

4.0 Project Description and Forecast Project Trips

Fiesta Island is part of the overall Mission Bay Park Master Plan. The Master Plan Amendment evaluated in this report modifies some of the land uses and converts some of the open space and undeveloped park areas to active park uses. To estimate the total trips into and off the island based on the existing uses, the trip generation rates included in the City of San Diego *Land Development Code Trip Generation Manual* were applied. Where the City did not have existing trip generation rates, the Institute of Transportation Engineers (ITE) rates were applied. This section summarizes the methodology for the trip rates and the application of the trip rates to the proposed Option A and Option B scenarios.

Trip Generation Rates

City of San Diego published trip generation rates (*Land Development Code, Trip Generation Manual, 2003*) and ITE published trip generation rates (*Trip Generation Manual, 9th Edition, 2012*) were used to forecast the net change in trips associated with the proposed changes in land use on Fiesta Island with both Option A and Option B. **Table 4-1** below summarizes the trip generation rates applied to the existing and planned uses.

Table 4-1: Trip Generation Rates

Land Use	Units	Daily (veh)	AM Peak Hour			PM Peak Hour		
			Total	In	Out	Total	In	Out
Developed Park ⁽¹⁾	acres	50	2.00	50%	50%	4.00	40%	60%
Undeveloped Park ⁽²⁾	acres	5	0.20	50%	50%	0.40	40%	60%
The Beach, Ocean or Bay ⁽³⁾	acres	60	2.40	50%	50%	6.60	40%	60%
Campground/RV Park ⁽⁴⁾	Per campsite	N/A ⁽⁵⁾	0.21	36%	64%	0.27	65%	35%

Notes:

- ⁽¹⁾ *Land Development Code Trip Generation Manual, City of San Diego (2003)*. However, the manual does not include inbound/outbound rates for Developed Park. Therefore a 50% inbound and 50% outbound split was assumed for the AM peak and 40% inbound and 60% outbound for the PM peak.
- ⁽²⁾ *Land Development Code Trip Generation Manual, City of San Diego (2003)*. However, the manual does not include inbound/outbound rates for Undeveloped Park. Therefore a 50% inbound and 50% outbound split was assumed for the AM peak and 40% inbound and 60% outbound for the PM peak.
- ⁽³⁾ *Land Development Code Trip Generation Manual, City of San Diego (2003)*. However, the manual does not include trip generation rates for the AM peak. The AM rate for Park (Developed and Undeveloped) were therefore applied (4% of ADT with 50% inbound and 50% outbound).
- ⁽⁴⁾ *ITE Trip Manual, 9th Edition (2012)*
- ⁽⁵⁾ ADT rate not available in ITE. Therefore, the ADT is assumed to be 10x the PM peak rate.

Existing Conditions Trip Generation

The trip generation rates summarized in Table 4-1 were applied to the existing land uses on Fiesta Island to determine existing traffic entering and exiting the site. The land uses and total acreage by land use type were defined by Placeworks as part of the overall Master Plan Amendment EIR. **Table 4-2** summarizes the variety of existing activity areas as defined for Fiesta Island. These detailed activity areas were grouped into the land use categories described in the trip generation rates section of this report, which include Developed Park, Undeveloped Park, Beach/Ocean/Bay, Campground/RV Park and Other.

Table 4-2: Existing Activity Centers and Land Uses Types on Fiesta Island

Land Use Definition	Existing Area (Acres)
Developed Park	
Regional Park	0.0
Fenced Leash Free Dog Park (w/o Beach)	93.9
Subtotal	93.9
Undeveloped Park	
Open Space (Native Vegetation, Nonnative, & Dunes)	169.7
Beach, Ocean, or Bay	
Open Beach	54.4
Campground / RV Park	
Primitive Camping	0.0
Youth Camping	23.6
Subtotal	23.6
Other ⁽¹⁾	
Sand Recreation	31.0
Boat Storage	0.0
Pier	0.0
Circulation and Parking	17.7
Sand Management	20.3
Habitat (Preserves, Upland, Wetlands)	38.3
Subtotal	107.3
TOTAL	448.9

Source: Placeworks (2017)

Notes:

- ⁽¹⁾ The uses grouped in the "Other" land use category does not generate traffic or does not generate regularly occurring traffic. In particular, use of the Sand Recreation areas (i.e. sand arena) occur less frequently and during special events. For example, full occupancy of this land use type occurs during special events like Over the Line.

Table 4-3 summarizes the total acres by land use type and the estimated trips based on the existing uses on Fiesta Island. Applying the trip generation rates to the existing land use, an estimated 8,898 trips per day circulate around Fiesta Island on a typical weekday.

Table 4-3: Existing Land Use Forecast Trips

Existing Land Uses	Amount	Daily (veh)	AM Peak Hour (veh)			PM Peak Hour (veh)		
			Total	In	Out	Total	In	Out
Developed Park	93.9 acres	4,693	188	94	94	375	150	225
Undeveloped Park	169.7 acres	849	34	17	17	68	27	41
Beach, Ocean or	54.4 acres	3,264	130	65	65	359	144	215
Campground/ RV Park	34 campsites ⁽¹⁾	92	8	3	5	9	6	3
TOTAL		8,898	360	179	181	811	327	484

Notes:

⁽¹⁾ City of San Diego does not have a trip rate for Campground. Therefore, ITE Trip Generation Rates were used to forecast trips for this land use.

The existing trip generation results in Table 4-3 were applied as a trip reduction to the proposed project's weekday trip generation under Option A and Option B. Providing credit for an existing use on site is a common practice in the traffic engineering field and often applied in traffic studies. A primary reason for including existing development as a credit is because traffic from the existing use is included in the traffic counts and/or future traffic projections. These trips were applied as a reduction in the trip generation calculations.

Daily traffic counts, presented in Section 3 of this report, were collected both inbound and outbound from the island along Fiesta Island Road. **Table 4-4** summarizes the existing ground count volumes for the data collection period (Thursday through Sunday).

Table 4-4: Existing Ground Counts

Existing Ground Counts (Vehicles)	Daily (Veh)	AM Peak Hour (veh)			PM Peak Hour (veh)		
		Total	In	Out	Total	In	Out
Weekday							
Thursday (4/6/17)	4,705	211	117	94	418	244	174
Friday (4/7/17)	5,227	233	138	95	372	197	175
Weekend							
Saturday (4/8/17)	7,439	318	191	127	565	291	274
Sunday (4/9/17)	7,662	331	196	135	664	324	341
WEEKEND AVERAGE	7,551	325	194	131	615	308	308

To reflect the increase in trips for weekend conditions, a factor of 1.6 was applied to the forecast weekday trips. This corresponds to the difference ratio between the Thursday ground count (4,705 vehicles per day) and the average Saturday and Sunday weekend ground count (7,551 vehicles per day).

Original Forecast Master Plan Amendment Alternatives Trip Generation

To forecast “Plus Project” traffic volumes under Option A and Option B of the proposed project, trip generation analyses for these Fiesta Island Master Plan Alternatives were prepared in January 2018. The forecast project generated trips for Option A and Option B are provided in **Table 4-5** and were used as a basis for the traffic operations analysis presented in this Mobility Assessment.

Table 4-5: Original Project Trip Estimates Used in Traffic Operations Analysis

Forecast Net Changes in Trips to/from Fiesta Island Option A

Option A	Daily (veh)	AM Peak Hour (veh)			PM Peak Hour (veh)		
		Total	In	Out	Total	In	Out
Net Change in Weekday Trips	634	32	14	18	49	24	25
Net Change in Weekend Trips	1,014				77	37	40

Forecast Net Changes in Trips to/from Fiesta Island Option B

Option B	Daily (veh)	AM Peak Hour (veh)			PM Peak Hour (veh)		
		Total	In	Out	Total	In	Out
Net Change in Weekday Trips	375	22	9	13	24	13	11
Net Change in Weekend Trips	600				39	22	17

Since the development of the project’s trip generation above and the preparation of the corresponding traffic operations analysis, some of the land use components have been refined. The main change in land use assumption is due to the later understanding that occupation of the sand recreation areas, such as the sand arena, would not be a daily occurrence and full occupancy of these areas occur infrequently, during special events. The original project’s trip estimates provided in **Table 4-5** had included the sand recreation use in the trip generation analysis for Option A and Option B, and consequentially the “plus Project” traffic operations analyses reflect results of non-typical conditions. A traffic evaluation was performed to understand how the trip generation for the proposed land use designation changes and refined assumptions compare to what has already been analyzed. The results of this evaluation determined that there would be no additional significant traffic impacts to those already considered in the traffic operations analysis using the original trip generation estimates presented in the Mobility Assessment. Details of this trip generation comparison are described in the subsequent sections.

Refined Forecast Master Plan Amendment Alternatives Trip Generation

As stated previously, two study scenarios (i.e. Option A and Option B) are evaluated in this traffic report for the change in land use for Fiesta Island. **Table 4-6** summarizes the traffic generating land uses for each of the two options, as well as the existing land uses previously described in Table 4-1. A more detailed land use breakdown for Fiesta Island is provided in Chapter 3 - Project Description of the project’s Program EIR. **Figures 4-1 and 4-2** illustrate the two land use options considered in this report.

Table 4-6: Typical Traffic-Generating Land Uses for Existing Conditions and Option A and Option B Conditions of the Fiesta Island Master Plan Amendment

Land Use Definition	Existing Area (Acres)	Option A (Acres)	Option B (Acres)
Developed Park			
Regional Park	0	23	19
Fenced Leash Free Dog Park (w/o Beach) & Dog Activity Area	93.9	85	92
Subtotal	93.9	108	111
Undeveloped Park			
Open Space (Native Vegetation, Nonnative, & Dunes)	169.7	103	102
Beach, Ocean, or Bay			
Open Beach	54.4	51	51
Campground / RV Park	34 campsites	95 campsites	95 campsites
Primitive Camping	0	7	7
Youth Camping	23.6	22	22
Subtotal	23.6	29	29

As shown in Table 4-6 above and previously mentioned, the sand recreation areas have been excluded from the summary of traffic-generating land uses in Fiesta Island because use of such areas occur less frequently and during special events. The refined trip generation analyses, which is representative of typical, regularly occurring Fiesta Island traffic, uses the information provided in Table 4-6 and does not account for traffic associated with the sand recreation.

Table 4-7 presents the results of the refined trip generation analyses. Option A is forecast to result in an increase of 336 net new weekday daily trips and 538 net new weekend daily trips. Options B is forecast to result in higher net new weekday and weekend daily trips with 486 and 778 vehicles per day, respectively.

Table 4-7: Refined Project Trip Estimates

**Forecast Net Changes in Trips to/from Fiesta Island
Option A**

Land Use	Amount	Daily (veh)	AM Peak Hour (veh)			PM Peak Hour (veh)		
			Total	In	Out	Total	In	Out
Developed Park	108.0 acres	5,402	216	108	108	432	173	259
Undeveloped Park	103.0 acres	515	21	11	10	41	16	25
Beach, Ocean or Bay	51.0 acres	3,060	122	61	61	337	135	202
Campground/RV Park	95 campsite ⁽¹⁾	257	20	7	13	26	17	9
TOTAL FORECAST WEEKDAY TRIPS		9,234	379	187	192	836	341	495
Existing Land Use Forecast Trips		8,898	360	179	181	811	327	484
Net Change in Weekday Trips (Option A)		336	19	8	11	25	15	10
Net Change in Weekend Trips (Option A)⁽²⁾		538				40	24	16

Notes:

- ⁽¹⁾ City of San Diego does not have a trip rate for Campground. Therefore, ITE Trip Generation Rates were used to forecast trips for this land use.
- ⁽²⁾ Weekend trips are estimated to be 1.6 times the weekday trips. PM Peak hour trips used to assess the midday weekend conditions.

**Forecast Net Changes in Trips to/from Fiesta Island
Option B**

Land Use	Amount	Daily (veh)	AM Peak Hour (veh)			PM Peak Hour (veh)		
			Total	In	Out	Total	In	Out
Developed Park	111.2 acres	5,558	222	111	111	445	178	267
Undeveloped Park	101.8 acres	509	20	10	10	40	16	24
Beach, Ocean or Bay	51 acres	3,060	122	61	61	337	135	202
Campground/RV Park	95 campsite ⁽¹⁾	257	20	7	13	26	17	9
TOTAL FORECAST WEEKDAY TRIPS		9,384	384	189	195	848	346	502
Existing Land Use Forecast Trips		8,898	360	179	181	811	327	484
Net Change in Weekday Trips (Option B)		486	24	10	14	37	19	18
Net Change in Weekend Trips (Option B)⁽²⁾		778				59	30	29

Notes:

- ⁽¹⁾ City of San Diego does not have a trip rate for Campground. Therefore, ITE Trip Generation Rates were used to forecast trips for this land use.
- ⁽²⁾ Weekend trips are estimated to be 1.6 times the weekday trips. PM Peak hour trips used to assess the midday weekend conditions.

Trip Generation Comparison

The refined trip generation results presented in Table 4-7 were compared to the original trip generation results in Table 4-5. **Table 4-8** presents this comparison of trip generation estimates.

Table 4-8: Trip Generation Comparison (Refined Project Trip Estimates Minus Original Project Trip Estimates)

Option A

Option A	Daily (veh)	AM Peak Hour (veh)			PM Peak Hour (veh)		
		Total	In	Out	Total	In	Out
Change in Weekday Trips	-298	-13	-6	-7	-24	-9	-15
Change in Weekend Trips	-476				-37	-13	-24

Option B

Option B	Daily (veh)	AM Peak Hour (veh)			PM Peak Hour (veh)		
		Total	In	Out	Total	In	Out
Change in Weekday Trips	111	2	1	1	13	6	7
Change in Weekend Trips	178				20	8	12

The trip generation comparison for Option A shows that the refined trip generation yields less net new trips than the original trip generation. Therefore, the original traffic operations analysis conducted for Option A is conservative.

For Option B, the trip generation comparison shows nominal increases in weekday and weekend peak hour trips and the addition of 111 and 178 daily trips in the weekday and weekend, respectively. Although the refined trip generation shows that Option B would have additional trips that are not captured in the traffic operations analysis, the addition of these daily trips to roadways with volumes in the thousands is less than or equal to the maximum 10% day-to-day traffic fluctuation assumed in a typical week and is considered a negligible change.¹ Therefore, the increases in net new traffic under the refined trip generation for Option B are considered to not have any substantial effect on roadway operations and would not change the number of or location of impacts to any roadway segments or intersections identified using the original trip generation estimates presented in the Mobility Assessment.

Distribution and Assignment of Net New Trips

Distribution patterns from Fiesta Island is based on existing travel patterns observed in April 2017 during the data collection period and are illustrated in **Figure 4-3**.

The net increase in daily and peak hour traffic was applied to the distribution percentages to determine the assignment of new weekday and weekend trips for both Option A and Option B. **Figure 4-4 and 4-5** illustrate the peak hour and daily net new trips added to the roadway network based on the forecast project trips for both weekdays and on the weekend for Option A respectively. **Figures 4-6 and 4-7** illustrate the trip assignment for Option B.

¹ **Appendix N** provides comparison details in the Daily Roadway Segment Operations Analysis using the original trip generation versus the refined trip generation for proposed project Option B.

Fiesta Island/Mission Bay Park Master Plan Amendment



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Figure 4-1
Option A Land Use

Fiesta Island/Mission Bay Park Master Plan Amendment



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Figure 4-2
Option B Land Use

Fiesta Island/Mission Bay Park Master Plan Amendment



E Mission Bay Drive @ Fiesta Island Road	Sea World Drive @ E. Mission Bay Drive	I-5 SB On/Off Ramps @ Sea World Drive	I-5 NB On/Off Ramps @ Sea World Drive
<div><div>25% / (0%)</div><div>0% / (25%)</div><div>0% / (75%)</div><div>75% / (0%)</div><div>1</div></div>	<div><div>25% / (0%)</div><div>20% / (0%)</div><div>0% / (25%)</div><div>0% / (20%)</div><div>0% / (30%)</div><div>30% / (0%)</div><div>2</div></div>	<div><div>10% / (0%)</div><div>15% / (0%)</div><div>0% / (15%)</div><div>0% / (10%)</div><div>3</div></div>	<div><div>5% / (0%)</div><div>0% / (10%)</div><div>0% / (5%)</div><div>10% / (0%)</div><div>4</div></div>
Sea World Drive @ Friars Road	<div><div>0% / (15%)</div><div>0% / (15%)</div><div>15% / (0%)</div><div>15% / (0%)</div><div>5</div></div> <div>LEGEND xx% / (yy%) = Inbound % / (Outbound %)</div>		



Figure 4-3
Trip Distribution Percentages

Fiesta Island/Mission Bay Park Master Plan Amendment

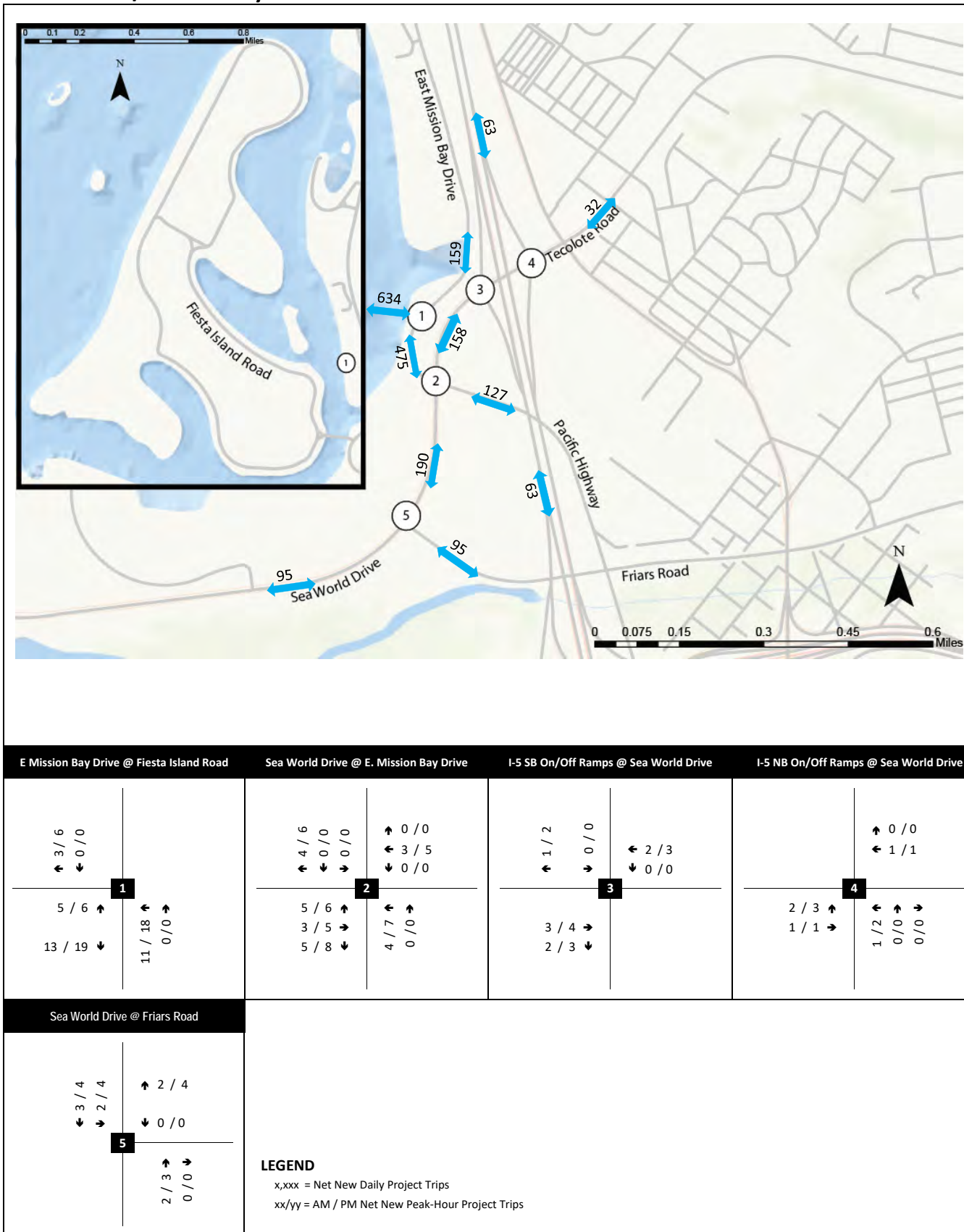


Figure 4-4
Weekday Option A Trip Assignment

Fiesta Island/Mission Bay Park Master Plan Amendment



E Mission Bay Drive @ Fiesta Island Road	Sea World Drive @ E. Mission Bay Drive	I-5 SB On/Off Ramps @ Sea World Drive	I-5 NB On/Off Ramps @ Sea World Drive
<div data-bbox="292 1312 316 1344">1</div> <div data-bbox="203 1260 397 1417"> <div>9 ↑</div> <div>0 ↓</div> <div>10 ↑</div> <div>30 ↓</div> <div>28 ↑</div> <div>0 ↑</div> </div>	<div data-bbox="625 1312 649 1344">2</div> <div data-bbox="535 1260 730 1417"> <div>10 ↑</div> <div>0 ↓</div> <div>0 ↓</div> <div>10 ↑</div> <div>8 ↑</div> <div>12 ↓</div> <div>11 ↑</div> <div>0 ↑</div> <div>0 ↑</div> <div>0 ↓</div> <div>7 ↑</div> <div>0 ↓</div> </div>	<div data-bbox="958 1312 982 1344">3</div> <div data-bbox="868 1260 1063 1417"> <div>4 ↑</div> <div>0 ↓</div> <div>6 ↑</div> <div>0 ↓</div> <div>6 ↑</div> <div>4 ↓</div> </div>	<div data-bbox="1299 1312 1323 1344">4</div> <div data-bbox="1209 1260 1404 1417"> <div>0 ↑</div> <div>2 ↑</div> <div>4 ↑</div> <div>2 ↑</div> <div>4 ↑</div> <div>0 ↑</div> <div>0 ↑</div> </div>
Sea World Drive @ Friars Road			
<div data-bbox="292 1659 316 1690">5</div> <div data-bbox="227 1575 397 1732"> <div>6 ↑</div> <div>6 ↑</div> <div>6 ↑</div> <div>0 ↓</div> <div>6 ↑</div> <div>0 ↑</div> </div>	<div data-bbox="487 1711 812 1795"> LEGEND x,xxx = Net New Daily Project Trips xx = Midday Net New Peak-Hour Project Trips </div>		



Figure 4-5
Weekend Option A Trip Assignment

Fiesta Island/Mission Bay Park Master Plan Amendment



E Mission Bay Drive @ Fiesta Island Road	Sea World Drive @ E. Mission Bay Drive	I-5 SB On/Off Ramps / I-5 SB Off Ramps @ Sea World Drive	I-5 NB On/Off Ramps / I-5 NB Off Ramps @ Sea World Drive
<div> <div> <div>2 / 3</div> <div>↑</div> </div> <div> <div>0 / 0</div> <div>↓</div> </div> </div> <div> <div>3 / 3</div> <div>↑</div> </div> <div> <div>10 / 8</div> <div>↓</div> </div> <div> <div>7 / 10</div> <div>↑</div> </div> <div> <div>0 / 0</div> <div>↑</div> </div> <div> <div>0 / 0</div> <div>↓</div> </div>	<div> <div>2 / 3</div> <div>↑</div> </div> <div> <div>0 / 0</div> <div>↓</div> </div> <div> <div>0 / 0</div> <div>↑</div> </div> <div> <div>0 / 0</div> <div>↓</div> </div> <div> <div>3 / 3</div> <div>↑</div> </div> <div> <div>3 / 2</div> <div>↑</div> </div> <div> <div>4 / 3</div> <div>↓</div> </div> <div> <div>3 / 4</div> <div>↑</div> </div> <div> <div>0 / 0</div> <div>↑</div> </div> <div> <div>0 / 0</div> <div>↑</div> </div> <div> <div>0 / 0</div> <div>↓</div> </div> <div> <div>0 / 0</div> <div>↓</div> </div>	<div> <div>1 / 1</div> <div>↑</div> </div> <div> <div>0 / 0</div> <div>↓</div> </div> <div> <div>2 / 2</div> <div>↑</div> </div> <div> <div>1 / 0</div> <div>↓</div> </div> <div> <div>1 / 2</div> <div>↑</div> </div> <div> <div>0 / 0</div> <div>↓</div> </div>	<div> <div>0 / 0</div> <div>↑</div> </div> <div> <div>0 / 1</div> <div>↓</div> </div> <div> <div>1 / 1</div> <div>↑</div> </div> <div> <div>1 / 1</div> <div>↑</div> </div> <div> <div>1 / 1</div> <div>↑</div> </div> <div> <div>0 / 0</div> <div>↑</div> </div> <div> <div>0 / 0</div> <div>↑</div> </div> <div> <div>0 / 0</div> <div>↓</div> </div> <div> <div>0 / 0</div> <div>↓</div> </div>
Sea World Drive @ Friars Rd			
<div> <div>2 / 2</div> <div>↑</div> </div> <div> <div>2 / 2</div> <div>↓</div> </div> <div> <div>1 / 2</div> <div>↑</div> </div> <div> <div>0 / 0</div> <div>↓</div> </div> <div> <div>2 / 2</div> <div>↑</div> </div> <div> <div>0 / 0</div> <div>↓</div> </div>	LEGEND x,xxx = Net New Daily Project Trips xx/yy = AM / PM Net New Peak-Hour Project Trips		



Figure 4-6
Weekday Option B Trip Assignment

Fiesta Island/Mission Bay Park Master Plan Amendment



E Mission Bay Drive @ Fiesta Island Road	Sea World Drive @ E. Mission Bay Drive	I-5 SB On/Off Ramps @ Sea World Drive	I-5 NB On/Off Ramps @ Sea World Drive
Sea World Drive @ Friars Road	<p>LEGEND</p> <p>x,xxx = Net New Daily Project Trips</p> <p>xx = Midday Net New Peak-Hour Project Trips</p>		



Figure 4-7
Weekend Option B Trip Assignment

5.0 Analysis of Traffic Operating Conditions with the Proposed Master Plan Amendment

Existing Plus Project Traffic Operations

To evaluate the Existing Plus Project conditions, the net change in volume associated with Option A or Option B were overlaid on the existing volumes collected specifically for this project for the daily and peak hour conditions. **Figures 5-1 and 5-2** illustrate the Existing Plus Option A daily roadway segment and peak hour turning movement volumes for weekday and weekend conditions, respectively. **Figures 5-3 and 5-4** illustrate the Existing Plus Option B daily roadway segment and peak hour turning movement volumes for weekday and weekend conditions, respectively.

The results of the peak hour intersection operational analysis are summarized in **Table 5-1**. Most intersections operate at an acceptable LOS (LOS D or better) with either Option A or Option B. The entry intersection into Fiesta Island, E. Mission Bay Drive/Fiesta Island Road, is forecast to operate at a deficient LOS (LOS E / LOS F) on the weekend during the midday peak hour for both Option A and Option B. This is primarily due to the delay imposed on the stop controlled outbound movement (single lane, stop controlled). Improvements to the intersection of E. Mission Bay Drive/Fiesta Island Road and solutions to improve this deficient condition are recommended later in this report. HCM LOS worksheets are provided in **Appendix H** for the Existing Plus Project Conditions.

The results of the weekday roadway segment analysis are summarized in **Table 5-2**. As shown in Table 5-2, the segment of Sea World Drive from Friars Road to South Shores Parkway, currently operates at deficient LOS on a typical weekday and will continue to operate at a deficient LOS with either Option A or Option B. Due to the low increase in volume anticipated with either Option A or Option B, the change in V/C ratio for the deficient segment falls below the thresholds of significance. Therefore, the project does not result in a significant impact on this existing deficient roadway segment.

On the weekend, two segments of Sea World Drive currently operate at LOS E: Sea World Drive from Friars Road to South Shores Parkway and Sea World Drive from E. Mission Bay Drive-Pacific Highway to the I-5 freeway ramps, as summarized in **Table 5-3**. Similar to the weekday conditions, the additional trips associated with either Option A or Option B result in a change in V/C ratio that falls below the threshold of significance. Therefore, the project does not result in a significant impact on these two existing deficient roadway segments under weekend conditions.

The volume along Fiesta Island Road falls within the allowable capacity for the two-lane Collector along the causeway and for the single lane, one-way road that currently circulates around Fiesta Island. Therefore, sufficient capacity remains on the single lane, one-way road to handle the additional daily traffic forecast with either Option A or Option B. Details regarding internal circulation are summarized in later sections of this report.

Table 5-1: Existing Conditions Plus Master Plan Amendment Alternatives Peak Hour Intersection Operations Analysis

#	Intersection	Traffic Control	Peak Hour	Existing Conditions		Existing Plus Option A Conditions			Existing Plus Option B Conditions		
				Average Delay (sec)	LOS	Average Delay (sec)	LOS	Δ ⁽¹⁾	Average Delay (sec)	LOS	Δ ⁽¹⁾
UNSIGNALIZED INTERSECTION											
1	E. Mission Bay Dr and Fiesta Island Rd	OWSC ⁽²⁾	AM	12.4	B	12.8	B	0.4	12.6	B	0.2
			PM	24.7	C	29.6	D	4.9	26.9	D	2.2
			Weekend MID	39.9	E	67.1	F	27.2	50.7	F	10.8
SIGNALIZED INTERSECTIONS											
2	Sea World Dr and E. Mission Bay Dr - Pacific Hwy	Signal	AM	36.5	D	36.8	D	0.3	36.7	D	0.2
			PM	37.2	D	38.4	D	1.2	37.9	D	0.7
			Weekend MID	23.2	C	24.5	C	1.3	23.6	C	0.4
3	Sea World Dr and I-5 SB On/Off Ramps	Signal	AM	19.5	B	19.5	B	0	19.5	B	0.0
			PM	12.3	B	12.3	B	0	12.3	B	0.0
			Weekend MID	13.0	B	13.0	B	0	13.0	B	0.0
4	Sea World Dr and I-5 NB On/Off Ramps	Signal	AM	27.9	C	28.1	C	0.2	28.1	C	0.2
			PM	37.9	D	38.0	D	0.1	37.9	D	0.0
			Weekend MID	48.7	D	49.5	D	0.8	49.1	D	0.4
5	Sea World Dr and Friars Rd	Signal	AM	17.6	B	17.7	B	0.1	17.7	B	0.1
			PM	23.9	C	24.1	C	0.2	24.0	C	0.1
			Weekend MID	14.8	B	14.9	B	0.1	14.9	B	0.1

Notes:

⁽¹⁾ Change in Delay. **Bold** = Exceeds threshold of significance

⁽²⁾ One-Way Stop Controlled (OWSC) from eastbound approach. In all cases, the delay and LOS reported is for the stop controlled eastbound approach.

Table 5-2: Existing Weekday Conditions with Master Plan Amendment Roadway Segment Operations Analysis

Roadway Segment	Classification ⁽¹⁾	Daily Capacity ⁽¹⁾	Existing Weekday			Existing Plus Option A Weekday				Existing Plus Option B Weekday			
			ADT	V/C	LOS	ADT	V/C	LOS	Δ ⁽²⁾	ADT	V/C	LOS	Δ ⁽²⁾
Sea World Drive													
S. Shores Pkwy to Friars Rd	4-Lane Major Arterial	40,000	37,428	0.94	E	37,523	0.94	E	0.00	37,484	0.94	E	0.00
Friars Rd to E. Mission Bay Dr	4-Lane Major Arterial	40,000	32,163	0.80	D	32,353	0.81	D	0.01	32,276	0.81	D	0.01
E. Mission Bay Dr to I-5 Ramps	4-Lane Major Arterial	40,000	34,270	0.86	D	34,428	0.86	D	0.00	34,364	0.86	D	0.00
E. Mission Bay Drive													
Sea World Dr to Fiesta Island Rd	2-Lane Collector (continuous left-turn lane)	15,000	9,227	0.62	C	9,702	0.65	C	0.03	9,509	0.63	C	0.01
Friars Road													
East of Sea World Dr	4-Lane Major Arterial	40,000	14,472	0.36	A	14,567	0.36	A	0.00	14,528	0.36	A	0.00
Fiesta Island Road													
E. Mission Bay Dr to Fiesta Island Loop	2-Lane Collector (no fronting property)	10,000	4,705	0.47	B	5,339	0.53	B	0.06	5,080	0.51	B	0.04

Notes:

(1) Based on the City's General Plan Mobility Element and Traffic Study Guidelines for Development Projects

(2) Change in V/C ratio; Bold indicates change exceeds thresholds of significance.

Table 5-3: Existing Weekend Conditions with Master Plan Amendment Roadway Segment Operations Analysis

Roadway Segment	Classification ⁽¹⁾	Daily Capacity ⁽¹⁾	Existing Weekend			Existing Plus Option A Weekend				Existing Plus Option B Weekend			
			ADT	V/C	LOS	ADT	V/C	LOS	Δ ⁽²⁾	ADT	V/C	LOS	Δ ⁽²⁾
Sea World Drive													
S. Shores Pkwy to Friars Rd	4-Lane Major Arterial	40,000	36,178	0.90	E	36,330	0.91	E	0.01	36,268	0.91	E	0.01
Friars Rd to E. Mission Bay Dr - Pacific Hwy	4-Lane Major Arterial	40,000	32,573	0.81	D	32,877	0.82	D	0.01	32,753	0.82	D	0.01
E. Mission Bay Dr to I-5 Ramps	4-Lane Major Arterial	40,000	37,188	0.93	E	37,442	0.94	E	0.01	37,338	0.93	E	0.00
E. Mission Bay Drive													
Sea World Dr to Fiesta Island Rd	2-Lane Collector (continuous left-turn lane)	15,000	11,521	0.77	D	12,282	0.82	D	0.05	11,971	0.80	D	0.03
Friars Road													
East of Sea World Dr	4-Lane Collector Major Arterial	40,000	10,985	0.27	A	11,137	0.28	A	0.01	11,075	0.28	A	0.01
Fiesta Island Road													
E. Mission Bay Drive to Fiesta Island Loop	2-Lane Collector (no fronting property)	10,000	7,439	0.74	C	8,453	0.85	D	0.11	8,039	0.80	D	0.06

Notes:

(1) Based on the City's General Plan Mobility Element and Traffic Study Guidelines for Development Projects

(2) Change in V/C; Bold indicates change exceeds threshold of significance.

Fiesta Island/Mission Bay Park Master Plan Amendment

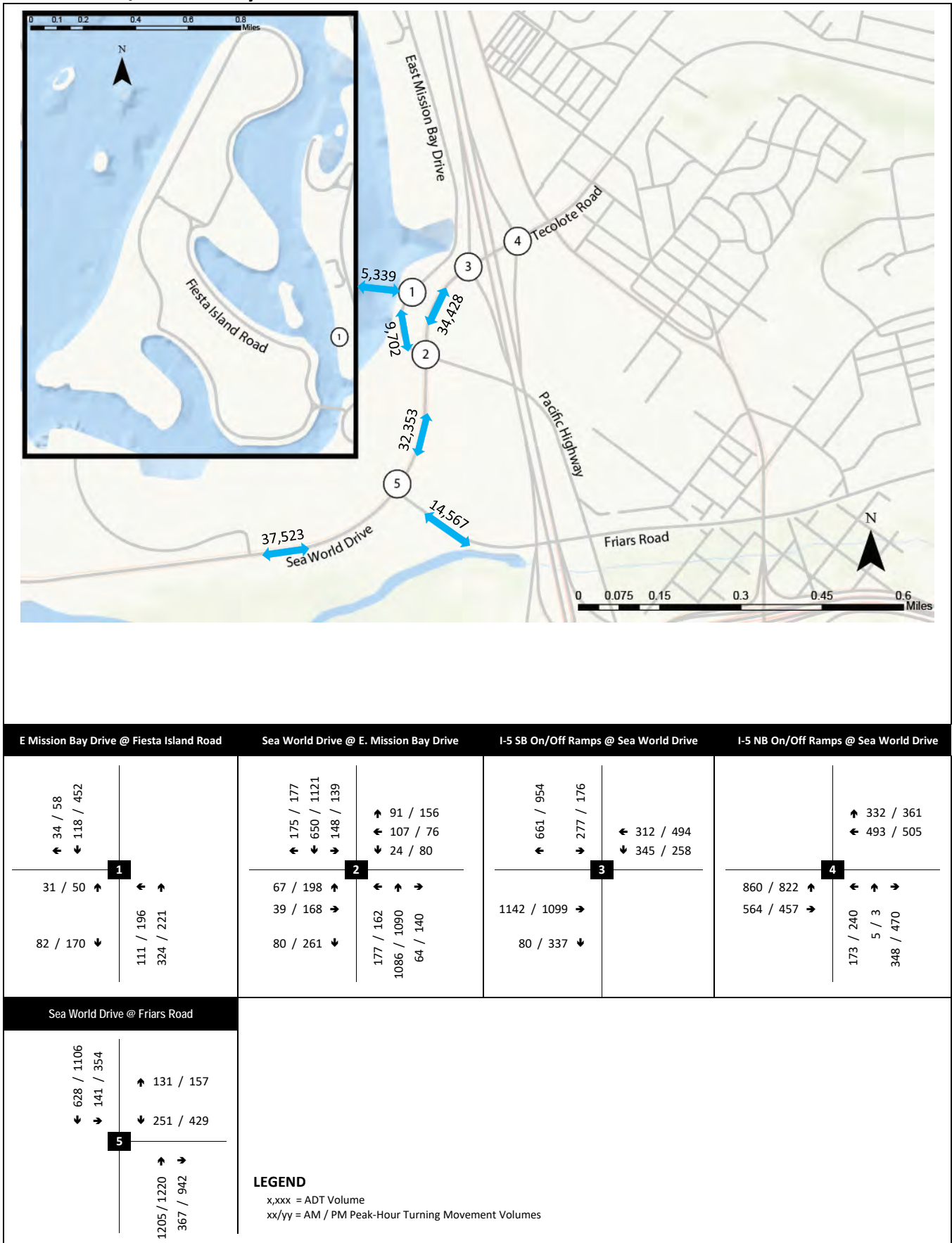


Figure 5-1

Existing Plus Option A Weekday Volumes



Fiesta Island/Mission Bay Park Master Plan Amendment

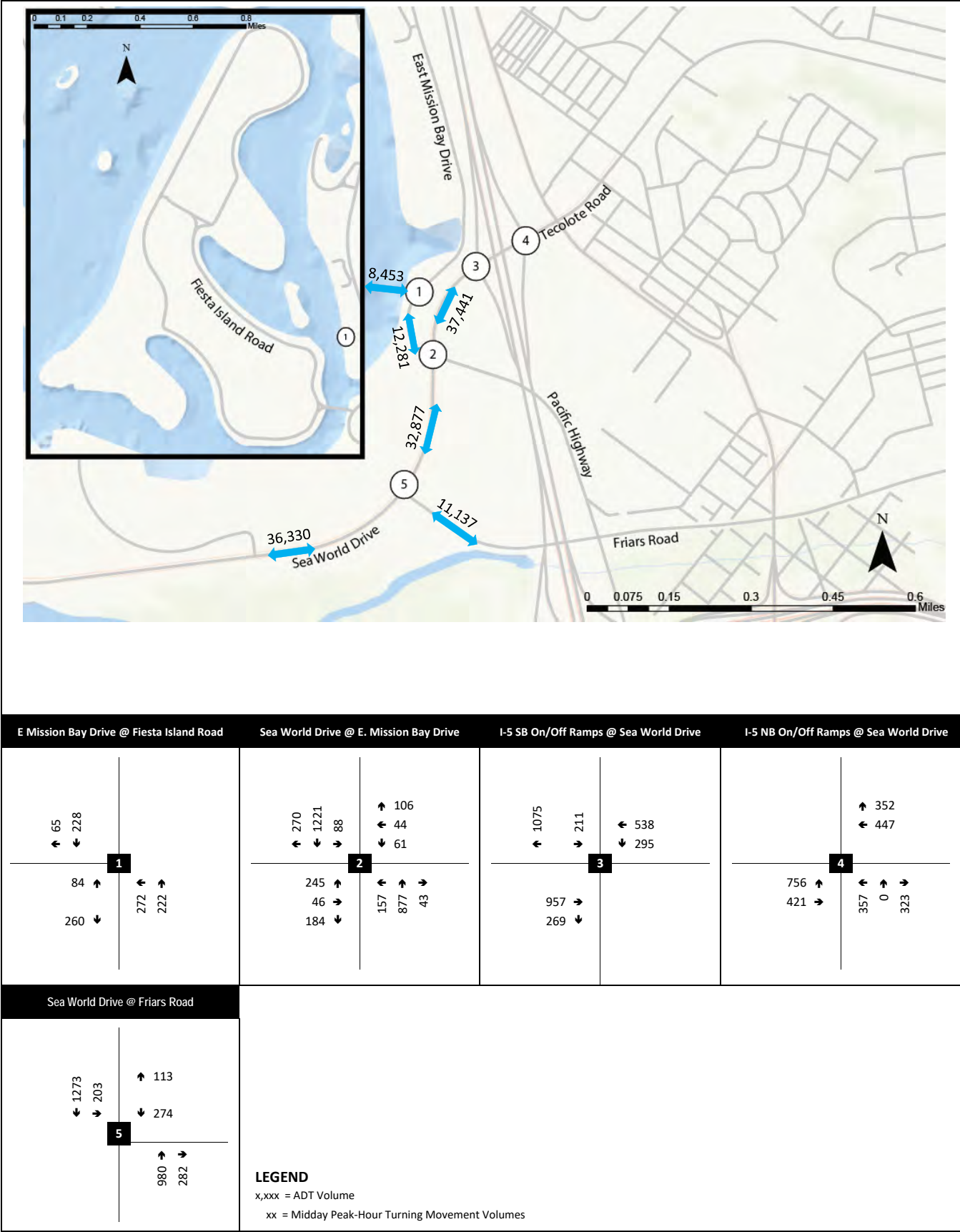


Figure 5-2
Existing Plus Option A Weekend Volumes

Fiesta Island/Mission Bay Park Master Plan Amendment

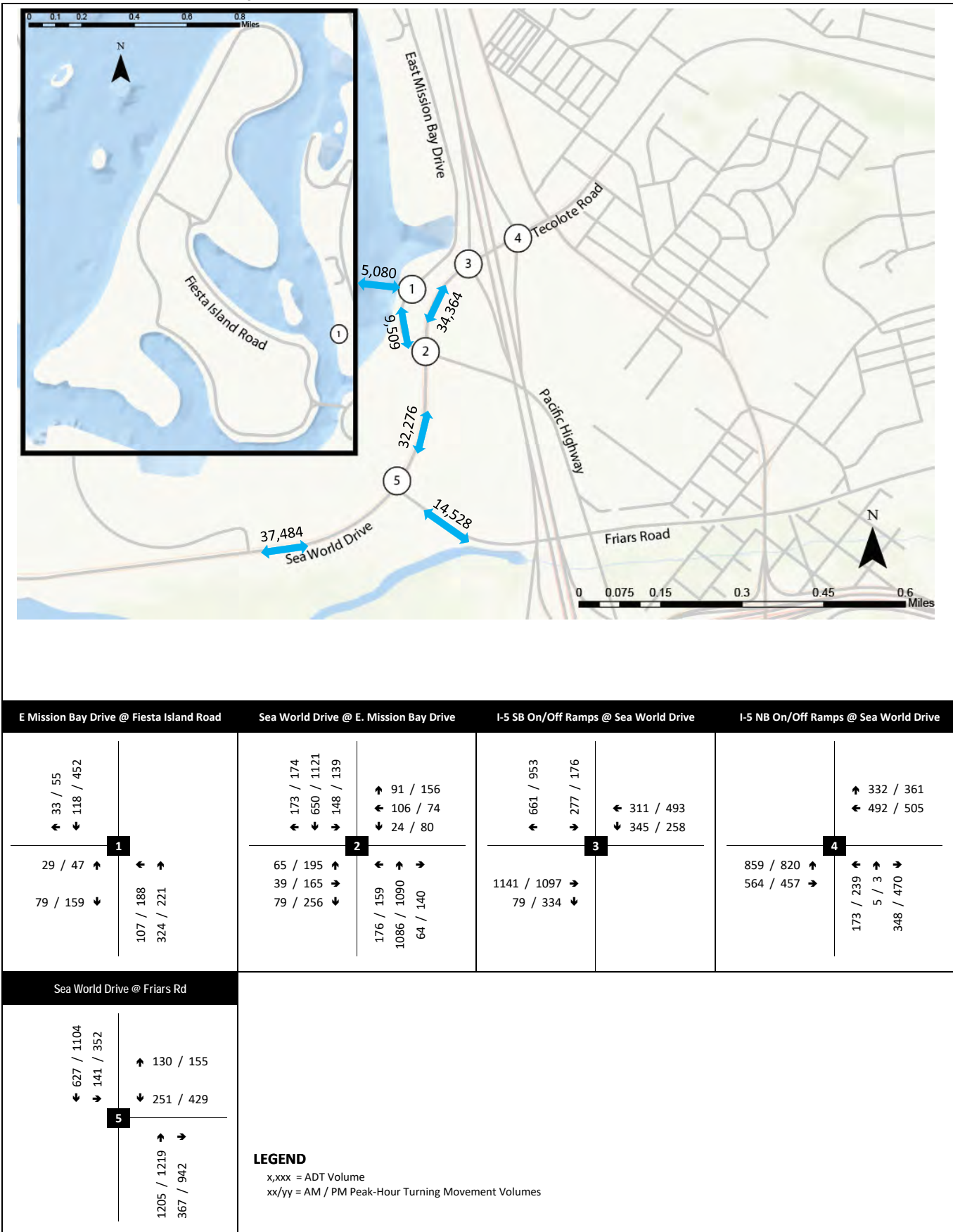


Figure 5-3
Existing Plus Option B Weekday Volumes

Fiesta Island/Mission Bay Park Master Plan Amendment



E Mission Bay Drive @ Fiesta Island Road	Sea World Drive @ E. Mission Bay Drive	I-5 SB On/Off Ramps @ Sea World Drive	I-5 NB On/Off Ramps @ Sea World Drive
<div><div><div>61</div><div>228</div></div><div><div>78</div><div>243</div></div><div><div>261</div><div>222</div></div></div>	<div><div><div>266</div><div>1221</div><div>88</div></div><div><div>240</div><div>41</div><div>177</div></div><div><div>106</div><div>42</div><div>61</div></div></div>	<div><div><div>1073</div><div>211</div></div><div><div>954</div><div>267</div></div><div><div>535</div><div>295</div></div></div>	<div><div><div>352</div><div>446</div></div><div><div>754</div><div>420</div></div><div><div>355</div><div>0</div><div>323</div></div></div>
Sea World Drive @ Friars Road			
<div><div><div>1270</div><div>200</div></div><div><div>110</div><div>274</div></div><div><div>977</div><div>282</div></div></div>			

LEGEND

x,xxx = ADT Volume

xx = Midday Peak-Hour Turning Movement Volumes

Figure 5-4

Existing Plus Option B Weekend Volumes



Future Year 2050 Conditions Traffic Operations Assessment

SANDAG Series 12 regional travel demand forecast model volumes were used to calculate the Future Year 2050 daily traffic volumes for the study area. The SANDAG Series 12 data used in this analysis was collected from the Transportation Forecast Information Center (TFIC) website supported by SANDAG and is presented in **Figure 5-5**.

Year 2050 No Project

To determine the Future Year 2050 daily volumes, compound growth rate by segment was calculated using the SANDAG Series 12 2008 and 2050 forecast volumes:

$$\text{Compound Growth} = \left(\frac{2050\text{ADT}}{2008\text{ADT}} \right)^{1/N} - 1$$

Where:

N = number of years (2050 – 2008 = 42 years)

2050 ADT = SANDAG Series 12

2008 ADT = SANDAG Series 12

The growth rate was then applied for a period of 33 years to the ground count volumes (both weekday and weekend) collected in 2017 to determine the Future Year 2050 daily traffic volumes. **Table 5-4** summarizes the 2008 and 2050 model volumes, the calculated growth rate and Forecast Year 2050 volume for each roadway segment. Based on the model volumes, the growth rate on the segments ranged from approximately 0.18% on Sea World Drive near the I-5 interchange to 1.76% on Friars Road east of Sea World Drive.

The Future Year 2050 peak hour volumes were then calculated using the Future Year 2050 daily volumes in the study area. The existing ratio of peak hour volume to existing daily traffic volume was applied to the Future Year 2050 ADT volume to determine the future year peak hour intersection volumes for the weekday and weekend peak periods. The Future Year 2050 peak hour intersection volumes were then converted to turning movement volumes using the existing intersection turning movement patterns for each peak period. **Figures 5-6 and 5-7** illustrate the Year 2050 without the Master Plan Amendment peak hour and daily roadway segment volumes for the weekday and weekend conditions, respectively.

Table 5-5 summarizes the results of the Future Year 2050 intersection operational analysis for the weekday and weekend conditions. As shown, all the intersections within the project study area are forecast to operate at LOS E or LOS F during at least one of the analyzed peak hours. The increase in delay that translates to a deficient LOS is a result of the increase in background traffic volume forecast to occur within the study area without changes in conditions on Fiesta Island. Therefore, the intersections within the study area are forecast to operate at a deficient LOS E or F without the Mission Bay Park Master Plan Amendment. HCM LOS worksheets are provided in **Appendix I**.

The Year 2050 roadway segment analysis results are summarized in **Table 5-6 and 5-7** for the weekday and weekend conditions, respectively. Similar to the intersection analysis results, the roadway segment analysis shows that the increase in volume from 2017 to 2050 results in deficient future baseline operating conditions along Sea World Drive during the weekday conditions and along E. Mission Bay Drive during the weekend conditions.

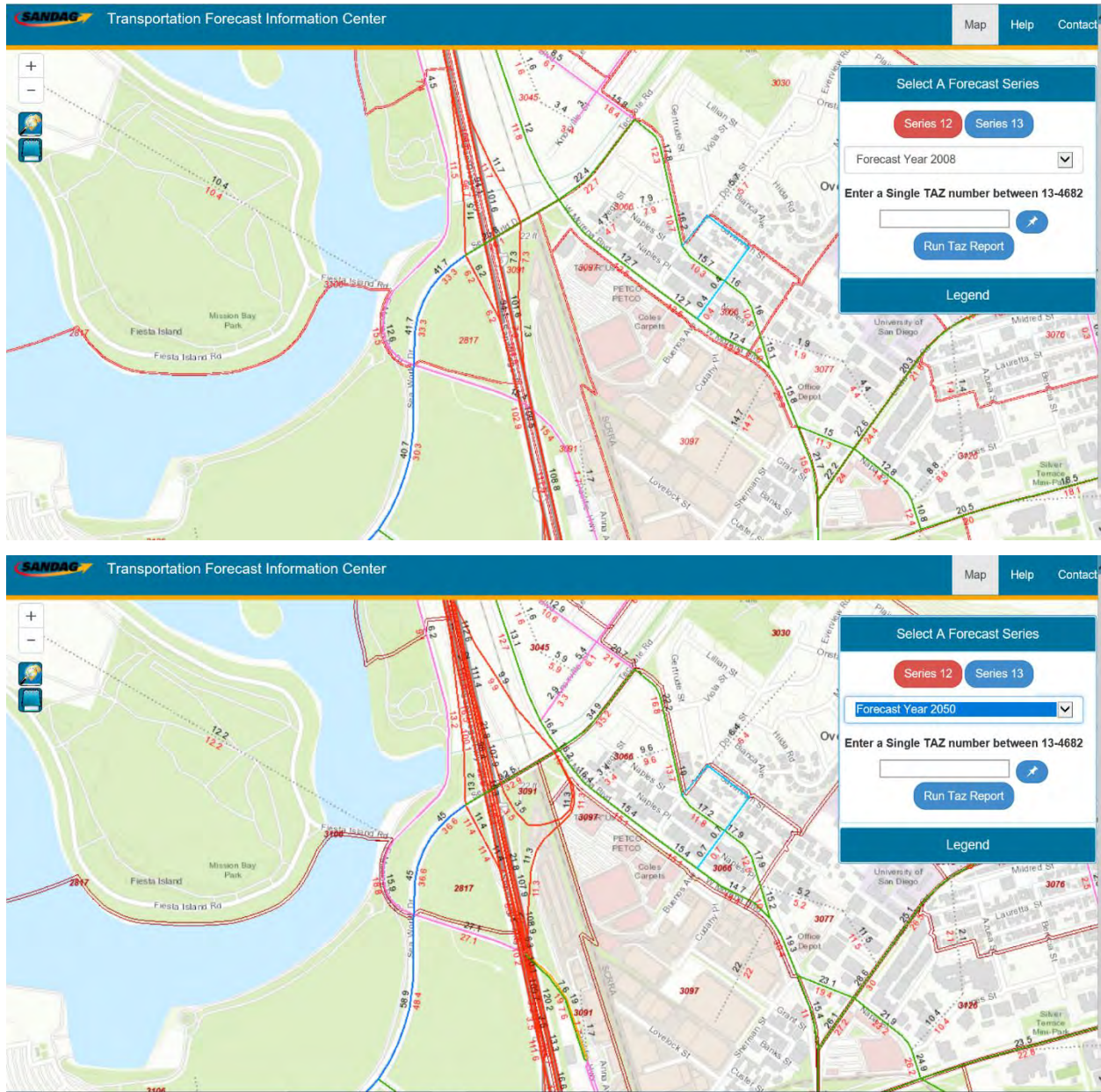


Figure 5-5: 2008 and 2050 SANDAG Model Volumes (Series 12)

Fiesta Island/Mission Bay Park Master Plan Amendment

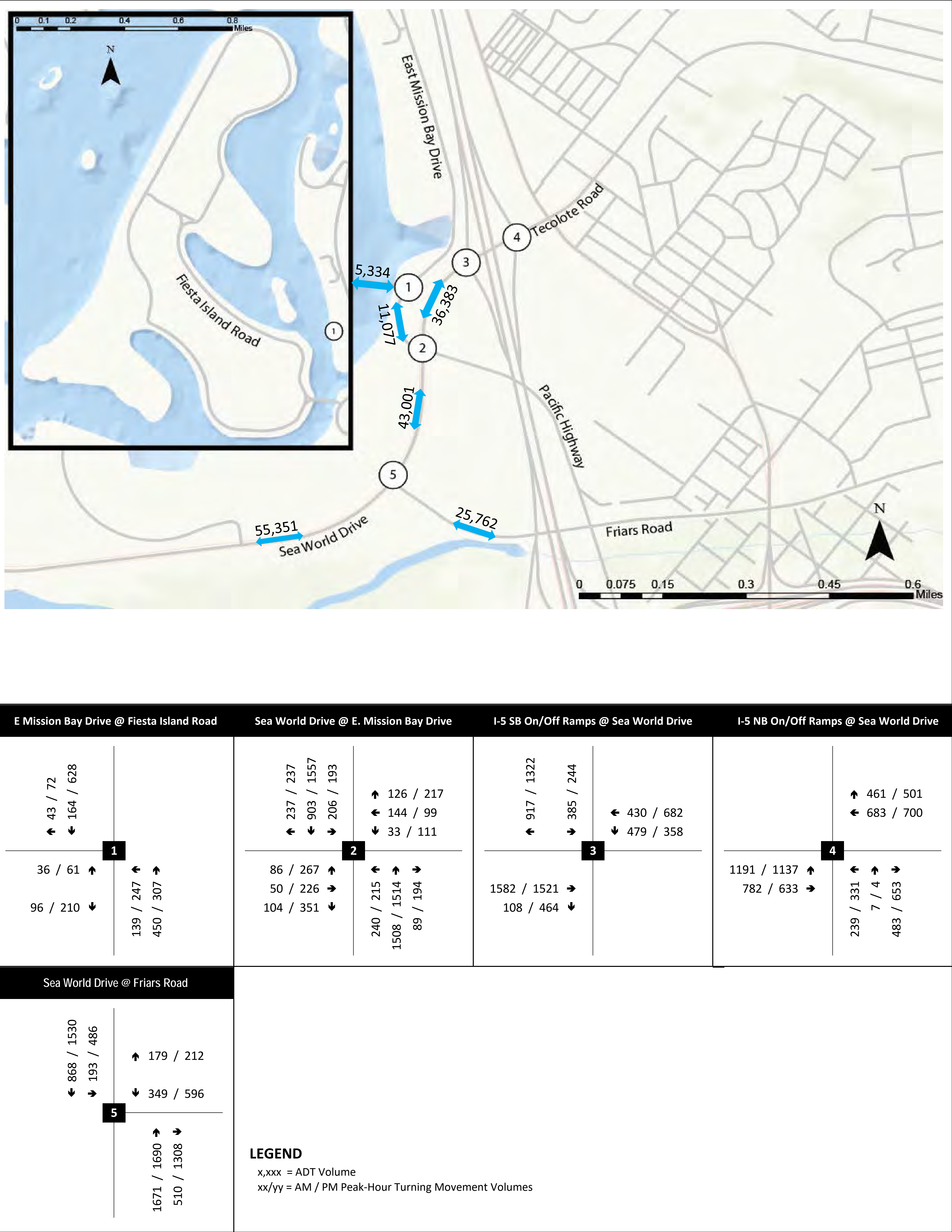


Figure 5-6
2050 without Master Plan Amendment Weekday Volumes

Fiesta Island/Mission Bay Park Master Plan Amendment



E Mission Bay Drive @ Fiesta Island Road	Sea World Drive @ E. Mission Bay Drive	I-5 SB On/Off Ramps @ Sea World Drive	I-5 NB On/Off Ramps @ Sea World Drive
<div> <div>78</div> <div>317</div> <div>103</div> <div>319</div> <div>339</div> <div>308</div> </div>	<div> <div>361</div> <div>1696</div> <div>122</div> <div>326</div> <div>53</div> <div>239</div> <div>147</div> <div>51</div> <div>85</div> <div>203</div> <div>1218</div> <div>60</div> </div>	<div> <div>1487</div> <div>293</div> <div>739</div> <div>410</div> <div>1321</div> <div>368</div> </div>	<div> <div>489</div> <div>618</div> <div>1044</div> <div>582</div> <div>490</div> <div>449</div> </div>
Sea World Drive @ Friars Road			
<div> <div>1759</div> <div>274</div> <div>149</div> <div>381</div> <div>1353</div> <div>392</div> </div>			

LEGEND

x,xxx = ADT Volume

xx = Midday Peak-Hour Turning Movement Volumes



Figure 5-7

2050 without Master Plan Amendment Weekend Volumes

Year 2050 with Project

To determine the potential impacts associated with the Master Plan Amendment, the forecast traffic associated with Option A and Option B were overlaid on the Future Year 2050 peak hour and daily roadway segment volumes discussed in the previous section. **Figures 5-8 and 5-9** present the Year 2050 with Option A peak hour intersection and daily roadway segment volumes for the weekday and weekend conditions, respectively. **Figures 5-10 and 5-11** present the Year 2050 with Option B peak hour and daily roadway segment volumes for the weekday and weekend volumes, respectively.

As shown in Table 5-5, analysis of the intersection operating conditions with Option A and with Option B show that all the study intersections are forecast to operate at deficient LOS in one or more of the peak periods. HCM LOS worksheets are provided in **Appendix J**.

For the following two intersections, the increase in delay associated with either Option A or Option B exceeds the threshold of significance during at least one of the analysis peak hours and therefore results in a *significant cumulative impact*:

- Intersection #1: E. Mission Bay Drive / Fiesta Island Road
- Intersection #2: E. Mission Bay Drive / Sea World Drive

Results of the Year 2050 with Project roadway segment analysis (Table 5-6) show that under the weekday conditions, the additional trips associated with either Option A or Option B do not result in a change in V/C ratio that exceeds the threshold of significance along any of the study segments. Therefore, the project results in no weekday roadway segment significant impacts.

However, for the weekend condition, shown in Table 5-7, the additional trips associated with either Option A or Option B result in an increase in V/C ratio that exceeds the threshold of significance for the following deficient roadway segments:

- Sea World Drive from Friars Road to E. Mission Bay Drive (Option A)
- E. Mission Bay Drive from Sea World Drive to Fiesta Island Road (Option A & Option B)
- Fiesta Island Road Causeway from E. Mission Bay Drive to the Loop Road (Option A & Option B)

Therefore, mitigation measures are required to mitigate the identified significant impacts.

Table 5-4: SANDAG Model Volumes and Forecast ADT

Roadway Segment	Series 12 Model Data			Existing (2017) and Future (2050) Volumes				
	2008	2050	Δ	Growth Rate	Existing 2017 Weekday	Forecast 2050 Weekday	Existing 2017 Weekend	Forecast 2050 Weekend
Sea World Drive								
S Shores Pkwy to Friars Rd	42,300	69,600	27,300	1.19%	37,428	55,351	36,178	53,502
Friars Rd to E. Mission Bay Dr	40,700	58,900	18,200	0.88%	32,163	43,001	32,573	43,549
E. Mission Bay Dr to I-5 Ramps	41,700	45,000	3,300	0.18%	34,270	36,383	37,188	39,481
E. Mission Bay Drive								
Sea World Dr to Fiesta Island Rd	12,600	15,900	3,300	0.56%	9,227	11,077	11,521	13,831
Friars Road								
East of Sea World Dr	10,800	22,500	11,700	1.76%	14,472	25,762	10,985	19,555

Source: SANDAG, Traffic Forecasting Information Center (2017)

Table 5-5: Year 2050 Without & With Master Plan Amendment Alternatives Peak Hour Intersection Operations Analysis

#	Intersection	Traffic Control	Peak Hour	2050 No Amendment		2050 with Option A Conditions			2050 with Option B Conditions		
				Average Delay (sec)	LOS	Average Delay (sec)	LOS	Δ ⁽¹⁾	Average Delay (sec)	LOS	Δ ⁽¹⁾
UNSIGNALIZED INTERSECTION											
1	E. Mission Bay Dr and Fiesta Island Rd	OWSC ⁽²⁾	AM	14.2	B	14.9	B	0.7	14.6	B	0.4
			PM	98.7	F	141.9	F	43.2	119.1	F	20.4
			Weekend MID	210.7	F	307.8	F	97.1	255.3	F	44.6
SIGNALIZED INTERSECTIONS											
2	Sea World Dr and E. Mission Bay Dr - Pacific Hwy	Signal	AM	74.8	E	75.7	E	0.9	75.7	E	0.9
			PM	105.8	F	108.1	F	2.3	106.9	F	1.1
			Weekend MID	70.0	E	74.2	E	4.2	72.1	E	2.1
3	Sea World Dr and I-5 SB Off Ramps	Signal	AM	86.5	F	86.9	F	0.4	86.8	F	0.3
			PM	17.8	B	17.8	B	0.0	17.8	B	0.0
			Weekend MID	19.9	B	20.0	C	0.1	20.0	B	0.1
4	Sea World Dr and I-5 NB Off Ramps	Signal	AM	85.5	F	86.2	F	0.7	86.0	F	0.5
			PM	86.8	F	87.5	F	0.7	87.2	F	0.4
			Weekend MID	85.3	F	85.6	F	0.3	85.0	F	-0.3
5	Sea World Dr and Friars Rd	Signal	AM	44.7	D	44.9	D	0.2	44.8	D	0.1
			PM	100.3	F	101.0	F	0.7	100.8	F	0.5
			Weekend MID	21.4	C	21.6	C	0.2	21.5	C	0.1

Notes:

⁽¹⁾ Change in Delay. **Bold** = Exceeds threshold of significance

⁽²⁾ One-Way Stop Controlled (OWSC) from eastbound approach. The delay and LOS reported is for the stop controlled eastbound approach.

Table 5-6: 2050 Weekday Conditions with Master Plan Amendment Roadway Segment Operations Analysis

Roadway Segment	Classification ⁽¹⁾	Daily Capacity ⁽¹⁾	2050 Weekday			2050 Plus Option A Weekday				2050 Plus Option B Weekday			
			ADT	V/C	LOS	ADT	V/C	LOS	Δ ⁽²⁾	ADT	V/C	LOS	Δ ⁽²⁾
Sea World Drive													
S. Shores Pkwy to Friars Rd	4-Lane Major Arterial	40,000	55,351	1.38	F	55,446	1.39	F	0.01 ⁽³⁾	55,407	1.39	F	0.01 ⁽³⁾
Friars Rd to E. Mission Bay Dr	4-Lane Major Arterial	40,000	43,001	1.08	F	43,191	1.08	F	0.00	43,114	1.08	F	0.00
E. Mission Bay Dr to I-5 Ramps	4-Lane Major Arterial	40,000	36,383	0.91	E	36,541	0.91	E	0.00	36,477	0.91	E	0.00
E. Mission Bay Drive													
Sea World Dr to Fiesta Island Rd	2-Lane Collector (continuous left-turn lane)	15,000	11,077	0.74	D	11,552	0.77	D	0.03	11,359	0.76	D	0.02
Friars Road													
East of Sea World Dr	4-Lane Major Arterial	40,000	25,762	0.64	C	25,857	0.65	C	0.01	25,818	0.65	C	0.01
Fiesta Island Road													
E. Mission Bay Drive to Fiesta Island Loop	2-Lane Collector (no fronting property)	10,000	5,334	0.53	B	5,968	0.60	C	0.07	5,708	0.57	C	0.04

Notes:

(1) Based on the City's General Plan Mobility Element and Traffic Study Guidelines for Development Projects

(2) Change in V/C ratio; Bold indicates change exceeds thresholds of significance.

(3) When the V/C ratio is expanded to three decimal places, the net change in V/C is 0.002 (2050 Plus Option A Weekday) and 0.001 (2050 Plus Option B Weekday). Due to rounding, the impact on this segment appears to be significant when only two decimal places are presented. However, the net change in V/C ratio falls below the threshold of significance and is therefore determined to be not significant.

Table 5-7: 2050 Weekend Conditions with Master Plan Amendment Roadway Segment Operations Analysis

Roadway Segment	Classification ⁽¹⁾	Daily Capacity ⁽¹⁾	2050 Weekend			2050 Plus Option A Weekend				2050 Plus Option B Weekend			
			ADT	V/C	LOS	ADT	V/C	LOS	Δ ⁽²⁾	ADT	V/C	LOS	Δ ⁽²⁾
Sea World Drive													
S. Shores Pkwy to Friars Rd	4-Lane Major Arterial	40,000	53,502	1.34	F	53,654	1.34	F	0.00	53,592	1.34	F	0.00
Friars Rd to E. Mission Bay Dr	4-Lane Major Arterial	40,000	43,549	1.09	F	43,854	1.10	F	0.01	43,729	1.09	F	0.00
E. Mission Bay Dr to I-5 Ramps	4-Lane Major Arterial	40,000	39,481	0.99	E	39,735	0.99	E	0.00	39,631	0.99	E	0.00
E. Mission Bay Drive													
Sea World Dr to Fiesta Island Rd	2-Lane Collector (continuous left-turn lane)	15,000	13,831	0.92	E	14,592	0.97	E	0.05	14,281	0.95	E	0.03
Friars Road													
East of Sea World Dr	4-Lane Major Arterial	40,000	19,555	0.49	B	19,707	0.49	B	0.00	19,645	0.49	B	0.00
Fiesta Island Road													
E. Mission Bay Dr to Fiesta Island Loop	2-Lane Collector (no fronting property)	10,000	8,533	0.85	D	9,547	0.95	E	0.10	9,133	0.91	E	0.06

Notes:

(1) Based on the City's General Plan Mobility Element and Traffic Study Guidelines for Development Projects

(1) Change in V/C ratio; **Bold** indicates change exceeds thresholds of significance.