To:	David Megdal Island Land Venture LLC	**Date:**	November 12, 2025
From:	Kristen Stevens, PE		
Job Number:	23.5591		
RE:	Waterfront at Lake Havasu Traffic Statement		

Registered Professional Engineer (Civil)
CERTIFICATE NO.
81890
KRISTEN A.
STEVENS
Date Signed: 11/12/25
ARIZONA, U.S.A.

1. INTRODUCTION

Lōkahi, LLC (Lōkahi) has prepared this Traffic Statement for the proposed Waterfront at Lake Havasu development, located on the southwest corner of McCulloch Boulevard and Beachcomber Boulevard in Lake Havasu City, Arizona. See **Figure 1** for the vicinity map.

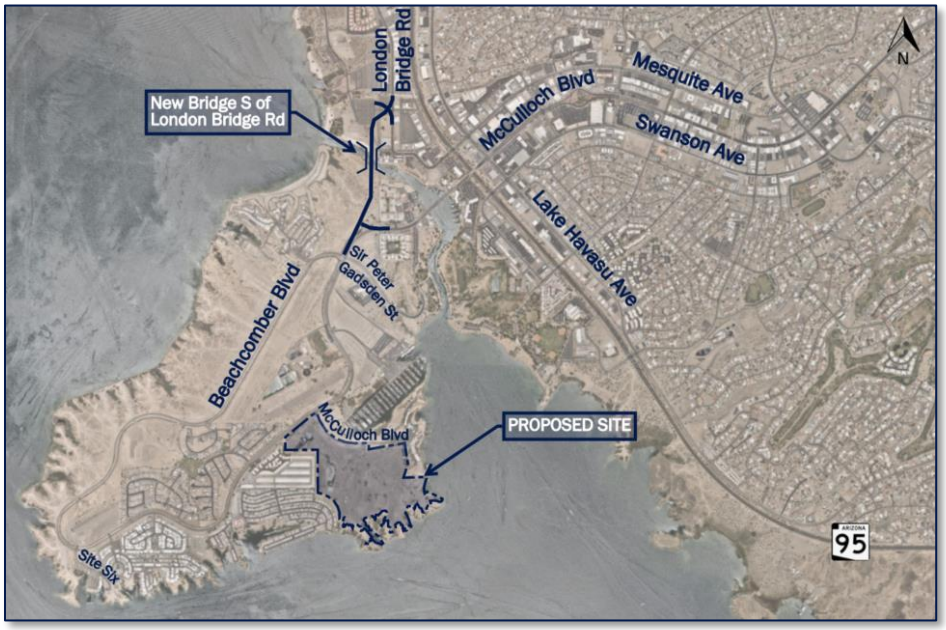

Figure 1 – Vicinity Map

To assess projected traffic impacts of the proposed Waterfront at Lake Havasu development, this Traffic Statement draws from the analyses and findings presented in the Lake Havasu City Second Bridge Feasibility Study (LHC/ADOT Feasibility Study), completed in July 2024. This LHC/ADOT Feasibility Study was initiated by Lake Havasu City in coordination with the Arizona Department of Transportation (ADOT) and funded through a $35.5 million state appropriation under Senate Bill 1722. The LHC/ADOT Feasibility Study was an extensive planning effort, incorporating technical modeling, stakeholder feedback, and public engagement. The LHC/ADOT Feasibility Study outlined the need for the second bridge for emergency and evacuation purposes for scenarios that the London Bridge crossing was unpassable or experienced extensive access delay conditions for emergency and public safety.

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The proposed Waterfront at Lake Havasu development is estimated to be fully built out between 2030 and 2032. The planned second bridge – currently underway – is expected to be constructed and operational before that time. Because the bridge will significantly alter access and circulation patterns on the island, evaluating future traffic conditions based on current patterns would not provide an accurate picture.

The most effective approach is to compare the proposed development's land uses with the assumptions and findings of the Lake Havasu Second Bridge Feasibility Study, which modeled future conditions for 2030. This method offers the most relevant and reliable basis for understanding how traffic will function in the area once the bridge is in place.

2. EXECUTIVE SUMMARY

The traffic-related impacts of the proposed Waterfront at Lake Havasu development have been evaluated in the context of the Lake Havasu City Second Bridge Feasibility Study, completed in July 2024. Initiated by the City of Lake Havasu in coordination with the Arizona Department of Transportation (ADOT) and funded through a $35.5 million state appropriation under Senate Bill 1722, the LHC/ADOT Feasibility Study was a robust and comprehensive planning effort. It incorporated detailed technical modeling, stakeholder input, and public engagement. The LHC/ADOT Feasibility Study outlined the need for the second bridge for emergency and evacuation purposes for scenarios that the London Bridge crossing was unpassable or experienced extensive access delay conditions for emergency and public safety.

At the time of the LHC/ADOT Feasibility Study, the development plan for the 91-acre site was still in the early stages of planning. However, the Waterfront at Lake Havasu team maintained close coordination with the City of Lake Havasu, and the Second Bridge project team to provide timely input on preliminary land use and site planning details. This collaborative effort helped ensure the study reflected informed, reasonable assumptions representative of anticipated development.

Since that time, the development plan has been refined—resulting in fewer residential units and a slight increase in commercial space compared to what was assumed in the LHC/ADOT Feasibility Study. **A comparative analysis confirms that the proposed Waterfront at Lake Havasu development will generate fewer overall daily and peak-hour trips than the scenario originally modeled in the LHC/ADOT Feasibility Study.**

Accordingly, the LHC/ADOT Feasibility Study's traffic analysis projected 2030 daily volumes based on a more intensive development scenario and full build-out of the second bridge. The capacity analysis concluded that all roadways on the island and adjacent mainland will continue to operate at acceptable levels of service, with available roadway capacity ranging from 37% to 92%.

- **These findings confirm that the surrounding roadway network is well-equipped to accommodate traffic from the proposed development. Because the LHC/ADOT Feasibility Study assumed more traffic-intensive land uses for the 91-acre site, the proposed Waterfront at Lake Havasu development is expected to result in even less traffic-related impact than originally projected—further supporting the conclusion that no adverse impacts to the transportation system are anticipated.**

- **The Second Bridge effectively will mitigate the proposed Waterfront at Lake Havasu's traffic impacts.**

- **The LHC/ADOT Second Bridge Feasibility Study recommends improvements to the intersection of McCulloch Boulevard and the second bridge new roadway alignment/Beachcomber Boulevard.**

- **This Traffic Statement provides a high-level analysis of the future roadway network. More detailed traffic analyses of site driveways—including traffic operations, traffic controls, lane configurations, turn-lane storage requirements and lengths—should be completed once the site plan is further defined. All site access points should be evaluated to provide acceptable ingress and egress operations, queue storage, and traffic control.**

3. EXISTING CONDITIONS

The site is a vacant 91-acre parcel (APN 107-15-015) located on the southern portion of Lake Havasu Island. It is currently zoned GC (Golf Course) and lies west of McCulloch Boulevard and south of Beachcomber Boulevard.

MCCULLOCH BOULEVARD

McCulloch Boulevard is an east-west roadway serving as the only existing connection between Lake Havasu City's mainland and Lake Havasu Island.

Roadway Segment Adjacent to the Site (Beachcomber Boulevard to The Nautical Beachfront Resort)

The segment of McCulloch Boulevard directly adjacent to the site provides one (1) through lane in each direction of travel. According to the *Lake Havasu Metropolitan Planning Organization (MPO) 2045 Regional Transportation Plan*, dated February 2022, this roadway segment is functionally classified as a local road. The posted speed limit is 25 miles per hour (mph).

BEACHCOMBER BOULEVARD

Beachcomber Boulevard forms a loop around Lake Havasu Island. The north and south loops both run from the McCulloch Boulevard intersection to Site Six. According to the *Lake Havasu MPO 2045 Regional Transportation Plan*, the loop carries fewer than 5,000 vehicles per day (vpd).

Roadway Segment Adjacent to the Site (South Loop – Islander Resort to McCulloch Boulevard)

The segment of Beachcomber Boulevard directly adjacent to the site and between the Islander Resort and McCulloch Boulevard, provides two (2) through lanes in each direction of travel. According to the *Lake Havasu MPO 2045 Regional Transportation Plan*, the south loop is functionally classified as a major collector. The posted speed limit is 35 mph.

Refer to **Figure 2** and **Figure 3** for the functional roadway classifications and number of lanes as provided in the *Lake Havasu MPO 2045 Regional Transportation Plan. See* **Figure 4** for 2022 daily traffic volumes reported in the LHC/ADOT Feasibility Study.

Figure 2 – Functional Classification (*Lake Havasu MPO Regional Transportation Plan*)

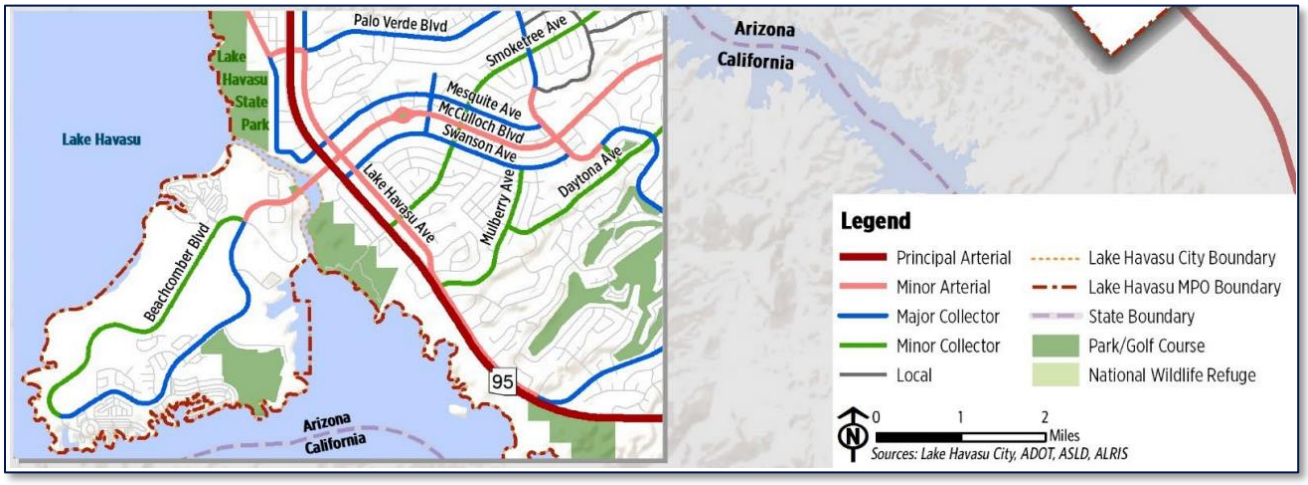


Figure 3 – Number of Lanes (*Lake Havasu MPO Regional Transportation Plan*)

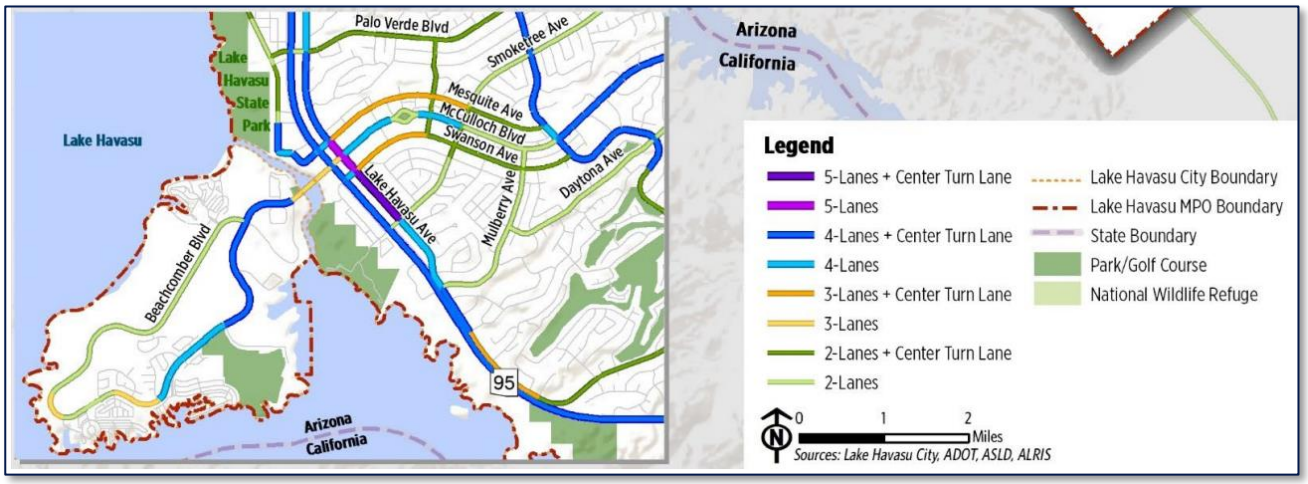


Figure 4 | Year 2022 Daily Traffic Volumes (LHC/ADOT Feasibility Study)

Legend

X,XXX Average Daily Traffic (vehicles per day)

4. PROPOSED DEVELOPMENT

The proposed Waterfront at Lake Havasu development is located on an approximately 91-acre site on Lake Havasu Island, at the southwest corner of McCulloch Boulevard and Beachcomber Boulevard. The project is estimated to be built out between 2030 and 2032.

The proposed development is anticipated to consist of the following land uses:

Commercial Land Use – 187,200 sq. ft.

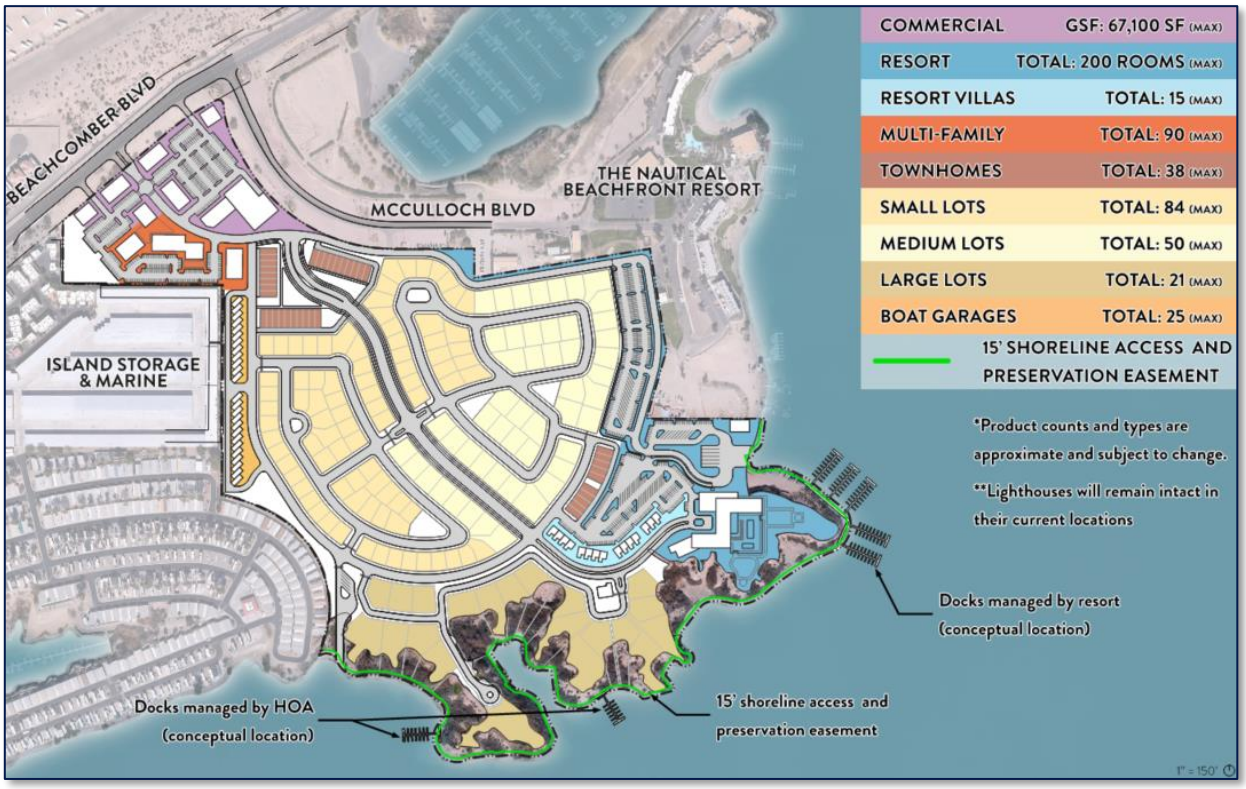
- Market: 22,000 sq. ft.
- Retail: 45,100 sq. ft.
- Resort: 120,100 sq. ft.

Residential Land Use – 298 Dwelling Units

- Resort Villas: 15 DU
- Multi-Family: 90 DU
- Townhomes: 38 DU
- Small Lots: 84 DU
- Medium Lots: 50 DU
- Large Lots: 21 DU

See **Figure 5** and **Attachment A** for the general development plan.

Figure 5 – General Development Plan



4.1 TRIP GENERATION – PROPOSED DEVELOPMENT

Trip generation for the proposed development was calculated utilizing the Institute of Transportation Engineers (ITE) publication entitled *Trip Generation, 12th Edition*. The ITE trip generation rates and fitted curve equations are based on studies that measure trip generation characteristics for various types of land uses. The rates are expressed in terms of trips per unit of land use type. This publication is the standard for the transportation engineering profession.

INTERNAL TRIPS

Given the mixed-use nature of the proposed development, a portion of the trips are expected to occur internally between the residential, retail, and resort components on-site. Internal capture rates from *NCHRP Report 684 – Enhancing Internal Trip Capture Estimation for Mixed-Use Developments* were applied to the AM and PM peak hours. Daily internal capture was calculated using the average of the AM and PM peak hour capture rates.

Trip generation estimates are based on the approximate product types and counts shown in **Figure 5** and are subject to change. The proposed development is anticipated to generate a total of 3,446 new weekday trips, including 134 trips during the AM peak hour and 265 trips during the PM peak hour. See **Table 1** and **Attachment B** for detailed calculations.

Table 1 – Trip Generation (Proposed Development)

Land Use	ITE LUC	Qty	Unit	Weekday	AM Peak Hour			PM Peak Hour		
				Total	Total	In	Out	Total	In	Out
Resort Hotel	330	200	Rooms	534	66	46	20	78	34	44
Shopping Plaza	821	45.1	1000 Sq Ft GFA	1,952	13	8	5	115	56	59
Market	850	22.0	1000 SF GFA	662	20	12	8	68	34	34
Recreational Homes (Single-Family Lots/Resort Villas)	260	170	Dwelling Units	665	30	10	20	55	31	24
Multifamily Housing	221	90	Dwelling Units	338	14	3	11	23	15	8
Townhomes	215	38	Dwelling Units	182	5	1	4	6	3	3
			Subtotal	4,333	148	80	68	345	173	172
			Internal Trips	*887*	*14*	*7*	*7*	*80*	*40*	*40*
Total Proposed Development Trips				**3,446**	**134**	**73**	**61**	**265**	**133**	**132**

* Based on approximate product types and counts; subject to change.

5. SECOND BRIDGE FEASIBILITY STUDY

Currently, London Bridge is the only existing vehicular connection between Lake Havasu's mainland and the island. The LHC/ADOT Feasibility Study outlined the need for the second bridge for emergency and evacuation purposes for scenarios that the London Bridge crossing was unpassable or experienced extensive access delay conditions for emergency and public safety. The LHC/ADOT Feasibility Study evaluated alternatives for a second bridge and included a comprehensive assessment to identify a preferred alignment and analysis of how the second bridge would affect future travel patterns. The selected alignment is shown in **Figure 6**.

As part of the LHC/ADOT Feasibility Study, Michael Baker International, in association with Kittelson & Associates, conducted a detailed travel demand model analysis using VISSIM software. This analysis evaluated roadway capacity and operational characteristics under existing conditions, as well as future conditions in 2030 and 2045 with the second bridge in place. The modeling assumed the second bridge would divert a portion of traffic from London Bridge, thereby reducing congestion and improving circulation between the island and the mainland.

The traffic analysis was based on the Lake Havasu Metropolitan Planning Organization's (LHMPO) 2022 Regional Travel Demand Model, developed as part of the 2045 Regional Transportation Plan. The model network and socioeconomic inputs were updated to reflect current conditions and validated using recent traffic count data. Future year projections incorporated the latest land use plans and anticipated development activity for Lake Havasu Island and surrounding areas.

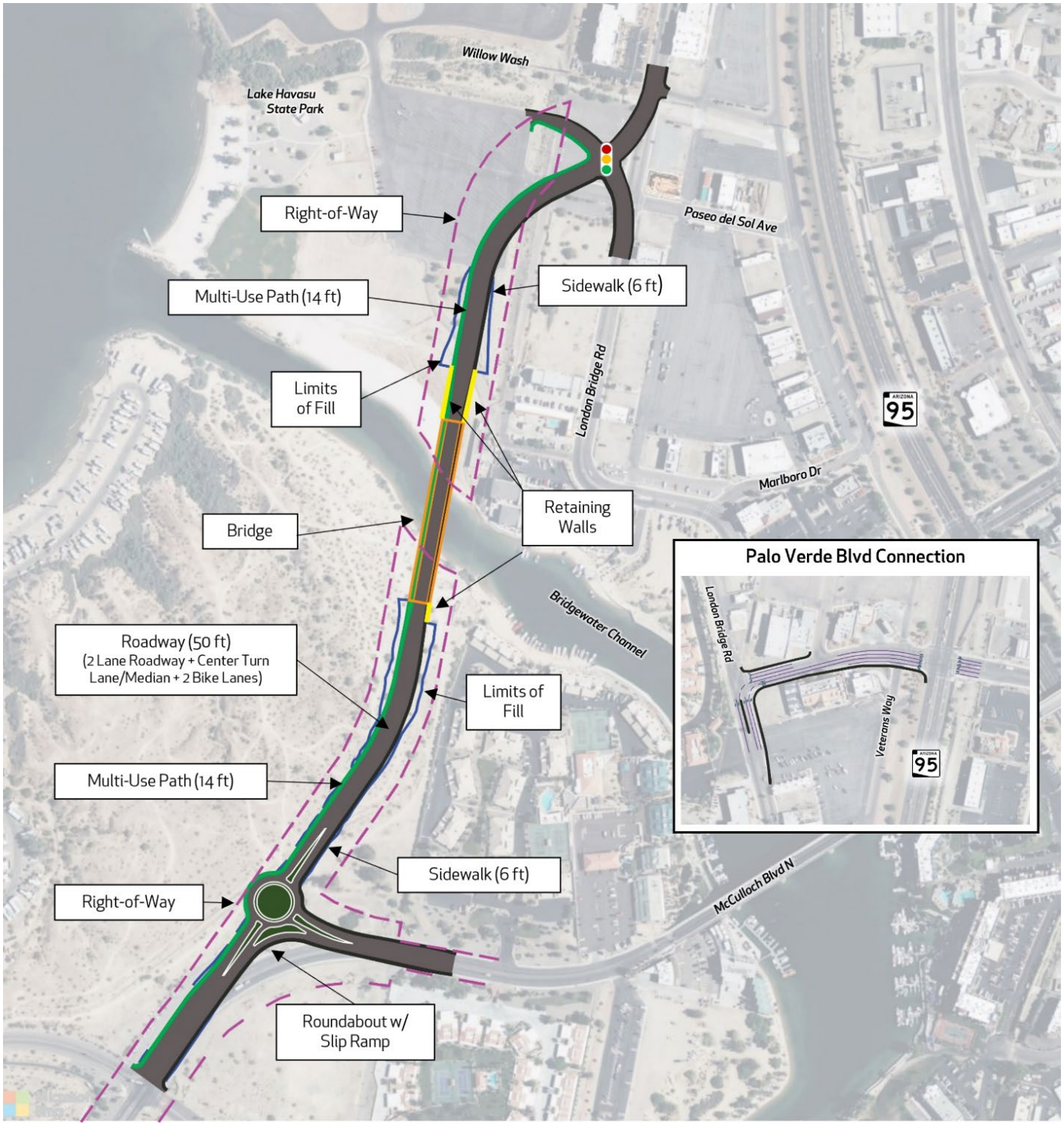
This effort was a comprehensive and collaborative process involving the City of Lake Havasu, the Lake Havasu Metropolitan Planning Organization (LHMPO), the consultant team of Michael Baker International in association with Kittelson & Associates, the public, and the Waterfront at Lake Havasu development team. Together, these stakeholders provided critical input to ensure the model reflected the most reasonable and informed assumptions regarding land use, development timelines, and projected growth patterns.

As part of the modeling, the 91-acre site proposed for the Waterfront at Lake Havasu development was assumed to include:

Commercial Land Use – 172,200 sq. ft. **Residential Land Use – 475 Dwelling Units**

Figure 6 | Second Bridge Preferred Alternative (LHC/ADOT Feasibility Study)

FIGURE 26: PREFERRED ALTERNATIVE



5.1 TRIP GENERATION – LHC/ADOT FEASIBILITY STUDY

The LHC/ADOT Feasibility Study assumed the 91-acre site would include:

Commercial Land Use – 172,000 sq. ft. **Residential Land Use – 475 Dwelling Units**

At the time the LHC/ADOT Feasibility Study was completed in July 2024, the proposed land uses and concept site plan for the Waterfront at Lake Havasu development were still in the early stages of planning. Throughout the process, the Waterfront at Lake Havasu team maintained close coordination with the Second Bridge project team—including Michael Baker International and the City of Lake Havasu—providing ongoing updates, land use details, and planning information to support a well-informed and representative model. These collaborative efforts helped ensure that the assumptions used in the LHC/ADOT Feasibility Study aligned with the initial development vision of the Waterfront at Lake Havasu and reflected the best available information at the time.

Since the LHC/ADOT Feasibility Study's completion, the Waterfront at Lake Havasu's development plan has been further refined. As described previously, the proposed Waterfront at Lake Havasu is now anticipated to consist of the following land uses:

Commercial Land Use – 187,200 sq. ft.

- Market: 22,000 sq. ft.
- Retail: 45,100 sq. ft.
- Resort: 120,100 sq. ft.

Residential Land Use – 298 Dwelling Units

- Resort Villas: 15 DU
- Multi-Family: 90 DU
- Townhomes: 38 DU
- Small Lots: 84 DU
- Medium Lots: 50 DU
- Large Lots: 21 DU

Table 2 provides a comparison between the land use assumptions used in the LHC/ADOT Feasibility Study and the land uses currently proposed for the Waterfront at Lake Havasu development.

Compared to the current proposal, the proposed development assumes **9% more commercial square footage** and **37% less residential dwelling units**.

Table 2 – Land Use Comparison

Land Use	Commercial (Sq. Ft.)	Residential (DU)
Proposed Development	187,200	298
LHC/ADOT Feasibility Study	172,200	475
Difference	9%	-37%

Commercial Land Use

To estimate the commercial trip generation for the LHC/ADOT Feasibility Study's land use assumptions for the 91-acre site, the proposed Waterfront at Lake Havasu development's commercial trip generation was adjusted to reflect a 9% reduction in commercial square footage. See **Table 3** for the LHC/ADOT Feasibility Study's commercial trip generation calculations.

Table 3 – Trip Generation (LHC/ADOT Feasibility Study Commercial Development)

Land Use	ITE LUC	Qty	Unit	Weekday	AM Peak Hour			PM Peak Hour		
				Total	Total	In	Out	Total	In	Out
Proposed Development Commercial Trips										
Resort Hotel	330	200	Rooms	534	66	46	20	78	34	44
Shopping Plaza	821	45.1	1000 Sq Ft GFA	1,952	13	8	5	115	56	59
Market	850	22	1000 SF GFA	662	20	12	8	68	34	34
Subtotal				3,148	99	66	33	261	124	137
Internal Trips				590	8	4	4	47	17	30
Total Proposed Development Commercial Trips				**2,558**	**91**	**62**	**29**	**214**	**107**	**107**
LHC/ADOT Feasibility Study Commercial Trips										
Total LHC/ADOT Feasibility Study Commercial Trips				**2,353**	**84**	**57**	**27**	**196**	**98**	**98**
Commercial Difference				205	7	5	2	18	9	9
Commercial % Difference				9%	9%	9%	8%	9%	9%	9%

The commercial development in the LHC/ADOT Feasibility Study for the 91-acre site is anticipated to generate a total of 2,353 weekday trips, including 84 trips during the AM peak hour and 196 trips during the PM peak hour. Compared to these estimates, the proposed development is anticipated to generate 205 (9%) additional weekday trips, including 7 (9%) more trips during the AM peak hour and 18 (9%) more trips during the PM peak hour.

Residential Land Use

To estimate the residential trip generation for the LHC/ADOT Feasibility Study's land use assumptions for the 91-acre site, the proposed Waterfront at Lake Havasu development's residential trip generation was adjusted to reflect a 37% increase in residential dwelling units. See **Table 4** for the LHC/ADOT Feasibility Study's residential trip generation calculations.

Table 4 – Trip Generation (LHC/ADOT Feasibility Study Residential Development)

Land Use	ITE LUC	Qty	Unit	Weekday	AM Peak Hour			PM Peak Hour		
				Total	Total	In	Out	Total	In	Out
Proposed Development Residential Trips										
Recreational Homes (Single-Family Lots/Resort Villas)	260	170	Dwelling Units	665	30	10	20	55	31	24
Multifamily Housing	221	90	Dwelling Units	338	14	3	11	23	15	8
Townhomes	215	38	Dwelling Units	182	5	1	4	6	3	3
Subtotal				1,185	49	14	35	84	49	35
Internal Trips				297	6	3	3	33	23	10
Total Proposed Development Residential Trips				**888**	**43**	**11**	**32**	**51**	**26**	**25**
LHC/ADOT Feasibility Study Residential Trips										
Total LHC/ADOT Feasibility Study Residential Trips				**1,410**	**69**	**18**	**51**	**81**	**41**	**40**
Residential Difference				-522	-26	-7	-19	-30	-15	-15
Residential % Difference				-37%	-37%	-38%	-37%	-37%	-37%	-37%

The residential development in the LHC/ADOT Feasibility Study for the 91-acre site is anticipated to generate a total of 1,410 weekday trips, including 69 trips during the AM peak hour and 81 trips during the PM peak hour. Compared to these estimates, the proposed development is anticipated to generate 522 (37%) **fewer** weekday trips, including 26 (37%) **less** trips during the AM peak hour and 30 (37%) **less** trips during the PM peak hour.

6. TRIP GENERATION COMPARISON

When comparing both commercial and residential land uses, the proposed Waterfront at Lake Havasu development results in a net decrease of 317 (-8%) weekday trips—including 19 (-12%) less trips during the AM peak hour and 12 (-4%) less during the PM peak hour—than the LHC/ADOT Feasibility Study assumptions for the proposed development.

This demonstrates that the **LHC/ADOT Feasibility Study assumed a more intensive development scenario than what is currently proposed, resulting in traffic projections that are conservative. As a result, the proposed Waterfront at Lake Havasu development is expected to have less overall traffic impact than what was shown in the LHC/ADOT Feasibility Study.** A trip generation comparison is shown in **Table 5.**

Table 5 – Trip Generation Comparison (LHC/ADOT Feasibility Study vs. Proposed Development)

Land Use	Weekday	AM Peak Hour			PM Peak Hour		
	Total	Total	In	Out	Total	In	Out
Total Proposed Development Trips	**3,446**	**134**	**73**	**61**	**265**	**133**	**132**
Total LHC/ADOT Feasibility Study Trips	**3,763**	**153**	**75**	**78**	**277**	**139**	**138**
Total Difference	-317	-19	-2	-17	-12	-6	-6
Total % Difference	-8%	-12%	-3%	-22%	-4%	-4%	-4%

7. YEAR 2030 TRAFFIC VOLUMES & CAPACITY ANALYSIS

The LHC/ADOT Feasibility Study includes projected 2030 daily traffic volumes that reflect full build-out of the second bridge and assumed development of the 91-acre parcel with a more intensive land use scenario. **Table 6** shows existing 2022 daily volumes under the current one-bridge network and projected 2030 daily volumes with two bridges, as presented in the LHC/ADOT Feasibility Study. Roadways located on the island are highlighted in brown. See **Figure 7** for 2030 daily traffic volumes reported in the LHC/ADOT Feasibility Study.

A capacity analysis found:

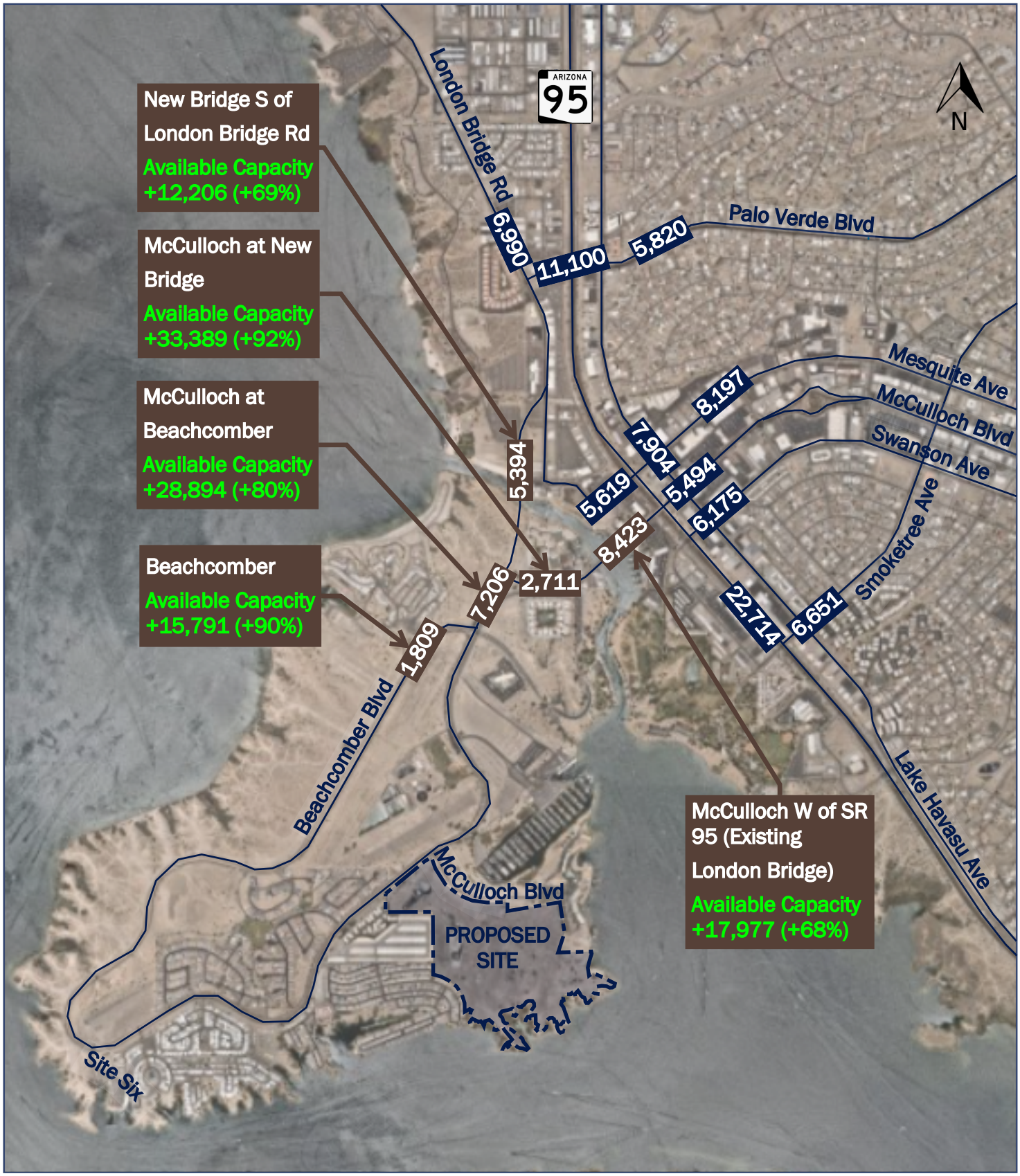
- All island roadways will operate with **acceptable levels of service (LOS), between 68% and 92% of available capacity**
- Roadways on the mainland near the bridge will also operate with **acceptable levels of service (LOS), between 37% and 85% of available capacity**

This confirms that the roadway network **has the capacity** to support future traffic volumes with the proposed development in place.

Table 6 – Year 2030 Daily Traffic Volumes (LHC/ADOT Feasibility Study) (Island Roadways in Brown)

Location	Existing (One Bridge)	Build (Two Bridges)			
		Scenario A: 3 Lane Bridge			
		2A: at Palo Verde			
	2022	2030	Capacity (LOS D)	Available Capacity	
Lake Havasu (4 LANES)	8,354	7,904	36,100	28,196	78%
SR 95 (4 LANES)	22,757	22,714	36,100	13,386	37%
London Bridge Rd (4 LANES)	4,132	6,990	36,100	29,110	81%
Palo Verde W of SR 95 (2 LANES)	6,140	11,100	17,600	6,500	37%
Palo Verde E of SR 95 (2 LANES)	5,482	5,820	17,600	11,780	67%
Mesquite W of SR 95 (4 LANES)	-	5,619	36,100	30,481	84%
Mesquite E of SR 95 (4 LANES)	6,670	8,197	36,100	27,903	77%
Beachcomber (2 LANES)	2,317	1,809	17,600	15,791	90%
McCulloch at Beachcomber (4 LANES)	5,918	7,206	36,100	28,894	80%
McCulloch at New Bridge (4 LANES)	-	2,711	36,100	33,389	92%
McCulloch W of SR 95 (3 LANES)	10,430	8,423	26,400	17,977	68%
McCulloch E of SR 95 (4 LANES)	5,255	5,494	36,100	30,606	85%
Swanson (3 LANES)	5,915	6,175	26,400	20,225	77%
Smoketree (2 LANES)	6,387	6,651	17,600	10,949	62%
New Bridge S of London Bridge Rd	-	5,394	17,600	12,206	69%

Figure 7 | Year 2030 Daily Traffic Volumes (LHC/ADOT Feasibility Study)



Legend

X,XXX Average Daily Traffic (vehicles per day)

8. SUMMARY

The traffic-related impacts of the proposed Waterfront at Lake Havasu development have been evaluated in the context of the Lake Havasu City Second Bridge Feasibility Study, completed in July 2024. Initiated by the City of Lake Havasu in coordination with the Arizona Department of Transportation (ADOT) and funded through a $35.5 million state appropriation under Senate Bill 1722, the LHC/ADOT Feasibility Study was a robust and comprehensive planning effort. It incorporated detailed technical modeling, stakeholder input, and public engagement. The LHC/ADOT Feasibility Study outlined the need for the second bridge for emergency and evacuation purposes for scenarios that the London Bridge crossing was unpassable or experienced extensive access delay conditions for emergency and public safety.

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- **These findings confirm that the surrounding roadway network is well-equipped to accommodate traffic from the proposed development. Because the LHC/ADOT Feasibility Study assumed more traffic-intensive land uses for the 91-acre site, the proposed Waterfront at Lake Havasu development is expected to result in even less traffic-related impact than originally projected—further supporting the conclusion that no adverse impacts to the transportation system are anticipated.**

- **The Second Bridge effectively will mitigate the proposed Waterfront at Lake Havasu's traffic impacts.**

- **The LHC/ADOT Second Bridge Feasibility Study recommends improvements to the intersection of McCulloch Boulevard and the second bridge new roadway alignment/Beachcomber Boulevard.**

- **This Traffic Statement provides a high-level analysis of the future roadway network. More detailed traffic analyses of site driveways—including traffic operations, traffic controls, lane configurations, turn-lane storage requirements and lengths—should be completed once the site plan is further defined. All site access points should be evaluated to provide acceptable ingress and egress operations, queue storage, and traffic control.**
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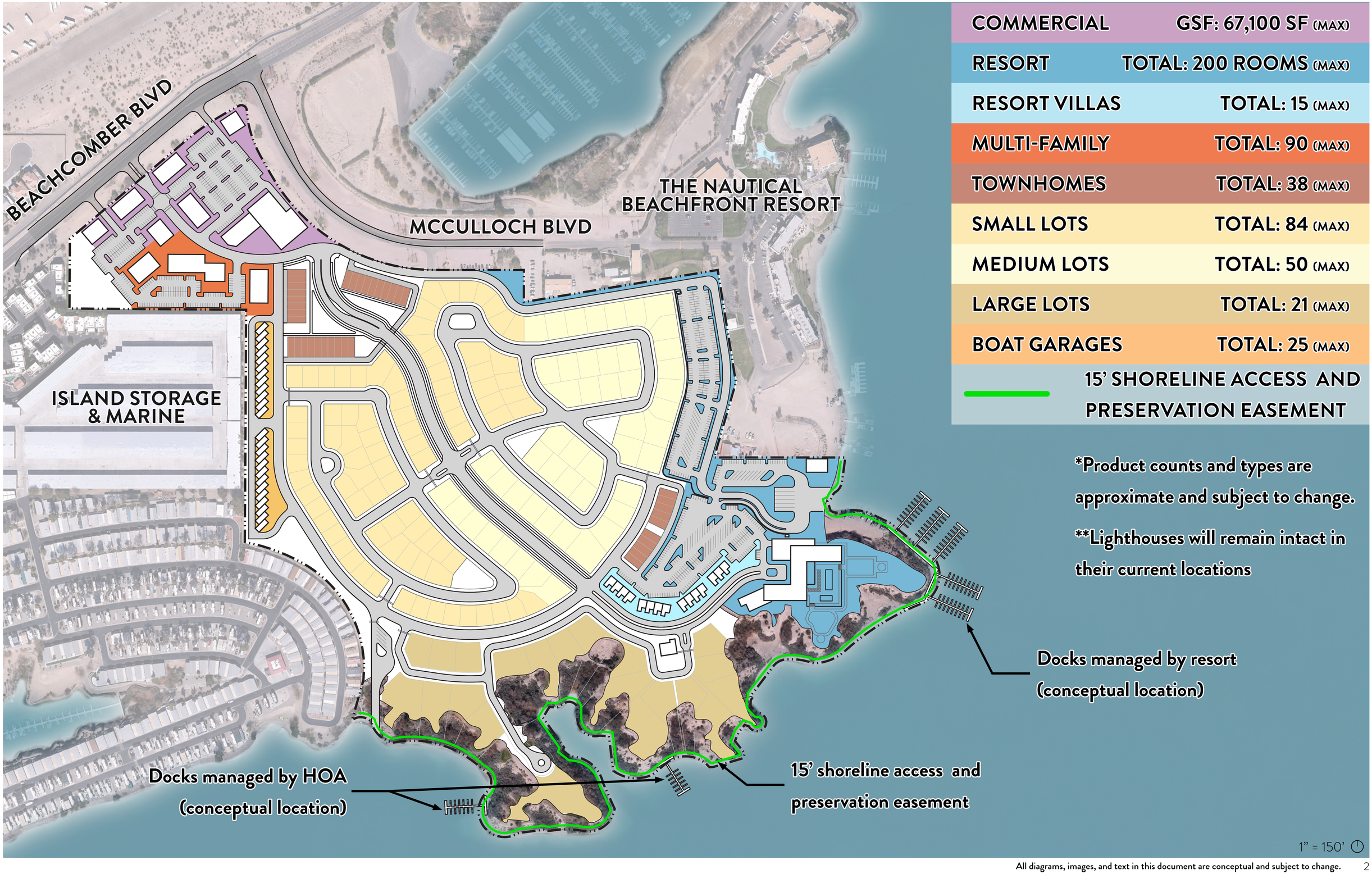
ATTACHMENT A – WATERFRONT AT LAKE HAVASU GENERAL DEVELOPMENT PLAN

Lokahi

A

GENERAL DEVELOPMENT PLAN



COMMERCIAL	GSF: 67,100 SF (MAX)
RESORT	TOTAL: 200 ROOMS (MAX)
RESORT VILLAS	TOTAL: 15 (MAX)
MULTI-FAMILY	TOTAL: 90 (MAX)
TOWNHOMES	TOTAL: 38 (MAX)
SMALL LOTS	TOTAL: 84 (MAX)
MEDIUM LOTS	TOTAL: 50 (MAX)
LARGE LOTS	TOTAL: 21 (MAX)
BOAT GARAGES	TOTAL: 25 (MAX)
15' SHORELINE ACCESS AND PRESERVATION EASEMENT	

*Product counts and types are approximate and subject to change.

**Lighthouses will remain intact in their current locations

1" = 150'

ATTACHMENT B – TRIP GENERATION

Waterfront at Lake Havasu
Proposed Development

12th Edition Trip Generation Calculations

Land Use	ITE Code	Qty	Unit	Weekday			AM Peak Hour			PM Peak Hour			Weekday			AM Peak Hour			PM Peak Hour			
				Rate	% In	% Out	Rate	% In	% Out	Rate	% In	% Out	Total	In	Out	Total	In	Out	Total	In	Out	
Recreational Homes (Single-Family Lots/Resort Villas)	260	170	Dwelling Units	3.68	50%	50%	0.24	35%	65%	0.29	56%	44%	626	313	313	41	14	27	49	28	21	Average
Recreational Homes (Single-Family Lots/Resort Villas)	260	170	Dwelling Units	2.60	50%	50%	0.16	35%	65%	0.22	56%	44%	442	221	221	27	9	18	37	21	16	Minimum
Recreational Homes (Single-Family Lots/Resort Villas)	260	170	Dwelling Units	4.40	50%	50%	0.30	35%	65%	0.36	56%	44%	748	374	374	51	18	33	61	34	27	Maximum
Land Use	ITE Code	Qty	Unit	Weekday			AM Peak Hour			PM Peak Hour			Weekday			AM Peak Hour			PM Peak Hour			
				Equation	% In	% Out	Equation	% In	% Out	Equation	% In	% Out	Total	In	Out	Total	In	Out	Total	In	Out	
Recreational Homes (Single-Family Lots/Resort Villas)	260	170	Dwelling Units	Ln(T)=0.96Ln(X)+1.57	50%	50%	T=0.25(X)-12.88	35%	65%	Ln(T)=0.93Ln(X)-0.77	56%	44%	665	332	333	30	10	20	55	31	24	Equation

Recreational Homes (Single-Family Lots/Resort Villas)	Standard Deviation	0.91	0.07	0.06
	Number of Studies	5	5	5
	Average Size	691	691	691
	R^2	0.96	0.85	0.97

Land Use	ITE Code	Qty	Unit	Weekday			AM Peak Hour			PM Peak Hour			Weekday			AM Peak Hour			PM Peak Hour			
				Rate	% In	% Out	Rate	% In	% Out	Rate	% In	% Out	Total	In	Out	Total	In	Out	Total	In	Out	
Multifamily Housing	221	90	Dwelling Units	4.46	50%	50%	0.38	23%	77%	0.38	64%	36%	401	201	200	34	8	26	34	22	12	Average
Multifamily Housing	221	90	Dwelling Units	3.76	50%	50%	0.15	23%	77%	0.26	64%	36%	338	169	169	14	3	11	23	15	8	Minimum
Multifamily Housing	221	90	Dwelling Units	5.40	50%	50%	0.67	23%	77%	0.57	64%	36%	486	243	243	60	14	46	51	33	18	Maximum
Land Use	ITE Code	Qty	Unit	Weekday			AM Peak Hour			PM Peak Hour			Weekday			AM Peak Hour			PM Peak Hour			
				Equation	% In	% Out	Equation	% In	% Out	Equation	% In	% Out	Total	In	Out	Total	In	Out	Total	In	Out	
Multifamily Housing	221	90	Dwelling Units	T=4.55(X)-17.52	50%	50%	T=.42(X)-7.77	23%	77%	T=.36(X)+3.07	64%	36%	392	196	196	30	7	23	35	22	13	Equation

Multifamily Housing	Standard Deviation	0.62	0.10	0.07
	Number of Studies	7	20	21
	Average Size	192	184	179
	R^2	0.90	0.87	0.92

Land Use	ITE Code	Qty	Unit	Weekday			AM Peak Hour			PM Peak Hour			Weekday			AM Peak Hour			PM Peak Hour			
				Rate	% In	% Out	Rate	% In	% Out	Rate	% In	% Out	Total	In	Out	Total	In	Out	Total	In	Out	
Townhomes	215	38	Dwelling Units	6.57	50%	50%	0.47	25%	75%	0.51	57%	43%	250	125	125	18	5	13	19	11	8	Average
Townhomes	215	38	Dwelling Units	4.80	50%	50%	0.12	25%	75%	0.17	57%	43%	182	91	91	5	1	4	6	3	3	Minimum
Townhomes	215	38	Dwelling Units	8.45	50%	50%	0.74	25%	75%	1.25	57%	43%	321	161	160	28	7	21	48	27	21	Maximum
Land Use	ITE Code	Qty	Unit	Weekday			AM Peak Hour			PM Peak Hour			Weekday			AM Peak Hour			PM Peak Hour			
				Equation	% In	% Out	Equation	% In	% Out	Equation	% In	% Out	Total	In	Out	Total	In	Out	Total	In	Out	
Townhomes	215	38	Dwelling Units	Ln(T)=6.53(X)+3.25	50%	50%	T=0.59(X)-15.25	25%	75%	T=0.57(X)-7.84	57%	43%	251	126	125	7	2	5	14	8	6	Equation

Townhomes	Standard Deviation	1.28	0.16	0.16
	Number of Studies	11	26	31
	Average Size	84	129	131
	R^2	0.91	0.94	0.92

Land Use	ITE Code	Qty	Unit	Weekday			AM Peak Hour			PM Peak Hour			Weekday			AM Peak Hour			PM Peak Hour			
				Rate	% In	% Out	Rate	% In	% Out	Rate	% In	% Out	Total	In	Out	Total	In	Out	Total	In	Out	
Resort Hotel	330	200	Rooms	2.67	50%	50%	0.33	70%	30%	0.39	43%	57%	534	267	267	66	46	20	78	34	44	Average
Resort Hotel	330	200	Rooms				0.12	70%	30%	0.22	43%	57%				24	17	7	44	19	25	Minimum
Resort Hotel	330	200	Rooms				0.41	70%	30%	0.51	43%	57%				82	57	25	102	44	58	Maximum
Land Use	ITE Code	Qty	Unit	Weekday			AM Peak Hour			PM Peak Hour			Weekday			AM Peak Hour			PM Peak Hour			
				Equation	% In	% Out	Equation	% In	% Out	Equation	% In	% Out	Total	In	Out	Total	In	Out	Total	In	Out	
Resort Hotel	330	200	Rooms	Not Given			Not Given			Not Given			Not Given			Not Given			Not Given			Equation

Resort Hotel	Standard Deviation	****	0.15	0.15
	Number of Studies	1	3	3
	Average Size	404.00	574	574
	R^2	****	****	****

Land Use	ITE Code	Qty	Unit	Weekday			AM Peak Hour			PM Peak Hour			Weekday			AM Peak Hour			PM Peak Hour			
				Rate	% In	% Out	Rate	% In	% Out	Rate	% In	% Out	Total	In	Out	Total	In	Out	Total	In	Out	
Market	850	22.0	1000 SF GFA	92.29	50%	50%	2.95	59%	41%	8.79	50%	50%	2,030	1,015	1,015	65	38	27	193	97	96	Average
Market	850	22.0	1000 SF GFA	30.09	50%	50%	0.89	59%	41%	3.11	50%	50%	662	331	331	20	12	8	68	34	34	Minimum
Market	850	22.0	1000 SF GFA	170.24	50%	50%	9.35	59%	41%	20.30	50%	50%	3,745	1,873	1,872	206	122	84	447	223	224	Maximum
Land Use	ITE Code	Qty	Unit	Weekday			AM Peak Hour			PM Peak Hour			Weekday			AM Peak Hour			PM Peak Hour			
				Equation	% In	% Out	Equation	% In	% Out	Equation	% In	% Out	Total	In	Out	Total	In	Out	Total	In	Out	
Market	850	22.0	1000 SF GFA	T=85.92(X)+336.45	50%	50%	Not Given			Ln(T)=0.82Ln(X)+2.87			2,227	1,114	1,113	Not Given			222	111	111	Equation

Market	Standard Deviation	24.98	1.31	3.31
	Number of Studies	21	29	97
	Average Size	53	59	55
	R^2	0.82	****	0.67

Land Use	ITE Code	Qty	Unit	Weekday			AM Peak Hour			PM Peak Hour			Weekday			AM Peak Hour			PM Peak Hour			
				Rate	% In	% Out	Rate	% In	% Out	Rate	% In	% Out	Total	In	Out	Total	In	Out	Total	In	Out	
Shopping Plaza	821	45.1	1000 Sq Ft GFA	65.38	50%	50%	1.59	62%	38%	4.76	49%	51%	2,949	1,474	1,475	72	44	28	215	105	110	Average
Shopping Plaza	821	45.1	1000 Sq Ft GFA	43.29	50%	50%	0.29	62%	38%	2.55	49%	51%	1,952	976	976	13	8	5	115	56	59	Minimum
Shopping Plaza	821	45.1	1000 Sq Ft GFA	91.06	50%	50%	3.77	62%	38%	12.04	49%	51%	4,107	2,053	2,054	170	105	65	543	266	277	Maximum
Land Use	ITE Code	Qty	Unit	Weekday			AM Peak Hour			PM Peak Hour			Weekday			AM Peak Hour			PM Peak Hour			
				Equation	% In	% Out	Equation	% In	% Out	Equation	% In	% Out	Total	In	Out	Total	In	Out	Total	In	Out	
Shopping Plaza	821	45.1	1000 Sq Ft GFA	Not Given			Not Given			Not Given			Not Given			Not Given			Not Given			Equation

Shopping Plaza	Standard Deviation	20.03	1.18	1.89
	Number of Studies	6	9	24
	Average Size	59	67	79
	R^2	****	****	****

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Waterfront at Lake Havasu	**Organization:**	Lokahi
Project Location:	Lake Havasu City, AZ	**Performed By:**	KS
Scenario Description:		**Date:**	11/12/2025
Analysis Year:		**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	821, 850	45.1, 22	1000 SF GLA	33	20	13
Restaurant				0		
Cinema/Entertainment				0		
Residential	260, 221, 215	298	Units	49	14	35
Hotel	330	200	Rooms	66	46	20
All Other Land Uses[2]				0		
Total				148	80	68

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	3	1
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	2	0	0		1
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	148	80	68
Internal Capture Percentage	9%	9%	10%
External Vehicle-Trips[3]	134	73	61
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	10%	31%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	21%	9%
Hotel	4%	0%

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	Waterfront at Lake Havasu
Analysis Period:	**AM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	20	20	1.00	13	13
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	14	14	1.00	35	35
Hotel	1.00	46	46	1.00	20	20

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		4	1	3	1
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	15	7	0		1
Hotel	0	3	14	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		2	0	0	1	0
Retail	0		0	0	6	8
Restaurant	0	10		0	2	33
Cinema/Entertainment	0	1	0		1	0
Residential	0	2	0	0		6
Hotel	0	0	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	2	18	20	18	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	3	11	14	11	0	0
Hotel	2	44	46	44	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	4	9	13	9	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	3	32	35	32	0	0
Hotel	0	20	20	20	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Waterfront at Lake Havasu	**Organization:**	Lokahi
Project Location:	Lake Havasu City, AZ	**Performed By:**	KS
Scenario Description:		**Date:**	11/12/2025
Analysis Year:		**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	821, 850	45.1, 22	1000 SF GLA	183	90	93
Restaurant				0		
Cinema/Entertainment				0		
Residential	260, 221, 215	298	Units	84	49	35
Hotel	330	200	Rooms	78	34	44
All Other Land Uses[2]				0		
Total				345	173	172

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	23	5
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	9	0	0		1
Hotel	0	2	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	345	173	172
Internal Capture Percentage	23%	23%	23%
External Vehicle-Trips[3]	265	133	132
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	12%	30%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	47%	29%
Hotel	18%	5%

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	Waterfront at Lake Havasu
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	90	90	1.00	93	93
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	49	49	1.00	35	35
Hotel	1.00	34	34	1.00	44	44

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	2		27	4	24	5
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	15	7	0		1
Hotel	0	7	30	0	1	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		7	0	0	2	0
Retail	0		0	0	23	6
Restaurant	0	45		0	8	24
Cinema/Entertainment	0	4	0		2	0
Residential	0	9	0	0		4
Hotel	0	2	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	11	79	90	79	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	23	26	49	26	0	0
Hotel	6	28	34	28	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	28	65	93	65	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	10	25	35	25	0	0
Hotel	2	42	44	42	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.