



RENEWS 31 DECEMBER 2025

TRANSPORTATION IMPACT ANALYSIS

To
City of Hermiston

For
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I. EXECUTIVE SUMMARY

The following summarizes the analysis and findings contained in this Transportation Impact Analysis (TIA).

1. Proposed land use actions include 1) An annexation from Umatilla County into the city of Hermiston, and 2) A Comprehensive Plan Amendment and corresponding Zone Change from Umatilla County General Rural (F-2) to Outlying Commercial (C-2) and Multi-Family Residential (R-3).
2. Because specific development is unknown, the TIA evaluates impacts resulting from reasonable worst-case development scenarios in the proposed zone designations. The C-2 zone south of the railroad assumes a 200-space RV park that is further assumed to have trip-generating characteristics of an apartment development. The C-2 zone north of the railroad assumes 64,250 square feet of neighborhood-oriented retail space. The R-3 zone assumes 188 single-family residences and 241 apartments. The overall proposed zone designations reasonable worst-case development scenario generates 657 PM peak hour primary (net new) external trips – which is 642 PM peak hour trips more than the current zone designation.
3. All study area intersection crash rates are less than 1.0 crashes/mev and the 90th percentile crash rates of the reference intersections. As such, the intersections are considered relatively safe, and no further evaluation of safety deficiencies is necessary.
4. All study intersections are anticipated to operate within agency mobility targets in the 2034 current and proposed zone designation scenarios except the E Highland Avenue / SE 10th Street intersection. As such, future consideration will need to be given to mitigating improvements such as the installation of all-way stop-control to provide adequate operations.
5. All study intersection approach movements are anticipated to have adequate queue storage in the 2034 current and proposed zone designation scenarios to accommodate the 95th percentile vehicle queues. It is further noted that additional striped storage may need to be considered for the left-turn lanes at the US 395 / E Highland Avenue intersection.
6. The Applicant proposes a trip cap limiting trip generation to that of the assumed reasonable worst-case development scenario.
7. The existing A Line Canal overcrossing on SE 10th Street is currently one-lane wide, and SE 10th Street between the A Line Canal and E Highland Avenue is a two-lane paved roadway of minimum width and is not improved to City standards. While the timing is unknown, it is anticipated this roadway and canal overcrossing will be improved and widened in the future to facilitate unrestricted traffic flow.
8. This TIA assumes the subject development traffic uses SE 10th Avenue as a primary travel route. As such, analysis was performed to determine the need to widen the one-lane canal overcrossing with the finding that widening is not necessary to accommodate development traffic; however, it is recommended to provide unrestricted traffic flow.
9. Overall, these land use actions do not contemplate a specific development application; therefore, additional transportation analyses may be necessary to support specific development applications, consider trip cap limitations, and evaluate the design of site accesses to the public roadway system.

II. INTRODUCTION

Property Description and Proposed Land Use Actions

The subject property is located south of E Highland Drive, north of Experiment Station Road, and east of SE 10th Street in Hermiston, Oregon. The property is also bisected by a Union Pacific rail line. The property is more specifically described as tax lot 200 on Umatilla County Assessors Map 4N-28-13 and is approximately 79.41 acres in size. The property is currently used for agricultural purposes and has access to abutting roadways. The study area is illustrated in the attached Figure 1 in Appendix A.

The property is currently zoned Umatilla County General Rural (F-2) and is in the Hermiston Airport Hazard Overlay Zone. Proposed land use actions include property annexation into the city of Hermiston and a Comprehensive Plan amendment and zone change to support a mix of commercial and residential development.

The property south of the railroad (25.67 acres) is proposed to be zoned Outlying Commercial (C-2) for the express purpose of a 200-space RV Park development. For the property north of the railroad (53.97 acres), 5.9 acres are proposed to be zoned Outlying Commercial (C-2), and 47.89 acres are proposed to be zoned Multi-Family Residential (R-3).

The subject land use actions only contemplate an annexation, Comprehensive Plan amendment, and zone change. Specific development is not contemplated; however, the property south of the railroad will have limited development potential due to property configuration and access limitations. The proposed zone areas are illustrated in the attached Exhibit 2 in Appendix A.

Transportation Analysis Description

In support of these land use actions, a transportation impact analysis (TIA) is necessary to address criteria identified in the following:

- City of Hermiston Municipal Code requirements outlined in Chapter 156.09,
- Oregon Department of Transportation (ODOT) TIS requirements,
- Oregon Department of Transportation (ODOT) criteria contained in the Oregon Highway Plan, and
- Transportation Planning Rule (TPR) criteria outlined in Oregon Administrative Rule (OAR) 660-012-0060.

Study Area

Based on development trip generation and distribution described later in this analysis, the following project area intersections and development accesses are evaluated and are illustrated in the attached Figure 2 in Appendix A.

- US 395 / Port Drive
- SE Columbia Drive / SE 10th Street
- E Highland Avenue / SE 10th Street
- E Highland Avenue / S Townsend Road
- E Highland Avenue / E Loop Road
- US 395 / E Highland Avenue

Analysis Scenarios

The proposed land use actions do not contemplate specific development. Rather, they contemplate an annexation, Comprehensive Plan amendment, and zone change request addressing both TPR and City requirements. As such, weekday PM peak hour conditions are evaluated in 2023 – the existing condition, and in 2034 – the Hermiston Transportation System Plan (TSP) plan year. Analysis scenarios include:

- 2023 Existing Conditions
- 2034 Current Zone Designation
- 2034 Proposed Zone Designations

III. EXISTING CONDITIONS

Existing Site Conditions

The subject property is located south of E Highland Drive, north of Experiment Station Road, and east of SE 10th Street in Hermiston, Oregon. The property is also bisected by a Union Pacific rail line. The property is approximately 79.41 acres in size and is currently used for agricultural purposes. The property is illustrated in the attached Figure 1 in Appendix A.

The property has access to all abutting roadways.

Roadway Facilities

The following table summarizes existing roadway classifications and characteristics in the study area.

TABLE 1 – EXISTING ROADWAY CHARACTERISTICS						
Roadway	Functional Classification	Lanes	Posted Speed (MPH)	Sidewalks	Bicycle Lanes	On-Street Parking
US 395	Urban Major Arterial – Hermiston Statewide Highway - ODOT	5	30 - 45	No, at Port Yes, at Highland	>5' Shoulder	No
E Highland Avenue	Urban Major Collector	2	25	No	No	No
Port Drive	Urban Minor Collector	2	25	No	No	No
SE Columbia Drive	Urban Minor Collector	2	25	Yes	No	No
SE 10 th Street	Urban Minor Collector	2	25	No	No	Yes
S Townsend Road	Local	2	Not Posted	No	No	No
E Loop Road	Rural Collector	2	25	No	No	No
Experiment Station Road	Local	2	Not Posted	No	No	No

The existing A Line Canal overcrossing on SE 10th Street is currently one-lane wide and SE 10th Street between the A Line Canal and E Highland Avenue is a two-lane paved roadway of minimum width and is not improved to City standards. While specific project timing is unknown, it is anticipated this roadway and canal overcrossing will be improved and widened in the future to facilitate unrestricted traffic flow.

Safety Analysis

When evaluating intersection safety, consideration is given to the total number and types of crashes occurring and the number of vehicles entering the intersection. This leads to the concept known as “crash rate,” typically expressed in terms of the number of crashes occurring per one million vehicles entering the intersection (crashes/mev). A critical crash rate analysis is then performed by comparing the subject intersection to the published statewide 90th percentile intersection crash rates at comparable/reference intersections. Crash rates close to or exceeding 1.0 crashes/mev or the 90th percentile rates require further analysis.

Crash data for the study area intersections were obtained from the Oregon Department of Transportation (ODOT) for five years from January 1, 2018 through December 31, 2022. The following table presents the study intersection crash rates and critical crash analysis. All crash data and crash rate calculations are provided in Appendix B.

TABLE 2 – INTERSECTION CRASH RATES										
Intersection	2018	2019	2020	2021	2022	Total	Crash Rate (crashes/mev)	Reference Population		Over or Under Crash Rate?
								Description ¹	90 th Percentile Crash Rate	
US 395 / Port Drive	3	1	1	0	0	5	0.259	Urban 4ST	0.408	Under
SE Columbia Drive / SE 10th Street	0	0	0	0	0	0	0.000	Urban 3ST	0.408	Under
E Highland Avenue / SE 10th Street	0	0	1	1	0	2	0.358	Urban 4ST	0.408	Under
E Highland Avenue / S Townsend Road	0	0	0	0	0	0	0.000	Rural 3ST	0.475	Under
E Highland Avenue / E Loop Road	0	0	0	0	0	0	0.000	Rural 3ST	0.475	Under
US 395 / E Highland Avenue	2	4	1	2	3	12	0.320	Urban 4SG	0.860	Under

¹ 3ST is defined as a three-leg minor stop-control intersection, 4ST is a four-leg minor stop-control intersection, and 4SG is a four-leg signalized intersection.

All study area intersection crash rates are less than 1.0 crashes/mev and the 90th percentile crash rates of the reference intersections. As such, the intersections are considered relatively safe, and no further evaluation of safety deficiencies is necessary.

Existing Traffic Counts

Existing traffic counts were obtained in August 2023 and January 2024 during the PM peak period. Traffic counts are included in Appendix C.

Seasonal Adjustment and 30th Highest Hour Volumes

Seasonal adjustments account for the variation in traffic volumes during the year. As required for intersections under ODOT jurisdiction, the August 2023 and January 2024 traffic counts were adjusted to the 30th highest hour volume (30HV) consistent with procedures identified in the ODOT Analysis Procedures Manual (APM) Version 2, Chapter 5.5.1 – On-Site Automatic Traffic Recorder (ATR) Method. This method is used when an ATR is within or near the project area.

In the study area, ATR 30-019 – Stanfield is located on US395; Umatilla-Stanfield Highway NO. 54; 0.12 miles NW of Feedville Road (NW Stanfield). Using this ATR data, a seasonal adjustment of 1.00 was applied to the August 2023 Base traffic counts to obtain 2023 30HV volumes – noting that August is the peak ATR month. A seasonal adjustment of 1.15 was applied to the January 2024 Base traffic counts to obtain 2023 30HV volumes. Seasonal adjustment assumptions are included in Appendix C.

IV. REASONABLE WORST-CASE DEVELOPMENT SCENARIO

The subject property is currently undeveloped and specific development is unknown; however, the Applicant anticipates the development will include a mix of commercial and residential uses. The property south of the railroad (25.67 acres) is proposed to be zoned C-2 for the express purpose of a 200-space RV Park. For the property north of the railroad (53.97 acres), 5.9 acres are proposed to be zoned C-2, and 47.89 acres are proposed to be zoned R-3.

The following reasonable worst-case development scenarios for the proposed and current zone designations were developed based on permitted uses identified in the Umatilla County and Hermiston Development Codes and are more specifically described as follows:

Proposed Hermiston Outlying Commercial (C-2) – South of Railroad

Description

The C-2 zone allows all uses permitted in the C-1 zone (which includes a wide range of commercial uses), and a limited number of commercial uses that are generally auto-dependent.

Reasonable Worst-Case Development Assumptions

- The gross site area south of the railroad proposed to be zoned C-2 is 25.67 acres.
- The applicant anticipates developing the property as a 200-space RV park due to property configuration and limited access.
- Because RV park occupancy is unknown in terms of vehicle type or duration of stay, ITE *Trip Generation Manual*, 11th Edition data for apartments – Multifamily Housing (Low-Rise) (Land Use Code 220) is assumed to represent the highest development trip generation.

Proposed Hermiston Outlying Commercial (C-2) – North of Railroad

Description

The C-2 zone allows all uses permitted in the C-1 zone (which includes a wide range of commercial uses), and a limited number of commercial uses that are generally auto-dependent.

Reasonable Worst-Case Development Assumptions

- The gross site area north of the railroad proposed to be zoned C-2 is 5.9 acres (257,000 square feet).
- 25% building area coverage (0.25 floor area ratio (FAR)) accounting for parking, site circulation, and landscaping.
- A review of ITE *Trip Generation Manual*, 11th Edition data finds a Shopping Plaza (Land Use Code 821), which contains a large number of commercial land uses, including neighborhood centers, to have the highest trip generation.
- Development is assumed to include a collection of small neighborhood-oriented retail spaces totaling 64,250 square feet.

Proposed Hermiston Multi-Family Residential (R-3)

Description

The R-3 zone allows all uses permitted in the R-1 and R-2 zones; bed and breakfast, boarding, lodging, or rooming houses; multiple-family dwellings; and residential care facilities.

Reasonable Worst-Case Development Assumptions

- The gross site area north of the railroad proposed to be zoned R-3 is 47.89 acres.
- 20% of the site area is used for right-of-way and other infrastructure.
- The net developable area is 38.31 acres.
- Based on projected City development trends, approximately 70% of the site (26.82 acres) will develop as single-family residential at a density of 7 dwelling units per acre and 30% (11.49 acres) will develop as multi-family residential at a density of 21 dwelling units per acre.
- The resulting development includes 188 single-family residences and 241 apartments.
- A review of ITE *Trip Generation Manual*, 11th Edition data finds Multifamily Housing (Low-Rise) (Land Use Code 220) to have the highest trip generation for the apartments.

Current Umatilla County General Rural (F-2)

Description

The F-2 zone designation is intended to apply to farmlands that would not be appropriate for an F-1 Exclusive Farm Use classification. It is designed to maintain the openness and rural nature of the countryside and to provide areas that are appropriate for most kinds of typical rural development.

Allowed uses in an F-2 Zone include agricultural uses, single-family dwellings, planned unit developments, veterinary or animal hospitals, schools, churches, golf courses, and a number of other low-trip generating uses. The minimum lot area for a principal dwelling unit is 19 acres, and for all other uses it is the area determined by the Department of Environmental Quality to be necessary for the protection of public health.

Reasonable Worst-Case Development Assumptions

- Gross site area is 79.41 acres.
- Of the non-residential uses, a review of ITE *Trip Generation Manual*, 11th Edition data finds an Animal Hospital/Veterinary Clinic (Land Use Code 640) to have the highest trip generation. As such, an animal hospital with an average size of 3,000 square feet is assumed.
- Further assuming a 0.25 FAR, the animal hospital encumbers 12,000 square feet (0.28 acres).
- For residential uses, the minimum parcel size is 19 acres, resulting in four single-family residences.

Development Trip Generation

Because specific development is unknown, trip generation is based on the reasonable worst-case development scenarios described in the previous section which includes commercial and residential uses.

The intensity, proximity, and variety of proposed land uses suggest it is likely some trips will travel between proposed uses in the development. This characteristic is referred to as internal (or shared) trip capture which is the portion of trips generated by a mixed-use development having both an origin and destination in the development. The importance of identifying internal trip capture is these trips satisfy a portion of the total development trip generation without using the external roadway system. As a result, a mixed-use development with internal trip capture has less impact on the external road system than does a single-use development generating the same number of total trips.

Internal capture trips were calculated using practices from the ITE *Trip Generation Handbook*, 3rd Edition which is based on the Transportation Research Board's National Cooperative Highway Research Program (NCHRP) Report 684: *Enhancing Internal Trip Capture Estimation for Mixed-Use Developments*. Detailed internal capture calculations are attached for reference in Appendix C.

For commercial uses, a portion of the trips generated are primary (new trips on the roadway system traveling specifically to/from the proposed development), and a portion are pass-by (existing trips on the roadway system that ‘divert’ to the subject development before continuing on their original trip path to their destination.) As such, a pass-by/diverted-link trip reduction can be assumed; however, because the assumed commercial development is neighborhood-oriented retail, no pass-by reductions are assumed from the adjacent higher-order roadway system.

Trip generation was estimated using the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition, and practices from the ITE *Trip Generation Handbook*, 3rd Edition for the assumed reasonable worst-case development scenarios. The following table presents development trip generation estimates.

TABLE 3 – REASONABLE WORST-CASE DEVELOPMENT TRIP GENERATION					
Land Use	ITE Code	Size	PM Peak Hour		
			Enter	Exit	Total
Proposed C-2 Zone Designation – South of Railroad					
Total Trips					
Multifamily Housing (Low-Rise) ¹	220	200 DUs	67	40	107
Proposed C-2 Zone Designation – North of Railroad					
Total Trips					
Shopping Plaza (No Supermarket) ²	821	64,250 SF	163	170	333
Internal Capture Trips					
Shopping Center (8% Enter / 24% Exit)			(13)	(41)	(54)
Proposed R-3 Zone Designation – North of Railroad					
Total Trips					
Single-Family Detached Housing ¹	210	188 DUs	126	74	200
Multifamily Housing (Low-Rise) ¹	220	241 DUs	78	46	124
Sub-Total			204	120	324
Internal Capture Trips					
Single-Family Detached Housing (20% Enter / 10% Exit)			(25)	(7)	(32)
Multifamily Housing (20% Enter / 10% Exit)			(16)	(5)	(21)
Sub-Total			(41)	(12)	(53)
Total Primary (Net New) Trips - Proposed Zone Designations			380	277	657
Current F-2 Zone Designation					
Total Trips					
Animal Hospital/Veterinary Clinic ²	640	3,000 SF	4	7	11
Single-Family Detached Housing ²	210	4 DU	2	2	4
Total Primary (Net New) Trips – Current Zone Designation			6	9	15
Change in Primary (Net New) Trip Generation (Proposed – Existing)			374	268	642

¹ Trip generation estimated using the *Fitted Curve* per recommended practice in the ITE *Trip Generation Handbook*, 3rd Edition.

² Trip generation estimated using the *Average Rate* per recommended practice in the ITE *Trip Generation Handbook*, 3rd Edition.

³ Internal Capture trip percentages are based on NCHRP 684 methodologies contained in the attached worksheet in Appendix C.

As identified in the table above, the proposed zone designations reasonable worst-case development scenario generates 657 PM peak hour primary (net new) external trips which is 642 PM peak hour trips more than the current zone designation.

V. PLAN YEAR CONDITIONS

Background Growth

Based on a review of the Hermiston TSP and discussions with City staff, background traffic growth for the planning period duration is assumed to be 1.5% per year on the local and regional roadways.

As a result, the 2023 30HV volumes were adjusted to the 2034 TSP plan year using a 1.5% annual compounded growth rate.

Plan Year Traffic Volumes – Current Zone Designation

2034 30HV current zone designation traffic volumes are the sum of the 2023 30HV traffic volumes and background traffic growth over the planning period and are illustrated in the attached Figure 6 in Appendix A. Detailed background growth rate calculations are included in Appendix C.

Trip Distribution and Traffic Assignment

Based on anticipated property development patterns, the future internal roadway system on the subject property will access the external public roadway in three locations as illustrated in the attached Figures 3, 4, and 5 in Appendix A, including:

- West to SE 10th Street at SE Columbia Drive
- North to E Highland Avenue at S Townsend Road (West of the railroad)
- North to E Highland Avenue at E Loop Road (East of the railroad)

The resulting reasonable worst-case development trip generation identified in the previous section of this TIA was distributed onto the roadway system based on existing intersection volumes, surrounding land uses, discussions with Agency staff, and engineering judgment. The resulting trip distribution and development traffic assignment for the Proposed Zone Designations are illustrated in the attached Figures 3, 4, and 5.

Plan Year Traffic Volumes – Proposed Zone Designations

2034 30HV proposed zone designations traffic volumes are the sum of the 2034 30HV current zone designation traffic volumes and the additional traffic from the reasonable worst-case development scenario in the proposed zone designations (illustrated in Figures 3, 4, and 5) and are illustrated in the attached Figure 6 in Appendix A.

Conservatively, no trip generation reductions are assumed for development in the current zone designation, and all primary (net new) trips from the proposed zone designations are added to the transportation system.

VI. INTERSECTION ANALYSIS

Analysis Scope

The following project area intersections and development accesses are evaluated:

- US 395 / Port Drive
- SE Columbia Drive / SE 10th Street / West Site Access
- E Highland Avenue / SE 10th Street
- E Highland Avenue / S Townsend Road / North Site Access
- E Highland Avenue / E Loop Road / North Site Access
- US 395 / E Highland Avenue

Analysis Description

Plan year intersection peak hour factors (PHFs) are based on the ODOT *Analysis Procedures Manual* Version 2, Section 5.8.3. Specifically, the following plan year intersection PHFs are assumed:

- 0.95 for major arterial-major arterial
- 0.90 for minor arterial-minor arterial
- 0.85 for collector-collector or lower classification

Further, if the existing intersection PHF is higher than the assumed PHFs described above, the existing intersection PHF is used.

Intersection operation characteristics are generally defined by two mobility standards: volume-to-capacity (v/c) ratio and level-of-service (LOS). At signalized intersections, the v/c ratio is a measurement of an intersection's ability to accommodate critical movements, while LOS is based on the average control delay per vehicle for the entire intersection. At unsignalized intersections, the v/c ratio and LOS are calculated for intersection approach movements yielding right-of-way.

The City of Hermiston mobility standard for signalized and unsignalized intersections is LOS D or better.

Table 6 of Policy 1F in the *Oregon Highway Plan* (OHP), as updated through January 2023, provides ODOT mobility targets for state roadways. In the study area, US 395 is classified as a *Freight Route on a Statewide Highway*, inside the urban growth boundary of a non-metropolitan planning organization (MPO).

At the Port Drive intersection, US 395 has a posted speed of 45 MPH, and the intersection mobility target is a v/c ratio ≤ 0.80 . Further, two-way stop-controlled (TWSC) intersections under ODOT jurisdiction are evaluated using two mobility targets; one for the major roadway (State Highway) approaches and one for the minor roadway approaches. The ODOT mobility target v/c ratio ≤ 0.80 is applied to the major roadway approaches and the target v/c ratio ≤ 0.90 is applied to the minor roadway approaches.

At the E Highland Drive intersection, US 395 has a posted speed of 30 MPH, and the intersection mobility target is a v/c ratio ≤ 0.85 .

Intersection Operations Analysis

Unsignalized intersection operations analyses were performed using the Transportation Research Board’s *Highway Capacity Manual* 6th Edition methodologies using Trafficware’s *Synchro* software (Version 11). Signalized intersection operations analyses were performed per the Transportation Research Board’s *Highway Capacity Manual* 6th Edition, 2000, and 2010 methodologies using Trafficware’s *Synchro* software (Version 11) and practices outlined in the ODOT Analysis Procedures Manual V2 necessary to calculate the intersection v/c ratio.

The proposed land use actions do not contemplate specific development. Rather, they contemplate an annexation, Comprehensive Plan amendment, and zone change request addressing both TPR and City requirements. As such, weekday PM peak hour conditions are evaluated in 2023 – the existing condition, and in 2034 – the TSP plan year. Analysis scenarios include:

- 2023 Existing Conditions
- 2034 Current Zone Designation
- 2034 Proposed Zone Designations

The following table summarizes weekday PM peak hour operations analysis results. Data output sheets from all operations calculations are attached in Appendix D.

TABLE 4 – INTERSECTION OPERATIONS ANALYSIS					
Intersection	Critical Movement Lane Group	Mobility Target	v/c Ratio or LOS		
			2023 Existing	2034 Current Zone Designation	2034 Proposed Zone Designations
US 395 / Port Drive	NB L	$v/c \leq 0.80$	—	—	—
	SB L	$v/c \leq 0.80$	0.03	0.04	0.11
	EB L/T/R	$v/c \leq 0.90$	0.01	0.02	0.02
	WB L/T/R	$v/c \leq 0.90$	0.17	0.24	0.59
SE Columbia Drive / SE 10 th Street / West Site Access	SB L/R	LOS D	—	—	B
	EB L/T		—	—	A
	WB T/R		—	—	A
E Highland Avenue / SE 10 th Street	NB L/T/R	LOS D	B	B	F
	SB L/T/R		B	B	D
E Highland Avenue / S Townsend Road / North Site Access	NB L/T/R	LOS D	—	—	B
	SB L/T/R		A	A	B
E Highland Avenue / E Loop Road / North Site Access	NB L/T/R	LOS D	—	—	B
	SB L/T/R		A	A	A
US 395 / E Highland Avenue	Intersection	$v/c \leq 0.85$	0.56	0.65	0.78

Operations Analysis Discussion

As identified in the table above, all study intersections are anticipated to operate within agency mobility targets in the 2034 current and proposed zone designations scenarios except the E Highland Avenue / SE 10th Street intersection with the following discussion.

E Highland Avenue/SE 10th Street intersection operations for the north and southbound approaches are anticipated to approach and/or exceed the agency mobility target in the 2034 proposed zone designations scenario. As such, future consideration will need to be given to mitigating improvements such as the installation of all-way stop-control to provide adequate operations.

The following table summarizes operations analysis results for the Highland Avenue/SE 10th Street intersection with all-way stop-control. Data output sheets from all operations calculations are attached in Appendix D.

TABLE 5 – INTERSECTION OPERATIONS ANALYSIS WITH MITIGATION CONSIDERATION				
Intersection	Critical Movement Lane Group	Mobility Target	2034 Proposed Zone Designations	
			Current Two-Way Stop-Control	Mitigated All-Way Stop-Control
E Highland Avenue / SE 10 th Street	NB L/T/R	LOS D	F	B
	SB L/T/R		D	B
	EB L/T/R		—	D
	WB L/T/R		—	B

Mitigated Operations Analysis Discussion

As identified in the table above, the E Highland Avenue / SE 10th Street intersection operates within the agency mobility target in the 2034 proposed zone designation scenario with all-way stop-control mitigation.

Intersection Queuing Analysis

Queuing analysis was performed to evaluate queue storage adequacy. 95th percentile queues were estimated using Trafficware’s *SimTraffic* software (Version 11) and ODOT *Analysis Procedure Manual* methodologies. Available storage is rounded to the nearest five feet, and queue demand is rounded to the nearest 25 feet, the average length of a queued vehicle.

The following table summarizes weekday queuing analysis results and data output sheets from all queuing calculations are contained in Appendix D.

TABLE 6 – INTERSECTION QUEUING ANALYSIS					
Intersection	Critical Movement Lane Group	Queue Storage Available (Feet) ¹	2023 Existing	2034 Current Zone Designation	2034 Proposed Zone Designations
US 395 / Port Drive	NB L	500+	—	—	—
	NB R	175	—	—	25
	SB L	500+	50	25	75
	SB R	75	—	—	—
	EB L/T/R	250+	25	25	25
	WB L/T/R	350	75	75	100
SE Columbia Drive / SE 10 th Street / West Site Access	SB L/T/R	325	—	—	75
	EB L/T/R	500	—	—	75
	WB L/T/R	100+	—	—	75
E Highland Avenue / SE 10 th Street	NB L/T/R	500+	50	50	100 ³
	SB L/T/R	350	50	75	100 ³
	EB L/T/R	500+	25	50	250 ³
	WB L/T/R	500+	25	25	100 ³
E Highland Avenue / S Townsend Road / North Site Access	NB L/T/R	100+	—	—	75
	SB L/T/R	500+	25	50	50
	EB L/T/R	500+	25	25	25
	WB L/T/R	500+	—	—	25
E Highland Avenue / E Loop Road / North Site Access	NB L/T/R	100+	—	—	50
	SB L/T/R	500+	50	50	50
	EB L/T/R	500+	—	25	25
	WB L/T/R	500+	—	—	25
US 395 / E Highland Avenue	NB L	250	125	150	250
	NB T/R	680	200	225	325
	SB L	200	75	75	175
	SB T/R	1,000+	200	225	300
	EB L	200	125	150	175
	EB T	690 [635] ²	150	175	300
	EB R	175	100	100	175
	WB L	200	50	75	150
WB T/R	435	200	200	375	

¹ Available queue storage is measured to the nearest upstream intersection for continuous lanes between intersections and to the end of full-width storage for turn lanes.

² The total distance to the next upstream intersection is 690 feet; however, the distance to the railroad crossing is 245 feet. Assuming queues do not block the railroad crossing, a total of 635 feet is available to the next intersection.

³ Assumes mitigated all-way stop-control operation.

Queuing Analysis Discussion

As identified in the table above, all study intersection approach movements are anticipated to have adequate queue storage in the 2034 current and proposed zone designations scenarios to accommodate the 95th percentile vehicle queues. It is further noted that additional striped storage may need to be considered for the left-turn lanes at the US 395 / E Highland Avenue intersection.

VII. DEVELOPMENT ASSUMPTIONS, TRIP CAP, AND INFRASTRUCTURE IMPROVEMENTS

Development Assumptions and Trip Cap

The subject land use actions only contemplate an annexation, Comprehensive Plan amendment, and zone change. Specific development is not contemplated; however, this TIA assumes reasonable worst-case property development to evaluate impacts in the Hermiston TSP plan year.

As identified in the *Reasonable Worst-Case Development Scenario* section of this TIA, the proposed zone designations development scenario includes a mix of commercial and residential uses generating 657 PM peak hour primary (net new) external trips – which is 642 PM peak hour trips more than the current zone designation. The Applicant believes this is the reasonable worst-case development scenario; however, to address Agency concerns regarding potential impacts, the Applicant further proposes a trip cap limiting trip generation to that of the assumed reasonable worst-case development scenario.

Infrastructure Improvements

The existing A Line Canal overcrossing on SE 10th Street is currently one-lane wide and SE 10th Street between the A Line Canal and E Highland Avenue is a two-lane paved roadway of minimum width and is not improved to City standards. As identified in Hermiston TSP Table 17 – *Unprioritized Street System Improvement List*, Project #15 is the widening of 10th Street from Columbia Street to Elm Avenue with an estimated cost of \$5,820,000 (2014\$). While this project is not on the funded/prioritized list and construction timing is unknown, the City anticipates the need to widen the roadway and canal overcrossing.

This TIA assumes the subject development traffic uses SE 10th Avenue as a primary travel route. As such, operations and queuing analyses were performed to determine the need to widen the overcrossing to accommodate development traffic. As illustrated in Figure 7 in Appendix A, the one-lane roadway section is approximately 100 feet long where opposing traffic must wait for conflicting vehicles to clear the overcrossing. The following table summarizes operations and queuing analysis for this roadway section, and data output sheets are attached in Appendix D.

TABLE 7 –CANAL OVERCROSSING OPERATIONS AND QUEUING ANALYSIS					
Roadway Section	Critical Movement Lane Group	2034 Proposed Zone Designations			
		Mobility Target	Operations	Queue Storage Available	Queue Length
SE 10 th Street /	NB T	LOS D	LOS A	250+ Feet	100 Feet
A Line Canal	SB T	LOS D	LOS A	250+ Feet	100 Feet

A Line Canal Overcrossing Analysis Discussion

As identified in the table above, the one-lane roadway section (overcrossing) is anticipated to have adequate operations and queue storage in the 2034 proposed zone designations scenarios. As such, overcrossing widening is not necessary to accommodate development traffic; however, it is recommended to provide unrestricted traffic flow.

VIII. CONCLUSION

The following summary and recommendations are based on materials contained in this analysis.

1. The subject property is located south of E Highland Drive, north of Experiment Station Road, and east of SE 10th Street. The property is also bisected by a Union Pacific rail line. The property is more specifically described as tax lot 200 on Umatilla County Assessors Map 4N-28-13 and is approximately 79.41 acres in size. The property is currently used for agricultural purposes and has access to abutting roadways.
2. The property is currently zoned Umatilla County General Rural (F-2). Proposed land use actions include property annexation into the city of Hermiston and a Comprehensive Plan amendment and zone change to support a mix of commercial and residential development.
3. All study area intersection crash rates are less than 1.0 crashes/mev and the 90th percentile crash rates of the reference intersections. As such, the intersections are considered relatively safe, and no further evaluation of safety deficiencies is necessary.
4. The property south of the railroad (25.67 acres) is proposed to be zoned Outlying Commercial (C-2) for the express purpose of a 200-space RV Park. For the property north of the railroad (53.97 acres), 5.9 acres are proposed to be zoned Outlying Commercial (C-2), and 47.89 acres are proposed to be zoned Multi-Family Residential (R-3).
5. Reasonable worst-case development in the proposed C-2 zone south of the railroad is assumed to be a 200-space RV park. Because occupancy is unknown in terms of vehicle type or duration of stay, 200 apartments are assumed to represent the highest development trip generation.
6. Reasonable worst-case development in the proposed C-2 zone north of the railroad is assumed to include a collection of small neighborhood-oriented retail spaces totaling 64,250 square feet.
7. Reasonable worst-case development in the proposed R-3 zone includes 188 single-family residences and 241 apartments.
8. The overall proposed zone designations reasonable worst-case development scenario includes a mix of commercial and residential uses generating 657 PM peak hour primary (net new) external trips – which is 642 PM peak hour trips more than the current zone designation.
9. All study intersections are anticipated to operate within agency mobility targets in the 2034 current and proposed zone designation scenarios except the E Highland Avenue / SE 10th Street intersection. As such, future consideration will need to be given to mitigating improvements such as the installation of all-way stop-control to provide adequate operations.
10. All study intersection approach movements are anticipated to have adequate queue storage in the 2034 current and proposed zone designation scenarios to accommodate the 95th percentile vehicle queues. It is further noted that additional striped storage may need to be considered for the left-turn lanes at the US 395 / E Highland Avenue intersection.
11. The Applicant believes the assumptions presented in this TIA represent the reasonable worst-case development scenario; however, to address Agency concerns regarding potential impacts, the Applicant further proposes a trip cap limiting trip generation to that of the assumed reasonable worst-case development scenario.

12. The existing A Line Canal overcrossing on SE 10th Street is currently one-lane wide and SE 10th Street between the A Line Canal and E Highland Avenue is a two-lane paved roadway of minimum width and is not improved to City standards. While the timing is unknown, it is anticipated this roadway and canal overcrossing will be improved and widened in the future to facilitate unrestricted traffic flow.
13. This TIA assumes the subject development traffic uses SE 10th Avenue as a primary travel route. As such, analysis was performed to determine the need to widen the one-lane canal overcrossing with the finding that widening is not necessary to accommodate development traffic; however, it is recommended to provide unrestricted traffic flow.
14. Overall, these land use actions do not contemplate a specific development application; therefore, additional transportation analyses may be necessary to support specific development applications, consider trip cap limitations, and evaluate the design of site accesses to the public roadway system.