

WDC EIS Technical Report 7

2040 Base Travel Demand Model

UDOT Project No. S-0067(14)0

September 02, 2016

Version 8.1 Travel Demand Model

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Version 8.1 TDM – September 02, 2016

Purpose

The purpose of this technical report is to present a summary of the 2040 Travel Demand Model (TDM) inputs and results for the No-Action Alternative within the West Davis Corridor (WDC) Environmental Impact Statement (EIS) study area. This includes a comparison of the 2011 TDM inputs and results that were described in the supplemental document “WDC EIS Technical Report 6 Existing Conditions.” That report also contained a detailed description of the modifications made to the Wasatch Front Regional Council (WFRC) and Mountainland Association of Governments (MAG) Regional TDM. Therefore, this report will only present the modifications and updates that are specific to the 2040 TDM.

Project Overview

The Federal Highway Administration (FHWA), in cooperation with the Utah Department of Transportation (UDOT), is in the process of preparing an EIS on a proposed action to address projected transportation demand in western Davis and Weber Counties. The EIS study area is bound by Parrish Lane on the south, 4000 South in West Haven on the north, I-15 on the east, and the Great Salt Lake on the west (see Figure 1).

Alternatives to be considered include:

- Taking no action (No-Build)
- Transportation system management
- Build alternatives for various modes of transportation
- Other alternatives identified during the study process

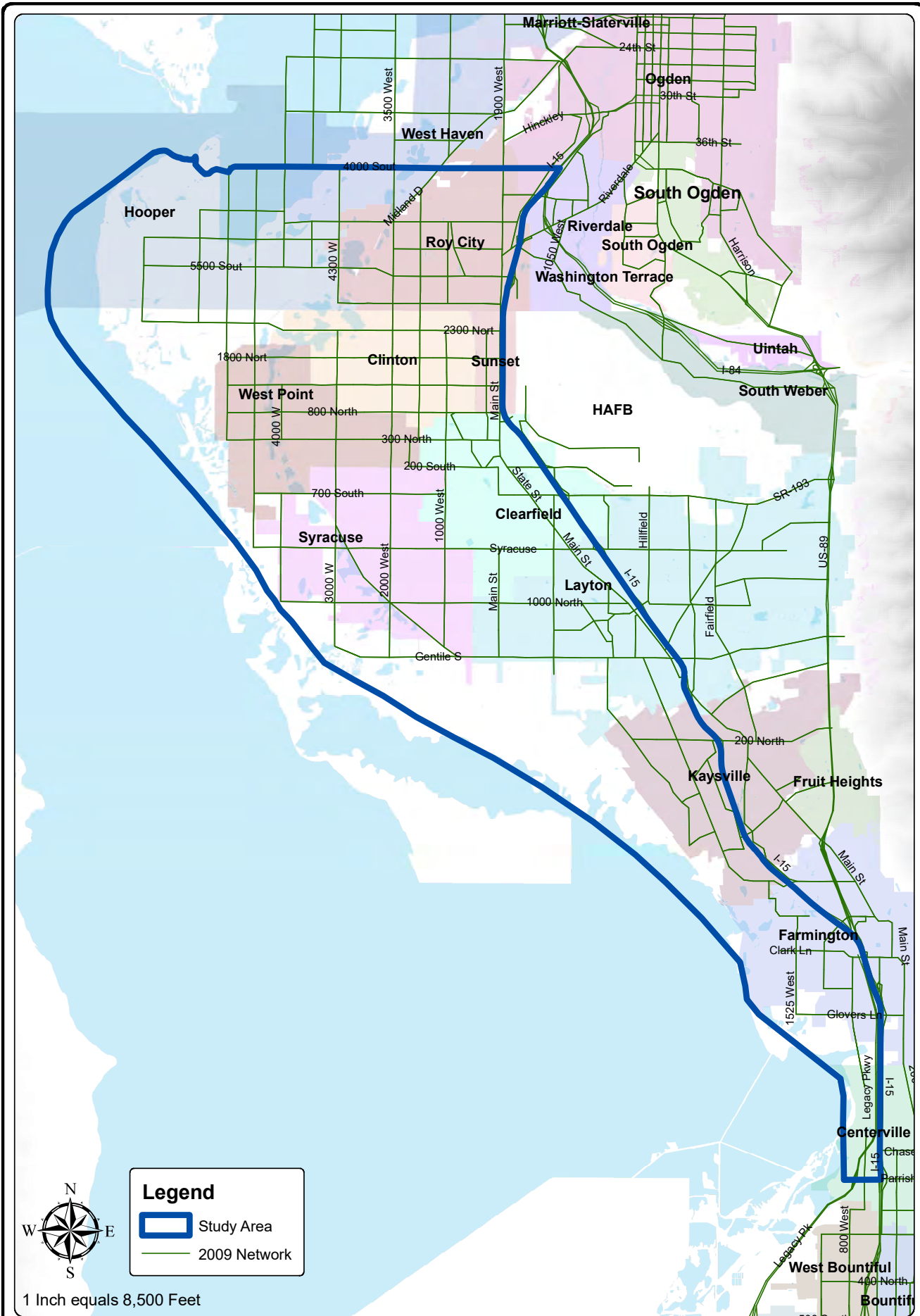


Figure 1. Study Area

West Davis Corridor

9/14/2011

2040 Travel Demand Model Inputs

WFRC and MAG jointly maintain a travel demand forecasting model for the four-county metropolitan region (Weber, Davis, Salt Lake, and Utah Counties). The TDM predicts future travel demand based on projections of land use, socioeconomic patterns, and transportation system characteristics. The model is based on the TP+/Cube software (currently using version 6.4.1). References to “the model” in this report refer to the scripts and data maintained by WFRC and MAG, not to the Cube software. At the time of the final version of this report, version 8.1 beta of the TDM had been officially released. It was calibrated to 2011 and uses 2040 as the forecast year. Version 8.1 will be used during Phase 1 and Phase 2 of the Environmental Impact Statement for alternative analysis and screening.

WFRC 2040 Socioeconomic Data

Land use data in the model includes population, dwelling units, household size, retail employees, industrial employees, and other employees. The version 8.1 model official inputs include data for 2011, 2019, 2024, 2034, and 2040. The 2040 population and employment projections are based on county-level values provided by the Governor's Office of Management and Budget (GOMB) with 2012 as the baseline year. WFRC works with the cities, historical growth factors, and software programs to estimate city-level and Traffic Analysis Zone (TAZ) values for population, households, and employment. The process is iterative, and the data is revised until it is agreeable to the local governments. A comparison of the 2040 GOMB values and the final 2040 socioeconomic data provided by WFRC is shown in Table 1. A breakdown of employment type is shown in Table 2.

Table 1: Comparison of GOMB Socioeconomic Data with the WFRC 2040 Final Socioeconomic Data

County	2040 Population			2040 Households			2040 Total Employment		
	GOPB	WFRC	Change	GOPB	WFRC	Change	GOPB	WFRC	Change
Weber	344,941	335,220	-2.8%	133,835	130,065	-2.8%	164,363	164,867	0.3%
Davis	421,659	420,050	-0.4%	148,993	148,934	0.0%	187,181	190,047	1.5%
Salt Lake	1,486,286	1,477,873	-0.6%	574,647	572,823	-0.3%	991,510	989,686	-0.2%
Utah	994,558	990,876	-0.4%	312,487	292,438	-6.4%	448,747	447,569	-0.3%
Totals	3,247,444	3,224,019	-0.7%	1,169,962	1,144,260	-2.2%	1,791,801	1,792,169	0.0%

Table 2: Comparison of GOMB Employment Data with the WFRC 2040 Final Employment Data

County	2040 Retail Employment			2040 Industrial Employment			2040 Other Employment		
	GOPB	WFRC	Change	GOPB	WFRC	Change	GOPB	WFRC	Change
Weber	26,906	30,653	13.9%	22,976	29,287	27.5%	114,481	104,927	-8.3%
Davis	30,760	29,144	-5.3%	19,331	23,641	22.3%	137,090	137,262	0.1%
Salt Lake	146,355	149,407	2.1%	137,202	158,737	15.7%	707,953	681,542	-3.7%
Utah	74,761	74,354	-0.5%	41,097	41,068	-0.1%	332,889	332,147	-0.2%
Totals	278,782	283,558	1.7%	220,606	252,733	14.6%	1,292,413	1,255,878	-2.8%

The tables above indicate that the GOMB 2040 projections and the WFRC 2040 socioeconomic data do not match for each category. Previously this was brought to the attention of WFRC. They replied that they were aware of the discrepancies, but the decision was made that they only needed to get close rather than exactly match for the Regional Transportation Plan (RTP). Also, county boundaries differ from what is modeled in the TDM which may further contribute to the differences.

WDC Version 8.1 TDM 2040 Socioeconomic Data

The Existing Conditions Report described the need to split some TAZ within the study area into smaller zones to make the model more sensitive for a corridor-level study. Because of these TAZ splits, the socioeconomic data from the original version 8.1 TAZ had to be distributed into the new zones. Care was taken to observe the original “developable” areas, and new developable areas were estimated for the smaller TAZ. The redistributions were based on these estimates of developable areas to provide appropriate allocation of households and employment. It was assumed that variables such as income and household size for the smaller TAZ were the same as the original TAZ.

Review of 2040 Socioeconomic Data

The WDC team provided each city within the study area the opportunity to comment on 2040 socioeconomic data (see the Existing Conditions Report); however, most of the comments received pertained to existing conditions rather than future. Therefore, after the initial distribution into the WDC TAZ for version 7.0 of the WFRC data, the WDC team performed a detailed review of the 2040 socioeconomic data within the study area using aerial photography, city land use plans and/or zoning plans to ensure the data were generally in agreement. Version 8.1 was based on more recent socioeconomic information, so fewer adjustments were necessary than in version 7.0. Figures showing the WDC TAZ with aerial background and copies of the city land use or zoning plans are included in the appendix for reference. Based on this review, some adjustments to socioeconomic data were made which are summarized in Table 3.

Table 3: Socioeconomic Data Adjustment Summary

City	WFRC TAZ	Description of Adjustment	Comment
Farmington	413	Add 250 Households	Improve match with land use plans and city comments
Farmington	417	Remove 250 Households	Improve match with land use plans and city comments
HAFB	324	Add 1867 Employees	Improve match with land use plans
HAFB	325	Remove 8 Households and Add 3825 Employees	Improve match with land use plans
HAFB	328	Add 7 Households and Remove 3236 Employees	Improve match with land use plans
HAFB	330	Add 1 Households and Remove 2456 Employees	Improve match with land use plans

Comparison of Final 2040 WDC Socioeconomic Data with Original WFRC Data

Although the process described above to distribute the original socioeconomic data provided by WFRC into the WDC TAZ structure was extensive, it is appropriate to check the final data against the original data. The following table makes this comparison on the county level. The table shows the original WFRC totals, the final WDC data, and the percent change. The slight differences in final data can be attributed to deviations caused by rounding throughout the process.

Table 4: Comparison of 2040 Socioeconomic Data

County	2040 Population			2040 Households			2040 Total Employment		
	Original WFRC	Final WDC	Percent Change	Original WFRC	Final WDC	Percent Change	Original WFRC	Final WDC	Percent Change
Weber	335,220	335,220	0.0%	130,065	130,065	0.0%	164,867	164,868	0.0%
Davis	420,050	420,052	0.0%	148,934	148,935	0.0%	190,047	190,038	0.0%
Salt Lake	1,477,873	1,477,873	0.0%	572,823	572,823	0.0%	989,686	989,686	0.0%
Utah	990,876	990,876	0.0%	292,438	292,438	0.0%	447,569	447,569	0.0%
Totals	3,224,019	3,224,021	0.0%	1,144,260	1,144,261	0.0%	1,792,169	1,792,161	0.0%

Comparison of 2011 and 2040 Socioeconomic Data Used in the WDC TDM

A review was performed of the growth patterns between the 2011 and 2040 socioeconomic data used for the WDC TDM. Summary comparisons are shown in the following tables and figure.

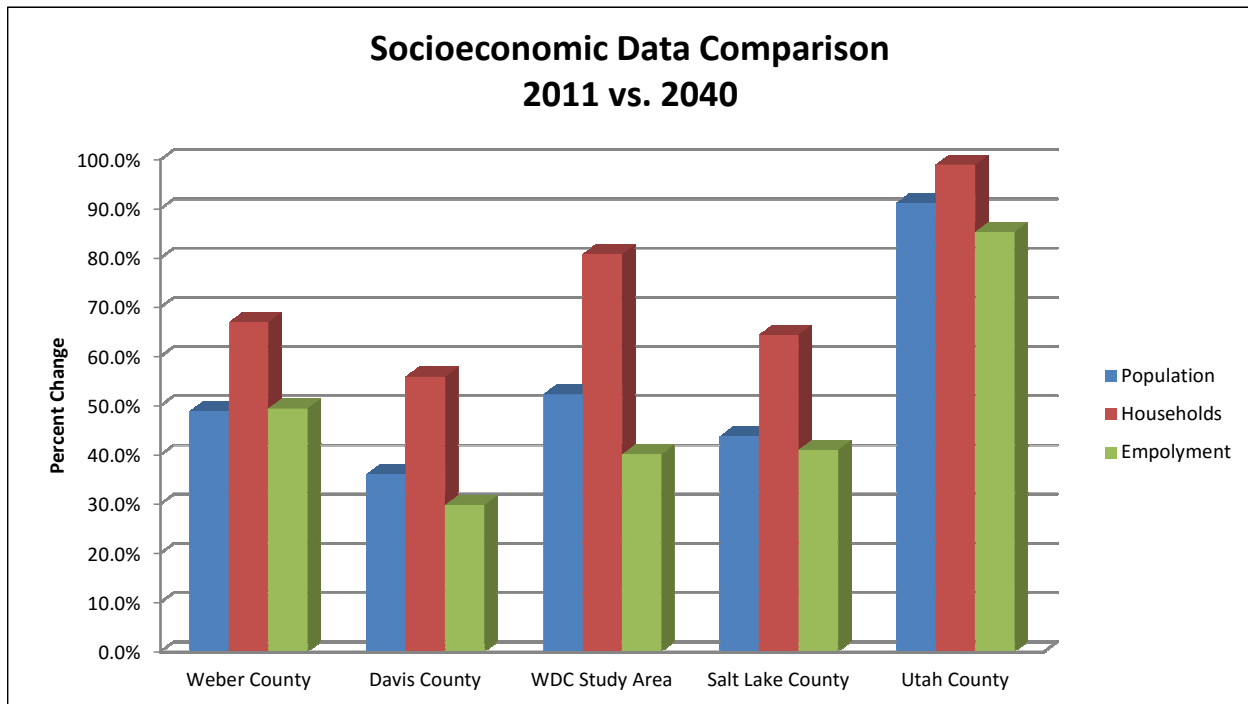
Table 5: County Comparison of 2011 and 2040 Socioeconomic Data within the TDM

County	Population			Households			Employment		
	2011	2040	Change	2011	2040	Change	2011	2040	Change
Weber	225,224	335,220	48.8%	77,917	130,065	66.9%	110,362	164,868	49.4%
Davis	308,837	420,052	36.0%	95,545	148,935	55.9%	146,458	190,038	29.8%
Salt Lake	1,028,282	1,477,873	43.7%	348,554	572,823	64.3%	701,903	989,686	41.0%
Utah	518,284	990,876	91.2%	147,001	292,438	98.9%	241,607	447,569	85.2%
Totals	2,080,627	3,224,021	55.0%	669,017	1,144,261	71.0%	1,200,330	1,792,161	49.3%

Table 6: Study Area Comparison of 2011 and 2040 Socioeconomic Data

Study Area	Population			Households			Employment		
	2011	2040	Change	2011	2040	Change	2011	2040	Change
	168,070	255,887	52.3%	49,430	89,328	80.7%	57,210	80,132	40.1%

1



2

3 Figure 2: Comparison of 2011 and 2040 Socioeconomic Data within the TDM

4

5 The WDC study area data is included in Figure 2 with the county data. It shows population and
 6 households within the study area growing at a relatively faster pace than both Weber and Davis
 7 counties. The employment growth rate within the study area is between the growth rates of these two
 8 counties.

9 The following figures show the distribution of population and employment growth within the TAZ of the
 10 TDM. Figure 3 and Figure 5 show total growth, and Figure 4 and Figure 6 show the percentage growth.

11

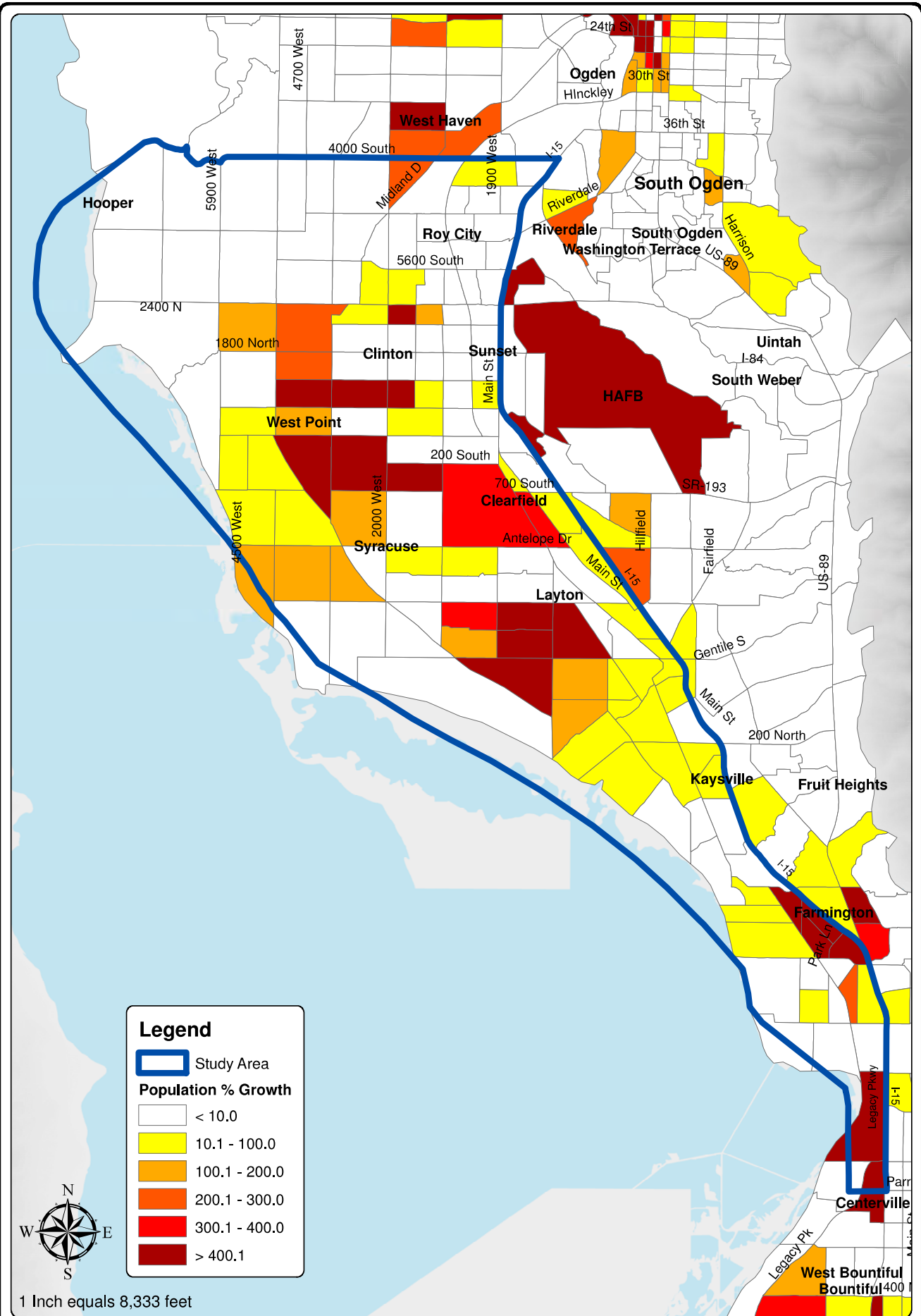


Figure 4. 2011 - 2040 Percentage Population Growth

West Davis Corridor

07/05/2016

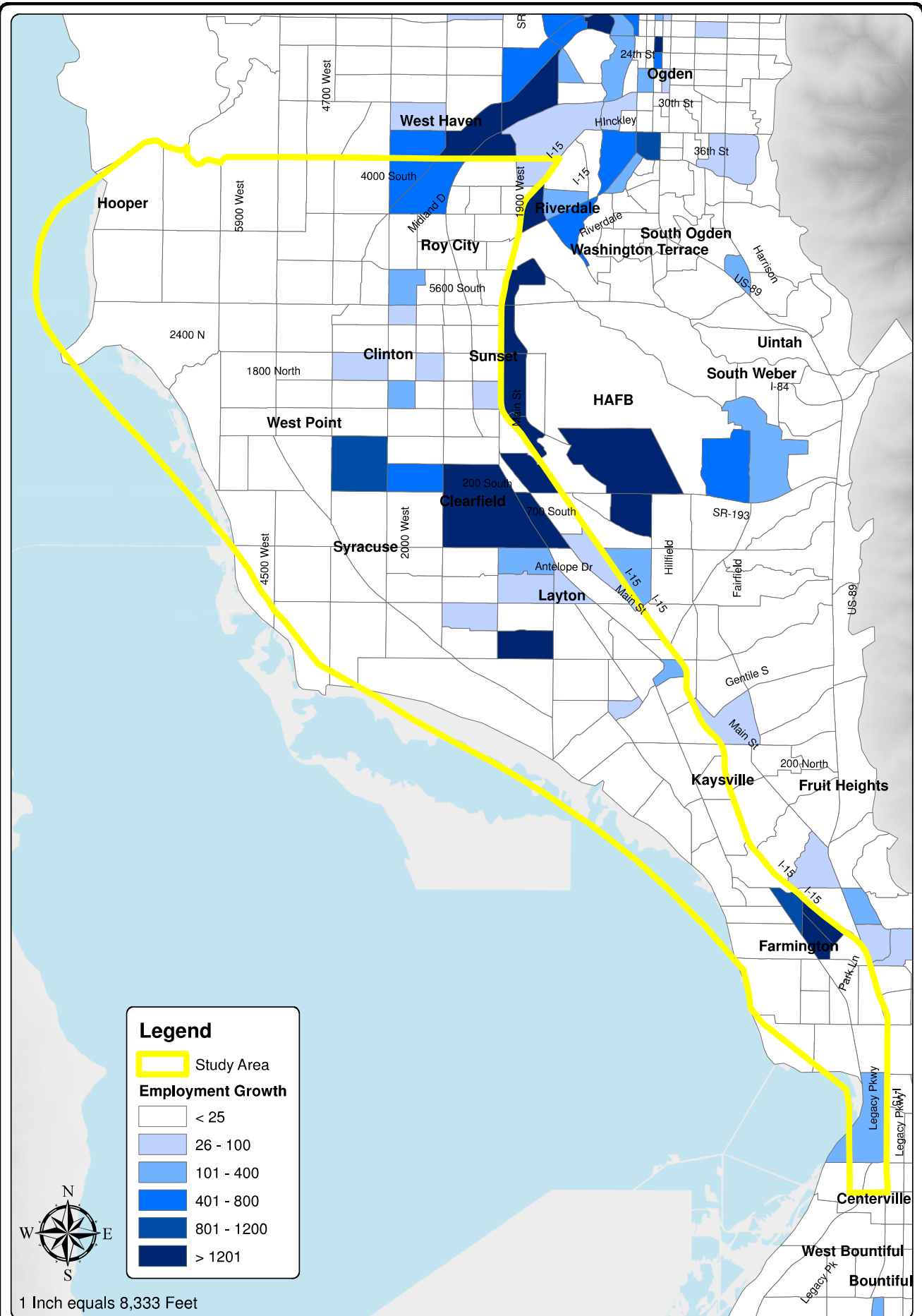


Figure 5. 2011 - 2040 Total Employment Growth

West Davis Corridor

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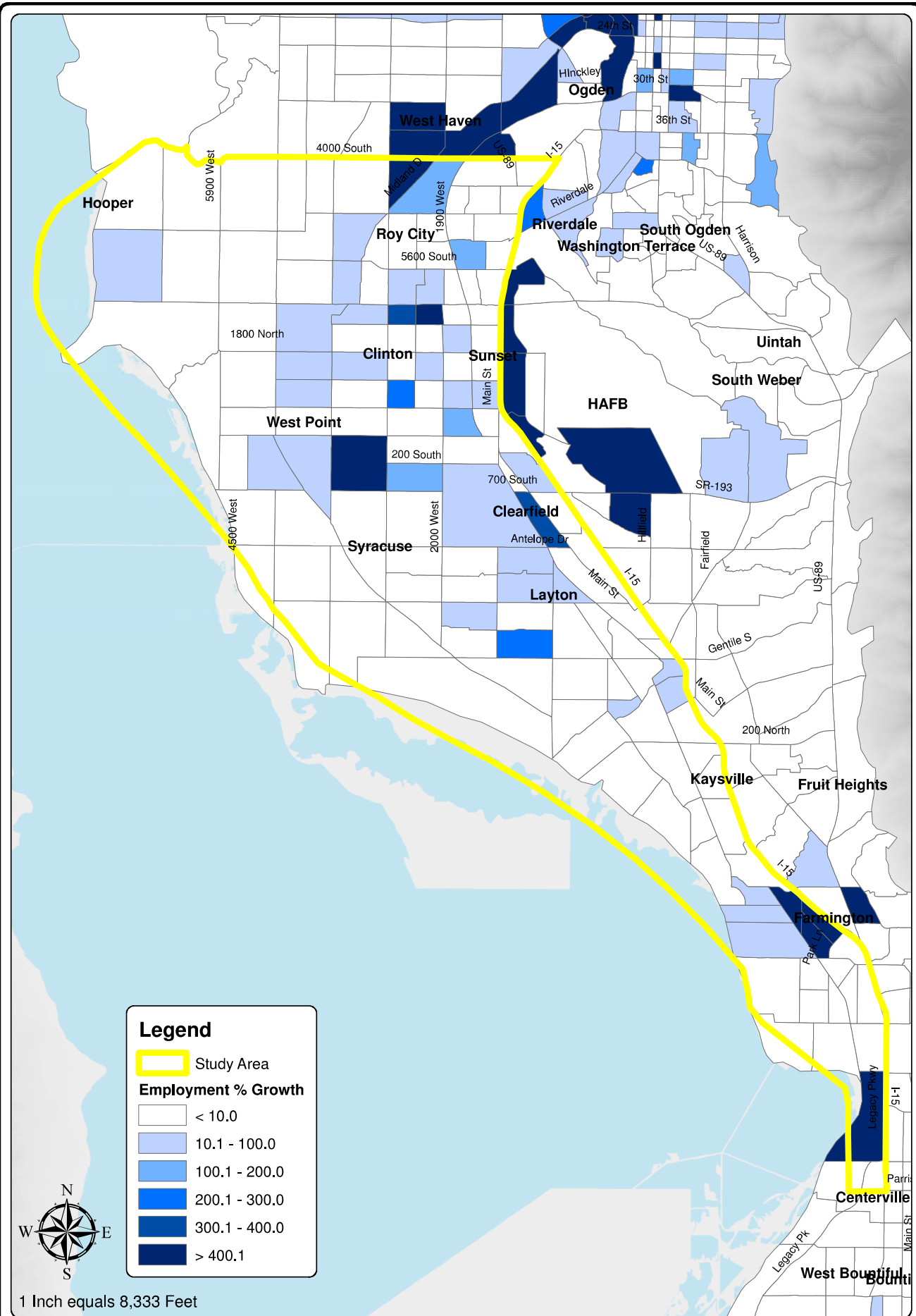


Figure 6. 2011 - 2040 Percentage Employment Growth

West Davis Corridor

07/05/2016

District-Level Comparison of 2011 and 2040 Socioeconomic Data

WFRC already has the version 8.1 model divided into large, medium, and small districts; however, new districts were defined for the West Davis Corridor study area to simplify the evaluation of trip origins and destinations. The WFRC medium districts were divided or combined into larger districts for use specifically in the West Davis Corridor EIS traffic analysis. Figure 7 shows a comparison of the WFRC medium districts and the West Davis Corridor EIS districts. Districts 1 and 2 of the West Davis Corridor EIS districts represent the study area.

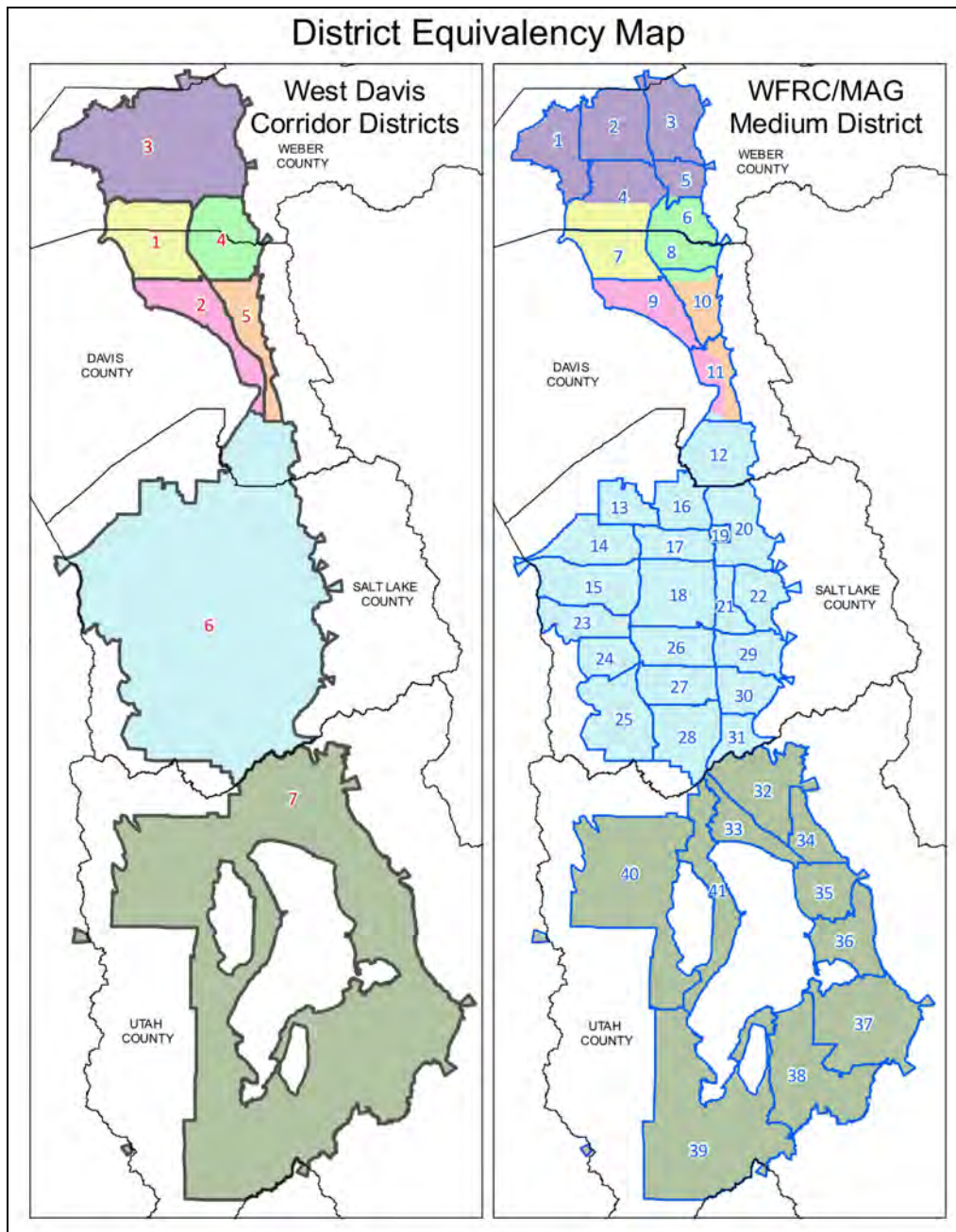


Figure 7: District Equivalency Map

Table 7 and Figure 8 show the 2011 versus the 2040 socioeconomic data for the WDC Districts. The figure shows the highest percent household growth within Weber and Davis Counties occurs in District 2 which is the southern half of the study area. The employment growth rate of District 1 is slightly more than the adjacent District 4, and the employment growth rate of District 2 is much larger than the adjacent District 5.

Table 7: District-Level Socioeconomic Data Comparison

WDC District	Population			Households			Employment		
	2011	2040	Change	2011	2040	Change	2011	2040	Change
1	108,218	151,480	40.0%	33,354	54,111	62.2%	31,813	45,659	43.5%
2	59,852	104,407	74.4%	16,076	35,217	119.1%	25,397	34,473	35.7%
3	132,809	235,379	77.2%	46,166	92,959	101.4%	70,090	114,336	63.1%
4	75,010	84,400	12.5%	26,831	33,109	23.4%	59,201	84,101	42.1%
5	83,132	88,475	6.4%	26,136	30,155	15.4%	32,552	33,257	2.2%
6	1,103,322	1,569,004	42.2%	373,453	606,272	62.3%	739,670	1,032,766	39.6%
7	518,284	990,876	91.2%	147,001	292,438	98.9%	241,607	447,569	85.2%
Totals	2,080,627	3,224,021	55.0%	669,017	1,144,261	71.0%	1,200,330	1,792,161	49.3%

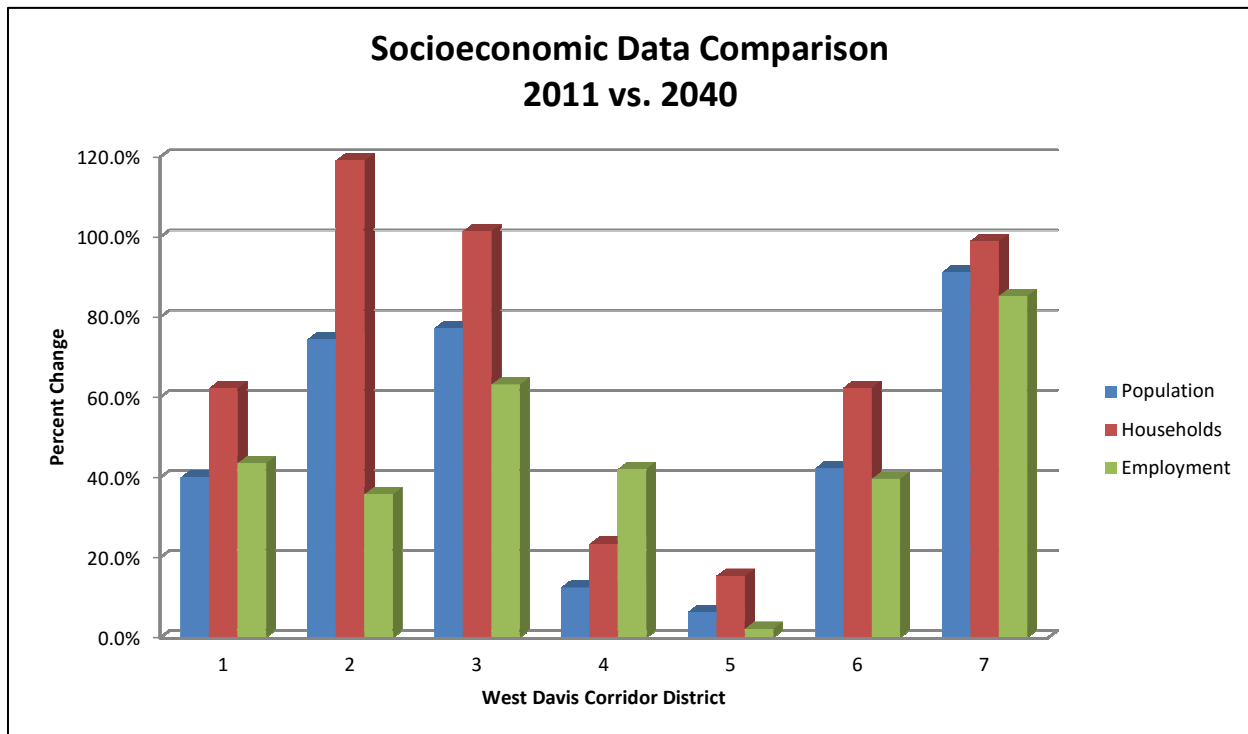


Figure 8: District-Level Socioeconomic Growth Rate Comparison

In terms of actual values, the following figures show population, households, and employment for Districts 1 through 5. The relatively larger values for Districts 6 and 7 are provided in Table 7 above.

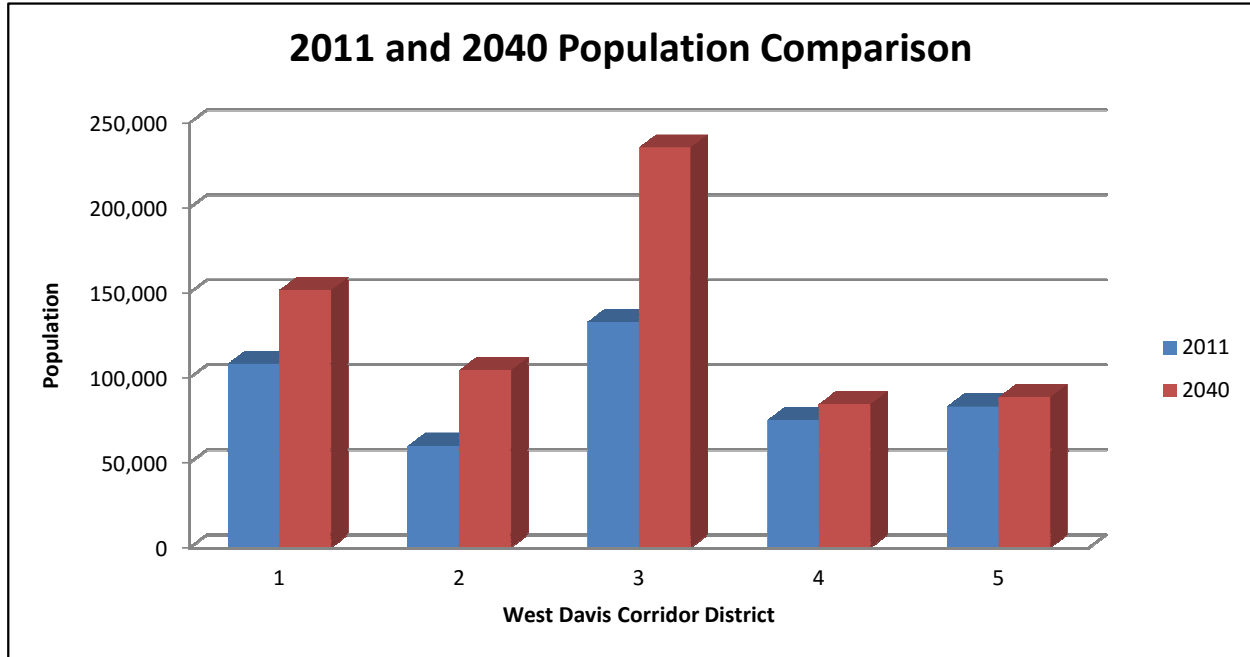


Figure 9: 2011 and 2040 Population Comparison

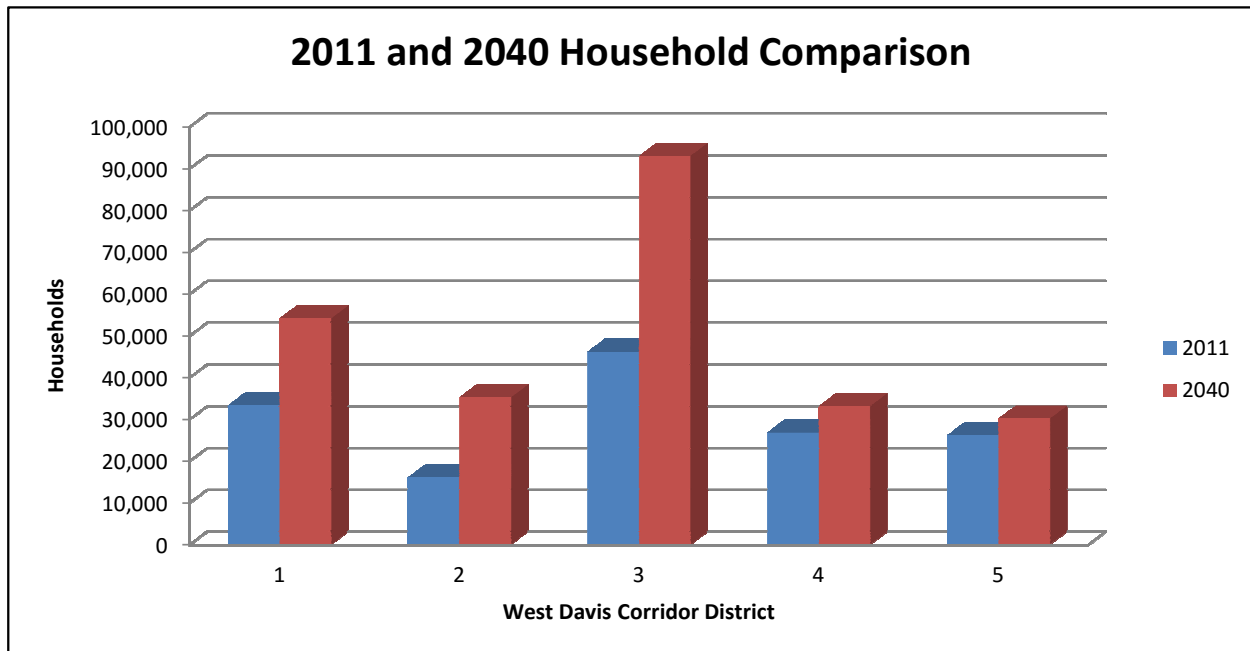


Figure 10: 2011 and 2040 Household Comparison

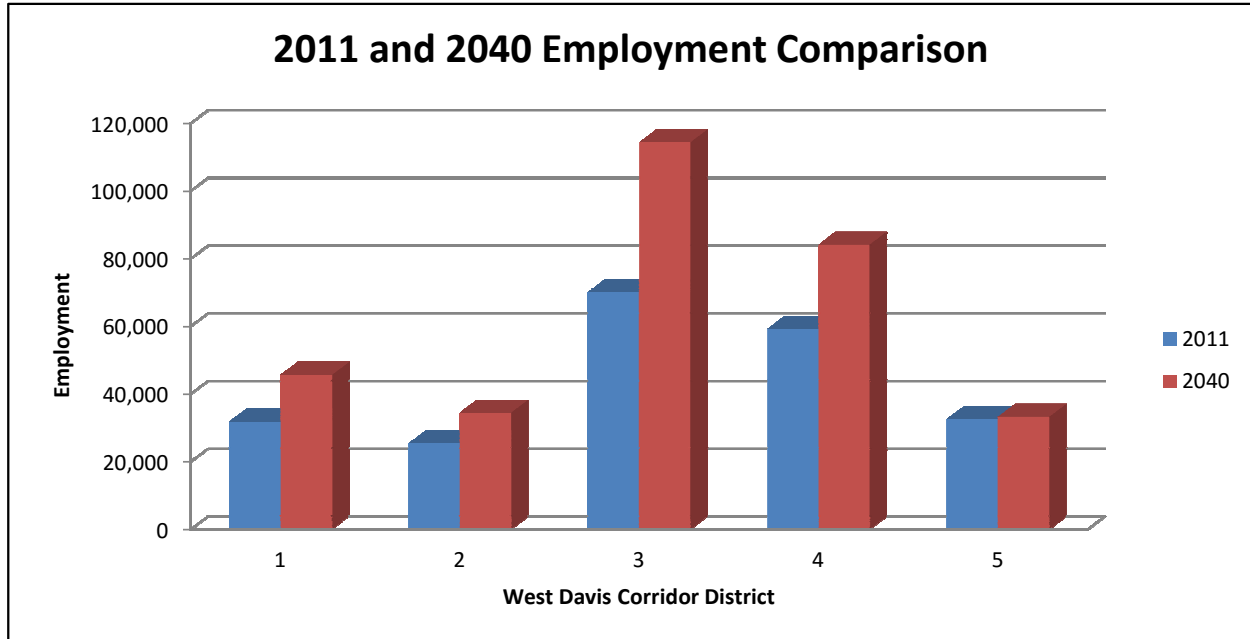


Figure 11: 2011 and 2040 Employment Comparison

Reasonableness Check of WDC 2040 Socioeconomic Data

As a final review of the 2040 socioeconomic data, several checks were performed to determine the reasonableness of the data within the study area. At the district level (see Figure 7 above) the number of jobs per household and the average household size were compared with the 2011 socioeconomic data. Districts 1 and 2 represent the study area in the following tables.

Table 8: District Level Jobs/Household Ratio

WDC District	Jobs/Household Ratio		
	2011	2040	Change
1	0.95	0.84	-11.5%
2	1.58	0.98	-38.0%
3	1.52	1.23	-19.0%
4	2.21	2.54	15.1%
5	1.25	1.10	-11.5%
6	1.98	1.70	-14.0%
7	1.64	1.53	-6.9%
Total Model	1.79	1.57	-12.7%

1 Table 9: District Level Population/Household Ratio

WDC District	Population/Household Ratio		
	2011	2040	Change
1	3.24	2.80	-13.7%
2	3.72	2.96	-20.4%
3	2.88	2.53	-12.0%
4	2.80	2.55	-8.8%
5	3.18	2.93	-7.8%
6	2.95	2.59	-12.4%
7	3.53	3.39	-3.9%
Total Model	3.11	2.82	-9.4%

2
3
4 Table 8 shows that the study area will decrease in the jobs/household ratio between 2011 and 2040.
5 Districts 3 and 5 also decrease, but District 4 will increase. These differing results in the ratio appear to
6 be consistent with current land use projections in that the study area has a larger relative household
7 increase and District 4 has a higher relative employment increase. The Falcon Hill development largely
8 contributes to this outcome. Table 9 shows a decrease in average household size which is consistent
9 with the long range population projections.

10 The final check performed was to compare household densities and employment densities at the TAZ
11 level. The densities were based on developable land acreage within each TAZ. The following figures
12 show the densities for 2011 and 2040 socioeconomic data. Based on a review of the land use plans and
13 a comparison between 2011 and 2040, all densities within the study area appear to be reasonable.
14

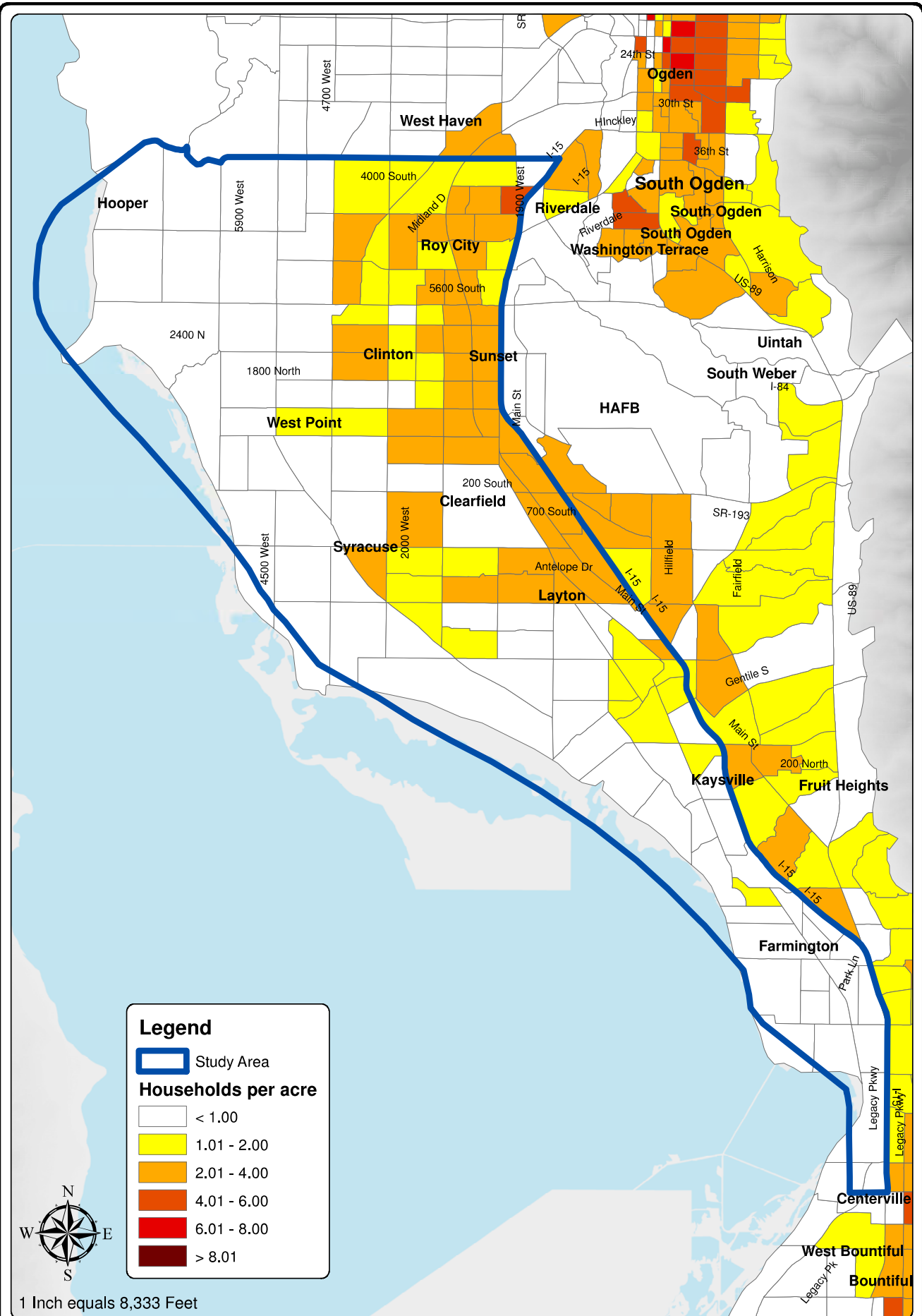


Figure 12. 2011 Household Densities

West Davis Corridor

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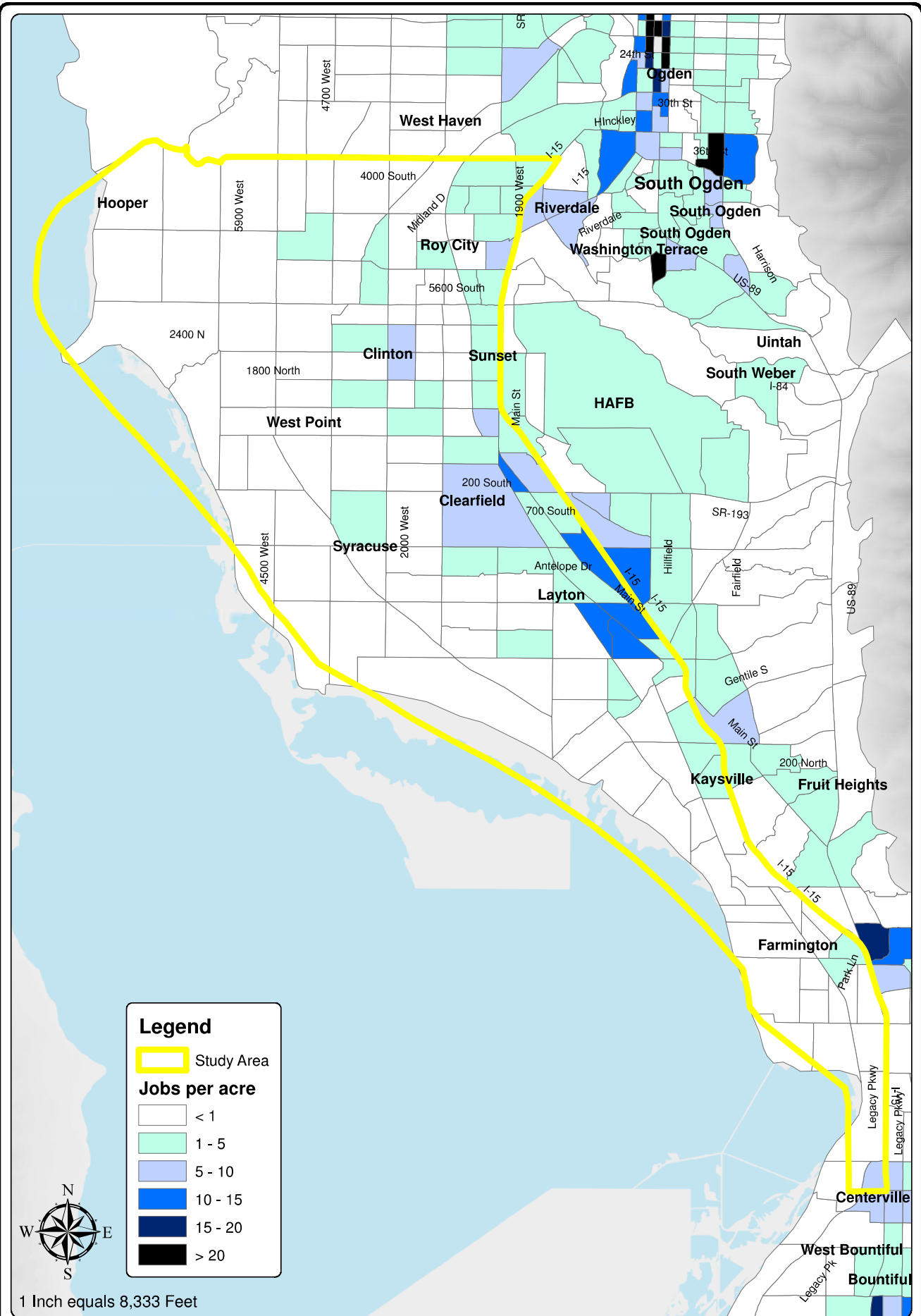


Figure 14. 2011 Employment Density

West Davis Corridor

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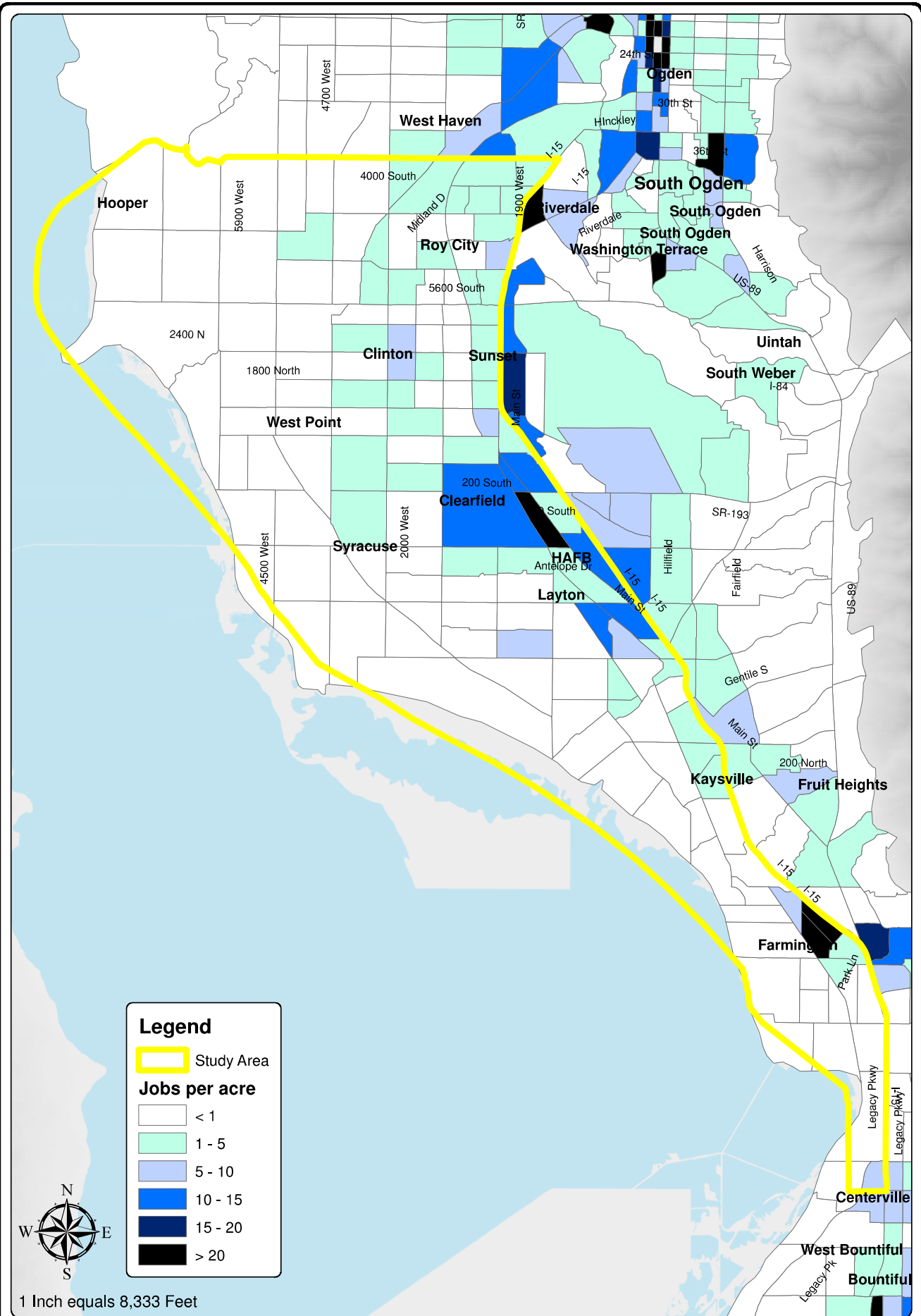


Figure 15. 2040 Employment Densities

West Davis Corridor

07/06/2016

1 **2040 Model Roadway Network**

2 A review was performed to compare the 2040 RTP roadway network with all city transportation master
3 plans within the study area. The model was updated to reflect these plans by adding all proposed
4 collector and arterial roadways that were not already in the RTP. Some updates in the network were
5 part of the WFRC network and were not associated with any identified capital improvement project.
6 These mainly included ramp widening and were retained in the 2040 roadway network. Figure 16 shows
7 the roadway improvements that were assumed to be implemented between 2011 and 2040. Figure 17
8 indicates the source of each roadway improvement. A tabulated list of all roadway improvements
9 within the study area is included in the appendix.

10 For the No-Action Alternative, which is the focus of this report, the roadway improvement in the RTP
11 called “West Davis Corridor” and/or “SR-67 (North Legacy Corridor)” was removed within the study area
12 boundaries. All other proposed improvements were retained in the network.

13

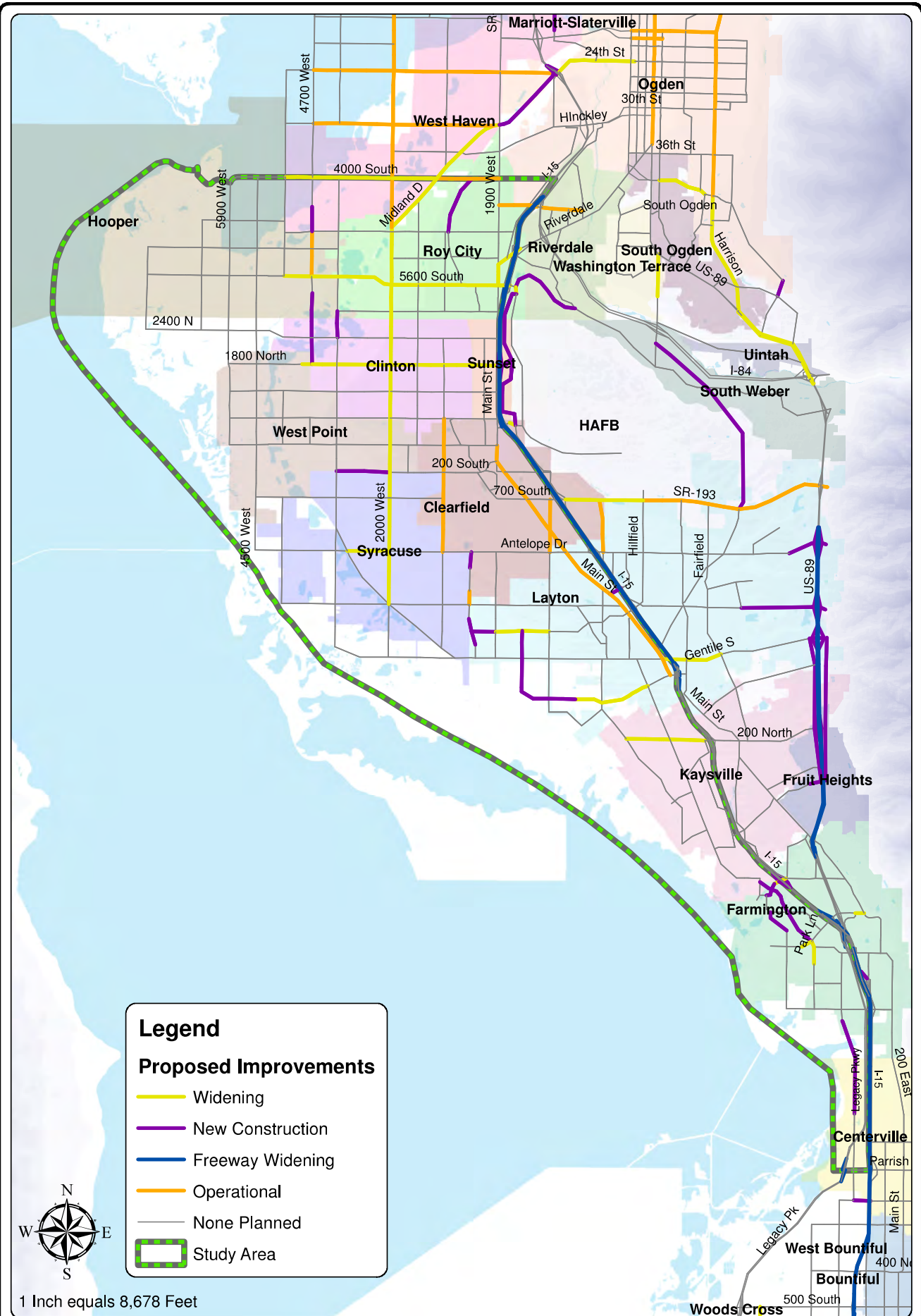


Figure 16. 2040 Proposed Roadway Improvements

West Davis Corridor

07/20/2016

1 **2040 Model Transit Network**

2 The transit lines in the version 8.1 TDM input directory called Lin_2040_v8 were used for the WDC 2040
3 transit network. The only intended modifications made to the transit lines were those necessary to
4 match the 2040 No-Action roadway network to account for link splits and the additional roadways. The
5 2040 RTP transit projects within the study area are shown in Figure 18. The transit network used in the
6 2040 No-Action TDM is shown in Figure 19. Table 10 provides details about the 2011 TDM transit lines
7 that cross within the study area, and Table 11 provides details for the 2040 TDM transit lines. Total
8 transit stops for the TDM inside the study area increased from 95 in 2011 to 136 in 2040.

9

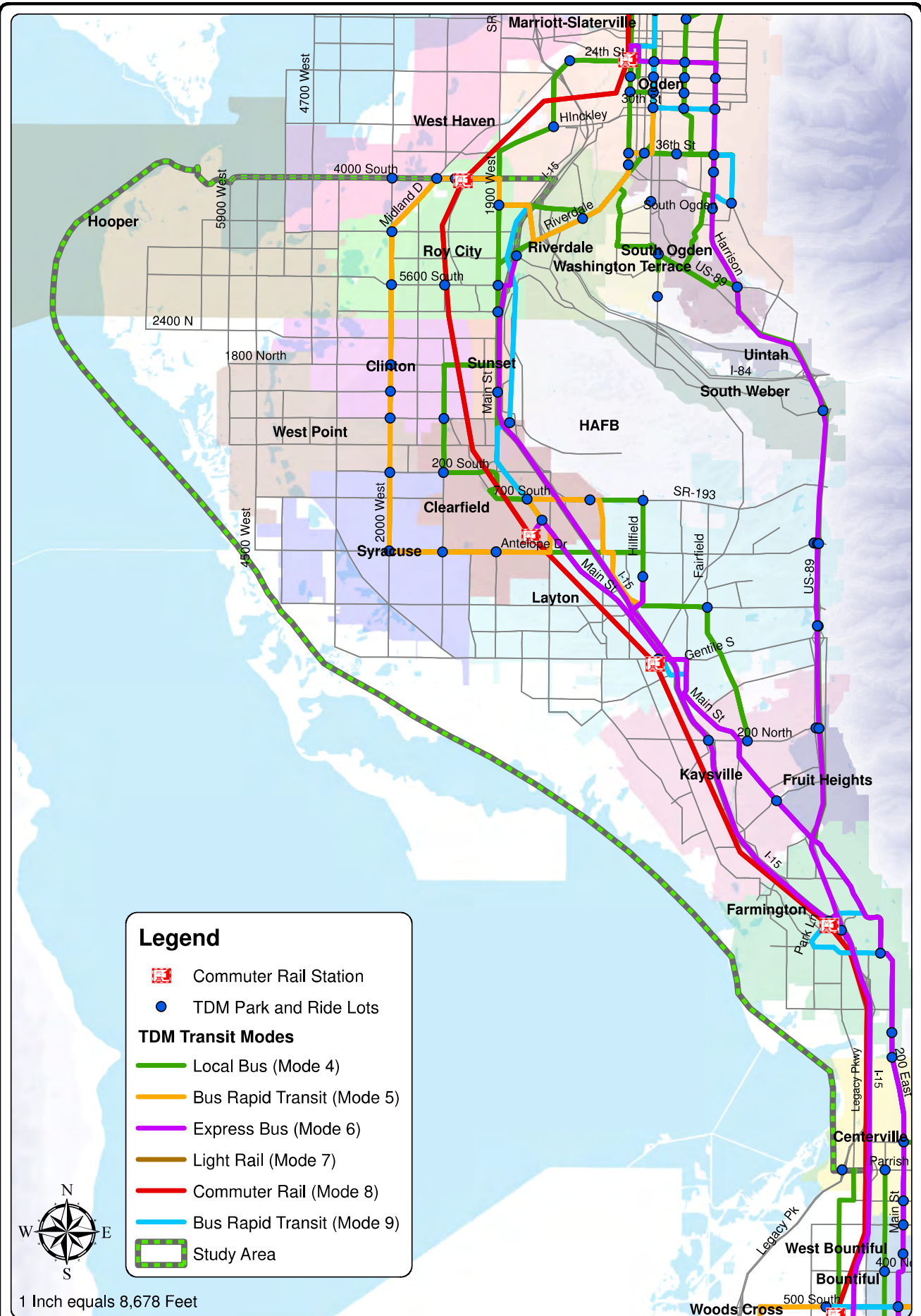


Figure 19. 2040 No Action TDM Transit Network

West Davis Corridor

07/21/2016

1 Table 10: 2011 TDM Transit Lines within the WDC Study Area

Name	Mode	Origin/Destination	Headway(1)	Headway(2)	Total Stops	Stops in Study Area
11og.lin						
O626	Local Bus	Kent's Market (6800 South), Roy Weber State University (Davis Campus)	65	65	26	22
O604	Local Bus	Ogden Transit Center 1900 West/5800 South, Roy	30	30	30	11
S470	Local Bus	400 South/State Street, Salt Lake City Ogden Transit Center	20	30	134	28
O640	Local Bus	Layton Hills Mall (Hillfield Road), Layton Weber State University	30	30	55	29
Name	Mode	Origin/Destination	Headway(1)	Headway(2)	Total Stops	Stops in Study Area
11rail.lin						
RCRT_OGPN (FrontRunner)	Commuter Rail	Ogden Transit Center Salt Lake Central Station	30	50	16	4
Name	Mode	Origin/Destination	Headway(1)	Headway(2)	Total Stops	Stops in Study Area
11slx.lin						
S472X	Express Bus	500 South/State Street, Salt Lake City Freeway Park Drive Station, Riverdale	60	0	13	1

2
3
4 Table 11: 2040 TDM Transit Lines within the WDC Study Area

Name	Mode	Origin/Destination	Headway(1)	Headway(2)	Total Stops	Stops in Study Area
Local_Ogden.lin						
O627	Local Bus	Clearfield Transit Center Davis High School, Kaysville	30	30	24	3
O604	Local Bus	Ogden Transit Center Hillfield Road Station, Layton	30	30	30	12
S470	Local Bus	400 South/State Street, Salt Lake City Ogden-Weber Applied Technology College	20	30	150	29
O640	Local Bus	Clearfield Transit Center Weber State University	30	30	40	24
O660	Local Bus	Clearfield Transit Center Layton Hills Mall, Layton	30	0	11	7
Name	Mode	Origin/Destination	Headway(1)	Headway(2)	Total Stops	Stops in Study Area
Rail.lin						
RCRT_OGPN	Commuter Rail	2700 North/Hwy 89, Pleasant View 800 South, Payson	30	60	19	4
Name	Mode	Origin/Destination	Headway(1)	Headway(2)	Total Stops	Stops in Study Area
StreetCarBRT.lin						
BRTWash_R	BRT Mode 5	Ogden Transit Center Layton Transit Center	15	15	53	32
BRTNSDA_R	BRT Mode 9	2700 North/Washington Boulevard, North Ogden 200 East/200 South, Salt Lake City	15	15	104	13
Name	Mode	Origin/Destination	Headway(1)	Headway(2)	Total Stops	Stops in Study Area
Express.lin						
S472X	Express Bus	500 South/State Street, Salt Lake City Freeway Park Drive Station, Riverdale	20	0	13	1
S480	Express Bus	Clearfield Transit Center 400 South/State Street, Salt Lake City	30	30	70	11

2040 No-Action Alternative Travel Demand Model Results

Transit Results

After the 2040 No-Action Alternative model was run, an analysis was performed to determine the amount of trips the model assigned to transit within the study area and within Weber and Davis Counties. A comparison was made between all trip types (comprising all motorized and non-motorized trips) and the Home-Based Work (HBW) trips. A similar analysis was performed for 2011, as described in the Existing Conditions Report. The results of the 2011 transit analysis are repeated in Table 12 and 2040 is shown in Table 13.

Table 12: 2011 TDM Transit Trips Summary

	Weber County Trips		Davis County Trips		Study Area Trips	
	All Types	HBW	All Types	HBW	All Types	HBW
Model Total Trips	929,700	190,300	1,251,800	272,000	683,000	141,200
Model Transit Trips	10,700	5,100	11,900	6,600	5,100	3,000
Model Percent Transit	1.2%	2.7%	1.0%	2.4%	0.7%	2.1%
ACS*	N/A	1.7%	N/A	2.8%	N/A	N/A
*Source: U.S. Census Bureau American Community Survey, 2007-2011						

Table 13: 2040 TDM Transit Trips Summary

	Weber County Trips		Davis County Trips		Study Area Trips	
	All Types	HBW	All Types	HBW	All Types	HBW
Model Total Trips	1,470,900	315,600	1,774,700	407,900	1,060,900	236,700
Model Transit Trips	31,700	16,500	41,000	24,000	17,000	10,300
Model Percent Transit	2.2%	5.2%	2.3%	5.9%	1.6%	4.4%

A comparison of the 2011 and 2040 transit data shows that, as a percentage of total trips, transit use increased in all categories. This may be due, in part, to the additional transit capacity provided by the RTP improvements and increased land use near transit lines and stations.

Roadway Network Results

Several Measures of Effectiveness (MOEs) were calculated in the study area from the 2040 No-Action Alternative TDM. A key focus was on congested roadways, which were assumed to be those with Volume-to-Capacity (V/C) ratios greater than or equal to 0.9 as calculated by the TDM or ramps with ramp meter delays greater than 1.2 minutes. The MOEs for congestion include: roadway lane-miles, Vehicle Miles Traveled (VMT), and Vehicle Hours Traveled (VHT). Other MOEs include: average speeds in miles-per-hour (mph), total VMT, total VHT, and total daily delay in hours. The roadway lane-miles MOE is divided into east-west roads and north-south roads. It represents the physical length of roadway lanes that have poor traffic operations. The VMT in congestion represents the cumulative length of roadway miles that drivers experience with poor traffic operations. The following tables provide a comparison between the 2011 and 2040 MOEs for the AM 3-Hr period, PM 3-Hr period, and daily traffic.

1 Table 14: 2011 Travel Demand Model MOE Summary for WDC Study Area – AM 3-Hr Period

WDC Study Area MOEs	AM 3-Hr Period				
	Freeway	Arterial	Collector	Ramps	All Roads
East-West Road Lane-Miles in Congestion	0.0	1.9	0.3	0.0	2.2
Total East-West Lane-Miles	1.4	92.5	133.4	2.8	230.1
Percent East-West Lane-Miles in Congestion	0%	2%	0%	0%	1%
North-South Road Lane-Miles in Congestion	23.3	0.5	0.4	0.7	25.0
Total North-South Lane-Miles	183.4	73.0	153.8	11.8	422.0
Percent North-South Lane-Miles in Congestion	13%	1%	0%	6%	6%
VMT in Congestion	104,500	5,700	1,200	2,100	113,600
Total VMT	486,400	137,000	70,800	14,900	709,100
Percent VMT in Congestion	21%	4%	2%	14%	16%
VHT in Congestion	2,050	380	70	140	2,640
Total VHT	8,140	4,580	2,600	720	16,040
Percent VHT in Congestion	25%	8%	3%	19%	16%
Average Speed (mph)	59.7	29.9	27.3	20.8	44.2
Total Delay (Hr)	770	440	160	110	1,490
Note: Excludes Centroid Connectors					

5 Table 15: 2040 Travel Demand Model MOE Summary for WDC Study Area – AM 3-Hr Period

WDC Study Area MOEs	AM 3-Hr Period				
	Freeway	Arterial	Collector	Ramps	All Roads
East-West Road Lane-Miles in Congestion	0.0	10.7	1.0	0.2	11.9
Total East-West Lane-Miles	1.5	149.2	131.3	3.5	285.5
Percent East-West Lane-Miles in Congestion	0%	7%	1%	6%	4%
North-South Road Lane-Miles in Congestion	42.4	1.2	2.2	2.6	48.4
Total North-South Lane-Miles	212.4	98.4	173.2	15.3	499.4
Percent North-South Lane-Miles in Congestion	20%	1%	1%	17%	10%
VMT in Congestion	234,400	28,000	5,200	6,100	273,700
Total VMT	761,700	239,800	103,700	21,400	1,126,500
Percent VMT in Congestion	31%	12%	5%	29%	24%
VHT in Congestion	4,840	1,500	370	520	7,230
Total VHT	13,470	8,390	4,160	1,230	27,250
Percent VHT in Congestion	36%	18%	9%	42%	27%
Average Speed (mph)	56.5	28.6	24.9	17.4	41.3
Total Delay (Hr)	1,990	1,160	450	350	3,950
Note: Excludes Centroid Connectors					

Table 16: Percent Change 2011 to 2040 – AM 3-Hr Period

WDC Study Area MOEs	AM 3-Hr Period				
	Freeway	Arterial	Collector	Ramps	All Roads
East-West Road Lane-Miles in Congestion	0%	463%	233%	DIV/0	441%
Total East-West Lane-Miles	7%	61%	-2%	25%	24%
North-South Road Lane-Miles in Congestion	82%	140%	450%	271%	94%
Total North-South Lane-Miles	16%	35%	13%	30%	18%
VMT in Congestion	124%	391%	333%	190%	141%
Total VMT	57%	75%	46%	44%	59%
VHT in Congestion	136%	295%	429%	271%	174%
Total VHT	65%	83%	60%	71%	70%
Average Speed (mph)	-5%	-4%	-9%	-16%	-7%
Total Delay (Hr)	158%	164%	181%	218%	165%
Note: Excludes Centroid Connectors					

Table 17: 2011 Travel Demand Model MOE Summary for WDC Study Area – PM 3-Hr Period

WDC Study Area MOEs	PM 3-Hr Period				
	Freeway	Arterial	Collector	Ramps	All Roads
East-West Road Lane-Miles in Congestion	0.0	6.7	1.8	0.0	8.5
Total East-West Lane-Miles	1.4	92.5	133.4	2.8	230.1
Percent East-West Lane-Miles in Congestion	0%	7%	1%	0%	4%
North-South Road Lane-Miles in Congestion	60.3	5.8	1.8	1.0	68.9
Total North-South Lane-Miles	183.4	73.0	153.8	11.8	422.0
Percent North-South Lane-Miles in Congestion	33%	8%	1%	8%	16%
VMT in Congestion	298,900	29,700	6,100	2,800	337,500
Total VMT	651,800	202,700	121,000	19,200	994,600
Percent VMT in Congestion	46%	15%	5%	15%	34%
VHT in Congestion	7,430	1,720	400	190	9,740
Total VHT	13,230	7,440	4,660	950	26,280
Percent VHT in Congestion	56%	23%	9%	20%	37%
Average Speed (mph)	49.3	27.2	26	20.3	37.9
Total Delay (Hr)	3,320	1,330	510	170	5,330
Note: Excludes Centroid Connectors					

Table 18: 2040 Travel Demand Model MOE Summary for WDC Study Area – PM 3-Hr Period

WDC Study Area MOEs	PM 3-Hr Period				
	Freeway	Arterial	Collector	Ramps	All Roads
East-West Road Lane-Miles in Congestion	0.0	24.8	4.9	0.8	30.5
Total East-West Lane-Miles	1.5	149.2	131.3	3.5	285.5
Percent East-West Lane-Miles in Congestion	0%	17%	4%	23%	11%
North-South Road Lane-Miles in Congestion	91.1	16.1	6.9	2.1	116.2
Total North-South Lane-Miles	212.4	98.4	173.2	15.3	499.4
Percent North-South Lane-Miles in Congestion	43%	16%	4%	14%	23%
VMT in Congestion	516,300	99,200	21,500	5,100	642,000
Total VMT	974,600	358,400	183,800	24,700	1,541,500
Percent VMT in Congestion	53%	28%	12%	21%	42%
VHT in Congestion	13,170	5,310	1,560	730	20,770
Total VHT	20,990	14,190	8,130	1,710	45,020
Percent VHT in Congestion	63%	37%	19%	43%	46%
Average Speed (mph)	46.4	25.3	22.6	14.5	34.2
Total Delay (Hr)	6,260	3,400	1,570	700	11,930
Note: Excludes Centroid Connectors					

Table 19: Percent Change 2011 to 2040 – PM 3-Hr Period

WDC Study Area MOEs	PM 3-Hr Period				
	Freeway	Arterial	Collector	Ramps	All Roads
East-West Road Lane-Miles in Congestion	0%	270%	172%	DIV/0	259%
Total East-West Lane-Miles	7%	61%	-2%	25%	24%
North-South Road Lane-Miles in Congestion	51%	178%	283%	110%	69%
Total North-South Lane-Miles	16%	35%	13%	30%	18%
VMT in Congestion	73%	234%	252%	82%	90%
Total VMT	50%	77%	52%	29%	55%
VHT in Congestion	77%	209%	290%	284%	113%
Total VHT	59%	91%	74%	80%	71%
Average Speed (mph)	-6%	-7%	-13%	-29%	-10%
Total Delay (Hr)	89%	156%	208%	312%	124%
Note: Excludes Centroid Connectors					

1 Table 20: 2011 Travel Demand Model MOE Summary for WDC Study Area – Daily Traffic

WDC Study Area MOEs	Daily MOE Statistics				
	Freeway	Arterial	Collector	Ramps	All Roads
East-West Road Lane-Miles in Congestion	0.0	8.8	2.2	0.0	11.0
Total East-West Lane-Miles	1.4	92.5	133.4	2.8	230.1
Percent East-West Lane-Miles in Congestion	0%	10%	2%	0%	5%
North-South Road Lane-Miles in Congestion	83.6	6.3	2.5	2.0	94.4
Total North-South Lane-Miles	183.4	73.0	153.8	11.8	422.0
Percent North-South Lane-Miles in Congestion	46%	9%	2%	17%	22%
VMt in Congestion	403,400	36,200	8,400	6,100	454,000
Total VMt	2,531,600	793,600	432,200	81,200	3,838,600
Percent VMt in Congestion	16%	5%	2%	8%	12%
VHT in Congestion	9,470	2,170	540	400	12,590
Total VHT	42,410	26,100	15,710	3,700	87,920
Percent VHT in Congestion	22%	8%	3%	11%	14%
Average Speed (mph)	59.7	30.4	27.5	21.9	43.7
Total Delay (Hr)	4,220	2,160	840	400	7,630
Note: Excludes Centroid Connectors					

5 Table 21: 2040 Travel Demand Model MOE Summary for WDC Study Area – Daily Traffic

WDC Study Area MOEs	Daily MOE Statistics				
	Freeway	Arterial	Collector	Ramps	All Roads
East-West Road Lane-Miles in Congestion	0.0	35.8	6.5	1.1	43.3
Total East-West Lane-Miles	1.5	149.2	131.3	3.5	285.5
Percent East-West Lane-Miles in Congestion	0%	24%	5%	31%	15%
North-South Road Lane-Miles in Congestion	133.4	17.3	10.4	4.9	166.1
Total North-South Lane-Miles	212.4	98.4	173.2	15.3	499.4
Percent North-South Lane-Miles in Congestion	63%	18%	6%	32%	33%
VMt in Congestion	750,700	128,400	32,200	12,700	924,000
Total VMt	3,979,700	1,365,300	626,900	118,600	6,090,400
Percent VMt in Congestion	19%	9%	5%	11%	15%
VHT in Congestion	18,010	6,880	2,290	1,370	28,550
Total VHT	68,810	46,760	25,040	6,160	146,760
Percent VHT in Congestion	26%	15%	9%	22%	19%
Average Speed (mph)	57.8	29.2	25	19.3	41.5
Total Delay (Hr)	8,890	5,530	2,560	1,330	18,310
Note: Excludes Centroid Connectors					

1 Table 22: Percent Change 2011 to 2040 – Daily Traffic

WDC Study Area MOEs	Daily Statistics				
	Freeway	Arterial	Collector	Ramps	All Roads
East-West Road Lane-Miles in Congestion	0%	307%	195%	DIV/0	294%
Total East-West Lane-Miles	7%	61%	-2%	25%	24%
North-South Road Lane-Miles in Congestion	60%	175%	316%	145%	76%
Total North-South Lane-Miles	16%	35%	13%	30%	18%
VMT in Congestion	86%	255%	283%	108%	104%
Total VMT	57%	72%	45%	46%	59%
VHT in Congestion	90%	217%	324%	243%	127%
Total VHT	62%	79%	59%	66%	67%
Average Speed (mph)	-3%	-4%	-9%	-12%	-5%
Total Delay (Hr)	111%	156%	205%	233%	140%
Note: Excludes Centroid Connectors					

2
 3
 4 The tables above indicate that overall roadway congestion increases for all time periods, with speeds
 5 typically decreasing and total delay increasing. The most severe congestion generally occurs during the
 6 PM 3-Hr period. For this period, the east-west road lane-miles in congestion increased from 8.5 to 30.5
 7 while the north-south roads increased from 68.9 to 116.2. This suggests that north-south travel will
 8 experience a greater degree of congestion relative to east-west travel. Overall delay increased 165
 9 percent during the AM 3-Hr period, 124 percent during the PM 3-Hr period, and 140 percent on a daily
 10 basis.

11
 12 As described in the Existing Conditions Report, the original v8.1 TDM was modified to improve results
 13 within the WDC study area. For comparison, the original v8.1 TDM was run with the 2040
 14 socioeconomic data and the project labeled “West Davis” removed from the study area roadway
 15 network. This “unmodified” model resulted in daily delays within the study area that were 25 percent
 16 higher than the modified model.
 17

Roadway Level of Service Estimates

Level of Service (LOS) is a term used by the *Highway Capacity Manual* (HCM) to describe the traffic operations of an intersection or roadway, based on congestion, average vehicle delay, or densities. LOS ranges from “A” (almost no congestion or delay) to “F” (traffic demand is above capacity and the intersection or roadway experiences long queues and delay). LOS C or better is generally considered acceptable for rural roadways. LOS D or better is generally acceptable for urbanized roadways. LOS E is the threshold when the roadway approaches maximum capacity.

LOS for the roadways within the study area was estimated by using the V/C ratios calculated by the TDM. LOS was estimated to be LOS F for V/C greater than or equal to 1.0, LOS E for V/C greater than or equal to 0.9 and less than 1.0, and LOS D or better for V/C less than 0.9. Figure 20 through Figure 23 show the 2011 and 2040 V/C ratios during the AM and PM peak 3-hour periods.

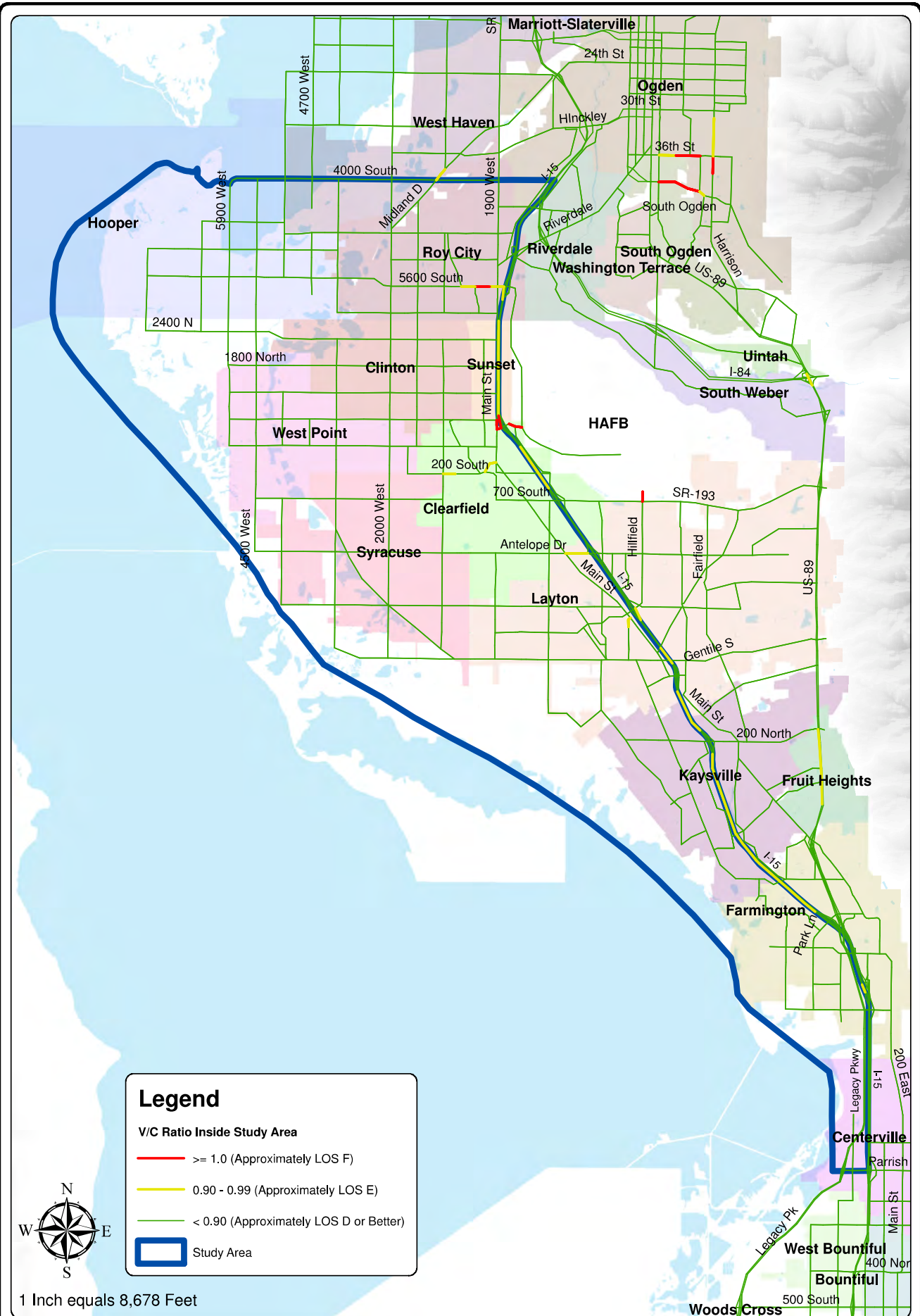


Figure 20. 2011 AM 3-Hr Peak V/C Ratios

West Davis Corridor

08/05/2016

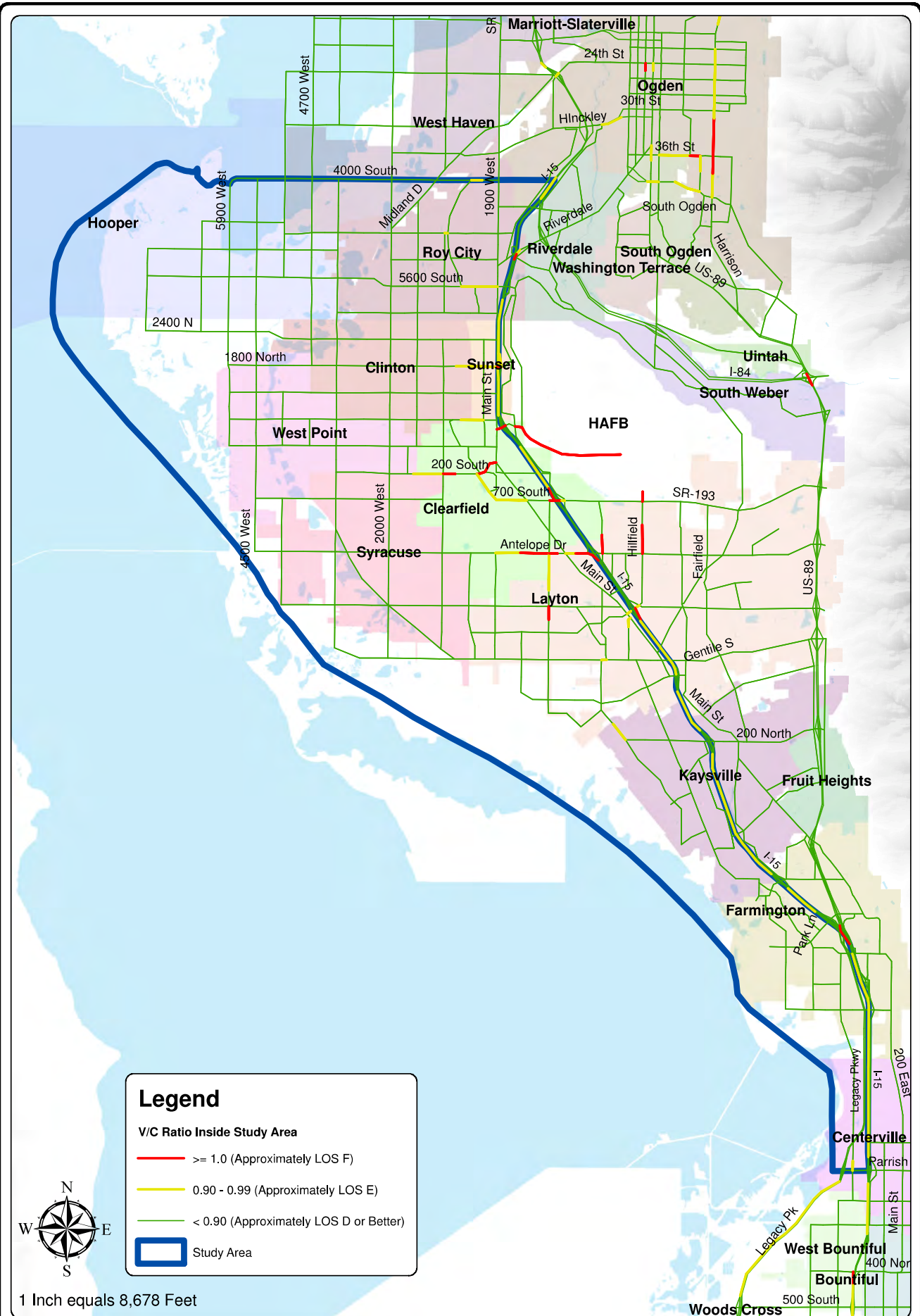


Figure 21. 2040 AM 3-Hr Peak V/C Ratios

West Davis Corridor

08/05/2016



Figure 22. 2011 PM 3-Hr Peak V/C Ratios

West Davis Corridor

08/05/2016

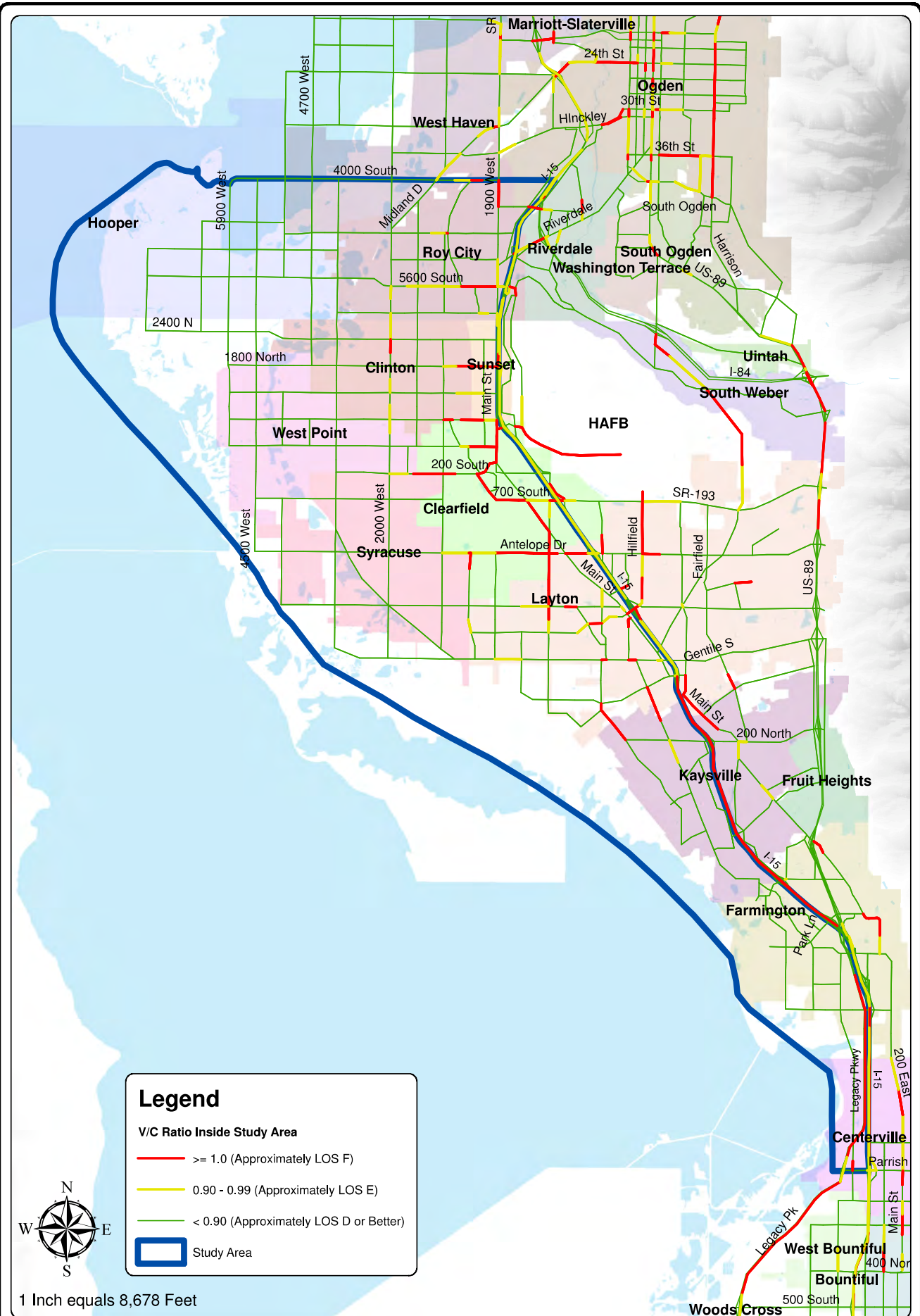


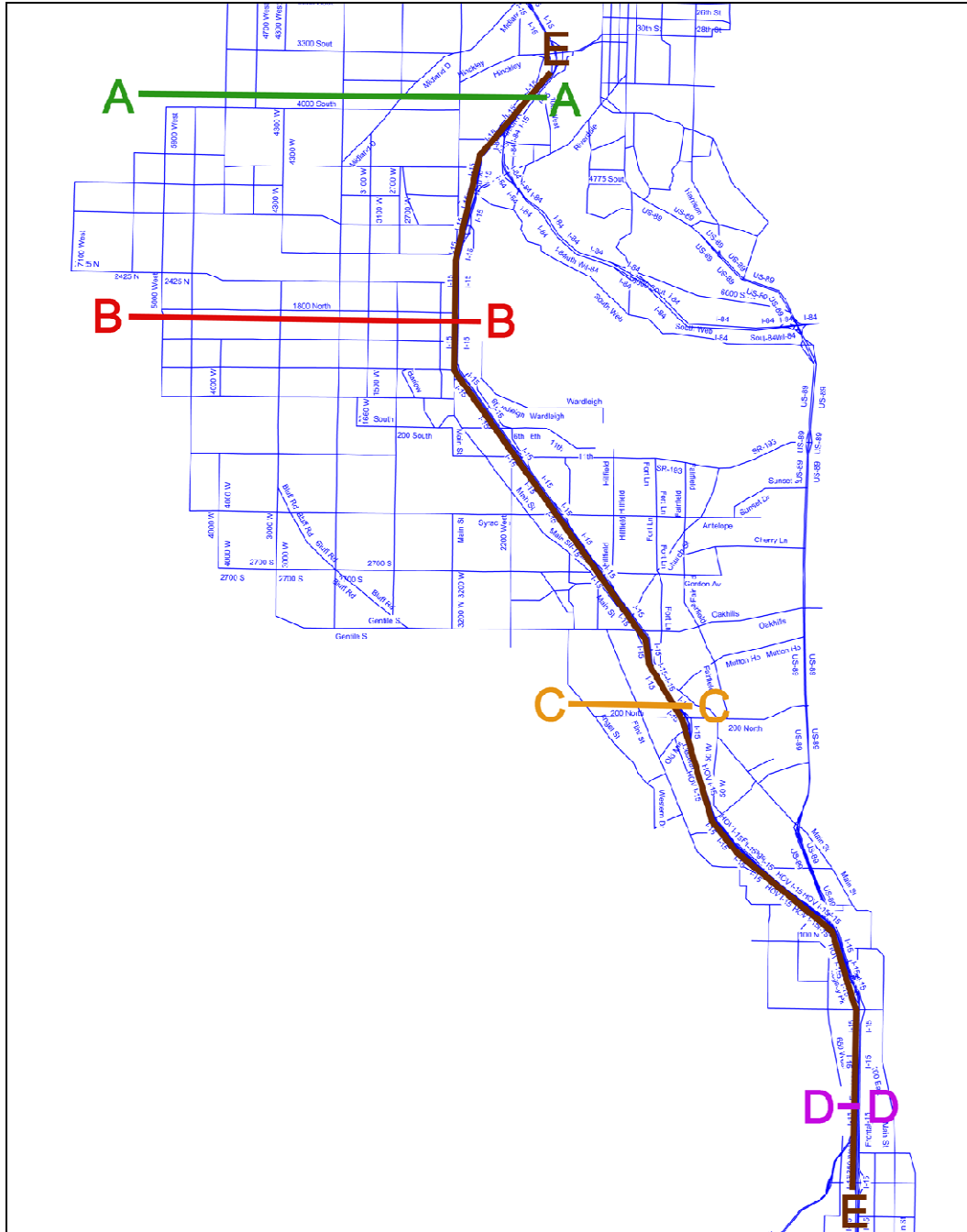
Figure 23. 2040 PM 3-Hr Peak V/C Ratios

West Davis Corridor

08/05/2016

1 Screenline Growth Comparison

2 Screenlines were established to compare overall traffic volumes for north-south and east-west travel
3 from the study area. Figure 24 shows the screenline locations. Screenline A is north of 4000 South,
4 Screenline B is south of 1800 North, Screenline C is north of 200 North, Screenline D crosses Legacy
5 Parkway and I-15 north of Parrish Lane, and Screenline E parallels the west side of I-15.
6



7
8 Figure 24: Screenline Locations
9

The Average Weekday Traffic (AWDT) volumes crossing the screenlines were compared between the 2011 model and the 2040 model. A summary is shown in Table 23.

Table 23: TDM Screenline Summary

Screenline	AWDT Screenline Summary			
	2011 TDM	2040 No-Action	Change in AWDT	Percent Change
A (N-S Traffic: North of 4000 South)	151,000	262,700	111,700	74.0%
B (N-S Traffic: South of 1800 North)	182,100	290,000	107,900	59.3%
C (N-S Traffic: North of 200 North Kaysville)	134,600	201,900	67,300	50.0%
D (N-S Traffic: North of Parrish Lane)	163,500	254,000	90,500	55.4%
E (E-W Traffic: West of I-15)	311,500	481,800	170,300	54.7%
Total all Screen Lines	942,700	1,490,400	547,700	58.1%

The screenline analysis indicates that travel on the north end of the study area will increase at a greater rate than the other screenline locations. This coincides, in part, with Figure 5 which shows a large employment increase occurring north of the study area. Across all screenlines, traffic increases 58.1 percent from 2011 to 2040.

Travel Pattern Analysis

To analyze the travel patterns within the West Davis Corridor study area, an origin-destination study was conducted using the TDM. One purpose of this study was to determine the percentage of traffic within the study area that travels a north-south direction versus an east-west direction. To perform this study, the entire TDM was divided into districts, as shown in Figure 7. Districts 1 and 2 of the West Davis Corridor Districts represent the study area.

Using these district definitions, the model generated statistics regarding person-trip origins and destinations. Figure 25 shows the 2011 HBW person-trips originating from the study area, and Figure 26 shows 2040 HBW person-trips. Figure 27 shows 2011 all person-trips, and Figure 28 shows 2040 all person-trips.

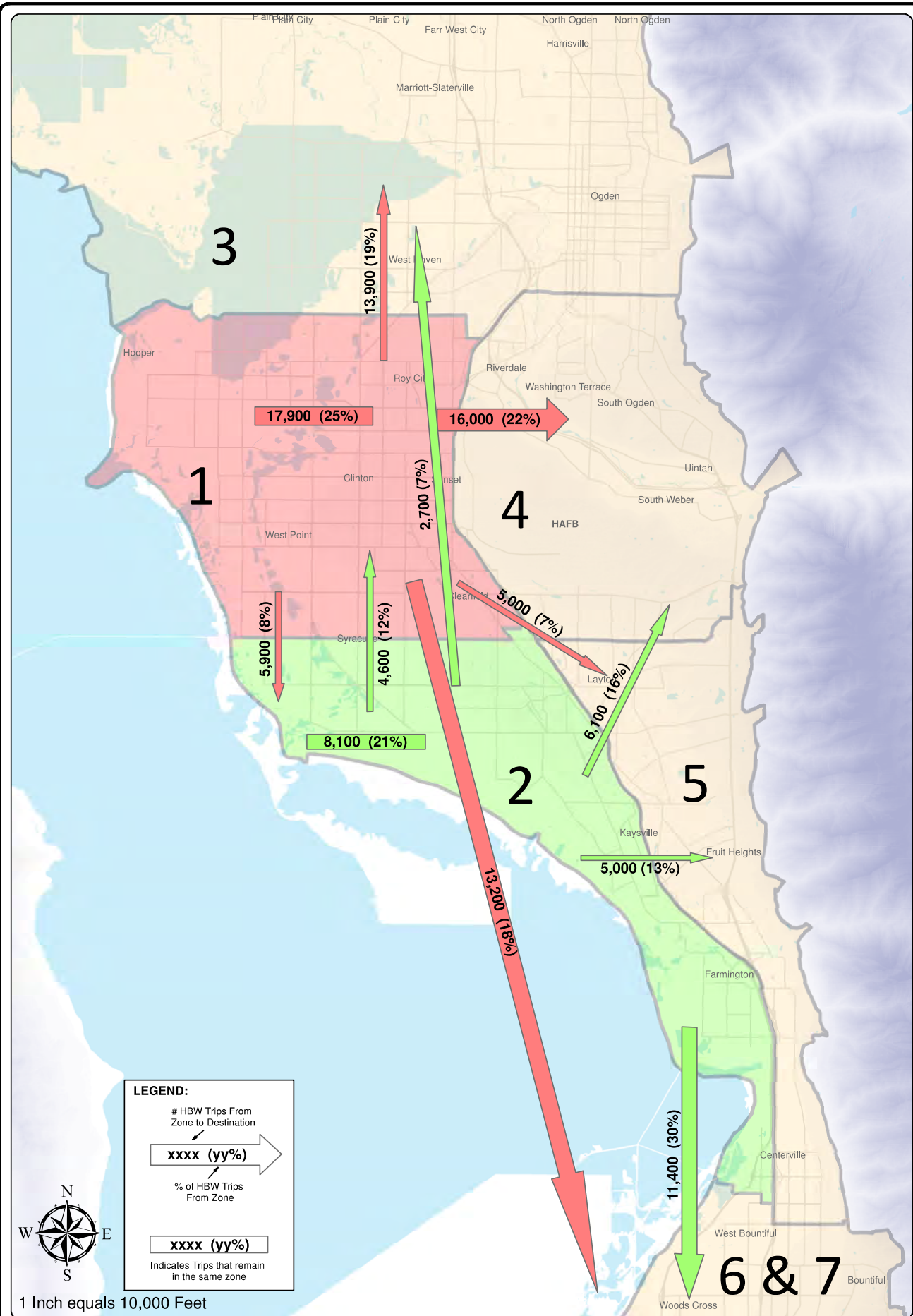


Figure 25. 2011 Home-Based Work Person-Trips
Originating in the Study Area
West Davis Corridor

08/08/2016

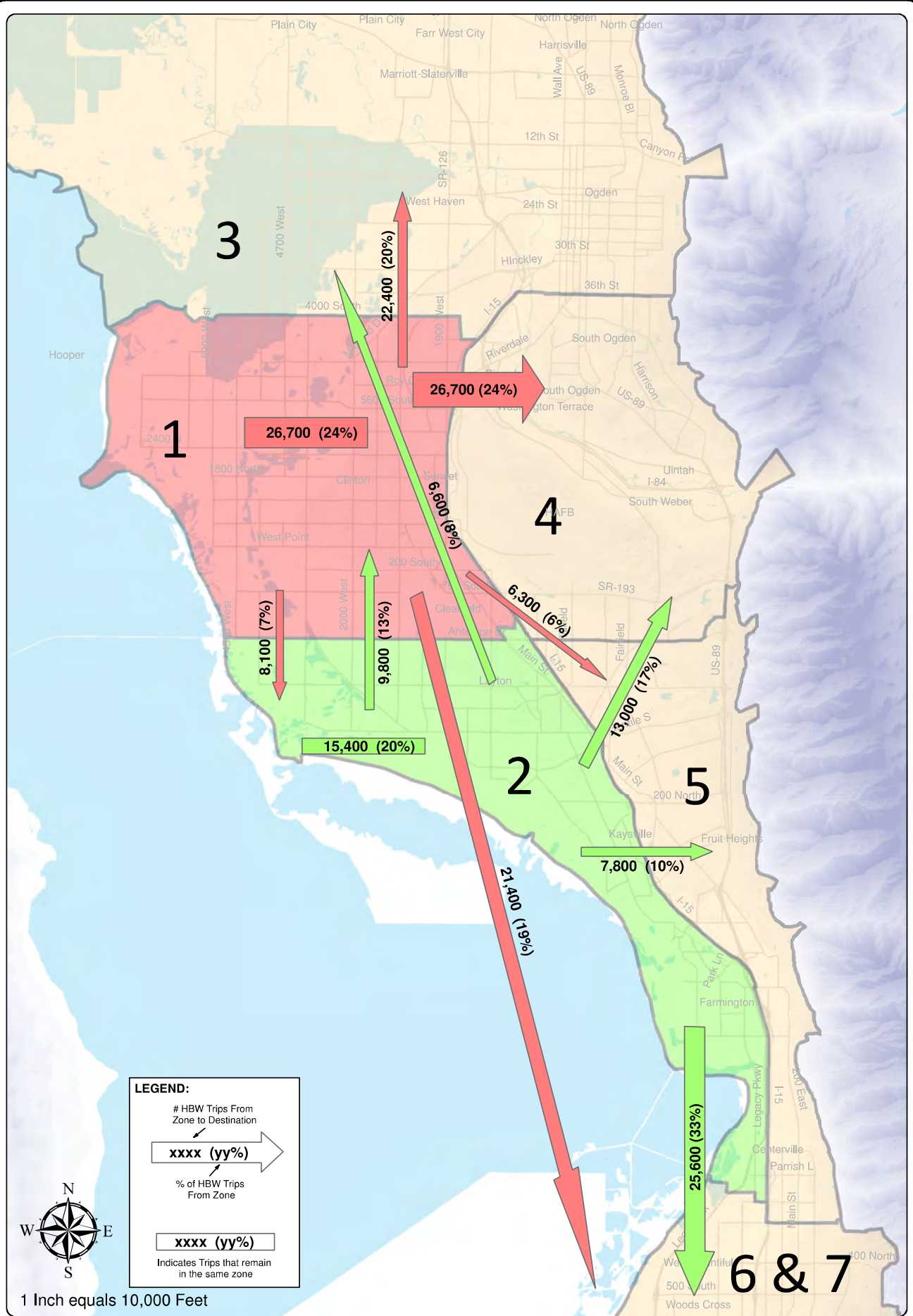


Figure 26. 2040 Home-Based Work Person-Trips
 Originating in the Study Area
 West Davis Corridor

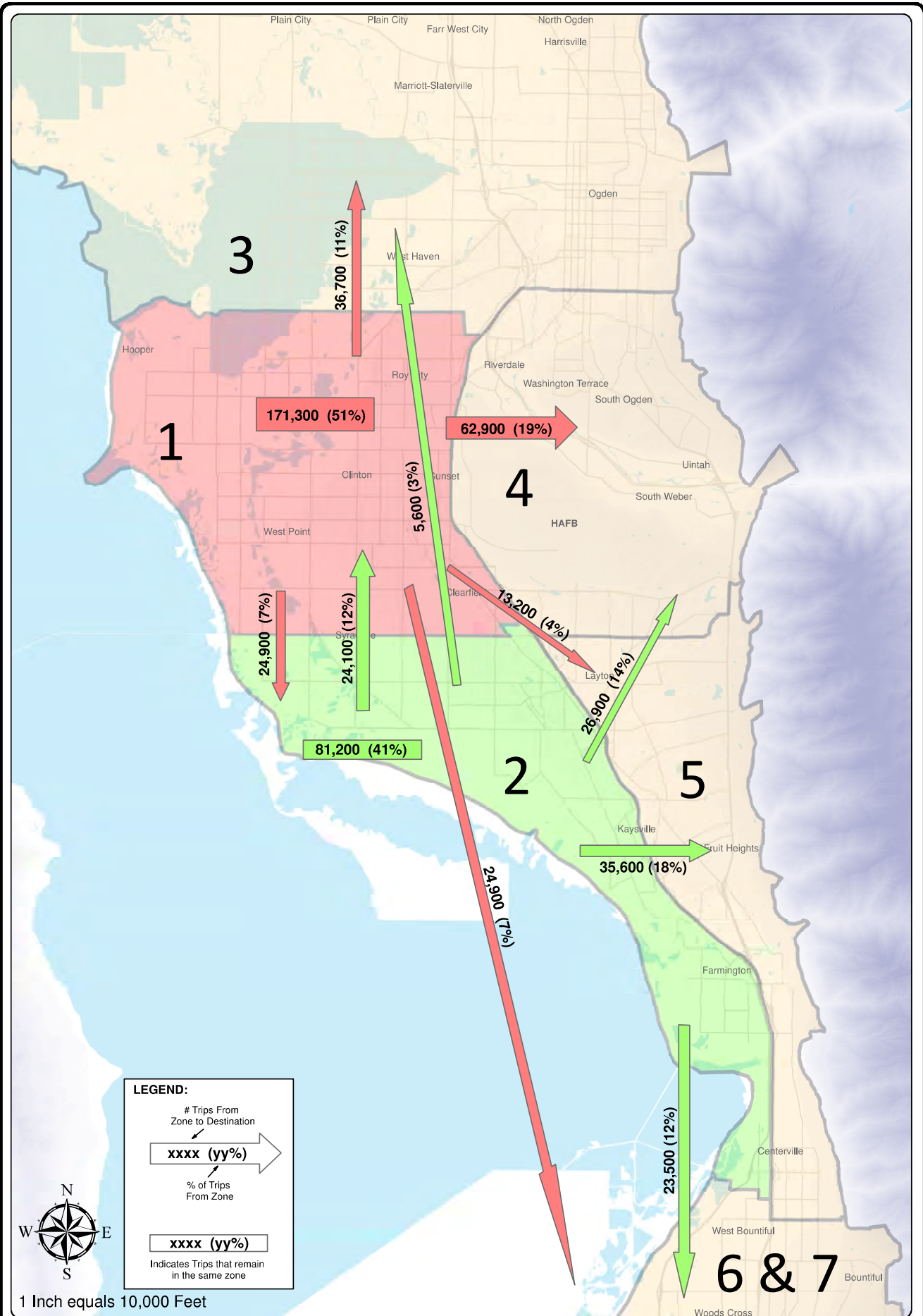


Figure 27. 2011 All Person-Trips
 Originating in the Study Area
 West Davis Corridor

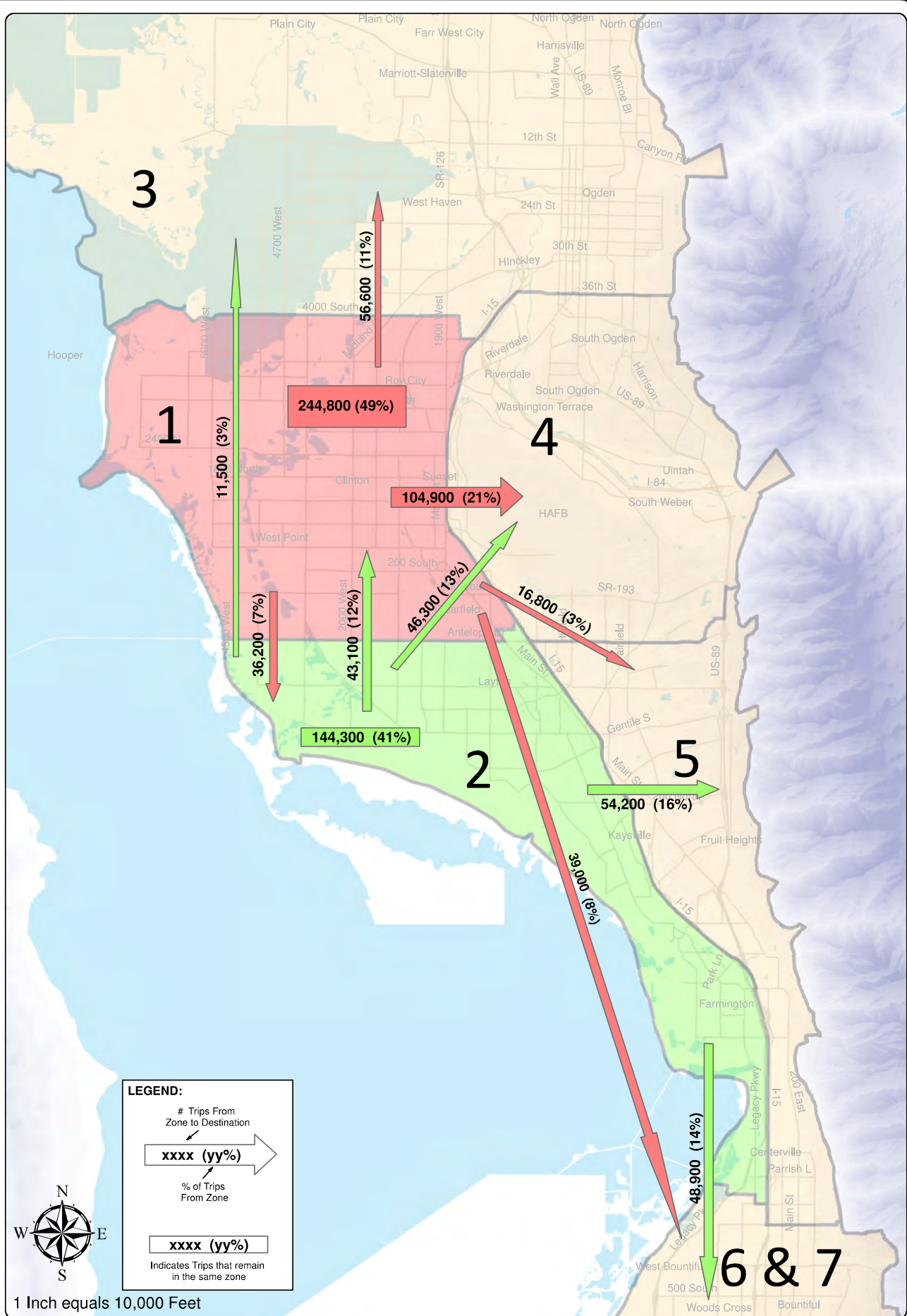


Figure 28. 2040 All Person-Trips
Originating in the Study Area
West Davis Corridor

08/08/2016

Table 24 summarizes the travel patterns for Districts 1 and 2 and the total Study Area. The figures may not exactly match these values due to rounding.

Table 24: Travel Pattern Summary

	2011		2040	
	HBW	All	HBW	All
District 1				
North-South	53%	30%	52%	30%
East-West	22%	19%	24%	21%
Intra-District	25%	51%	24%	49%
District 2				
North-South	65%	41%	70%	43%
East-West	13%	18%	10%	16%
Intra-District	21%	41%	20%	41%
Total Study Area				
North-South	38%	17%	40%	18%
East-West	29%	26%	28%	26%
Internal	33%	57%	32%	55%

The tables and figures above show the travel patterns for District 1 very similar between 2011 and 2040 with only a couple percentage points variation. District 2 also shows similar trip patterns for the All trips category but larger differences for the HBW trips. The figures show the percent of HBW East-West trips decreases from 13 percent in 2011 to 10 percent in 2040, and the percent of HBW North-South trips increases from 65 percent in 2011 to 70 percent in 2040. This appears to correspond to the small increase in employment in District 5 (see Figure 5); however, to provide an additional level of analysis, a comparison with census journey to work data was performed as detailed in the following section.

Journey to Work Census Comparison

A check was performed to compare the TDM origin and destination trip distribution with county-level historical data. Journey to work survey data for 1980, 1990, and 2000 were obtained from the U.S. Bureau of the Census, as summarized by the Bureau of Economic and Business Research (BEBR) in *Utah Economic and Business Review*, May/June 2003, Volume 63, Numbers 5 & 6. Journey to work data for 2010 were obtained from the American Community Survey (ACS) 2006-2010 5-year County-to-County Worker Flow summarized at <https://www.census.gov/population/metro/files/commuting/Table1.xlsx> titled, "Table 1. Residence County to Workplace County Flows for the United States and Puerto Rico Sorted by Residence Geography: 2006-2010." The HBW trip purpose from the TDM was used to obtain values for 2011 and 2040. The following tables and figures summarize the journey to work comparison for Weber and Davis Counties. It should be noted that the journey to work data is at the county-level and will not match the district-level data presented in the previous section. Many of the "internal to external" trips for a district would be completely internal to the county.

Table 25: Journey to Work and HBW Trips from Weber County

Year	To Weber	To Davis	To Salt Lake	To Utah	To Other
1980 ⁽¹⁾	72.3%	19.4%	4.9%	0.0%	3.3%
1990 ⁽¹⁾	72.1%	17.9%	5.6%	0.1%	4.2%
2000 ⁽¹⁾	70.8%	18.2%	7.0%	0.5%	3.4%
2010 ⁽²⁾	66.3%	20.6%	8.3%	0.5%	4.2%
2011 ⁽³⁾	66.3%	22.6%	10.8%	0.3%	0.0%
2040 ⁽³⁾	66.1%	21.9%	11.4%	0.6%	0.0%

(1) Source: U.S. Bureau of the Census, BEBR Calculations

(2) Source: American Community Survey (ACS) 2006-2010 5-year County-to-County Worker Flow Files

(3) Source: WFRC/MAG Travel Demand Model

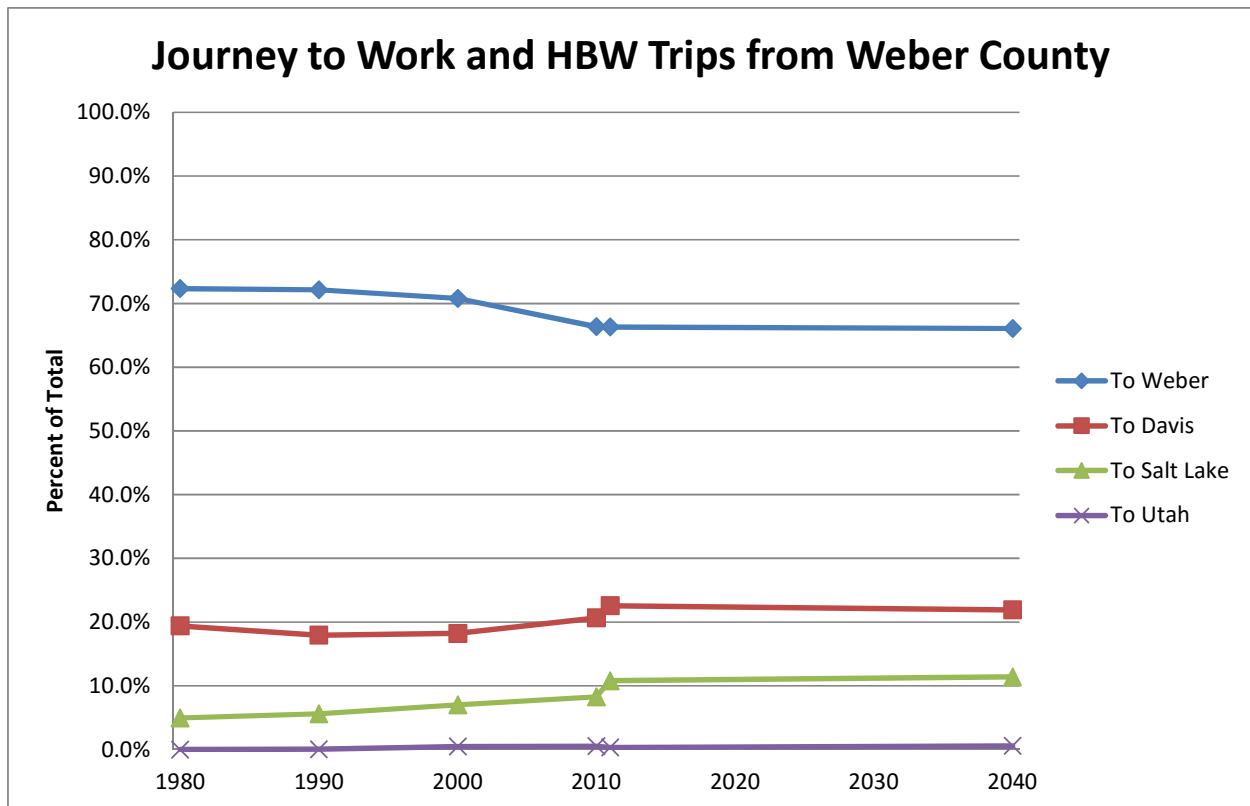


Figure 29: Journey to Work and HBW Trips from Weber County

1 Table 26: Journey to Work and HBW Trips from Davis County

Journey to Work and HBW Trips From Davis County					
Year	To Weber	To Davis	To Salt Lake	To Utah	To Other
1980 ⁽¹⁾	11.7%	56.1%	30.7%	0.2%	1.3%
1990 ⁽¹⁾	13.8%	54.6%	29.4%	0.2%	1.9%
2000 ⁽¹⁾	13.2%	54.3%	30.0%	0.7%	1.8%
2010 ⁽²⁾	12.3%	53.0%	31.8%	0.7%	2.2%
2011 ⁽³⁾	11.8%	54.0%	33.6%	0.6%	0.0%
2040 ⁽³⁾	14.3%	51.1%	33.6%	1.0%	0.0%
(1) Source: U.S. Bureau of the Census, BEBR Calculations					
(2) Source: American Community Survey (ACS) 2006-2010 5-year County-to-County Worker Flow Files					
(3) Source: WFRC/MAG Travel Demand Model					

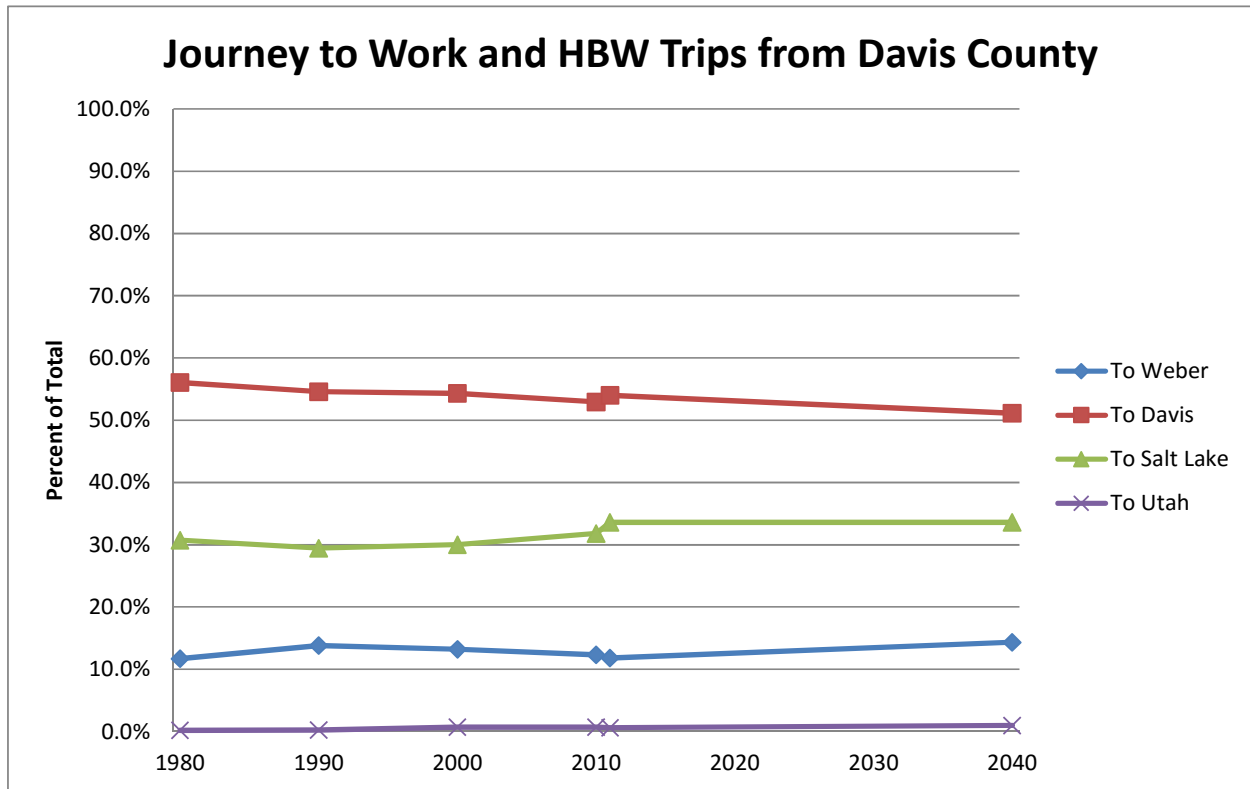


Figure 30: Journey to Work and HBW Trips from Davis County

For both Weber and Davis Counties, the 2040 home based work trip projections from the TDM are very similar to the historical journey to work survey data. Also, the 2011 TDM numbers are very close to the 2010 ACS data. The largest difference is 2.5 percent (from Weber County to Salt Lake County) and the average difference for all trips from Weber and Davis Counties is only 0.8 percent.

1 **Appendix**

Projects in the WFRC Regional Transportation Plan 2015-2040 Within the WDC Study Area

County	Facility	From	To	Project Type	Current Travel Lanes	Future Travel Lanes	Approximate Lenth (mi)	Future Functional Type	Phase
Weber	4000 South (SR-37)	West Weber Corridor	Midland Drive	Widening	2	4	2.8	Minor Arterial	1
Weber	4000 South (SR-37)	Midland Drive	1900 West (SR-126)	Operational	-	-	1.2	Minor Arterial	1
Weber	4000 South (SR-37)	@ 2500 West Railroad Crossing	-	New Construction	-	-	-	Minor Arterial	2
Weber	3500 West	1200 South	Midland Drive	Operational	-	-	4.6	Collector	2
Weber	3500 West/Midland Drive (SR-108)	4275 South	Davis County Line	Widening	2	4	2.5	Principal Arterial	1
Weber	4700 West	4600 South	4800 South	New Construction	0	2	0.3	Collector	1
Weber	4700 West	4800 South	5500 South	Operational	-	-	0.9	Collector	1
Weber	4400 South	1900 West (SR-126)	700 West	Operational	-	-	1.6	Collector	1
Weber	1900 West (SR-126)	Riverdale Road	5600 South	Widening	4	6	0.4	Principal Arterial	1
Weber	5600 South/5500 South	West Weber Corridor	3500 West	Widening	2	4	2.1	Principal Arterial	2
Weber	5600 South	3500 West	1900 West (SR-126)	Widening	2	4	2.0	Principal Arterial	2
Weber	5600 South	1900 West (SR-126)	I-15	Widening	5	6	0.2	Principal Arterial	1
Weber	I-15 Interchange	@ 5600 South	-	Upgrade	-	-	-	Freeway	2
Davis	2000 West (SR-108)	Weber County Line	300 North	Widening	2	4	2.5	Principal Arterial	1
Davis	2000 West (SR-108)	300 North	Antelope Drive (SR-108)	Widening	2	4	2.0	Principal Arterial	1
Davis	2000 West	Antelope Drive (SR-108)	West Davis Corridor	Widening	2	4	1.4	Collector	3
Davis	1800 North	West Davis Corridor	2000 West	Widening	2	4	2.0	Minor Arterial	2
Davis	1800 North	2000 West	SR-126	Widening	2	4	2.0	Minor Arterial	1
Davis	1800 North Overpass	@ 500 West Railroad Crossing	-	New Construction	-	-	-	Minor Arterial	1
Davis	I-15 Interchange	@ 1800 North	-	New Construction	-	-	-	Freeway	1
Davis	SR-193 Extension	West Davis Corridor	3000 West	New Construction	0	4	0.7	Principal Arterial	2
Davis	SR-193 Extension	3000 West	2000 West	New Construction	0	4	1.0	Principal Arterial	1
Davis	1000 West	800 North	Antelope Drive	Operational	-	-	2.5	Collector	1
Davis	1000 East	SR-193	Antelope Drive	Operational	-	-	1.0	Collector	1
Davis	Main Street/State Street (SR-126)	300 North	Layton Parkway	Operational	-	-	5.5	Principal Arterial	2
Davis	Antelope Drive (SR-127)	West Davis Corridor	2000 West	Widening	2	4	0.8	Minor Arterial	1
Davis	500 West	Antelope Drive	1980 South	New Construction	0	2	0.5	Collector	1
Davis	500 West	1980 South	Gordon Avenue	Operational	-	-	0.5	Collector	1
Davis	3650 West (Layton)	700 North	Gentile Street	New Construction	0	2	0.8	Collector	3
Davis	West Hill Field Road	3650 West (Layton)	2200 West (Layton)	Widening	2	4	1.5	Minor Arterial	3
Davis	2700 West (Layton)	650 North	Layton Parkway	New Construction	0	4	1.2	Collector	1
Davis	Layton Parkway	West Davis Corridor/2700 West	1700 West	New Construction	0	4	1.0	Minor Arterial	1
Davis	200 North (Kaysville)	West Davis Corridor	I-15	Widening	2	4	2.3	Minor Arterial	1
Davis	I-15 Interchange	@ 650 North	-	Upgrade	-	-	-	Freeway	2
Davis	I-15 Interchange	@ SR-193	-	Upgrade	-	-	-	Freeway	1
Davis	I-15 Interchange	@ Antelope Drive	-	Upgrade	-	-	-	Freeway	2
Davis	1200 North Overpass (Layton)	@ I-15	-	New Construction	-	-	-	Collector	1
Davis	Gentile Street	Main Street	Fairfield Road	Widening	2	4	1.1	Minor Arterial	2
Davis	Shepard Lane	West Davis Corridor	I-15	New Construction	0	2/4	1.2	Minor Arterial	1
Davis	I-15 Interchange	@ Shepard Lane	-	New Construction	-	-	-	Freeway	1
Davis	1250 West/650 West	1900 North	1275 North	New Construction	0	2	1.0	Collector	1

Completed Projects in the WFRC Regional Transportation Plan 2011-2040 Within the WDC Study Area

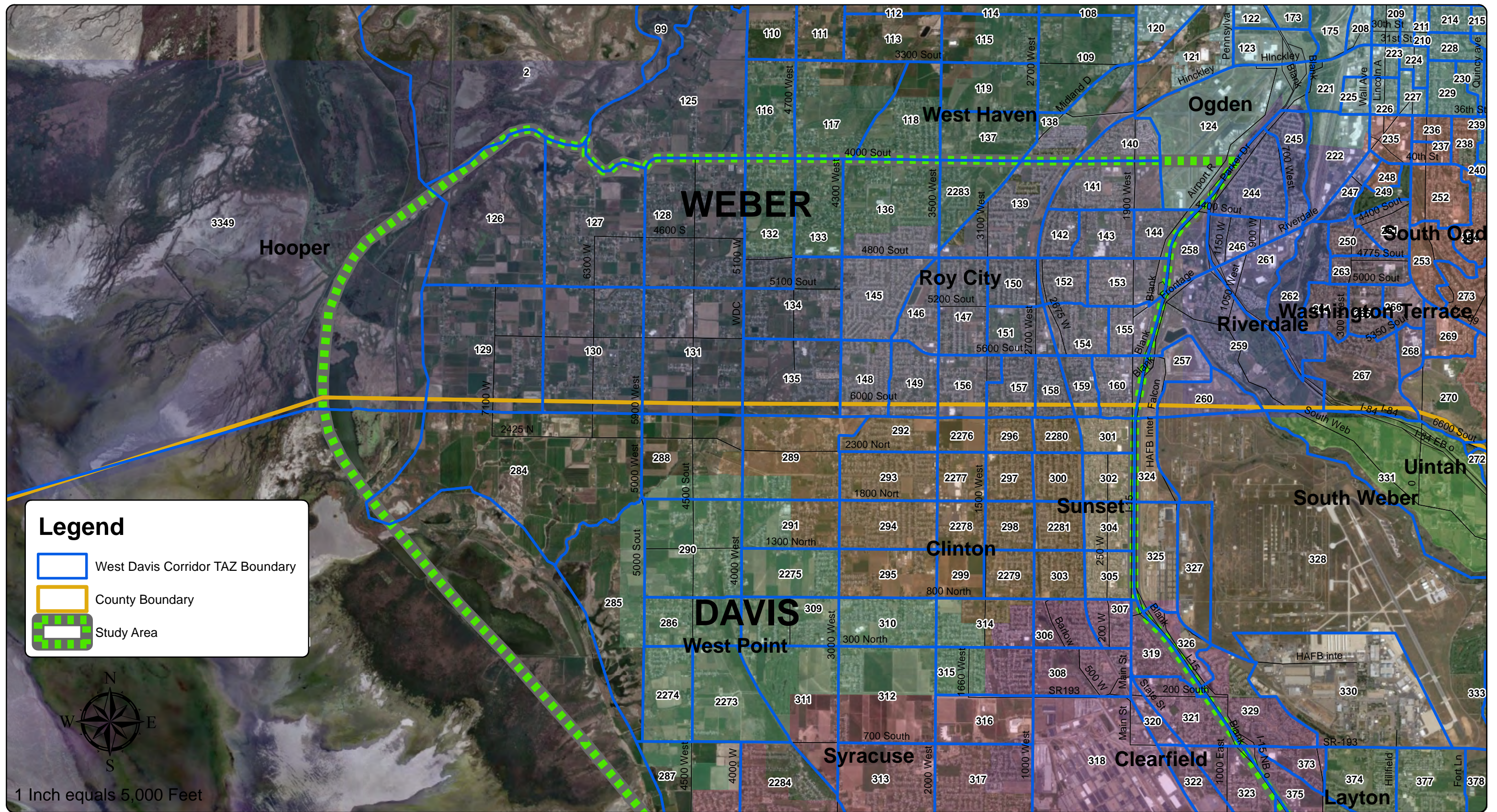
County	Facility	From	To	Project Type	Current Travel Lanes	Future Travel Lanes	Approximate Lenth (mi)	Future Functional Type	Phase
Weber	4300 West	6000 South	2415 North	New Construction	0	2	0.4	Collector	-

Changes in the WFRC Travel Demand Model Not Associated with any Project Within the Study Area

County	Facility	From	To	Project Type	Current Travel Lanes	Future Travel Lanes	Approximate Lenth (mi)	Future Functional Type	Phase
Davis	Layton Parkway	1700 West	Flint Street	Widening	2	4	1.4	Minor Arterial	-
Davis	I-15 Interchange	@ Layton Parkway	-	Upgrade	-	-	-	Freeway	-
Davis	I-15 Interchange	@ Park Lane/US-89	-	Upgrade	-	-	-	Freeway	-
Davis	Legacy Parkway Interchange	@ Parrish Lane	-	Upgrade	-	-	-	Freeway	-

Other Transportation Plan Improvements Within the Study Area

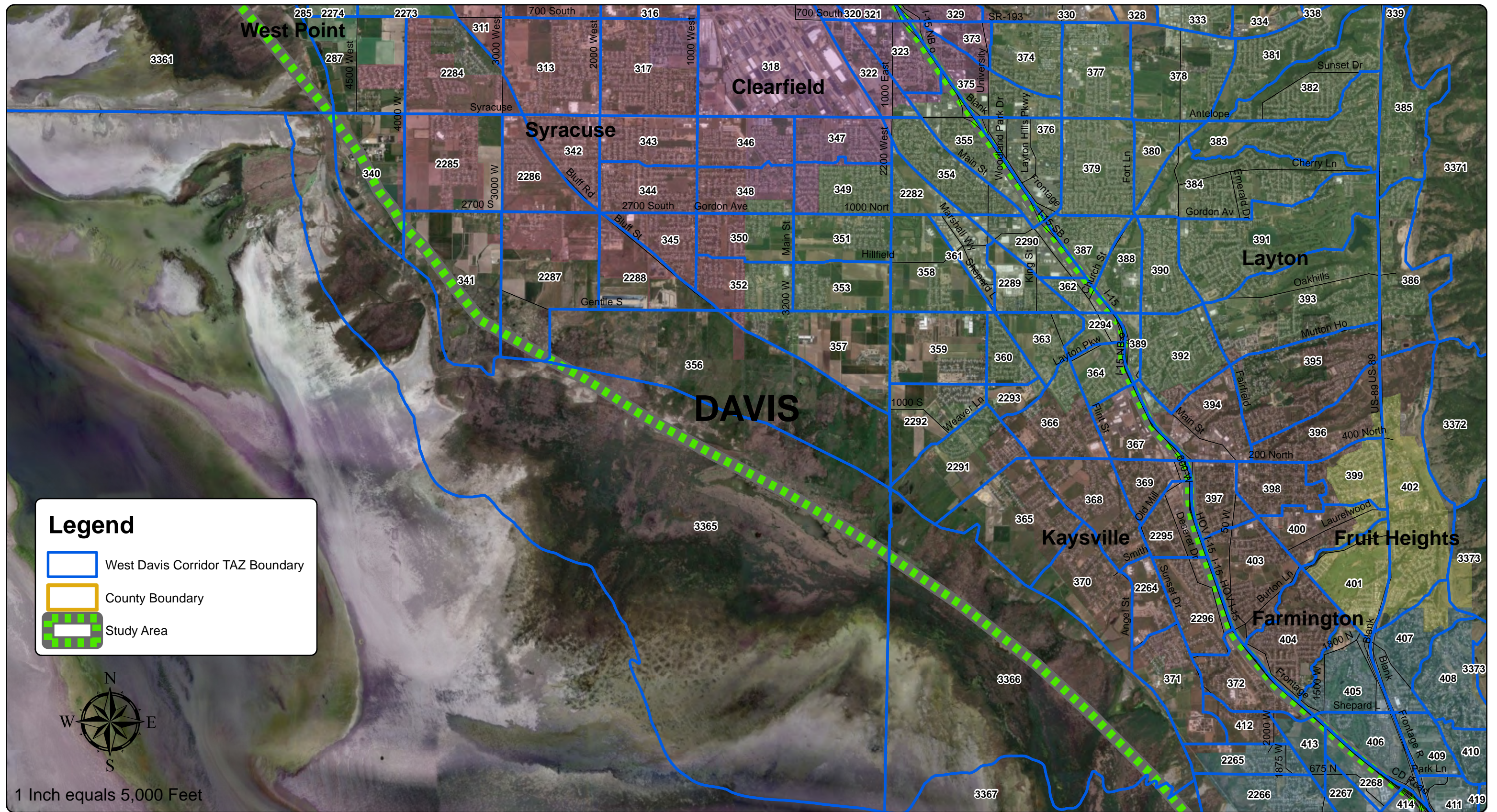
County	Facility	From	To	Project Type	Current Travel Lanes	Future Travel Lanes	Approximate Lenth (mi)	Source
Weber	2675 West (Roy)	4300 South	4200 South	New Construction	0	2	0.2	Roy MTP 2005
Weber/Davis	4700 West	5500 South	1800 North	New Construction	0	2	1.7	Clinton MTP 2006
Davis	1800 North (SR-37)	Falcon Hill Frontage Road	I-15	New Construction	0	4	0.4	Falcon Hill Plans
Weber/Davis	Falcon Hill Frontage Road	5600 South	650 North	New Construction	0	4	3.1	Falcon Hill Plans
Davis	1100 West (Approximately)	Shepard Lane	100 North	New Construction	0	4	1.7	Farmington MTP 2009
Davis	1100 West	100 North	175 South	Widening	2	4	0.3	Farmington MTP 2009
Davis	1875 West (Approximately)	1525 West	North of 675 North	New Construction	0	2	0.7	Farmington MTP 2009
Davis	Park Lane	Proposed 1100 West	Clark Lane	Completed	0	2	0.2	Farmington MTP 2009



WDC TAZ with Aerial (1 of 3)

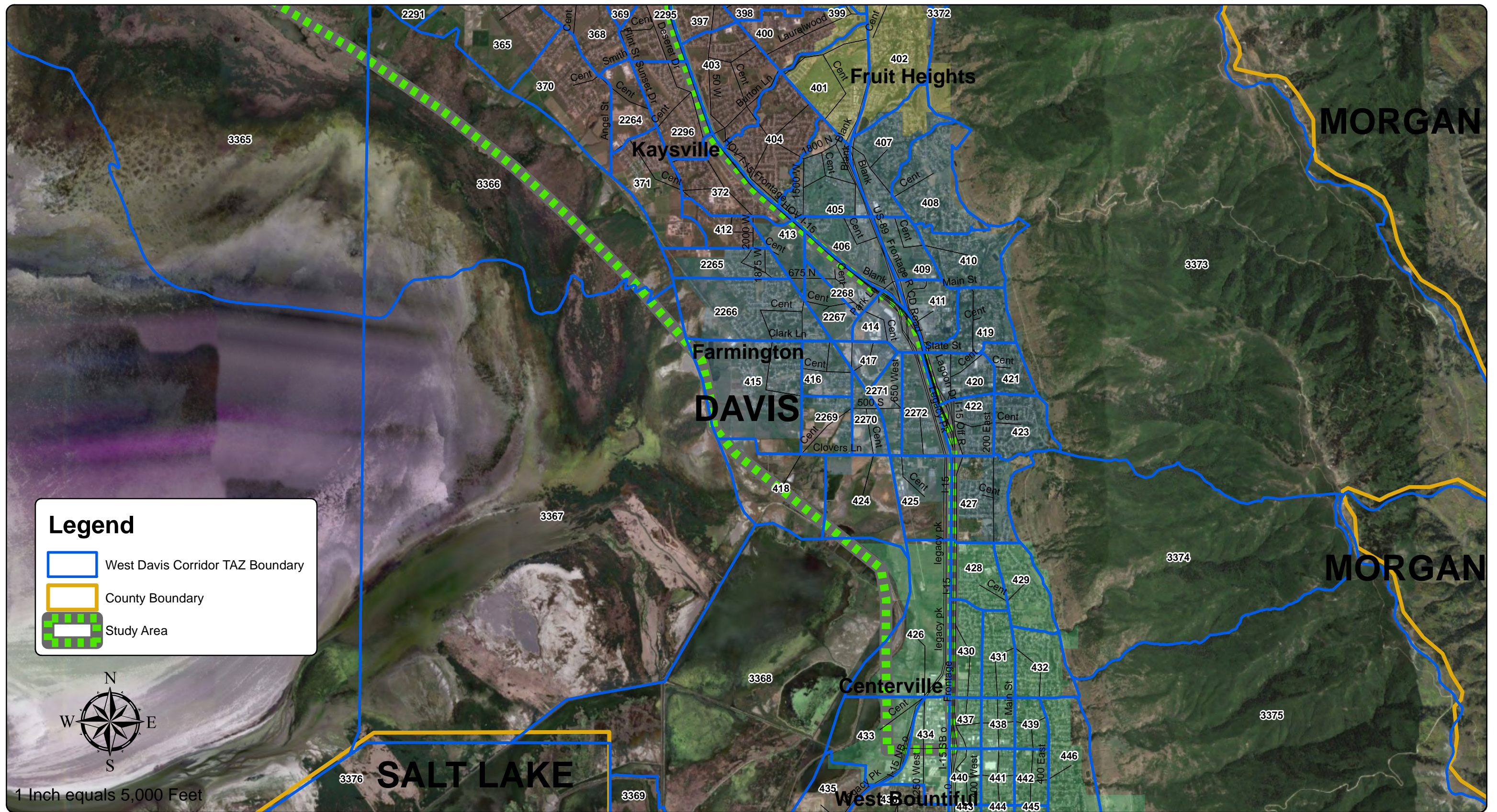
West Davis Corridor

07/05/2016



WDC TAZ with Aerial (2 of 3)
West Davis Corridor

07/05/2016



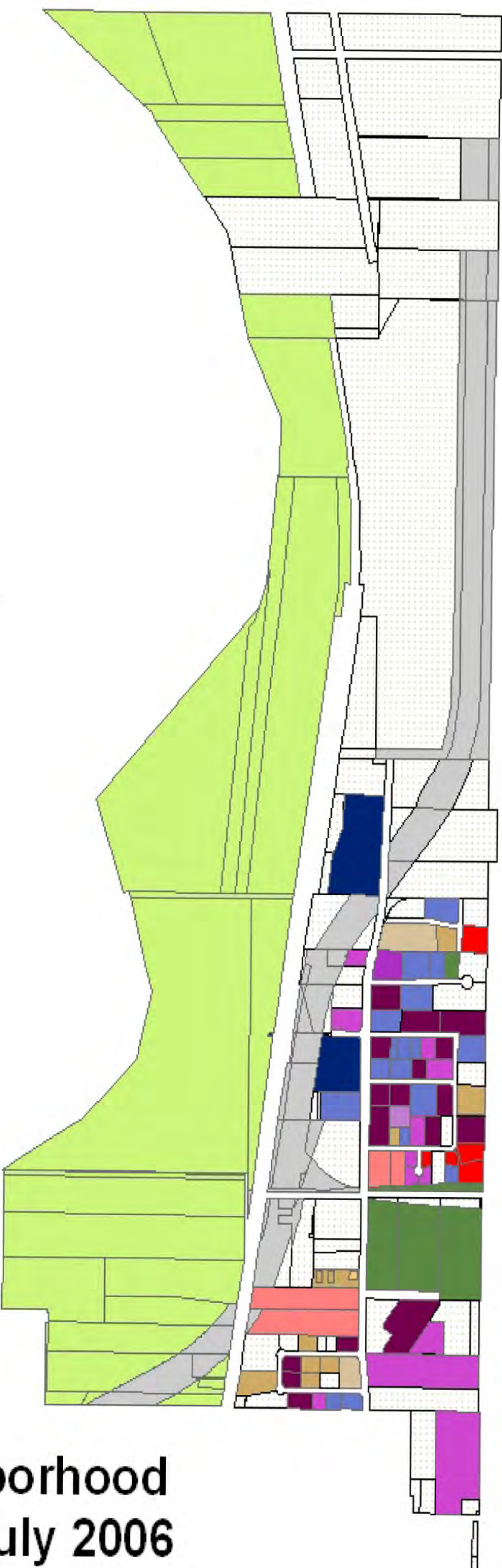
WDC TAZ with Aerial (3 of 3)

West Davis Corridor

07/05/2016

Land Use Legend

- Agriculture
- Cultural
- Industrial
- Industrial/Office
- Industrial/Warehouse
- Warehouse
- Legacy
- Office
- Office/Professional Services
- Office/Warehouse
- Professional Services
- Public/Civic
- Retail
- Retail/Warehouse
- Vacant

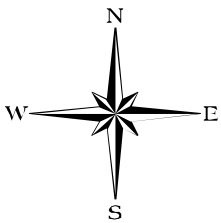


West Side Neighborhood
Land Use Map - July 2006



GENERAL LAND USE PLAN

FARMINGTON CITY



FRUIT HEIGHTS

AMMENDED 12/16/2008

Note: Accompanying text provides greater information for each area, which supercedes this map.

KAYSVILLE

CENTERVILLE

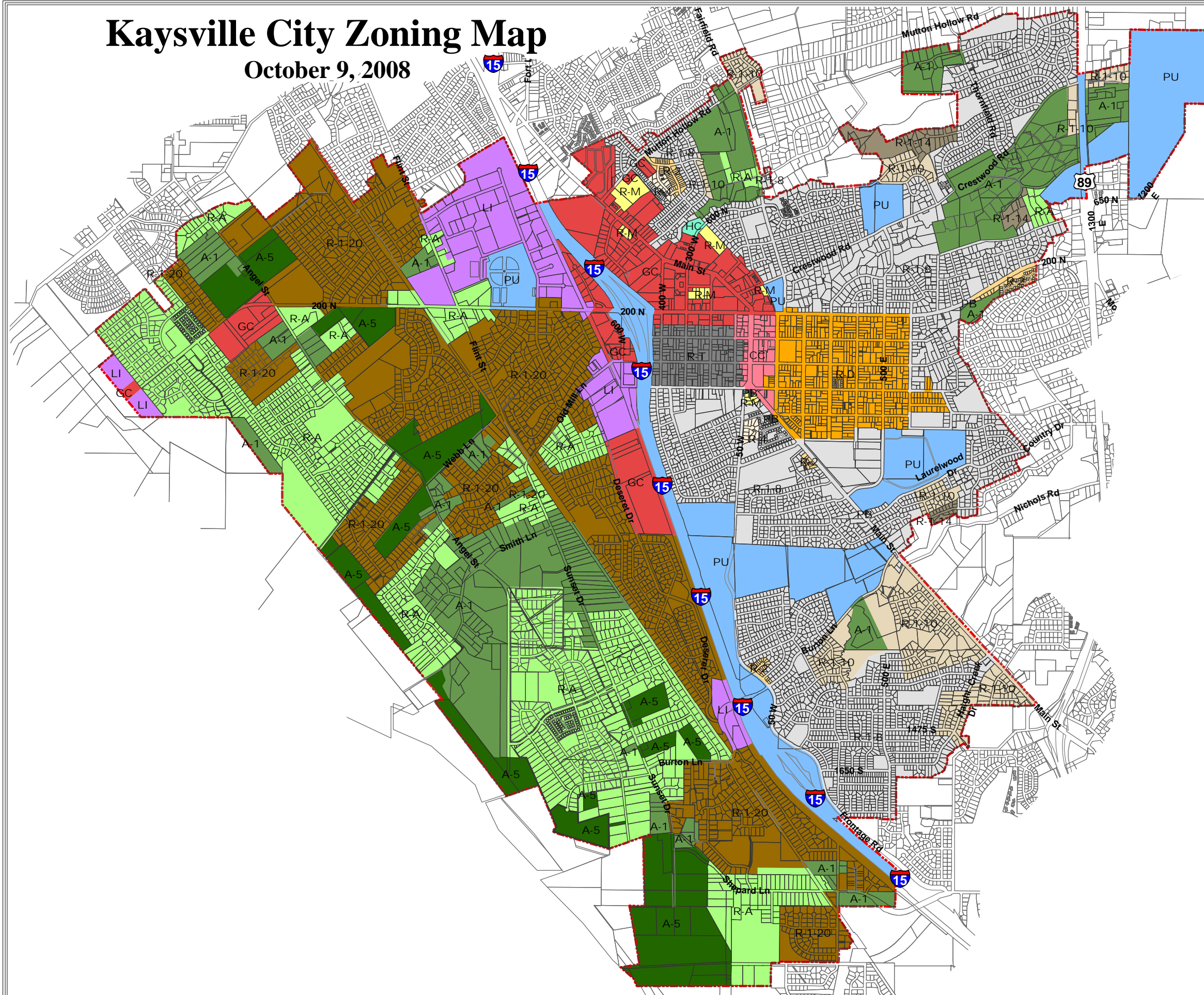
LEGEND

LAND USE

- AG - AGRICULTURE PRESERVATION VERY LOW DENSITY
- DR - DEVELOPMENT RESTRICTIONS, VERY LOW DENSITY, AND/OR AGRICULTURAL OPEN SPACE
- CR - COMMERCIAL RECREATION
- GC - GENERAL COMMERCIAL
- CMU - COMMERCIAL MIXED USE
- O/BP - OFFICE/BUSINESS PARK
- CA/BP - CLASS A BUSINESS PARK
- LM - LIGHT MANUFACTURING
- LDR - LOW DENSITY RESIDENTIAL
- MDR - MEDIUM DENSITY RESIDENTIAL
- NMU - NEIGHBORHOOD MIXED USE
- RRD - RURAL RESIDENTIAL DENSITY
- MU/B - MIXED USE - BUSINESS, MEDIUM DENSITY RESIDENTIAL, LIGHT COMMERCIAL
- TMU - TRANSPORTATION MIXED USE
- PPR - PUBLIC/PRIVATE RECREATION OPEN SPACE AND OR PARKS VERY LOW DENSITY
- I-15 CORRIDOR
- FARMINGTON CITY BOUNDARY

Kaysville City Zoning Map

October 9, 2008



Legend

- City Boundary
- Heavy Agricultural (A-5) $\geq 210,000$ SqFt
- Light Agricultural (A-1) $\geq 40,000$ SqFt
- Agricultural Residential (R-A) $\geq 21,780$ SqFt
- Old Kaysville Townsite Residential (R-T)
- Single Family (R-1-20) $\geq 20,000$ SqFt
- Single Family (R-1-14) $\geq 14,000$ SqFt
- Single Family (R-1-10) $\geq 10,000$ SqFt
- Single Family (R-1-8) $\geq 8,000$ SqFt
- Diverse Residential (R-D)
- One or Two Family Residential (R-2)
- One to Four Family Residential (R-4)
- Multiple Family Residential (R-M)
- Public Use (PU)
- Professional Business (PB)
- General Commercial (GC)
- Central Commercial (CC)
- Light Industrial (LI)
- Health Care (HC)



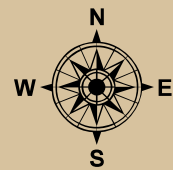
Kaysville City GIS



Layton City Land Use

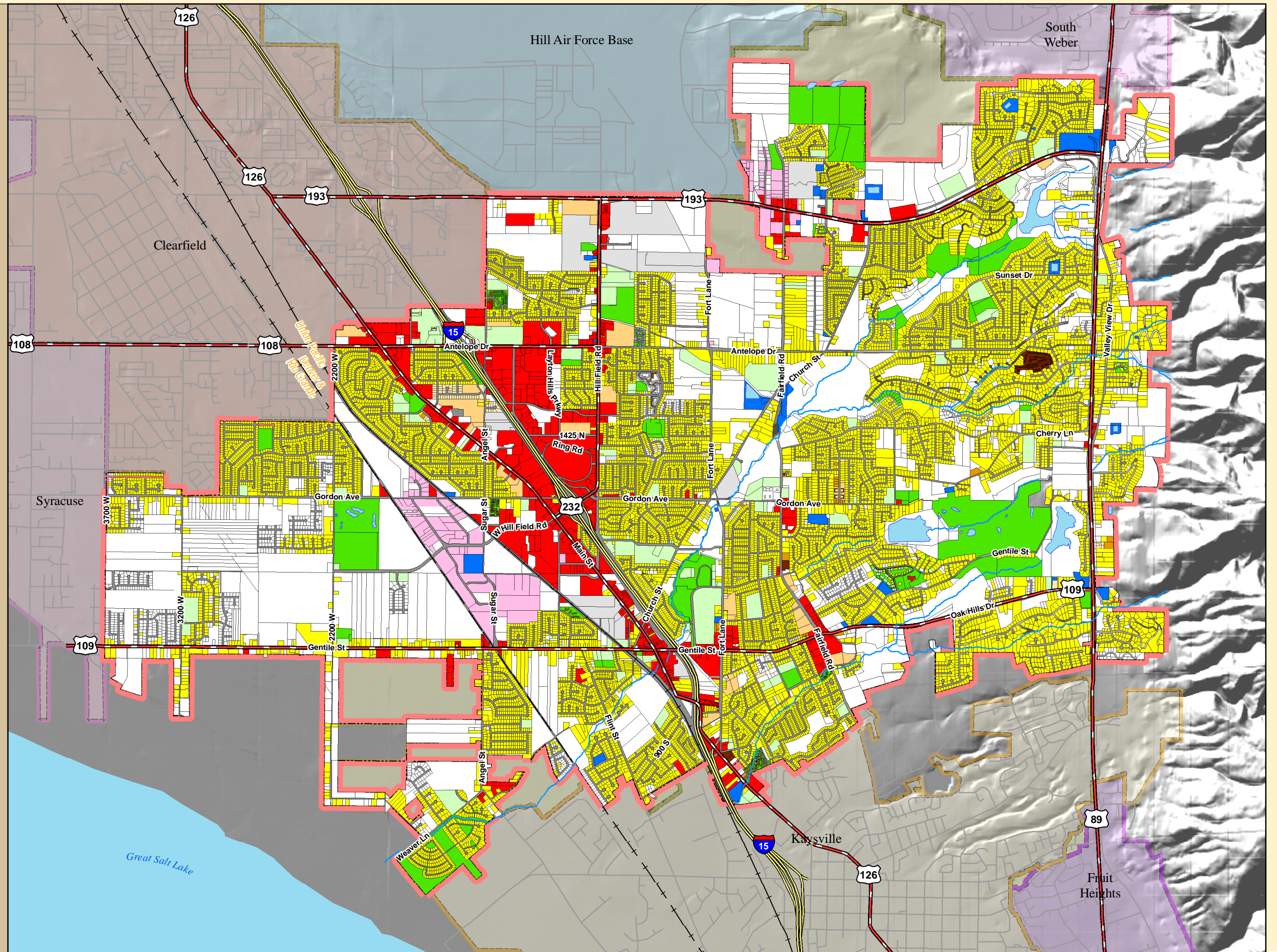
Legend

- Lakes
- Highways
- Interstate 15
- Streams
- Rail**
- STATUS**
- In Service
- Out of Service
- City Boundary
- Land Use**
- Agriculture
- Commercial
- Condominium
- Condominium 21+ Units
- Manufacturing
- Mobile Homes
- Multi-Family 21+ Units
- Multi-Family 3-4 Units
- Multi-Family 5-20 Units
- Multi-Family Duplex
- Parks/Open Space
- Public/Quasi Public
- Public/Utility
- Single Family Residential
- Vacant



1:40,000

7/26/2005



Clinton

West Point

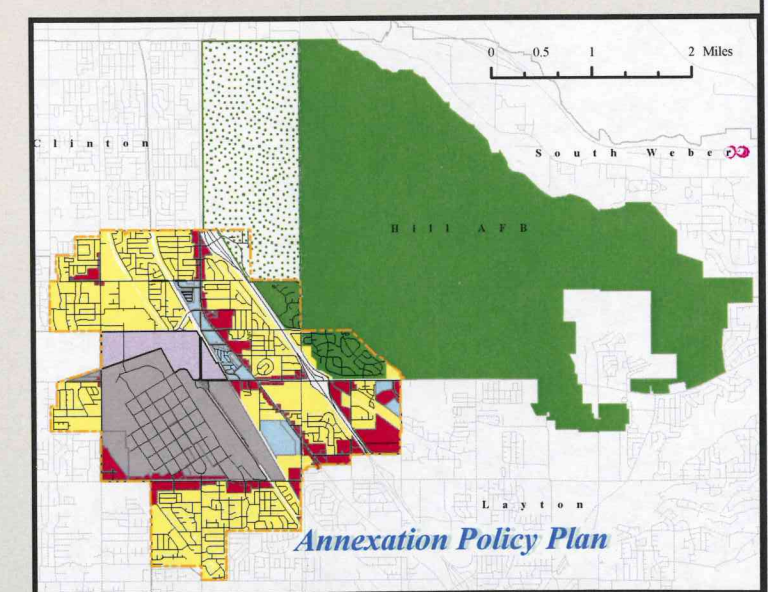
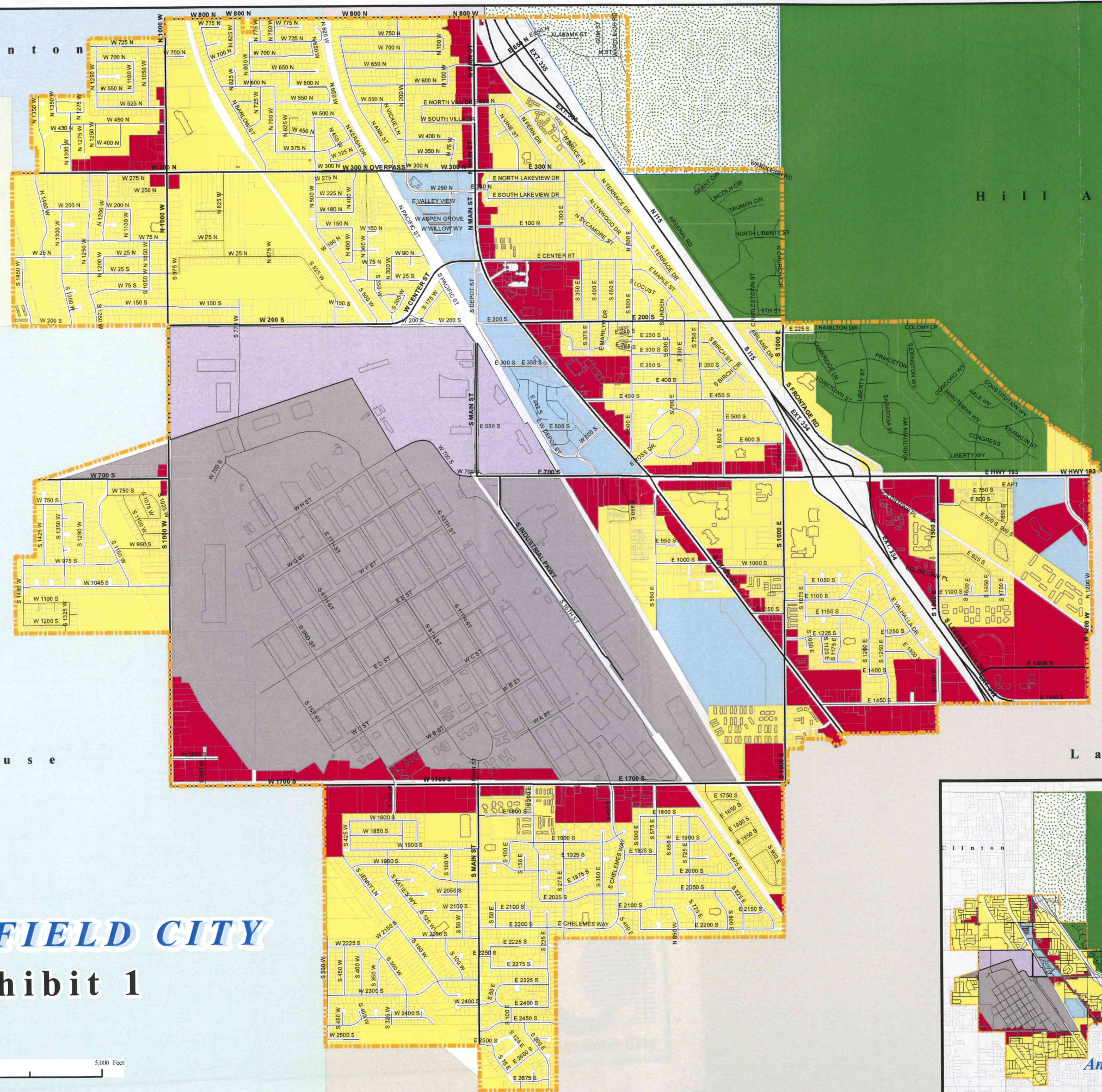
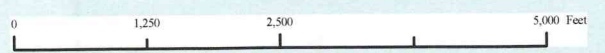
Hill AFB

Syracuse

Layton

CLEARFIELD CITY

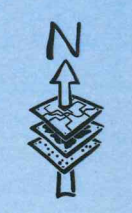
Exhibit 1



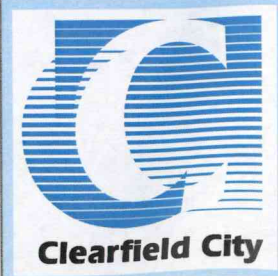
Future Land Use Map of the General Plan 2008

Legend

- Parcels
- Buildings
- City Boundary
- Streets
 - Major
 - Minor
- Proposed Land Use
 - Commercial
 - Mixed Use
 - DTEC
 - Falcon Hill
 - Hill AFB
 - Manufacturing
 - Residential



Data published 07/03/2008



Syracuse City

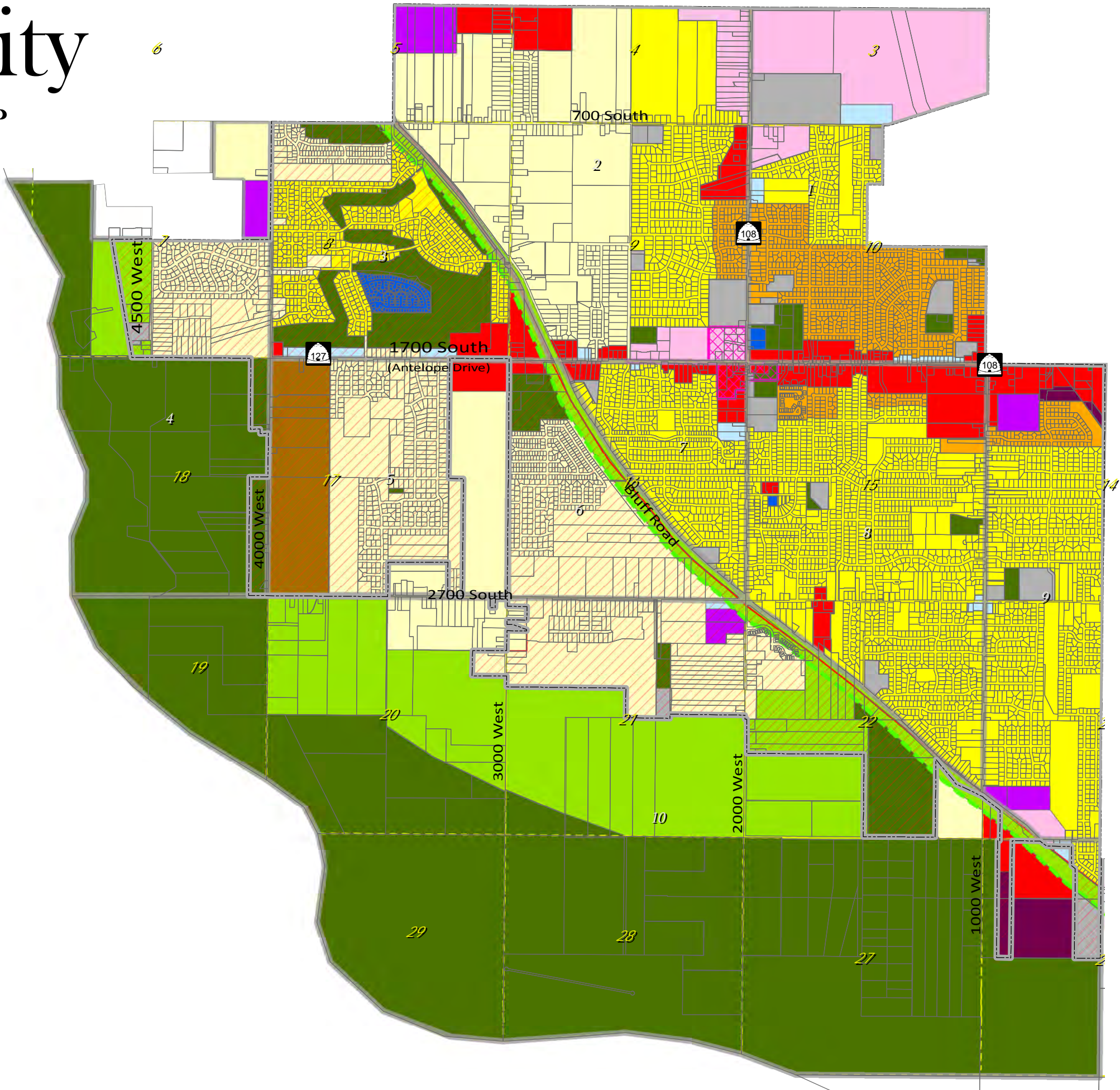
GENERAL PLAN MAP

Resolution R09-03
Adopted February 10, 2009

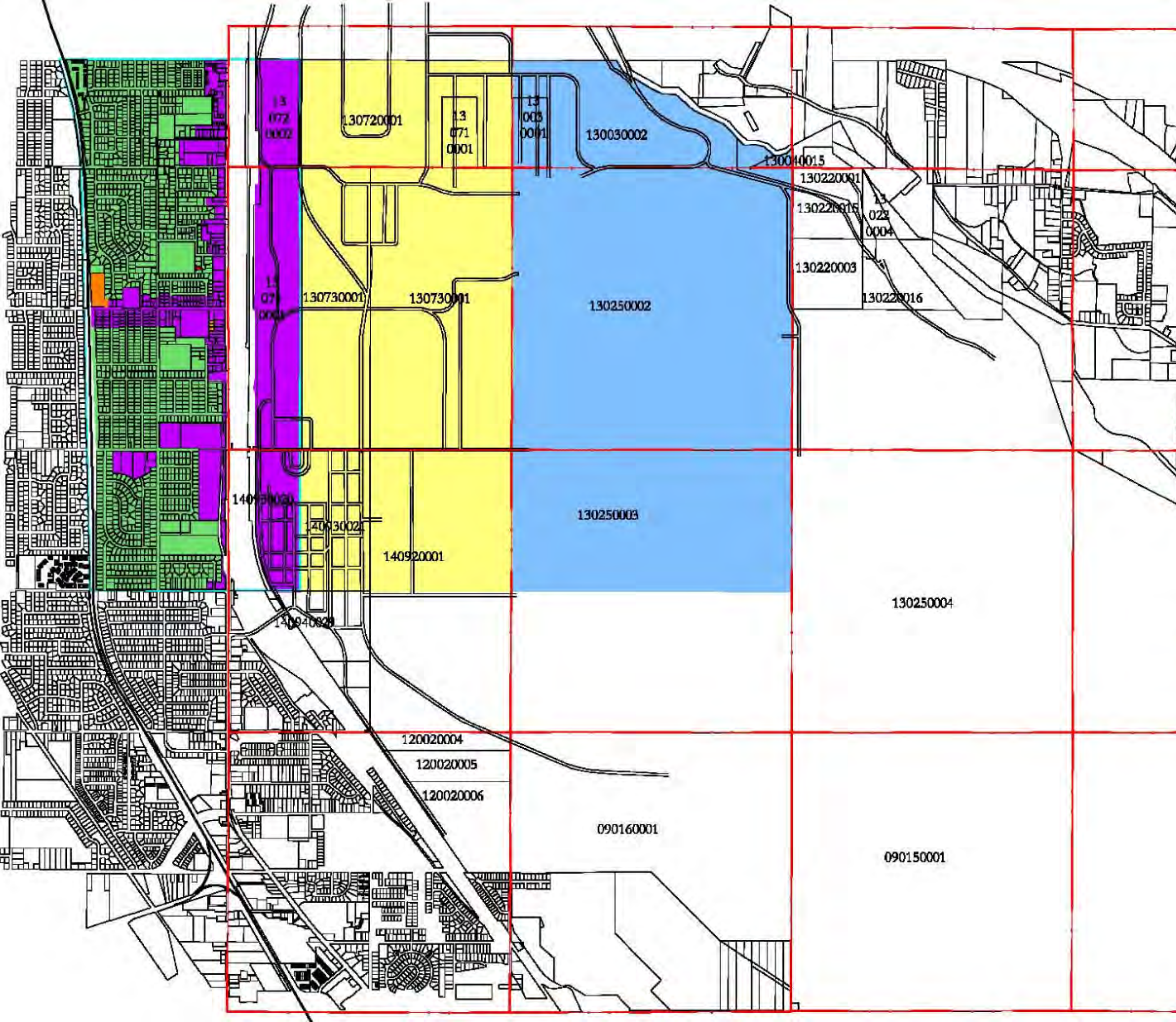


Legend

- Preservation Corridor
- Zoning Boundaries
- Survey Sections
- Sensitive Overlay Zone
- A-1 Agriculture
- General Commercial
- Commercial II
- Industrial
- Institutional
- Open Space / Recreational
- Professional Office
- R-1 (2.90 dwellings per net acre)
- R-2 (3.79 dwellings per net acre)
- R-3 (5.44 dwellings per net acre)
- PRD (8.0 dwellings per net acre)
- R-4 (14.52 dwellings per net acre)
- Redevelopment District Boundary
- Research Park



Community Development Department
Geographic Information System (GIS)
Updated: February 12, 2009



NOT TO SCALE

SUNSET CITY ZONING LEGEND

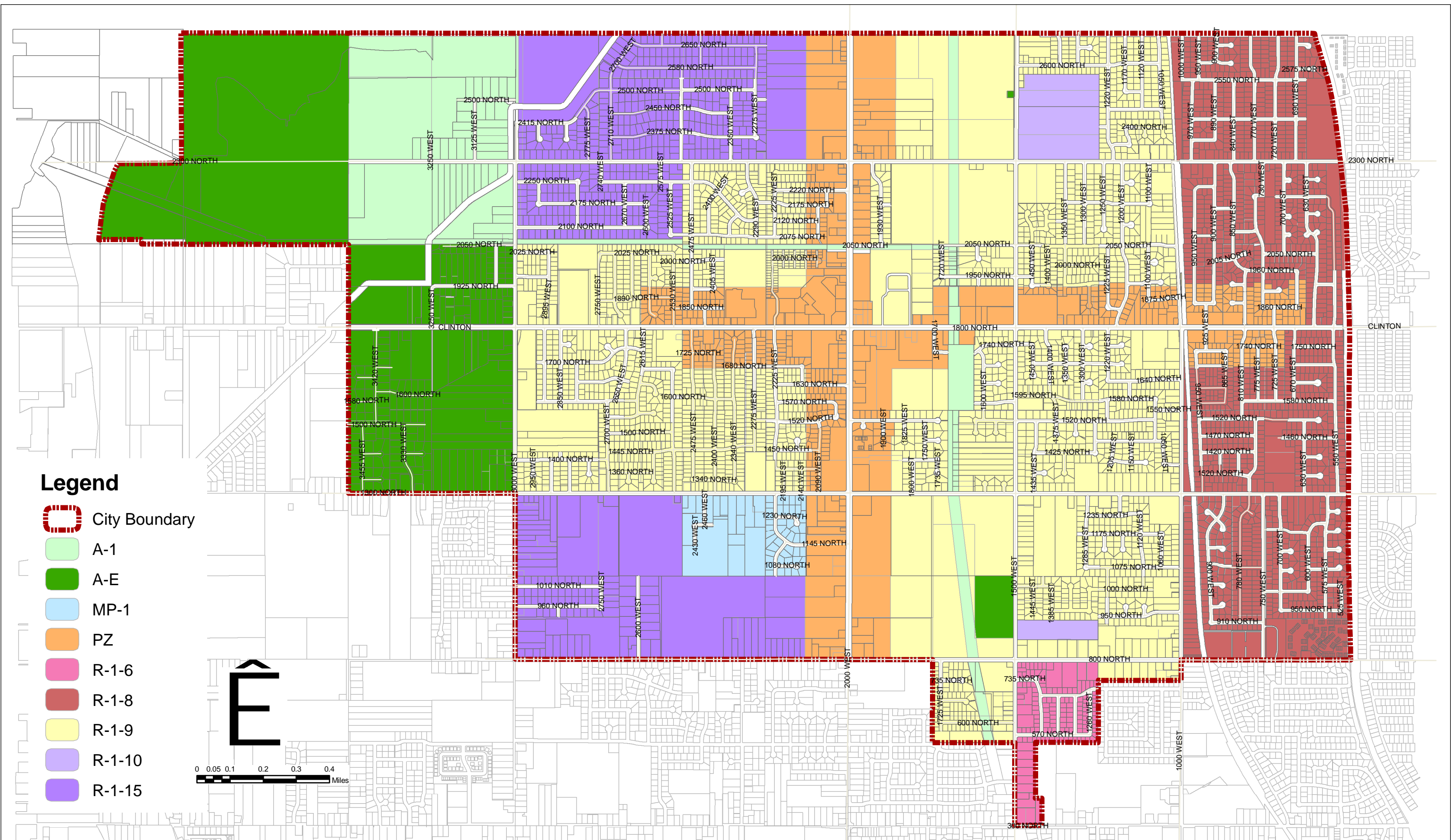
- C-2
- C-2-C
- R-1
- R-3
- Un-Zoned

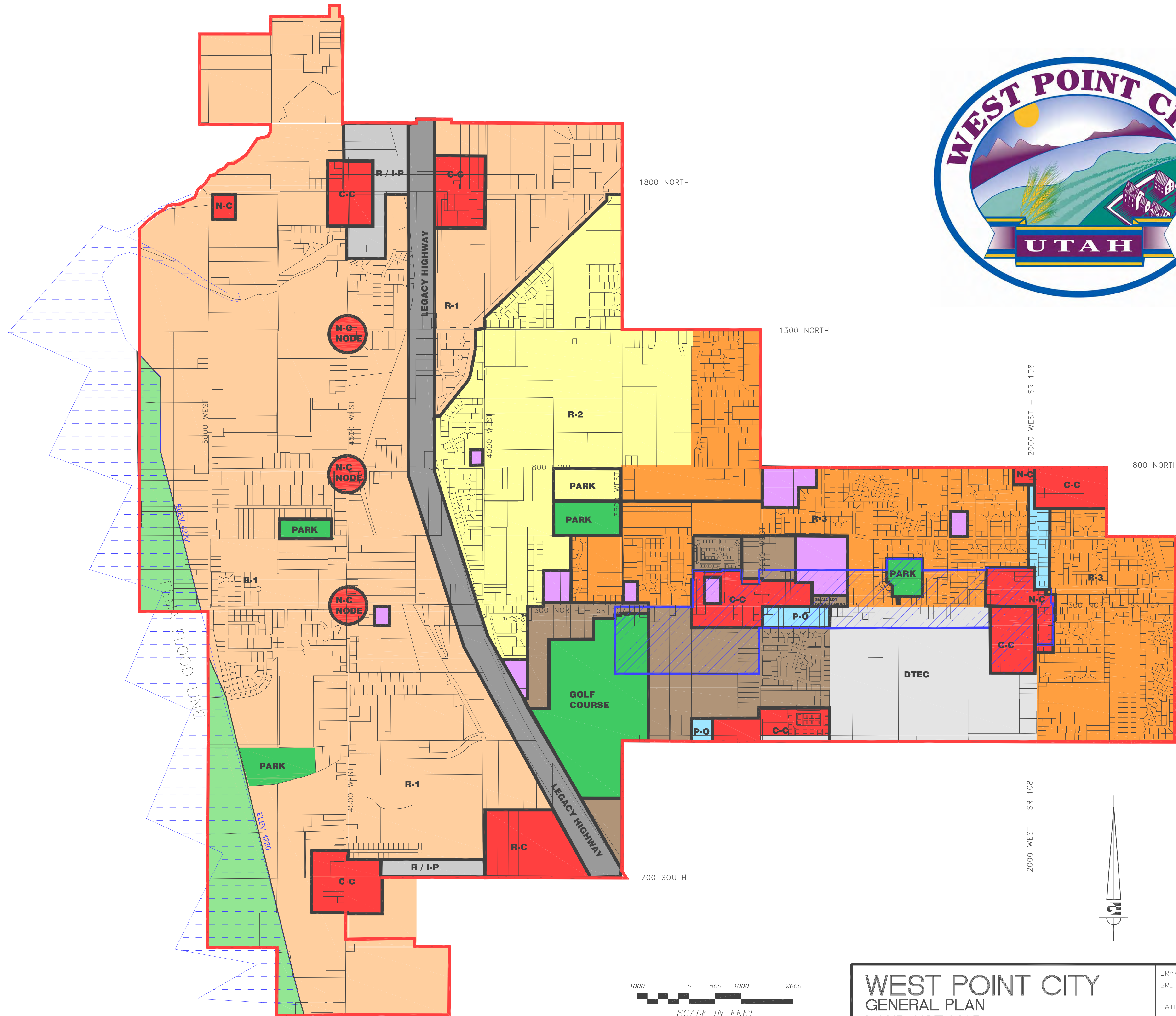
SUNSET CITY ANNEXATION

- 1-20 Year
- 20-50 Year

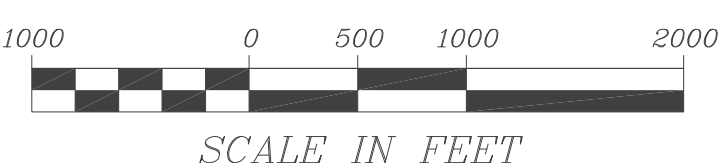
CLINTON CITY

Master Land Use Map





- R-1** (RESIDENTIAL 2.2 UNITS PER ACRE)
- R-2** (RESIDENTIAL 2.7 UNITS PER ACRE)
- R-3** (RESIDENTIAL 3.6 UNITS PER ACRE)
- R-4** (MEDIUM DENSITY 6.9 UNITS PER ACRE)
- R-5** (HIGH DENSITY 10.5 UNITS PER ACRE)
- A-5** (AGRICULTURAL AND FARM INDUSTRY. 1 UNIT PER 5 ACRE)
- A-40** (AGRICULTURAL. 1 UNIT PER ACRE)
- N-C** (NEIGHBORHOOD COMMERCIAL)
- C-C** (COMMUNITY COMMERCIAL)
- R-C** (REGIONAL COMMERCIAL)
- P-O** (PROFESSIONAL OFFICE)
- R/I-P** (RESEARCH AND INDUSTRIAL PARK)
- RECREATIONAL**
- PUBLIC / QUAZI**
- LEGACY**
- HIGHWAY**
- DTEC** (SEE DTEC MASTERPLAN)
- CENTRAL BUSINESS DISTRICT**



WEST POINT CITY
GENERAL PLAN
LAND USE MAP

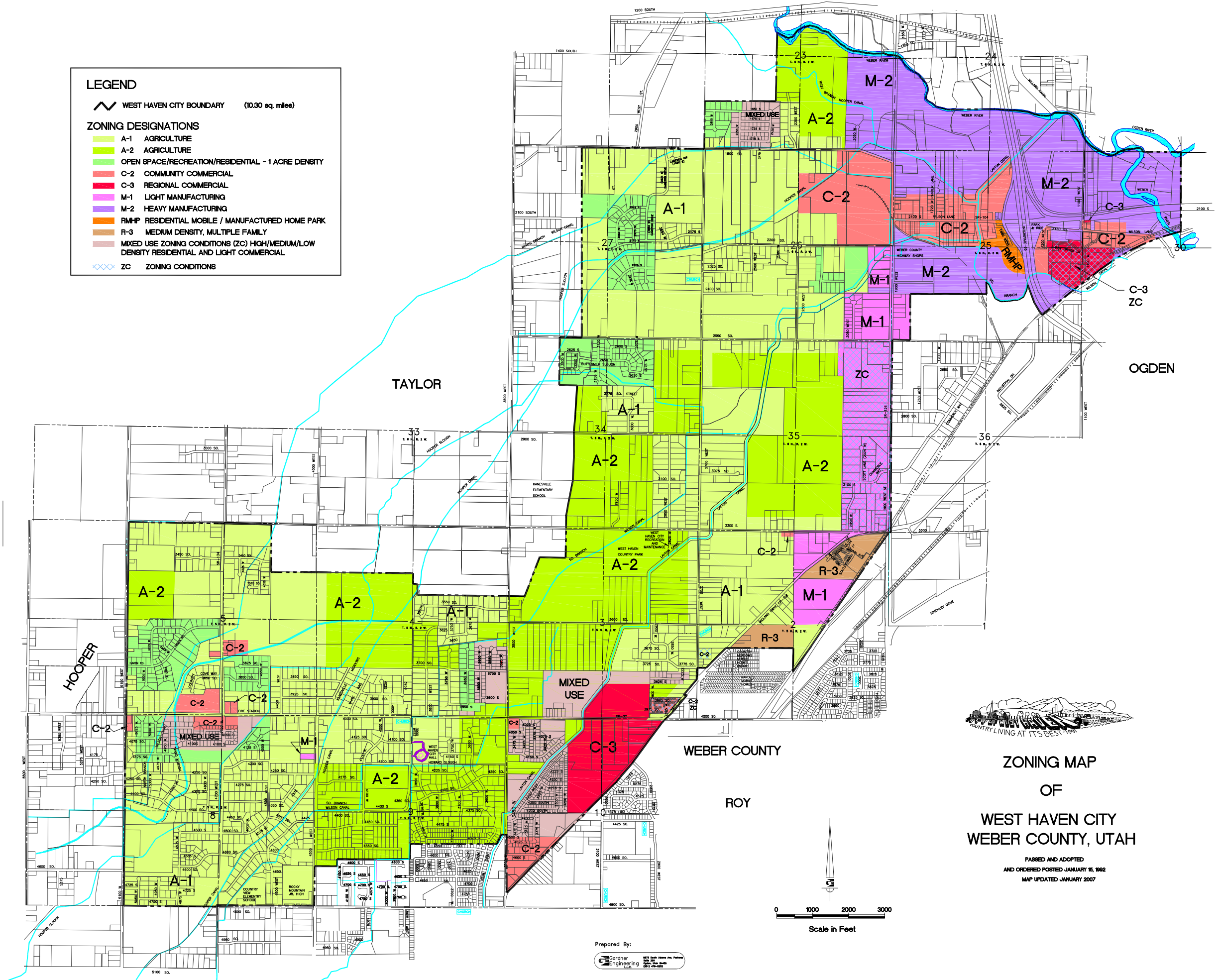
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DATE MARCH 2008	APPROVED	PRINT DATE 3-14-08

LEGEND

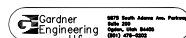
WEST HAVEN CITY BOUNDARY (10.30 sq. miles)

ZONING DESIGNATIONS

- A-1 AGRICULTURE
- A-2 AGRICULTURE
- OSR OPEN SPACE/RECREATION/RESIDENTIAL - 1 ACRE DENSITY
- C-2 COMMUNITY COMMERCIAL
- C-3 REGIONAL COMMERCIAL
- M-1 LIGHT MANUFACTURING
- M-2 HEAVY MANUFACTURING
- RMHP RESIDENTIAL MOBILE / MANUFACTURED HOME PARK
- R-3 MEDIUM DENSITY, MULTIPLE FAMILY
- MIXED USE ZONING CONDITIONS (ZC) HIGH/MEDIUM/LOW DENSITY RESIDENTIAL AND LIGHT COMMERCIAL
- ZC ZONING CONDITIONS



Prepared By:



WEST CENTRAL WEBER COUNTY GENERAL PLAN

PROPOSED LAND USE MAP 2-4

LEGEND



INDUSTRIAL PARK

- Rezone approximately 20-acre parcel to match adjacent zoning.
- Eliminate residential as a conditional use in industrial zones.



RESIDENTIAL/AGRICULTURAL

- As zoned - one-acre and five-acre lots.
- Cluster style development pattern required, minimum 30 percent open space.



EXISTING STATE / FEDERAL LAND WATERFOWL MANAGEMENT AREA



COMMUNITY VILLAGE CENTER

- Commercial node of 7 to 14 acres of supportable neighborhood services.
- First response emergency service.



EXISTING AGRICULTURE PROTECTION AREAS

- Unchanged



EXISTING SEWER



PROPOSED 100' WIDE SETBACK ALONG RIVER



SCHOOLS AND PARKS

- New High School as planned by Weber School District.
- Adjacent 20-acre park.

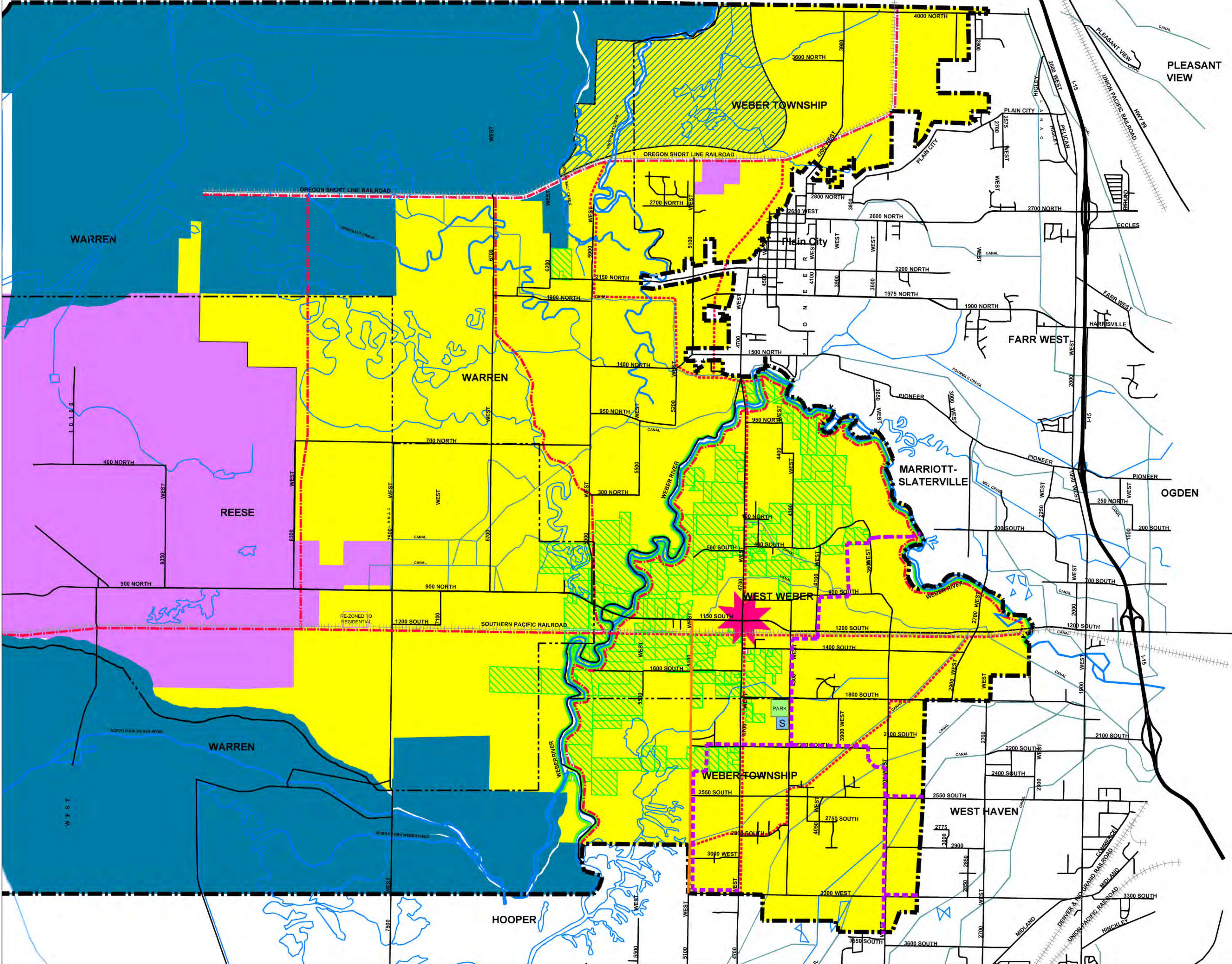


TRAILS

- Pedestrian and bicycle trails along railroad tracks, selected canals, major roadways, and Weber River.
- Equestrian trails.



TOWNSHIP BOUNDARY



LANDMARK DESIGN

2834 HIGHLAND DRIVE
SALT LAKE CITY
UTAH 84106
PHONE (801) 474-3300
FAX (801) 474-3303