East Ontario Commercial Area Traffic Study

Draft Final Report

For

The City of Ontario

By

Meyer Mohaddes Associates
January 2004
J03-0015

Table of Contents

LIST OF FIGURES

LIST OF TABLES

1.0 INTRODUCTION

1.1 Background and Project Description

Because of the large inventory of undeveloped and potential redeveloped property between 13th Street and East Lane both north of East Idaho Avenue and south of East Idaho Avenue to SE 5th Avenue, the City of Ontario is conducting a study to evaluate the impact of full build-out traffic conditions of this area. Although the study includes the entire area as noted, particular interest and emphasis has been placed on the redevelopment impacts of the vacant Akins building and surrounding lot. The City desires to know, under build-out conditions, what impacts and needs (roadway, striping, signal operation, pedestrian, bicycle improvement, etc.) the surrounding infrastructure of these lands will require as seen in Figure 1.

Figure 1. Study Area

Existing condition data as shown in Chapters 2-3 of this report have been collected and are used as a baseline to assess the build-out conditions to evaluate the required needs of the surrounding infrastructure, and provide a mechanism to evaluate an individual property's impact so that an appropriate impact fee can be developed.

The project area, situated to the east of Interstate 84, is unique in its location and socio-economic status. Located on the Oregon/Idaho border, Ontario is the gateway to Oregon. With immediate access to Interstate 84, the Idaho side of the Snake River, and the many neighboring communities, the study area attracts commercial and industrial development. The availability of parcels and the economy in the eastern section of the City of Ontario has spurred growth and attracted businesses.

Although located ideally for economic growth, the study area is trapped between man-made and natural land barriers as shown in Figure 2 on page 2. The Snake River is located to the east of the developing area and the Interstate to the west. Few crossings, particular to this commercialized area, exist to traverse both river and interstate. Congestion occurs as traffic is funneled through the limited crossings and transportation infrastructure. In addition, the roadway system within the study area is not fully built out, and requires improvement to support potential growth.

One bridge on East Idaho Avenue allows crossing of the Snake River east to Idaho providing connectivity to Fruitland, Payette, Emmett, and Weiser areas. Two bridges, one grade separation and one fully accessed interchange, connect the study area to the downtown area and neighboring cities of Oregon – Nyssa, Adrian, and Vale. Recent growth and business expansion has resulted in congestion on East Idaho Avenue, SE 5th Avenue, and the surrounding streets. Continued growth and development in the study area will further impact traffic flow. This study documents these impacts, lists necessary improvements, and estimates a development charge per trip generated.

This report presents the data collected and existing roadway conditions, the future conditions and impact analysis, improvement recommendations, and the recommended system development charge. The existing condition analysis establishes the baseline foundation for the remaining tasks. Presented in Chapters 2 and 3 are a status of completed, collected reports and studies, the project area characteristics, summary of the data collected, and the existing roadway condition analysis results. The future conditions analysis and impact assessment, as presented in Chapter 5 of this report, describe the results of the traffic analysis conducted by Meyer, Mohaddes Associates. A computerized traffic model was completed using a specialized software program called TRAFFIX, and it was used to assess the trip generation potential of a development scenario. "Scenario B" was tested in terms of intersection traffic impacts, and conceptual mitigation recommendations were recommended in Chapter 6. In Chapter 7, the study report presents an evaluation of a potential traffic congestion mitigation fee program for the East Ontario Commercial area and is based on all previous findings and analysis.

The study was conducted under the guidance of a technical review team consisting of City staff and representatives of the Oregon Department of Transportation (ODOT). The review team assisted in the development of the study by providing technical data, reviewing work products, approving methodology and participation in project team meetings and conference calls.

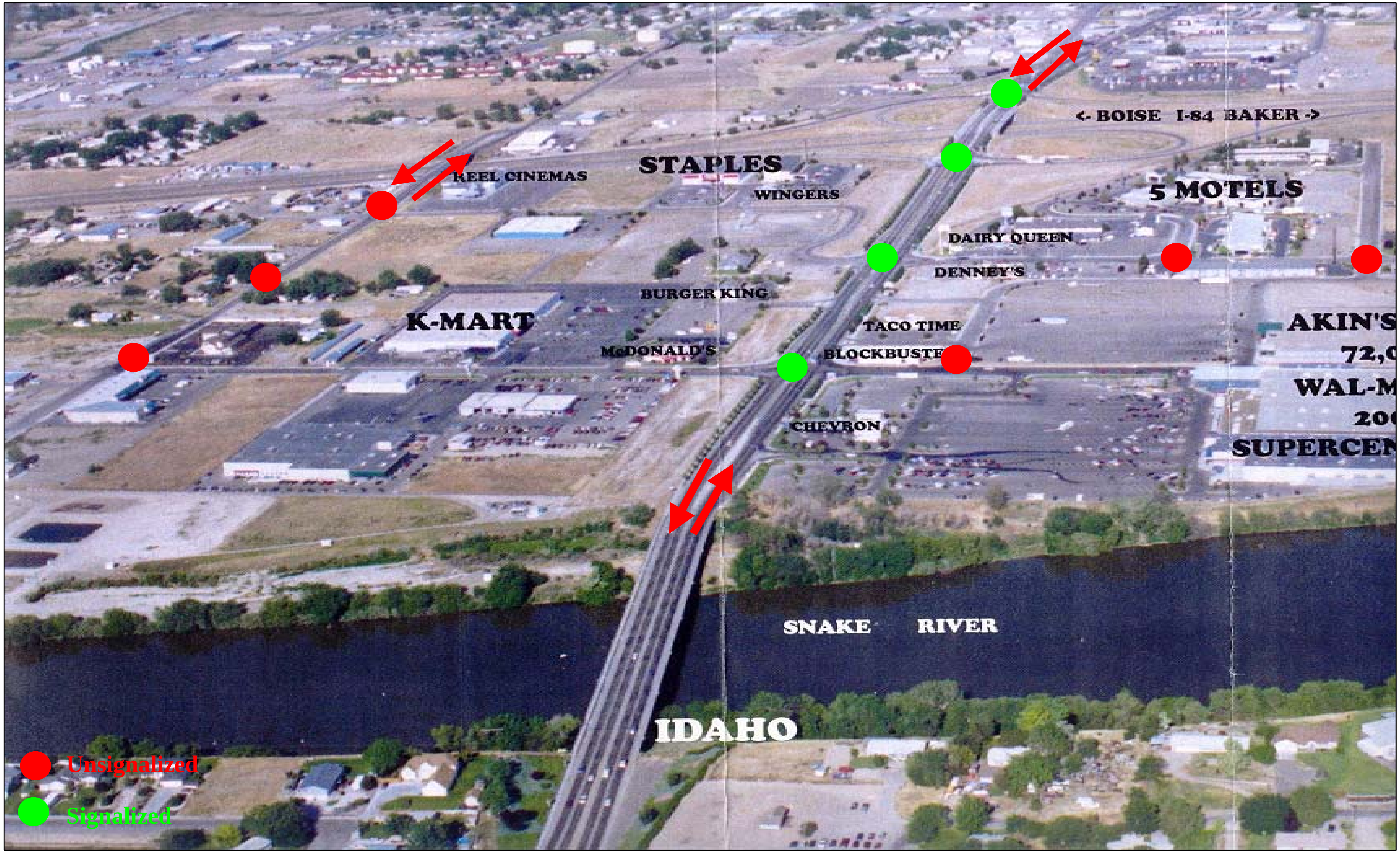

Figure 2. Project Area Overview

2.0 REVIEW OF EXISTING STUDIES AND REPORTS

In order to perform an analysis on the existing and future conditions, a compilation of recent transportation studies in, around, or adjacent to the study area was completed. Reports from local agencies, public entities, and local consultants were collected. The comprehensive compilation of studies is shown in Appendix A on page 47. The condensed list below shows recent studies crucial in establishing and recording community goals, objectives, and policies and providing insight to land use and volume projections within the study area.

- Ontario City Comprehensive Plan
- Ontario Transportation System Plan
- Title 10 of Ontario's Code
- Traffic Impact Study of the Wal-Mart expansion
- Traffic Impact Study of the Reel Theatre
- 1999 Oregon Highway Plan[2]

From State and City adopted documents, planning and operation thresholds and criteria were extracted to help evaluate existing and future conditions. For instance, Ontario's Transportation System Plan and the 1999 Oregon Highway Plan (OHP)[2] provided the volume to capacity (v/c) thresholds for the study area facilities (e.g. 0.85 maximum v/c ratio threshold for East Idaho Avenue). Travel patterns from previous hourly, daily, weekly, monthly, and annual volume data were also recorded in these documents from previous data collection. State and City planning documents provided an overall understanding of regional policies governing the growth, street management, and transportation infrastructure of the study area.

Recently completed studies assisted in better understanding the corridor, intersections, and surrounding developments. Findings in these studies and documents contributed to analyzing the existing conditions, identifying problem areas, and noting street system deficiencies by providing hourly and ADT link and intersection volumes. Detailed information from recent transportation impact studies within the study area assisted in trip distribution and assignment in the traffic analysis zones (TAZ). These same studies also provided a comparison of hourly volumes and computed v/c ratios and delay calculations. From the study comparisons, recent counts and analyses were checked.

In addition to the acquired information through past studies and documents, detailed field inventory of existing geometric conditions and signal operations was completed for this study. Signal timing, lane geometry, growth rates, and land use types were a few key items obtained from field reviews, studies, and reports.

3.0 PROJECT AREA CHARACTERISTICS

3.1 Study Area Sub Zones

The study area was divided into 11 "zones" for purposes of traffic analysis and traffic forecasting/modeling. These micro Traffic Analysis Zones (TAZ) provided for detailed traffic analysis. The basemap and zone system, as shown in Figure 3, were prepared so that detailed information could be documented on existing and future land use conditions. This same basemap and zone system was used to analyze the proposed site plan information with its changes in new development activity in and surrounding the project area.

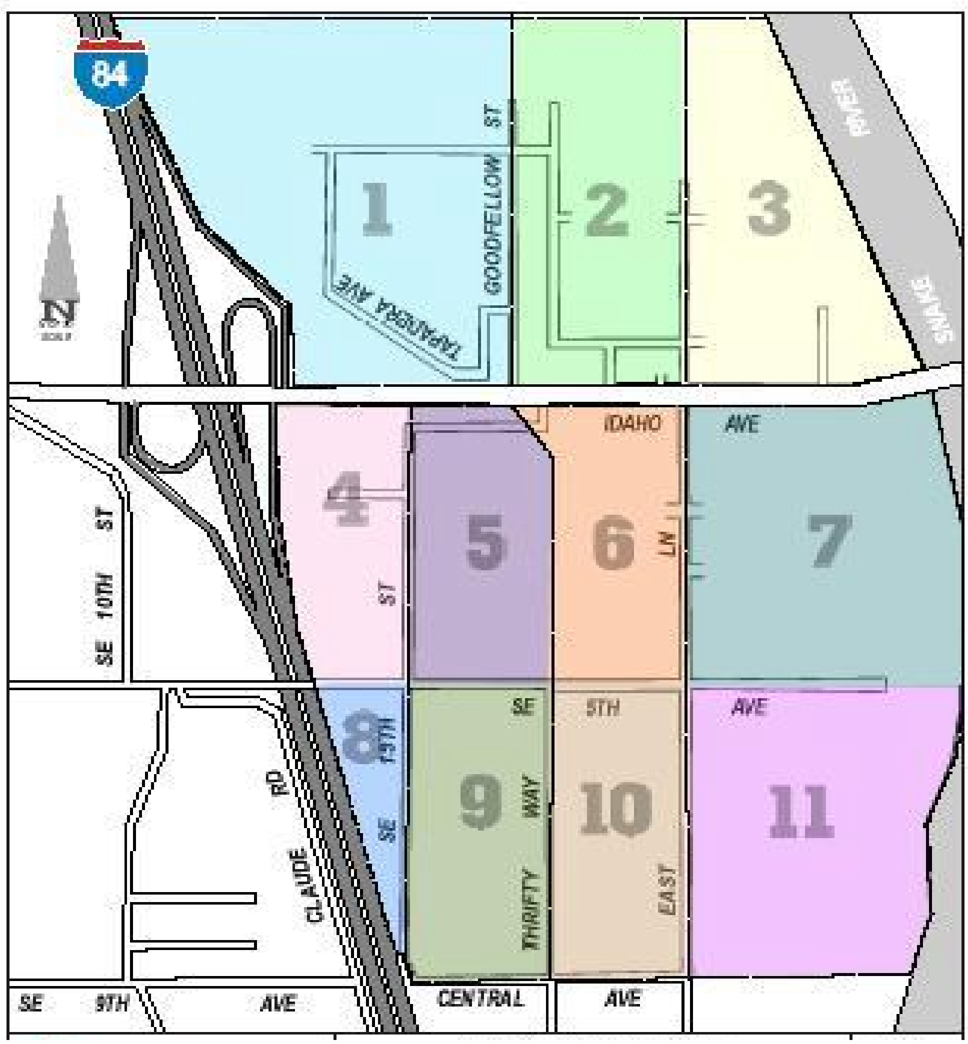

Figure 3. Traffic Analysis Zone System

3.2 Existing Land Use and Business Types

There are approximately 222 total acres in the study area. Currently, approximately 153 acres of this total area is developed. The area is zoned for a mix of uses including heavy industrial (I-2), general heavy commercial (C-2-H), general commercial (C-2), and public facility (PF) as shown in Figure 4. Large discount stores such as Wal-Mart and K-mart; fast food and sit down restaurants such as McDonalds, Burger King, Wingers, and Denny's; hotels; car dealerships; offices; and public facilities occupy the study area as noted in Figure 2 on page 2. As of the date

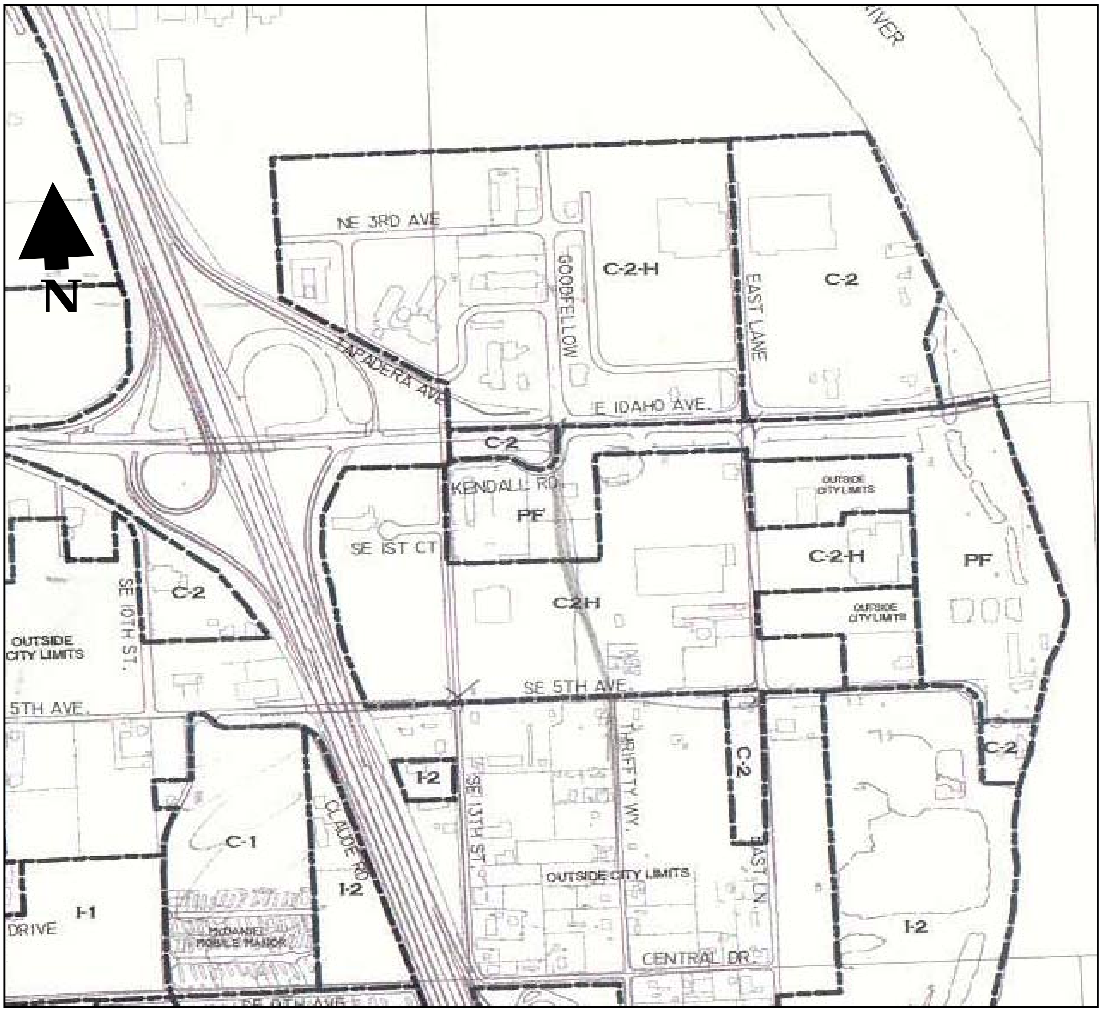

Figure 4. City Zoning Map

of the draft traffic study there were no scheduled or foreseen significant changes in the study area regarding land use type or zoning categories.

3.3 Existing Average Daily and Truck Traffic

The Average Daily Traffic (ADT) counts available on the major streets in the study area are shown in Table 3-1 on page 7. ADT counts were highest in the study area on the East Idaho Avenue (SH 30), which is classified as a principal arterial. East Idaho carries the greatest traffic volumes (ranges from 20,800 to 28,000 ADT within the study area) as it provides direct access to the I-84 interchange and an underpass crossing of the Union Pacific Railroad further west in the corridor. Traffic volumes are much lower on the local and collector streets in the project area ranging from 2,000 to 6,000 vehicles per day as shown in Table 3-1 on page 7 for SE 5th Avenue.

Also shown in Table 3-1 on page 7 are correlating truck traffic percentages on the major roadways in the study area.

Most goods purchased by Ontario residents are transported into the City as truck freight. Truck freight plays an important role for Ontario's and the study area's economy, not only for local consumption, but also for the export of commodities to markets elsewhere. Vendors rely heavily on trucks to ship their products. Truck traffic north and south of Ontario on I-84 ranges from 30 to 50 percent of the ADT. Increasing truck traffic, both within and through the study area, is adding to the significant congestion along the primary routes. Within the study area, truck percentages range from 12 to 15 percent on East Idaho Avenue. These percentages are considered relatively high for an arterial roadway.

Location	***Recorded ADT Range (1997 - 2000)***	***Truck Traffic Percentages***
East Idaho Ave - E of Goodfellow St	24,400 - 28,000 vpd	15%
East Idaho Ave - E of East Ln	20,800 - 25,500 vpd	15%
SE 5th Ave - W of East Ln	2,100 - 5,200 vpd	3%

Table 3-1. **Average Daily Traffic on Major Streets in the Study Area**

3.4 Transit, Bicycles, and Pedestrians

There are very few cyclists and pedestrians on a regular basis traveling within the project area. The rural community population chooses to drive the automobile for the most part to, from, and between businesses. Improvements to sidewalks and study area streets and signals could promote transit and encourage bicycle and pedestrian traffic. Thus, as shown in Chapter 6, it is proposed that improvements to the transportation system will include curb, gutter, and sidewalk where widening is proposed and/or there exists deficiencies to encourage the use of alternative modes of transportation.

4.0 EXISTING ROADWAY CONDITION ANALYSIS

4.1 Geometric and Traffic Control Data

The study addresses various classifications of streets and their existing conditions. East Idaho Avenue, a principal arterial road, is a 4 to 5-lane divided section with a raised median running east to west providing connection from the interstate across the Snake River to the State of Idaho through the project area as shown in Figure 5. Major intersection and access point locations along East Idaho are signalized with exclusive left turn lanes and protected movements on the major streets, while the minor streets have permissive left-turn movements. Access control has been implemented with the raised median and right-in and right-out access point controls along East Idaho Avenue. All other streets, SE 5th Avenue, East Lane, Goodfellow Street, SE 13th, NE 1st, and Thrifty Way are collector streets. Interconnections of these streets are stop controlled. SE 5th Avenue runs parallel to East Idaho Avenue and is located to the south approximately ½ mile. SE 5th Avenue also crosses Interstate 84 grade separation but does not cross over the Snake River. NE 1st Avenue also runs parallel to East Idaho Avenue connecting the abandoned Akins Market and surrounding retail businesses to East Lane and the Wal-Mart super store. Proposed site plans of this Akin's Market area will change the location of the NE 1st intersection and route. All other streets run north and south, perpendicular to East Idaho. Generally, lane widths are 12 feet or greater.

Figure 5. Picture Showing Existing Conditions – Curb/Gutter, Raised Median, Bike Path

In the project area, there is no on-street parking. Off-street parking facilities associated with businesses in the surrounding area provide the required parking. East Idaho is designed with curb, gutter, and sidewalks in a majority of the study area. East Lane and SE 13th Street are partially equipped with curb, gutter, and sidewalks. SE 5th Avenue lacks these improvements but has substantial shoulder widths. Improved sidewalk connectivity, enhanced pedestrian/bicycle crossings and facilities could promote more use by pedestrians and cyclists.

4.2 Count Data and Highway Capacity Software Analysis

Average Daily Traffic (ADT) counts in the study area were provided by ODOT along East Idaho Avenue to verify when the peak hours occur in the study area. Figure 6 shows the graphic results of the ADT peaks for different days of the week along East Idaho between I-84 and the Snake River.

ADT trends show peak hours occurring in the standard time frames of 4 – 6 p.m. with another peak at 11 a.m. to 1 p.m. The morning has a lower level of activity on the roadway system. These peak hours correlate with hourly traffic patterns presented in Figure 4-3 of Ontario's Transportation System Plan[1].

Based on these data, peak hour turning movement counts were conducted throughout the month of May and the first week of June 2003 during the typical commuter peak periods (7-9 a.m. and 4-6 p.m.). In order to get viable counts, the counts were conducted while school was still in session. Holidays and weekends were avoided. Appendix B on page 48 shows an example of the count sheets used to perform the peak hour turning movement counts.

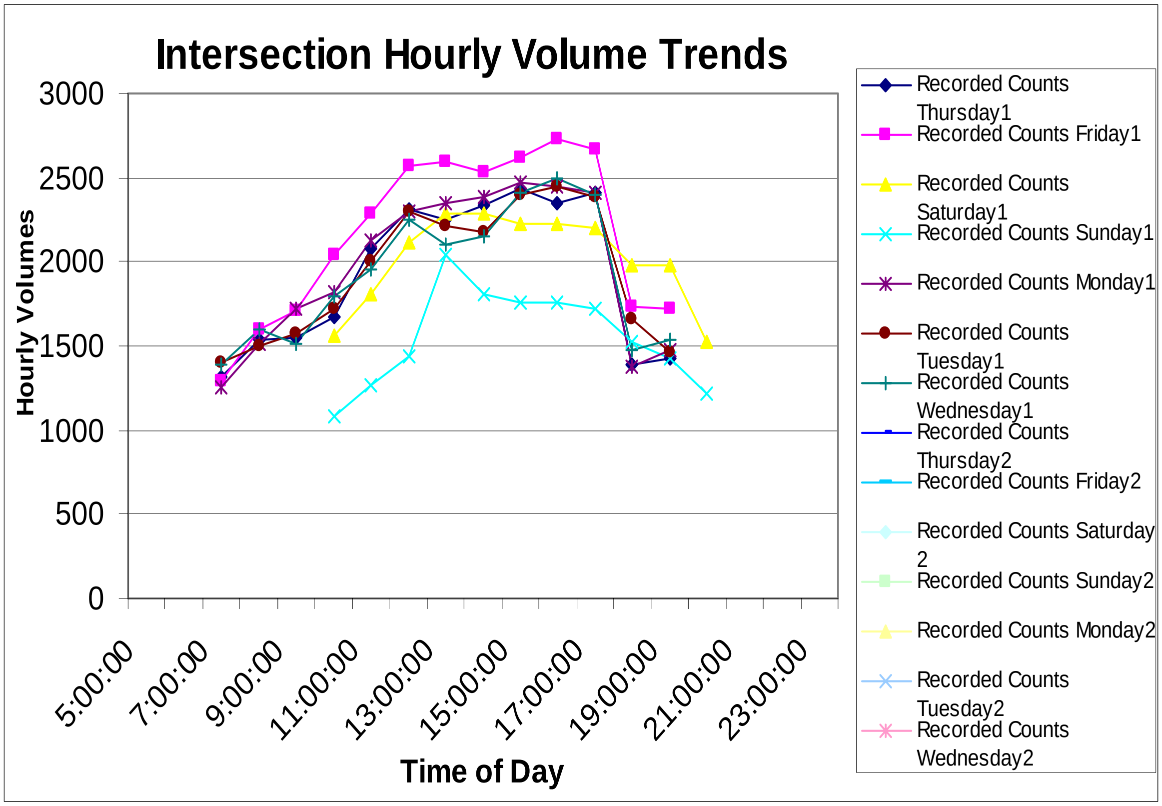

Figure 6. ADT Trends Within the Project Area

Existing traffic operations were evaluated using level-of-service (LOS) techniques described in the Highway Capacity Manual (HCM)[3]. The primary measure of effectiveness for signalized and unsignalized intersections is average delay and volume to capacity ratios. Unsignalized intersections, at uncontrolled approaches, experience little or no delay. In these instances, average vehicle delay is computed but v/c ratios are not computed or shown and an overall level-of-service for the intersection is provided. The Oregon Department of Transportation (ODOT) evaluates signalized intersections based on v/c ratio calculations. The City prefers delay or level-of-service results to be shown for ease of understanding and to accommodate the stopped and uncontrolled intersections. Both levels-of-service and v/c ratios are shown in the results to accommodate both the State and City requirements, however, it should be noted that "average vehicle delay" is used to determine level-of-service, per city guidelines therefore, volume/capacity ratio is presented for information only. Level-of-service ranges from "A" to "F" and is used to describe traffic flow conditions, as shown in Table 4-1 and 4-2 on page 11.

Level-of-service (LOS)	Description	Signalized intersection Average delay per vehicle	Unsignalized intersection Average delay per vehicle
A	Traffic moves freely. The free-flow condition is accompanied by low volumes. All waiting vehicles clear on the first green. The major movements have a low percentage of stops.	0 – 10 secs	0 – 10 secs
B	Traffic moves fairly freely. Volumes are somewhat low. Waiting vehicles will still probably clear on the first green. Traffic on a major movement can expect less than a 50 percent chance of stopping.	>10 – 20 secs	> 10 – 15 secs
C	Traffic moves smoothly. Volumes are beginning to increase. Some minor movements may clear on the first green. Traffic on major movements can expect a greater than 50 percent chance of stopping.	>20 – 35 secs	> 15 – 25 secs
D	Traffic approaching unstable flow. Acceptable intersection operation for peak periods. Many intersection movements may not clear on the first green. Traffic on major movements can expect a greater than 50percent chance of stopping.	> 35 – 55 secs	> 25 – 35 secs
E	Unstable traffic flow. Volumes at or near capacity. No vehicles are able to go through the intersection without having to stop first.	> 55 – 80 secs	> 35 – 50 secs
F	Saturation. Demand is higher than capacity. All vehicles will stop and probably will not make it through the first green.	> 80 secs	> 50 secs
	Source: Highway Capacity Manual 2000, Transportation Research Board, 2000		

Table 4-1. Intersection Level-of-service Criteria Using Control Delay Ranges

Level-of-service (LOS)	Description	Signalized intersection Volume to Capacity Ratio
A	Intersection has no congestion. A typical cycle length of 80 seconds or less will move traffic efficiently. All Traffic should be served in the 1st cycle. Can accommodate up to 40% more traffic.	0 – 0.60
B	Intersection has very little congestion. Almost all traffic will be served on the 1st cycle. A cycle length of 90 seconds or less will move traffic efficiently. Can accommodate up to 30% more traffic	> 0.60 – 0.70
C	Intersection has no major congestion. Most traffic served on 1st cycle. A cycle length of 100 seconds or less will move traffic efficiently. Can accommodate up to 20% more traffic.	> 0.70 – 0.80
D	Intersection normally has no congestion. Majority of traffic should be served on the 1st cycle. A cycle length of 110 seconds or less will move traffic sufficiently. Can accommodate up to 10% more traffic on all movements.	> 0.80 – 0.90
E	Intersection is right on the verge of congested conditions. Many vehicles are not served on the 1st cycle. Intersection has less than 10% reserve capacity available.	> 0.90 – 1.0
F	Intersection is over capacity and likely experiences congestion periods of 15 to 60 minutes per day. Residual queues at the end of green are common. A cycle length of over 120 seconds is required to move all traffic. Sub optimal timings can cause congestion	> 1.0
	Source: Transportation Research Board – Intersection Capacity (ICU) Report	

Table 4-2. Intersection Level-of-service Criteria Using Volume to Capacity Ratio Ranges

Level-of-service A represents free flow conditions with limited delay. At level-of-service D, some vehicles on certain approaches will begin to have to wait through more than one signal cycle. Level-of-service E represents full capacity conditions and level F is jammed traffic conditions.

Turning movement volumes, study area geometry and lane configuration, and signal and traffic control data were entered into the TRAFFIX software system, which was developed as a focused model of the study area. Within TRAFFIX, the Highway Capacity Software (HCS2000) was employed to conduct operational analysis on the intersections. Appendix D on page 51 shows the HCM[3] detailed calculations for all signal and stop controlled intersections. Table 4-3 on page 12 provides a summary of the analysis results.

Intersection	AM Peak Hour			PM Peak Hour		
	LOS Based on Delay	Avg Vehicle Delay (sec)	V/C Ratio	LOS Based on Delay	Avg Vehicle Delay (sec)	V/C Ratio
East Idaho & Eastlane	B	11.2	0.319	B	15.7	0.409
East Idaho & Goodfellow	B	10.6	0.248	B	12.3	0.356
East Idaho & Northbound On-Off	C	30.7	0.337	B	16.9	0.632
East Idaho & Chevron_WalMart Entrance*	B	11.6	N/A	B	13.3	N/A
SE 5th & SE 13th*	B	11.6	N/A	C	16.5	N/A
SE 5th & Eastlane	A	8.2	0.234	B	11.8	0.556
SE 5th & Thirty Way*	A	9.9	N/A	B	11.4	N/A
Idaho Ave & Southbound On-Off	A	5.5	0.436	A	6.7	0.615
NE 1st Eastlane*	B	12	N/A	B	12.2	N/A

* Note: Intersections are unsignalized and analyzed using HCS 2000 – v/c ratio is not applicable at those locations

Table 4-3. Existing Intersection Operating Conditions Analysis

Intersection operations analysis of existing conditions shows that there are no immediate problems in terms of poor intersection service levels within the study area. Intersections are currently operating with acceptable levels-of-service (LOS) and volume to capacity ratios. However, detailed analysis of individual traffic movements show LOS ratings of D and E at intersections on East Idaho – particularly at the East Lane and Goodfellow Street intersections. Generally, delays under existing conditions are not excessive at any intersection location within the study area. However with development or redevelopment of vacant or underdeveloped land with in the study area, trips will be generated which will change travel patterns and congestion levels on adjacent streets. Analysis of future conditions will examine problems within the study area. These trips will be added to existing volumes through a distribution and assignment process. ODOT and City guidelines state that traffic impact analyses are warranted when new trips generated by new development are greater than 400/day. Build-out conditions will generate more than 400 trips per day, thereby warranting this traffic analysis. Level-of-service and v/c ratio standards for planning/operation design fall in the range of LOS D to E and v/c ratios of 0.75 to 0.95 depending on the roadway classification and location (as explained in table 4.2 on page 11).

4.3 Crash Analysis

Crash data were collected and inventoried for the past four years as shown in Appendix B on page 48. Data were available and recorded mainly for the signalized corridor of East Idaho Avenue and unsignalized corridor of SE 5th within the project area. Figure 7 on page 13 shows that the past four yearly totals equals 156 crashes overall, with a peak of 43 in 2000.

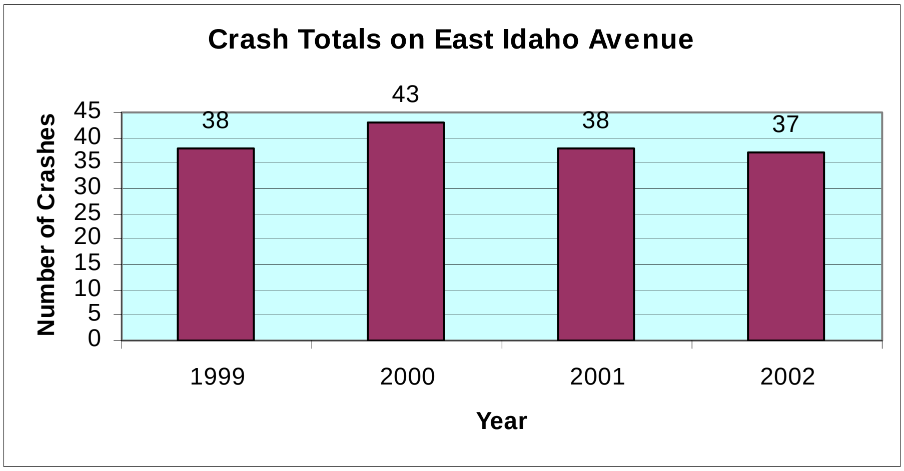

Figure 7. 4-year Crash Totals

Figure 8 shows the number of crashes per location. Clustering of crashes occurred around the intersections. There were very few mid-block crashes. Movements are limited to right-in and right-out at access points except at intersections. Because SE 5th Avenue traffic volumes and congestion levels are lower, there are fewer crashes recorded in this region of the study area.

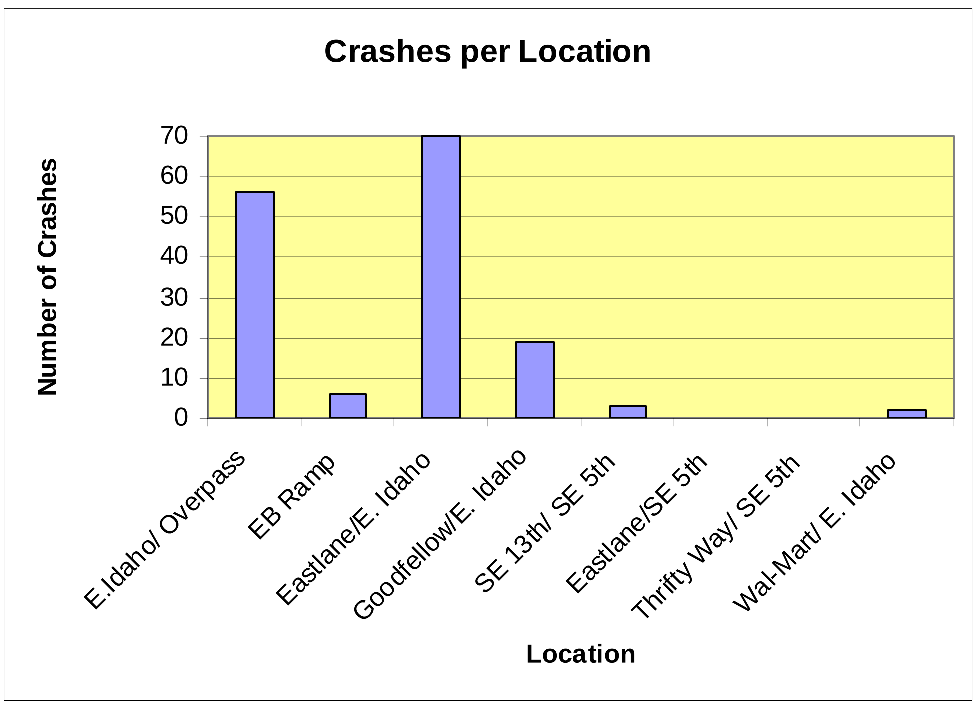

Figure 8. Crashes at Major Intersections

The East Idaho Avenue overpass, East Lane, and Goodfellow Street intersections experience the highest number of crashes. High volume and congestion during peak hours contribute to these crashes.

Figure 9 shows the common types of crashes in the project area. In that the crashes are clustered around the intersections, a majority of them are rear-ends and angle/turning crashes. There are also a few sideswipe, head-on, and pedestrian related crashes.

Of the 156 total crashes, there were no reported fatalities. However, 42 injuries and 114 property damage only crashes were reported out of the 156 crashes.

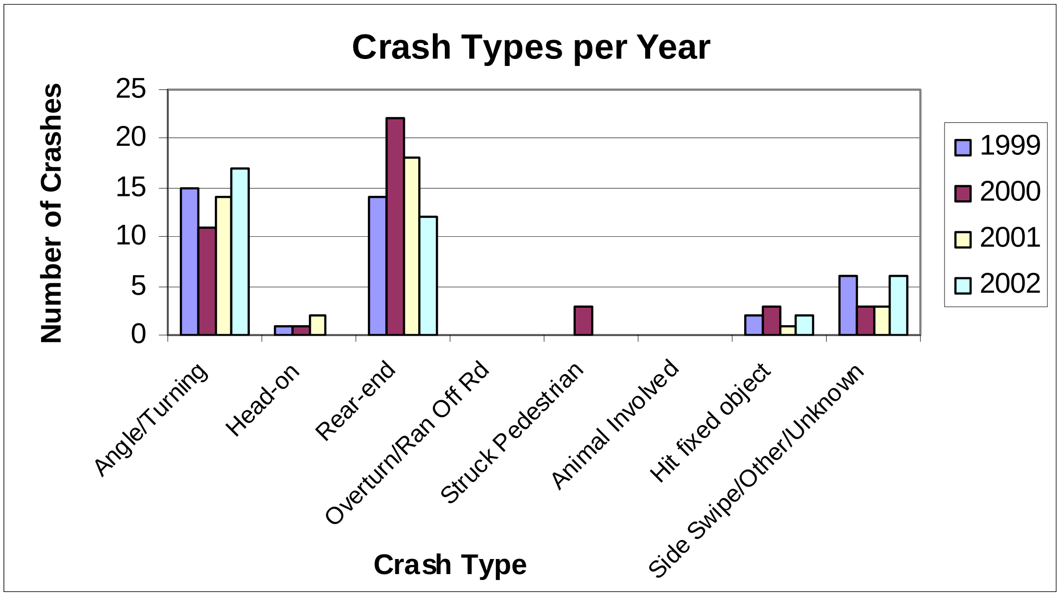

Figure 9. Number of Each Crash Type in the Project Area

4.4 Conclusions from the Existing Condition Documentation and Analysis

Analysis of existing conditions and review of recent documents and studies indicates acceptable overall intersection and roadway levels-of-service and v/c ratios. None exceed the thresholds of the State or City planning and operation standards. There are, however, turn movements that approach level-of-service C and D. Particularly, the eastbound left-turn movements from East Idaho and the southbound left-turn movement from East Lane onto eastbound East Idaho Avenue towards the Snake River. Also, all movements southbound from SE 13th Street experience excessive delay. This is due to the stopped control on SE 13th Street and the uncontrolled movement of SE 5th Avenue. In all movement calculations using the HCM 2000[3] (Highway Capacity Manual) operation methodology, there are no v/c ratios approaching ODOT's threshold maximum of 0.85.

5.0 FUTURE CONDITIONS AND IMPACT ASSESSMENT

Eleven Traffic Analysis Zones (TAZs) were developed and approved by the project committee as shown in Figure 3 on page 5. Development scenarios of future built-out conditions within these zones were generated to predict all future generated vehicle trips. Specific development patterns cannot be predicted for the long term, however, reasonable estimates of the type and quantity of development can be developed.

5.1 Future Condition Analysis and Documentation

The City provided current and proposed site plan information describing changes in development activity within and surrounding the project area. A spreadsheet entitled "*Project Development Summary by Traffic Analysis Zone*" was developed to assist in recording, by traffic zone, potential future changes in development or redevelopment in and around the project area.

The project development spreadsheet includes the following data:

- Future building area to be developed/added within the study area and within each TAZ. This includes future development type and development quantities (square footage of building area for commercial uses, rooms for hotel/motel).
- Under "other," it includes the future development that doesn't fall under the general categories listed and provides information about size of development
- Information on occupied buildings that will be removed or redeveloped – including size and type/description
- Other Relevant Project information – information that will assist in zonal trip generation (e.g. timing, phasing, build-out year if known)
- Information on "cumulative" development activity or redevelopments around the study area (but not within the study area) that would impact the background traffic.
  Note: Cumulative development activity is the progressive addition of trips as new development or redevelopment occurs.

It is clear that there is no perfect "crystal ball" that will precisely predict the future building patterns or type of development that will occur in the East Ontario study area. However, a few important pieces of information including total land area available, City of Ontario Plan Classification from the Comprehensive Plan, and historical development patterns assisted in understanding the study area development and building patterns. Three scenarios of potential project development summaries were produced as explained in the following section (see page 16).

5.2 Project Development Summary Scenarios

Three different development and trip generation scenarios were developed; 1) Scenario A - standard mixed-use commercial/retail; 2) Scenario B - discount "super store"; and 3) Scenario C - restaurant. The purpose of developing three scenarios is to "bracket" the potential changes in the built area and trip generation that could occur. To develop each scenario, the available land area was measured, multiplied by an assumed floor area ratio (FAR), and multiplied by the appropriate trip generation rates using data from the Institute of Transportation Engineers, which is the nationwide standard for such data. In all scenarios, an assumed Floor-Area Ratio of 0.25 was used. This was the accepted value approved by the project team. Also based on the *Trip Generation Handbook – An ITE Recommended Practice*[4], reductions for pass-by and diverted linked trips were used in the calculations as shown in the spreadsheet per development type. The Excel spreadsheets in Appendix E show the following scenarios and key results in greater detail.

- Scenario A – This Scenario assumes the entire study area will be built out as standard mixed-use commercial/retail shopping centers with some office.

  This scenario yielded the following total added trips for the developable and redevelopable parcel land:

  - AM Peak hour – 1,175 trips
  - PM Peak hour– 1,840 trips
  - Daily – 21,650 trips

- Scenario B – This Scenario assumes that the study area will be built out with discount “super stores” rather than standard mixed commercial/retail shopping centers. This is more conservative than Scenario A since the trip rates for discount super stores are higher than standard commercial. This scenario yielded the following total new trips for the same developable land:

  - AM Peak hour – 1,150 trips
  - PM Peak hour – 2,570 trips
  - Daily – 34,320 trips

  Note that this scenario results in approximately the same number of added trips in the AM peak compared to Scenario A, 40 percent more added trips in the PM peak, and approximately 59 percent more added daily trips.

- Scenario C -This scenario, representing the potential worst case, essentially assumes that the entire area is built out as a “restaurant row” with a preponderance of sit-down type of restaurants. While this development pattern is less common than standard commercial, it has been appearing in some suburban areas and corridors. In such areas, sit-down and quality restaurant chains tend to bunch together, potentially including such chains as Outback Steak house, Applebee’s, Chili’s, or Sizzlers. This scenario is also conservative, because restaurant trip rates are somewhat higher than standard retail commercial in the PM peak and daily rates. This scenario yielded the following total new trips:

  - AM Peak hour– 685 trips (less than retail as some restaurants are not yet open)
  - PM Peak hour – 2,770 trips (higher than retail scenarios)
  - Daily – 33,215 trips

  Note that restaurants have a lower AM peak hour generation rate, especially for sit-down restaurants, thus the AM peak hour in this scenario results in approximately 41 percent less trips in the AM peak compared to Scenario A. However, as would be expected in the PM peak hour due to a high generation rate, this scenario results in 50 percent more added trips in the PM peak. Also, given that reduction percentages for pass-by and diverted linked trips are substantially higher for restaurants according to *the ITE Trip Generation Handbook*[4], this scenario resulted in a slightly smaller percentage increase than in Scenario B at approximately 53 percent more added daily trips.

These three scenarios assume basically homogenous development throughout the study area. In reality, there will likely be a mix of development types, such as a portion of the study area developed as discount store and a portion as standard mixed-use retail commercial. Scenario A represents, fairly accurately, a mixed-use type of development pattern, with some retail and some restaurant. The project team reviewed this data and considered how to characterize the potential future development (e.g. should the area build-out to an all mixed-use commercial development, should some of the area build-out to discount store, or etc). Finally, the floor area ratio (FAR) for each scenario was considered, because the FAR directly impacts the number of trips generated by the project area.

Following review and consideration by the project team, the discount super store development scenario (Scenario B) was selected as the conservative/typical build-out condition to use in the Ontario City study area. The project team proceeded with the future conditions analysis and identification of a list of improvements based on Scenario B.

5.3 Future Condition Traffic Analysis

A computerized traffic model using the TRAFFIX software was developed to test Scenario B. Using the model and HCS2000, MMA analyzed the potential impact of Scenario B in terms of intersection traffic impacts, assessed the proportionate fair share impacts and developed conceptual mitigation recommendations. Figure 10 on page 18 shows the TRAFFIX model. The methodology and results of the impact analyses are summarized below.

5.3.1 Computer Traffic Model Results

MMA applied information within the traffic model to assess project area impacts. The proposed development data (square footage of future land uses by type of land use), the roadway and intersection geometries, and peak hour trip generation estimates for the future scenarios were coded in the model and travel paths were assigned for each TAZ. The model was then run to assess future AM and PM intersection levels-of-service and v/c ratios with full build-out conditions of Scenario B scenario. To recap, Scenario B is projected to add the following number of trips to the roadway system (trips to be added over current traffic on the roadway system):

- AM Peak hour – 1,150 added trips
- PM Peak hour – 2,570 added trips
- Daily – 34,320 added trips

These are the net new trips to be added to the roadway system by Scenarios on top of the traffic volumes that exist today.

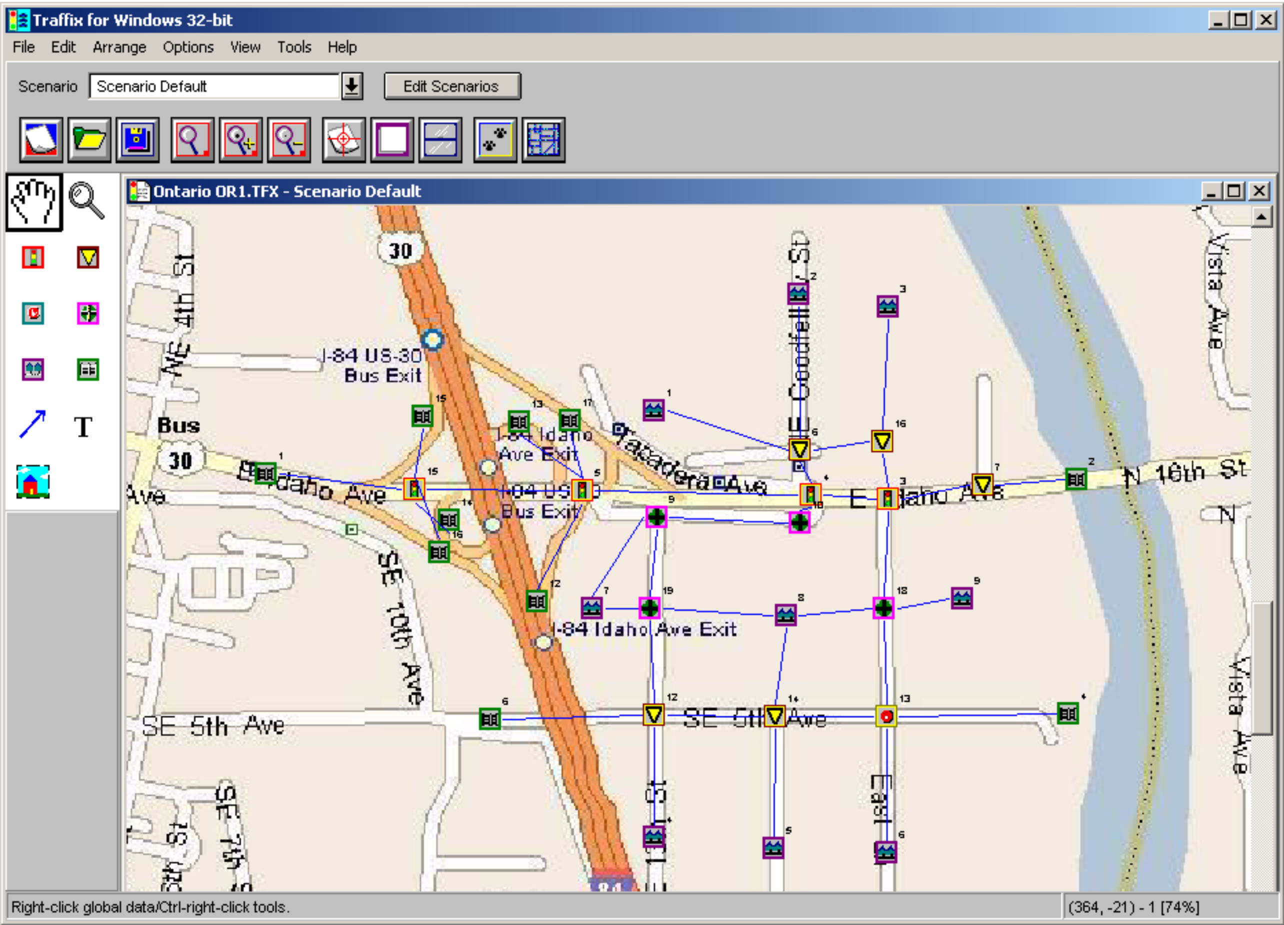

Figure 10. Study Area TRAFFIX Model

5.3.2 Intersection Level-of-service Forecasts

Table 5-1 on page 22 illustrates the results of the intersection LOS (level-of-service) and v/c ratio forecasts of Scenario B for the PM Peak Period, and compares them to the existing conditions. Review tables 4-2 and 4-3 on pages 10 and 11 of Chapter 4 to reference LOS ratings to v/c and vehicle delay ranges. All Level of Service determinations are based on average vehicle delay as opposed to volume to capacity ratio. For purposes of this analysis, an intersection deficiency is defined as any intersection that is projected to operate at LOS E or F or with a v/c ratio greater than 0.85 in the future with build-out of the project as referenced in Ontario's TSP and the state's OHP[2]. As shown, level-of-service during the AM peak hour does not change significantly, and no intersections are projected to move to LOS E or F as shown in Figure 11 on page 19.

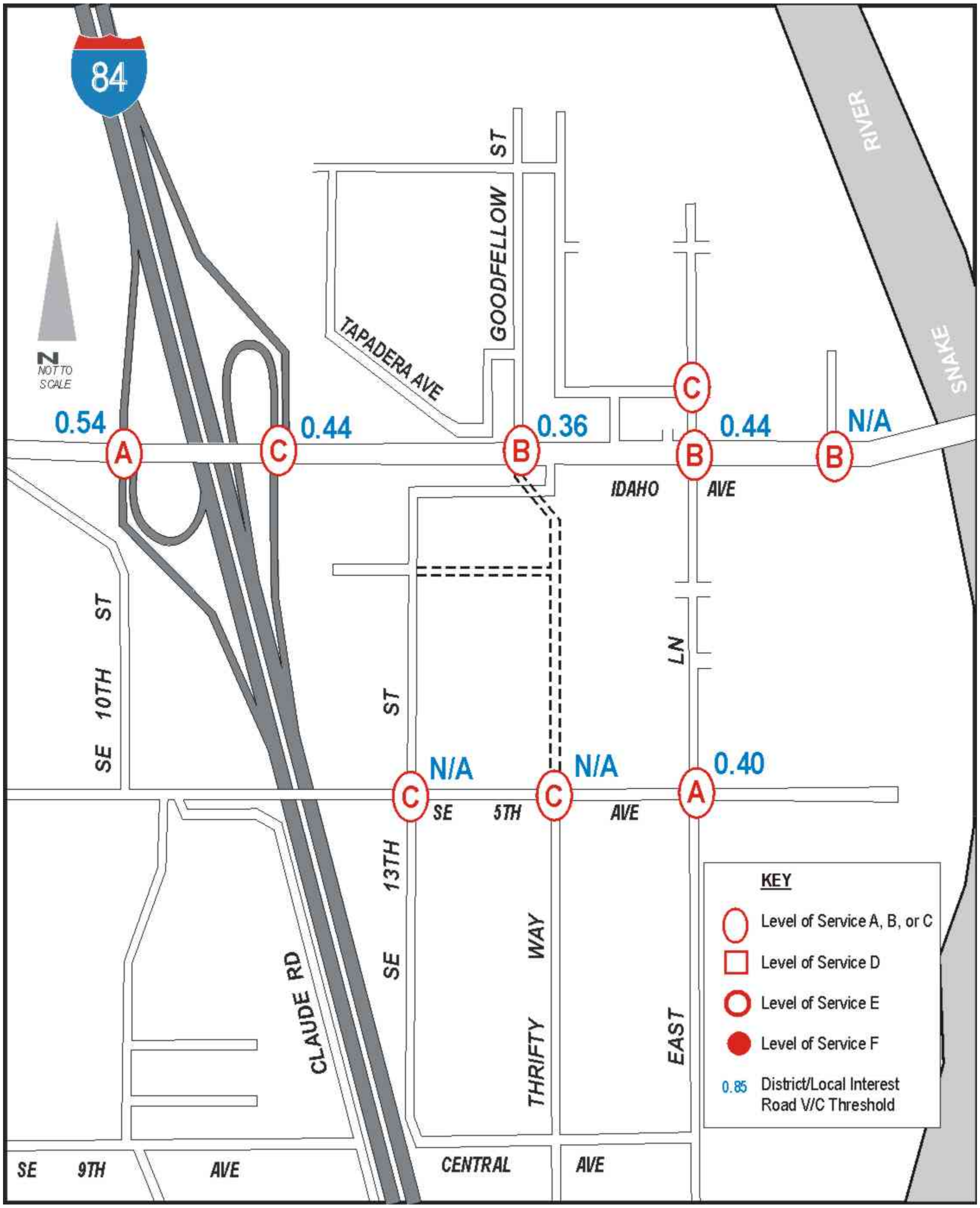

Figure 11. Future AM Peak Hr LOS & V/C (Future = full development, no improvement)

This finding is expected since Scenario B does not generate significant volumes of traffic during the morning time period. During the morning, discount superstores generate employee trip making and nominal customer trip making, and many are not even open until after the AM peak period is over. During the PM peak hour, however, the number of trips is far greater (over 2.5 times greater) and the resulting impacts are found to be significant at several locations. During the PM peak hour, LOS E conditions are projected at two locations and LOS F conditions are projected at three locations. One additional location is projected to operate at LOS D, and the remaining intersections are forecast to operate at LOS C or better. All three of the LOS F conditions are expected to occur at currently unsignalized intersections. Figure 12 on page 21 illustrates the locations of the projected LOS E and F intersection operating conditions in the future during the PM peak hour. The projected deficiencies are as follows:

- East Idaho Avenue and Goodfellow St. (LOS E, V/C 0.828, average vehicle delay 56.4 seconds)
- East Idaho Avenue and East Lane (LOS E, V/C 1.046, average vehicle delay 57.5 seconds)
- SE 5th Avenue and SE 13th Street (LOS F, average vehicle delay >50 seconds)
- SE 5th Avenue and Thrifty Way (LOS F, average vehicle delay >50 seconds)
- SE 5th Avenue and East Lane (LOS F, V/C 1.033, average vehicle delay 52 seconds)

5.4 Conclusions of the Future Condition Traffic Analysis

Under build-out conditions based on Scenario B, forecasted/generated traffic will impact the efficiency and functionality of the transportation network of this study area. Analysis shows a deterioration of intersection and roadway operation. Based on the trip generation of the build-out condition and analysis of the future conditions, improvements to the transportation system are warranted. Recommended improvements are described in the following sections of the report.

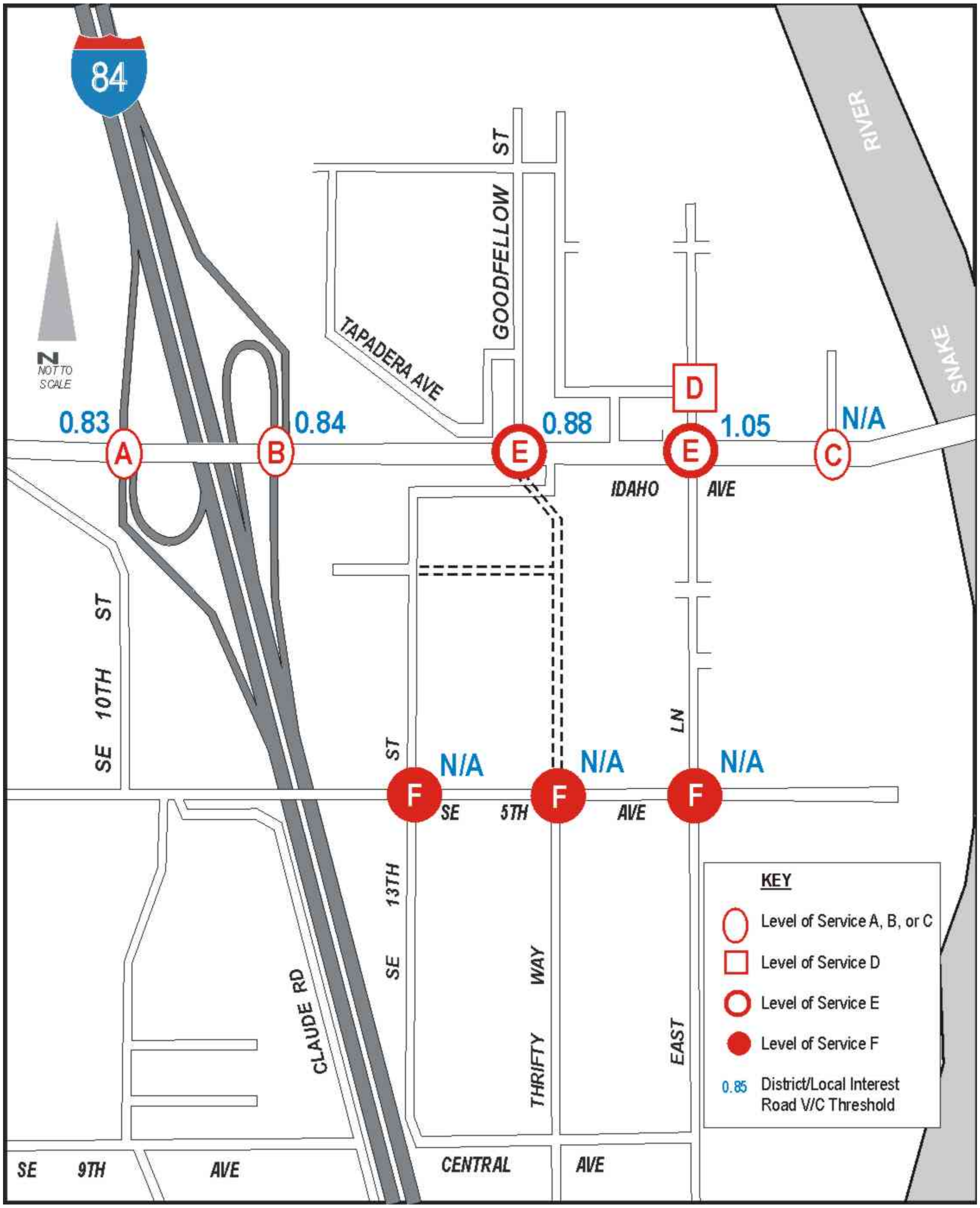

Figure 12. Future PM Peak Hr LOS & V/C (Future = full development, no improvement)

Intersection	Existing						Future w/ Big Box Scenarios					
	AM Peak Hour			PM Peak Hour			Future AM Peak Hour			Future PM Peak Hour		
	LOS	*Avg Vehicle Delay*	*V/C Ratio*	*LOS)*	*Avg Vehicle Delay*	*V/C Ratio*	*LOS*	*Avg Vehicle Delay*	*V/C Ratio*	*LOS*	*Avg Vehicle Delay*	*V/C Ratio*
East Idaho & Eastlane	B	11.2	0.319	B	15.7	0.409	B	12.7	0.435	E	57.5	1.046
East Idaho & Goodfellow	B	10.6	0.248	B	12.3	0.356	B	12.6	0.357	E	56.4	0828
East Idaho & Northbound On-Off	C	30.7	0.337	B	16.9	0.632	C	32.4	0.444	B	16.9	0.880
East Idaho & Chevron WalMart Entrance*	B	11.6	N/A	B	13.3	N/A	B	12.9	N/A	C	17.0	N/A
SE 5th & SE 13th*	B	11.6	N/A	C	16.5	N/A	C	20.5	N/A	F	750.0	N/A
SE 5th & Eastlane	A	8.2	0.234	B	11.8	0.556	A	9.8	0.401	F	52.0	1.033
SE 5th & Thirty Way*	A	9.9	N/A	B	11.4	N/A	C	15.3	N/A	F	750.0	N/A
Idaho Ave & Southbound On-Off	A	5.5	0.436	A	6.7	0.615	A	5.5	0.541	A	7.5	0.833
NE 1st Eastlane*	B	12	N/A	B	12.2	N/A	C	15.9	N/A	D	25.5	N/A

*Note: Intersections are unsignalized and analyzed using HCS 2000 v/c ratio is not applicable at hose locations

(1) Proportionate share based on PM peak hour traffic forecasts

Average Vehicle Delay is in seconds

Table 5-1. Future Intersection Analysis

6.0 STUDY AREA IMPROVEMENT RECOMMENDATIONS

6.1 Conceptual Mitigation Measures

The future intersection capacity analysis results were reviewed to determine the required roadway and intersection capacity improvements based on projected future traffic volumes under Scenario B. The capacity enhancements listed in Chapter 6 indicate the need for additional roadway and intersection capacity based on the forecasted volumes. It is also recommended that increased access management be implemented by the State and City on the major east/west corridors (e.g. East Idaho and SE 5th Avenue). Access management through limited driveways will help to maintain good traffic flow. The mitigation recommendations are based on review of aerial photos, design plans and field reviews. These mitigation measures were presented to the project team (City and State) for review and approval. Comments were incorporated into this report.

Recommended capacity and operation improvements have been developed and conceptual drawings were completed so that preliminary cost estimates could be generated and a final impact fee analysis performed as shown in Figure 13 on page 24.

The following capacity improvements are recommended based on the future projected volumes for Scenario B:

- <u>East Idaho Avenue and East Lane</u> – This intersection is forecast to experience LOS E conditions in the future with build-out of Scenario B. The traffic movements that are most highly impacted by future traffic are the southbound left turn, the eastbound left turn, the westbound left turn and the east and westbound through movements. The warranted improvements at this location include dual southbound left turn lanes, dual eastbound left turn lanes and dual westbound left turn lanes. With these improvements as shown in Figure 14, the intersection level-of-service would be LOS C.
- <u>East Idaho Avenue and Goodfellow</u> – This intersection is forecast to experience LOS E conditions in the future with build-out of Scenario B. The traffic movements that are most highly impacted by future traffic are the northbound left turn, the southbound right turn, all of the eastbound movements and the westbound through movement. The warranted improvements at this location include dual eastbound left turn lanes, plus reconfiguration of the north and southbound approaches to each include an exclusive northbound left turn lane, a through lane and a right turn lane. With these improvements as shown in Figure 15, the intersection level-of-service would be LOS B.
- <u>SE 5th Avenue and East Lane</u> - A traffic signal is recommended at this location upon meeting conditions that satisfy standard traffic engineering warrants for the installation of a signal. This location should be monitored over time as development occurs, with periodic traffic counts and engineering field review of conditions. The decision to install a traffic signal is based on written warrants (derived from vehicular volume, pedestrian volume, vehicle delay and other factors) as well as review and professional judgment of the responsible traffic engineer. Until that time, conditions should be monitored to determine if modifications to the existing stop sign controls are warranted based on changing conditions. In addition to the potential traffic signal installation, it

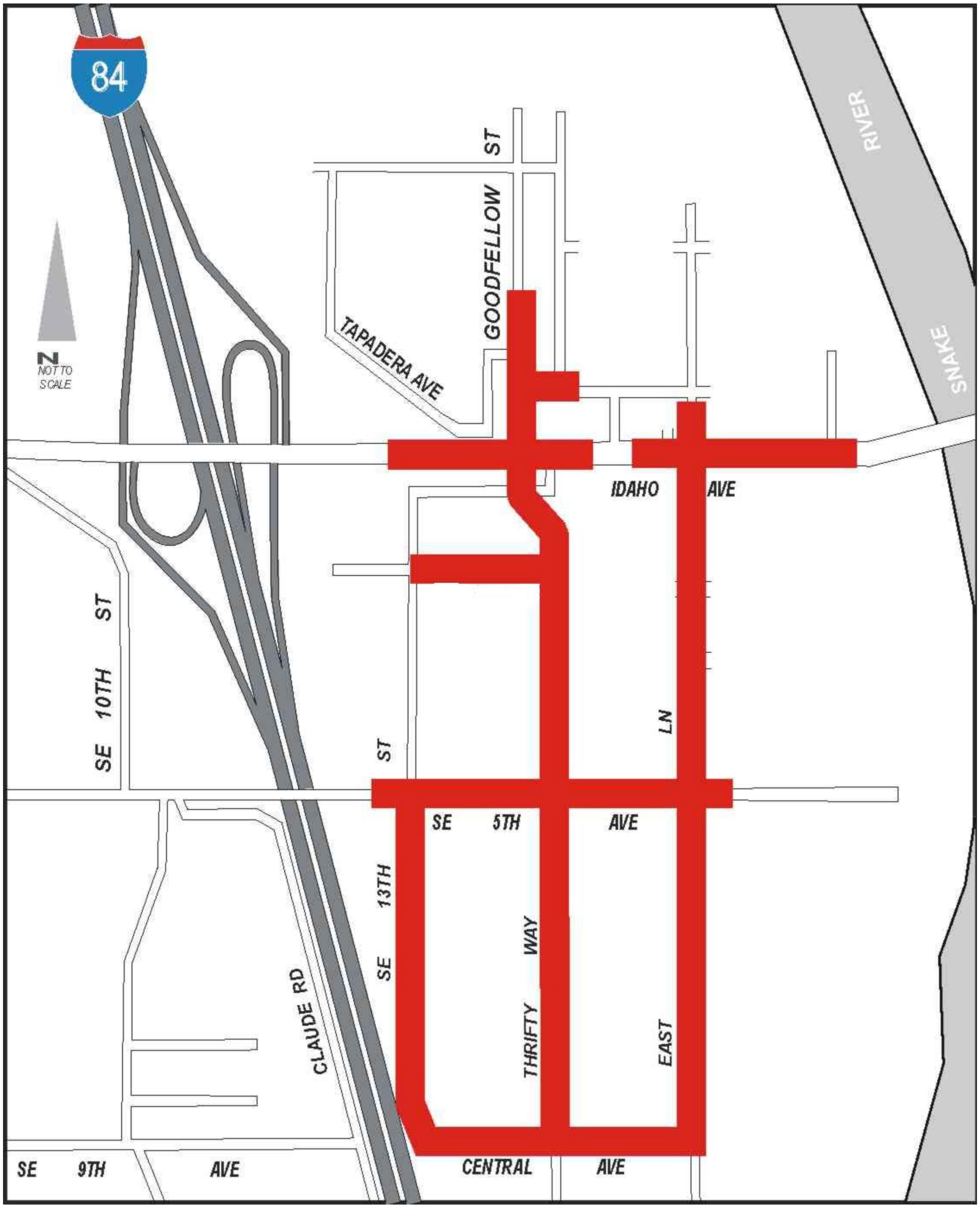

Figure 13. Overall Improvements for Study Area

recommended that the heavier volume approaches, including the southbound and eastbound approaches to the intersection, be reconstructed to provide two standard width lanes in place of the single lane that currently exists as shown in Figure 16.

- SE 5th Avenue and Thrifty Way (future Goodfellow St.) - A traffic signal is recommended at this location upon conditions that satisfy standard warrants for the installation of a signal. This location should be monitored over time as development occurs, with periodic traffic counts and engineering field review of conditions. The decision to install a traffic signal is based on written warrants (derived from vehicular volume, pedestrian volume and vehicle delay) as well as review and professional judgment of the responsible traffic engineer. Until that time, conditions should be monitored to determine if modifications to the existing stop sign controls are warranted based on changing conditions. In addition to the potential traffic signal installation, it is recommended that the heavier volume approaches, including the eastbound, westbound and southbound approaches to the intersection, be reconstructed to provide two standard width lanes in place of the single lane that currently exists. It will also be important to coordinate the design and installation of a traffic signal at this location with the potential installation of a signal at East Lane to ensure that there is adequate spacing and signal timing coordination as depicted in Figure 16.
- SE 5th Avenue and 13th Street – Although this location is projected to operate at a poor level-of-service with stop sign traffic controls (unsignalized), it is not likely that this location could be signalized. This is due to the proximity of the adjacent overpass on I-84 and the issues associated with sight distance for eastbound traffic. As the area south of Idaho Avenue develops, Thrifty Way and East Lane should be more heavily emphasized as far as driveway frontage and access to abutting properties. Also, the installation of traffic signals at either Thrifty Way and SE 5th or East Lane and SE 5th will tend to cause traffic patterns to utilize those streets for local access and access to Idaho Avenue in place of 13th Street, which will act more as a local collector street as shown in Figure 16. The recommendation for this intersection is to improve it to city standards for width and curbs and roadway cross-sections upon build-out of adjacent parcels, but not to install a traffic signal. If side street delay increases, selected traffic movements, such as the southbound right turn onto the overpass, could be reviewed to determine if physical modifications would be warranted (such as a channelized or free right turn lane or other improvement.
- Goodfellow Street Extension – This location is in design and included as a part of the City's Transportation System Plan (TSP) and Capital Improvement Plan (CIP), it may or may not be included into the fee impact calculation so that the City is compensated for its efforts to improve the transportation system within the study area if they so choose. The improvement shown in Figure 17 is warranted because of area development. It is recommended that the Goodfellow Street Extension include a two-way road with center turn lane and connect to the Thrifty Street intersection as proposed in previous studies. Curbside parking should be allowed on this collector street. Caution should be used in the spacing and number of driveways and access points.
- SE 1st Avenue Extension – Similar to the proposed and planned Goodfellow Street Extension, SE 1st Avenue connection could also be added to the impact fee calculation versus inclusion as a part of the City's CIP. The proposed improvement includes

widening and "T" intersection geometry as displayed in Figure 18 (exclusive movement lanes to decrease delay at stopped intersections).

- South of SE 5th Avenue Improvements – In addition to intersection improvements, street improvements will be warranted such as widening East Lane, Thrifty Way, SE 13th Street, and Central Avenue south of SE 5th Avenue to accommodate the growth and expansion of development. Sidewalks and curb/gutter should also be provided for safety reasons as displayed in Figure 19.
- Akins Site Plan Suggested Connectivity – Although Commercial Real Estate Services is working on this site plan, it is proposed that additional circulation be provided for the Akins area by connecting the parking facility ring road to Goodfellow Street on the west end of the facility. This would result in parking stall relocation, driveway, and other improvements at the Denny's Restaurant. These improvements are shown in Figure 20.

Note: In the future the Street called Thrifty Way will be renamed Goodfellow Street to match the Goodfellow Extension.

Figure 14. East Idaho/East Lane Improvements

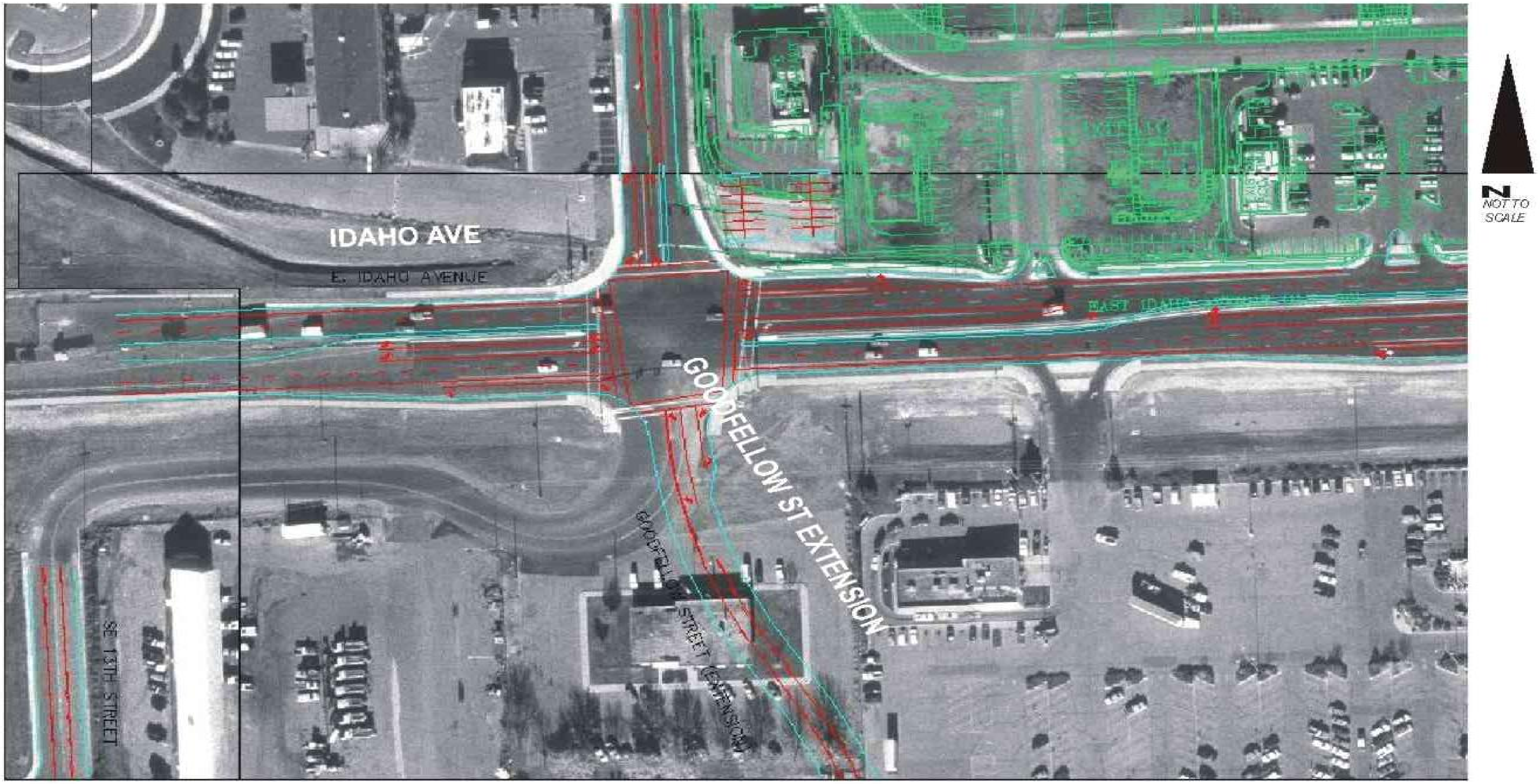

Figure 15. East Idaho/Goodfellow Improvements

Figure 16. SE 5th Ave. from SE 13th ST. to East Lane Improvements

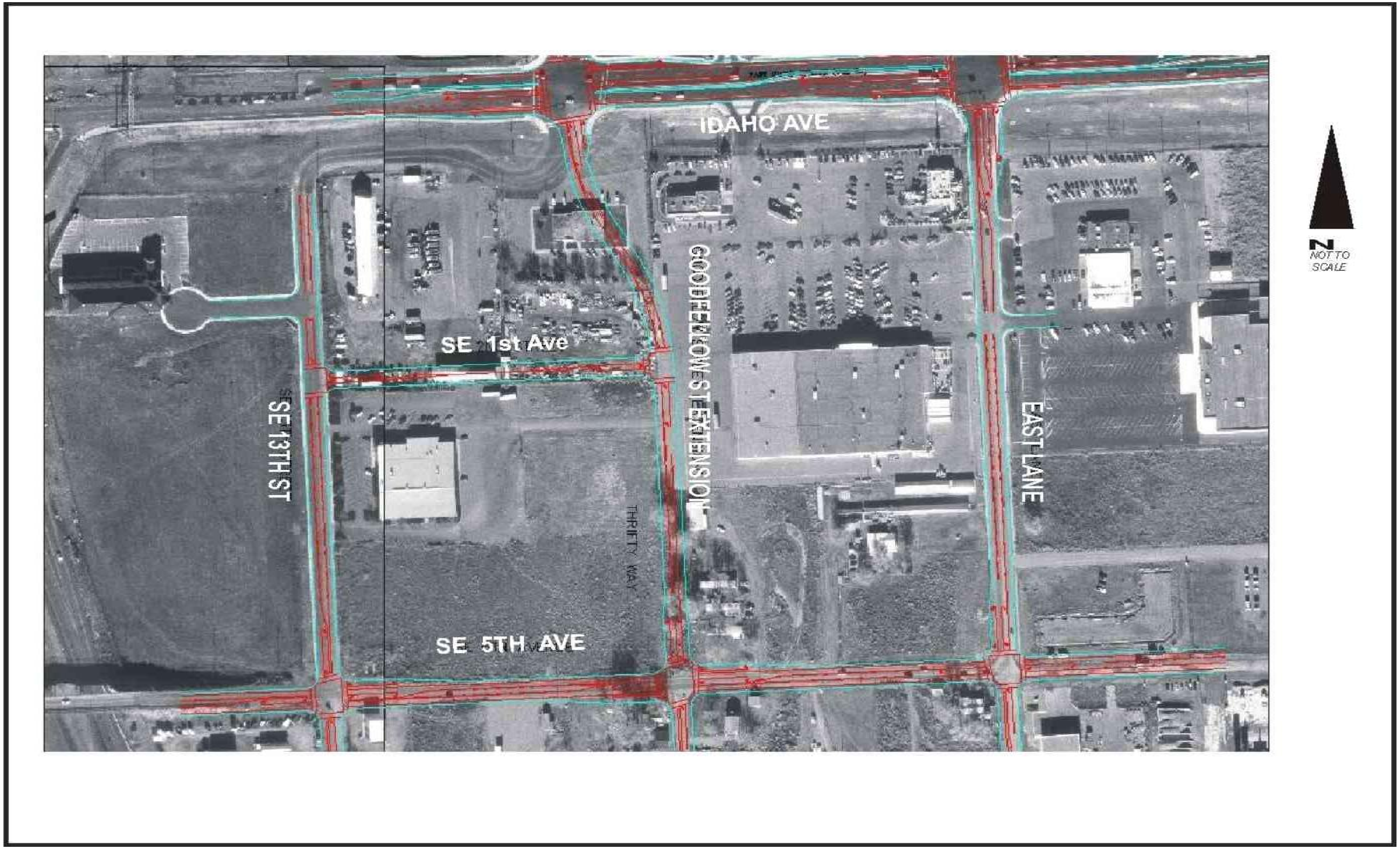

Figure 17. Goodfellow Extension Improvements

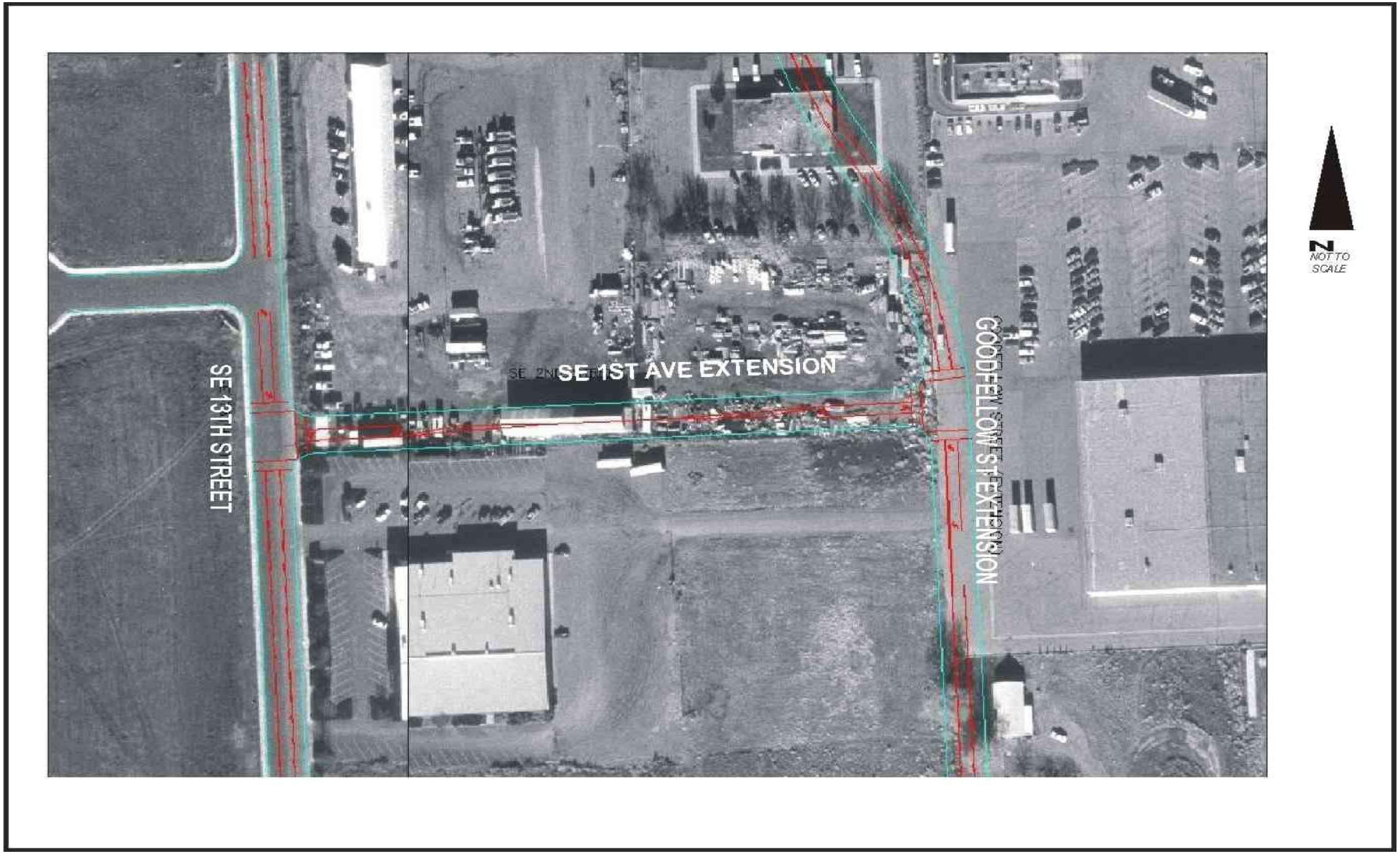

Figure 18. SE 1st Avenue Extension Improvements

Figure 19. South of SE 5th Avenue Improvements

6.2 Mitigation Conclusions and Total Costs

Improvements recommended in the study area would mitigate the forecasted operational deficiencies caused by trips generated through development. These improvements were coded into the TRAFFIX model and yielded acceptable levels-of-service and average vehicle delays and v/c ratios. From the improvements, costs were generated using an EXCEL spreadsheet. The City of Ontario provided the unit costs as shown in the spreadsheet in Table 6-1.

Location	Description	Cost of Improvements
Central Avenue	Roadway widening to City standards including a 60' ROW, curb, gutter, sidewalk, curbside parking, & landscaping	**$762,082.00**
South SE 13th St	Roadway widening to City standards including a 60' ROW, curb, gutter, sidewalk, curbside parking, & landscaping	**$539,968.00**
Thrifty Wy	Roadway widening to City standards including a 60' ROW, curb, gutter, sidewalk, curbside parking, & landscaping	**$759,768.00**
South East Ln	Roadway widening to City standards including a 60' ROW, curb, gutter, sidewalk, curbside parking, & landscaping	**$759,768.00**
SE 5th Ave	Roadway widening to City standards to 66" ROW, 2 signals installed at Goodfellow St and East Lane, restriping to include center turn lanes and proper lane geometry at intersections - will include sidewalk, curb & gutter, drainage, landscaping, etc	**$952,236.00**
East Ln	Select widening at the intersection to provide a SB dual left-turn lane and exclusive right-turn lane, NB exclusive left and right-turn lanes	**$130,018.10**
East Idaho Ave	Select widening at Goodfellow to include an EB dual left turn lane, at East Lane to provide a EB and WB dual left-turn lane - including signal improvements, curb & gutter, sidewalk, and landscape replacement	**$216,750.00**
North Goodfellow St	Restriping to provide a center turn lane and exclusive lanes at the SB approach to the Goodfellow/East Idaho intersection	**$21,865.50**
NE 1st Ave	Correct striping through the Akins development area with access to Goodfellow St including the relocation of parking stalls for Denny's	**$284,940.00**
Goodfellow St/SE 1st Ave Extension	Roadway widening to City standards including a 66' & 60' ROW, striping (center-lane for Goodfellow), curb, gutter, sidewalk, curbside, parking, & landscaping.	**$1,199,060.00 (cost not included in fee calculation)**

Table 6-1. Cost of Improvements

7.0 SYSTEM DEVELOPMENT CHARGES

7.1 Background of System Development Charges

This section of the East Ontario Commercial Area Comprehensive Transportation Study report presents an evaluation of a potential traffic congestion mitigation fee program for the East Ontario Commercial area in the City of Ontario. In the state of Oregon, impact fee programs are known as "system development charges." Within the document, the terms "impact fee" "transportation fee" and "system development charge" can all be assigned the same definition, as follows:

- "A reimbursement fee, an improvement fee or a combination thereof assessed or collected at the time of increased uses of a capital improvement or issuance of a development permit, building permit or connection to the capital improvement, "System develop charge" does not include any fees assessed or collected as part of a local improvement district or a charge in lieu of a local implement district or the cost of complying with requirements or conditions imposed upon a land use decisions, expedited land division or limited land use decision" (State of Oregon, 2001 Oregon laws, Section ORS 223.299)

A transportation fee program would require that new development activities throughout the study area that contribute to future transportation system deficiencies (via added traffic on the roadway system) should pay for the fair share of improvements required to alleviate those deficiencies. All new vehicle trips would be viewed as both using and benefiting from future transportation improvements in the study area. A fee is being examined because of the perceived need for additional funding for improvements to the transportation system.

System development charges must establish a reasonable relationship (often called the "nexus test") between the fee being levied on new development, the impacts of that development, and facilities paid for by the program. Specifically, it must be proven that the need for transportation system improvements results from new development, not simply from existing deficiencies. Also, the fee which is charged must not exceed what is required to mitigate the impacts of new development, otherwise, the impact fee program would be charging new development to pay for deficiencies resulting from past land development or development outside of the City. A comprehensive technical analysis has been conducted in the study area for purposes of establishing the "reasonable relationship" of new development to the proposed fee.

The objectives of the study are:

- To examine the geographic distribution of projected growth, transportation system deficiencies, fee generation, and transportation improvements in the study area.
- To estimate the required costs to mitigate or partially mitigate projected deficiencies on the system.
- To estimate the fee levels which would be necessary to cover the costs, or partially cover the costs.

- To provide a summary of advantages and disadvantages of a uniform fee, and discuss related policies.

There must be a relationship between the amount of the charges and the cost of the improvements. In order to impose a fee as a condition to a development project, a public agency must do the following:

1. Identify the purpose of the charges

2. Identify the use to which the charges are to be put. If the use is financing public facilities, the facilities must be identified.

3. Determine how there is a reasonable relationship between the charge’s use and the type of development project on which they are imposed.

4. Determine how there is a reasonable relationship between the need for the public facility and the type of development project on which the charges are imposed.

The public agency must also determine that there is a reasonable relationship between the *amount of a fee* and the *cost of the facilities* or portion of the facilities attributable to new development. Implicit in these requirements is a stipulation that a public agency cannot impose a fee to cure existing deficiencies in public facilities or improve public facilities beyond what is required based on the impacts from new development.

As previously explained in this document, future traffic operating conditions have been forecasted using the computer traffic model and the intersection analysis methodology consistent with analysis of existing conditions. The procedure used to estimate future deficiencies includes the following steps:

1. Define local land use development potential within the study area. This includes known "approved" projects, projects that are currently applied for, and parcels which are likely to develop or redevelop.

2. Estimate vehicle trip generation for each project and parcel using nationally accepted trip generation rates from the Institute of Transportation Engineers (ITE).

3. Develop a future "base" roadway network within the traffic model which consists of existing roadway geometries plus anticipated improvements which will be implemented.

4. Assign future forecast trips to the roadway system.

5. Forecast future levels of service using the procedures described in Chapter 1.

6. Identify deficiency locations resulting from future development.

7.2 System Development Charges by Land Use Type

Previous chapters of this report have described the analysis of existing and future transportation system conditions as well as recommended improvements to mitigate deficiencies caused by growth assuming Scenario B development. This chapter presents conceptual cost estimates for those improvements and describes system development charges by type of land use and by traffic analysis zone.

7.2.1 Conceptual Improvement Costs

Table 7 illustrates the estimated conceptual costs of transportation system improvements (both physical improvement measures and programmatic costs) necessary to accommodate new development. Appendix F shows greater detail including quantities and costs per zone. The total cost of improvements included in the charges is approximately $4,427,400.

7.2.2 Proposed System Development Charges

During a status report meeting, it was determined that Wal-Mart generated trips should also be added to the total number of PM peak hour trips based on a previous contractual agreement between the City and Wal-Mart. According to a *Traffic Impact Analysis Report for the Wal-Mart Expansion* completed in March of 2000 - generated PM peak trips from Wal-Mart were added into the total trips generated in the study area. Also, an adjustment must be made to account for other regional growth and pass-through traffic. This adjustment accounts for the fact that some of the projected future deficiencies will be caused by regional growth not study area growth. For this analysis, a 25 percent adjustment factor is applied. Therefore only 75% of the costs are included in the system development charge.

Because growth occurs in the ambient or through traffic that also contribute to the study area's increase in congestion, there was a 25% reduction due to growth in through traffic. Thus, 75% of the impact is attributed to the development growth and based on a total of 3,455 PM peak hour trips attributable to new development (proportion eligible for system development charges), the per trip cost on average is $960.00. The per trip cost on average will be applied to each development on all study area parcels as development occurs. Similarly, the zone containing the Akins property, depending on the particular developments and their square footage, will contribute the per trip cost similar to other portions of the study area.

7.3 Advantages and Disadvantages of a System Development Charge System in Ontario

The system development charge program will require administrative efforts. The foregoing analysis has estimated the future unfunded transportation deficiency improvements and calculated the system development charges for the City of Ontario. The elected officials, staff, development community and citizens of Ontario must now decide whether to proceed with the formulation and adoption of a traffic congestion fee. Advantages and disadvantages of a traffic fee are summarized below.

7.3.1 Advantages

- **Economically efficient means of providing improvements** - All developers' pay on the same basis (depending on location and relative impact), and the process is clear and predictable.
- **Reduces and streamlines entitlement requirements.** - A uniform fee will partially reduce the need for detailed case-by-case traffic analysis and mitigation, as new developments' share of off-site improvement costs will have already been allocated by the fee. Analysis would still be required to assess localized impacts of development (i.e., contiguous to the project property).
- **Encourages inter-jurisdictional cooperation.** - Inter-jurisdictional cooperation is required in order to fund improvements that extend beyond the City boundary. Where local fee programs already exist, credit can be given when the program already funds regional facilities. Agreements with other cities regarding mitigation may be easier if their development only has to pay a proportional fair share of improvement costs.

7.3.2 Disadvantages

- **High fee incidence on non-residential uses** - The relatively higher incidence of the fee on non-residential uses, caused by their high trip generation, should be evaluated and means of reducing these fees through supplemental funding may be explored.
- **Need to update the program** - The program will require periodic updating for purposes of reassessing traffic conditions, re-evaluating development levels, adding to or subtracting from the list of improvements, and finally, amending the fee structure. An update will be required particularly if the level of development increases in the near future to levels that were experienced before the economic downturn in southern California. The costs of the updates are, however, covered by the fee program.

7.4 Administration of the System Development Charge Program

A system development charge program will require administrative efforts. The greatest efforts are related to setting up the program and include the adopting procedures and training of staff. Once these initial efforts have been completed, the program will be relatively easy to administer. The City should consider preparing and adopting a procedures manual for the impact fee program. The manual should be brief and address the issues discussed in this chapter, along with any others identified by the City. Important administrative issues associated with the fee program include the following:

7.4.1 Adoption

The effective data of the impact fee program should be determined. Delaying the adoption of the fee serves a useful purpose in not taking the development community by surprise and gives developers an opportunity to consider the impact of the fee on projects they are planning. The City will also need sufficient time to prepare and implement administrative procedures prior to the imposition of the fee.

7.4.2 Assessment

The schedules depicting the fees should be clear and allow both City staff and those who will pay the fees to accurately determine the fee applicable for any project. Inevitably, unconventional cases will arise. Variances for special or unique circumstances are discussed later in this chapter. Unconventional cases, other than variances, will generally fall into one of two categories: (1) additions, modification, or replacement of existing structures, and (2) types of development not described in the fee schedule.

Fees are levied on commercial development based on the square footage of the structure. An addition, modification, or replacement of a commercial building would be subject to a fee based on any increase in the size of the building. For example, if a manufacturing structure of 100,000 square feet were being replaced by a structure of 150,000 square feet, only the additional 50,000 square feet would be subject to the impact fee. This presumes that the new structure will have a similar use as the one demolished and will not increase traffic relative to its previous use.

The impact fee schedule in this report includes eight types of development, which are the types of development anticipated within the study area. These types of development are general and are to be broadly interpreted. Still, some types of development will not completely fall within one of these categories. In these cases, the City should determine the appropriate trip generation rate for the development in question. To maintain consistency with the system development charges levied on other development, the trip generation rate should be the peak, weekday PM traffic for the type of development most similar to the proposed project, as estimated by the Institute of Transportation Engineers. ITE *Trip Generation*[4] may not include adequate data for some land uses. In these cases, the City should determine the appropriate trip generation rate. Note that all retail and "quality" restaurant uses would be are reduced by 44 percent to reflect pass-by trips, and fast-food restaurants would be reduced by 50 percent.

Some projects may fall into more than one category. In these cases, the appropriate fee for the amount of development in each category should be determined and these fees added together to determine the total traffic congestion mitigation fees for the project. For example, the retail category used in this study is a broad category that includes many different types of retail uses. Large shopping centers or mixed-use projects may justify computation of specialized rates that apply more specifically to the proposed tenant mix.

7.4.3 Collection

Administration of the road fee program will be simplified if fees are collected when building permits are issued. Most public agencies collect fees at this time. A single department of the City should be responsible for the collection of all fees. If fees are collected when a building permit is issued, there is certain efficiency in having the building department collect fees when a permit is issued. Staff in the building department should also be experienced at determining the type of development a permit is issued for, which is necessary to determine the appropriate fee to be collected.

Whichever department collects the fees, this department must keep other agencies that have responsibility related to the fee program informed of all fees collected. For example, a five-copy receipt may be made when fees are paid: one copy would be given to the fee payer and the other copies sent to accounting, public works, planning, and building department (assuming one of these is the department responsible for collecting the fee).

There should be procedures in place for occasionally auditing the records of fees collected, to ensure that fees are being collected from all of the projects subject to fees.

7.4.4 Accounting

Public agencies are required to deposit any fees received in a separate capital facilities account and to avoid any commingling with other funds of the public agency. The fees may be spent for only the purposes for which the fees were imposed. Any interest earned on the account must be left in the account and used for the same purpose as the fees.

At the end of each fiscal year, the public agency must make available to the public the beginning and ending balance in the fund for the fiscal year, the fee, interest, and other income, and the amount of expenditure by public facility.

7.4.5 Disbursement

Fees should be disbursed according to the capital improvement plan, which should be updated as needed. Developers, particularly those who have paid or are subject to fees, should be invited, along with other interested members of the community, to attend a public meeting to discuss the capital improvement when it is updated.

All of the projects for which fees are being collected should be included in the capital improvement plan, even if the improvements are deferred or partially unfunded. Justification should be provided for projects deferred beyond five years; this justification should demonstrate that the transportation system would be sufficient until improvements are scheduled and development will be able to proceed without interruption.

Disbursements should also be made for administrative expenses and the costs of updating the fee study. These expenses are discussed further in the chapters of this report on administrative expense and program updates.

7.4.6 Credits

The City should clearly define the circumstances under which credits shall be provided. There may only be two circumstances for which developers may be allowed to qualify for credits against the impact fees (other than as described under "Existing Projects"). The first is the donation of right-of-way for a road improvement included in the road impact fee program that the City would otherwise be obligated to purchase. The second is the construction of improvements that are included in the impact fee program. The amount of the credit should not exceed the lesser of (1) the value of the right of way and the cost of the improvements, and (2) the fees owed by the project. The value of the right of way or cost of the improvements should be determined by the City.

Credits should not be paid in excess of the fees owed on a project; otherwise the City will end up paying for development. This should not prevent a developer from entering into a reimbursement agreement with other property owners, whereby the developer who improves a road will agree to make the improvements for other developers who would obligated to pay fees. These property owners will qualify for a credit against fees as a result of the construction of the road improvements, and will instead, agree to pay this amount to the developer who improved the road. Preparing and negotiating reimbursement agreements of this type should be the responsibility of the developers who request them; although clearly, the City will need to approve the agreement and should be a part of the process of the agreement.

7.4.7 Variances

There may be special or unique circumstances that apply to some projects that warrant a variance in the fee that would normally be levied. Suggested procedures for variances are to have developer’s request a variance if they believe their project qualifies for one; this request should include the basis for the variance and a calculation of the fee that should apply. The request should be submitted to the planning department and reviewed by public works.

The trip generation rate in the fee schedules are averages based on data collected by the Institute of Transportation Engineers (ITE). Some projects will generate traffic higher and some lower than these rates. Variances should be granted to projects with special or unique circumstances that do not fall within the normal range of variation in the ITE rates.

A project should not qualify for a variance on the basis that the type of project proposed is not included in the land use types in the fee schedule. The City can determine the impact fee for projects that do not fall within one of the categories in the impact fee schedule. This is discussed in the chapter of the Report on assessment of fees.

7.4.8 Refunds

Fees cannot be diverted to any other purpose other than that for which they were collected. If fees are not used as intended, they must be refunded. For any fee that remains unexpended after several years, the City must make findings (1) to identify the purpose for which the fee was collected, and (2) to demonstrate a reasonable relationship between the fee and the purpose for which it was charged. If the City is not able to make these findings for all or a portion of the unexpended fee, this portion of the fee, along with interest, must be refunded to the then current owner of the property from which the fee was collected.

7.4.9 Inflation Adjustments

The transportation system development charges described in this report are based on current cost estimates. Many of the improvements in the fee program will be built in future years when costs will be higher as a result of inflation. The impact fees should be adjusted for inflation, if they are to keep pace with the costs of constructing the improvements included in the program. This adjustment is usually made by increasing the fees each year according to an inflation index, such as the *Engineering News Record* Cost Index. Fees can be increased by inflation administratively each year if this is provided for in the ordinance adopting the program.

7.4.10 Administrative Expenses

Administrative expenses related to a development impact fee program are highest when the program is being set up. Once the program is in place, the cost of administering the program should be relatively modest. According to the American Planning Association, the cost of administering most development impact fees programs is between two and five percent of the fees collected. Administrative expenses for the City of Ontario System Development Charge Program have been estimated to be three percent of the fees collected. The accounting for the impact fee program should include a means of estimating the costs of administration, and should these costs be less than three percent, the road impact fees should be decreased accordingly.

7.4.11 Additional Traffic Impacts and Analysis

Typically, the City requires the preparation of traffic analyses for all projects, which are determined to be large enough to have potentially significant traffic impacts. The adoption of the impact fee program will affect this determination. The impact fee study partially mitigates the impacts of new projects on the roads included in the impact fee program, unless a project amends the planned land use element or circulation plan diagram. The impact fee program does not mitigate the impacts on roads not included in the program.

There may also be cases where a project may create a large volume of traffic on a road that is not included in the impact fee program, and this traffic requires a road to be built or improved during or before development. If the capital improvement program for roads does not provide for the road to be built in time, the City may need to condition development of the project on the construction of these road improvements. In these cases, the developer should be able to qualify for a credit against other impact fees owed by the project.

To avoid confusion, the City should adopt policies regarding when a project (1) requires additional traffic analysis, (2) must mitigate impacts in addition to the payment of congestion mitigation impact fees, and (3) should be conditioned to construct road improvements included in the impact fee program.

7.4.12 Program Updates

The impact fee is based on assumptions regarding the costs of improvements, growth patterns and rates, demographic variables, and a number of other factors. These variables may change over time or future experience may show other assumptions to be more accurate. To maintain the fairness and validity of the congestion mitigation impact fee program, the City should commit itself to updating the program on a periodic basis. The frequency of these updates should be established and honored. These updates may occur every five years or sooner, if a major amendment to the general plan is made. To ensure the funds to pay for the update, the impact fee program includes $25,000 for each five years of the planning period analyzed in the program. These funds are to cover the cost to re-examine the fee methodology and have traffic studies conducted to determine road impacts.

8.0 SYSTEM DEVELOPMENT CHARGES FOR SPECIFIC DEVELOPMENT TYPES

8.1 ITE Trip Generation Rates and Special Studies for Trip Generation

The system development charge will be assessed to individual developments as they are approved, by applying the per trip fee to the estimated number of PM peak hour trips to be generated by that development. The Institute of Transportation Engineers' publication "Trip Generation," seventh edition, is to be used to estimate the number of trips for each development. The most applicable ITE trip rate is to be used based on the proposed type of building and activity to be developed. Also, appropriate adjustments are to be made for pass-by and linked trips, according to ITE methodologies as outlined in "Trip Generation."

Since not every type of development is covered by ITE data, the enabling ordinance for the system development charge should be written to allow for customized trip generation estimates based on professional studies. For example, if a particular development is not covered adequately by ITE data, the developer may submit a study based on empirical data from a similar project. The customized studies would be based on estimates of project operational conditions or based on other verifiable information relating to the expected number of PM peak hour trips. This could also be done in order to modify ITE estimates based on special characteristics of a development. For example, a commercial center may have different hours of operation than usual or other special characteristics which may lower its trip generation rate as compared to the ITE data. This procedure recognizes that there may be unique and specialized developments that will operate differently, in terms of trips generated, than those studied and published by ITE. All customized data would be subject to review and approval by the city.

Based on published ITE data, typical system development charges per square foot of gross building area are shown in Table 8-1 below. These are examples only for information purposes, and the actual system development charges will be based on the unique land uses and the most applicable ITE category, and charges will be based on PM peak hour trip estimates.

Land Use Type	**Typical System Development Charge Per Square Foot**
Standard Office	$1.43
Shopping Center of about 100 KSF	$2.65
Fast Food Restaurant	$16.39
Sit Down Restaurant	$5.94
Discount Superstore	$3.37

Table 8-1. Typical System Development Charges

The land use types listed above are simply examples drawn from the ITE published data. As noted, special studies may be warranted for unique types of developments or developments with other types of characteristics.

8.2 Akins Site

The Akins development site (as defined by Zone 2 in figure 20 below) is of special interest as it is likely to go forward in the short term, and it is a site which will generate a substantial building area and number of trips. The relative impacts of the potential development on that site has been evaluated in terms of percentage share of new trips at key intersections. Figures 21 on page 44 and 22 on page 45 illustrate the estimated percentage share of trips for Akins in the AM and PM peak hours, respectively. The figures illustrate the percent of added new trips that is attributable to the Akins site as compared to the remainder of the study area. This is based on an assumed development of 71,588 square feet on that site, and assumes discount superstore as the land use.

As with any other site, the Akins site development would pay its fair share of the system development charge based on the per trip cost ($960.00) multiplied by the estimated number of PM peak hour trips based on the proposed use. As an example, if it was developed as a discount superstore at approximately 71,500 square feet, the system development charge for the Akins site would be approximately $240,000.

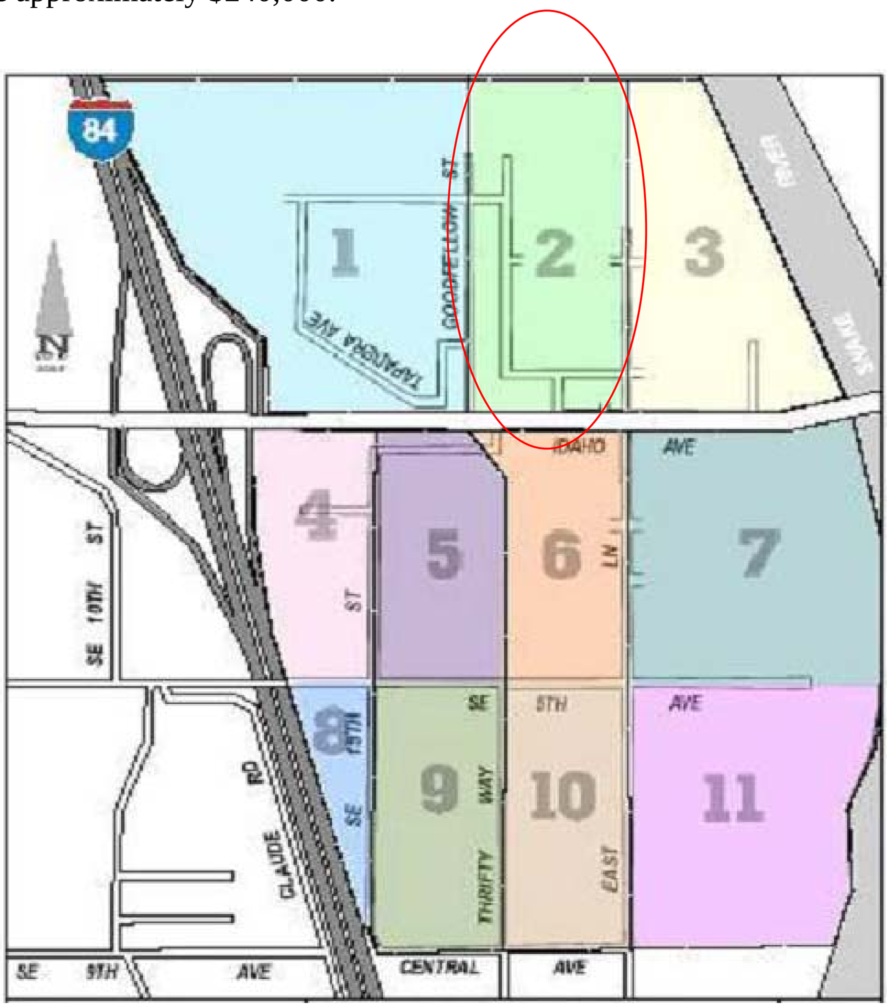

Figure 20. Akins Development Site Location

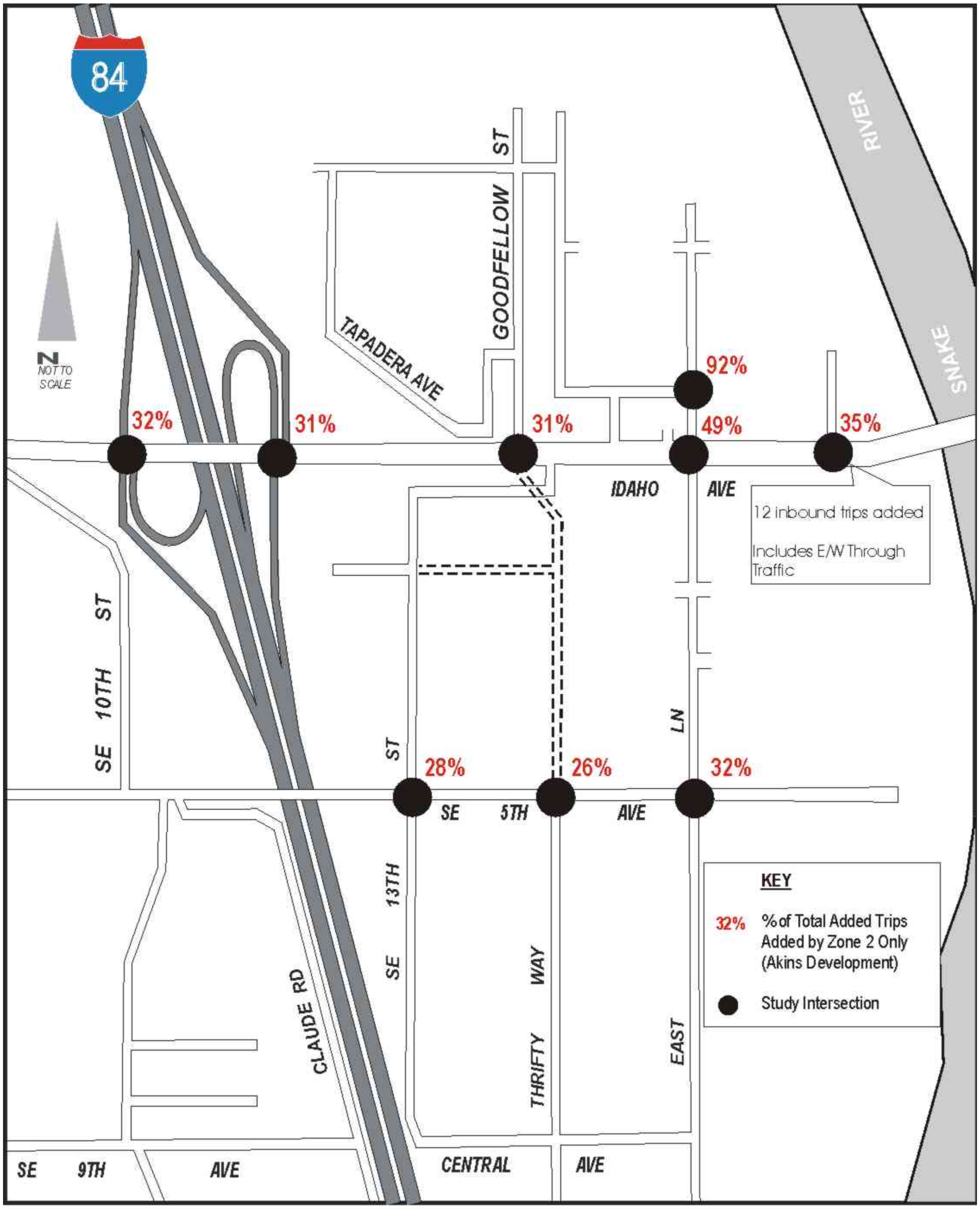

Figure 21. Future PM Peak Percentage of Akins Added Trips

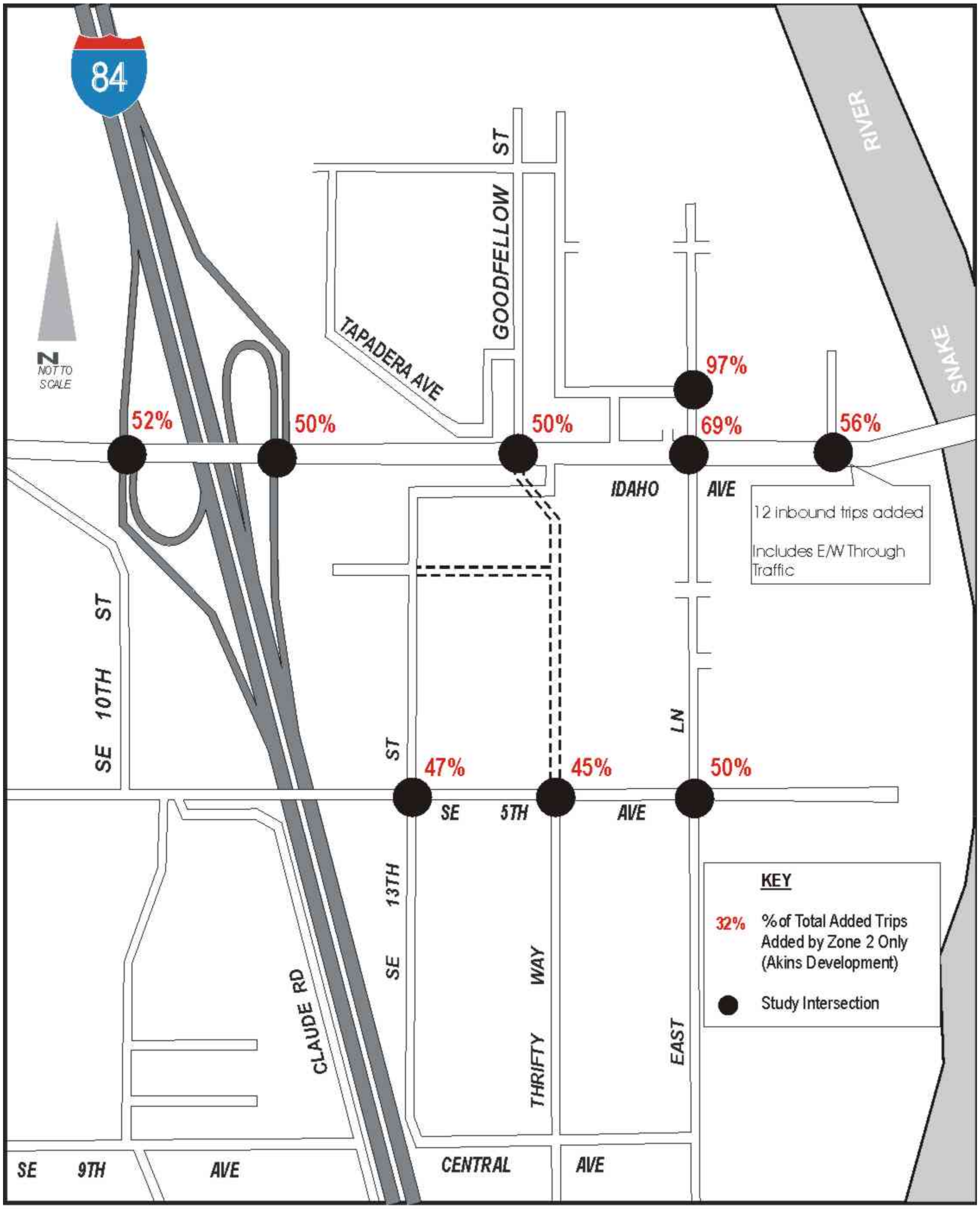

Figure 22. Future AM Peak Percentage of Akins Added Trips

BIBLIOGRAPHY

1. David Evans and Associates, INC., *City of Ontario Transportation System Plan – Final Draft Report.* Ontario, Oregon, 97914, 2001.

2. Oregon Department of Transportation, ODOT, *1999 Oregon Highway Plan.* State of Oregon, 97914, 1999.

3. Highway Capacity Manual, HCM 2000, Transportation Research Board, TRB, 2000.

4. Institute of Transportation Engineers "Trip Generation", 6th Edition, 1997.

Appendix A – Studies & Reports

Study No.	Reports Received	Year	Study Location - City of Ontario	Study Completed by	Pertinent Content to Ontario Transportation Plan
1	City of Ontario System Plan	2001	Ontario,	David Evans and	re-calibration and update of the travel forecasting the socioeconomic data utilized to estimate
2	City of Ontario Comprehensive	1992	Ontario,	City of Ontario	Land Use type definitions/policies, street
3	Supplemental Handout 5-	2000	Ontario,	City of Ontario	Set the goals and objectives for implementing the
4	Title 10B Ontario City	2000	Ontario,	City of Ontario	Administrative procedures for Land Use
5	Title 10C Ontario City	2000	Ontario,	City of Ontario	Substantive Regulations for Land
6	Title 10D Ontario City	2000	Ontario,	City of Ontario	Comprehensive Plan
7	Wal-Mart Expansion Traffic Study	2000	East Idaho/East	Keller	background counts and growth
8	Reele Theatre Traffic Impact	1999	SE 5th Ave/SE 13th	Keller	Goodfellow St extension and new
9	East Idaho Avenue as-	1994	East Idaho	ODOT	Lane
10	East Idaho Avenue Operation	1995	East Idaho	ODOT	Signal timing and
11	East Idaho Avenue ADT count	2000	East Idaho	ODOT	Determine peak hour travel
12	ODOT District Office	2002	East Idaho Avenue/Goodfellow	ODOT	Building location and square

Appendix B – Crash Data

Incident Info.	Analysis Category	Intersection								Totals
		E.Idaho/ Overpass	EB Ramp	Eastlane/ E. Idaho	Goodfellow/E. Idaho	SE 13th/ SE 5th	Eastlane/ SE 5th	Thrifty Way/ SE 5th	Wal-Mart/ E. Idaho	
Collision Type	Angle/Turning	3		12						15
	Head-on			1						1
	Rear-end	9	1	2	1	1				14
	Overturn/Ran Off Rd									0
	Struck Pedestrian									0
	Animal Involved									0
	Hit fixed object	1	1							2
	Side Swipe/Other/Unknown	2		3	1					6
	Section Total	***15***	***2***	***18***	***2***	***1***	***0***	***0***	***0***	**38**
Crash Cause	Following too close	5		2	1					8
	Inattentive/Sleepy									0
	Fail to Yld/Ran Signal	4		10						14
	Driving too Fast	1								1
	Vision Obstructed									0
	Alc/Drug Impared		2							2
	Other - Vehicle Defect	1								1
	Unknown/none	4		6	1	1				12
	Section Total	***15***	***2***	***18***	***2***	***1***	***0***	***0***	***0***	**38**
Severity	Fatality									0
	Injury	3		6						9
	Property Damage Only	12	2	12	2	1				29
	Section Total	***15***	***2***	***18***	***2***	***1***	***0***	***0***	***0***	**38**
Total Number of vehicles		**31**	**4**	**38**	**4**	**2**				79
1999 Total Number of Crashes		**38**								

Incident Info.	Analysis Category	Intersection								Totals
		E.Idaho/ Overpass	SB Ramp	Eastlane/ E. Idaho	Goodfellow/E. Idaho	SE 13th/ SE 5th	Eastlane/ SE 5th	Thrifty Way/ SE 5th	Wal-Mart/ E. Idaho	
Collision Type	Angle/Turning	6		5						11
	Head-on			1						1
	Rear-end	9	3	8	2					22
	Overturn/Ran Off Rd									0
	Struck Pedestrian/cyclist	1		1	1					3
	Animal Involved									0
	Hit fixed object	1		1		1				3
	Side Swipe/Other/Unknown			3						3
	Section Total	***17***	***3***	***19***	***3***	***1***	***0***	***0***	***0***	**43**
Crash Cause	Following too close	5	2	5	1					13
	Inattentive/Sleepy	1								1
	Fail to Yld/Ran Signal	7		7						14
	Driving too Fast	2				1				3
	Vision Obstructed			1						1
	Alc/Drug Impared			1						1
	Other - Vehicle Defect			1						1
	Unknown/none	2	1	4	2					9
	Section Total	***17***	***3***	***19***	***3***	***1***	***0***	***0***	***0***	**43**
Severity	Fatality									0
	Injury	8		5	1					14
	Property Damage Only	9	3	14	2	1				29
	Section Total	***17***	***3***	***19***	***3***	***1***	***0***	***0***	***0***	**43**
Total Number of vehicles		**34**	**6**	**37**	**5**	**1**				83
2000 Total Number of Crashes		**43**								

Incident Info.	Analysis Category	Intersection								
		E.Idaho/ Overpass	SB Ramp	Eastlane/ E. Idaho	Goodfellow/E. Idaho	SE 13th/ SE 5th	Eastlane/ SE 5th	Thrifty Way/ SE 5th	Wal-Mart/ E. Idaho	Totals
Collision Type	Angle/Turning			12	2					14
	Head-on			2						2
	Rear-end	9		5	4					18
	Overturn/Ran Off Rd									0
	Struck Pedestrian									0
	Animal Involved									0
	Hit fixed object			1						1
	Side Swipe/Other/Unknown	3								3
	Section Total	***12***	***0***	***20***	***6***	***0***	***0***	***0***	***0***	**38**
Crash Cause	Following too close	8		3	4					15
	Inattentive/Sleepy									0
	Fail to Yld/Ran Signal	2		10	2					14
	Driving too Fast	1		3						4
	Vision Obstructed									0
	Alc/Drug Impared									0
	Other - Vehicle Defect	1		1						2
	Unknown/none			3						3
	Section Total	***12***	***0***	***20***	***6***	***0***	***0***	***0***	***0***	**38**
Severity	Fatality									0
	Injury	4		6	2					12
	Property Damage Only	8		14	4					26
	Section Total	***12***	***0***	***20***	***6***	***0***	***0***	***0***	***0***	**38**
Total Number of vehicles		**25**		**38**	**13**					76
2001 Total Number of Crashes		**38**								

Incident Info.	Analysis Category	Intersection								
		E.Idaho/ Overpass	SB Ramp	Eastlane/ E. Idaho	Goodfellow/E. Idaho	SE 13th/ SE 5th	Eastlane/ SE 5th	Thrifty Way/ SE 5th	Wal-Mart/ E. Idaho	Totals
Collision Type	Angle/Turning	5		8	3				1	17
	Head-on									0
	Rear-end	7	1	2	2					12
	Overturn/Ran Off Rd									0
	Struck Pedestrian									0
	Animal Involved									0
	Hit fixed object			1					1	2
	Side Swipe/Other/Unknown			2	3	1				6
	Section Total	***12***	***1***	***13***	***8***	***1***	***0***	***0***	***2***	**37**
Crash Cause	Following too close	5		1	1					7
	Inattentive/Sleepy	1							1	2
	Fail to Yld/Ran Signal	2		4	1					7
	Driving too Fast									0
	Vision Obstructed									0
	Alc/Drug Impared									0
	Other - Vehicle Defect		1			1				2
	Unknown/none	4		8	6				1	19
	Section Total	***12***	***1***	***13***	***8***	***1***	***0***	***0***	***2***	**37**
Severity	Fatality									0
	Injury	2		4	1					7
	Property Damage Only	10	1	9	7	1			2	30
	Section Total	***12***	***1***	***13***	***8***	***1***	***0***	***0***	***2***	**37**
Total Number of vehicles		**28**	**2**	**25**	**15**	**2**			**3**	75
2002 Total Number of Crashes		**37**								

Appendix C – Turning Movement Count Sheets

City of Ontario TABULAR SUMMARY OF VEHICLE COUNTS

PCE, E_T = 2.0

Observer: Jack and Diane Bowen Date: 5/13/2003 Day: Tues

Intersection of: E. Idaho Ave and East Lane

Right=Right Turn
Left=Left turn
Thru=Through Traffic

Time Begins	Car/Truck/ Bike/Ped	Northbound Right	Northbound Thru	Northbound Left	Northbound Total	Southbound Right	Southbound Thru	Southbound Left	Southbound Total	Total North & South	Eastbound Right	Eastbound Thru	Eastbound Left	Eastbound Total	Westbound Right	Westbound Thru	Westbound Left	Westbound Total	Total East & West	Total Intersection Count	Intersection Calculations
16:00	Cars	57	14	20		34	7	48			13	150	77		6	165	57			0	
to	Trucks/Bus	1	0	0		2	0	1			0	8	1		0	8	1			0	
	PCE	*59*	*14*	*20*	*93*	*38*	*7*	*50*	*95*	*188*	*13*	*166*	*79*	*258*	*6*	*181*	*59*	246	*504*	692	
16:15	Ped/Bike															2				0	
16:15	Cars	85	23	12		33	24	37			14	132	45		5	148	78			0	
to	Trucks/Bus	0	0	1		1	0	0			0	5	2		1	3	1			0	
	PCE	*85*	*23*	*14*	*122*	*35*	*24*	*37*	*96*	*218*	*14*	*142*	*49*	*205*	*7*	*154*	*80*	241	*446*	664	
16:30	Ped/Bike											1					1			0	
16:30	Cars	69	16	14		25	4	32			15	146	74		4	151	57			0	
to	Trucks/Bus	0	0	0		0	0	0			1	1	0		0	12	2			0	
	PCE	*69*	*16*	*14*	*99*	*25*	*4*	*32*	*61*	*160*	*17*	*148*	*74*	*239*	*4*	*175*	*61*	240	*479*	639	
16:45	Ped/Bike		1									2								0	
16:45	Cars	33	17	21		19	12	51			10	164	42		5	118	39			0	
to	Trucks/Bus	0	1	1		2	0	0			0	0	2		0	2	1			0	
	PCE	*33*	*19*	*23*	*75*	*23*	*12*	*51*	*86*	*161*	*10*	*164*	*46*	*220*	*5*	*122*	*41*	168	*388*	549	
17:00	Ped/Bike																			0	
17:00	Cars	63	24	24		20	10	53			15	216	70		3	174	73			0	
to	Trucks/Bus	1	0	0		2	0	0			2	3	2		0	5	3			0	**Peak 15**
	PCE	*65*	*24*	*24*	*113*	*24*	*10*	*53*	*87*	*200*	*19*	*222*	*74*	*315*	*3*	*184*	*79*	266	*581*	781	781
17:15	Ped/Bike																			0	
17:15	Cars	59	25	12		21	19	55			25	180	61		12	139	74			0	**Hourly Volumes**
to	Trucks/Bus	1	0	0		0	0	0			2	4	1		0	3	0			0	2544
	PCE	*61*	*25*	*12*	*98*	*21*	*19*	*55*	*95*	*193*	*29*	*188*	*63*	*280*	*12*	*145*	*74*	231	*511*	704	2633
17:30	Ped/Bike																			0	2673
17:30	Cars	41	9	8		24	14	32			12	160	43		7	134	65			0	2605
to	Trucks/Bus	0	0	0		0	0	0			2	3	0		0	6	0			0	2539
	PCE	*41*	*9*	*8*	*58*	*24*	*14*	*32*	*70*	*128*	*16*	*166*	*43*	*225*	*7*	*146*	*65*	218	*443*	571	
17:45	Ped/Bike						1					2				1	2			0	**Peak Hour**
17:45	Cars	57	7	19		21	12	37			4	104	33		5	124	28			0	2673
to	Trucks/Bus	1	2	2		2	0	0			0	4	3		0	2	0			0	
	PCE	*59*	*11*	*23*	*93*	*25*	*12*	*37*	*74*	*167*	*4*	*112*	*39*	*155*	*5*	*128*	*28*	161	*316*	483	**PHF**
18:00	Ped/Bike							1					1							0	0.86
Peak Hour Totals		228	84	73	385	93	45	191	329	714	75	722	257	1054	24	626	255	905	1959	2673	

City of Ontario TABULAR SUMMARY OF VEHICLE COUNTS

PCE, E_T = 2.0

Observer: Jack and Diane Bowen Date: 5/14/2003 Day: Wed

Intersection of: E. Idaho Ave and Goodfellow St.

Right=Right Turn
Left=Left turn
Thru=Through Traffic

Time Begins	Car/Truck/ Bike/Ped	Northbound Right	Northbound Thru	Northbound Left	Northbound Total	Southbound Right	Southbound Thru	Southbound Left	Southbound Total	Total North & South	Eastbound Right	Eastbound Thru	Eastbound Left	Eastbound Total	Westbound Right	Westbound Thru	Westbound Left	Westbound Total	Total East & West	Total Intersection Count	Intersection Calculations
16:00	Cars	12	0	13		12	1	12			20	244	12		5	221	12			0	
to	Trucks/Bus	0	0	2		0	0	0			0	5	0		0	10	1			0	
	PCE	*12*	*0*	*17*	*29*	*12*	*1*	*12*	*25*	*54*	*20*	*254*	*12*	*286*	*5*	*241*	*14*	260	*546*	600	
16:15	Ped/Bike		1				1					1								0	
16:15	Cars	8	3	5		5	2	10			13	225	12		8	239	4			0	
to	Trucks/Bus	0	0	2		1	0	0			4	5	4		2	4	0			0	
	PCE	*8*	*3*	*9*	*20*	*7*	*2*	*10*	*19*	*39*	*21*	*235*	*20*	*276*	*12*	*247*	*4*	263	*539*	578	
16:30	Ped/Bike											2				3				0	
16:30	Cars	9	0	4		4	1	4			15	206	12		3	209	10			0	
to	Trucks/Bus	0	0	0		3	0	0			0	7	3		1	8	0			0	
	PCE	*9*	*0*	*4*	*13*	*10*	*1*	*4*	*15*	*28*	*15*	*220*	*18*	*253*	*5*	*225*	*10*	240	*493*	521	
16:45	Ped/Bike											4				2				0	
16:45	Cars	12	2	6		5	1	10			7	251	19		8	185	9			0	
to	Trucks/Bus	0	0	0		1	0	0			2	5	2		1	8	0			0	
	PCE	*12*	*2*	*6*	*20*	*7*	*1*	*10*	*18*	*38*	*11*	*261*	*23*	*295*	*10*	*201*	*9*	220	*515*	553	
17:00	Ped/Bike					1						1				1	1			0	
17:00	Cars	6	4	6		16	3	5			7	257	18		8	193	4			0	
to	Trucks/Bus	0	0	0		0	0	0			1	6	2		0	10	0			0	**Peak 15**
	PCE	*6*	*4*	*6*	*16*	*16*	*3*	*5*	*24*	*40*	*9*	*269*	*22*	*300*	*8*	*213*	*4*	225	*525*	565	603
17:15	Ped/Bike																			0	
17:15	Cars	7	0	17		6	2	5			20	261	20		2	233	6			0	**Hourly Volumes**
to	Trucks/Bus	1	0	0		0	0	0			0	5	2		0	4	0			0	2252
	PCE	*9*	*0*	*17*	*26*	*6*	*2*	*5*	*13*	*39*	*20*	*271*	*24*	*315*	*2*	*241*	*6*	249	*564*	603	2217
17:30	Ped/Bike						1					1				1				0	2242
17:30	Cars	15	2	6		6	2	8			14	229	25		9	198	8			0	2279
to	Trucks/Bus	0	0	0		0	0	0			1	2	4		1	10	0			0	2118
	PCE	*15*	*2*	*6*	*23*	*6*	*2*	*8*	*16*	*39*	*16*	*233*	*33*	*282*	*11*	*218*	*8*	237	*519*	558	
17:45	Ped/Bike		1				2					4				4	2			0	**Peak Hour**
17:45	Cars	12	1	7		8	0	3			12	155	9		8	142	3			0	2279
to	Trucks/Bus	0	2	0		0	0	0			1	5	1		0	7	0			0	
	PCE	*12*	*5*	*7*	*24*	*8*	*0*	*3*	*11*	*35*	*14*	*165*	*11*	*190*	*8*	*156*	*3*	167	*357*	392	**PHF**
18:00	Ped/Bike						1	1					1							0	0.94
Peak Hour Totals		42	8	35	85	35	8	28	71	156	56	1034	102	1192	31	873	27	931	2123	2279	

Appendix D – HCS Analysis/TRAFFIX Output Files

Default Scenario Mon Jul 14, 2003 11:16:03 **Page 1-1**

Ontario OR1
Existing AM Peak Hour

Scenario Report

Scenario: Default Scenario

Command: Default Command
Volume: Existing PH AM
Geometry: Default Geometry
Impact Fee: Default Impact Fee
Trip Generation: Default Trip Generation
Trip Distribution: Default Trip Distribution
Paths: Default Paths
Routes: Default Routes
Configuration: Default Configuration

Traffix 7.5.1115 (c) 2001 Dowling Assoc. Licensed to MMA, LONG BEACH, **Page 2-1**

Ontario OR1
Existing AM Peak Hour

Impact Analysis Report
Level Of Service

Intersection	Base			Future			Change in
	LOS	Del/ Veh	V/ C	LOS	Del/ Veh	V/ C	
# 3 East Idaho & Eastlane	B	11.2	0.319	B	11.2	0.319	+ 0.000 D/V
# 4 East Idaho & Goodfellow	B	10.6	0.248	B	10.6	0.248	+ 0.000 D/V
# 5 East Idaho & Northbound On- Of	C	30.7	0.337	C	30.7	0.337	+ 0.000 D/V
# 7 East Idaho & Chevron_WalMart E	B	11.6	0.000	B	11.6	0.000	+ 0.000 V/C
# 12 SE 5th & SE 13th	B	11.6	0.000	B	11.6	0.000	+ 0.000 V/C
# 13 SE 5th & Eastlane	A	8.2	0.234	A	8.2	0.234	+ 0.000 V/C
# 14 SE 5th & Thirty Way	A	9.9	0.000	A	9.9	0.000	+ 0.000 V/C
# 15 Idaho Ave & Southbound On-Off	A	5.5	0.436	A	5.5	0.436	+ 0.000 D/V
# 16 NE 1st & Eastlane	B	12.0	0.000	B	12.0	0.000	+ 0.000 V/C

Ontario OR1
Existing PM Peak Hour

Scenario Report

Scenario: Default Scenario

Command: Default Command
Volume: Existing PH PM
Geometry: Default Geometry
Impact Fee: Default Impact Fee
Trip Generation: Default Trip Generation
Trip Distribution: Default Trip Distribution
Paths: Default Paths
Routes: Default Routes
Configuration: Default Configuration

Traffix 7.5.1115 (c) 2001 Dowling Assoc. Licensed to MMA, LONG BEACH, **Page 3-1**

Ontario OR1
Existing PM Peak Hour

Impact Analysis Report
Level Of Service

Intersection	Base			Future			Change
		Del/	V/		Del/	V/	in
	LOS	Veh	C	LOS	Veh	C	
# 3 East Idaho & Eastlane	B	15.7	0.409	B	15.7	0.409	+ 0.000 D/V
# 4 East Idaho & Goodfellow	B	11.3	0.356	B	11.3	0.356	+ 0.000 D/V
# 5 East Idaho & Northbound On- Of	B	16.9	0.632	B	16.9	0.632	+ 0.000 D/V
# 7 East Idaho & Chevron_WalMart E	B	13.3	0.000	B	13.3	0.000	+ 0.000 V/C
# 12 SE 5th & SE 13th	C	16.5	0.000	C	16.5	0.000	+ 0.000 V/C
# 13 SE 5th & Eastlane	B	11.8	0.556	B	11.8	0.556	+ 0.000 V/C
# 14 SE 5th & Thirty Way	B	11.4	0.000	B	11.4	0.000	+ 0.000 V/C
# 15 Idaho Ave & Southbound On-Off	A	6.7	0.615	A	6.7	0.615	+ 0.000 D/V
# 16 NE 1st & Eastlane	B	12.2	0.000	B	12.2	0.000	+ 0.000 V/C

```
------------------------------------------------------------------------------
                         Ontario OR1
                    Existing AM Peak Hour
------------------------------------------------------------------------------
                Level Of Service Computation Report
         2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #3 East Idaho & Eastlane
********************************************************************************
Cycle (sec):        95              Critical Vol./Cap. (X):       0.319
Loss Time (sec):       0 (Y+R = 50 sec) Average Delay (sec/veh):       11.2
Optimal Cycle:      96             Level Of Service:                 B
********************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Permitted        Permitted       Prot+Permit     Prot+Permit
Rights:         Include          Include          Include          Include
Min. Green:    0   24    0     0   24    0    12   60    0    12   60    0
Lanes:       1  0  1  0  1    1  0  1  0  1    1  0  2  0  1    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 13 May 2003 << 8:00 - 9:00 am
Base Vol:     61   26  103    56   16    75   115  414    52   252  724    29
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  61   26  103    56   16    75   115  414    52   252  724    29
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87
PHF Volume:   70   30  118    64   18    86   132  476    60   290  832    33
Reduct Vol:    0    0    0     0    0     0     0    0     0     0    0     0
Reduced Vol:  70   30  118    64   18    86   132  476    60   290  832    33
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:   70   30  118    64   18    86   132  476    60   290  832    33
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.73 1.00  0.85  0.71 1.00  0.85  0.38 0.95  0.85  0.52 0.95  0.83
Lanes:       1.00 1.00  1.00  1.00 1.00  1.00  1.00 2.00  1.00  1.00 2.00  1.00
Final Sat.:  1389 1900  1615  1341 1900  1615   728 3610  1614   981 3610  1580
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.02  0.07  0.05 0.01  0.05  0.18 0.13  0.04  0.30 0.23  0.02
Crit Moves:       ****                               ****        ****
Green/Cycle: 0.25 0.25  0.25  0.25 0.25  0.25  0.75 0.63  0.63  0.75 0.63  0.63
Volume/Cap:  0.20 0.06  0.29  0.19 0.04  0.21  0.24 0.21  0.06  0.39 0.37  0.03
Delay/Veh:   28.7 27.5  29.5  28.6 27.3  28.8   4.3  7.8   7.0   4.2  8.9   6.9
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  28.7 27.5  29.5  28.6 27.3  28.8   4.3  7.8   7.0   4.2  8.9   6.9
DesignQueue:    3    1     5     3    1     3     6   10     1    14   18     1
********************************************************************************
```

Appendix E. Project Development Scenarios

Project Development Summary by Traffic Analysis Zone - Scenario A (Standard Mixed Use Commercial/Retail)

Traffic Analysis Zone	Pending/Approved Building Area to be Developed				Total Pending/Approved Building Area (Sq.Ft.)	Total Parcel Area (Sq.Ft.)	Existing Parcel Building Area (Sq.Ft.)	Remaining Buildable Land Area (Sq.Ft.)	Assumed Floor Area Ratio (FAR)	Resultant Building Area to be Developed	Resultant Building Area - Approved Building Area	Assumed Land Use Types	ITE Rate Type	ITE Trip Generation Rate/Approved Building Area Generated Trips						ITE Trip Generation Rate		
	Retail (Bldg. Sq. Ft.)	Fast Food Restaurant (Bldg. Sq. Ft.)	Sit Down Restaurant (Bldg. Sq. Ft.)	Office (Bldg. Sq. Ft.)										AM ITE Rate	AM Trips	PM ITE Rate	PM Trips	Daily ITE Rate	Daily Trips	AM	PM	Daily
1					0	1,134,165	632,352	501,813	0.25	125,453	125,453	General Heavy Commercial	820	N/A	0	N/A	0	N/A	0	1.03	3.74	42.92
2	68,000	6,000	15,000	2,000	91,000	1,040,000	389,647	650,353	0.25	162,588	71,588	General Heavy Commercial	820/834/ 832/710	4 categories	511	4 categories	621	4 categories	7872	1.03	3.74	42.92
3					0	975,000	945,000	30,000	0.25	7,500	7,500	General Commercial	820	N/A	0	N/A	0	N/A	0	1.03	3.74	42.92
4					0	750,000	600,153	149,847	0.25	37,462	37,462	General Heavy Commercial	820	N/A	0	N/A	0	N/A	0	1.03	3.74	42.92
5		1,192			1,192	833,750	323,225	510,525	0.25	127,631	126,439	Public Facility/ Commercial	820/834	49.86	59	33.48	40	496.12	591	1.03	3.74	42.92
6				11,042	11,042	845,000	660,740	184,260	0.25	46,065	35,023	General Heavy Commercial	820/710	1.56	17	1.49	16	11.01	122	1.03	3.74	42.92
7					0	1,200,000	961,508	238,492	0.25	59,623	59,623	General Heavy Comm /Public Facility	820	N/A	0	N/A	0	N/A	0	1.03	3.74	42.92
8					0	258,750	258,750	0	0.25	0	0	Heavy Industrial	n/a	N/A	0	N/A	0	N/A	0	1.03	3.74	42.92
9					0	747,500	346,747	400,753	0.25	100,188	100,188	General Comm./ Heavy Industrial	820	N/A	0	N/A	0	N/A	0	1.03	3.74	42.92
10				5,562	5,562	747,500	404,180	343,320	0.25	85,830	80,268	General Comm./ Heavy Industrial	810/710	1.56	9	1.49	8	11.01	61	1.03	3.74	42.92
11					0	1,150,000	1,150,000	0	0.25	0	0	Heavy Industrial	n/a	N/A	0	N/A	0	N/A	0	1.03	3.74	42.92
Total	68,000	7,192	15,000	18,604	108,796	9,681,665	6,672,302	3,009,363		752,341	643,545											

- Scenario B (Discount Commercial Store)

Traffic Analysis Zone	Pending/Approved Building Area to be Developed				Total Pending/Approved Building Area (Sq.Ft.)	Total Parcel Area (Sq.Ft.)	Existing Parcel Building Area (Sq.Ft.)	Remaining Buildable Land Area (Sq.Ft.)	Assumed Floor Area Ratio (FAR)	Resultant Building Area to be Developed	Resultant Building Area - Approved Building Area	Assumed Land Use Types	ITE Rate Type	ITE Trip Generation Rate/Approved Building Area Generated Trips						ITE Trip Generation Rate		
	Retail (Bldg. Sq. Ft.)	Fast Food Restaurant (Bldg. Sq. Ft.)	Sit Down Restaurant (Bldg. Sq. Ft.)	Office (Bldg. Sq. Ft.)										AM ITE Rate	AM Trips	PM ITE Rate	PM Trips	Daily ITE Rate	Daily Trips	AM	PM	Daily
1					0	1,134,165	632,352	501,813	0.25	125,453	125,453	General Heavy Commercial	815	N/A	0	N/A	0	N/A	0	0.99	4.24	56.63
2	68,000	6,000	15,000	2,000	91,000	1,040,000	389,647	650,353	0.25	162,588	71,588	General Heavy Commercial	815/834/ 832/710	4 categories	509	4 categories	655	4 categories	8805	0.99	4.24	56.63
3					0	975,000	945,000	30,000	0.25	7,500	7,500	General Commercial	815	N/A	0	N/A	0	N/A	0	0.99	4.24	56.63
4					0	750,000	600,153	149,847	0.25	37,462	37,462	General Heavy Commercial	815	N/A	0	N/A	0	N/A	0	0.99	4.24	56.63
5		1,192			1,192	833,750	323,225	510,525	0.25	127,631	126,439	Public Facility/ Commercial	815/834	49.86	59	33.48	40	496.12	591	0.99	4.24	56.63
6				11,042	11,042	845,000	660,740	184,260	0.25	46,065	35,023	General Heavy Commercial	815/710	1.56	17	1.49	16	11.01	122	0.99	4.24	56.63
7					0	1,200,000	961,508	238,492	0.25	59,623	59,623	General Heavy Comm /Public Facility	815	N/A	0	N/A	0	N/A	0	0.99	4.24	56.63
8					0	258,750	258,750	0	0.25	0	0	Heavy Industrial	n/a	N/A	0	N/A	0	N/A	0	0.99	4.24	56.63
9					0	747,500	346,747	400,753	0.25	100,188	100,188	General Comm./ Heavy Industrial	815	N/A	0	N/A	0	N/A	0	0.99	4.24	56.63
10				5,562	5,562	747,500	404,180	343,320	0.25	85,830	80,268	General Comm./ Heavy Industrial	815/710	1.56	9	1.49	8	11.01	61	0.99	4.24	56.63
11					0	1,150,000	1,150,000	0	0.25	0	0	Heavy Industrial	n/a	N/A	0	N/A	0	N/A	0	0.99	4.24	56.63
Total	68,000	7,192	15,000	18,604	108,796	9,681,665	6,672,302	3,009,363		752,341	643,545											

Project Development Summary by Traffic Analysis Zone - Scenario C (Quality Restaurant – 831)

Traffic Analysis Zone	Pending/Approved Building Area to be Developed				Total Pending/Approved Building Area (Sq.Ft.)	Total Parcel Area (Sq.Ft.)	Existing Parcel Building Area (Sq.Ft.)	Remaining Buildable Land Area (Sq.Ft.)	Assumed Floor Area Ratio (FAR)	Resultant Building Area to be Developed
	Retail (Bldg. Sq. Ft.)	Fast Food Restaurant (Bldg. Sq. Ft.)	Sit Down Restaurant (Bldg. Sq. Ft.)	Office (Bldg. Sq. Ft.)						
1					0	1,134,165	632,352	501,813	0.25	125,453
2	68,000	6,000	15,000	2,000	91,000	1,040,000	389,647	650,353	0.25	162,588
3					0	975,000	945,000	30,000	0.25	7,500
4					0	750,000	600,153	149,847	0.25	37,462
5		1,192			1,192	833,750	323,225	510,525	0.25	127,631
6				11,042	11,042	845,000	660,740	184,260	0.25	46,065
7					0	1,200,000	961,508	238,492	0.25	59,623
8					0	258,750	258,750	0	0.25	0
9					0	747,500	346,747	400,753	0.25	100,188
10				5,562	5,562	747,500	404,180	343,320	0.25	85,830
11					0	1,150,000	1,150,000	0	0.25	0
Total	**68,000**	**7,192**	**15,000**	**18,604**	**108,796**	**9,681,665**	**6,672,302**	**3,009,363**		**752,341**

Traffic Analysis Zone	Resultant Building Area - Approved Building Area	Assumed Land Use Types	ITE Rate Type	ITE Trip Generation Rate/Approved Building Area Generated Trips						ITE Trip Generation Rate		
				AM		PM		Daily		AM	PM	Daily
				ITE Rate	Trips	ITE Rate	Trips	ITE Rate	Trips			
1	125,453	General Heavy Commercial	831	N/A	0	N/A	0	N/A	0	0.81	7.49	89.95
2	71,588	General Heavy Commercial	831/ 832/710	4 categories	203	4 categories	701	4 categories	8434	0.81	7.49	89.95
3	7,500	General Commercial	831	N/A	0	N/A	0	N/A	0	0.81	7.49	89.95
4	37,462	General Heavy Commercial	831	N/A	0	N/A	0	N/A	0	0.81	7.49	89.95
5	126,439	Public Facility/ Commercial	831	0.99	1	4.24	5	56.63	68	0.81	7.49	89.95
6	35,023	General Heavy Commercial	931/834/710	1.56	17	1.49	16	11.01	122	0.81	7.49	89.95
7	59,623	General Heavy Comm /Public Facility	831	N/A	0	N/A	0	N/A	0	0.81	7.49	89.95
8	0	Heavy Industrial	n/a	N/A	0	N/A	0	N/A	0	0.81	7.49	89.95
9	100,188	General Comm./ Heavy Industrial	831	N/A	0	N/A	0	N/A	0	0.81	7.49	89.95
10	80,268	General Comm./ Heavy Industrial	831/834/710	1.56	9	1.49	8	11.01	61	0.81	7.49	89.95
11	0	Heavy Industrial	n/a	N/A	0	N/A	0	N/A	0	0.81	7.49	89.95
Total	**643,545**											