FEASIBILITY STUDY

Proposed Chinatown Hotel

112 NORTH NIMITZ HIGHWAY
HONOLULU, HAWAII

SUBMITTED TO:

Mr. Christopher Flaherty
3 Leaf Holdings
1188 Bishop Street, Suite 907
Honolulu, Hawaii 96813

+1 (808) 529-0404

PREPARED BY:

HVS Consulting & Valuation
Division of TS Worldwide, LLC
100 Bush Street, Suite 1625
San Francisco, California 94104

+1 (281) 381-3456

HVS SAN FRANCISCO
100 Bush Street, Suite 1625
San Francisco, California 94104
+1 (281) 381-3456
+1 (415) 896-0516 FAX
www.hvs.com

October 4, 2021

Mr. Christopher Flaherty
3 Leaf Holdings
1188 Bishop Street, Suite 907
Honolulu, Hawaii 96813

Re: Proposed Chinatown Hotel
Honolulu, Hawaii
HVS Reference: 2021021135

Dear Mr. Flaherty:

Pursuant to your request, we herewith submit our feasibility study pertaining to the above-captioned property. We have inspected the real estate and analyzed the hotel market conditions in the Honolulu, Hawaii, area. We have studied the proposed project, and the results of our fieldwork and analysis are presented in this report. We have also reviewed the proposed improvements for this site. Our report was prepared in accordance with the Uniform Standards of Professional Appraisal Practice (USPAP), as provided by the Appraisal Foundation.

This report was produced during the ongoing COVID-19 pandemic. The impact of the pandemic is addressed throughout and considers market perspectives and information available on or about the effective date of the report. With vaccines widely available, and most travel restrictions lifted, the prevailing market outlook is that the peak impact of the pandemic on the travel industry is behind us. Most market participants believe that the recovery is underway, and that demand will strengthen at an accelerating pace over the balance of the year. Our market research reflects a general expectation that the U.S. market will recover to 2019 levels by 2024; the timing and pace of recovery for individual markets will vary based on market-specific characteristics and conditions.

We hereby certify that we have no undisclosed interest in the property, and our employment and compensation are not contingent upon our findings. This study is subject to the comments made throughout this report and to all assumptions and limiting conditions set forth herein.

Sincerely,
TS Worldwide, LLC

John Berean
Director
jberean@hvs.com, +1 (281) 381-3456
State Appraiser License (HI) CGA-1422

Table of Contents

1. Executive Summary

Subject of the Feasibility Study

The subject of the feasibility study is a 25,617-square-foot (0.59-acre) site to be improved with a full-service lodging facility. The property, which is planned to open on January 1, 2025, will feature 240 rooms, a speakeasy, a lobby café/bar, a rooftop restaurant, and a rooftop bar & lounge, 7,172 square feet of flexible meeting space, an outdoor pool, an outdoor whirlpool, a fitness center, a market pantry, a lobby workstation, and a concierge desk. The hotel will also contain the appropriate parking capacity and all necessary back-of-the-house space.

RENDERING OF PROJECT

The proposed subject property is envisioned as a lifestyle/boutique hotel. While a particular brand has yet to be chosen for this project, our feasibility study assumes that the proposed subject hotel will operate as an upscale- to upper-upscale, full-service hotel under a brand not currently represented in the market. The site is favorably located in the Chinatown Historic District within the greater Downtown Honolulu neighborhood. While still in the early stages of development, the proposed subject hotel is planned to offer several unique facilities and amenities, including a fifth-floor sky lobby that overlooks the Honolulu Harbor, as well as a rooftop amenity deck that features a restaurant, a bar/lounge, and an outdoor swimming pool. The subject site's location is 112 North Nimitz Highway, Honolulu, Hawaii 96817.

Pertinent Dates

The effective date of the report is June 24, 2021. The subject site was inspected by John Berean on May 10, 2021.

COVID-19

In December 2019, a novel coronavirus known as SARS-CoV-2 (COVID-19) was first identified in China, which has since spread throughout the world. The first reported case in the United States occurred in the State of Washington in late January 2020; by mid-March, cases had been identified in all 50 states, and the number of cases was increasing exponentially. The World Health Organization (WHO) officially declared COVID-19 a global pandemic on March 11, 2020, and the U.S. declared the outbreak a National Emergency on March 13, 2020. As the number of cases multiplied in the U.S. and throughout the world, governments implemented lockdowns and social-distancing measures in an effort to slow the spread of the virus. In most cases, these measures were effective, and the rates of infection slowed substantially through the summer months. After a spike in late December/early January, the number of new cases declined again. With vaccinations now available for all adults, infection rates continue to decline in most states. As a result, consumer confidence in being able to travel safely in the U.S. is rising; thus, the outlook for recovery of the travel industry has significantly improved.

The pandemic led to global economic disruptions, as stock markets throughout the world suffered sharp declines and the price of oil dropped precipitously. The markets have realized a significant recovery since the initial impact, and the price of oil has also recovered. In the U.S., economic activity declined sharply because of restrictions on business and travel. In most areas of the U.S., all but essential businesses were effectively closed for much of the second quarter of 2020, resulting in a 31.4% drop in GDP. With most states easing or lifting restrictions over the summer, the economy rebounded in the latter half of 2020, and with a 6.4% gain in the first quarter of 2021, actual GDP exceeded pre-pandemic levels. Significant government support contributed to this rebound, and the latest $1.9-trillion funding bill passed in March 2021 will further contribute to the ongoing economic recovery, with GDP growth for 2021 expected to reach or exceed 6.0%. While the long-term impact of the bailouts remains unknown, it is clear that the economic rebound is already well underway and will continue to stimulate the recovery of the hospitality industry.

The hospitality industry was severely affected by the pandemic, as travel declined sharply and restrictions on group sizes resulted in the cancellation of meetings and conventions. Most festivals and sporting events were similarly affected. Business and group travel dropped sharply; leisure travel was also affected, although not as significantly, as many resort and drive-to destinations captured demand from

Americans eager for a change of scenery. With vaccines widely available and infection rates falling, most travel restrictions have now been lifted, and travel has resumed. Leisure continues to be the strongest segment, with business travel also increasing, albeit at a slower pace. Group events are also returning, led by social gatherings. Corporate group and convention activity is anticipated to follow, initially consisting of events deferred from 2020 and early 2021, but this segment is not expected to regain historical levels until 2023 or 2024. The impact of the pandemic and ongoing recovery of the market are well illustrated by STR's RevPAR statistics for the month of April, which saw the greatest impact due to the pandemic. In April 2019, RevPAR for the U.S. lodging industry was $89.36. With the onset of the pandemic, RevPAR dropped to $17.79 in April 2020, an 80% decline. In April 2021, RevPAR recovered to $63.46, still 29% below the 2019 level but a substantial improvement over the 2020 performance. Given the recent trend, hotel owners, operators, and investors are increasingly optimistic about the balance of the year and the ultimate recovery of the market.

Ownership History

The developer of the proposed subject hotel is 'Ikenakea Development, which is based in Honolulu, Hawaii. The subject site was last sold in 1991; C Q Yee Hop & Co Ltd. & Yee Hop Realty Ltd. has owned the site since that time, having purchased it for an undisclosed price. The subject site is now under contract for purchase by 3 Leaf Holdings for a reported price of $11,000,000.

Management and Franchise History and Assumptions

Details pertaining to management terms were not yet determined at the time of this report; however, we assume that the proposed hotel will be managed by a professional hotel-operating company, with fees deducted at rates consistent with current market standards. Our projections reflect a total management fee of 3.0% of total revenues.

According to the developer, the proposed subject hotel will operate as a soft-branded, lifestyle/boutique property. Although a specific franchise affiliation and/or brand has yet to be finalized, based upon a review of several published franchise fees for brands that fall within this category, we have selected a royalty fee of 5.0% of rooms revenue and a marketing assessment fee of 3.5% of rooms revenue in order to estimate the cost of a national franchise affiliation. Based on our review of the agreement's terms or expected terms, the Independent franchise is reflected in our forecasts with a royalty fee of 5% of rooms revenue, and a marketing assessment of 3.5% of rooms revenue.

Summary of Hotel Market Trends

O'ahu is a major resort destination, and tourism represents the primary source of demand for the selected set of competitive hotels in this market. Hotel demand in Hawaii, similar to other major destination resort markets, is sensitive to economic trends, as much of the travel is discretionary or incentive in nature. During challenging economic periods, demand has contracted significantly, and during more prosperous economic periods, demand has rebounded to prior peak levels. Hotel operators report that demand has historically been affected by currency exchange rates in countries such as Japan, China, Australia, and Canada, and a strengthening U.S. dollar can affect visitation trends.

The following table provides a historical perspective on the supply and demand trends for a selected set of hotels, as provided by STR.

FIGURE 1-1 HISTORICAL SUPPLY AND DEMAND TRENDS (STR)

Year	Average Daily Room Count	Available Room Nights	Change	Occupied Room Nights	Change	Occupancy	Average Rate	Change	RevPAR	Change
2008	2,265	826,560	—	606,283	—	73.4 %	$165.54	—	$121.42	—
2009	2,268	827,820	0.2 %	622,103	2.6 %	75.1	139.76	(15.6) %	105.03	(13.5) %
2010	2,389	871,804	5.3	678,220	9.0	77.8	138.70	(0.8)	107.90	2.7
2011	2,624	957,760	9.9	756,446	11.5	79.0	154.99	11.7	122.41	13.4
2012	2,624	957,760	0.0	829,394	9.6	86.6	171.12	10.4	148.19	21.1
2013	2,624	957,760	0.0	817,633	(1.4)	85.4	193.50	13.1	165.19	11.5
2014	2,624	957,760	0.0	818,505	0.1	85.5	204.47	5.7	174.74	5.8
2015	2,598	948,192	(1.0)	834,874	2.0	88.0	211.85	3.6	186.53	6.7
2016	2,466	900,138	(5.1)	772,965	(7.4)	85.9	225.49	6.4	193.63	3.8
2017	3,061	1,117,116	24.1	943,552	22.1	84.5	215.47	(4.4)	182.00	(6.0)
2018	3,220	1,175,300	5.2	980,430	3.9	83.4	220.27	2.2	183.75	1.0
2019	3,258	1,189,086	1.2	1,036,630	5.7	87.2	225.05	2.2	196.20	6.8
2020	3,378	1,232,970	3.7	448,000	(56.8)	36.3	208.51	(7.3)	75.76	(61.4)
Year-to-Date Through March										
2020	3,378	304,020	—	222,161	—	73.1 %	$229.31	—	$167.57	—
2021	3,378	304,020	0.0 %	119,592	(46.2) %	39.3	179.28	(21.8) %	70.52	(57.9) %
Average Annual Compounded Change:										
2008 - 2019			3.4 %		5.0 %			2.8 %		4.5 %
2015 - 2019			5.8		5.6			1.5		1.3

Hotels Included in Sample	Class	Competitive Status	Number of Rooms	Year Affiliated	Year Opened	Comments
The Surfjack Hotel & Swim Club	Upscale Class	*Primary*	111	Jan 2020	Jun 1962	
Outrigger Resorts Waikiki Beachcomber	Upper Upscale Class	*Secondary*	496	Nov 2020	Jun 1971	S/O (Apr '20); R/O (Nov '20)
Autograph Collection The Laylow	Upper Upscale Class	*Primary*	251	Mar 2017	Jan 1973	
Hilton Waikiki Beach	Upper Upscale Class	*Secondary*	601	Oct 2020	Jun 1980	S/O (Apr '20); R/O (Oct '20)
DoubleTree by Hilton Hotel Alana Waikiki	Upscale Class	*Secondary*	317	Nov 2020	Mar 1992	S/O (Apr '20); R/O (Nov '20)
Aston Hotel At The Executive Centre	Upscale Class	*Primary*	112	Jan 2009	Jun 1992	
Embassy Suites by Hilton Waikiki Beach Walk	Upper Upscale Class	*Primary*	369	Dec 2006	Dec 2006	
The Modern Honolulu	Upscale Class	*Primary*	353	Sep 2011	Sep 2010	
Hampton by Hilton Inn & Suites Oahu/Kapolei	Upper Midscale Class	*Secondary*	175	Sep 2016	Sep 2016	
Hyatt Centric Waikiki Beach	Upper Upscale Class	*Primary*	230	Nov 2020	Dec 2016	S/O (Apr '20); R/O (Nov '20)
Embassy Suites by Hilton Oahu Kapolei	Upper Upscale Class	*Secondary*	180	Sep 2017	Sep 2017	
Residence Inn Oahu Kapolei	Upscale Class	*Secondary*	183	Oct 2019	Oct 2019	
		Total	**3,378**			

**S/O (Suspended Operations); R/O (Resumed Operations); E/O (Expected Reopening)*

Source: STR

The following tables reflect our estimates of operating data for hotels on an individual basis. These trends are presented in detail in the Supply and Demand Analysis chapter of this report.

FIGURE 1-2 PRIMARY COMPETITORS – OPERATING PERFORMANCE

Property	Number of Rooms	Est. Segmentation: FIT	Est. Segmentation: Wholesale	Est. Segmentation: Meeting and Group	Estimated 2018: Weighted Annual Room Count	Estimated 2018: Occ.	Estimated 2018: Average Rate	Estimated 2018: RevPAR	Estimated 2019: Weighted Annual Room Count	Estimated 2019: Occ.	Estimated 2019: Average Rate	Estimated 2019: RevPAR	Estimated 2019: Occupancy Penetration	Estimated 2019: Yield Penetration
The Laylow, Autograph Collection	251	78 %	17 %	5 %	251	90 - 95 %	$220 - $230	$200 - $210	251	85 - 90 %	$230 - $240	$200 - $210	95 - 100 %	100 - 110 %
Hyatt Centric Waikiki Beach	230	75	20	5	230	90 - 95	200 - 210	190 - 200	230	90 - 95	210 - 220	200 - 210	100 - 110	100 - 110
The Modern Honolulu	353	60	30	10	353	65 - 70	260 - 270	180 - 190	353	75 - 80	280 - 290	210 - 220	85 - 90	110 - 120
Surfjack Hotel & Swim Club	111	70	25	5	111	90 - 95	210 - 220	190 - 200	111	90 - 95	200 - 210	180 - 190	100 - 110	90 - 95
Embassy Suites by Hilton Waikiki Beach Walk	369	70	20	10	369	90 - 95	300 - 325	290 - 300	369	90 - 95	300 - 325	290 - 300	100 - 110	140 - 150
Aston at the Executive Centre Hotel	112	90	5	5	137	60 - 65	160 - 170	105 - 110	129	70 - 75	160 - 170	120 - 125	80 - 85	60 - 65
Sub-Totals/Averages	**1,426**	**72 %**	**21 %**	**7 %**	**1,451**	**83.9 %**	**$249.49**	**$209.44**	**1,443**	**86.5 %**	**$257.98**	**$223.18**	**99.3 %**	**111.7 %**
Secondary Competitors	1,952	70 %	16 %	14 %	1,327	83.0 %	$196.06	$162.70	1,361	87.8 %	$199.26	$174.93	100.8 %	87.6 %
Totals/Averages	**3,378**	**71 %**	**19 %**	**10 %**	**2,778**	**83.5 %**	**$224.12**	**$187.11**	**2,804**	**87.1 %**	**$229.26**	**$199.76**	**100.0 %**	**100.0 %**

** Specific occupancy and average rate data were utilized in our analysis, but are presented in ranges in the above table for the purposes of confidentiality.*

FIGURE 1-3 SECONDARY COMPETITORS – OPERATING PERFORMANCE

Property	Number of Rooms	Est. Segmentation: FIT	Est. Segmentation: Wholesale	Est. Segmentation: Meeting and Group	Total Competitive Level	Estimated 2018: Weighted Annual Room Count	Estimated 2018: Occ.	Estimated 2018: Average Rate	Estimated 2018: RevPAR	Estimated 2019: Weighted Annual Room Count	Estimated 2019: Occ.	Estimated 2019: Average Rate	Estimated 2019: RevPAR
Embassy Suites by Hilton O'ahu Kapolei	180	80 %	5 %	15 %	75 %	135	75 - 80 %	$210 - $220	$160 - $170	135	80 - 85 %	$220 - $230	$180 - $190
Hampton by Hilton O'ahu Kapolei	175	85	5	10	75	131	90 - 95	180 - 190	170 - 180	131	95 - 100	190 - 200	180 - 190
Residence Inn by Marriott O'ahu Kapolei	183	85	5	10	75	*Not Open*				35	55 - 60	210 - 220	120 - 125
Hilton Waikiki Beach	601	70	15	15	75	451	95 - 100	200 - 210	190 - 200	451	90 - 95	200 - 210	190 - 200
Waikiki Beachcomber by Outrigger	496	63	25	12	75	372	60 - 65	180 - 190	110 - 115	372	80 - 85	190 - 200	150 - 160
DoubleTree by Hilton Alana Waikiki	317	65	20	15	75	238	85 - 90	180 - 190	160 - 170	238	85 - 90	180 - 190	160 - 170
Totals/Averages	**1,952**	**70 %**	**16 %**	**14 %**	**75 %**	**1,327**	**83.0 %**	**$196.06**	**$162.70**	**1,361**	**87.8 %**	**$199.26**	**$174.93**

** Specific occupancy and average rate data was utilized in our analysis, but is presented in ranges in the above table for the purposes of confidentiality.*

Summary of Forecast Occupancy and Average Rate

Based on our analysis presented in the Projection of Occupancy and Average Rate chapter, we have chosen to use a stabilized occupancy level of 80% and a base-year rate position of $240.00 for the proposed subject hotel. The following table reflects a summary of our market-wide and proposed subject hotel occupancy and average rate projections.

FIGURE 1-4 ADR FORECAST – MARKET AND PROPOSED SUBJECT PROPERTY

	Historical									
Calendar Year	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**
Market ADR	$229.26	$212.41	$199.67	$210.65	$224.34	$235.56	$244.98	$252.33	$259.90	$267.70
Projected Market ADR Growth Rate	—	-7.3%	-6.0%	5.5%	6.5%	5.0%	4.0%	3.0%	3.0%	3.0%
Proposed Subject Property ADR (As-If Stabilized)	$\boxed{\$240.00}$	$222.36	$209.02	$220.52	$234.85	$246.59	$256.46	$264.15	$272.08	$280.24
ADR Growth Rate		-7.3%	-6.0%	5.5%	6.5%	5.0%	4.0%	3.0%	3.0%	3.0%
Proposed Subject Stabilized ADR Penetration	104.7%	104.7%	104.7%	104.7%	104.7%	104.7%	104.7%	104.7%	104.7%	104.7%

Fiscal Year	**2025**	**2026**	**2027**	**2028**
Proposed Subject Property Average Rate	$256.46	$264.15	$272.08	$280.24
Opening Discount	5.0%	2.0%	0.0%	0.0%
Average Rate After Discount	**$243.63**	**$258.87**	**$272.08**	**$280.24**
Real Average Rate Growth	—	6.3%	5.1%	3.0%
Market ADR	$244.98	$252.33	$259.90	$267.70
Proposed Subject ADR Penetration (After Discount)	99.5%	102.6%	104.7%	104.7%
ADR Expressed in Base-Year Dollars Deflated @ Inflation Rate	$216.36	$223.19	$227.75	$227.75

Summary of Forecast Income and Expense Statement

Our positioning of each revenue and expense level is supported by comparable operations or trends specific to this market. Our forecast of income and expense is presented in the following table.

FIGURE 1-5 DETAILED FORECAST OF INCOME AND EXPENSE

	2025	(Calendar Year)			2026				2027				Stabilized				2029			
Number of Rooms:	240				240				240				240				240			
Occupancy:	70%				75%				78%				80%				80%			
Average Rate:	$243.63				$258.87				$272.08				$280.24				$288.65			
RevPAR:	$170.54				$194.15				$212.22				$224.19				$230.92			
Days Open:	365				365				365				365				365			
Occupied Rooms:	61,320	%Gross	PAR	POR	65,700	%Gross	PAR	POR	68,328	%Gross	PAR	POR	70,080	%Gross	PAR	POR	70,080	%Gross	PAR	POR
OPERATING REVENUE																				
Rooms	$14,940	64.0 %	$62,250	$243.64	$17,008	64.0 %	$70,867	$258.87	$18,590	63.5 %	$77,458	$272.07	$19,639	63.7 %	$81,829	$280.24	$20,228	63.7 %	$84,283	$288.64
Food	3,540	15.2	14,750	57.73	4,048	15.2	16,866	61.61	4,518	15.4	18,826	66.13	4,743	15.4	19,761	67.68	4,885	15.4	20,354	69.71
Beverage	2,448	10.5	10,200	39.92	2,870	10.8	11,957	43.68	3,302	11.3	13,757	48.32	3,449	11.2	14,372	49.22	3,553	11.2	14,803	50.70
Other Operated Departments	152	0.7	633	2.48	160	0.6	665	2.43	166	0.6	692	2.43	172	0.6	719	2.46	178	0.6	740	2.53
Parking	888	3.8	3,699	14.48	945	3.6	3,937	14.38	992	3.4	4,134	14.52	1,035	3.4	4,312	14.77	1,066	3.4	4,441	15.21
Resort Fee	1,058	4.5	4,408	17.25	1,222	4.6	5,092	18.60	1,374	4.7	5,725	20.11	1,440	4.7	5,998	20.54	1,483	4.7	6,178	21.16
Miscellaneous Income	304	1.3	1,266	4.95	319	1.2	1,329	4.86	332	1.1	1,385	4.86	345	1.1	1,437	4.92	355	1.1	1,480	5.07
Total Operating Revenues	23,330	100.0	97,207	380.46	26,571	100.0	110,712	404.43	29,275	100.0	121,978	428.44	30,823	100.0	128,428	439.82	31,747	100.0	132,280	453.01
DEPARTMENTAL EXPENSES *																				
Rooms	4,098	27.4	17,074	66.83	4,332	25.5	18,049	65.93	4,530	24.4	18,876	66.30	4,713	24.0	19,639	67.26	4,855	24.0	20,228	69.27
Food & Beverage	5,113	85.4	21,306	83.39	5,520	79.8	23,000	84.02	5,920	75.7	24,667	86.64	6,144	75.0	25,600	87.67	6,328	75.0	26,368	90.30
Other Operated Departments	109	71.9	455	1.78	113	70.9	471	1.72	117	70.4	487	1.71	121	70.0	503	1.72	124	70.0	518	1.77
Parking	372	41.9	1,549	6.06	386	40.9	1,610	5.88	400	40.4	1,668	5.86	414	40.0	1,725	5.91	426	40.0	1,776	6.08
Total Expenses	9,692	41.5	40,384	158.06	10,351	39.0	43,130	157.55	10,968	37.5	45,698	160.51	11,392	37.0	47,467	162.56	11,734	37.0	48,891	167.43
DEPARTMENTAL INCOME	13,638	58.5	56,823	222.40	16,220	61.0	67,582	246.88	18,307	62.5	76,279	267.93	19,431	63.0	80,961	277.26	20,013	63.0	83,389	285.58
UNDISTRIBUTED OPERATING EXPENSES																				
Administrative & General	1,430	6.1	5,958	23.32	1,508	5.7	6,283	22.95	1,579	5.4	6,580	23.11	1,636	5.3	6,816	23.34	1,685	5.3	7,021	24.04
Info & Telecom Systems	260	1.1	1,083	4.24	274	1.0	1,142	4.17	287	1.0	1,196	4.20	297	1.0	1,239	4.24	306	1.0	1,276	4.37
Marketing	1,300	5.6	5,417	21.20	1,371	5.2	5,711	20.86	1,436	4.9	5,982	21.01	1,487	4.8	6,196	21.22	1,532	4.8	6,382	21.86
Franchise Fee	1,270	5.4	5,291	20.71	1,446	5.4	6,024	22.00	1,580	5.4	6,584	23.13	1,669	5.4	6,955	23.82	1,719	5.4	7,164	24.53
Prop. Operations & Maint.	780	3.3	3,250	12.72	822	3.1	3,427	12.52	861	2.9	3,589	12.61	892	2.9	3,718	12.73	919	2.9	3,829	13.11
Utilities	1,040	4.5	4,333	16.96	1,097	4.1	4,569	16.69	1,149	3.9	4,786	16.81	1,190	3.9	4,957	16.98	1,225	3.9	5,106	17.49
Total Expenses	6,080	26.0	25,333	99.15	6,517	24.5	27,156	99.20	6,892	23.5	28,718	100.87	7,172	23.3	29,882	102.34	7,387	23.3	30,779	105.41
GROSS OPERATING PROFIT	7,558	32.5	31,490	123.25	9,702	36.5	40,426	147.67	11,415	39.0	47,562	167.06	12,259	39.7	51,079	174.93	12,627	39.7	52,611	180.17
Management Fee	700	3.0	2,916	11.41	797	3.0	3,321	12.13	878	3.0	3,659	12.85	925	3.0	3,853	13.19	952	3.0	3,968	13.59
INCOME BEFORE NON-OPR. INC. & EXP.	6,858	29.5	28,574	111.84	8,905	33.5	37,105	135.54	10,537	36.0	43,902	154.21	11,334	36.7	47,226	161.73	11,674	36.7	48,642	166.58
NON-OPERATING INCOME & EXPENSE																				
Property Taxes	1,105	4.7	4,604	18.02	1,138	4.3	4,742	17.32	1,172	4.0	4,884	17.16	1,207	3.9	5,031	17.23	1,244	3.9	5,182	17.75
Insurance	269	1.2	1,120	4.39	277	1.0	1,154	4.22	285	1.0	1,189	4.18	294	1.0	1,224	4.19	303	1.0	1,261	4.32
Total Expenses	1,374	5.9	5,724	22.40	1,415	5.3	5,896	21.54	1,458	5.0	6,073	21.33	1,501	4.9	6,255	21.42	1,546	4.9	6,443	22.06
EBITDA	5,484	23.6	22,850	89.43	7,490	28.2	31,208	114.00	9,079	31.0	37,829	132.87	9,833	31.8	40,971	140.31	10,128	31.8	42,199	144.52
Reserve for Replacement	467	2.0	1,944	7.61	797	3.0	3,321	12.13	1,171	4.0	4,879	17.14	1,233	4.0	5,137	17.59	1,270	4.0	5,291	18.12
EBITDA LESS RESERVE	$5,017	21.6 %	$20,906	$81.82	$6,693	25.2 %	$27,887	$101.87	$7,908	27.0 %	$32,950	$115.74	$8,600	27.8 %	$35,834	$122.72	$8,858	27.8 %	$36,908	$126.40

*Departmental expenses are expressed as a percentage of departmental revenues.

FIGURE 1-6 TEN-YEAR FORECAST OF INCOME AND EXPENSE

	2025		2026		2027		2028		2029	
Number of Rooms:	**240**		**240**		**240**		**240**		**240**	
Occupied Rooms:	**61,320**		**65,700**		**68,328**		**70,080**		**70,080**	
Occupancy:	**70%**		**75%**		**78%**		**80%**		**80%**	
Average Rate:	**$243.63**	**% of**	**$258.87**	**% of**	**$272.08**	**% of**	**$280.24**	**% of**	**$288.65**	**% of**
RevPAR:	**$170.54**	**Gross**	**$194.15**	**Gross**	**$212.22**	**Gross**	**$224.19**	**Gross**	**$230.92**	**Gross**
OPERATING REVENUE										
Rooms	$14,940	64.0 %	$17,008	64.0 %	$18,590	63.5 %	$19,639	63.7 %	$20,228	63.7 %
Food	3,540	15.2	4,048	15.2	4,518	15.4	4,743	15.4	4,885	15.4
Beverage	2,448	10.5	2,870	10.8	3,302	11.3	3,449	11.2	3,553	11.2
Other Operated Departments	152	0.7	160	0.6	166	0.6	172	0.6	178	0.6
Parking	888	3.8	945	3.6	992	3.4	1,035	3.4	1,066	3.4
Miscellaneous Income	304	1.3	319	1.2	332	1.1	345	1.1	355	1.1
Total Operating Revenues	23,330	100.0	26,571	100.0	29,275	100.0	30,823	100.0	31,747	100.0
DEPARTMENTAL EXPENSES *										
Rooms	4,098	27.4	4,332	25.5	4,530	24.4	4,713	24.0	4,855	24.0
Food & Beverage	5,113	85.4	5,520	79.8	5,920	75.7	6,144	75.0	6,328	75.0
Other Operated Departments	109	71.9	113	70.9	117	70.4	121	70.0	124	70.0
Parking	372	41.9	386	40.9	400	40.4	414	40.0	426	40.0
Total Expenses	9,692	41.5	10,351	39.0	10,968	37.5	11,392	37.0	11,734	37.0
DEPARTMENTAL INCOME	13,638	58.5	16,220	61.0	18,307	62.5	19,431	63.0	20,013	63.0
UNDISTRIBUTED OPERATING EXPENSES										
Administrative & General	1,430	6.1	1,508	5.7	1,579	5.4	1,636	5.3	1,685	5.3
Info & Telecom Systems	260	1.1	274	1.0	287	1.0	297	1.0	306	1.0
Marketing	1,300	5.6	1,371	5.2	1,436	4.9	1,487	4.8	1,532	4.8
Franchise Fee	1,270	5.4	1,446	5.4	1,580	5.4	1,669	5.4	1,719	5.4
Prop. Operations & Maint.	780	3.3	822	3.1	861	2.9	892	2.9	919	2.9
Utilities	1,040	4.5	1,097	4.1	1,149	3.9	1,190	3.9	1,225	3.9
Total Expenses	6,080	26.0	6,517	24.5	6,892	23.5	7,172	23.3	7,387	23.3
GROSS OPERATING PROFIT	7,558	32.5	9,702	36.5	11,415	39.0	12,259	39.7	12,627	39.7
Management Fee	700	3.0	797	3.0	878	3.0	925	3.0	952	3.0
INCOME BEFORE NON-OPR. INC. & EXP.	6,858	29.5	8,905	33.5	10,537	36.0	11,334	36.7	11,674	36.7
NON-OPERATING INCOME & EXPENSE										
Property Taxes	1,105	4.7	1,138	4.3	1,172	4.0	1,207	3.9	1,244	3.9
Insurance	269	1.2	277	1.0	285	1.0	294	1.0	303	1.0
Total Expenses	1,374	5.9	1,415	5.3	1,458	5.0	1,501	4.9	1,546	4.9
EBITDA	5,484	23.6	7,490	28.2	9,079	31.0	9,833	31.8	10,128	31.8
Reserve for Replacement	467	2.0	797	3.0	1,171	4.0	1,233	4.0	1,270	4.0
EBITDA LESS RESERVE	$5,017	21.6 %	$6,693	25.2 %	$7,908	27.0 %	$8,600	27.8 %	$8,858	27.8 %

	2030		2031		2032		2033		2034	
Number of Rooms:	**240**		**240**		**240**		**240**		**240**	
Occupied Rooms:	**70,080**		**70,080**		**70,080**		**70,080**		**70,080**	
Occupancy:	**80%**		**80%**		**80%**		**80%**		**80%**	
Average Rate:	**$297.30**	**% of**	**$306.22**	**% of**	**$315.41**	**% of**	**$324.87**	**% of**	**$334.62**	**% of**
RevPAR:	**$237.84**	**Gross**	**$244.98**	**Gross**	**$252.33**	**Gross**	**$259.90**	**Gross**	**$267.70**	**Gross**
OPERATING REVENUE										
Rooms	$20,835	63.7 %	$21,460	63.7 %	$22,104	63.8 %	$22,767	63.9 %	$23,450	63.9 %
Food	5,032	15.4	5,183	15.4	5,338	15.4	5,498	15.4	5,663	15.4
Beverage	3,659	11.2	3,769	11.2	3,882	11.2	3,999	11.2	4,119	11.2
Other Operated Departments	183	0.6	188	0.6	194	0.6	200	0.6	206	0.6
Parking	1,098	3.4	1,131	3.4	1,165	3.4	1,200	3.4	1,236	3.4
Miscellaneous Income	366	1.1	377	1.1	388	1.1	400	1.1	412	1.1
Total Operating Revenues	32,700	100.0	33,681	100.0	34,644	100.0	35,636	100.0	36,705	100.0
DEPARTMENTAL EXPENSES *										
Rooms	5,000	24.0	5,150	24.0	5,305	24.0	5,464	24.0	5,628	24.0
Food & Beverage	6,518	75.0	6,714	75.0	6,915	75.0	7,123	75.0	7,336	75.0
Other Operated Departments	128	70.0	132	70.0	136	70.0	140	70.0	144	70.0
Parking	439	40.0	452	40.0	466	40.0	480	40.0	494	40.0
Total Expenses	12,086	37.0	12,448	37.0	12,822	37.0	13,206	37.1	13,603	37.1
DEPARTMENTAL INCOME	20,614	63.0	21,232	63.0	21,822	63.0	22,430	62.9	23,103	62.9
UNDISTRIBUTED OPERATING EXPENSES										
Administrative & General	1,735	5.3	1,788	5.3	1,841	5.3	1,895	5.3	1,952	5.3
Info & Telecom Systems	316	1.0	325	1.0	335	1.0	345	1.0	355	1.0
Marketing	1,578	4.8	1,625	4.8	1,673	4.8	1,723	4.8	1,775	4.8
Franchise Fee	1,771	5.4	1,824	5.4	1,879	5.4	1,935	5.4	1,993	5.4
Prop. Operations & Maint.	947	2.9	975	2.9	1,004	2.9	1,034	2.9	1,065	2.9
Utilities	1,262	3.9	1,300	3.9	1,339	3.9	1,378	3.9	1,420	3.9
Total Expenses	7,609	23.3	7,837	23.3	8,070	23.3	8,310	23.3	8,559	23.3
GROSS OPERATING PROFIT	13,005	39.7	13,396	39.7	13,753	39.7	14,120	39.6	14,544	39.6
Management Fee	981	3.0	1,010	3.0	1,039	3.0	1,069	3.0	1,101	3.0
INCOME BEFORE NON-OPR. INC. & EXP.	12,024	36.7	12,385	36.7	12,713	36.7	13,051	36.6	13,443	36.6
NON-OPERATING INCOME & EXPENSE										
Property Taxes	1,281	3.9	1,319	3.9	1,359	3.9	1,400	3.9	1,442	3.9
Insurance	312	1.0	321	1.0	331	1.0	341	1.0	351	1.0
Total Expenses	1,593	4.9	1,640	4.9	1,690	4.9	1,740	4.9	1,793	4.9
EBITDA	10,432	31.8	10,745	31.8	11,024	31.8	11,311	31.7	11,650	31.7
Reserve for Replacement	1,308	4.0	1,347	4.0	1,386	4.0	1,425	4.0	1,468	4.0
EBITDA LESS RESERVE	$9,124	27.8 %	$9,397	27.8 %	$9,638	27.8 %	$9,885	27.7 %	$10,182	27.7 %

As illustrated, the hotel is expected to stabilize at a profitable level. Please refer to the Forecast of Income and Expense chapter of our report for a detailed explanation of the methodology used in deriving this forecast.

Feasibility Conclusion

The Feasibility Analysis chapter of this report converts these cash flows into a net present value indication assuming set-forth debt and equity requirements and a development cost of $114,100,000. The construction budget provided by the developer appears to include all typical and adequate costs for the proposed subject property.

The conclusion of this analysis indicates that an equity investor contributing $39,937,000 (roughly 35% of the $114,100,000 development cost) could expect to receive a 14.4% internal rate of return over a ten-year holding period, assuming that the investor obtains financing at the time of the project's completion at the loan-to-value ratio and interest rate set forth. The proposed subject hotel has an opportunity to accommodate an underserved niche in the market. Based on our market analysis, there is sufficient market support for the proposed Chinatown Hotel. Our conclusions are based primarily on the long-term strength of the greater Hawaii lodging market. Our review of investor surveys indicates equity returns ranging from 10.8% to 12.2%, with an average of 17.0%. Based on these parameters, the calculated return to the equity investor, 13.5%, is within the range of market-level returns given the anticipated cost of $114,100,000. We note that the calculated return is based upon the cost estimated by HVS, which includes the developer's administrative costs, as well as an entrepreneurial incentive.

Assignment Conditions

"Extraordinary Assumption" is defined in USPAP as follows:

> An assignment-specific assumption as of the effective date regarding uncertain information used in an analysis which, if found to be false, could alter the appraiser's opinions or conclusions. Comment: Uncertain information might include physical, legal, or economic characteristics of the subject property; or conditions external to the property, such as market conditions or trends; or the integrity of data used in an analysis.[1]

The analysis is based on the extraordinary assumption that the described improvements have been completed as of the stated date of opening. The reader should understand that the completed subject property does not yet exist as of the date of this report. Our feasibility study does not address unforeseeable events that could alter the proposed project, and/or the market conditions reflected in the analyses; we assume that no significant changes, other than those anticipated and

[1] The Appraisal Foundation, *Uniform Standards of Professional Appraisal Practice*, 2020–2021 ed.

explained in this report, shall take place between the date of inspection and stated date of opening. The use of this extraordinary assumption may have affected the assignment results. We have made no other extraordinary assumptions specific to this feasibility study. However, several important general assumptions have been made that apply to this feasibility study and our studies of proposed hotels in general. These aspects are set forth in the Assumptions and Limiting Conditions chapter of this report.

Intended Use of the Feasibility Study

This feasibility report is being prepared for use in the development of the proposed subject hotel.

Identification of the Client and Intended User(s)

The client for this engagement is 3 Leaf Holdings. This report is intended for the addressee firm and may not be distributed to or relied upon by other persons or entities.

Scope of Work

The methodology used to develop this study is based on the market research and valuation techniques set forth in the textbooks authored by Hospitality Valuation Services for the American Institute of Real Estate Appraisers and the Appraisal Institute, entitled *The Valuation of Hotels and Motels,*[2] *Hotels, Motels and Restaurants: Valuations and Market Studies,*[3] *The Computerized Income Approach to Hotel/Motel Market Studies and Valuations,*[4] *Hotels and Motels: A Guide to Market Analysis, Investment Analysis, and Valuations,*[5] and *Hotels and Motels – Valuations and Market Studies.*[6]

1. All information was collected and analyzed by the staff of TS Worldwide, LLC. Information was supplied by the client and/or the property's development team.
2. The subject site has been evaluated from the viewpoint of its physical utility for the future operation of a hotel, as well as access, visibility, and other relevant factors.

---

[2] Stephen Rushmore, *The Valuation of Hotels and Motels*. (Chicago: American Institute of Real Estate Appraisers, 1978).

[3] Stephen Rushmore, *Hotels, Motels and Restaurants: Valuations and Market Studies*. (Chicago: American Institute of Real Estate Appraisers, 1983).

[4] Stephen Rushmore, *The Computerized Income Approach to Hotel/Motel Market Studies and Valuations*. (Chicago: American Institute of Real Estate Appraisers, 1990).

[5] Stephen Rushmore, *Hotels and Motels: A Guide to Market Analysis, Investment Analysis, and Valuations* (Chicago: Appraisal Institute, 1992).

[6] Stephen Rushmore and Erich Baum, *Hotels and Motels – Valuations and Market Studies.* (Chicago: Appraisal Institute, 2001).

3. The subject property's proposed improvements have been reviewed for their expected quality of construction, design, and layout efficiency.
4. The surrounding economic environment, on both an area and neighborhood level, has been reviewed to identify specific hostelry-related economic and demographic trends that may have an impact on future demand for hotels.
5. Dividing the market for hotel accommodations into individual segments defines specific market characteristics for the types of travelers expected to utilize the area's hotels. The factors investigated include purpose of visit, average length of stay, facilities and amenities required, seasonality, daily demand fluctuations, and price sensitivity.
6. An analysis of existing and proposed competition provides an indication of the current accommodated demand, along with market penetration and the degree of competitiveness. Unless noted otherwise, we have inspected the competitive lodging facilities summarized in this report.
7. Documentation for an occupancy and ADR projection is derived utilizing the build-up approach based on an analysis of lodging activity.
8. A detailed projection of income and expense made in accordance with the Uniform System of Accounts for the Lodging Industry sets forth the anticipated economic benefits of the proposed subject property.
9. A feasibility analysis is performed, in which the market equity yield that an investor would expect is compared to the equity yield that an investor must accept.

HVS

2. Description of the Site and Neighborhood

The suitability of the land for the operation of a lodging facility is an important consideration affecting the economic viability of a property and its ultimate marketability. Factors such as size, topography, access, visibility, and the availability of utilities have a direct impact on the desirability of a particular site.

The subject site is located in the Chinatown Historic District of Honolulu, to the northeast of the intersection formed by North Nimitz Highway and Maunakea Street. This site is located in the city of Honolulu, Hawaii.

Physical Characteristics

The subject site measures approximately 0.59 acres, or 25,617 square feet. The parcel's adjacent uses are set forth in the following table.

FIGURE 2-1 SUBJECT PARCEL'S ADJACENT USES

Direction	Adjacent Use
North	Commercial
South	Commercial
East	Commercial
West	North Nimitz Highway

Topography and Site Utility

The topography of the site is generally flat, and its shape permits efficient use of the site for the building and other improvements, as well as ingress and egress. Upon completion of construction, the subject site will not contain any significant portion of undeveloped land that could be sold, entitled, and developed for alternate use. It is expected that the site will be developed fully with building and site improvements, thus contributing to the overall profitability of the hotel.

VIEW OF SUBJECT SITE

AERIAL PHOTOGRAPH

HVS

VIEW FROM SITE TO THE NORTH

VIEW FROM SITE TO THE SOUTH

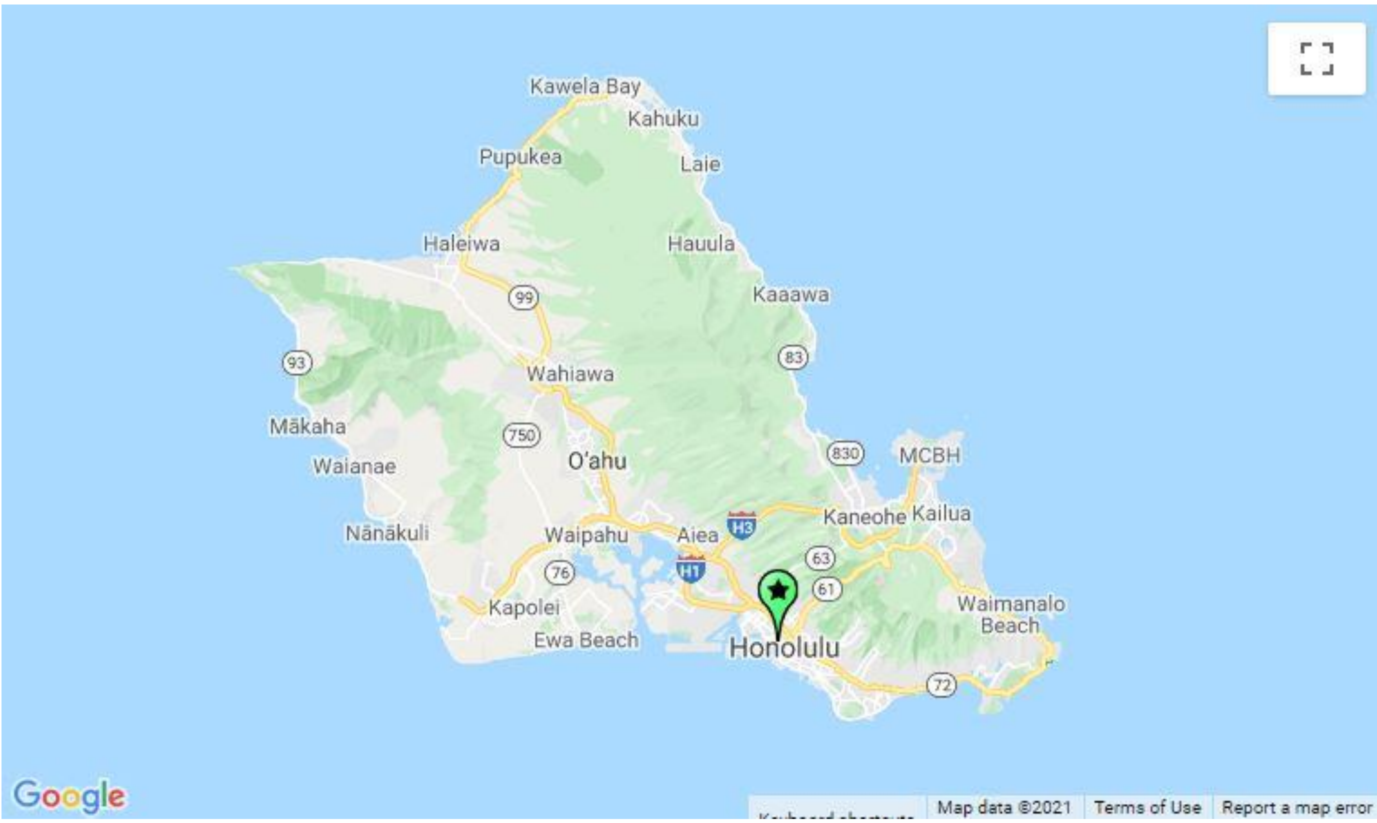
VIEW FROM SITE TO THE EAST

VIEW FROM SITE TO THE WEST

Access and Visibility

It is important to analyze the site with respect to regional and local transportation routes and demand generators, including ease of access. The subject site is readily accessible to a variety of local and county roads, as well as state and interstate highways.

MAP OF REGIONAL ACCESS ROUTES



Regional access on the island of O'ahu is provided by an intrastate highway system. East/west Interstate H-1 and its extensions Kalaniana'ole Highway/State Route 72 and Farrington Highway/State Route 93 connect Honolulu to such areas as Kahala and Hawaii Kai to the east and Kapolei and Waianae to the west. North/south Interstate H-2 is another major highway, which provides access to Mililani and Wahiawa to the northwest, while Interstate H-3 provides access to Kane'ohe and Kailua to the northeast.

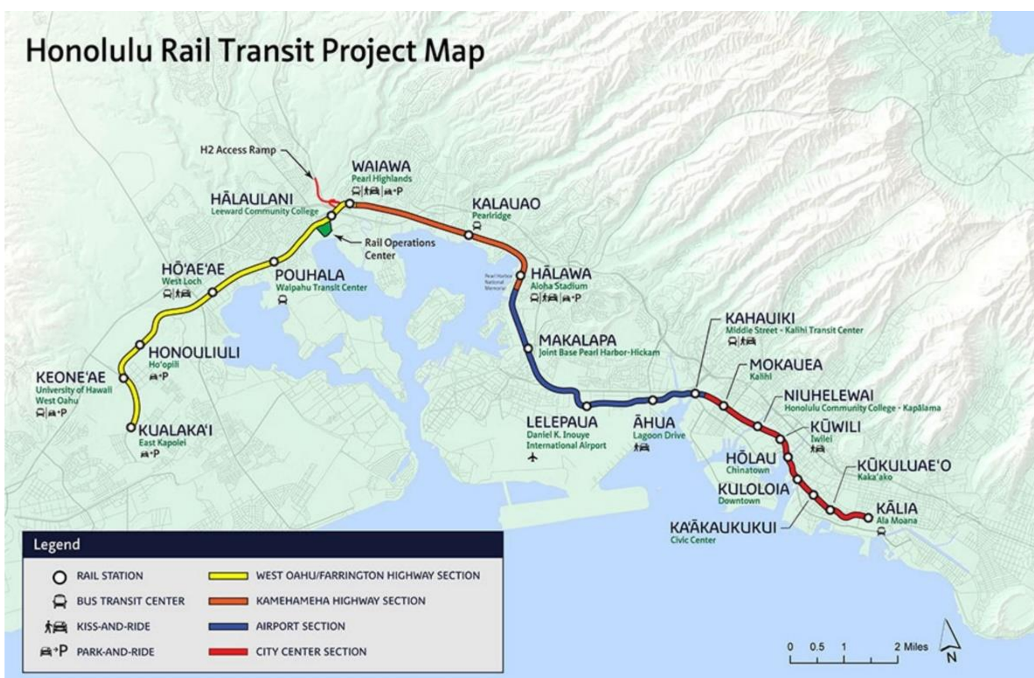
Vehicular access to the subject site is provided by North Nimitz Highway. The subject site is located near a busy intersection and is relatively simple to locate from North Nimitz Highway, which is a major thoroughfare between the Daniel K. Inouye International Airport and Downtown Honolulu. The proposed subject hotel is anticipated to have adequate signage at the street, as well as on its façade. Furthermore, the proposed subject property should be a prominent structure in the neighborhood and easily visible from a distance due to its 15-story tower. Overall, the subject site benefits from very good accessibility, and the proposed hotel is expected to enjoy very good visibility from within its local neighborhood.

Airport and HART Access

The proposed subject hotel will be served by the Daniel K. Inouye International Airport, also known as the Honolulu International Airport, which is located approximately four miles to the west of the subject site.

The Honolulu Rail Transit is a 20-mile elevated train line near the southern coast of O'ahu that is currently under construction. The train line was designed to feature 21 stations, starting with the Ala Moana Center station near Waikiki and ending at the East Kapolei station in Kapolei. The first phase of the project, linking East Kapolei and Aloha Stadium, is tentatively scheduled for completion in late 2021. Given numerous setbacks and cost overruns, the build-out of the entire project is conservatively estimated to be finished in 2031. Although the line is expected to be utilized primarily by local residents, it should ease traffic congestion and facilitate transportation along O'ahu's southern coast. We note that the subject site is favorably located one block south of the planned Chinatown Station, which is expected to accommodate a significant percentage of riders given the station's proximity to Downtown Honolulu.

HONOLULU RAIL TRANSIT MAP



Neighborhood

The neighborhood surrounding a lodging facility often has an impact on a hotel's status, image, class, style of operation, and sometimes its ability to attract and properly serve a particular market segment. This section of the report investigates the subject neighborhood and evaluates any pertinent location factors that could affect its future occupancy, average rate, and overall profitability.

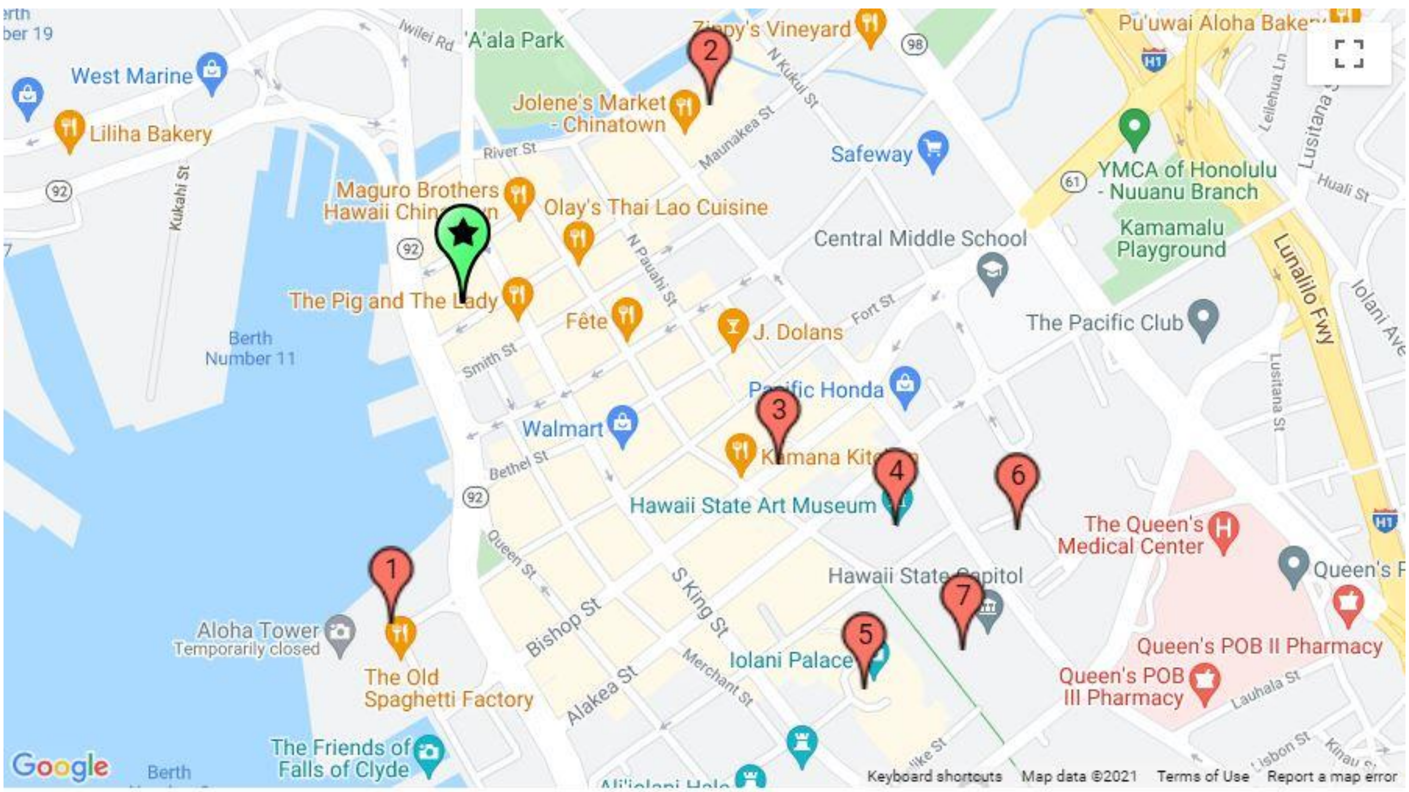
The neighborhood that surrounds the subject site can be described as the Chinatown Historic District, generally defined by Nu'uanu Stream to the north, Beretania Street to the east, Nu'uanu Avenue to the south, and North Nimitz Highway to the west. The Chinatown Historic District is situated on the north side of Downtown Honolulu and is primarily characterized by historic, low-rise buildings featuring residences above ground-floor commercial uses. Some specific businesses and entities in Downtown Honolulu include the Chinatown Cultural Plaza, 'Iolani Palace, and Hawai'i Pacific University. Restaurants located near the subject site include The Pig and The Lady, Senia, and Maguro Brothers. In general, the Chinatown Historic District and Downtown Honolulu are in the stable stage of their life cycle. The proposed subject hotel's opening should be a positive influence on the area, and it is expected to be in character with and to complement surrounding land uses.

MAP OF NEIGHBORHOOD

Proximity to Local Demand Generators and Attractions

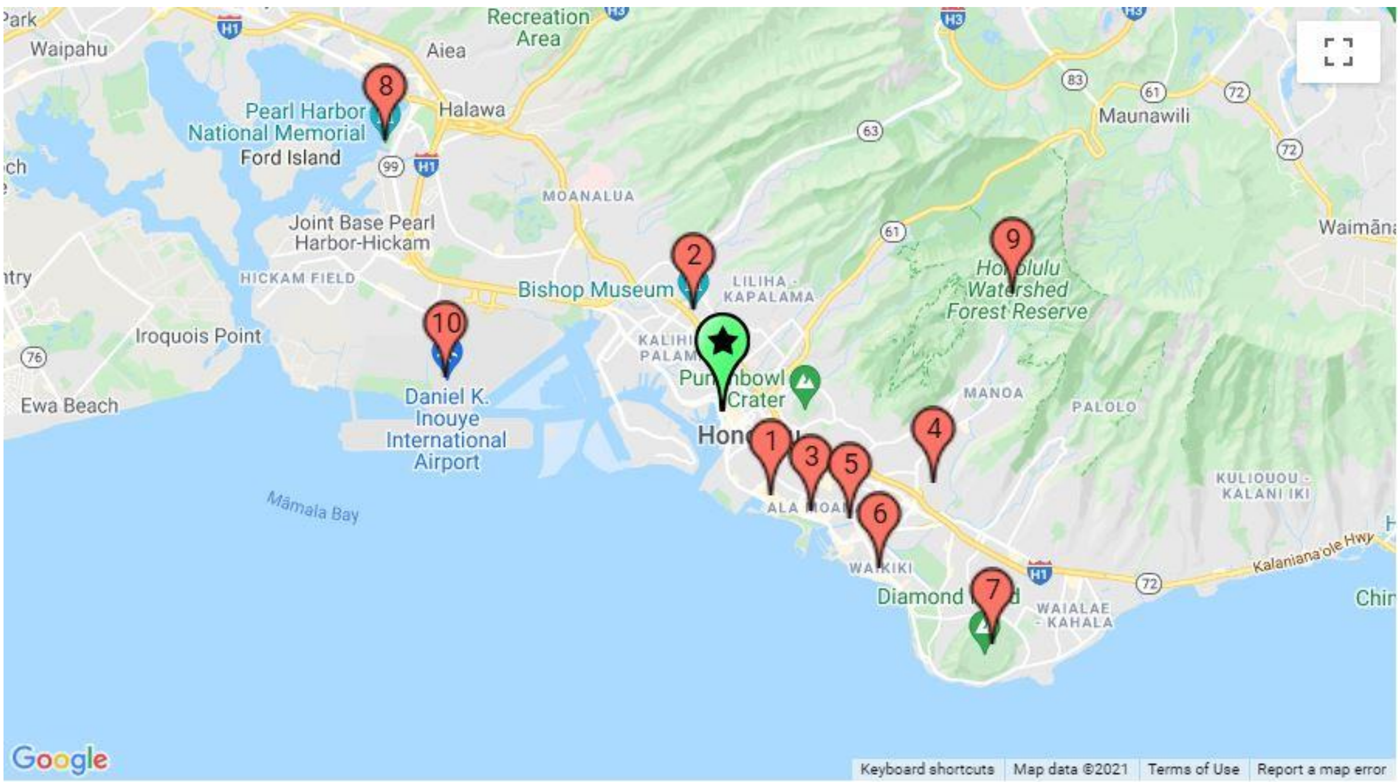
The subject site is located near the area's primary generators of lodging demand. A sample of these demand generators is reflected on the following map, including respective distances from and drive times to the subject site. We note that the Waikiki District is the largest demand generator on the island of O'ahu, and the subject site is favorably located between Waikiki and the Daniel K. Inouye International Airport. Overall, the subject site is well situated with respect to demand generators.

ACCESS TO DEMAND GENERATORS AND ATTRACTIONS



	Demand Generator	Approx. Time from Subject Property	Approx. Distance
	Subject Property		
1	Pier 11 Cruise Ship Terminal	7 minutes	0.3 mile
2	Chinatown Cultural Plaza	7 minutes	0.4 mile
3	Central Business District	9 minutes	0.5 mile
4	Hawaii State Art Museum	12 minutes	0.6 mile
5	Iolani Palace	13 minutes	0.6 mile
6	Washington Place	14 minutes	0.7 mile
7	Hawaii State Capitol	15 minutes	0.8 mile

ACCESS TO DEMAND GENERATORS AND ATTRACTIONS (CONTINUED)



	Demand Generator	Approx. Time from Subject Property	Approx. Distance
	Subject Property		
1	Ward Center	7 minutes	2.0 miles
2	Bishop Museum	10 minutes	2.9 miles
3	Ala Moana Center	11 minutes	2.9 miles
4	University of Hawai'i at Mānoa	11 minutes	4.1 miles
5	Hawai'i Convention Center	12 minutes	3.3 miles
6	Waikiki	15 minutes	4.1 miles
7	Diamond Head State Monument	16 minutes	6.4 miles
8	Pearl Harbor National Memorial	16 minutes	7.2 miles
9	Manoa Falls Trail	21 minutes	6.4 miles
10	Daniel K. Inouye International Airport	27 minutes	12.2 miles

Utilities

The subject site will reportedly be served by all necessary utilities.

Seismicity, Soil and Subsoil Conditions

The site is not located within an identified seismic zone. However, the nearby island of Hawai'i is considered to be seismically active. This condition is consistent with the surrounding real estate and does not affect the subject site's utility or marketability. Geological and soil reports were not provided to us or made available for our review during the preparation of this report. We are not qualified to evaluate soil conditions other than by a visual inspection of the surface; no extraordinary conditions were apparent.

Nuisances and Hazards

We were not informed of any site-specific nuisances or hazards, and there were no visible signs of toxic ground contaminants at the time of our inspection. Because we are not experts in this field, we do not warrant the absence of hazardous waste and urge the reader to obtain an independent analysis of these factors.

Flood Zone

According to the Federal Emergency Management Agency map illustrated below, the subject site is located in Zone X.

COPY OF FLOOD MAP AND COVER

The flood zone definition for the Zone X designation is as follows: the flood insurance rate zone that corresponds to areas outside the 100-year floodplains, areas of 100-year sheet flow flooding where average depths are less than 1 foot, areas of 100-year stream flooding where the contributing drainage area is less than 1 square mile, or areas protected from the 100-year flood by levees. No Base Flood Elevations or depths are shown within this zone.

Zoning

According to the local planning office, the subject property is zoned as follows: BMX-4 - Business Mixed Use Central. Additional details pertaining to the proposed subject property's zoning regulations are summarized in the following table.

FIGURE 2-2 ZONING

Municipality Governing Zoning	City & County of Honolulu
Current Zoning	Business Mixed Use Central
Current Use	Vacant
Is Current Use Permitted?	Yes
Is Change in Zoning Likely?	No
Permitted Uses	Hotel, Office, Retail, Residential
Hotel Allowed	Yes
Legally Non-Conforming	Not Applicable

We assume that all necessary permits and approvals will be secured (including the appropriate liquor license) and that the subject property will be constructed in accordance with local zoning ordinances, building codes, and all other applicable regulations. Our zoning analysis should be verified before any physical changes are made to the site.

Legal Description, Easements and Encroachments

A copy of the subject property's legal description is provided in the addenda to this report. We are not experts in interpreting legal descriptions. The description appears to be accurate; however, we suggest obtaining verification of this description from a qualified expert. We are not aware of any easements attached to the property that would significantly affect the utility of the site or marketability of this project.

Conclusion

We have analyzed the issues of size, topography, access, visibility, and the availability of utilities. The subject site is favorably located within walking distance of Downtown Honolulu. In general, the site should be well suited for future hotel use, with acceptable access, visibility, and topography for an effective operation.

3. Market Area Analysis

The economic vitality of the market area and neighborhood surrounding the subject site is an important consideration in forecasting lodging demand and future income potential. Economic and demographic trends that reflect the amount of visitation provide a basis from which to project lodging demand. The purpose of the market area analysis is to review available economic and demographic data to determine whether the local market will undergo economic growth, stabilize, or decline. In addition to predicting the direction of the economy, the rate of change must be quantified. These trends are then correlated based on their propensity to reflect variations in lodging demand, with the objective of forecasting the amount of growth or decline in visitation by individual market segment (e.g., commercial, meeting and group, and leisure).

Market Area Definition

The market area for a lodging facility is the geographical region where the sources of demand and the competitive supply are located. The subject site is located in the city of Honolulu, the county of Honolulu, and the state of Hawaii. Situated along O'ahu's southern coast, Honolulu is the state capital of Hawaii. As the most populous city with the largest airport in the Hawaiian Islands, Honolulu acts as a natural gateway to the islands' major tourism industry. The Honolulu area is part of the greater O'ahu economic base, which is fueled by the tourism, government/military, and manufacturing industries. The year-round moderate climate is highly conducive to agriculture, especially the production of sugar cane, pineapples, macadamia nuts, and a multitude of exotic flowers.

Hawaii, the Aloha State, admitted to the union as the nation’s 50th state in 1959, consists of 8 major and 124 minor islands. These islands form a chain that extends more than 1,600 miles across the mid-Pacific Ocean. These islands are either volcanic in nature or small coral atolls; combined, they have an aggregate land area of approximately 6,425 square miles, of which roughly 750 miles are along the coastline.

Together, Hawaii's eight major islands total roughly 4,112,000 acres, with the six primary islands accounting for approximately 98% of this area. In order of descending size, the six primary islands are Hawai'i, Maui, O'ahu, Kaua'i, Moloka'i, and Lana'i. The seventh-largest island, Ni'ihau, is privately owned. Kaho'olawe, the eighth-largest island, was previously used for military target practice and is currently uninhabited. Honolulu, the state’s capital and largest city, is located on the island of O'ahu, approximately 2,400 miles southwest of San Francisco and the United States mainland.

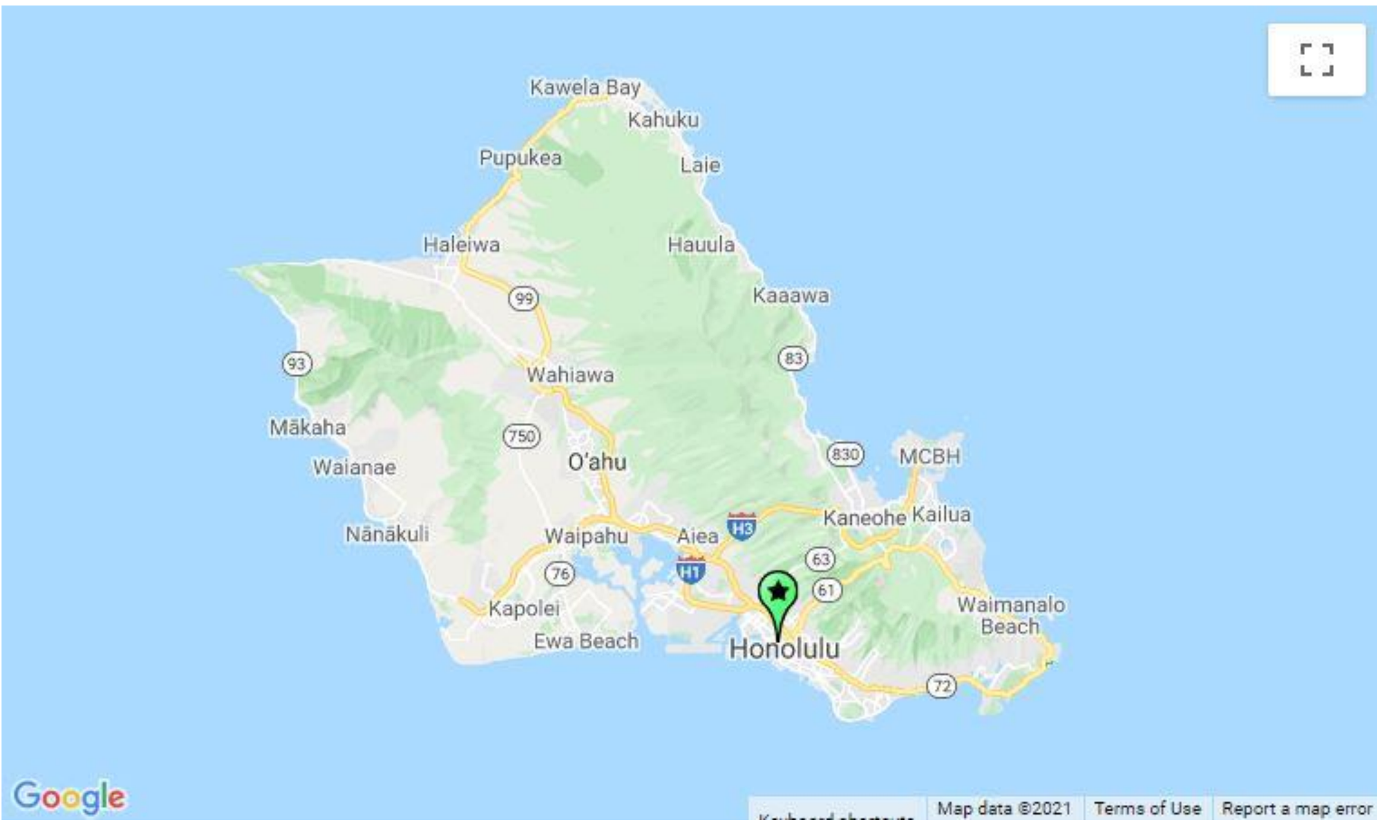
Due to the volcanic nature of the major islands, much of the state's total land area is unsuitable for development. Mountain ranges, steeply sloping areas, gulches, and barren lava flows constitute a large part of Hawaii's acreage. Of the four major populated islands—O'ahu, Hawai'i, Maui, and Kaua'i—Hawai'i is the only one with more than half (76.0%) of its land area at less than a 10% slope; however, large tracts of its relatively level areas consist of extensive lava flows.

Compounding the land-use limitations imposed by the islands' physical characteristics is the fact that roughly 50% of all land is state or federal government occupied, while another 20% is collectively held by eight major private owners, each of whom possessed between approximately 29,000 and 363,000 acres in 2018. According to the State of Hawaii Office of Planning, of the roughly four million land acres comprising Hawaii's six major islands, about 48% is designated as conservation land, 47% is designated as agricultural land, and only 5% has been put to urban use. This limited availability of, and resultant desirability for, land creates inherent value in Hawaii real estate.

HONOLULU

The subject property's market area can be defined by its Metropolitan Statistical Area (MSA): Urban Honolulu, HI MSA. The following exhibit illustrates the market area.

MAP OF MARKET AREA



Economic and Demographic Review

A primary source of economic and demographic statistics used in this analysis is the *Complete Economic and Demographic Data Source* published by Woods & Poole Economics, Inc.—a well-regarded forecasting service based in Washington, D.C. Using a database containing more than 900 variables for each county in the nation, Woods & Poole employs a sophisticated regional model to forecast economic and demographic trends. Historical statistics are based on census data and information published by the Bureau of Economic Analysis. Projections are formulated by Woods & Poole, and all dollar amounts have been adjusted for inflation, thus reflecting real change.

These data are summarized in the following table. Please note that these forecasts were formulated prior to the COVID-19 pandemic.

FIGURE 3-1 ECONOMIC AND DEMOGRAPHIC DATA SUMMARY

	2000	2010	2019	2025	Average Annual Compounded Change 2000-10	2010-19	2019-25
Resident Population (Thousands)							
Honolulu County	876.6	956.3	1,012.9	1,055.0	0.9 %	0.6 %	0.7 %
State of Hawaii	1,213.5	1,363.9	1,477.8	1,572.5	1.2	0.9	1.0
United States	282,162.4	309,348.1	331,969.3	350,937.2	0.9	0.8	0.9
Per-Capita Personal Income*							
Honolulu County	$37,837	$44,483	$51,694	$55,643	1.6	1.7	1.2
State of Hawaii	35,369	41,045	47,626	51,055	1.5	1.7	1.2
United States	36,812	39,622	46,751	50,233	0.7	1.9	1.2
W&P Wealth Index							
Honolulu County	105.7	114.5	111.4	111.6	0.8	(0.3)	0.0
State of Hawaii	99.2	106.3	103.5	103.3	0.7	(0.3)	(0.0)
United States	100.0	100.0	100.0	100.0	0.0	(0.0)	0.0
Food and Beverage Sales (Millions)*							
Honolulu County	$1,942	$2,273	$3,123	$3,361	1.6	3.6	1.2
State of Hawaii	2,730	3,297	4,599	5,071	1.9	3.8	1.6
United States	368,829	447,728	606,351	662,610	2.0	3.4	1.5
Total Retail Sales (Millions)*							
Honolulu County	$12,662	$13,433	$16,747	$17,892	0.6	2.5	1.1
State of Hawaii	18,086	19,821	24,828	27,127	0.9	2.5	1.5
United States	3,902,830	4,130,414	5,156,220	5,598,240	0.6	2.5	1.4

* Inflation Adjusted

Source: Woods & Poole Economics, Inc.

The U.S. population grew at an average annual compounded rate of 0.8% from 2010 through 2019. The county's population has grown more slowly than the nation's population; the average annual growth rate of 0.6% between 2010 and 2019 reflects a gradually expanding area. Following this population trend, per-capita personal income increased slowly, at 1.7% on average annually for the county between 2010 and 2019. Local wealth indexes have remained stable in recent years, registering a high 111.4 level for the county in 2019.

Food and beverage sales totaled $3,123 million in the county in 2019, versus $2,273 million in 2010. This reflects a 3.6% average annual change, stronger than the 1.6% pace recorded in the prior decade, the latter years of which were adversely affected by the recession. Over the long term, the pace of growth is forecast to moderate to a more sustainable level of 1.2%, which is projected through 2025. The retail sales sector demonstrated an annual increase of 0.6% in the decade spanning from 2000 to 2010, followed by an increase of 2.5% in the period from 2010 to 2019. An increase of 1.1% average annual change is expected in county retail sales through 2025.

Workforce Characteristics

The characteristics of an area's workforce provide an indication of the type and amount of transient visitation likely to be generated by local businesses. Sectors such as finance, insurance, and real estate (FIRE); wholesale trade; and services produce a considerable number of visitors who are not particularly rate sensitive. The government sector often generates transient room nights, but per-diem reimbursement allowances often limit the accommodations selection to budget and mid-priced lodging facilities. Contributions from manufacturing, construction, transportation, communications, and public utilities (TCPU) employers can also be important, depending on the company type.

The following table sets forth the county workforce distribution by business sector in 2000, 2010, and 2019, as well as a forecast for 2025. Please note that these forecasts were formulated prior to the COVID-19 pandemic.

FIGURE 3-2 HISTORICAL AND PROJECTED EMPLOYMENT (000S)

Industry	2000	Percent of Total	2010	Percent of Total	2019	Percent of Total	2025	Percent of Total	Average Annual Compounded Change 2000-2010	2010-2019	2019-2025
Farm	3.0	0.5 %	2.4	0.4 %	2.8	0.4 %	2.8	0.4 %	(2.2) %	1.9 %	0.1 %
Forestry, Fishing, Related Activities And Other	2.0	0.4	1.0	0.2	1.1	0.2	1.1	0.1	(6.5)	0.6	0.3
Mining	0.3	0.1	0.7	0.1	0.6	0.1	0.6	0.1	8.1	(1.1)	0.7
Utilities	1.8	0.3	2.2	0.4	3.2	0.5	3.8	0.5	1.8	4.2	3.0
Construction	21.6	3.9	26.8	4.5	41.8	6.0	44.5	5.9	2.2	5.1	1.0
Manufacturing	14.8	2.7	12.4	2.1	14.1	2.0	13.5	1.8	(1.8)	1.5	(0.7)
Total Trade	75.7	13.7	72.4	12.1	90.5	12.9	96.9	12.8	(0.4)	2.5	1.1
Wholesale Trade	16.2	2.9	16.6	2.8	19.4	2.8	20.3	2.7	0.2	1.8	0.7
Retail Trade	59.4	10.7	55.9	9.4	71.1	10.1	76.6	10.1	(0.6)	2.7	1.3
Transportation And Warehousing	22.6	4.1	20.2	3.4	25.4	3.6	26.4	3.5	(1.1)	2.6	0.7
Information	11.4	2.1	9.5	1.6	9.1	1.3	9.8	1.3	(1.8)	(0.5)	1.3
Finance And Insurance	21.3	3.8	23.7	4.0	25.6	3.6	28.5	3.8	1.1	0.9	1.8
Real Estate And Rental And Lease	19.5	3.5	24.6	4.1	29.6	4.2	32.7	4.3	2.3	2.1	1.6
Total Services	219.6	39.7	248.4	41.7	302.4	43.1	335.9	44.3	1.2	2.2	1.8
Professional And Technical Services	28.1	5.1	34.3	5.8	37.6	5.4	40.4	5.3	2.0	1.0	1.2
Management Of Companies And Enterprises	5.2	0.9	6.2	1.0	8.8	1.2	9.4	1.2	1.8	3.9	1.3
Administrative And Waste Services	33.9	6.1	38.4	6.4	47.3	6.7	51.1	6.7	1.3	2.3	1.3
Educational Services	12.0	2.2	15.6	2.6	17.9	2.5	19.2	2.5	2.7	1.5	1.2
Health Care And Social Assistance	44.7	8.1	54.8	9.2	68.4	9.7	83.7	11.0	2.1	2.5	3.4
Arts, Entertainment, And Recreation	12.1	2.2	11.6	1.9	13.6	1.9	14.1	1.9	(0.4)	1.8	0.5
Accommodation And Food Services	54.4	9.8	56.6	9.5	72.4	10.3	78.5	10.4	0.4	2.8	1.4
Other Services, Except Public Administration	29.4	5.3	30.9	5.2	36.4	5.2	39.5	5.2	0.5	1.8	1.4
Total Government	139.8	25.3	152.0	25.5	155.8	22.2	161.9	21.3	0.8	0.3	0.6
Federal Civilian Government	28.1	5.1	31.8	5.3	30.6	4.4	30.5	4.0	1.2	(0.4)	(0.0)
Federal Military	49.5	8.9	53.2	8.9	53.4	7.6	53.7	7.1	0.7	0.1	0.1
State And Local Government	62.1	11.2	67.0	11.2	71.8	10.2	77.7	10.2	0.8	0.8	1.3
TOTAL	553.3	100.0 %	596.3	100.0 %	702.0	100.0 %	758.4	100.0 %	0.8 %	1.8 %	1.3 %
U.S.	165,372.0	—	173,034.7	—	205,736.3	—	223,254.5	—	1.2	1.9	1.4

Source: Woods & Poole Economics, Inc.

Woods & Poole Economics, Inc. reports that during the period from 2000 to 2010, total employment in the county grew at an average annual rate of 0.8%. More recently, the pace of total employment growth in the county accelerated to 1.8% on an annual average from 2010 to 2019, reflecting the initial years of the recovery.

Of the primary employment sectors, Total Services recorded the highest increase in number of employees during the period from 2010 to 2019, increasing by 53,968 people, or 21.7%, and rising from 41.7% to 43.1% of total employment. Of the various service sub-sectors, Accommodation And Food Services and Health Care And Social Assistance were the largest employers. Strong growth was also recorded in the Total Trade sector, as well as the Construction sector, which expanded by 24.9% and 55.9%, respectively, in the period from 2010 to 2019. Forecasts developed by Woods & Poole Economics, Inc. anticipate that total employment in the county will change by 1.3% on average annually through 2025. The trend is below the forecast rate of change for the U.S. as a whole during the same period.

The following table illustrates historical employment, households, population, and average household income data, as provided by REIS for the overall Honolulu market.

FIGURE 3-3 HISTORICAL & PROJECTED EMPLOYMENT, HOUSEHOLDS, POPULATION, AND HOUSEHOLD INCOME STATISTICS

Year	Total Employment	% Chg	Office Employment	% Chg	Industrial Employment	% Chg	Households	% Chg	Population	% Chg	Household Avg. Income	% Chg
2018	474,470	—	146,558	—	34,937	—	322,830	—	977,070	—	$182,438	—
2019	472,130	(0.5) %	146,359	(0.1) %	34,257	(1.9) %	324,380	0.5 %	972,850	(0.4) %	186,625	2.3 %
2020	399,890	(15.3)	129,972	(11.2)	28,382	(17.1)	325,840	0.5	973,760	0.1	201,118	7.8

Source: REIS Report, 4th Quarter, 2020

For the Honolulu market, of the roughly 400,000 persons employed in 2020, 33% work in offices and are categorized as office employees, while are categorized as industrial employees. Total employment by -15.3% from 2019 to 2020. By comparison, office employment -11.2% from 2019 to 2020.

The number of households in this market in 2020 totaled , reflecting of 0.5% from the level registered in 2019. Population increased during this same period, at a rate of 0.1%. Household average income grew by 7.8% in 2020, ending the year at roughly $201,000.

Unemployment Statistics

The following table presents historical unemployment rates for the proposed subject hotel's market area.

FIGURE 3-4 UNEMPLOYMENT STATISTICS

Year	County	MSA	State	U.S.
2011	5.9 %	5.9 %	6.8 %	8.9 %
2012	5.4	5.4	6.0	8.1
2013	4.4	4.4	4.9	7.4
2014	4.1	4.1	4.4	6.2
2015	3.4	3.4	3.6	5.3
2016	2.8	2.8	3.0	4.9
2017	2.3	2.3	2.4	4.4
2018	2.4	2.4	2.5	3.9
2019	2.6	2.6	2.7	3.7
2020	10.2	10.2	11.6	8.1
Recent Month - Apr				
2020	18.8 %	18.8 %	21.9 %	14.8 %
2021	7.2	7.2	8.1	6.1

Source: U.S. Bureau of Labor Statistics

Prior to the pandemic, U.S. unemployment levels were firmly below the 4.6% level recorded in 2006 and 2007, the peak years of the economic cycle prior to the Great Recession. The unemployment rate for February 2020 was 3.5%. The unemployment rate had remained in the 3.5% to 3.7% range since April 2019, reflecting a trend of stability and strength of the U.S. economy. However, in April 2020, unemployment rose to 14.7%, and employment dropped by 20.7 million because of the COVID-19 pandemic. Steady declines in unemployment have been registered since April 2020; most recently, the national unemployment registered 5.8% in May 2021. After the nation's labor market showed signs of slowing in the fourth quarter of 2020, the fiscal stimulus from the U.S. government and a decline in the number of COVID-19 infections started to fuel improvements in the first quarter, a trend that is extending into the second quarter with a roughly 300,000- and 500,0000-person rise in employment registered in April and May 2021, respectively.

Locally, the unemployment rate was 10.2% in 2020; for this same area in 2021, the most recent month's unemployment rate was registered at 7.2%, versus 18.8% for the same month in 2020. Unemployment levels remained elevated through 2011 as the region experienced the effects of the Great Recession. However, tourism levels began to rebound in 2012, and hiring resumed, resulting in a notable drop in the unemployment rate. This positive trend continued through 2017, with unemployment remaining relatively stable in 2018 and 2019; reportedly, local employment was strong in the tourism and construction industries. Furthermore, we note that the region's unemployment rates have historically been well below the national unemployment rates. The most recent comparative period illustrates heighted levels of unemployment due to the COVID-19 pandemic. As tourism and the economy recovers, employment levels are expected to increase as businesses return to normalized operations.

Major Business and Industry

Providing additional context for understanding the nature of the regional economy, the following table presents a list of the major employers in the proposed subject property's market.

FIGURE 3-5 MAJOR EMPLOYERS

Rank	Firm	Number of Employees
1	State of Hawaii	72,900
2	Federal Government	34,300
3	Local Government	19,100
4	The Queen's Health Systems	7,479
5	Hawaii Pacific Health	7,273
6	Hawaiian Electric	3,841
7	Kamehameha Schools	3,758
8	Hawaii Health Systems Corporation	2,553
9	Kaiser Permanente	2,477
10	Securitas Security Services USA Inc.	2,302

Source: City & County of Honolulu, CAFR 2019/20

Tourism is the heart of Hawaii's economy; the state is unique among American tourism destinations because of its physical separation from the U.S. mainland and its relative proximity to Asia. Traditionally, the largest sources of visitation to Hawaii have been the U.S. mainland and Asian countries; nearly 65% of visitors come from U.S. feeder markets, while international travelers represent the remaining 35%. Health care is another important driver of the state's economy. Hawai'i Pacific Health, the largest private healthcare system in the state of Hawaii, was formed by the merger of Wilcox Health, Kapi'olani Health, and Straub Clinic & Hospital. The entity provides four medical centers and numerous other facilities statewide. Furthermore, construction activity continues to increase on O'ahu. Projects completed in the last development cycle include the $500-million renovation of the Four Seasons O'ahu at Ko Olina, the $465-million redevelopment of the International Market Place in Waikiki, the $110-million renovation of the former Ohana Waikiki West (now the Hilton Garden Inn Waikiki Beach), the $115-million renovation of the former Pacific Beach Hotel (now the 'Alohilani Resort), the $60-million renovation of the former Aqua Waikiki Wave (now The Laylow, Autograph Collection), and the completion of the Ritz-Carlton Residences in Waikiki.

Since mid-March 2020, the State of Hawaii has been significantly affected by the COVID-19 pandemic and the resulting travel and business operation restrictions. As a result of the restrictions and economic downturn, the majority of hotels and resorts on the island of O'ahu suspended operations in late March. The State of Hawaii modified the mandatory two-week quarantine period for all travelers on October 15, 2020, contingent upon a negative COVID-19 test result within three days prior to arrival. In response, hotels and other lodging facilities throughout the state began to reopen in October and November. After an initial rebound in demand, occupancies remained depressed in December and January, attributed to a significant increase in COVID-19 cases in major feeder markets, such as California. In April 2021, travel and business operation began to notably improve, concurrent with the widespread distribution of vaccines. Reportedly, hotels have been operating at nearly full-capacity during weekends and key holidays. In general, steady improvement in economic indicators is being realized as infection rates decline and restrictions are eased.

Office Space Statistics

Trends in occupied office space are typically among the most reliable indicators of lodging demand, as firms that occupy office space often exhibit a strong propensity to attract commercial visitors. Thus, trends that cause changes in vacancy rates or occupied office space may have a proportional impact on commercial lodging demand and a less direct effect on meeting demand. The following table details office space statistics for the pertinent market area.

FIGURE 3-6 OFFICE SPACE STATISTICS – MARKET OVERVIEW

Submarket	Year	Vacancy Rate	Average Asking Lease Rate
Metro Area	2018	12.5 %	$30.61
	2019	14.4	30.82
	2020	14.6	31.26
CBD	2018	14.4 %	$30.82
	2019	14.6	31.26
	2020	15.0	31.23
Non-CBD	2018	11.7 %	$31.73
	2019	10.5	33.00
	2020	10.9	32.72

Source: REIS Report, 4th Quarter, 2020

In the greater Honolulu market, REIS reported a vacancy rate of 14.6% and an average asking rent of $31.26 for 2020. The subject property is located in the CBD submarket. The submarket's vacancy rate of 15.0% is above the overall market average. The average asking lease rate of $31.23 is above the average for the broader market.

Convention Activity

A convention center serves as a gauge of visitation trends to a particular market. Convention centers also generate significant levels of demand for area hotels and serve as a focal point for community activity. Typically, hotels within the closest proximity to a convention center—up to three miles away—will benefit the most. Hotels serving as headquarters for an event benefit the most by way of premium rates and hosting related banquet events. During the largest conventions, peripheral hotels may benefit from compression within the city as a whole.

Opened in 1998, the Hawaii Convention Center is Hawaii's largest meeting facility. The Hawaii Convention Center contains a total of 1.1 million square feet of net rentable space, which includes a 35,000-square-foot lobby and a 200,000-squarefoot exhibit hall with drive-in floor access. In addition, the 138,869 square feet of meeting space includes a 35,000-square-foot grand ballroom, 47 meeting rooms, and 2 theaters. The center features a rooftop garden, glass-encased meeting rooms, outdoor function spaces, and a 20,000-square-foot production kitchen.

CONVENTION CENTER

Effective March 11, 2021, COVID-19 restrictions were eased on O'ahu to allow for static events (those in which attendees reserve a seat, attend the seated event, and leave such as business/educational seminars, business meetings, and graduations) at venues, such as convention centers and banquet rooms, with occupancy limited to no more than the number that allows each attendee to maintain six feet of physical distance from other attendees at all times.

Airport Traffic

Airport passenger counts are important indicators of lodging demand. Depending on the type of service provided by a particular airfield, a sizable percentage of arriving passengers may require hotel accommodations. Trends showing changes in passenger counts also reflect local business activity and the overall economic health of the area.

Located on the island of O'ahu in Honolulu, Daniel K. Inouye International Airport (formerly known as Honolulu International Airport) is the principal aviation gateway to the State of Hawaii. The airport is host to numerous major U.S. and international flagship commercial carriers with direct routes to Australian, American, Asian, and Pacific Rim destinations. It is also the principal hub for Hawaiian Airlines, which offers flights among the various airports of the Hawaiian Islands and serves the continental U.S. and Asia Pacific regions. Construction of the Mauka Concourse, situated on the site of the former interisland terminal, is currently ongoing. When completed in the fall of 2021, the $220-million, two-story facility will add eleven narrow-body gates and will include a connecting walkway between Terminal 1 and a new TSA checkpoint. Another notable project under construction is the $329-million Consolidated Car Rental Facility. The 1.8-million-square-foot concrete structure will consolidate all rental car companies serving the airport and will include rental agency areas, office space, carwash equipment, fueling stations, and 2,250 parking stalls. According to the Hawaii Department of Transportation, roughly $1.6 billion has been invested in airport improvements since 2013.

The following table illustrates recent operating statistics for the Daniel K Inouye International Airport, which is the primary airport facility serving the proposed subject hotel's submarket.

FIGURE 3-7 AIRPORT STATISTICS – DANIEL K INOUYE INTERNATIONAL AIRPORT

Year	Passenger Traffic	Percent Change*	Percent Change**
2011	17,996,998	—	—
2012	19,275,834	7.1 %	7.1 %
2013	19,476,224	1.0	4.0
2014	19,341,893	(0.7)	2.4
2015	19,638,982	1.5	2.2
2016	19,950,125	1.6	2.1
2017	18,669,243	(6.4)	0.6
2018	20,711,557	10.9	2.0
2019	21,600,425	4.3	2.3
2020	6,533,674	(69.8)	(10.6)

*Annual average compounded percentage change from the previous year

**Annual average compounded percentage change from first year of data

Source: Daniel K Inouye International Airport

This facility recorded 6,533,674 passengers in 2020. The change in passenger traffic between 2019 and 2020 was -69.8% The most recent data illustrate a substantial decline given the impact of the COVID-19 pandemic and travel restrictions that were implemented. The Hawaii Tourism Authority reports that overall visitor arrivals to the State of Hawaii dropped by more than 75% in 2020. All passengers arriving from out-of-state prior to mid-October were required to undergo a two-week self-quarantine, with exemptions for essential business or healthcare travel. Initial estimates from airport officials suggest that passenger numbers are not expected to return to pre-pandemic levels until 2023. Over the long term, passenger volume should recover and improve as travel restrictions are rescinded and economic activity rebounds.

Tourism Overview – State of Hawaii

The tourism industry is highly important within this region. Hawaii is unique among American tourism destinations because of its physical separation from the United States mainland and its relative proximity to Asia. The location of Hawaii fosters its status as a truly international resort destination. To monitor the tourism industry, the Hawaii State Department of Business, Economic Development & Tourism (DBEDT) assumed responsibility in 1999 for collecting and publishing official state tourism-related statistics. Since the vast majority of tourists arrive by way of air travel, visitation data are relatively easy to obtain, as passengers are asked to fill out a questionnaire during their flight. In order to evaluate Hawaii's status as an international tourist destination, we have analyzed historical visitation statistics, as compiled by the DBEDT.

The following tables show visitation statistics for the state of Hawaii from 2007 through 2020.

FIGURE 3-8 HISTORICAL VISITATION TRENDS FOR THE STATE OF HAWAII (VISITORS BY AIR)

Year	Total Visitors by Air	Percent Change	Domestic Visitors	Percent Change	Domestic % of Total	International Visitors	Percent Change	International % of Total
2007	7,496,820	—	5,582,530	—	74.5 %	1,914,290	—	25.5 %
2008	6,713,436	(10.4) %	4,901,893	(12.2) %	73.0	1,811,543	(5.4) %	27.0
2009	6,420,448	(4.4)	4,672,001	(4.7)	72.8	1,748,447	(3.5)	27.2
2010	6,916,893	7.7	4,957,351	6.1	71.7	1,959,542	12.1	28.3
2011	7,174,397	3.7	5,127,291	3.4	71.5	2,047,106	4.5	28.5
2012	7,867,143	9.7	5,403,025	5.4	68.7	2,464,118	20.4	31.3
2013	8,003,474	1.7	5,405,300	0.0	67.5	2,598,174	5.4	32.5
2014	8,196,342	2.4	5,486,059	1.5	66.9	2,710,283	4.3	33.1
2015	8,563,018	4.5	5,782,140	5.4	67.5	2,780,878	2.6	32.5
2016	8,821,802	3.0	5,968,779	3.2	67.7	2,853,023	2.6	32.3
2017	9,277,613	5.2	6,239,748	4.5	67.3	3,037,865	6.5	32.7
2018	9,761,448	5.2	6,736,736	8.0	69.0	3,024,712	(0.4)	31.0
2019	10,243,165	4.9	7,253,806	7.7	70.8	2,989,359	(1.2)	29.2
2020	2,686,403	(73.8)	2,062,642	(71.6)	76.8	623,761	(79.1)	23.2
Avg. Annual Compounded Change:								
2007 - 2019		2.6 %		2.2 %			3.8 %	
2015 - 2019		4.6		5.8			1.8	

Source: State of Hawaii Department of Business, Economic Development & Tourism

Domestic travel to Hawaii fluctuated with economic trends but represented between 65% to 75% of total visitors by air over the period reviewed; since 2012 the split between domestic and international visitors has been roughly two-thirds domestic and one-third international.

As mentioned previously, the largest sources of visitation to Hawaii have historically been from the U.S. mainland and Asia, in particular Japan. Major international feeder markets include Japan, Canada, Oceania, and Korea. Over 1.5 million visitors, or just over 14.8% of total visitors, were from Japan in 2019.

Visitors by air have historically indicated that "pleasure/vacation" was their primary purposes of travel, representing 84.6% of total 2019 visitation. Visiting friends and relatives was a distant second at 8.2%. Year-end 2020 data indicate that pleasure/vacation still represents the primary purpose of visitation.

With respect to accommodations, hotels are the preferred lodging option by a large margin; nearly 60% of visitors in 2019 planned to stay at a hotel. From 2016 to 2019, visitors indicating that they would stay at a hotel increased 11.3% from 5,502,947 to 6,126,674. However, while hotels are still the primary lodging choice for visitors to Hawaii, the percentage of visitors seeking alternative transient lodging accommodations (bed & breakfast, rental house, or room/space in a private home) has also grown in recent years, albeit at a slower pace. Between 2016 and 2019, the number of visitors seeking these alternative accommodations increased 8.4% from 1,266,554 to 1,373,334.

FIGURE 3-9 HAWAII VISITOR CHARACTERISTICS (PURPOSE OF TRIP FOR VISITORS BY AIR)

	2016 Total	% Total	2017 Total	% Total	% Change	2018 Total	% Total	% Change	2019 Total	% Total	% Change
Purpose of Visit (Arrival by Air)											
Pleasure/Vacation	7,338,059	77.7 %	7,795,027	78.7 %	6.2 %	8,228,574	79.0 %	5.6 %	8,694,605	79.5 %	5.7 %
Meeting/Convention/Incentives	485,194	5.1	475,229	4.8	(2.1)	471,373	4.5	(0.8)	467,231	4.3	(0.9)
Other Business	255,919	2.7	256,931	2.6	0.4	258,003	2.5	0.4	273,503	2.5	6.0
Visit Friends/Relatives	722,681	7.6	734,353	7.4	1.6	793,806	7.6	8.1	847,046	7.7	6.7
Government/Military	94,105	1.0	91,074	0.9	(3.2)	104,245	1.0	14.5	109,170	1.0	4.7
Education	28,091	0.3	30,449	0.3	8.4	25,843	0.2	(15.1)	25,779	0.2	(0.2)
Sport Events	89,744	0.9	84,295	0.9	(6.1)	91,966	0.9	9.1	98,266	0.9	6.9
Other	434,311	4.6	437,957	4.4	0.8	439,260	4.2	0.3	418,081	3.8	(4.8)
Total	**9,448,104**	**100.0 %**	**9,905,315**	**100.0 %**	**4.8 %**	**10,413,070**	**100.0 %**	**5.1 %**	**10,933,681**	**100.0 %**	**5.0 %**
Accommodations											
Hotel	5,502,947	56.0 %	5,743,630	55.3 %	4.4 %	5,864,186	53.6 %	2.1 %	6,126,674	53.5 %	4.5 %
Condominium	1,520,162	15.5	1,566,757	15.1	3.1	1,671,608	15.3	6.7	1,702,919	14.9	1.9
Timeshare	798,503	8.1	841,061	8.1	5.3	842,332	7.7	0.2	850,653	7.4	1.0
Cruise Ship	120,868	1.2	136,056	1.3	12.6	134,694	1.2	(1.0)	143,771	1.3	6.7
Friends/Relatives	784,885	8.0	815,444	7.9	3.9	877,627	8.0	7.6	948,533	8.3	8.1
Bed & Breakfast	93,350	1.0	104,388	1.0	11.8	117,158	1.1	12.2	120,496	1.1	2.8
Rental House	679,484	6.9	768,370	7.4	13.1	953,058	8.7	24.0	1,039,453	9.1	9.1
Hostel	62,265	0.6	70,023	0.7	12.5	81,501	0.7	16.4	89,536	0.8	9.9
Camp Site/Beach	50,639	0.5	53,043	0.5	4.7	58,754	0.5	10.8	65,049	0.6	10.7
Room/Space in Private Home*	80,793	0.8	163,001	1.6	101.8	199,788	1.8	22.6	213,385	1.9	6.8
Other	128,772	1.3	116,741	1.1	(9.3)	135,767	1.2	16.3	157,002	1.4	15.6
Total	**9,822,668**	**100.0 %**	**10,378,514**	**100.0 %**	**5.7 %**	**10,936,473**	**100.0 %**	**5.4 %**	**11,457,471**	**100.0 %**	**4.8 %**

**Sample size for "Room/Space in Private Home" is limited*

Source: State of Hawaii Department of Business, Economic Development & Tourism

Currently, the vacation rental sector in Hawaii largely operates without valid permits and there are few mechanisms for tax collection, although hotel owners and operators have been seeking legislation for years to level the playing field, such as requiring websites including Airbnb and VRBO.com to collect and pay taxes on behalf of short-term rental hosts. The transient occupancy and general excise taxes the short-term rental operators must pay are levied by the state. The necessary permits for short-term rentals are issued by counties, which have varying regulations that are often poorly enforced.

Over the last several years, Hawaii's four main counties have made progress in crafting laws and rules to better regulate vacation rentals. In April 2019, both the House and Senate of the Hawaii State Legislature approved separate bills addressing the issue. On the island of Oʻahu, Mayor Kirk Caldwell signed a bill establishing a real property tax classification for bed & breakfast properties in December 2019; the law also limits the total number of registered and permitted short-term vacation rentals on Oʻahu starting October 2020. In November 2020, a memoranda of understanding with Airbnb and Expedia Group, parent company of VRBO, was signed with the City & County of Honolulu. Under terms of the agreement, both platforms agree to cooperate with the City in terms of education, information, sharing, and listing; the agreement is expected to help regulate illegal vacation rentals. According to Aloha Hospitality Consulting, vacation rental supply on the island of Oʻahu declined by nearly 50% in 2020, attributed to lack of demand due to the COVID-19 pandemic.

FIGURE 3-10 VISITATION BY ISLAND

	2012		2013		2014		2015		2016		2017		2018		2019		2020		CAGR (2012 - 2019)
Domestic Visitors by Island																			
O'ahu	2,734,643	5.5 %	2,732,456	(0.1) %	2,779,642	1.7 %	2,868,749	3.2 %	2,913,562	1.6 %	3,009,467	3.3 %	3,217,740	6.9 %	3,513,070	9.2 %	995,915	(71.7) %	3.6 %
Maui	1,914,706	4.6	1,921,362	0.3	1,977,718	2.9	2,083,999	5.4	2,171,914	4.2	2,269,119	4.5	2,432,854	7.2	2,650,787	9.0	705,718	(73.4)	4.8
Hawai'i	1,072,678	5.0	1,055,383	(1.6)	1,084,443	2.8	1,154,201	6.4	1,187,740	2.9	1,292,724	8.8	1,291,109	(0.1)	1,361,151	5.4	402,317	(70.4)	3.5
Kaua'i	977,820	6.9	987,818	1.0	988,312	0.1	1,028,294	4.0	1,050,577	2.2	1,125,560	7.1	1,209,338	7.4	1,211,260	0.2	295,850	(75.6)	3.1
Moloka'i	41,740	(4.8)	42,663	2.2	47,737	11.9	49,843	4.4	44,203	(11.3)	41,560	(6.0)	42,441	2.1	44,304	4.4	12,976	(70.7)	0.9
Lana'i	58,877	(4.8)	58,334	(0.9)	54,852	(6.0)	44,334	(19.2)	49,299	11.2	48,021	(2.6)	54,310	13.1	58,799	8.3	15,478	(73.7)	(0.0)
International Visitors by Island																			
O'ahu	2,169,402	19.9 %	2,311,820	6.6 %	2,412,978	4.4 %	2,471,163	2.4 %	2,533,667	2.5 %	2,681,286	5.8 %	2,644,617	(1.4) %	2,641,178	(0.1) %	519,098	(80.3) %	2.9 %
Maui	394,488	16.9	437,421	10.9	439,700	0.5	456,163	3.7	462,323	1.4	475,875	2.9	482,058	1.3	460,345	(4.5)	100,647	(78.1)	2.2
Hawai'i	360,604	21.7	379,862	5.3	370,241	(2.5)	360,772	(2.6)	362,203	0.4	468,765	29.4	415,108	(11.4)	402,753	(3.0)	90,008	(77.7)	1.6
Kaua'i	106,861	10.1	126,537	18.4	131,661	4.0	145,458	10.5	136,691	(6.0)	154,408	13.0	179,962	16.5	158,769	(11.8)	35,104	(77.9)	5.8
Moloka'i	11,583	1.7	12,494	7.9	12,363	(1.0)	14,924	20.7	14,728	(1.3)	16,890	14.7	16,445	(2.6)	18,730	13.9	3,988	(78.7)	7.1
Lana'i	13,772	4.7	15,975	16.0	13,298	(16.8)	14,057	5.7	13,725	(2.4)	16,337	19.0	20,700	26.7	25,304	22.2	2,491	(90.2)	9.1
Total Visitors by Island																			
O'ahu	4,904,045	11.4 %	5,044,276	2.9 %	5,192,620	2.9 %	5,339,912	2.8 %	5,447,229	2.0 %	5,690,753	4.5 %	5,862,357	3.0 %	6,154,248	5.0 %	1,515,013	(75.4) %	3.0 %
Maui	2,309,194	6.5	2,358,783	2.1	2,417,418	2.5	2,540,162	5.1	2,634,237	3.7	2,744,994	4.2	2,914,912	6.2	3,111,132	6.7	806,365	(74.1)	4.0
Hawai'i	1,433,282	8.7	1,435,245	0.1	1,454,684	1.4	1,514,973	4.1	1,549,943	2.3	1,761,489	13.6	1,706,217	(3.1)	1,763,904	3.4	492,325	(72.1)	2.9
Kaua'i	1,084,681	7.2	1,114,355	2.7	1,119,973	0.5	1,173,752	4.8	1,187,268	1.2	1,279,968	7.8	1,389,300	8.5	1,370,029	(1.4)	330,954	(75.8)	4.2
Moloka'i	53,323	(3.5)	55,157	3.4	60,100	9.0	64,767	7.8	58,931	(9.0)	58,450	(0.8)	58,886	0.7	63,034	7.0	16,964	(73.1)	1.7
Lana'i	72,649	(3.1)	74,309	2.3	68,150	(8.3)	58,391	(14.3)	63,024	7.9	64,358	2.1	75,010	16.6	84,103	12.1	17,969	(78.6)	0.5

Source: State of Hawaii Department of Business, Economic Development & Tourism

As shown in the preceding table, O‘ahu is the most visited island. International visitors tend to stay on O‘ahu, specifically in the Waikiki District, and typically schedule day trips to visit the outer islands. This trend is due to the travel habits of international visitors, who tend to travel in large groups, use buses as their main form of transportation, and stay in larger hotels. Moreover, the well-developed infrastructure of O‘ahu was planned to handle the needs of these international travelers. In addition, Waikiki as a destination is the most popular among first-time and international visitors.

Maui is the second most visited island after O‘ahu. While O‘ahu and Waikiki offer an experience of Hawaii in a more urban setting, the island of Maui features lush rainforests, pristine white sand beaches, and luxury resort developments. Maui tends to draw both first- and second-time visitors to the Hawaiian Islands, with primary feeder markets stemming from the West Coast of the United States.

Hawai‘i, also known as the Big Island, is the largest island by land mass. The island also features a number of upscale resort developments on its sunny west side; however, the main draw of Hawai‘i is the Volcanoes National Park on the east side. Given its sheer size, the Big Islands tends to be frequented by those on their second or third visit to the Hawaiian Islands.

Kaua‘i is the smallest and least populated of the four main Hawaiian Islands. As this particular island remains relatively underdeveloped, Kaua‘i tends to attract a younger, more active demographic that prefers outdoor adventures such as hiking, kayaking, paddleboarding, snorkeling, and helicopter tours. The island has gained significant popularity in recent years, evidenced by the 6.3% CAGR in visitation levels between 2012 and 2019. Primary feeder markets for Kaua‘i include California, Oregon, Washington, and Arizona.

Visitation Forecast

In 2019, the State of Hawaii achieved a historical peak of over 10.2 million visitors by air. The entrance of Southwest Airlines into the transpacific and interisland market significantly boosted domestic visitation. Prior to the ongoing COVID-19 pandemic, visitation was projected to continue to grow over the next four years, with the largest absolute growth previously expected to stem from the Western United States.

In the latest Hawaii DBEDT Quarterly Tourism Forecast, overall visitation is not expected to recover to peak 2019 levels until 2025. However, we note that domestic tourism is forecast to return to roughly 98% of 2019 levels by 2023; a slower recovery is anticipated for the international markets. The Hawaii DBEDT’s most recent four-year visitation forecast, along with historical statistics for 2012 through 2019, by source markets are presented in the following table.

FIGURE 3-11 HAWAII DBEDT QUARTERLY TOURISM FORECAST

Year	Total Visitor Arrivals	Percent Change	Visitor Arrivals (US West)	Percent Change	Visitor Arrivals (US East)	Percent Change	Visitor Arrivals (Japan)	Percent Change	Visitor Arrivals (Canada)	Percent Change	Visitor Arrivals (Europe)	Percent Change	Visitor Arrivals (Oceania)	Percent Change	Visitor Arrivals (Cruise)	Percent Change	Visitor Arrivals (Korea)	Percent Change	Visitor Arrivals (Other Markets)	Percent Change
2000	6,989,293	—	2,432,444	—	1,712,712	—	1,817,643	—	251,843	—	166,973	—	95,974	—	40,699	—	58,865	—	412,140	—
2001	6,350,361	(9.1) %	2,372,070	(2.5) %	1,588,164	(7.3) %	1,528,564	(15.9) %	216,948	(13.9) %	126,020	(24.5) %	81,158	(15.4) %	46,571	14.4 %	44,161	(25.0) %	346,705	(15.9) %
2002	6,452,835	1.6	2,486,915	4.8	1,582,563	(0.4)	1,483,122	(3.0)	189,890	(12.5)	111,275	(11.7)	108,835	34.1	63,776	36.9	48,174	9.1	378,285	9.1
2003	6,442,021	(0.2)	2,609,863	4.9	1,653,357	4.5	1,340,034	(9.6)	204,999	8.0	111,074	(0.2)	95,514	(12.2)	61,581	(3.4)	48,493	0.7	317,106	(16.2)
2004	6,991,926	8.5	2,768,002	6.1	1,805,377	9.2	1,482,085	10.6	217,163	5.9	114,948	3.5	132,130	38.3	79,833	29.6	38,394	(20.8)	353,994	11.6
2005	7,494,234	7.2	3,032,492	9.6	1,929,294	6.9	1,517,439	2.4	248,617	14.5	112,370	(2.2)	142,391	7.8	77,662	(2.7)	35,008	(8.8)	398,961	12.7
2006	7,628,117	1.8	3,219,948	6.2	1,953,316	1.2	1,362,876	(10.2)	280,920	13.0	106,033	(5.6)	135,813	(4.6)	100,012	28.8	37,911	8.3	431,288	8.1
2007	7,600,819	(0.4)	3,244,707	0.8	1,901,502	(2.7)	1,269,423	(6.9)	333,397	18.7	108,023	1.9	164,150	20.9	130,999	31.0	42,140	11.2	406,478	(5.8)
2008	6,822,912	(10.2)	2,769,229	(14.7)	1,683,112	(11.5)	1,175,198	(7.4)	359,580	7.9	115,172	6.6	155,479	(5.3)	109,476	(16.4)	38,110	(9.6)	417,556	2.7
2009	6,517,054	(4.5)	2,718,818	(1.8)	1,561,468	(7.2)	1,168,080	(0.6)	346,583	(3.6)	104,403	(9.4)	136,717	(12.1)	96,606	(11.8)	51,353	34.7	333,026	(20.2)
2010	7,018,134	7.7	2,924,430	7.6	1,610,421	3.1	1,239,307	6.1	405,040	16.9	112,765	8.0	161,060	17.8	101,239	4.8	81,758	59.2	382,114	14.7
2011	7,299,047	4.0	2,994,732	2.4	1,642,279	2.0	1,241,805	0.2	477,564	17.9	119,825	6.3	209,976	30.4	124,650	23.1	112,567	37.7	375,649	(1.7)
2012	8,028,745	10.0	3,178,824	6.1	1,699,625	3.5	1,465,654	18.0	499,144	4.5	129,252	7.9	273,039	30.0	161,600	29.6	153,338	36.2	468,269	24.7
2013	8,174,461	1.8	3,211,429	1.0	1,701,852	0.1	1,518,517	3.6	517,011	3.6	136,805	5.8	355,568	30.2	170,987	5.8	177,113	15.5	385,179	(17.7)
2014	8,320,785	1.8	3,255,475	1.4	1,713,085	0.7	1,511,739	(0.4)	522,761	1.1	142,366	4.1	371,367	4.4	124,443	(27.2)	178,118	0.6	501,431	30.2
2015	8,679,564	4.3	3,507,652	7.7	1,803,670	5.3	1,482,304	(1.9)	512,323	(2.0)	145,019	1.9	399,619	7.6	116,546	(6.3)	193,658	8.7	518,773	3.5
2016	8,934,279	2.9	3,664,150	4.5	1,892,768	4.9	1,487,979	0.4	469,314	(8.4)	143,922	(0.8)	390,364	(2.3)	112,475	(3.5)	257,189	32.8	516,118	(0.5)
2017	9,404,346	5.3	3,868,195	5.6	2,040,795	7.8	1,525,343	2.5	520,062	10.8	142,665	(0.9)	400,957	2.7	126,733	12.7	279,201	8.6	500,395	(3.0)
2018	9,888,845	5.2	4,203,894	8.7	2,173,458	6.5	1,489,778	(2.3)	548,702	5.5	144,953	1.6	415,764	3.7	127,397	0.5	228,350	(18.2)	556,549	11.2
2019	10,386,673	5.0	4,595,319	9.3	2,276,520	4.7	1,576,205	5.8	540,103	(1.6)	137,908	(4.9)	363,551	(12.6)	143,508	12.6	229,056	0.3	524,503	(5.8)
2020	2,716,195	(73.8)	1,306,388	(71.6)	676,061	(70.3)	297,243	(81.1)	161,201	(70.2)	21,609	(84.3)	61,226	(83.2)	29,792	(79.2)	42,179	(81.6)	120,496	(77.0)
2021	5,511,945	102.9	3,002,696	129.8	1,401,180	107.3	349,500	17.6	195,431	21.2	55,102	155.0	82,654	35.0	55,102	85.0	55,102	30.6	315,177	161.6
2022	8,281,723	50.3	3,975,227	32.4	1,904,796	35.9	1,076,624	208.0	414,086	111.9	99,381	80.4	248,452	200.6	66,254	20.2	149,071	170.5	347,832	10.4
2023	9,209,632	11.2	4,144,335	4.3	2,026,119	6.4	1,335,397	24.0	506,530	22.3	119,725	20.5	322,337	29.7	110,516	66.8	202,612	35.9	442,062	27.1
2024	9,837,094	6.8	4,328,321	4.4	2,164,161	6.8	1,475,564	10.5	541,040	6.8	127,882	6.8	393,484	22.1	127,882	15.7	226,253	11.7	452,506	2.4

Source: DBEDT Tourism Forecast (Q1 2021)

Currently, the percentage of total visitors to Hawai'i that are from the U.S. mainland is high given the Hawai'i's low COVID-19 infection rate, the limited safe destination options available outside of the U.S., and the limited number of international visitors due to COVID-19 related restrictions and individual government policies. For example, visitors from Japan to Hawai'i are subject to a 14-day quarantine upon returning to Japan, Japanese citizens are advised by the Japanese government not to travel if possible, and the uncertainty of the status of the Summer Olympics scheduled to be held in Tokyo, Japan complicates Japan's government decision regarding travel abroad. While some travel companies have started selling tour products to Hawaii from Japan beginning in mid to late summer arrivals, the majority of airlines and tour companies anticipate international travel to start up in the third quarter of 2021. Hawai'i Tourism Japan is forecasting significant visitation to begin in the fourth quarter of 2021, but Japan visitation will not return to 2019 levels until after 2023.

Tourist Attractions

The market benefits from a variety of tourist and leisure attractions in the area. While O'ahu typically experiences steady year-round tourism given its warm weather, the peak season in this area is from May to September. Primary attractions in the area include the following:

- The Waikiki hotel and entertainment district features a multitude of restaurants, shops, and bars, in addition to two miles of beach. Waikiki Beach is one of the most heavily photographed beaches in the world, attracting hundreds of thousands of visitors to sunbathe, swim, and surf here. The Diamond Head Crater, located at the eastern end of Waikiki, was formed during a series of volcanic eruptions. While part of Diamond Head currently serves as a platform for antennas used by the U.S. Government, the crater is a popular tourist and hiking destination. Once hikers reach the end of the trail at the top of the crater, they are rewarded with panoramic views of Waikiki and the Pacific Ocean.

- The North Shore, the north-facing coastal area of O'ahu between Kaena Point and La'ie Point, is famous for its massive waves, often reaching 20 feet or higher. The North Shore attracts surfers from all around the world. The North Shore waters are also abundant with shrimp, and many popular shrimp trucks line the beach areas. The Polynesian Cultural Center, spread over 42 acres in La'ie, has historically been one of the state's top paid visitor attractions, typically drawing around a million visitors annually. The Cultural Center features seven Pacific Island villages, an evening show with a cast of 100, a canoe pageant, an award-wining luau, an arts and handicrafts marketplace, and an IMAX theater.

- The USS Arizona Memorial is one of several sites in Hawaii that are part of the Pearl Harbor National Memorial. The national memorial commemorates the site where World War II began for the United States. The memorial was built in 1962 and is only accessibly by boat, straddling the sunken hull of the battleship. The battleship's sunken remains were declared a National Historic Landmark in 1989. Prior to the COVID-19 pandemic, it was visited by over one million visitors annually.

- The I'olani Palace, the seat of Hawaii's former government, is a short walk from the State Capitol in Downtown Honolulu. Built in 1882 for King Kalakaua, I'olani Palace is the only restored royal palace in the United States. Until 1893, when the United States government overthrew the Hawaiian monarchy, this Renaissance-style building was the official residence of King Kalakaua and Queen Lili'uokalani, Hawaii's last two monarchs.

- One of Hawaii's most recognized icons, Diamond Head is an extinct volcano located at the eastern end of Waikiki. While part of Diamond Head currently serves as a platform for antennas used by the U.S. government, the crater is a popular tourist and hiking destination. Once hikers reach the end of the trail at the top of 760-foot summit, they are rewarded with panoramic views of the Pacific Ocean, spanning from Hawaii Kai and Kahala to Waikiki and Downtown Honolulu.

- Formed within a volcanic cone, Hanauma Bay is a nature preserve and marine-life conservation district located eight miles east of Waikiki. With more than 400 species of fish, as well as an abundance of green sea turtles inhabiting the area, Hanauma Bay is a popular snorkeling destination for tourists.

- Ala Moana, the world's largest open-air shopping center, is located less than one mile northwest of Waikiki. Featuring more than 2.2 million square feet of retail space and over 330 retailers, Ala Moana has undergone numerous renovations since its opening in 1959. In 2015, the shopping center underwent a $573-million expansion of its western Ewa Wing.

- Kualoa Ranch is a 4,000-acre private nature reserve and working cattle ranch located on the windward coast of O'ahu. The property features three valleys: Ka'a'awa Valley, Kualoa Valley, and Hakipu'u Valley. Ka'a'awa Valley has been the site of many television shows and Hollywood films, including *Jurassic Park, Jurassic World, Pearl Harbor, Godzilla, 50 First Dates, LOST*, and *Hawaii Five-O*. The ranch features a variety of activities, including horseback riding, ATV tours, jungle expeditions, ocean voyaging tours, and zipline tours.

- The Bernice Pauahi Bishop Museum, designated the Hawaii State Museum of Natural and Cultural History, is a museum of history and science located in the Kalihi district of Honolulu. Founded in 1989, it is the largest museum in Hawaii and features the world's largest collection of Polynesian cultural artifacts and natural history specimens.

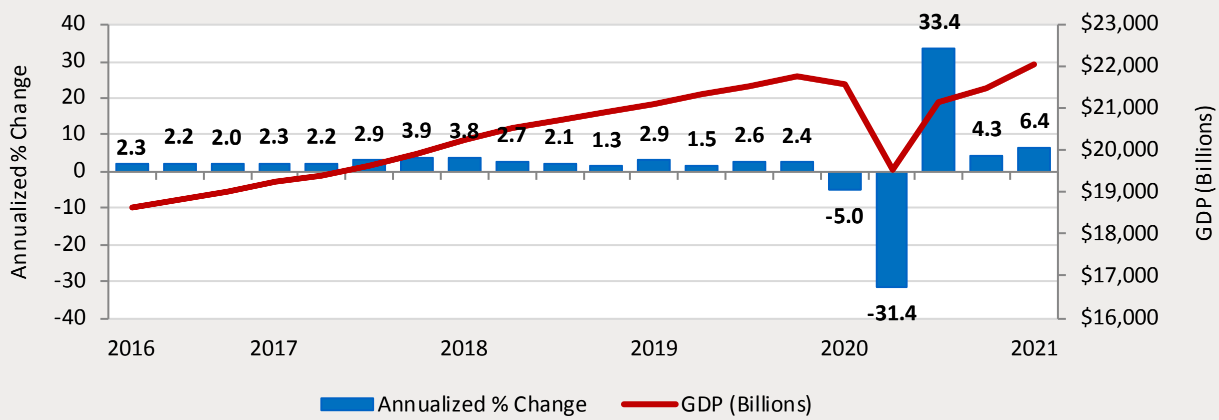
WAIKIKI BEACH

Conclusion

This section discussed a wide variety of economic indicators for the pertinent market area. Given the scenic views and beautiful landscapes, Hawaii's economy is largely dependent upon tourism, which declined significantly in 2020 due to the onset of the COVID-19 pandemic. However, tourism has rebounded in Q2 2021 due to pent-up domestic demand. Moreover, other economic drivers, such as the government and military sectors, remain strong and stable sources of demand on O'ahu, and construction activity has continued despite the pandemic. The long-term outlook remains optimistic, as the Hawaiian Islands will remain a popular destination for both domestic and international tourism.

Our analysis of the outlook for this specific market also considers the broader context of the national economy. The U.S. economy expanded at an overall rate of 2.3% in 2019, a decline from the 2.9% level achieved in 2018. For the seven quarters leading up to 2020, GDP quarterly growth ranged between 1.3% and 2.9%, reflecting moderate economic expansion. The slowdown and impact of COVID-19 became more evident in the first quarter of 2020, when GDP declined by 5.0%. As shutdowns halted major components of the U.S. economy from mid-March through May, and partial, halting re-openings continued to dampen business activity, the U.S. economy contracted by an annualized rate of 31.4% in the second quarter, the largest such decline in U.S. history. The decline affected virtually every corner of the economy, with major decreases in personal consumption, exports, private inventory investment, residential and nonresidential fixed investment, and state and local government spending.

FIGURE 3-12 UNITED STATES GDP GROWTH RATE



Sources: tradingeconomics.com, Bureau of Economic Analysis

While shocking, the second-quarter GDP decline was offset by a significant rebound in economic activity in the third quarter, greatly moderating the overall impact for the year. The U.S. economy grew by 33.4% on an annualized basis in the third quarter, followed by a 4.3% and 6.4% gain in the subsequent fourth and first quarters, respectively. The rebound has been supported by substantial stimulus by the federal government, including the March 2020 $2-trillion CARES economic-aid package, the December 2020 $900-million aid package, and the March 2021 $1.9-trillion American Rescue Plan. Additional stimulus may be forthcoming if some form of the infrastructure bill currently in Congress is passed. The considerable federal stimulus has raised concerns about rising inflation, which has traditionally benefited hotel investments, though rising labor costs are also a concern. Hotel investors remain bullish based on factors such as a rebound in travel demand, rising hotel performance levels, and opportunities to generate significant returns as the industry recovers.

4. Supply and Demand Analysis

In the lodging industry, price varies directly, but not proportionately, with demand and inversely, but not proportionately, with supply. Supply is measured by the number of guestrooms available, and demand is measured by the number of rooms occupied; the net effect of supply and demand toward equilibrium results in a prevailing price, or average daily rate (ADR). The purpose of this section is to investigate current supply and demand trends, as indicated by the current competitive market, and to set forth a basis for the projection of future supply and demand growth.

Definition of Subject Hotel Market

The subject site is located in the greater Hawaii lodging market. Prior to the onset of the COVID-19 pandemic, this greater lodging market encompassed nearly 170 open and operating lodging facilities totaling roughly 49,000 guestrooms, characterized by a mix of large resort hotels and older, more modest hotels and resorts. Condominium rentals located throughout the Hawaiian Islands offer alternatives to traditional hotel and resort accommodations. Within this greater market, the island of O'ahu features roughly 90 lodging facilities totaling approximately 30,500 guestrooms, with the majority of hotels located in Waikiki. Visitors travel from all over the world to enjoy Waikiki Beach's white sand, calm surf, and picturesque views of Diamond Head. In addition to the primary concentration of hotels in the Waikiki area, several hotels are located near the Daniel K. Inouye International Airport in Honolulu, within the Ko Olina Resort development in Kapolei, and along the North Shore of the island.

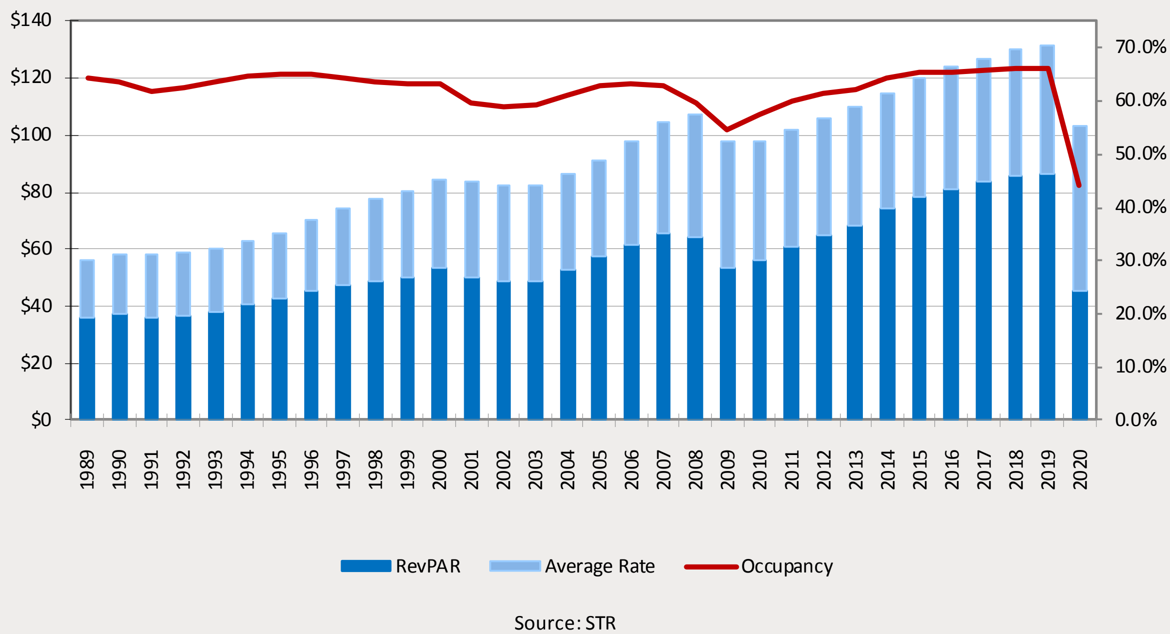
Within this greater market, the proposed subject hotel is expected to compete with six hotels on a primary level. Five of these hotels, located in Waikiki, are competitive on a primary level given their product offering, price point, and focus on capturing higher-rated transient demand. The sixth hotel, located in Downtown Honolulu, has been considered a primary competitor given its proximate location. We have considered an additional six hotels as future secondary competitors given differences in location and price point.

National Trends Overview

A hotel's local lodging market is most directly affected by the supply and demand trends within the immediate area. However, individual markets are also influenced by conditions in the national lodging market. We have reviewed national lodging trends to provide a context for the forecast of the supply and demand for the proposed subject hotel's competitive set.

STR is an independent research firm that compiles data on the lodging industry, and this information is routinely used by typical hotel buyers. The following STR diagram presents annual hotel occupancy, average daily rate (ADR), and rooms revenue per available room (RevPAR) data since 1989. RevPAR is calculated by multiplying occupancy by average rate and provides an indication of how well rooms revenue is being maximized.

FIGURE 4-1 NATIONAL OCCUPANCY, AVERAGE RATE, AND REVPAR TRENDS



Source: STR

The preceding chart illustrates the impact of the recessions of the early 1990s, 2000s, and the financial crisis of 2008/09 on the U.S. lodging industry. In each case, the downturn caused lodging demand to drop, resulting in an occupancy decline. The aggregate average rate (ADR) also fell, as hoteliers used price as a marketing tool to attract demand and support occupancy levels. As occupancy recovered, ADR growth resumed, although the ADR recovery lagged somewhat behind occupancy levels, as price discounts contributed to the initial recovery of demand. Throughout the period, both supply and demand increased, which contributed to the increased degree of volatility evident in each successive cycle.

Following the financial crisis of the Great Recession, occupancy fell by over eight points, and ADR declined by 5.9%, resulting in an 18.3% decrease in RevPAR. The market recovered steadily thereafter, with occupancy surpassing the 65% mark in 2015, and average rates also consistently growing, albeit at a decelerating pace. The onset of the COVID-19 pandemic in March 2020 had a severe impact on the lodging industry, causing occupancy, ADR, and RevPAR to decline by unprecedented levels. The 2019 and 2020 annual data are presented in the following chart. The data are categorized by geographical region, price point, type of location, and chain scale, and the statistics include occupancy, ADR, and RevPAR.

HVS

FIGURE 4-2 NATIONAL OCCUPANCY AND ADR TRENDS – CALENDAR-YEAR DATA

	Occupancy			Average Rate			RevPAR			Percent Change	
	2019	2020	% Change	2019	2020	% Change	2019	2020	% Change	Rms. Avail.	Rms. Sold
United States	66.0 %	44.0 %	(33.3) %	$131.23	$103.25	(21.3) %	$86.64	$45.48	(47.5) %	(3.6) %	(35.7) %
Region											
New England	64.7 %	38.8 %	(40.1) %	$161.08	$123.17	(23.5) %	$104.25	$47.77	(54.2) %	(5.2) %	(43.2) %
Middle Atlantic	69.0	41.3	(40.1)	166.27	115.26	(30.7)	114.81	47.65	(58.5)	(8.7)	(45.3)
South Atlantic	67.5	45.7	(32.2)	128.41	107.99	(15.9)	86.68	49.40	(43.0)	(3.5)	(34.6)
E. North Central	61.1	39.1	(36.0)	112.64	86.72	(23.0)	68.82	33.93	(50.7)	(2.3)	(37.4)
E. South Central	62.4	45.7	(26.8)	103.58	85.74	(17.2)	64.61	39.18	(39.4)	0.5	(26.4)
W. North Central	58.3	39.1	(32.9)	99.28	83.65	(15.7)	57.88	32.72	(43.5)	0.2	(32.7)
W. South Central	62.6	44.9	(28.2)	101.84	82.88	(18.6)	63.77	37.25	(41.6)	(0.4)	(28.5)
Mountain	66.9	46.7	(30.1)	121.89	105.70	(13.3)	81.54	49.39	(39.4)	(4.3)	(33.2)
Pacific	73.6	47.1	(36.0)	171.40	129.57	(24.4)	126.16	61.01	(51.6)	(7.3)	(40.7)
Class											
Luxury	70.9 %	36.8 %	(48.1) %	$304.11	$285.78	(6.0) %	$215.73	$105.29	(51.2) %	(15.1) %	(55.9) %
Upper-Upscale	72.6	34.8	(52.1)	188.24	159.14	(15.5)	136.67	55.30	(59.5)	(13.3)	(58.5)
Upscale	71.5	42.8	(40.1)	143.60	117.80	(18.0)	102.68	50.45	(50.9)	(2.7)	(41.7)
Upper-Midscale	67.5	45.3	(32.9)	115.91	98.80	(14.8)	78.20	44.72	(42.8)	0.0	(32.9)
Midscale	59.5	44.4	(25.4)	95.82	84.47	(11.8)	57.03	37.52	(34.2)	(0.7)	(25.9)
Economy	59.4	49.2	(17.1)	75.50	65.45	(13.3)	44.83	32.30	(28.2)	(1.3)	(18.2)
Location											
Urban	73.2 %	37.9 %	(48.2) %	$183.20	$127.80	(30.2) %	$134.12	$48.47	(63.9) %	(10.9) %	(53.8) %
Suburban	66.7	46.4	(30.4)	111.26	88.81	(20.2)	74.24	41.24	(44.4)	(0.9)	(31.0)
Airport	73.7	44.5	(39.6)	119.22	93.71	(21.4)	87.85	41.72	(52.5)	(1.2)	(40.3)
Interstate	57.9	44.8	(22.7)	87.86	79.05	(10.0)	50.85	35.39	(30.4)	0.8	(22.0)
Resort	70.0	42.9	(38.6)	182.74	170.36	(6.8)	127.85	73.13	(42.8)	(12.9)	(46.6)
Small Town	57.8	44.4	(23.1)	107.26	96.95	(9.6)	61.98	43.07	(30.5)	(0.1)	(23.2)
Chain Scale											
Luxury	73.8 %	32.0 %	(56.7) %	$343.02	$329.54	(3.9) %	$253.17	$105.40	(58.4) %	(21.5) %	(66.0) %
Upper-Upscale	73.9	33.4	(54.8)	189.25	158.86	(16.1)	139.80	53.10	(62.0)	(13.7)	(61.0)
Upscale	72.6	43.0	(40.7)	142.38	115.11	(19.2)	103.32	49.52	(52.1)	(0.9)	(41.3)
Upper-Midscale	67.5	45.4	(32.7)	112.80	96.04	(14.9)	76.14	43.61	(42.7)	0.9	(32.1)
Midscale	58.1	44.2	(23.8)	86.61	77.29	(10.8)	50.30	34.19	(32.0)	0.9	(23.2)
Economy	58.7	50.9	(13.2)	63.70	58.21	(8.6)	37.36	29.64	(20.7)	(0.4)	(13.5)
Independents	63.5	44.8	(29.5)	133.08	110.74	(16.8)	84.44	49.56	(41.3)	(5.6)	(33.4)

Source: STR - December 2020 Lodging Review

In December 2019, a novel coronavirus known as SARS-CoV-2 (COVID-19) was first identified in China, which has since spread throughout the world. The first reported case in the United States occurred in the State of Washington in late January 2020; by mid-March, cases had been identified in all 50 states, and the number of cases was increasing exponentially. The World Health Organization (WHO) officially declared COVID-19 a global pandemic on March 11, 2020, and the U.S. declared the outbreak a National Emergency on March 13, 2020. As the number of cases multiplied in the U.S. and throughout the world, governments implemented lockdowns and social-distancing measures in an effort to slow the spread of the virus. In most cases, these measures were effective, and the rates of infection slowed substantially through the summer months. After a spike in late December/early January, the number of new cases declined again. With vaccinations now available for all adults, infection rates continue to decline in most states. As a result, consumer confidence in being able to travel safely in the U.S. is rising; thus, the outlook for recovery of the travel industry has significantly improved.

The pandemic led to global economic disruptions, as stock markets throughout the world suffered sharp declines and the price of oil dropped precipitously. The markets have realized a significant recovery since the initial impact, and the price of oil has also recovered. In the U.S., economic activity declined sharply because of restrictions on business and travel. In most areas of the U.S., all but essential businesses were effectively closed for much of the second quarter of 2020, resulting in a 31.4% drop in GDP. With most states easing or lifting restrictions over the summer, the economy rebounded in the latter half of 2020, and with a 6.4% gain in the first quarter of 2021, actual GDP exceeded pre-pandemic levels. Significant government support contributed to this rebound, and the latest $1.9-trillion funding bill passed in March 2021 will further contribute to the ongoing economic recovery, with GDP growth for 2021 expected to reach or exceed 6.0%. While the long-term impact of the bailouts remains unknown, it is clear that the economic rebound is already well underway and will continue to stimulate the recovery of the hospitality industry.

The hotel market performance data for 2020 reflect the onset and spread of the COVID-19 pandemic. Occupancy declined by 22 points, and ADR declined by roughly $28.00, resulting in a RevPAR loss of 47.5% when compared to 2019. The sharp downturn in travel caused by COVID-19 has continued into 2021, as the months of January and February 2020 were not notably affected by the pandemic. With travel still substantially below historic levels, data for the first quarter of 2021 continue to show a sharp downturn in travel activity.

FIGURE 4-3 NATIONAL OCCUPANCY AND ADR TRENDS – YEAR-TO-DATE DATA

	Occupancy - YTD May			Average Rate - YTD May			RevPAR - YTD May			Percent Change	
	2020	2021	% Change	2020	2021	% Change	2020	2021	% Change	Rms. Avail.	Rms. Sold
United States	43.3 %	51.3 %	18.6 %	$112.07	$106.35	(5.1) %	$48.47	$54.56	12.6 %	4.4 %	23.9 %
Region											
New England	36.7 %	43.0 %	17.1 %	$116.35	$109.71	(5.7) %	$42.74	$47.19	10.4 %	4.7 %	22.6 %
Middle Atlantic	40.6	45.1	11.0	122.10	110.22	(9.7)	49.59	49.69	0.2	(1.8)	9.0
South Atlantic	46.6	56.5	21.2	119.82	121.42	1.3	55.83	68.55	22.8	6.1	28.6
E. North Central	36.7	43.7	19.1	88.96	86.78	(2.5)	32.64	37.92	16.2	3.6	23.4
E. South Central	42.1	54.5	29.5	87.18	90.53	3.8	36.70	49.33	34.4	3.8	34.4
W. North Central	35.3	43.4	22.8	84.78	84.31	(0.6)	29.94	36.56	22.1	3.2	26.7
W. South Central	44.5	55.1	23.7	89.60	85.58	(4.5)	39.89	47.15	18.2	4.1	28.9
Mountain	45.8	53.2	16.1	115.97	107.50	(7.3)	53.13	57.18	7.6	8.7	26.2
Pacific	47.7	52.1	9.1	145.24	127.13	(12.5)	69.35	66.24	(4.5)	4.0	13.4
Class											
Luxury	43.5 %	41.8 %	(3.9) %	$302.71	$315.75	4.3 %	$131.66	$132.01	0.3 %	20.1 %	15.4 %
Upper-Upscale	41.9	39.8	(5.0)	177.55	155.41	(12.5)	74.38	61.84	(16.9)	8.6	3.2
Upscale	43.1	52.3	21.2	129.27	115.49	(10.7)	55.76	60.39	8.3	5.8	28.2
Upper-Midscale	42.2	54.8	30.0	103.41	99.78	(3.5)	43.63	54.72	25.4	4.3	35.6
Midscale	40.3	51.1	26.9	84.16	87.42	3.9	33.89	44.66	31.8	3.1	30.8
Economy	46.0	55.1	19.8	65.02	68.53	5.4	29.88	37.75	26.3	0.0	19.9
Location											
Urban	43.4 %	43.1 %	(0.7) %	$147.91	$121.81	(17.6) %	$64.26	$52.55	(18.2) %	2.7 %	2.0 %
Suburban	45.4	54.5	20.1	95.43	89.97	(5.7)	43.28	49.00	13.2	3.9	24.8
Airport	47.4	54.1	14.1	106.45	91.25	(14.3)	50.50	49.38	(2.2)	2.9	17.4
Interstate	39.6	52.3	32.1	77.35	82.24	6.3	30.60	42.98	40.4	2.6	35.5
Resort	46.5	50.7	8.9	188.94	191.56	1.4	87.94	97.10	10.4	14.8	25.0
Small Town	38.1	50.8	33.4	89.01	98.19	10.3	33.92	49.93	47.2	2.8	37.1
Chain Scale											
Luxury	45.3 %	36.1 %	(20.3) %	$354.83	$369.37	4.1 %	$160.75	$133.33	(17.1) %	20.7 %	(3.8) %
Upper-Upscale	42.1	38.2	(9.2)	179.46	151.55	(15.6)	75.53	57.90	(23.3)	9.2	(0.9)
Upscale	43.7	52.7	20.6	128.47	111.25	(13.4)	56.19	58.67	4.4	6.3	28.2
Upper-Midscale	42.1	55.5	31.7	100.84	97.38	(3.4)	42.47	54.02	27.2	3.9	36.9
Midscale	40.0	50.8	27.0	77.00	79.38	3.1	30.77	40.29	30.9	2.1	29.7
Economy	47.5	56.6	19.2	56.90	60.51	6.3	27.02	34.26	26.8	(1.0)	18.1
Independents	42.9	51.2	19.4	111.42	116.77	4.8	47.76	59.77	25.2	4.4	24.7

Source: STR - May 2021 Lodging Review

In an effort to further understand the nature and degree of the impact of the pandemic thus far, we have reviewed the following weekly data for the U.S. lodging industry, as published by STR. As illustrated, both occupancy and ADR began to decline significantly during the week of March 7, 2020, with national occupancy reaching a nadir of 21% and RevPAR declining 83% over the same period in 2019 for the week ending April 11, 2020. Modest improvements began in late April when stay-at-home orders and travel restrictions were relaxed; the decline from 2019 performance fell below 50% in the latter half of the summer. However, with the relaxation in restrictions, the number of cases nationwide began to rise again, reaching a peak during the December 2020/January 2021 holiday season. As a result, travelers pulled back, and RevPAR declines once again exceeded 50% in most weeks throughout the early winter. Beginning in February 2021, with vaccination rates rising and the number of cases declining, travel increased, and the RevPAR decline fell below 50%. This improving trend is anticipated to continue as the population is increasingly vaccinated, group gathering restrictions are lifted, and consumer confidence in travel continues to rise. RevPAR, which registered $63 in April 2021 vs. $17 in April 2020, should continue its upward trajectory through 2021. The expectation of recovery over the next two to four years remains, particularly given that recent travel activity demonstrates that many Americans are eager to travel.

FIGURE 4-4 NATIONAL OCCUPANCY TRENDS – WEEKLY DATA

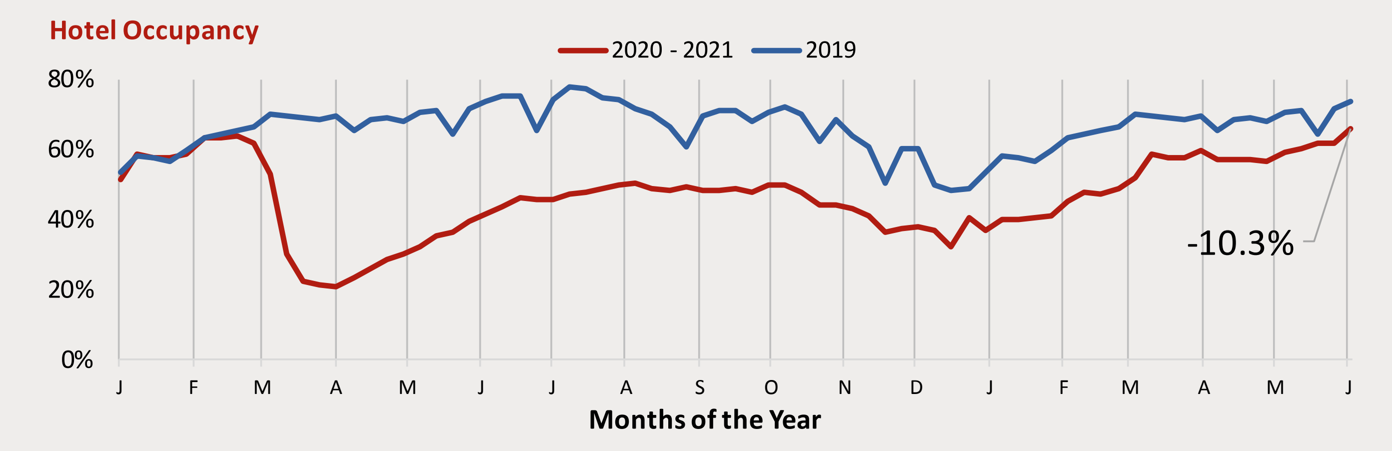


FIGURE 4-5 NATIONAL ADR TRENDS – WEEKLY DATA

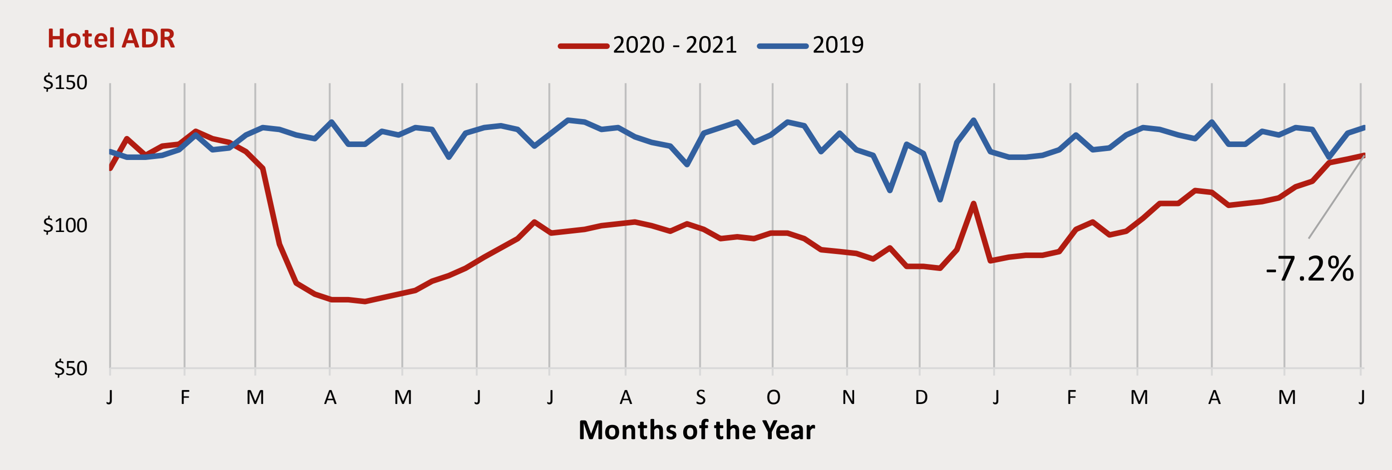
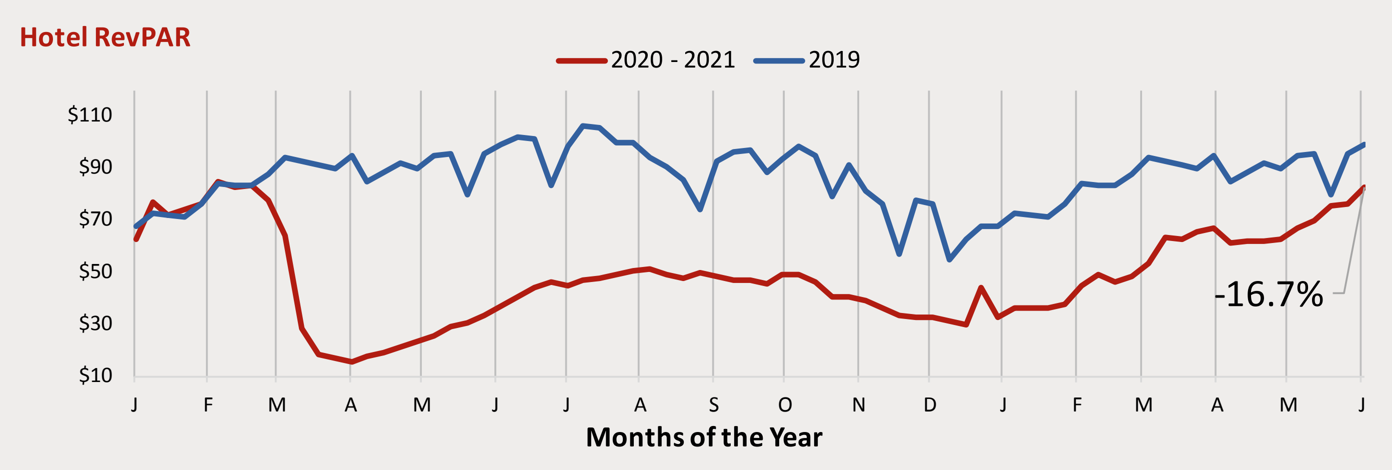


FIGURE 4-6 NATIONAL REVPAR TRENDS – WEEKLY DATA



The downturn has affected the various sectors of the lodging industry to differing degrees. Hotels that derive a significant component of their demand from the group segment have been hit the hardest, followed by properties in markets with a high proportion of business and international travel. For this reason, the major metropolitan areas reported deep RevPAR declines through the first quarter of 2021, a trend that is starting to reverse. Hotels in locations that depend primarily on automobile traffic have fared better and the extended-stay category has also outperformed the national average. The popularity of "drive-to" destinations has been a particular bright spot, demonstrating Americans' desire to travel, albeit in the relative safety of their own vehicles. With air travel increasing, the leisure segment continues to outperform all other segments, and hotels and markets that primarily depend on leisure travelers are showing strong signs of recovery. As restrictions have been lifted, some business travel has also resumed, and group events have started to occur in markets where local restrictions permit larger gatherings. These trends are evidence of the ongoing recovery of the market, and the weekly and monthly statistics are expected to reflect substantial increases over 2020 levels for the balance of the year, as all segments are increasingly confident in the safety of travel.

The rate of infections is continuing to decline from the late 2020/early 2021 spike, and vaccines are increasingly available. Accordingly, hotel owners, operators, and investors generally anticipate the hospitality sector to recover at an accelerating pace, as vaccines, medical therapies, and public confidence support a return of travel. The recovery is expected to continue in 2022 and 2023, with national RevPAR anticipated to return to 2019 levels by 2024.

O'ahu Island, HI Lodging Market

The subject property is located in the greater O'ahu Island market. The following table presents the historical occupancy, average rate, and RevPAR data for this metropolitan area for 2000 through May 2021. The data reflect the historical performance of the market, including the impact of and recovery from the 2001 and 2008/09 downturns.

FIGURE 4-7 O'AHU ISLAND LODGING MARKET DATA – 2000 TO YTD MAY 2021

Year	Occupancy	Percent Change	Average Rate	Percent Change	RevPAR	Percent Change
2000	75.8 %	—	$112.17	—	$85.02	—
2001	68.8	(9.2) %	117.12	4.4 %	80.58	(5.2) %
2002	70.3	2.2	111.46	(4.8)	78.36	(2.8)
2003	73.1	4.0	116.25	4.3	84.98	8.5
2004	79.7	9.0	123.23	6.0	98.21	15.6
2005	85.6	7.4	139.68	13.3	119.57	21.7
2006	83.1	(2.9)	155.77	11.5	129.44	8.3
2007	76.9	(7.5)	168.67	8.3	129.71	0.2
2008	74.9	(2.6)	169.92	0.7	127.27	(1.9)
2009	73.3	(2.1)	149.76	(11.9)	109.77	(13.7)
2010	78.2	6.7	149.67	(0.1)	117.04	6.6
2011	80.9	3.5	165.05	10.3	133.53	14.1
2012	84.7	4.7	183.51	11.2	155.43	16.4
2013	83.7	(1.2)	209.01	13.9	174.94	12.6
2014	84.4	0.8	221.18	5.8	186.68	6.7
2015	85.1	0.8	219.63	(0.7)	186.91	0.1
2016	83.9	(1.4)	227.42	3.5	190.81	2.1
2017	83.3	(0.7)	233.11	2.5	194.18	1.8
2018	83.7	0.5	236.06	1.3	197.58	1.8
2019	84.2	0.6	240.76	2.0	202.72	2.6
2020	39.0	(53.7)	215.57	(10.5)	84.07	(58.5)
Year to date through May						
2020	55.6 %		$237.64		$132.13	
2021	40.3	(27.5) %	185.83	(21.8) %	74.89	(43.3) %
Average Annual Compound Growth						
2000 to 2019		0.6 %		4.1 %		4.7 %

Source: STR Global, STR Monthly Hotel Review

Tourism is the core of O'ahu's economy. Attracting more visitors than any other island in the state, O'ahu offers a Hawaiian experience in a relatively urban setting, particularly in Honolulu. While occupancy declined in 2006 and 2007, ADR grew from 2006 to 2008, as hotel operators raised rates to maintain RevPAR. However, occupancy fell again in 2008 and 2009, as the Great Recession led to a contraction in destination travel. Heavy discounting to attract visitors prompted the ADR declines in 2009 and 2010. Hotel occupancy generally recovered from 2010 through 2015, with the exception of 2013, due in part to the large increase in demand from

Asian markets. In 2015, travelers to Europe and South America were displaced to this market, as terrorist activity and the Zika virus, respectively, affected the perception of those markets as tourist destinations, causing a minor increase in occupancy. Occupancy declined in 2016 given the entrance of new supply and continued to decline in 2017, attributed primarily to the renovations and rebranding of several properties within the Waikiki submarket, recovering slightly in 2018. ADR generally strengthened year-over-year from 2011 through 2018, aside from a slight decline in 2015. In 2019, tourism reached an all-time high, with visitor arrivals surpassing 10.4 million for the State of Hawaii that year; both occupancy and ADR increased in 2019.

To assess the impact of COVID-19 on this market, we have reviewed the following data, as published by STR, which track market performance on a weekly basis. The weekly data illustrate the timing and degree of impact that the market is experiencing.

FIGURE 4-8 O'AHU ISLAND OCCUPANCY TRENDS – WEEKLY DATA

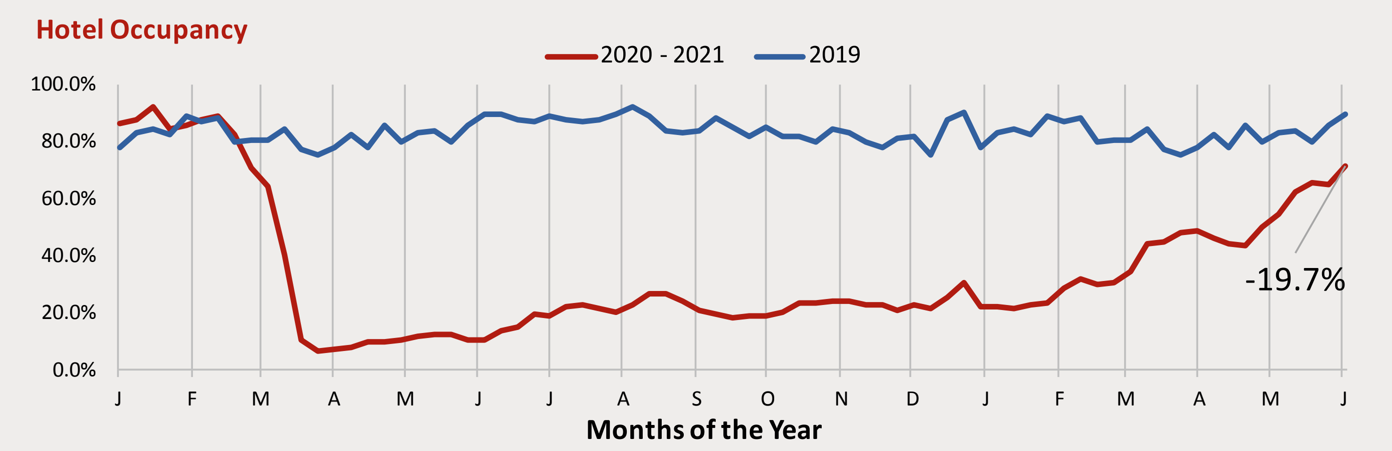


FIGURE 4-9 O'AHU ISLAND ADR TRENDS – WEEKLY DATA

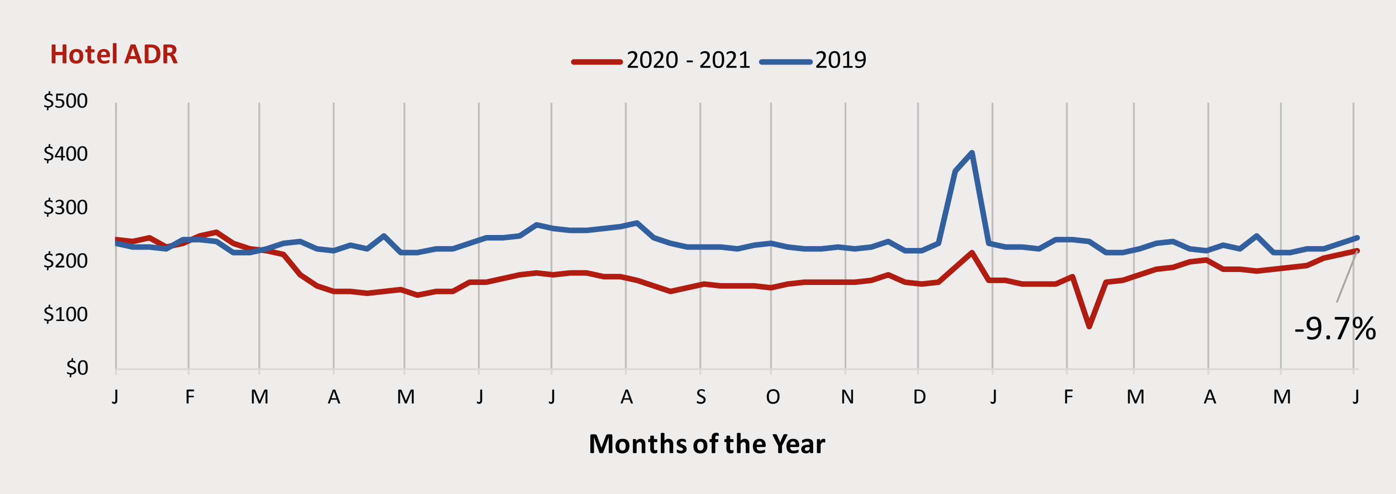
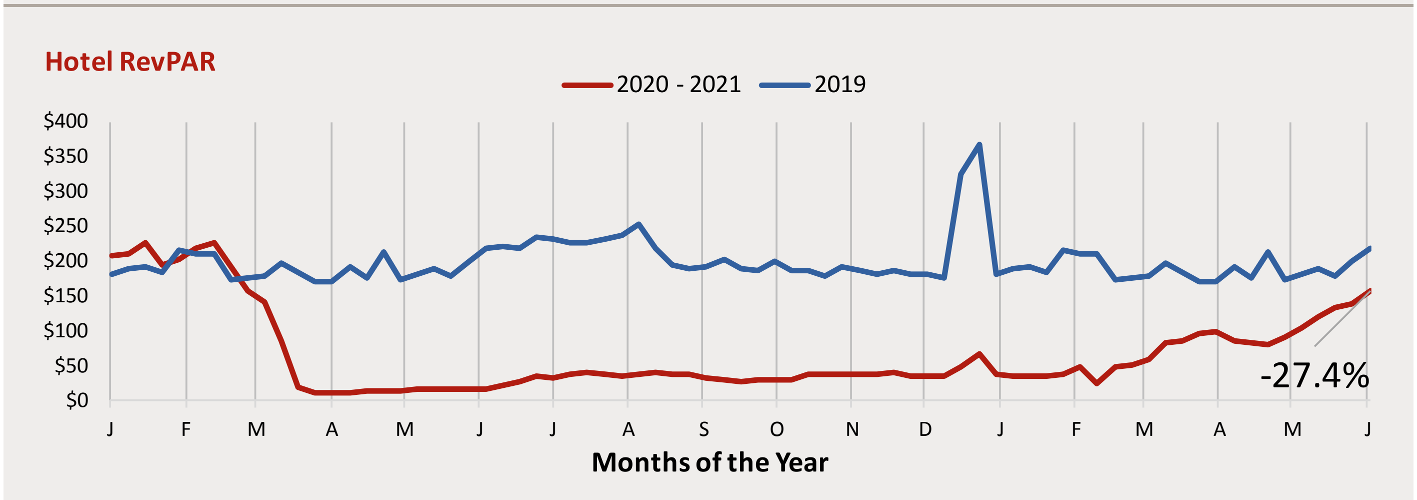


FIGURE 4-10 O'AHU ISLAND REVPAR TRENDS – WEEKLY DATA



Despite strong RevPAR growth in January and February of 2020, the greater Hawaii market has been devastated by the COVID-19 pandemic. As Hawaii is a major international tourist destination, the near complete stoppage of inbound international flights and travelers is of particular note; nearly 30% of tourism stems from international visitation. On March 26, Governor Ige implemented a mandatory two-week quarantine for all travelers arriving in the Hawaiian Islands. As a result of these restrictions, most hotels and resorts suspended operations in late March. Demand declined by more than 90% in the month of April, with hotels that remained open reporting average occupancy in the single digits. Demand began to trend upward in June as the quarantine was lifted for interisland travel. The quarantine for all inbound travelers was further eased in October, contingent upon a negative COVID-19 test result within three days prior to arrival; in response, lodging facilities began to reopen in October and November. However, the reopening of supply has kept pace with demand, with occupancy remaining around 20% for the remainder of 2020. A significant rise in COVID-19 cases in major feeder markets has also hampered a more notable recovery. While local operators anticipate some pent-up demand in the near term, the Hawaii Tourism Authority (HTA) forecasts that visitor arrivals will not recover to 2019 levels until 2025.

2019 Base Year

The severe disruption to the hospitality industry in 2020 and early 2021 is recognized by market participants as an anomaly. While it is important to understand how the hospitality industry, inclusive of individual markets and hotels, was affected by the pandemic, performance data from this period do not provide a reasonable basis for forecasting demand, occupancy, and ADR. Our interviews with market participants, including major brands, management companies, and investors, confirmed this opinion. The industry generally recognizes 2019 as representative of normalized performance levels, with recovery from the pandemic measured in terms of a rebound to those pre-pandemic benchmarks. We have utilized a similar approach in our analysis of the subject property and its competitive market, focusing on 2019 base-year performance and the trajectory of recovery to those metrics and beyond. Thus, the base year used in this report refers to 2019.

Historical Supply and Demand Data

As noted previously, STR is an independent research firm that compiles and publishes data on the lodging industry, routinely used by typical hotel buyers. HVS has ordered and analyzed an STR Trend Report of historical supply and demand data for a group of hotels considered applicable to this analysis for the proposed subject hotel. This information is presented in the following table, along with the market-wide occupancy, average rate, and rooms revenue per available room (RevPAR). RevPAR is calculated by multiplying occupancy by average rate and provides an indication of how well rooms revenue is being maximized.

In response to the travel restrictions and the decline in demand associated with the COVID-19 pandemic, numerous hotels in markets across the nation initially ceased operations; many of these have since reopened, while others are waiting until demand recovers more substantially. During these suspensions, hotels are typically closing to the public, with the majority of staff furloughed; however, key management and maintenance staff are retained to preserve the property and to be ready to reopen the hotel quickly when market conditions improve. We note that four of the twelve hotels in the competitive set temporarily suspended operations in April 2020 due to the pandemic. All four hotels resumed operations in October or November 2020. Our analysis considers the full supply of competitive rooms, including any hotels that have temporarily suspended operations. It is important to note that we have adjusted STR data to reflect the total available rooms in the market and true occupancy, regardless of suspended operations at competitive hotels.

FIGURE 4-11 HISTORICAL SUPPLY AND DEMAND TRENDS

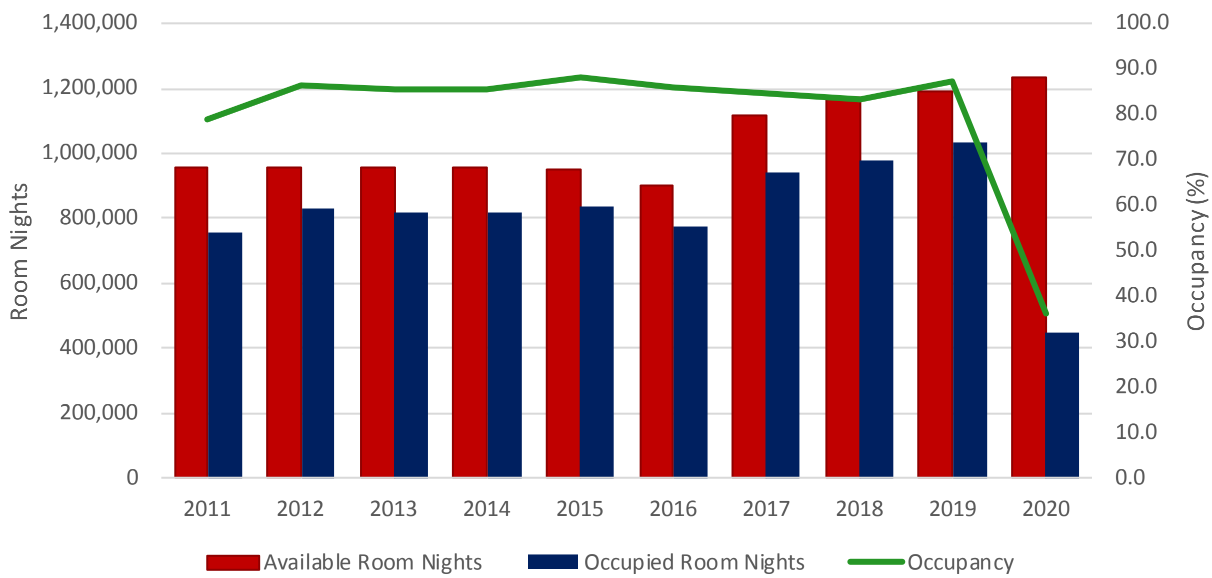
Year	Average Daily Room Count	Available Room Nights	Change	Occupied Room Nights	Change	Occupancy	Average Rate	Change	RevPAR	Change
2008	2,265	826,560	—	606,283	—	73.4 %	$165.54	—	$121.42	—
2009	2,268	827,820	0.2 %	622,103	2.6 %	75.1	139.76	(15.6) %	105.03	(13.5) %
2010	2,389	871,804	5.3	678,220	9.0	77.8	138.70	(0.8)	107.90	2.7
2011	2,624	957,760	9.9	756,446	11.5	79.0	154.99	11.7	122.41	13.4
2012	2,624	957,760	0.0	829,394	9.6	86.6	171.12	10.4	148.19	21.1
2013	2,624	957,760	0.0	817,633	(1.4)	85.4	193.50	13.1	165.19	11.5
2014	2,624	957,760	0.0	818,505	0.1	85.5	204.47	5.7	174.74	5.8
2015	2,598	948,192	(1.0)	834,874	2.0	88.0	211.85	3.6	186.53	6.7
2016	2,466	900,138	(5.1)	772,965	(7.4)	85.9	225.49	6.4	193.63	3.8
2017	3,061	1,117,116	24.1	943,552	22.1	84.5	215.47	(4.4)	182.00	(6.0)
2018	3,220	1,175,300	5.2	980,430	3.9	83.4	220.27	2.2	183.75	1.0
2019	3,258	1,189,086	1.2	1,036,630	5.7	87.2	225.05	2.2	196.20	6.8
2020	3,378	1,232,970	3.7	448,000	(56.8)	36.3	208.51	(7.3)	75.76	(61.4)
Year-to-Date Through March										
2020	3,378	304,020	—	222,161	—	73.1 %	$229.31	—	$167.57	—
2021	3,378	304,020	0.0 %	119,592	(46.2) %	39.3	179.28	(21.8) %	70.52	(57.9) %
Average Annual Compounded Change:										
2008 - 2019			3.4 %		5.0 %			2.8 %		4.5 %
2015 - 2019			5.8		5.6			1.5		1.3

Hotels Included in Sample	Class	Competitive Status	Number of Rooms	Year Affiliated	Year Opened	Comments
The Surfjack Hotel & Swim Club	Upscale Class	*Primary*	111	Jan 2020	Jun 1962	
Outrigger Resorts Waikiki Beachcomber	Upper Upscale Class	*Secondary*	496	Nov 2020	Jun 1971	S/O (Apr '20); R/O (Nov '20)
Autograph Collection The Laylow	Upper Upscale Class	*Primary*	251	Mar 2017	Jan 1973	
Hilton Waikiki Beach	Upper Upscale Class	*Secondary*	601	Oct 2020	Jun 1980	S/O (Apr '20); R/O (Oct '20)
DoubleTree by Hilton Hotel Alana Waikiki	Upscale Class	*Secondary*	317	Nov 2020	Mar 1992	S/O (Apr '20); R/O (Nov '20)
Aston Hotel At The Executive Centre	Upscale Class	*Primary*	112	Jan 2009	Jun 1992	
Embassy Suites by Hilton Waikiki Beach Walk	Upper Upscale Class	*Primary*	369	Dec 2006	Dec 2006	
The Modern Honolulu	Upscale Class	*Primary*	353	Sep 2011	Sep 2010	
Hampton by Hilton Inn & Suites Oahu/Kapolei	Upper Midscale Class	*Secondary*	175	Sep 2016	Sep 2016	
Hyatt Centric Waikiki Beach	Upper Upscale Class	*Primary*	230	Nov 2020	Dec 2016	S/O (Apr '20); R/O (Nov '20)
Embassy Suites by Hilton Oahu Kapolei	Upper Upscale Class	*Secondary*	180	Sep 2017	Sep 2017	
Residence Inn Oahu Kapolei	Upscale Class	*Secondary*	183	Oct 2019	Oct 2019	
		Total	**3,378**			

**S/O (Suspended Operations); R/O (Resumed Operations); E/O (Expected Reopening)*

Source: STR

FIGURE 4-12   HISTORICAL SUPPLY AND DEMAND TRENDS (STR)



It is important to note some limitations of the STR data. Hotels are occasionally added to or removed from the sample; furthermore, not every property reports data in a consistent and timely manner. These factors can influence the overall quality of the information by skewing the results, and these inconsistencies may also cause the STR data to differ from the results of our competitive survey. Nonetheless, STR data provide the best indication of aggregate growth or decline in existing supply and demand; thus, these trends have been considered in our analysis. Opening dates, as available, are presented for each reporting hotel in the previous table.

The STR data for the competitive set reflect a market-wide occupancy level of 2020 in 36.3%, which compares to 87.2% for 2019. The STR data for the competitive set reflect a market-wide average rate level of $208.51 in 2020, which compares to $225.05 for 2019. These occupancy and ADR trends resulted in a RevPAR level of $75.76 in 2020.

O'ahu is a major resort destination, and tourism represents the primary source of demand for the selected set of competitive hotels in this market. Hotel demand in Hawaii, similar to other major destination resort markets, is sensitive to economic trends, as much of the travel is discretionary or incentive in nature. During challenging economic periods, demand has contracted significantly, and during more prosperous economic periods, demand has rebounded to prior peak levels. Hotel operators report that demand has historically been affected by currency exchange rates in countries such as Japan, China, Australia, and Canada, and a strengthening U.S. dollar can affect visitation trends.

Demand for this set of competitive hotels began to recover from the Great Recession in 2009, with occupancy generally trending upward through 2015. We note that the minor decline in demand in 2013 and 2014 was attributed to operators significantly increasing average rates. Hotel occupancy declined modestly between 2016 and 2018 as The Laylow underwent significant renovations; the openings of the Hampton by HIlton O'ahu Kapolei, Hyatt Centric Waikiki Beach, and Embassy Suites by Hilton O'ahu Kapolei also impacted occupancy during this time. Thereafter, both demand and occupancy increased in 2019, concurrent with record levels of tourism throughout the State of Hawaii. Meanwhile, ADR generally trended upward between 2010 and 2019. RevPAR growth during the historical period shown was also attributed to the volatility in other destination markets, such as Mexico, the Caribbean, Napa/Sonoma, South America, and Europe.

Despite record RevPAR metrics in January and February, market-wide occupancy significantly declined by year-end 2020, while ADR registered a roughly $16.50 loss. In March 2020, the COVID-19 pandemic began to impact the local market, similar to the rest of the nation, resulting in decreased business activity, inclusive of the hospitality and tourism industries. A mandatory two-week quarantine for all travelers to the State of Hawaii was implemented in late March, resulting in a steep decline in demand. In response, four of the twelve hotels in the competitive set temporarily suspended operations in April. The quarantine for all inbound travelers was eased in October, contingent upon a negative COVID-19 test result within three days prior to arrival. All four hotels that had temporarily closed resumed operations in October and November. Year-to-date 2021 data through March illustrate a continued decline in occupancy and a roughly $50 loss in ADR. However, based on our conversations with local operators, demand has begun to rebound concurrent with the widespread distribution of vaccines. In general, the timing of recovery in lodging demand will be influenced by the course of the pandemic, the reopening of business activity, and the removal of restrictions on international travel.

Seasonality

Seasonality trends are presented in the following tables.

FIGURE 4-13 SEASONALITY

	2013	2014	2015	2016	2017	2018	2019	2020
High Season - January, February, March, June, July, August, September, October, December December								
Occupancy	86.5 %	87.4 %	89.2 %	86.6 %	85.1 %	83.6 %	88.3 %	42.0 %
Average Rate	$198.66	$209.78	$216.24	$230.29	$220.22	$224.46	$229.34	$213.75
RevPAR	171.85	183.41	192.91	199.35	187.44	187.74	202.48	89.79
Shoulder Season - April, May, November								
Occupancy	82.0 %	79.5 %	84.5 %	83.7 %	82.5 %	82.7 %	83.9 %	19.3 %
Average Rate	$177.10	$186.87	$197.82	$210.03	$200.98	$207.53	$211.52	$174.11
RevPAR	145.15	148.61	167.22	175.84	165.88	171.73	177.38	33.53

Source: STR

The illustrated occupancy and ADR patterns reflect important seasonal characteristics. We have reviewed these trends in developing our forthcoming forecast of market-wide demand and average rate.

Patterns of Demand

A review of the trends in occupancy and average rate by day of the week provides some insight into the impact that the current economic conditions have had on the competitive lodging market. The data, as provided by STR, are illustrated in the following table(s).

FIGURE 4-14 OCCUPANCY BY DAY OF WEEK (TRAILING 12 MONTHS)

Month	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Total Month
Apr - 20	22.1 %	23.6 %	24.1 %	22.1 %	22.0 %	21.6 %	21.5 %	22.4 %
May - 20	30.5	31.2	30.7	30.8	30.2	31.2	30.1	30.7
Jun - 20	42.0	38.7	39.8	39.2	38.7	39.0	40.9	39.7
Jul - 20	49.6	50.4	53.0	51.2	49.6	52.7	51.3	51.1
Aug - 20	58.5	59.5	60.3	60.5	59.3	58.6	57.8	59.1
Sep - 20	45.4	47.0	49.7	48.8	48.4	45.8	45.7	47.4
Oct - 20	36.0	36.9	37.1	38.0	36.2	37.1	37.8	37.0
Nov - 20	29.7	30.0	30.3	30.5	31.5	31.8	31.3	30.6
Dec - 20	33.5	33.3	32.4	32.9	35.1	34.1	34.5	33.7
Jan - 21	31.6	29.8	29.3	29.8	30.7	33.8	33.6	31.4
Feb - 21	40.3	35.8	36.0	35.8	37.7	41.2	43.2	38.6
Mar - 21	48.0	44.4	44.3	46.6	47.1	52.5	55.0	48.0
Average	**38.0 %**	**37.6 %**	**37.9 %**	**38.0 %**	**38.0 %**	**39.4 %**	**39.9 %**	**38.4 %**

Source: STR

FIGURE 4-15 AVERAGE RATE BY DAY OF WEEK (TRAILING 12 MONTHS)

Month	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Total Month
Apr - 20	$161.24	$164.22	$164.24	$162.32	$165.53	$169.16	$165.27	$164.51
May - 20	166.77	165.62	164.30	164.10	166.38	166.23	164.71	165.49
Jun - 20	180.49	179.31	187.20	179.14	183.08	180.89	180.42	181.62
Jul - 20	201.04	202.34	203.76	201.53	203.78	206.33	208.18	203.88
Aug - 20	200.20	200.60	201.49	199.42	201.23	201.18	201.30	200.76
Sep - 20	193.61	193.86	194.01	194.32	194.43	194.53	194.28	194.15
Oct - 20	190.46	190.68	189.29	190.99	189.11	190.03	191.74	190.34
Nov - 20	181.43	180.81	184.35	183.34	183.38	181.26	182.06	182.29
Dec - 20	184.65	185.44	185.42	186.67	190.53	181.54	182.33	185.46
Jan - 21	180.35	180.23	178.95	179.90	179.22	184.71	181.94	181.00
Feb - 21	176.34	178.55	179.11	177.89	178.84	177.59	177.17	177.88
Mar - 21	177.40	178.41	179.48	178.62	180.08	180.27	179.85	179.16
Average	**$183.76**	**$184.49**	**$185.54**	**$184.75**	**$186.12**	**$185.42**	**$185.04**	**$185.02**

Source: STR

FIGURE 4-16 OCCUPANCY AND AVERAGE RATE BY DAY OF WEEK (TRAILING 12 MONTHS)

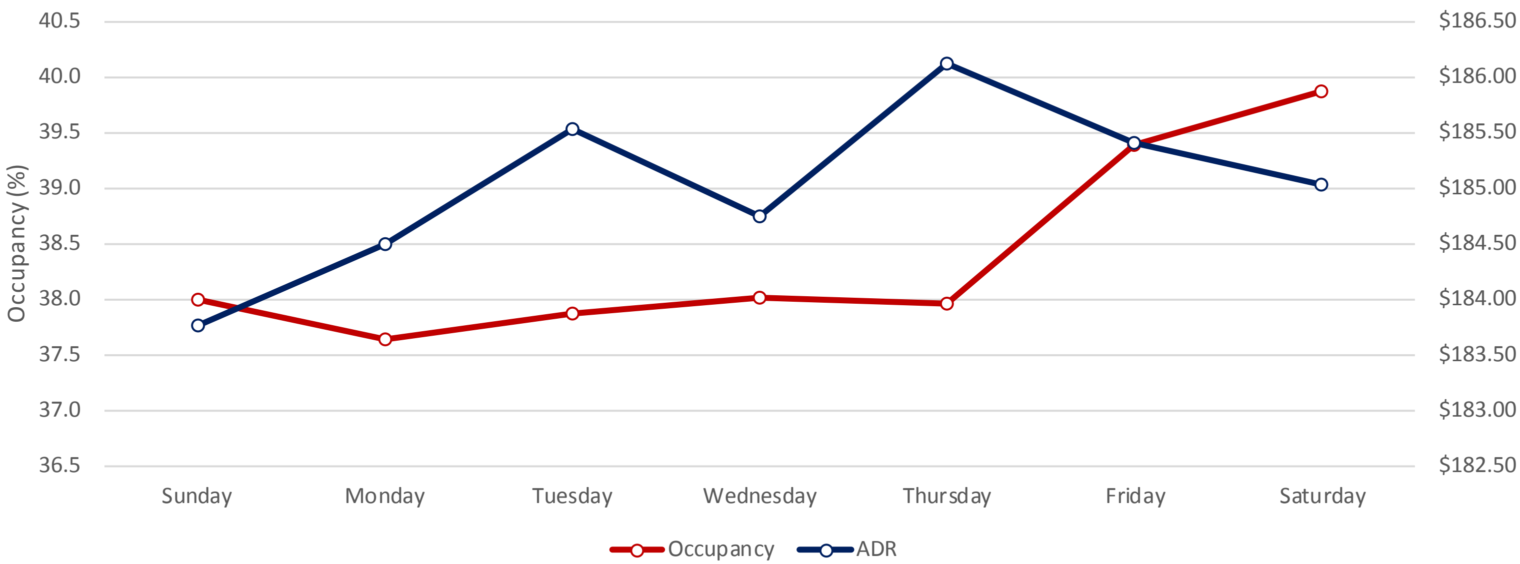


FIGURE 4-17 OCCUPANCY, AVERAGE RATE, AND REVPAR BY DAY OF WEEK (MULTIPLE YEARS)

Occupancy (%)	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Total Year
Apr 18 - Mar 19	81.6 %	82.6 %	83.1 %	84.7 %	85.4 %	86.3 %	84.3 %	84.0 %
Apr 19 - Mar 20	80.9	81.8	82.2	85.5	85.9	86.2	83.8	83.8
Apr 20 - Mar 21	38.0	37.6	37.9	38.0	38.0	39.4	39.9	38.4
Change (Occupancy Points)								
FY 19 - FY 20	(0.7)	(0.8)	(0.9)	0.9	0.5	(0.1)	(0.5)	(0.2)
FY 20 - FY 21	(42.9)	(44.2)	(44.4)	(47.5)	(48.0)	(46.8)	(43.9)	(45.4)

ADR ($)	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Total Year
Apr 18 - Mar 19	$219.85	$219.56	$219.67	$220.87	$221.93	$223.00	$222.54	$221.08
Apr 19 - Mar 20	226.29	227.05	226.64	227.61	228.65	227.88	228.00	227.46
Apr 20 - Mar 21	183.76	184.49	185.54	184.75	186.12	185.42	185.04	185.02
Change (Dollars)								
FY 19 - FY 20	$6.43	$7.49	$6.97	$6.74	$6.71	$4.88	$5.46	$6.38
FY 20 - FY 21	(42.53)	(42.56)	(41.10)	(42.85)	(42.52)	(42.46)	(42.96)	(42.44)
Change (Percent)								
FY 19 - FY 20	2.9 %	3.4 %	3.2 %	3.0 %	3.0 %	2.2 %	2.5 %	2.9 %
FY 20 - FY 21	(18.8)	(18.7)	(18.1)	(18.8)	(18.6)	(18.6)	(18.8)	(18.7)

RevPAR ($)	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Total Year
Apr 18 - Mar 19	$179.31	$181.37	$182.66	$186.98	$189.50	$192.50	$187.68	$185.69
Apr 19 - Mar 20	183.03	185.75	186.39	194.69	196.47	196.49	191.04	190.53
Apr 20 - Mar 21	69.83	69.43	70.27	70.22	70.67	73.06	73.77	71.03
Change (Dollars)								
FY 19 - FY 20	$3.72	$4.38	$3.74	$7.71	$6.97	$4.00	$3.36	$4.83
FY 20 - FY 21	(113.20)	(116.33)	(116.12)	(124.47)	(125.80)	(123.44)	(117.26)	(119.50)
Change (Percent)								
FY 19 - FY 20	2.1 %	2.4 %	2.0 %	4.1 %	3.7 %	2.1 %	1.8 %	2.6 %
FY 20 - FY 21	(61.8)	(62.6)	(62.3)	(63.9)	(64.0)	(62.8)	(61.4)	(62.7)

Source: STR

In most markets, business travel, including individual commercial travelers and corporate groups, is the predominant source of demand on Monday through Thursday nights. Leisure travelers and non-business-related groups generate a majority of demand on Friday and Saturday nights.

SUPPLY

Based on an evaluation of the occupancy, rate structure, market orientation, chain affiliation, location, facilities, amenities, reputation, and quality of each area hotel, as well as the comments of management representatives, we have identified several properties that are expected to be primarily competitive with the proposed subject hotel. If applicable, additional lodging facilities may be judged only secondarily competitive; although the facilities, rate structures, or market orientations of these hotels prevent their inclusion among the primary competitive supply, they are expected to compete with the proposed subject hotel to some extent.

Primary Competition

The following table summarizes the important operating characteristics of the future primary competitors and the aggregate secondary competitors. This information was compiled from personal interviews, inspections, online resources, and our in-house database of operating and hotel facility data. In cases where exact operating data for an individual property (or properties) were not available, we have used these resources, as well as the STR data, to estimate positioning within the market.

FIGURE 4-18 PRIMARY COMPETITORS – OPERATING PERFORMANCE

		Est. Segmentation			Estimated 2018				Estimated 2019					
Property	Number of Rooms	FIT	Wholesale	Meeting and Group	Weighted Annual Room Count	Occ.	Average Rate	RevPAR	Weighted Annual Room Count	Occ.	Average Rate	RevPAR	Occupancy Penetration	Yield Penetration
The Laylow, Autograph Collection	251	78 %	17 %	5 %	251	90 - 95 %	$220 - $230	$200 - $210	251	85 - 90 %	$230 - $240	$200 - $210	95 - 100 %	100 - 110 %
Hyatt Centric Waikiki Beach	230	75	20	5	230	90 - 95	200 - 210	190 - 200	230	90 - 95	210 - 220	200 - 210	100 - 110	100 - 110
The Modern Honolulu	353	60	30	10	353	65 - 70	260 - 270	180 - 190	353	75 - 80	280 - 290	210 - 220	85 - 90	110 - 120
Surfjack Hotel & Swim Club	111	70	25	5	111	90 - 95	210 - 220	190 - 200	111	90 - 95	200 - 210	180 - 190	100 - 110	90 - 95
Embassy Suites by Hilton Waikiki Beach Walk	369	70	20	10	369	90 - 95	300 - 325	290 - 300	369	90 - 95	300 - 325	290 - 300	100 - 110	140 - 150
Aston at the Executive Centre Hotel	112	90	5	5	137	60 - 65	160 - 170	105 - 110	129	70 - 75	160 - 170	120 - 125	80 - 85	60 - 65
Sub-Totals/Averages	**1,426**	**72 %**	**21 %**	**7 %**	**1,451**	**83.9 %**	**$249.49**	**$209.44**	**1,443**	**86.5 %**	**$257.98**	**$223.18**	**99.3 %**	**111.7 %**
Secondary Competitors	1,952	70 %	16 %	14 %	1,327	83.0 %	$196.06	$162.70	1,361	87.8 %	$199.26	$174.93	100.8 %	87.6 %
Totals/Averages	**3,378**	**71 %**	**19 %**	**10 %**	**2,778**	**83.5 %**	**$224.12**	**$187.11**	**2,804**	**87.1 %**	**$229.26**	**$199.76**	**100.0 %**	**100.0 %**

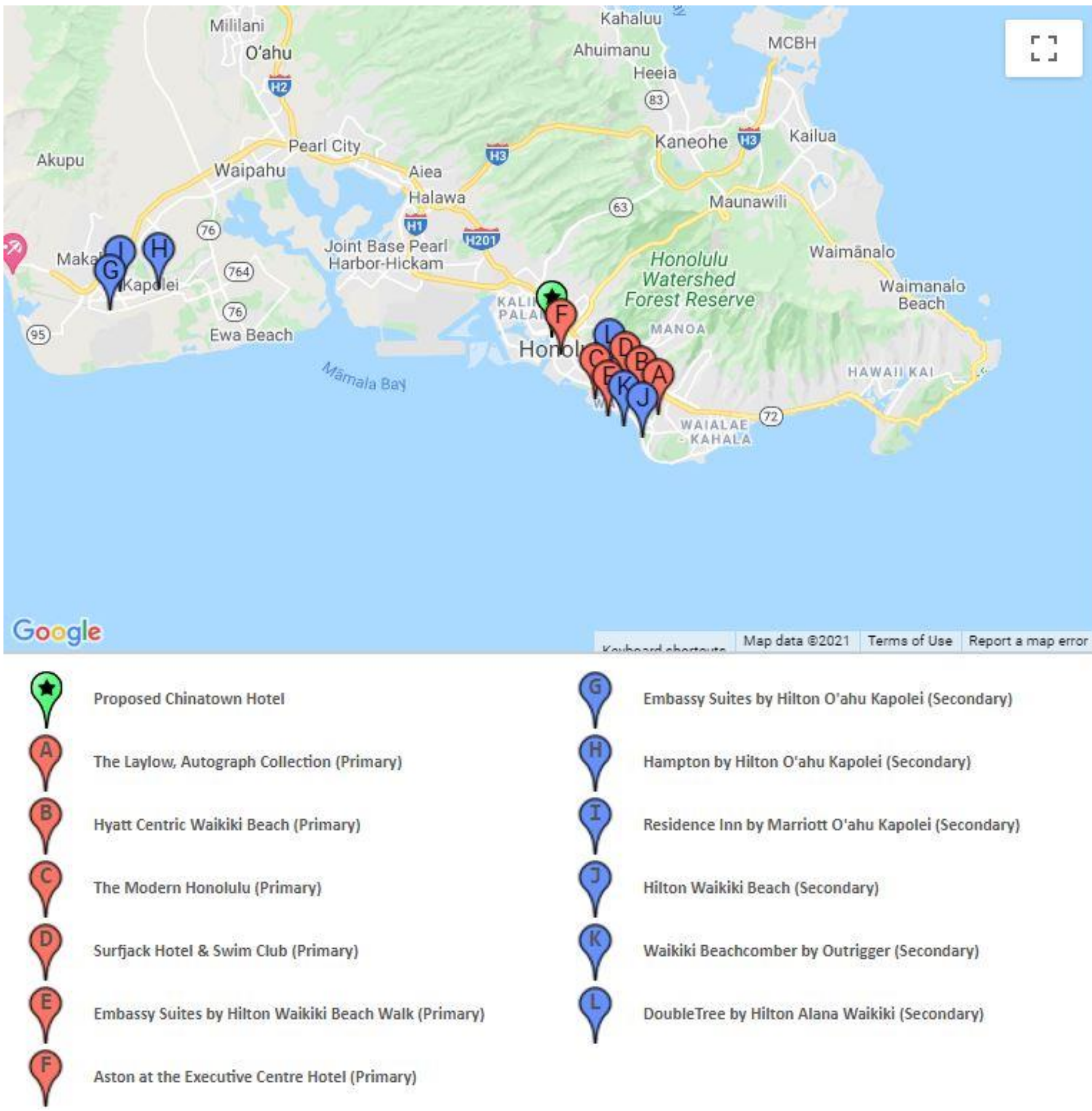
** Specific occupancy and average rate data were utilized in our analysis, but are presented in ranges in the above table for the purposes of confidentiality.*

FIGURE 4-19 PRIMARY COMPETITORS – FACILITY PROFILES

Property	Number of Rooms	Year Opened	Last Major Renovation(s)	Approx. Miles To Subject Property	Food and Beverage Outlets	Indoor Meeting Space (SF)	Meeting Space per Room	Facilities & Amenities	Resort Fee	Parking Fee
The Laylow, Autograph Collection 2299 Kuhio Avenue	251	1973	2017	3.3	Hideout	None	—	Outdoor Swimming Pool; Fitness Center; Gift Shop; Concierge Desk	$29	$39 (Self) $49 (Valet)
Hyatt Centric Waikiki Beach 349 Seaside Avenue	230	2016	—	3.2	The Lanai	None	—	Outdoor Swimming Pool; Fitness Center; Lobby Workstation; Retail Outlet(s)	$33	$42 (Self) $45 (Valet)
The Modern Honolulu 1775 Ala Moana Boulevard	353	2010	—	2.5	The Grove Restaurant & Bar, The Modern Pool Bar	11,855	33.6	Two Outdoor Swimming Pools; Fitness Center; Full-Service Spa	$40	$35 (Valet)
Surfjack Hotel & Swim Club 412 Lewers Street	111	1962	2015/16	3.1	Mahina & Sun's; Olive & Oliver	None	—	Outdoor Swimming Pool	$25	$35 (Valet)
Embassy Suites by Hilton Waikiki Beach Walk 201 Beachwalk Street	369	2006	2015	3.1	Breakfast Dining Area; Pakini Pool Bar; Roy's (Leased); Ruth's Chris (Leased)	1,725	4.7	Outdoor Swimming Pool; Outdoor Whirlpool; Fitness Center; Gift Shop; Guest Laundry Room; Concierge Desk	$30	$40 (Valet)
Aston at the Executive Centre Hotel 1088 Bishop Street	112	1992	2012	0.3	Hukilau	1,374	12.3	Outdoor Swimming Pool; Outdoor Whirlpool; Guest Laundry Room; Retail Outlet(s)	None	$23 (Self)

The following map illustrates the locations of the proposed subject property and its future competitors.

MAP OF COMPETITION



Our survey of the primarily competitive hotels in the local market shows a range of lodging types and facilities. Each primary competitor was inspected and evaluated. Descriptions of our findings are presented below.

PRIMARY COMPETITOR #1 - THE LAYLOW, AUTOGRAPH COLLECTION

The Laylow, Autograph Collection
2299 Kuhio Avenue
Honolulu, HI

FIGURE 4-20 ESTIMATED HISTORICAL OPERATING STATISTICS

Year	Wtd. Annual Room Count	Occupancy	Average Rate	RevPAR	Occupancy Penetration	Yield Penetration
Est. 2018	251	90 - 95 %	\$220 - \$230	\$200 - \$210	100 - 110 %	100 - 110 %
Est. 2019	251	85 - 90	230 - 240	200 - 210	95 - 100	100 - 110

Formerly known as the Aqua Wave Waikiki, this hotel was rebranded under Marriott's Autograph Collection as The Laylow following an extensive \$71-million renovation (\$282,000 per room). The property benefits from its favorable location adjacent to the International Market Place. The Hideout, the hotel's primary F&B outlet, features nightly live music and is a popular establishment among both locals and tourists alike.

PRIMARY COMPETITOR #2 - HYATT CENTRIC WAIKIKI BEACH

Hyatt Centric Waikiki Beach
349 Seaside Avenue
Honolulu, HI

FIGURE 4-21 ESTIMATED HISTORICAL OPERATING STATISTICS

Year	Wtd. Annual Room Count	Occupancy	Average Rate	RevPAR	Occupancy Penetration	Yield Penetration
Est. 2018	230	90 - 95 %	$200 - $210	$190 - $200	100 - 110 %	100 - 110 %
Est. 2019	230	90 - 95	210 - 220	200 - 210	100 - 110	100 - 110

Originally built as the Waikiki Trade Center office building, this property was redeveloped as the Hyatt Centric Waikiki Beach in 2016 following extensive renovations. Most aspects of the buildings were rebuilt and/or refinished, except for the parking garage and the building exterior, which received minimal updates. The hotel benefits from its favorable location within the heart of Waikiki. However, owing to its construction as an office building, the property is disadvantaged by its lack of guestroom balconies.

PRIMARY COMPETITOR #3 - THE MODERN HONOLULU

The Modern Honolulu
1775 Ala Moana Boulevard
Honolulu, HI

FIGURE 4-22 ESTIMATED HISTORICAL OPERATING STATISTICS

Year	Wtd. Annual Room Count	Occupancy	Average Rate	RevPAR	Occupancy Penetration	Yield Penetration
Est. 2018	353	65 - 70 %	$260 - $270	$180 - $190	80 - 85 %	95 - 100 %
Est. 2019	353	75 - 80	280 - 290	210 - 220	85 - 90	110 - 120

Formerly known as The Ilikai, this hotel has undergone numerous renovations and rebrandings since its opening in 1964. Under current ownership, the property is planned to be converted to timeshare units over the next several years. The hotel benefits from its modern guestroom design and proximity to Ala Moana Center.

PRIMARY COMPETITOR #4 - SURFJACK HOTEL & SWIM CLUB

Surfjack Hotel & Swim Club
412 Lewers Street
Honolulu, HI

FIGURE 4-23 ESTIMATED HISTORICAL OPERATING STATISTICS

Year	Wtd. Annual Room Count	Occupancy	Average Rate	RevPAR	Occupancy Penetration	Yield Penetration
Est. 2018	111	90 - 95 %	$210 - $220	$190 - $200	100 - 110 %	100 - 110 %
Est. 2019	111	90 - 95	200 - 210	180 - 190	100 - 110	90 - 95

Formerly known as the Hokele Suites Waikiki, this property was rebranded as the Surfjack Hotel & Swim Club following a comprehensive renovation in 2016. In addition to its boutique, surf-themed product, the hotel also benefits from its partnership with local restaurateur Ed Kenney.

PRIMARY COMPETITOR #5 - EMBASSY SUITES BY HILTON WAIKIKI BEACH WALK

Embassy Suites by Hilton Waikiki Beach Walk
201 Beachwalk Street
Honolulu, HI

FIGURE 4-24 ESTIMATED HISTORICAL OPERATING STATISTICS

Year	Wtd. Annual Room Count	Occupancy	Average Rate	RevPAR	Occupancy Penetration	Yield Penetration
Est. 2018	369	90 - 95 %	\$300 - \$325	\$290 - \$300	110 - 120 %	150 - 160 %
Est. 2019	369	90 - 95	300 - 325	290 - 300	100 - 110	140 - 150

The Embassy Suites by Hilton Waikiki Beach Walk opened in 2006 as part of the \$535-million Waikiki Beach Walk mixed-use development. In 2020, the property underwent an \$8-million renovation (\$21,700 per room). The hotel is popular among both transient and group travelers due to its suite-style guestroom product, F&B offerings, and location within the Waikiki Beach Walk mixed-use development.

PRIMARY COMPETITOR #6 - ASTON AT THE EXECUTIVE CENTRE HOTEL

Aston at the Executive Centre Hotel
1088 Bishop Street
Honolulu, HI

FIGURE 4-25 ESTIMATED HISTORICAL OPERATING STATISTICS

Year	Wtd. Annual Room Count	Occupancy	Average Rate	RevPAR	Occupancy Penetration	Yield Penetration
Est. 2018	137	60 - 65 %	$160 - $170	$105 - $110	75 - 80 %	55 - 60 %
Est. 2019	129	70 - 75	160 - 170	120 - 125	80 - 85	60 - 65

The Aston at the Executive Centre Hotel is located within a 41-story mixed-use tower that features residential, office, and retail uses. The property benefits from its status as the only hotel in Downtown Honolulu. However, given its nature as a condominium hotel, the guestrooms feature a dated and inconsistent product offering.

Secondary Competitors

We have also reviewed other area lodging facilities to determine whether any may compete with the proposed subject hotel on a secondary basis. The room count of each anticipated secondary competitor has been weighted based on its assumed degree of competitiveness in the future with the proposed subject hotel. By assigning degrees of competitiveness, we can assess how the proposed subject hotel and its future competitors may react to various changes in the market, including new supply, changes to demand generators, and renovations or franchise changes of existing supply. The following table sets forth the pertinent operating characteristics of the secondary competitors.

FIGURE 4-26 SECONDARY COMPETITOR(S) – OPERATING PERFORMANCE

Property	Number of Rooms	Est. Segmentation: FIT	Est. Segmentation: Wholesale	Est. Segmentation: Meeting and Group	Total Competitive Level	Estimated 2018: Weighted Annual Room Count	Estimated 2018: Occ.	Estimated 2018: Average Rate	Estimated 2018: RevPAR	Estimated 2019: Weighted Annual Room Count	Estimated 2019: Occ.	Estimated 2019: Average Rate	Estimated 2019: RevPAR
Embassy Suites by Hilton O'ahu Kapolei	180	80 %	5 %	15 %	75 %	135	75 - 80 %	$210 - $220	$160 - $170	135	80 - 85 %	$220 - $230	$180 - $190
Hampton by Hilton O'ahu Kapolei	175	85	5	10	75	131	90 - 95	180 - 190	170 - 180	131	95 - 100	190 - 200	180 - 190
Residence Inn by Marriott O'ahu Kapolei	183	85	5	10	75	*Not Open*				35	55 - 60	210 - 220	120 - 125
Hilton Waikiki Beach	601	70	15	15	75	451	95 - 100	200 - 210	190 - 200	451	90 - 95	200 - 210	190 - 200
Waikiki Beachcomber by Outrigger	496	63	25	12	75	372	60 - 65	180 - 190	110 - 115	372	80 - 85	190 - 200	150 - 160
DoubleTree by Hilton Alana Waikiki	317	65	20	15	75	238	85 - 90	180 - 190	160 - 170	238	85 - 90	180 - 190	160 - 170
Totals/Averages	**1,952**	**70 %**	**16 %**	**14 %**	**75 %**	**1,327**	**83.0 %**	**$196.06**	**$162.70**	**1,361**	**87.8 %**	**$199.26**	**$174.93**

** Specific occupancy and average rate data was utilized in our analysis, but is presented in ranges in the above table for the purposes of confidentiality.*

We have identified six hotels that are expected to compete with the proposed subject hotel on a secondary level. The Embassy Suites by Hilton O'ahu Kapolei, Hampton by Hilton O'ahu Kapolei, and Residence Inn by Marriott O'ahu Kapolei are competitive given their focus on capturing transient demand associated with business travelers; however, these hotels are located in West O'ahu. The Hilton Waikiki Beach, Waikiki Beachcomber by Outrigger, and DoubleTree by Hilton Alana Waikiki are competitive given their full-service product; however, these hotels operate at a lower price point and cater primarily towards leisure customers.

Supply Changes

It is important to consider any new hotels that may have an impact on the proposed subject hotel's operating performance. The hotels that have recently opened, are under construction, or are in the stages of early development in the greater O'ahu lodging market are noted below. The list is categorized by the principal submarkets within the island.

FIGURE 4-27 HOTEL DEVELOPMENT ACTIVITY – ISLAND OF O'AHU

Proposed Hotel Name	Estimated Number of Rooms	Hotel Product Tier	Development Stage	Expected Qtr. & Year of Opening	Address
Waikiki, O'ahu					
Proposed Hilton Grand Vacations	191	Upper-Upscale	Broke Ground	TBD	133 Ka'iulani Avenue, Honolulu
Proposed Luxury Hilton Hotel	TBD	Luxury	Early Development	TBD	2005 Kalia Road, Honolulu
Proposed Marriott Vacations Club	110	Upper-Upscale	Early Development	TBD	2080 Kalakaua Avenue, Honolulu
Proposed Sheraton Princess Ka'iulani Redevelopment	1,009	Upper-Upscale	Early Development	TBD	129 Ka'iulani Avenue, Street
Proposed One Waikiki Condo Hotel	170	TBD	Development on Hold	TBD	2055 Kalakaua Avenue, Honolulu
Honolulu, O'ahu					
Proposed Sky Ala Moana Hotel	300	TBD	Broke Ground	TBD	1388 Kapi'olani Boulevard, Honolulu
Proposed AC Hotel by Marriott	104	Upscale	Early Development	Q4 '24	1111 Bishop Street, Honolulu
Proposed Chinatown Hotel	240	TBD	Early Development	TBD	112 North Nimitz Highway, Honolulu
The Mighty Wo Fat	23	TBD	Early Development	TBD	103 North Hotel Street, Honolulu
Proposed Mo'ili'ili Gateway Hotel	180	TBD	Early Development	TBD	TBD, Honolulu
Proposed 1500 Kapi'olani Hotel & Condominiums	444	TBD	Early Development	TBD	1500 Kapi'olani Boulevard, Honolulu
Proposed 1646 Kona Mixed-Use Development	844	TBD	Early Development	TBD	1646 Kona Street, Honolulu
Mandarin Oriental Hotel & Residences Honolulu	125	Luxury	Development on Hold	TBD	1695 Kapi'olani Boulevard, Honolulu
Hawaii Ocean Plaza Hotel	175	TBD	Development on Hold	TBD	1370 Kapi'olani Boulevard, Honolulu
Central O'ahu					
Proposed Homewood Suites by Hilton	231	Upscale	Application Pending	TBD	Aolele Street & Paiea Street, Honolulu
Proposed Aloha Stadium Redevelopment	200	TBD	Early Development	TBD	99-500 Salt Lake Boulevard, Honolulu
Proposed Hyatt Place	180	Upscale	Development on Hold	TBD	98-850 Moanalua Road, 'Aiea
West O'ahu					
Proposed Element by Westin	207	Upscale	Early Development	Q4 '24	TBD, Kapolei
Proposed Dual-Brand Hotel	250	Upscale	Early Development	TBD	TBD, 'Ewa Beach
Proposed Atlantis Resort at Ko Olina	1,454	Luxury	Early Development	TBD	Ali'inui Drive, Kapolei
Proposed Resort Hotel & Residences at Ko Olina	450	Luxury	Early Development	TBD	Ali'inui Drive, Kapolei
Proposed Makaha Resort & Spa Redevelopment	250	Luxury	Development on Hold	TBD	626 Makaha Valley Road, Waianae
Kahuku, O'ahu					
Proposed Turtle Bay Resort Expansion	TBD	Luxury	Development on Hold	TBD	57-091 Kamehameha Highway, Kahuku

Of the hotels listed in the preceding table, we have identified the following new supply that is expected to have some degree of competitive interaction with the proposed subject hotel based on location, anticipated market orientation and price point, and/or operating profile.

FIGURE 4-28 COMPETITIVE NEW SUPPLY

Proposed Property	Number of Rooms	Total Competitive Level	Weighted Room Count	Estimated Opening Date	Developer	Development Stage
Proposed Subject Property	240	100 %	240	January 1, 2025	3 Leaf Holdings	Early Development
Proposed AC Hotel by Marriott	104	100	104	October 1, 2024	Continental Assets Management	Early Development
Totals/Averages	**344**		**344**			

A 104-room AC Hotel by Marriott has been proposed for development in Downtown Honolulu. The project is an adaptive reuse of an existing office building. Given its similar location, strong brand affiliation, and strong anticipated price point, this hotel has been classified as fully competitive new supply.

We note that a number of other projects are in various stages of planning and development within the greater Oʻahu lodging market. Hotel construction costs in Hawaii are very high, and the development process is extensive. Once the market fully recovers from the impact of COVID-19, we do not anticipate any significant impact from new supply over the foreseeable future.

While we have taken reasonable steps to investigate proposed hotel projects and their status, due to the nature of real estate development, it is impossible to determine with certainty every hotel that will be opened in the future or what their marketing strategies and effect on the market will be. Depending on the outcome of current and future projects, the future operating potential of the proposed subject hotel may be affected. Future improvement in market conditions will raise the risk of increased competition. Our forthcoming forecast of stabilized occupancy and average rate is intended to reflect such risk.

Supply Conclusion

We have identified various properties that are expected to be competitive to some degree with the proposed subject hotel. We have also investigated potential increases in competitive supply in this competitive submarket. The Proposed Chinatown Hotel should enter a dynamic market of varying product types and price points. Next, we will present our forecast for demand change, using the historical supply data presented as a starting point.

HVS

DEMAND

The following table presents the most recent trends for the subject hotel market as tracked by HVS. These data pertain to the competitors discussed previously in this section; performance results are estimated, rounded for the competition, and weighted if there are secondary competitors present. In this respect, the information in the table differs from the previously presented STR data and is consistent with the supply and demand analysis developed for this report.

FIGURE 4-29 HISTORICAL MARKET TRENDS

Year	Accommodated Room Nights	% Change	Room Nights Available	% Change	Market Occupancy	Market ADR	% Change	Market RevPAR	% Change
Est. 2018	846,455	—	1,013,879	—	83.5 %	$224.12	—	$187.11	—
Est. 2019	891,880	5.4 %	1,023,586	1.0 %	87.1	229.26	2.3 %	199.76	6.8 %
Est. 2020	385,763	(56.7)	1,054,850	3.1	36.6	212.41	(7.3)	77.68	(61.1)
Avg. Annual Compounded Chg., Est. 2018-Est. 2020:		(32.5) %		2.0 %			(2.6) %		(35.6) %

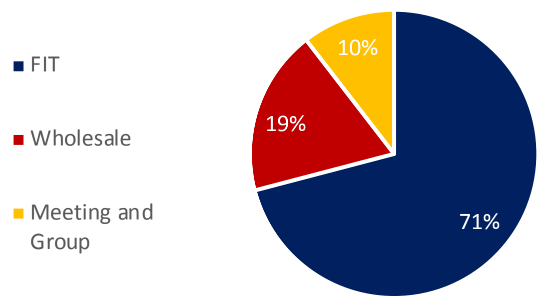
Demand Analysis Using Market Segmentation

For the purpose of demand analysis, the overall market is divided into individual segments based on the nature of travel. Based on our fieldwork, area analysis, and knowledge of the local lodging market, we estimate the 2019 distribution of accommodated-room-night demand as follows.

FIGURE 4-30 BASE-YEAR ACCOMMODATED-ROOM-NIGHT DEMAND

	Marketwide	
Market Segment	Accommodated Demand	Percentage of Total
FIT	632,514	71 %
Wholesale	166,080	19
Meeting and Group	93,286	10
Total	**891,880**	**100 %**

FIGURE 4-31 MARKET-WIDE ACCOMMODATED-ROOM-NIGHT DEMAND



In the base year, the market's demand mix comprised fit demand, with this segment representing roughly 71% of the accommodated room nights in this competitive submarket. The wholesale segment comprised 19% of the total, with the final portion meeting and group in nature, reflecting 10%.

Using the distribution of accommodated hotel demand as a starting point, we will analyze the characteristics of each market segment in an effort to determine future trends in room-night demand.

FIT Segment

Free Independent Traveler (FIT) demand consists of individuals and families spending time in an area or passing through as a tourist; this segment represents all travelers that are not associated with a group, contract, or wholesale program. Their travel purposes may include sightseeing, recreation, or visiting friends and relatives. FIT demand also includes room nights booked through Internet sites such as Expedia, hotels.com, and Priceline; however, this demand may include group and convention attendees who use these channels to take advantage of any discounts that may be available on these sites. FIT demand is strongest Friday and Saturday nights and all week during holiday periods and the summer months. Future FIT demand is tied to the overall economic health of the primary source cities for visitation.

As a result of Hawaii's year-round temperate climate, warm ocean water, and interesting attractions and geography, the Hawaiian Islands have perennially been a popular U.S. vacation destination. FIT demand includes individuals who purchase airline tickets and accommodations directly from the airlines and hotels or through a travel agent. Without an intermediary wholesaler, the hotel receives the entire room rate charged to the guest. Consequently, this is considered the most desirable segment, as it yields the highest average daily room rate. The FIT segment also includes Kama'aina (local Hawaiian) demand and commercial travelers conducting business in the area. While demand in this market segment declined in 2020 because of the COVID-19 pandemic, FIT demand is anticipated to be the first to recover as the economy rebounds over the next several years.

Wholesale Segment

Lodging accommodations for this demand segment are purchased in room blocks and subsequently sold by wholesale tour brokers directly to independent travelers or to retail tour brokers. Consequently, such room sales typically command rate discounts comparable to those achieved by large groups. Wholesale travelers are unusually flexible in order to obtain lower rates and therefore represent a strong candidate for off-season demand. A hotel's success within this segment of the market depends heavily upon the relationship between the tour operator and the hotel staff. Wholesale tours generate demand throughout the year and, consequently, require cooperation from the hotel in and out of season; most hotels are willing to designate a limited number of rooms for wholesale tour sales during the high season in order to ensure the supply of room nights generated by this segment in the low season. At properties where sufficient meeting and banquet facilities give the hotel the option of group sales to fill out the off-season months, dependence upon wholesale demand is somewhat lessened; however, it remains an important factor in achieving profitable off-season occupancy levels. Future trends in this segment largely depend on base assumptions regarding area hotels' expected acceptance of wholesale accounts going forward.

Prior to the onset of the pandemic, wholesalers were estimated to own 50% or more of all Hawaii inbound airline seats, and hotels must negotiate wholesale packages to remain competitive. Major wholesalers active in the Waikiki market include Pleasant Holidays, Apple Vacations, JALPAK, JTB, and Kintetsu International. It is important to note that the majority of Japanese travelers book through wholesalers. Japanese travel was largely responsible for the market's sluggish performance during the UNITE HERE strike between October and November of 2018 and in the following months. The ability of wholesalers to market Hawaii properties for future bookings was reportedly limited because of the negative publicity from the strike. Because the majority of wholesale demand is typically generated by international bookings, demand in this market segment has been virtually non-existent since March 2020 given travel restrictions associated with the COVID-19 pandemic. While wholesale demand is projected to remain depressed in 2021, demand in this segment is forecast to recover by the stabilized year.

Meeting and Group Segment

The meeting-and-group market includes meetings, seminars, conventions, trade association shows, and similar gatherings of ten or more people. Peak convention demand typically occurs in the spring and fall. Although there are numerous classifications within the meeting-and-group segment, the primary categories considered in this analysis are corporate groups, associations, and SMERFE (social, military, ethnic, religious, fraternal, and educational) groups. Corporate groups typically meet during the business week, most commonly in the spring and fall months. These groups tend to be the most profitable for hotels, as they typically pay higher rates and usually generate ancillary revenues including food and beverage and/or banquet revenue. SMERFE groups are typically price-sensitive and tend to meet on weekends and during the summer months or holiday season, when greater discounts are usually available; these groups generate limited ancillary revenues. Association demand is generally divided on a geographical basis, with national, regional, and state associations representing the most common sources. Professional associations and/or those supported by members' employers often meet on weekdays, while other associations prefer to hold events on weekends. The profile and revenue potential of associations varies depending on the group and the purpose of the meeting or event.

Given its leisure orientation, Hawaii generally appeals to business groups, with a combination of meetings, social functions, and recreational outings that are often centered on golf or spas. The full-service and deluxe resorts in the competitive set attract groups composed of the upper echelons of corporations, often as an incentive bonus for strong performance and future strategizing. Typical business or incentive groups that hold events at the resorts in Hawaii come from the insurance and pharmaceutical industries, as well as professional law and medical groups. The size of these meetings is typically between 50 and 500 people. Additional meeting and group demand is generated by the Honolulu Convention Center, which is actively marketing the island of O'ahu to groups that are too large for the meeting space of one hotel. When large groups choose O'ahu, delegates usually have their own hotel accommodation choices, with the deluxe and full-service hotel properties that are close to the beach having an advantage. The third generator of meeting and group demand in Waikiki is non-commercial meetings, which consist mainly of civic groups and social functions such as weddings. We note that meeting/group demand has been very limited given the implications associated with the COVID-19 pandemic, although group demand from weddings and smaller social groups is slowly returning as restrictions begin to ease. We have considered the impact of the pandemic and the correlating lower demand levels in our forecasts.

Base Demand Growth Rates

The purpose of segmenting the lodging market is to define each major type of demand, identify customer characteristics, and estimate future growth trends. Starting with an analysis of the local area, three segments were defined as representing the proposed subject hotel's lodging market. Various types of economic and demographic data were then evaluated to determine their propensity to reflect changes in hotel demand. Based on this procedure, we forecast the following average annual compounded market-segment growth rates.

FIGURE 4-32 AVERAGE ANNUAL COMPOUNDED MARKET SEGMENT GROWTH RATES

	Annual Growth Rate								
Market Segment	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**
FIT	-50.0 %	55.0 %	20.0 %	5.0 %	2.5 %	6.0 %	3.5 %	2.0 %	1.5 %
Wholesale	-75.0	88.0	48.0	26.0	10.0	8.0	2.0	1.0	0.5
Meeting and Group	-70.0	120.0	30.5	10.0	5.0	7.5	3.0	2.0	0.5
Base Demand Growth	**-56.7 %**	**63.3 %**	**24.5 %**	**8.6 %**	**4.0 %**	**6.5 %**	**3.2 %**	**1.8 %**	**1.2 %**

Accommodated Demand and Market-wide Occupancy

Based upon a review of the market dynamics in the proposed subject hotel's competitive environment, we have forecast growth rates for each market segment. Using the calculated potential demand for the market, we have determined market-wide accommodated demand based on the inherent limitations of demand fluctuations and other factors in the market area.

The following table details our projection of lodging demand growth for the subject market, including the total number of occupied room nights and any residual unaccommodated demand in the market.

FIGURE 4-33 FORECAST OF MARKET OCCUPANCY

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
FIT										
Total Demand	632,514	316,257	490,198	588,238	617,650	633,091	671,076	694,564	708,455	719,082
Growth Rate		(50.0) %	55.0 %	20.0 %	5.0 %	2.5 %	6.0 %	3.5 %	2.0 %	1.5 %
Wholesale										
Total Demand	166,080	41,520	78,058	115,525	145,562	160,118	172,928	176,386	178,150	179,041
Growth Rate		(75.0) %	88.0 %	48.0 %	26.0 %	10.0 %	8.0 %	2.0 %	1.0 %	0.5 %
Meeting and Group										
Total Demand	93,286	27,986	61,569	80,348	88,382	92,802	99,762	102,754	104,810	105,334
Growth Rate		(70.0) %	120.0 %	30.5 %	10.0 %	5.0 %	7.5 %	3.0 %	2.0 %	0.5 %
Totals										
Base Demand	891,880	385,763	629,825	784,111	851,594	886,011	943,766	973,705	991,415	1,003,457
Total Demand	891,880	385,763	629,825	784,111	851,594	886,011	943,766	973,705	991,415	1,003,457
Overall Demand Growth	5.4 %	(56.7) %	63.3 %	24.5 %	8.6 %	4.0 %	6.5 %	3.2 %	1.8 %	1.2 %
Market Mix										
FIT	70.9 %	82.0 %	77.8 %	75.0 %	72.5 %	71.5 %	71.1 %	71.3 %	71.5 %	71.7 %
Wholesale	18.6	10.8	12.4	14.7	17.1	18.1	18.3	18.1	18.0	17.8
Meeting and Group	10.5	7.3	9.8	10.2	10.4	10.5	10.6	10.6	10.6	10.5
Existing Hotel Supply	2,804	2,890	2,890	2,890	2,890	2,890	2,890	2,890	2,890	2,890
Proposed Hotels										
Proposed Subject Property [1]							240	240	240	240
Proposed AC Hotel by Marriott [2]						26	104	104	104	104
Available Room Nights per Year	1,023,586	1,054,850	1,054,850	1,054,850	1,054,850	1,064,418	1,180,410	1,180,410	1,180,410	1,180,410
Nights per Year	365	365	365	365	365	365	365	365	365	365
Total Supply	2,804	2,890	2,890	2,890	2,890	2,916	3,234	3,234	3,234	3,234
Rooms Supply Growth	1.0 %	3.1 %	0.0 %	0.0 %	0.0 %	0.9 %	10.9 %	0.0 %	0.0 %	0.0 %
Marketwide Occupancy	**87.1 %**	**36.6 %**	**59.7 %**	**74.3 %**	**80.7 %**	**83.2 %**	**80.0 %**	**82.5 %**	**84.0 %**	**85.0 %**

[1] Opening in January 2025 of the 100% competitive, 240-room Proposed Subject Property

[2] Opening in October 2024 of the 100% competitive, 104-room Proposed AC Hotel by Marriott

Following a sharp decline in occupancy in 2020 due to the severe downturn in travel associated with the COVID-19 pandemic, demand levels should recover and improve as travel restrictions are rescinded and economic activity rebounds. Based on historical occupancy levels in this market, and taking into consideration typical supply and demand cyclicality, market occupancy is forecast to stabilize at 85%.

5. Description of the Proposed Improvements

The quality of a lodging facility's physical improvements has a direct influence on marketability, attainable occupancy, and average room rate. The design and functionality of the structure can also affect operating efficiency and overall profitability. This section investigates the subject property's proposed physical improvements and personal property in an effort to determine how they are expected to contribute to attainable cash flows.

Project Overview

The Proposed Chinatown Hotel will be a full-service lodging facility containing 240 rentable units. The 15-story property is planned to open on January 1, 2025. The proposed subject property is envisioned as a lifestyle/boutique hotel. While a particular brand has yet to be chosen for this project, our feasibility study assumes that the proposed subject hotel will operate as an upscale- to upper-upscale, full-service hotel under a brand not currently represented in the market. The site is favorably located in the Chinatown Historic District within the greater Downtown Honolulu neighborhood. While still in the early stages of development, the proposed subject hotel is planned to offer several unique facilities and amenities, including a fifth-floor sky lobby that overlooks the Honolulu Harbor, as well as a rooftop amenity deck that features a restaurant, a bar/lounge, and an outdoor swimming pool.

EXTERIOR RENDERING

Summary of the Facilities

Based on information provided by the proposed subject hotel's development representatives, the following table summarizes the facilities that are expected to be available at the proposed subject hotel.

HVS

FIGURE 5-1 PROPOSED FACILITIES SUMMARY

Guestroom Configuration	Number of Units
Standard	TBD
Suite	TBD
Total	240

Food & Beverage Facilities	Square Footage
Speakeasy	3,734
Lobby Café/Bar	TBD
Rooftop Restaurant	3,577
Rooftop Bar & Lounge	1,506

Indoor Meeting & Banquet Facilities	Square Footage
Event Space	4,904
Pre-Function Space	2,268
Total	7,172

Amenities & Services	
Outdoor Swimming Pool	Market Pantry
Outdoor Whirlpool	Lobby Workstation
Fitness Center	Concierge

Infrastructure	
Parking Spaces	114 (Garage)
Elevators	6 Guest
Life-Safety Systems	Sprinklers, Smoke Detectors
Construction Details	Poured Concrete, Steel Frame

Site Improvements and Hotel Structure

The proposed hotel will comprise a fifteen-story main building and a three-story historic building. Garage parking will be located on floors two through four of the main building. Other site improvements will include freestanding signage, located at the main entrance to the site, as well as landscaping and sidewalks. Additional signage is expected to be placed on the exterior of the building. The hotel's main entrance, located on the west side of the main building, will lead into an elevator lobby, taking guests to the sky lobby on the fifth floor. Public areas and back-of-the-house space will be located on the first, fifth, and fifteenth floors of the main building, as well as all floors of the historic building. Guestrooms are planned to be located on the sixth through fourteenth floors of the main building. The site and building components are anticipated to be normal for a hotel of this type and should meet the standards for this Downtown Honolulu submarket.

Planned Facilities

The hotel is anticipated to offer a variety of food and beverage outlets, including a lobby café/bar, a rooftop restaurant, and a rooftop bar and lounge; these three outlets are planned to be housed in the main building. The historic building is planned to be redeveloped as a trendy, speakeasy bar. The size and layout of each outlet should be appropriate for a lifestyle/boutique hotel. Given the hotel's location in Downtown Honolulu proximate numerous commercial demand generators, the hotel is anticipated to offer roughly 4,900 square feet of dedicated event space, with an addition 2,200 square feet of pre-function space. The hotel is also planned to offer a rooftop swimming pool and whirlpool, as well as a fitness center as recreational facilities. Other amenities are likely to include a market pantry, a lobby workstation, and a concierge desk. Overall, the supporting facilities should be appropriate for a hotel of this type, and we assume that they will meet brand standards.

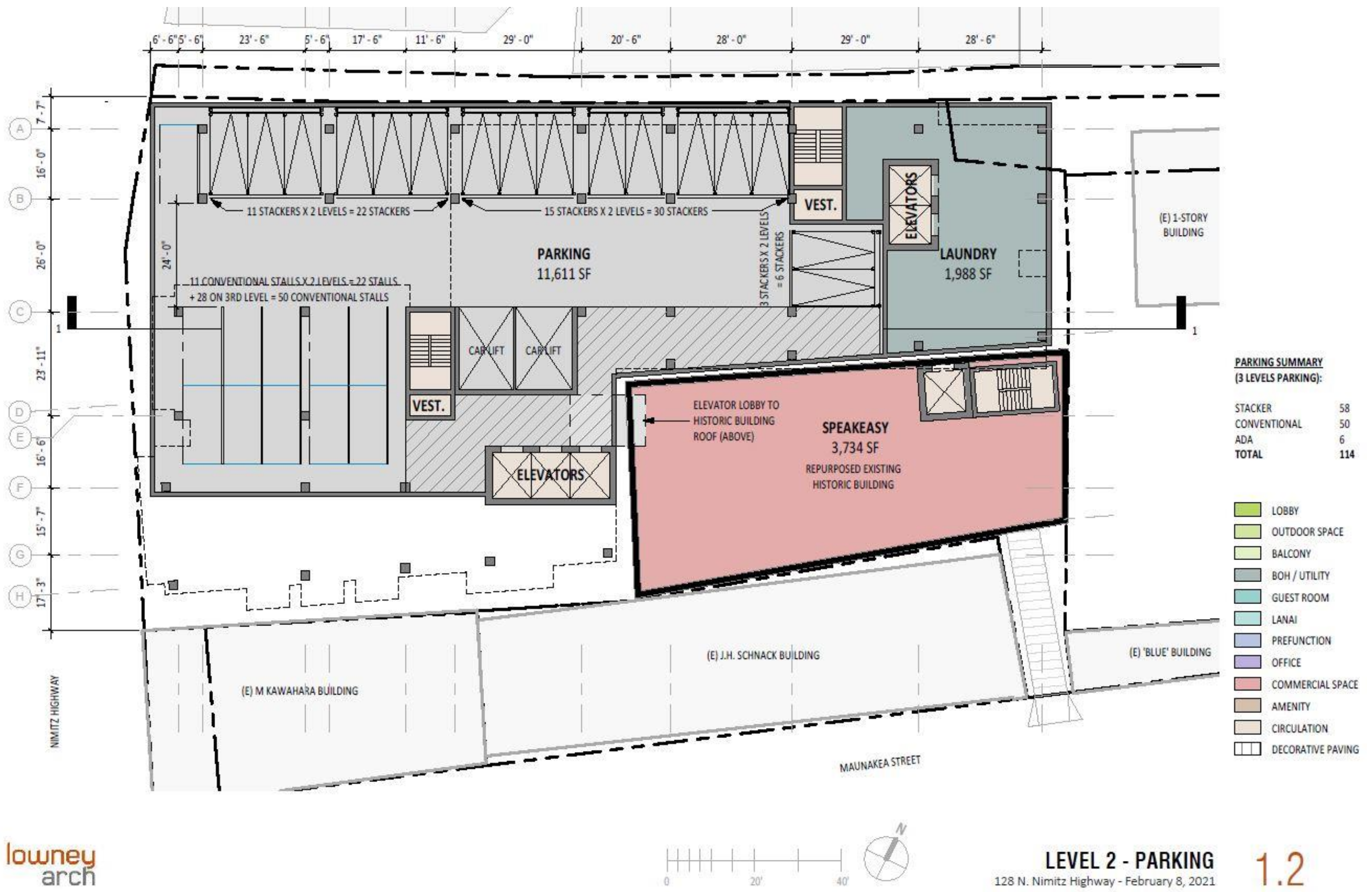
Guestrooms

The hotel is anticipated to feature standard and suite-style room configurations, with guestrooms located on floors six through fourteen of the main building. The standard guestrooms should offer typical amenities for this lifestyle/boutique product type, while the suites are expected to feature a larger living area. The guestroom bathrooms are anticipated to be of a standard size, with a standalone shower or shower-in-tub, commode, and vanity area featuring a stone countertop. Overall, the guestrooms should offer a competitive product for this Downtown Honolulu submarket.

HVS

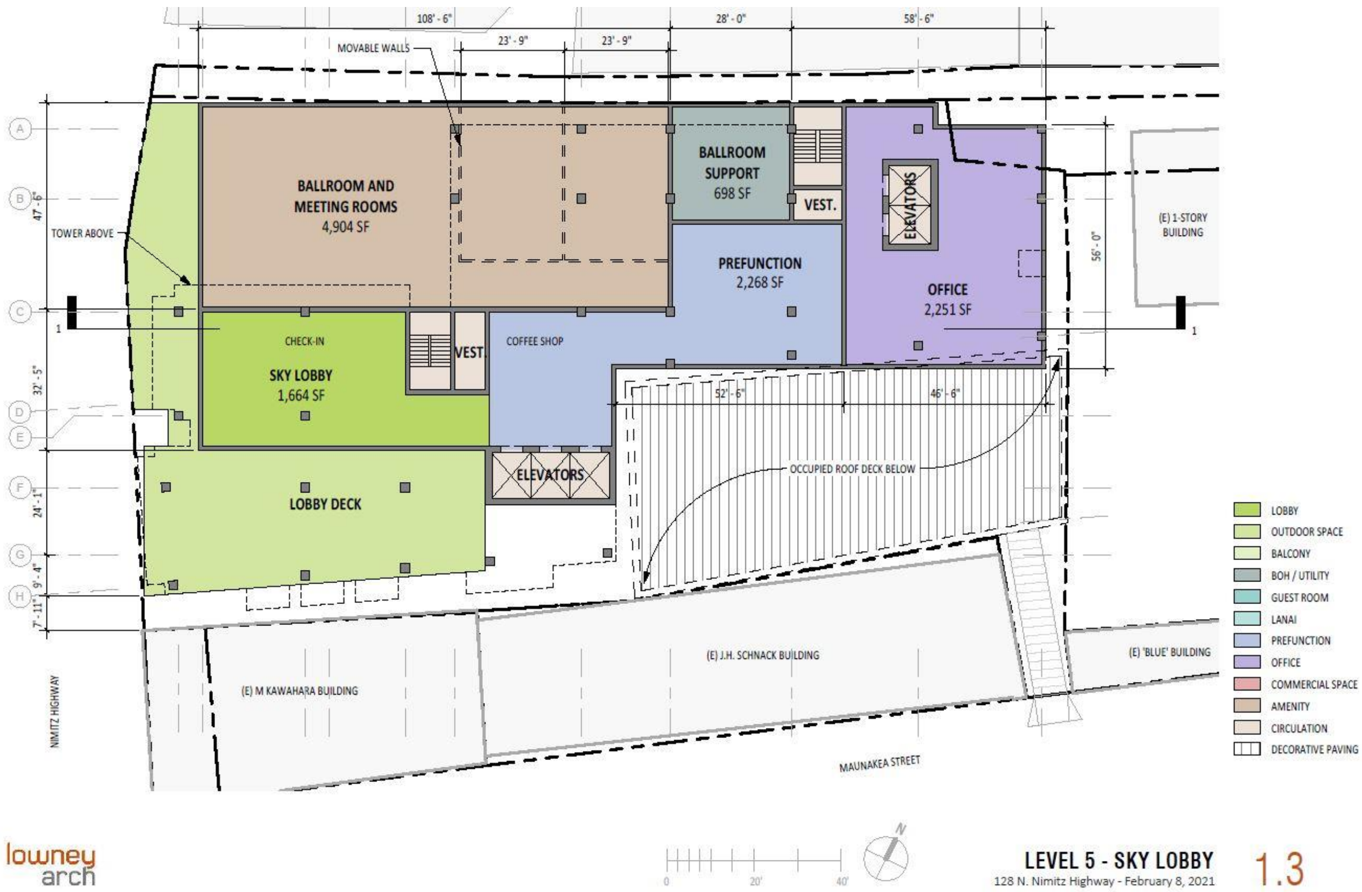
FIRST FLOOR PLAN

SECOND FLOOR PLAN

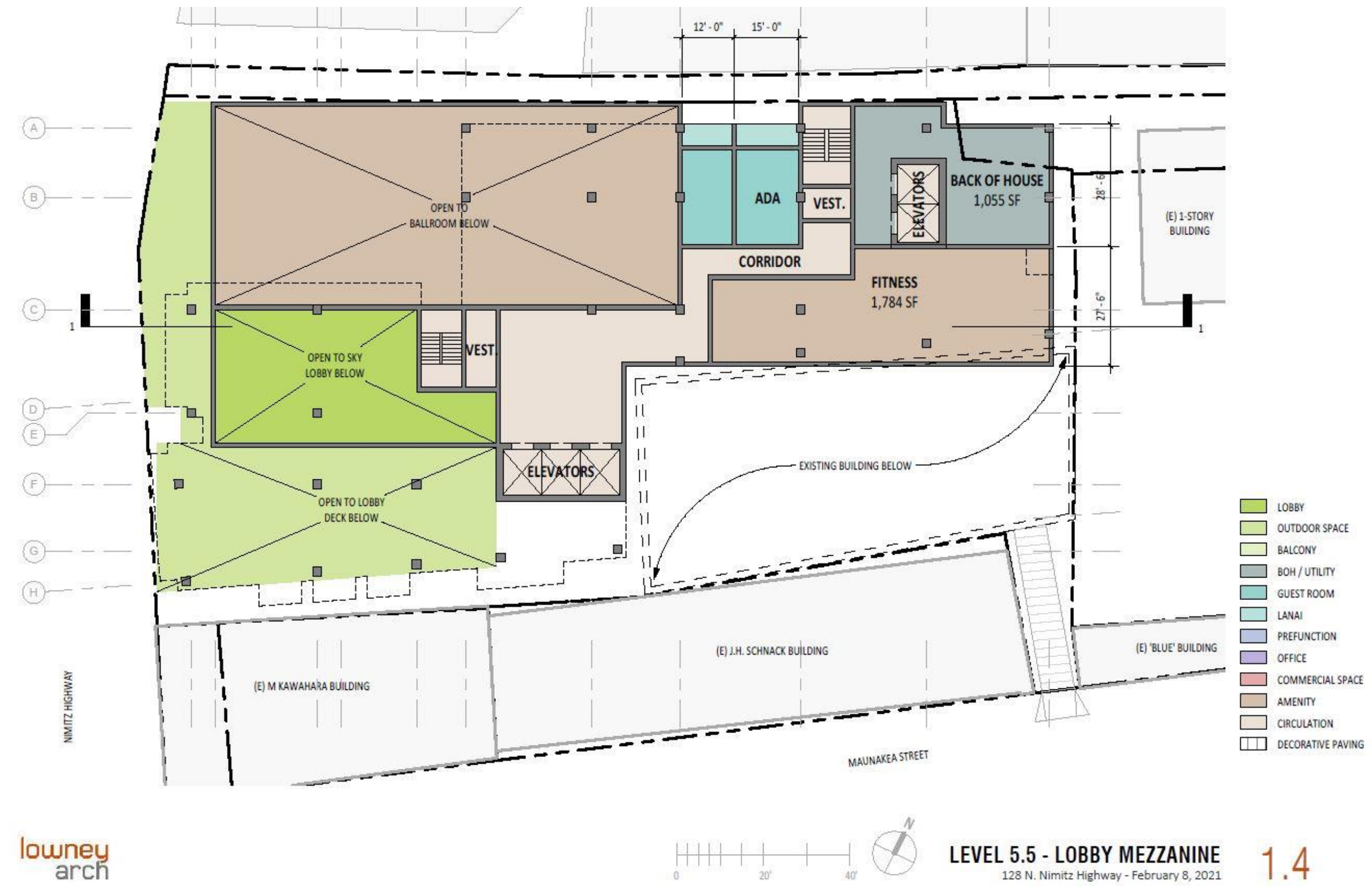


HVS

SKY LOBBY (FIFTH) FLOOR PLAN

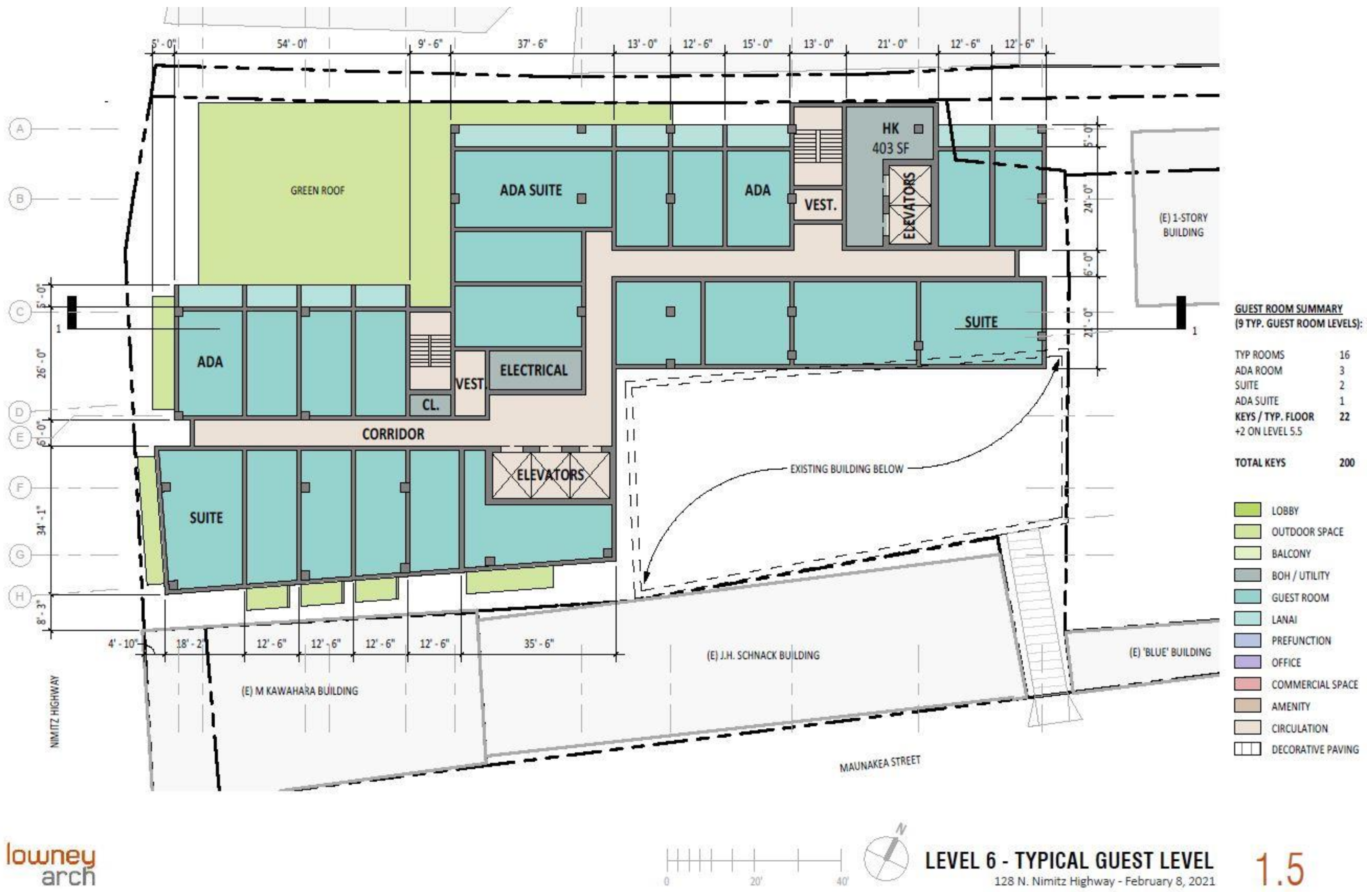


LOBBY MEZZANINE FLOOR PLAN



HVS

TYPICAL GUESTROOM FLOOR PLAN



ROOFTOP FLOOR PLAN

Back-of-the-House

The hotel is expected to be served by the necessary back-of-the-house space, including an in-house laundry facility, administrative offices, and several kitchens to service the needs of the hotel's food and beverage operation. These spaces should be adequate for a hotel of this type and should allow for the efficient operation of the property under competent management.

ADA and Environmental

We assume that the property will be built according to all pertinent codes and applicable brand standards. Moreover, we assume its construction will not create any environmental hazards (such as mold) and that the property will fully comply with the Americans with Disabilities Act.

Capital Expenditures

Our analysis assumes that the hotel will require ongoing upgrades and periodic renovations after its opening in order to maintain its competitive level in this market and to remain compliant with brand standards. These costs should be adequately funded by the forecasted reserve for replacement, as long as a successful, ongoing preventive-maintenance program is employed by hotel staff.

Construction Budget

The construction budget for the 240-room subject hotel, as provided by the project developer, is illustrated in the following table.

FIGURE 5-2 SUBJECT PROPERTY CONSTRUCTION BUDGET

Component	Cost	Cost per Room
Hard Costs & Site Improvements		
Hard Cost Construction	$80,000,000	$333,333
Tenant Improvements	3,000,000	12,500
Subtotal Hard Cost & Site Improvements	$83,000,000	$345,833
FF&E		
FF&E	$5,520,000	$23,000
Kitchen & In-House Laundry	960,000	$4,000
Technology & Telecommunications	480,000	$2,000
Subtotal FF&E	$6,960,000	$29,000
Pre-Opening Costs and Working Capital		
OS&E	$600,000	$2,500
Pre-Opening Costs	600,000	2,500
Working Capital	500,000	2,083
Liquor License	50,000	208
Subtotal Pre-Opening and Working Capital	$1,750,000	$7,292
Soft Costs		
Architecture/Engineering	$2,698,800	$11,245
Financing Costs	2,015,996	8,400
Interior Design	1,799,200	7,497
Insurance	899,600	3,748
Branding Agency	500,000	2,083
Technical Services	252,000	1,050
Franchise Fees	115,000	479
Permitting	100,000	417
Miscellaneous	258,000	1,075
Subtotal Soft Costs	$8,638,596	$35,994
Subtotal (without Land and Developer's Fee)	$100,348,596	$418,119
Site Cost	$11,000,000	$45,833
Subtotal (without Developer's Fee)	$111,348,596	$463,952
Developer's Fee	$2,698,800	$11,245
Total	$114,047,396	$475,197

Conclusion

Overall, the proposed subject property should offer a well-designed, functional layout of support areas and guestrooms. All typical and market-appropriate features and amenities are expected to be included in the hotel's design. We assume that the building will be fully open and operational on the stipulated opening date and will meet all local building codes and applicable brand standards. Furthermore, we assume that the hotel staff will be adequately trained to allow for a successful opening and that pre-marketing efforts will have introduced the product to major local accounts at least six months in advance of the opening date.

6. Projection of Occupancy and Average Rate

Along with ADR results, the occupancy levels achieved by a hotel are the foundation of the property's financial performance and market value. Most of a lodging facility's other revenue sources (such as food and beverage, other operated departments, and miscellaneous income) are driven by the number of guests, and many expense levels vary with occupancy. To a certain degree, occupancy attainment can be manipulated by management. For example, hotel operators may choose to lower rates in an effort to maximize occupancy. Our forecasts reflect an operating strategy that we believe would be implemented by a typical, professional hotel management team to achieve an optimal mix of occupancy and average rate.

Penetration Rate Analysis

The proposed subject hotel's forecasted market share and occupancy levels are based upon its anticipated competitive position within the market, as quantified by its penetration rate. The penetration rate is the ratio of a hotel's market share to its fair share.

Base-Year Penetration Rates by Market Segment

In the following table, the penetration rates attained by the primary competitors and the aggregate secondary competitors are set forth for each segment for the base year. As discussed previously in the Supply and Demand Analysis chapter of this report, we are utilizing the market's performance prior to the onset of the COVID-19 pandemic as a benchmark for projecting a return to normalized performance.

FIGURE 6-1 HISTORICAL PENETRATION RATES

Property	FIT	Wholesale	Meeting and Group	Overall
The Laylow, Autograph Collection	110 %	90 %	45 %	100 %
Hyatt Centric Waikiki Beach	113	115	51	107
The Modern Honolulu	76	144	86	90
Surfjack Hotel & Swim Club	104	142	50	106
Embassy Suites by Hilton Waikiki Beach Walk	105	115	102	107
Aston at the Executive Centre Hotel	108	23	41	85
Secondary Competition	100	88	131	101

The Hyatt Centric Waikiki Beach achieved the highest penetration rate within the FIT segment. The highest penetration rate in the wholesale segment was achieved by The Modern Honolulu, while the secondary competition led the market with the highest meeting and group penetration rate.

Forecast of Subject Property's Occupancy

Because the supply and demand balance for the competitive market is dynamic, there is a circular relationship between the penetration factors of each hotel in the market. The performance of individual new hotels has a direct effect upon the aggregate performance of the market and, consequently, upon the calculated penetration factor for each hotel in each market segment. The same is true when the performance of existing hotels changes, either positively (following a refurbishment, for example) or negatively (when a poorly maintained or marketed hotel loses market share).

A hotel's penetration factor is calculated as its achieved market share of demand divided by its fair share of demand. Thus, if one hotel's penetration performance increases, thereby increasing its achieved market share, this leaves less demand available in the market for the other hotels to capture, and the penetration performance of one or more of those other hotels consequently declines (other things remaining equal). This type of market share adjustment takes place every time there is a change in supply or a change in the relative penetration performance of one or more hotels in the competitive market. Our projections of penetration, demand capture, and occupancy performance for the proposed subject hotel account for these types of adjustments to market share within the defined competitive market.

The proposed subject hotel's occupancy forecast is set forth as follows, with the adjusted projected penetration rates used as a basis for calculating the amount of captured market demand.

HVS

FIGURE 6-2 FORECAST OF SUBJECT PROPERTY'S OCCUPANCY

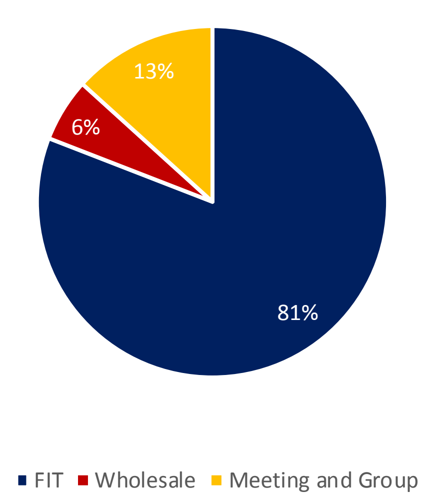
Market Segment	2025	2026	2027	2028
FIT				
Demand	671,076	694,564	708,455	719,082
Market Share	7.8 %	7.8 %	7.8 %	7.8 %
Capture	52,583	54,423	55,270	55,854
Penetration	106 %	106 %	105 %	105 %
Wholesale				
Demand	172,928	176,386	178,150	179,041
Market Share	1.6 %	2.0 %	2.2 %	2.5 %
Capture	2,728	3,465	3,978	4,409
Penetration	21 %	26 %	30 %	33 %
Meeting and Group				
Demand	99,762	102,754	104,810	105,334
Market Share	6.0 %	7.6 %	8.7 %	9.3 %
Capture	6,003	7,805	9,080	9,815
Penetration	81 %	102 %	117 %	126 %
Total Room Nights Captured	**61,314**	**65,693**	**68,329**	**70,078**
Available Room Nights	87,600	87,600	87,600	87,600
Subject Occupancy	**70 %**	**75 %**	**78 %**	**80 %**
Market-wide Available Room Nights	1,180,410	1,180,410	1,180,410	1,180,410
Fair Share	**7 %**	**7 %**	**7 %**	**7 %**
Market-wide Occupied Room Nights	943,766	973,705	991,415	1,003,457
Market Share	**6 %**	**7 %**	**7 %**	**7 %**
Market-wide Occupancy	**80 %**	**82 %**	**84 %**	**85 %**
Total Penetration	**88 %**	**91 %**	**93 %**	**94 %**

Within the FIT segment, the proposed subject hotel's occupancy penetration is positioned above the market-average level, supported by its lifestyle/boutique product. In general, the proposed subject property is anticipated to be a top choice for business travelers on O'ahu. The proposed subject hotel's occupancy penetration in the wholesale segment is positioned below the market-average level. We note that demand in the wholesale segment, primarily leisure in nature, is typically captured by hotels in Waikiki. Within the meeting and group segment, the proposed subject hotel's occupancy penetration is positioned above the market-average level, largely attributed to its ample offering of meeting space and favorable location in Downtown Honolulu. These positioned segment penetration rates result in the following market segmentation forecast.

FIGURE 6-3 MARKET SEGMENTATION FORECAST – SUBJECT PROPERTY

	2025	2026	2027	2028
FIT	86 %	83 %	81 %	80 %
Wholesale	4	5	6	6
Meeting and Group	10	12	13	14
Total	100 %	100 %	100 %	100 %

FIGURE 6-4 STABILIZED MARKET SEGMENTATION – SUBJECT PROPERTY



Based on our analysis of the proposed subject hotel and market area, we have selected a stabilized occupancy level of 80%. The stabilized occupancy is intended to reflect the anticipated results of the property over its remaining economic life given all changes in the life cycle of the hotel. Thus, the stabilized occupancy excludes from consideration any abnormal relationship between supply and demand, as well as any nonrecurring conditions that may result in unusually high or low occupancies. Although the proposed subject hotel may operate at occupancies above this stabilized level, we believe it equally possible for new competition and temporary economic downturns to force the occupancy below this selected point of stability.

Average Rate Analysis

One of the most important considerations in estimating the value of a lodging facility is a supportable forecast of its attainable average rate, which is more formally defined as the average rate per occupied room. Average rate can be calculated by dividing the total rooms revenue achieved during a specified period by the number of rooms sold during the same period. The projected average rate and the anticipated occupancy percentage are used to forecast rooms revenue, which in turn provides the basis for estimating most other income and expense categories.

Competitive Position

Although the ADR analysis presented here follows the occupancy projection, these two statistics are highly correlated; in reality, one cannot project occupancy without making specific assumptions regarding average rate. This relationship is best illustrated by revenue per available room (RevPAR), which reflects a property's ability to maximize rooms revenue. The following table summarizes the historical average rate and the RevPAR of the proposed subject hotel’s future primary competitors.

FIGURE 6-5 BASE-YEAR AVERAGE RATE AND REVPAR OF THE COMPETITORS

Property	Estimated 2019 Average Room Rate	Average Room Rate Penetration	Rooms Revenue Per Available Room (RevPAR)	RevPAR Penetration
The Laylow, Autograph Collection	$230 - $240	102.5 %	$200 - $210	100 - 110 %
Hyatt Centric Waikiki Beach	210 - 220	94.2	200 - 210	100 - 110
The Modern Honolulu	280 - 290	123.0	210 - 220	110 - 120
Surfjack Hotel & Swim Club	200 - 210	89.9	180 - 190	90 - 95
Embassy Suites by Hilton Waikiki Beach Walk	300 - 325	139.6	290 - 300	140 - 150
Aston at the Executive Centre Hotel	160 - 170	73.3	120 - 125	60 - 65
Average - Primary Competitors	$257.98	112.5 %	$223.18	111.7 %
Average - Secondary Competitors	199.26	86.9	174.93	87.6
Overall Average	**$229.26**	**100.0 %**	**$199.76**	**100.0 %**
Subject As If Stabilized (In 2019 Dollars)	**$240.00**	**104.7 %**	**$196.79**	**98.5 %**

To forecast the proposed subject hotel's average rate (ADR), we positioned the rate in the context of the 2019 competitive market. In other words, we estimated the ADR that the proposed subject hotel would have achieved had it been operating at a stabilized level in 2019. As part of this analysis, we considered the proposed subject property's competitive attributes, such as location, size (number of rooms), array of facilities and amenities, and market image/branding, and compared them to those of the hotels to which it is expected to be most comparable, applying adjustments as deemed appropriate, as illustrated below.

FIGURE 6-6 ADR ADJUSTMENT GRID

	Proposed Chinatown Hotel	The Laylow, Autograph Collection	Hyatt Centric Waikiki Beach	The Modern Honolulu	Surfjack Hotel & Swim Club	Embassy Suites by Hilton Waikiki Beach Walk
Rooms	240	251	230	353	111	369
Base Year Average Rate		$230 - $240	$210 - $220	$280 - $290	$200 - $210	$300 - $325
Location		Similar	Similar	Superior	Similar	Superior
Adjustments		0.0 %	0.0 %	-5.0 %	0.0 %	-5.0
Room Count/Market Mix		Similar	Similar	Similar	Similar	Superior
Adjustments		0.0 %	0.0 %	0.0 %	0.0 %	-5.0
Condition and Facilities		Similar	Inferior	Similar	Inferior	Similar
Adjustments		0.0 %	5.0 %	0.0 %	5.0 %	0.0
Market Image		Similar	Similar	Similar	Similar	Similar
Adjustments		0.0 %	0.0 %	0.0 %	0.0 %	0.0
Total Adjustmemt		0.0 %	5.0 %	-5.0 %	5.0 %	-10.0
Adjusted Average Rate		**$230 - $240**	**$220 - $230**	**$260 - $270**	**$210 - $220**	**$280 - $290**
Minimum		$210 - $220				
Maximum		$280 - $290				
Average		$240 - $250				
Median		$230 - $240				
Positioned Average Rate		$240				

Following the adjustments, our analysis indicates that the proposed subject hotel would have achieved an average rate between $210 and $285. if it were operating at a stabilized level in 2019. Based on this analysis, we have positioned the proposed subject hotel's average rate at $240 in base-year dollars.

Based on these considerations, the following table sets forth the basis for our projection of the proposed subject hotel's average rate. We have positioned the proposed subject hotel's stabilized average rate in base-year (2019) dollars at $240.00, which reflects an ADR penetration of 104.7%. Based on our review of the proposed improvements and the anticipated profile of the product and its operation, it is our opinion that the ADR penetration level should be achievable with appropriate management and marketing. The positioned stabilized average rate is projected to increase at the same rate as the overall market's average rate, prior to consideration of any ADR discounting during the hotel's ramp-up period. Note that our forecast of income and expense, which follows later in this report, assumes an underlying inflation rate of 1.0% in 2020, 2.0% between 2021 and 2024, and 3.0% thereafter.

The proposed subject hotel's projected average rate (as if stabilized) is then fiscalized to correspond with the hotel's anticipated date of opening for each forecast year. Discounts of 5% and 2% have been applied to the stabilized room rates projected for the first two years of operation, as would be expected for a new property of this type as it builds its reputation and becomes established in the market.

The following table presents the proposed subject hotel's ADR penetration level, followed by the average rate deflated to base-year dollars by the assumed underlying inflation rate, for each year of the forecast.

FIGURE 6-7 ADR FORECAST – MARKET AND PROPOSED SUBJECT PROPERTY

	Historical									
Calendar Year	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**
Market ADR	$229.26	$212.41	$199.67	$210.65	$224.34	$235.56	$244.98	$252.33	$259.90	$267.70
Projected Market ADR Growth Rate	—	-7.3%	-6.0%	5.5%	6.5%	5.0%	4.0%	3.0%	3.0%	3.0%
Proposed Subject Property ADR (As-If Stabilized)	$\boxed{\$240.00}$	$222.36	$209.02	$220.52	$234.85	$246.59	$256.46	$264.15	$272.08	$280.24
ADR Growth Rate		-7.3%	-6.0%	5.5%	6.5%	5.0%	4.0%	3.0%	3.0%	3.0%
Proposed Subject Stabilized ADR Penetration	104.7%	104.7%	104.7%	104.7%	104.7%	104.7%	104.7%	104.7%	104.7%	104.7%
Fiscal Year							**2025**	**2026**	**2027**	**2028**
Proposed Subject Property Average Rate							$256.46	$264.15	$272.08	$280.24
Opening Discount							5.0%	2.0%	0.0%	0.0%
Average Rate After Discount							**$243.63**	**$258.87**	**$272.08**	**$280.24**
Real Average Rate Growth							—	6.3%	5.1%	3.0%
Market ADR							$244.98	$252.33	$259.90	$267.70
Proposed Subject ADR Penetration (After Discount)							99.5%	102.6%	104.7%	104.7%
ADR Expressed in Base-Year Dollars Deflated @ Inflation Rate							$216.36	$223.19	$227.75	$227.75

We have positioned the proposed subject hotel's stabilized ADR in the 2019 base year in consideration of its new facility, strong brand affiliation, lifestyle/boutique product, and favorable location in Downtown Honolulu. Although the rate position would have been lowered in 2020, in line with market trends, we expect that rate position to mirror market trends going forward. Following a continued decline in 2021 as operators are expected to discount rates to drive occupancy, average rates for this competitive market are anticipated to begin to recover in the second projection year, with additional growth in the following years. The projected recovery and growth of market ADR is based upon the expectation that travel restrictions are eased and international travel rebounds. The proposed subject hotel's ADR penetration level is forecast to reach 104.7% by the stabilized period, consistent with our stabilized ADR positioning.

The following table sets forth our concluding forecast of the proposed subject hotel's occupancy, average rate, and RevPAR, with corresponding penetration levels, for the first projection year through the stabilized year of operation. The market's historical and projected occupancy, average rate, and RevPAR are presented for comparison, with the projections fiscalized to correspond with the proposed subject hotel's forecast, as appropriate.

FIGURE 6-8 COMPARISON OF HISTORICAL AND PROJECTED OCCUPANCY, ADR, AND REVPAR – PROPOSED SUBJECT PROPERTY AND MARKET

				Projected							
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Proposed Chinatown Hotel											
Occupancy								70.0 %	75.0 %	78.0 %	80.0 %
Change in Points								—	5.0	3.0	2.0
Occupancy Penetration								87.5 %	90.9 %	92.9 %	94.1 %
Average Rate								$243.63	$258.87	$272.08	$280.24
Change								—	6.3 %	5.1 %	3.0 %
Average Rate Penetration								99.5 %	102.6 %	104.7 %	104.7 %
RevPAR								$170.53	$194.13	$212.22	$224.18
Change								—	13.8 %	9.3 %	5.6 %
RevPAR Penetration								87.1 %	93.3 %	97.2 %	98.5 %

	Historical			Projected							
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Competitive Set											
Occupancy	83.5 %	87.1 %	36.6 %	59.7 %	74.3 %	80.7 %	83.2 %	80.0 %	82.5 %	84.0 %	85.0 %
Change in Points	—	3.6	(50.6)	23.1	14.6	6.4	2.5	(3.3)	2.5	1.5	1.0
Average Rate	$224.12	$229.26	$212.41	$199.67	$210.65	$224.34	$235.56	$244.98	$252.33	$259.90	$267.70
Change	—	2.3 %	(7.3) %	(6.0) %	5.5 %	6.5 %	5.0 %	4.0 %	3.0 %	3.0 %	3.0 %
RevPAR	$187.11	$199.76	$77.68	$119.22	$156.58	$181.11	$196.07	$195.87	$208.14	$218.29	$227.57
Change	—	6.8 %	(61.1) %	53.5 %	31.3 %	15.7 %	8.3 %	(0.1) %	6.3 %	4.9 %	4.3 %

The following occupancies and average rates will be used to project the proposed subject hotel's rooms revenue; this forecast reflects years beginning on January 1, 2025, which correspond with our financial projections.

FIGURE 6-9 FORECASTS OF OCCUPANCY AND AVERAGE RATE

Year	Occupancy	Average Rate Before Discount	Discount	Average Rate After Discount	RevPAR
2025	70 %	$256.46	5.0 %	$243.63	$170.54
2026	75	264.15	2.0	258.87	194.15
2027	78	272.08	0.0	272.08	212.22
2028	80	280.24	0.0	280.24	224.19

7. Projection of Income and Expense

In this chapter of our report, we have compiled a forecast of income and expense for the proposed subject hotel. This forecast is based on the facilities program set forth previously, as well as the occupancy and average rate (ADR) forecast discussed previously.

The forecast of income and expense is expressed in current dollars for each year. The stabilized year is intended to reflect the anticipated operating results of the property over its remaining economic life given any or all applicable stages of build-up, plateau, and decline in the life cycle of the hotel. Thus, income and expense estimates from the stabilized year forward exclude from consideration any abnormal relationship between supply and demand, as well as any nonrecurring conditions that may result in unusual revenues or expenses. The ten-year period reflects the typical holding period of large real estate assets such as hotels. In addition, the ten-year period provides for the stabilization of income streams and comparison of yields with alternate types of real estate. The forecasted income streams reflect the future benefits of owning specific rights in income-producing real estate.

Comparable Operating Statements

In order to project future income and expense for the proposed subject hotel, we have included a sample of individual comparable operating statements from our database of hotel statistics. All financial data are presented according to the three most common measures of industry performance: ratio to sales (RTS), amounts per available room (PAR), and amounts per occupied room night (POR). These historical income and expense statements will be used as benchmarks in our forthcoming forecast of income and expense. The subject's stabilized statement of income and expense, deflated to 2019 dollars, is also presented.

FIGURE 7-1 COMPARABLE OPERATING STATEMENTS: RATIO TO SALES

	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Subject Stabilized $
Year:	**2018**	**2018**	**2017/18**	**2017/18**	**2016**	**2019**
Edition:	11	10	11	10	11	**11**
Number of Rooms:	**220 to 280**	**480 to 600**	**540 to 670**	**290 to 360**	**120 to 160**	**240**
Days Open:	**365**	**365**	**365**	**365**	**365**	**365**
Occupancy:	**92%**	**73%**	**98%**	**86%**	**90%**	**80%**
Average Rate:	**$218**	**$355**	**$203**	**$145**	**$214**	**$228**
RevPAR:	**$200**	**$257**	**$200**	**$124**	**$193**	**$182**
REVENUE						
Rooms	70.9 %	55.4 %	78.2 %	89.9 %	86.1 %	63.7 %
Food & Beverage	16.3	34.1	16.5	0.0	6.5	26.6
Other Operated Departments	12.8	7.2	4.9	10.1	1.1	8.6
Miscellaneous Income	0.0	3.3	0.4	0.0	6.4	1.1
Total	100.0	100.0	100.0	100.0	100.0	100.0
DEPARTMENTAL EXPENSES*						
Rooms	27.2	28.6	25.6	29.7	24.0	24.0
Food & Beverage	98.6	78.9	93.5	0.0	75.6	75.0
Other Operated Departments	24.7	80.8	19.1	15.0	47.1	20.2
Total	38.5	48.6	36.3	28.2	26.0	37.0
DEPARTMENTAL INCOME	61.5	51.4	63.7	71.8	74.0	63.0
UNDISTRIBUTED OPERATING EXPENSES						
Administrative & General	6.2	8.0	5.3	7.0	7.2	5.3
Info. and Telecom. Systems	1.5	0.0	1.1	0.0	0.5	1.0
Marketing	7.0	6.3	3.5	5.8	5.2	4.8
Franchise Fee	3.1	0.0	7.0	0.0	0.0	5.4
Property Operations & Maintenance	2.8	4.9	3.8	4.6	3.1	2.9
Utilities	2.9	3.9	4.1	4.7	3.9	3.9
Total	23.5	23.1	24.8	22.1	20.0	23.3
GROSS OPERATING PROFIT	38.0	28.3	38.9	49.7	54.0	39.8
Management Fee	3.0	3.1	1.5	2.0	7.0	3.0
INCOME BEFORE NON-OPER. INC. & EXP.	35.0	25.2	37.3	47.6	47.0	36.8

* Departmental expense ratios are expressed as a percentage of departmental revenues

FIGURE 7-2 COMPARABLE OPERATING STATEMENTS: AMOUNTS PER AVAILABLE ROOM

	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Subject
						Stabilized $
Year:	**2018**	**2018**	**2017/18**	**2017/18**	**2016**	**2019**
Edition:	11	10	11	10	11	**11**
Number of Rooms:	**220 to 280**	**480 to 600**	**540 to 670**	**290 to 360**	**120 to 160**	**240**
Days Open:	**365**	**365**	**365**	**365**	**365**	**365**
Occupancy:	**92%**	**73%**	**98%**	**86%**	**90%**	**80%**
Average Rate:	**$218**	**$355**	**$203**	**$145**	**$214**	**$228**
RevPAR:	**$200**	**$257**	**$200**	**$124**	**$193**	**$182**
REVENUE						
Rooms	$73,072	$93,872	$72,869	$45,323	$70,515	$66,503
Food & Beverage	16,793	57,820	15,387	0	5,285	27,740
Other Operated Departments	13,242	12,274	4,602	5,079	906	8,963
Miscellaneous Income	26	5,620	382	0	5,218	1,168
Total	103,133	169,586	93,239	50,402	81,924	104,373
DEPARTMENTAL EXPENSES						
Rooms	19,883	26,859	18,628	13,462	16,900	15,961
Food & Beverage	16,557	45,649	14,383	0	3,997	20,805
Other Operated Departments	3,270	9,921	878	761	427	1,810
Total	39,709	82,428	33,889	14,223	21,324	38,576
DEPARTMENTAL INCOME	63,423	87,158	59,350	36,179	60,600	65,797
UNDISTRIBUTED OPERATING EXPENSES						
Administrative & General	6,373	13,587	4,919	3,520	5,939	5,539
Info. and Telecom. Systems	1,513	0	1,028	0	413	1,007
Marketing	7,237	10,747	3,272	2,912	4,291	5,036
Franchise Fee	3,206	0	6,556	0	0	5,653
Property Operations & Maintenance	2,895	8,312	3,540	2,334	2,533	3,022
Utilities	3,028	6,529	3,817	2,394	3,182	4,029
Total	24,252	39,175	23,133	11,159	16,358	24,285
GROSS OPERATING PROFIT	39,171	47,983	36,217	25,020	44,242	41,512
Management Fee	3,094	5,192	1,399	1,008	5,735	3,131
INCOME BEFORE NON-OPER. INC. & EXP.	36,077	42,790	34,818	24,011	38,507	38,381

FIGURE 7-3 COMPARABLE OPERATING STATEMENTS: AMOUNTS PER OCCUPIED ROOM

	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Subject Stabilized $
Year:	**2018**	**2018**	**2017/18**	**2017/18**	**2016**	**2019**
Edition:	11	10	11	10	11	**11**
Number of Rooms:	**220 to 280**	**480 to 600**	**540 to 670**	**290 to 360**	**120 to 160**	**240**
Days Open:	**365**	**365**	**365**	**365**	**365**	**365**
Occupancy:	**92%**	**73%**	**98%**	**86%**	**90%**	**80%**
Average Rate:	**$218**	**$355**	**$203**	**$145**	**$214**	**$228**
RevPAR:	**$200**	**$257**	**$200**	**$124**	**$193**	**$182**
REVENUE						
Rooms	$218.40	$354.73	$203.46	$144.85	$214.07	$227.75
Food & Beverage	50.19	218.50	42.96	0.00	16.04	95.00
Other Operated Departments	39.58	46.38	12.85	16.23	2.75	30.69
Miscellaneous Income	0.08	21.24	1.07	0.00	15.84	4.00
Total	308.25	640.85	260.34	161.08	248.71	357.44
DEPARTMENTAL EXPENSES						
Rooms	59.43	101.50	52.01	43.02	51.31	54.66
Food & Beverage	49.49	172.50	40.16	0.00	12.13	71.25
Other Operated Departments	9.77	37.49	2.45	2.43	1.30	6.20
Total	118.69	311.49	94.62	45.46	64.74	132.11
DEPARTMENTAL INCOME	189.56	329.36	165.71	115.62	183.97	225.33
UNDISTRIBUTED OPERATING EXPENSES						
Administrative & General	19.05	51.34	13.74	11.25	18.03	18.97
Info. and Telecom. Systems	4.52	0.00	2.87	0.00	1.25	3.45
Marketing	21.63	40.61	9.14	9.31	13.03	17.25
Franchise Fee	9.58	0.00	18.31	0.00	0.00	19.36
Property Operations & Maintenance	8.65	31.41	9.88	7.46	7.69	10.35
Utilities	9.05	24.67	10.66	7.65	9.66	13.80
Total	72.49	148.04	64.59	35.67	49.66	83.17
GROSS OPERATING PROFIT	117.08	181.32	101.12	79.96	134.31	142.16
Management Fee	9.25	19.62	3.91	3.22	17.41	10.72
INCOME BEFORE NON-OPER. INC. & EXP.	107.83	161.70	97.22	76.74	116.90	131.44

The comparable statements' departmental income ranged from 51.4% to 74.0% of total revenue. The comparable properties achieved a gross operating profit ranging from 28.3% to 54.0% of total revenue.

Fixed and Variable Component Analysis

HVS uses a fixed and variable component model to project a lodging facility's revenue and expense levels. This model is based on the premise that hotel revenues and expenses have one component that is fixed and another that varies directly with occupancy and facility usage. A projection can be made by taking a known level of revenue or expense and calculating its fixed and variable components. The fixed component is then increased in tandem with the underlying rate of inflation, while the variable component is adjusted for a specific measure of volume such as total revenue.

The actual forecast is derived by adjusting each year's revenue and expense by the amount fixed (the fixed expense multiplied by the inflated base-year amount) plus the variable amount (the variable expense multiplied by the inflated base-year amount) multiplied by the ratio of the projection year's occupancy to the base-year occupancy (in the case of departmental revenue and expense) or the ratio of the projection year's revenue to the base year's revenue (in the case of undistributed operating expenses). Fixed expenses remain fixed, increasing only with inflation. Our discussion of the revenue and expense forecast in this report is based upon the output derived from the fixed and variable model. This forecast of revenue and expense is accomplished through a systematic approach, following the format of the *Uniform System of Accounts for the Lodging Industry*. Each category of revenue and expense is estimated separately and combined at the end in the final statement of income and expense.

Inflation and Appreciation Assumptions

As discussed previously, we have defined the "base year" as 2019 because of the anomalous performance of the hotel industry during the depths of the pandemic in 2020. The industry is generally looking back to 2019 as a year of normalized performance, with recovery from the pandemic measured in terms of a rebound to those pre-pandemic benchmarks. In consideration of the trends in the Consumer Price Index (CPI), projections set forth by economists surveyed, and the Federal Reserve's target inflation rate, we have applied an underlying inflation rate of 1.0% in 2020, 2.0% between 2021 and 2024, and 3.0% thereafter. The 3.0% annual rate of growth to income and expenses is meant to reflect the longer-term expectation of asset appreciation by typical investors. This position is based on interviews with numerous market participants indicating a distinction in the expectations of near-term cost inflation (i.e., related to labor and supplies) versus long-term income growth that drives appreciation. Any exceptions to the application of the assumed underlying inflation and EBITDA Less Replacement Reserve growth rates are discussed in our write-up of individual income and expense items.

Forecast of Revenue and Expense

Based on an analysis that will be detailed throughout this section, we have formulated a forecast of income and expense. The following table presents a detailed forecast through the fifth projection year, including amounts per available room and per occupied room. The second table illustrates our ten-year forecast of income and expense, presented with a lesser degree of detail. The forecasts pertain to years that begin on January 1, 2025, expressed in inflated dollars for each year.

FIGURE 7-4 DETAILED FORECAST OF INCOME AND EXPENSE

	2025	(Calendar Year)			2026				2027				Stabilized				2029			
Number of Rooms:	240				240				240				240				240			
Occupancy:	70%				75%				78%				80%				80%			
Average Rate:	$243.63				$258.87				$272.08				$280.24				$288.65			
RevPAR:	$170.54				$194.15				$212.22				$224.19				$230.92			
Days Open:	365				365				365				365				365			
Occupied Rooms:	61,320	%Gross	PAR	POR	65,700	%Gross	PAR	POR	68,328	%Gross	PAR	POR	70,080	%Gross	PAR	POR	70,080	%Gross	PAR	POR
OPERATING REVENUE																				
Rooms	$14,940	64.0 %	$62,250	$243.64	$17,008	64.0 %	$70,867	$258.87	$18,590	63.5 %	$77,458	$272.07	$19,639	63.7 %	$81,829	$280.24	$20,228	63.7 %	$84,283	$288.64
Food	3,540	15.2	14,750	57.73	4,048	15.2	16,866	61.61	4,518	15.4	18,826	66.13	4,743	15.4	19,761	67.68	4,885	15.4	20,354	69.71
Beverage	2,448	10.5	10,200	39.92	2,870	10.8	11,957	43.68	3,302	11.3	13,757	48.32	3,449	11.2	14,372	49.22	3,553	11.2	14,803	50.70
Other Operated Departments	152	0.7	633	2.48	160	0.6	665	2.43	166	0.6	692	2.43	172	0.6	719	2.46	178	0.6	740	2.53
Parking	888	3.8	3,699	14.48	945	3.6	3,937	14.38	992	3.4	4,134	14.52	1,035	3.4	4,312	14.77	1,066	3.4	4,441	15.21
Resort Fee	1,058	4.5	4,408	17.25	1,222	4.6	5,092	18.60	1,374	4.7	5,725	20.11	1,440	4.7	5,998	20.54	1,483	4.7	6,178	21.16
Miscellaneous Income	304	1.3	1,266	4.95	319	1.2	1,329	4.86	332	1.1	1,385	4.86	345	1.1	1,437	4.92	355	1.1	1,480	5.07
Total Operating Revenues	23,330	100.0	97,207	380.46	26,571	100.0	110,712	404.43	29,275	100.0	121,978	428.44	30,823	100.0	128,428	439.82	31,747	100.0	132,280	453.01
DEPARTMENTAL EXPENSES *																				
Rooms	4,098	27.4	17,074	66.83	4,332	25.5	18,049	65.93	4,530	24.4	18,876	66.30	4,713	24.0	19,639	67.26	4,855	24.0	20,228	69.27
Food & Beverage	5,113	85.4	21,306	83.39	5,520	79.8	23,000	84.02	5,920	75.7	24,667	86.64	6,144	75.0	25,600	87.67	6,328	75.0	26,368	90.30
Other Operated Departments	109	71.9	455	1.78	113	70.9	471	1.72	117	70.4	487	1.71	121	70.0	503	1.72	124	70.0	518	1.77
Parking	372	41.9	1,549	6.06	386	40.9	1,610	5.88	400	40.4	1,668	5.86	414	40.0	1,725	5.91	426	40.0	1,776	6.08
Total Expenses	9,692	41.5	40,384	158.06	10,351	39.0	43,130	157.55	10,968	37.5	45,698	160.51	11,392	37.0	47,467	162.56	11,734	37.0	48,891	167.43
DEPARTMENTAL INCOME	13,638	58.5	56,823	222.40	16,220	61.0	67,582	246.88	18,307	62.5	76,279	267.93	19,431	63.0	80,961	277.26	20,013	63.0	83,389	285.58
UNDISTRIBUTED OPERATING EXPENSES																				
Administrative & General	1,430	6.1	5,958	23.32	1,508	5.7	6,283	22.95	1,579	5.4	6,580	23.11	1,636	5.3	6,816	23.34	1,685	5.3	7,021	24.04
Info & Telecom Systems	260	1.1	1,083	4.24	274	1.0	1,142	4.17	287	1.0	1,196	4.20	297	1.0	1,239	4.24	306	1.0	1,276	4.37
Marketing	1,300	5.6	5,417	21.20	1,371	5.2	5,711	20.86	1,436	4.9	5,982	21.01	1,487	4.8	6,196	21.22	1,532	4.8	6,382	21.86
Franchise Fee	1,270	5.4	5,291	20.71	1,446	5.4	6,024	22.00	1,580	5.4	6,584	23.13	1,669	5.4	6,955	23.82	1,719	5.4	7,164	24.53
Prop. Operations & Maint.	780	3.3	3,250	12.72	822	3.1	3,427	12.52	861	2.9	3,589	12.61	892	2.9	3,718	12.73	919	2.9	3,829	13.11
Utilities	1,040	4.5	4,333	16.96	1,097	4.1	4,569	16.69	1,149	3.9	4,786	16.81	1,190	3.9	4,957	16.98	1,225	3.9	5,106	17.49
Total Expenses	6,080	26.0	25,333	99.15	6,517	24.5	27,156	99.20	6,892	23.5	28,718	100.87	7,172	23.3	29,882	102.34	7,387	23.3	30,779	105.41
GROSS OPERATING PROFIT	7,558	32.5	31,490	123.25	9,702	36.5	40,426	147.67	11,415	39.0	47,562	167.06	12,259	39.7	51,079	174.93	12,627	39.7	52,611	180.17
Management Fee	700	3.0	2,916	11.41	797	3.0	3,321	12.13	878	3.0	3,659	12.85	925	3.0	3,853	13.19	952	3.0	3,968	13.59
INCOME BEFORE NON-OPR. INC. & EXP.	6,858	29.5	28,574	111.84	8,905	33.5	37,105	135.54	10,537	36.0	43,902	154.21	11,334	36.7	47,226	161.73	11,674	36.7	48,642	166.58
NON-OPERATING INCOME & EXPENSE																				
Property Taxes	1,105	4.7	4,604	18.02	1,138	4.3	4,742	17.32	1,172	4.0	4,884	17.16	1,207	3.9	5,031	17.23	1,244	3.9	5,182	17.75
Insurance	269	1.2	1,120	4.39	277	1.0	1,154	4.22	285	1.0	1,189	4.18	294	1.0	1,224	4.19	303	1.0	1,261	4.32
Total Expenses	1,374	5.9	5,724	22.40	1,415	5.3	5,896	21.54	1,458	5.0	6,073	21.33	1,501	4.9	6,255	21.42	1,546	4.9	6,443	22.06
EBITDA	5,484	23.6	22,850	89.43	7,490	28.2	31,208	114.00	9,079	31.0	37,829	132.87	9,833	31.8	40,971	140.31	10,128	31.8	42,199	144.52
Reserve for Replacement	467	2.0	1,944	7.61	797	3.0	3,321	12.13	1,171	4.0	4,879	17.14	1,233	4.0	5,137	17.59	1,270	4.0	5,291	18.12
EBITDA LESS RESERVE	$5,017	21.6 %	$20,906	$81.82	$6,693	25.2 %	$27,887	$101.87	$7,908	27.0 %	$32,950	$115.74	$8,600	27.8 %	$35,834	$122.72	$8,858	27.8 %	$36,908	$126.40

*Departmental expenses are expressed as a percentage of departmental revenues.

FIGURE 7-5 TEN-YEAR FORECAST OF INCOME AND EXPENSE

	2025		2026		2027		2028		2029	
Number of Rooms:	**240**		**240**		**240**		**240**		**240**	
Occupied Rooms:	**61,320**		**65,700**		**68,328**		**70,080**		**70,080**	
Occupancy:	**70%**		**75%**		**78%**		**80%**		**80%**	
Average Rate:	**$243.63**	**% of**	**$258.87**	**% of**	**$272.08**	**% of**	**$280.24**	**% of**	**$288.65**	**% of**
RevPAR:	**$170.54**	**Gross**	**$194.15**	**Gross**	**$212.22**	**Gross**	**$224.19**	**Gross**	**$230.92**	**Gross**
OPERATING REVENUE										
Rooms	$14,940	64.0 %	$17,008	64.0 %	$18,590	63.5 %	$19,639	63.7 %	$20,228	63.7 %
Food	3,540	15.2	4,048	15.2	4,518	15.4	4,743	15.4	4,885	15.4
Beverage	2,448	10.5	2,870	10.8	3,302	11.3	3,449	11.2	3,553	11.2
Other Operated Departments	152	0.7	160	0.6	166	0.6	172	0.6	178	0.6
Parking	888	3.8	945	3.6	992	3.4	1,035	3.4	1,066	3.4
Miscellaneous Income	304	1.3	319	1.2	332	1.1	345	1.1	355	1.1
Total Operating Revenues	23,330	100.0	26,571	100.0	29,275	100.0	30,823	100.0	31,747	100.0
DEPARTMENTAL EXPENSES *										
Rooms	4,098	27.4	4,332	25.5	4,530	24.4	4,713	24.0	4,855	24.0
Food & Beverage	5,113	85.4	5,520	79.8	5,920	75.7	6,144	75.0	6,328	75.0
Other Operated Departments	109	71.9	113	70.9	117	70.4	121	70.0	124	70.0
Parking	372	41.9	386	40.9	400	40.4	414	40.0	426	40.0
Total Expenses	9,692	41.5	10,351	39.0	10,968	37.5	11,392	37.0	11,734	37.0
DEPARTMENTAL INCOME	13,638	58.5	16,220	61.0	18,307	62.5	19,431	63.0	20,013	63.0
UNDISTRIBUTED OPERATING EXPENSES										
Administrative & General	1,430	6.1	1,508	5.7	1,579	5.4	1,636	5.3	1,685	5.3
Info & Telecom Systems	260	1.1	274	1.0	287	1.0	297	1.0	306	1.0
Marketing	1,300	5.6	1,371	5.2	1,436	4.9	1,487	4.8	1,532	4.8
Franchise Fee	1,270	5.4	1,446	5.4	1,580	5.4	1,669	5.4	1,719	5.4
Prop. Operations & Maint.	780	3.3	822	3.1	861	2.9	892	2.9	919	2.9
Utilities	1,040	4.5	1,097	4.1	1,149	3.9	1,190	3.9	1,225	3.9
Total Expenses	6,080	26.0	6,517	24.5	6,892	23.5	7,172	23.3	7,387	23.3
GROSS OPERATING PROFIT	7,558	32.5	9,702	36.5	11,415	39.0	12,259	39.7	12,627	39.7
Management Fee	700	3.0	797	3.0	878	3.0	925	3.0	952	3.0
INCOME BEFORE NON-OPR. INC. & EXP.	6,858	29.5	8,905	33.5	10,537	36.0	11,334	36.7	11,674	36.7
NON-OPERATING INCOME & EXPENSE										
Property Taxes	1,105	4.7	1,138	4.3	1,172	4.0	1,207	3.9	1,244	3.9
Insurance	269	1.2	277	1.0	285	1.0	294	1.0	303	1.0
Total Expenses	1,374	5.9	1,415	5.3	1,458	5.0	1,501	4.9	1,546	4.9
EBITDA	5,484	23.6	7,490	28.2	9,079	31.0	9,833	31.8	10,128	31.8
Reserve for Replacement	467	2.0	797	3.0	1,171	4.0	1,233	4.0	1,270	4.0
EBITDA LESS RESERVE	$5,017	21.6 %	$6,693	25.2 %	$7,908	27.0 %	$8,600	27.8 %	$8,858	27.8 %

	2030		2031		2032		2033		2034	
Number of Rooms:	**240**		**240**		**240**		**240**		**240**	
Occupied Rooms:	**70,080**		**70,080**		**70,080**		**70,080**		**70,080**	
Occupancy:	**80%**		**80%**		**80%**		**80%**		**80%**	
Average Rate:	**$297.30**	**% of**	**$306.22**	**% of**	**$315.41**	**% of**	**$324.87**	**% of**	**$334.62**	**% of**
RevPAR:	**$237.84**	**Gross**	**$244.98**	**Gross**	**$252.33**	**Gross**	**$259.90**	**Gross**	**$267.70**	**Gross**
OPERATING REVENUE										
Rooms	$20,835	63.7 %	$21,460	63.7 %	$22,104	63.8 %	$22,767	63.9 %	$23,450	63.9 %
Food	5,032	15.4	5,183	15.4	5,338	15.4	5,498	15.4	5,663	15.4
Beverage	3,659	11.2	3,769	11.2	3,882	11.2	3,999	11.2	4,119	11.2
Other Operated Departments	183	0.6	188	0.6	194	0.6	200	0.6	206	0.6
Parking	1,098	3.4	1,131	3.4	1,165	3.4	1,200	3.4	1,236	3.4
Miscellaneous Income	366	1.1	377	1.1	388	1.1	400	1.1	412	1.1
Total Operating Revenues	32,700	100.0	33,681	100.0	34,644	100.0	35,636	100.0	36,705	100.0
DEPARTMENTAL EXPENSES *										
Rooms	5,000	24.0	5,150	24.0	5,305	24.0	5,464	24.0	5,628	24.0
Food & Beverage	6,518	75.0	6,714	75.0	6,915	75.0	7,123	75.0	7,336	75.0
Other Operated Departments	128	70.0	132	70.0	136	70.0	140	70.0	144	70.0
Parking	439	40.0	452	40.0	466	40.0	480	40.0	494	40.0
Total Expenses	12,086	37.0	12,448	37.0	12,822	37.0	13,206	37.1	13,603	37.1
DEPARTMENTAL INCOME	20,614	63.0	21,232	63.0	21,822	63.0	22,430	62.9	23,103	62.9
UNDISTRIBUTED OPERATING EXPENSES										
Administrative & General	1,735	5.3	1,788	5.3	1,841	5.3	1,895	5.3	1,952	5.3
Info & Telecom Systems	316	1.0	325	1.0	335	1.0	345	1.0	355	1.0
Marketing	1,578	4.8	1,625	4.8	1,673	4.8	1,723	4.8	1,775	4.8
Franchise Fee	1,771	5.4	1,824	5.4	1,879	5.4	1,935	5.4	1,993	5.4
Prop. Operations & Maint.	947	2.9	975	2.9	1,004	2.9	1,034	2.9	1,065	2.9
Utilities	1,262	3.9	1,300	3.9	1,339	3.9	1,378	3.9	1,420	3.9
Total Expenses	7,609	23.3	7,837	23.3	8,070	23.3	8,310	23.3	8,559	23.3
GROSS OPERATING PROFIT	13,005	39.7	13,396	39.7	13,753	39.7	14,120	39.6	14,544	39.6
Management Fee	981	3.0	1,010	3.0	1,039	3.0	1,069	3.0	1,101	3.0
INCOME BEFORE NON-OPR. INC. & EXP.	12,024	36.7	12,385	36.7	12,713	36.7	13,051	36.6	13,443	36.6
NON-OPERATING INCOME & EXPENSE										
Property Taxes	1,281	3.9	1,319	3.9	1,359	3.9	1,400	3.9	1,442	3.9
Insurance	312	1.0	321	1.0	331	1.0	341	1.0	351	1.0
Total Expenses	1,593	4.9	1,640	4.9	1,690	4.9	1,740	4.9	1,793	4.9
EBITDA	10,432	31.8	10,745	31.8	11,024	31.8	11,311	31.7	11,650	31.7
Reserve for Replacement	1,308	4.0	1,347	4.0	1,386	4.0	1,425	4.0	1,468	4.0
EBITDA LESS RESERVE	$9,124	27.8 %	$9,397	27.8 %	$9,638	27.8 %	$9,885	27.7 %	$10,182	27.7 %

The following description sets forth the basis for the forecast of income and expense. We anticipate that it will take four years for the proposed subject hotel to reach a stabilized level of operation. Each revenue and expense item has been forecast based upon our review of the proposed subject hotel's operating budget and comparable income and expense statements. The forecast is based upon calendar years beginning January 1, 2025, expressed in inflated dollars for each year.

Revenues associated with the proposed subject hotel's food and beverage (F&B) department, other operated departments, and miscellaneous income category have been forecast to reflect the hotel's planned facilities and amenities. Expense levels fall within a range of reasonableness given the provided comparable operating statements; furthermore, franchise and management fees are set forth in accordance with our assumptions provided earlier in our report.

Rooms Revenue

Rooms revenue is determined by two variables: occupancy and average rate. We projected occupancy and average rate in a previous section of this report. The proposed subject hotel is expected to stabilize at an occupancy level of 80% with an average rate of $280.24 in 2028. Following the stabilized year, the proposed subject hotel's ADR is projected to increase along with the underlying rate of growth assigned to EBITDA Less Replacement Reserve.

Food and Beverage Revenue

Food and beverage (F&B) revenue is generated by a hotel's restaurants, lounges, coffee shops, snack bars, banquet rooms, and room service. In addition to providing a source of revenue, these outlets serve as an amenity that assists in the sale of guestrooms. With the exception of properties with active lounges or banquet facilities that draw local residents, in-house guests generally represent a substantial percentage of a hotel's F&B patrons. In the case of the Proposed Chinatown Hotel, the F&B department will include a speakeasy, a lobby café/bar, a rooftop restaurant, and a rooftop bar & lounge; moreover, banquet space is expected to encompass 7,172 square feet.

Although F&B revenue varies directly with changes in occupancy, the small portion generated by banquet sales and outside capture is relatively fixed.

FIGURE 7-6 FOOD AND BEVERAGE REVENUE

	Comparable Operating Statements					Proposed Subject Property Forecast	
	#1	#2	#3	#4	#5	2025	Deflated Stabilized
Food & Beverage Revenue							
Percentage of Revenue	16.3 %	34.1 %	16.5 %	0.0 %	6.5 %	25.7 %	26.6 %
Per Available Room	$16,793	$57,820	$15,387	$0	$5,285	$24,950	$27,740
Per Occupied Room	$50.19	$218.50	$42.96	$0.00	$16.04	$97.65	$95.00

HVS

Other Operated Departments Revenue

According to the Uniform System of Accounts, other operated departments include any major or minor operated department other than rooms and F&B.

Parking Income

According to the developer, the proposed subject hotel is expected to offer only valet parking. We forecast the proposed subject hotel's parking income to stabilize at $14.77 per occupied room by the stabilized year, 2028.

Resort Fee Income

We have assumed the proposed subject hotel will charge a resort fee, which typically includes the use of services and amenities such as Internet access, local telephone calls, fitness room access, pool access, and in-room amenities. The following table illustrates resort fees at hotels within the competitive set.

FIGURE 7-7 RESORT FEE COMPARABLES

Property	Resort Fee	Self-Parking	Valet-Parking
The Laylow, Autograph Collection	$29.00	$39.00	$49.00
Hyatt Centric Waikiki Beach	33.00	42.00	45.00
The Modern Honolulu	38.50	None	35.00
Surfjack Hotel & Swim Club	25.00	None	35.00
Embassy Suites by Hilton Waikiki Beach Walk	30.00	None	40.00
Aston at the Executive Centre Hotel	None	23.00	None
Embassy Suites by Hilton O'ahu Kapolei	None	25.00	None
Hampton by Hilton O'ahu Kapolei	None	Free	None
Residence Inn by Marriott O'ahu Kapolei	None	25.00	None
Hilton Waikiki Beach	30.00	None	39.00
Waikiki Beachcomber by Outrigger	30.00	None	40.00
DoubleTree by Hilton Alana Waikiki	30.00	40.00	None

We forecast the proposed subject hotel's resort fee income to stabilize at $20.54 per occupied room by the stabilized year, 2028. Our projection of resort fee income is presented in the following table.

FIGURE 7-8 RESORT FEE INCOME

Inflation Assumptions	*2.0%*	*2.0%*	*2.0%*	*2.0%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*
Calendar Year	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
Occupied Room Nights					61,314	65,693	68,329	70,078	70,078
Less: Group Room Nights					6,003	7,805	9,080	9,815	9,815
Adjusted Occupied Room Nights					55,311	57,888	59,249	60,263	60,263
Resort Fee Per Night	$25.00	$25.50	$26.01	$26.53	$27.33	$28.15	$28.99	$29.86	$30.76
Adjusted Occupied Room Nights					55,311	57,888	59,249	60,263	60,263
Assumed Capture Rate					70.0%	75.0%	80.0%	80.0%	80.0%
Resort Fee Revenue					$1,058,000	$1,221,980	$1,374,106	$1,439,557	$1,482,743

Miscellaneous Income

The miscellaneous income sources comprise those other than guestrooms, F&B, and the other operated departments. Changes in this revenue item through the projection period result from the application of the underlying inflation rate and projected changes in occupancy.

FIGURE 7-9 MISCELLANEOUS INCOME

	Comparable Operating Statements					Proposed Subject Property Forecast	
	#1	**#2**	**#3**	**#4**	**#5**	**2025**	**Deflated Stabilized**
Percentage of Revenue	0.0 %	3.3 %	0.4 %	0.0 %	6.4 %	1.3 %	1.1 %
Per Available Room	$26	$5,620	$382	$0	$5,218	$1,266	$1,168
Per Occupied Room	$0.08	$21.24	$1.07	$0.00	$15.84	$4.95	$4.00

Rooms Expense

Rooms expense consists of items related to the sale and upkeep of guestrooms and public space. Salaries, wages, and employee benefits account for a substantial portion of this category. Although payroll varies somewhat with occupancy, and managers can generally scale the level of service staff on hand to meet an expected occupancy level, much of a hotel's payroll is fixed. A base level of front desk personnel, housekeepers, and supervisors must be maintained at all times. As a result, salaries, wages, and employee benefits are only moderately sensitive to changes in occupancy.

Commissions and reservations are usually based on room sales and, thus, are highly sensitive to changes in occupancy and average rate. While guest supplies vary 100% with occupancy, linens and other operating expenses are only slightly affected by volume.

HVS

FIGURE 7-10 ROOMS EXPENSE

	Comparable Operating Statements					Proposed Subject Property Forecast	
	#1	#2	#3	#4	#5	2025	Deflated Stabilized
Percentage of Revenue	27.2 %	28.6 %	25.6 %	29.7 %	24.0 %	27.4 %	24.0 %
Per Available Room	$19,883	$26,859	$18,628	$13,462	$16,900	$17,074	$15,961
Per Occupied Room	$59.43	$101.50	$52.01	$43.02	$51.31	$66.83	$54.66

Food and Beverage Expense

Food expenses consist of items necessary for the primary operation of a hotel's food and banquet facilities. The costs associated with food sales and payroll are moderately to highly correlated to food revenues. Items such as china, linen, and uniforms are less dependent on volume. Although the other expense items are basically fixed, they represent a relatively insignificant factor. Beverage expenses consist of items necessary for the operation of a hotel's lounge and bar areas. The costs associated with beverage sales and payroll are moderately to highly correlated to beverage revenues.

FIGURE 7-11 FOOD AND BEVERAGE EXPENSE

	Comparable Operating Statements					Proposed Subject Property Forecast	
	#1	#2	#3	#4	#5	2025	Deflated Stabilized
Percentage of Revenue	98.6 %	78.9 %	93.5 %	0.0 %	75.6 %	85.4 %	75.0 %
Per Available Room	$16,557	$45,649	$14,383	$0	$3,997	$21,306	$20,805
Per Occupied Room	$49.49	$172.50	$40.16	$0.00	$12.13	$83.39	$71.25

Other Operated Departments Expense

Other operated departments expense includes all expenses reflected in the summary statements for the divisions associated in these categories, as discussed previously in this chapter.

Parking Expense

We have projected a stabilized expense ratio of 40.0% in 2028.

Administrative and General Expense

Administrative and general expense includes the salaries and wages of all administrative personnel who are not directly associated with a particular department. Expense items related to the management and operation of the property are also allocated to this category.

Most administrative and general expenses are relatively fixed. The exceptions are cash overages and shortages; commissions on credit card charges; provision for doubtful accounts, which are moderately affected by the number of transactions or total revenue; and salaries, wages, and benefits, which are very slightly influenced by volume.

FIGURE 7-12 ADMINISTRATIVE AND GENERAL EXPENSE

	Comparable Operating Statements					Proposed Subject Property Forecast	
	#1	#2	#3	#4	#5	2025	Deflated Stabilized
Percentage of Revenue	6.2 %	8.0 %	5.3 %	7.0 %	7.2 %	6.1 %	5.3 %
Per Available Room	$6,373	$13,587	$4,919	$3,520	$5,939	$5,958	$5,539
Per Occupied Room	$19.05	$51.34	$13.74	$11.25	$18.03	$23.32	$18.97

Information and Telecommunications Systems Expense

Information and telecommunications systems expense consists of all costs associated with a hotel's technology infrastructure. This includes the costs of cell phones, administrative call and Internet services, and complimentary call and Internet services. Expenses in this category are typically organized by type of technology or the area benefiting from the technology solution.

FIGURE 7-13 INFORMATION & TELECOMMUNICATIONS SYSTEMS EXPENSE

	Comparable Operating Statements					Proposed Subject Property Forecast	
	#1	#2	#3	#4	#5	2025	Deflated Stabilized
Percentage of Revenue	1.5 %	0.0 %	1.1 %	0.0 %	0.5 %	1.1 %	1.0 %
Per Available Room	$1,513	$0	$1,028	$0	$413	$1,083	$1,007
Per Occupied Room	$4.52	$0.00	$2.87	$0.00	$1.25	$4.24	$3.45

Marketing Expense

Marketing expense consists of all costs associated with advertising, sales, and promotion; these activities are intended to attract and retain customers. Marketing can be used to create an image, develop customer awareness, and stimulate patronage of a property's various facilities.

The marketing category is unique in that all expense items, with the exception of fees and commissions, are totally controlled by management. Most hotel operators establish an annual marketing budget that sets forth all planned expenditures. If the budget is followed, total marketing expenses can be projected accurately.

Marketing expenditures are unusual because, although there is a lag period before results are realized, the benefits are often extended over a long period. Depending on the type and scope of the advertising and promotion program implemented, the lag time can be as short as a few weeks or as long as several years. However, the favorable results of an effective marketing campaign tend to linger, and a property often enjoys the benefits of concentrated sales efforts for many months.

FIGURE 7-14 MARKETING EXPENSE

	Comparable Operating Statements					Proposed Subject Property Forecast	
	#1	#2	#3	#4	#5	2025	Deflated Stabilized
Percentage of Revenue	7.0 %	6.3 %	3.5 %	5.8 %	5.2 %	5.6 %	4.8 %
Per Available Room	$7,237	$10,747	$3,272	$2,912	$4,291	$5,417	$5,036
Per Occupied Room	$21.63	$40.61	$9.14	$9.31	$13.03	$21.20	$17.25

Franchise Fee

According to the developer, the proposed subject hotel will operate as a soft-branded, lifestyle/boutique property. Although a specific franchise affiliation and/or brand has yet to be finalized, based upon a review of several published franchise fees for brands that fall within this category, we have selected a royalty fee of 5.0% of rooms revenue and a marketing assessment fee of 3.5% of rooms revenue in order to estimate the cost of a national franchise affiliation.

Marketing expense and franchise fees are often analyzed in total because hotels may account for some components of franchise expense in the marketing expense category. The subject property's total marketing and franchise expense has been forecast at 10.2% of total revenue on a stabilized basis; the comparable operating statements show a range from 5.2% to 10.5% of total revenue.

Property Operations and Maintenance

Property operations and maintenance expense is another expense category that is largely controlled by management. Except for repairs that are necessary to keep the facility open and prevent damage (e.g., plumbing, heating, and electrical items), most maintenance can be deferred for varying lengths of time.

Maintenance is an accumulating expense. If management elects to postpone performing a required repair, the expenditure has not been eliminated, only deferred until a later date. A lodging facility that operates with a lower-than-normal maintenance budget is likely to accumulate a considerable amount of deferred maintenance.

The age of a lodging facility has a strong influence on the required level of maintenance. A new or thoroughly renovated property is protected for several years by modern equipment and manufacturers' warranties. However, as a hostelry grows older, maintenance expenses escalate. A well-organized preventive maintenance system often helps delay deterioration, but most facilities face higher property operations and maintenance costs each year, regardless of the occupancy trend. The quality of initial construction can also have a direct impact on future maintenance requirements. The use of high-quality building materials and construction methods generally reduces the need for maintenance expenditures over the long term.

Changes in this expense item through the projection period result from the application of the underlying inflation rate and projected changes in occupancy.

FIGURE 7-15 PROPERTY OPERATIONS AND MAINTENANCE EXPENSE

	Comparable Operating Statements					Proposed Subject Property Forecast	
	#1	#2	#3	#4	#5	2025	Deflated Stabilized
Percentage of Revenue	2.8 %	4.9 %	3.8 %	4.6 %	3.1 %	3.3 %	2.9 %
Per Available Room	$2,895	$8,312	$3,540	$2,334	$2,533	$3,250	$3,022
Per Occupied Room	$8.65	$31.41	$9.88	$7.46	$7.69	$12.72	$10.35

Utilities Expense

The utilities consumption of a lodging facility takes several forms, including water and space heating, air conditioning, lighting, cooking fuel, and other miscellaneous power requirements. The most common sources of hotel utilities are electricity, natural gas, fuel oil, and steam. This category also includes the cost of water service.

Total energy cost depends on the source and quantity of fuel used. Electricity tends to be the most expensive source, followed by oil and gas. Although all hotels consume a sizable amount of electricity, many properties supplement their utility requirements with less expensive sources, such as gas and oil, for heating and cooking. The changes in this utilities line item through the projection period are a result of the application of the underlying inflation rate and projected changes in occupancy.

FIGURE 7-16 UTILITIES EXPENSE

	Comparable Operating Statements					Proposed Subject Property Forecast	
	#1	#2	#3	#4	#5	2025	Deflated Stabilized
Percentage of Revenue	2.9 %	3.9 %	4.1 %	4.7 %	3.9 %	4.5 %	3.9 %
Per Available Room	$3,028	$6,529	$3,817	$2,394	$3,182	$4,333	$4,029
Per Occupied Room	$9.05	$24.67	$10.66	$7.65	$9.66	$16.96	$13.80

Management Fee

Management expense consists of the fees paid to the managing agent contracted to operate the property. Some companies provide management services and a brand-name affiliation (first-tier management company), while others provide management services alone (second-tier management company). Some management contracts specify only a base fee (usually a percentage of total revenue), while others call for both a base fee and an incentive fee (usually a percentage of defined profit). Basic hotel management fees are often based on a percentage of total revenue, which means they have no fixed component. While base fees typically range from 2% to 4% of total revenue, incentive fees are deal specific and often are calculated as a percentage of income available after debt service and, in some cases, after a preferred return on equity. Total management fees for the proposed subject hotel have been forecast at 3.0% of total revenue.

Property Taxes

Property (or ad valorem) tax is one of the primary revenue sources of municipalities. Based on the concept that the tax burden should be distributed in proportion to the value of all properties within a taxing jurisdiction, a system of assessments is established. Theoretically, the assessed value placed on each parcel bears a definite relationship to market value, so properties with equal market values will have similar assessments and properties with higher and lower values will have proportionately larger and smaller assessments.

FIGURE 7-17 HISTORIC SUBJECT PROPERTY TAX BURDEN (BASE YEAR)

	Real Property			
	Assessed Value			
Year	Land	Improvements	Real Property Total	Percent Change
2018/19	$6,692,400	$52,800	$6,745,200	—
2019/20	6,935,800	5,600	6,941,400	2.9 %
2020/21	7,300,900	56,300	7,357,200	6.0
2021/22	7,665,900	53,500	7,719,400	4.9

Source: Honolulu County Assessor

Depending on the taxing policy of the municipality, property taxes can be based on the value of the real property or the value of the personal property and the real property. We have based our estimate of the proposed subject property's market value (for tax purposes) on an analysis of assessments of comparable hotel properties in the local municipality.

FIGURE 7-18 COUNTY-ASSESSED VALUE OF COMPARABLE HOTELS

Hotel	Year Open	Land	Improvements	Total
Subject Property	2025	$7,300,900	$56,300	$7,357,200
The Laylow, Autograph Collection	1973	$37,291,400	$42,674,300	$79,965,700
Hyatt Centric Waikiki Beach	2016	71,256,700	61,864,600	133,121,300
Surfjack Hotel & Swim Club	1962	14,468,600	10,161,400	24,630,000
Embassy Suites by Hilton Waikiki Beach Walk	2006	71,480,700	116,483,900	187,964,600
Embassy Suites by Hilton O'ahu Kapolei	2017	3,695,300	43,535,300	47,230,600
Hampton by Hilton O'ahu Kapolei	2016	1,913,100	25,565,000	27,478,100
Residence Inn by Marriott O'ahu Kapolei	2019	7,785,700	30,431,700	38,217,400
Hilton Waikiki Beach	1980	79,999,200	87,589,500	167,588,700
Waikiki Beachcomber by Outrigger	1971	84,578,500	73,135,900	157,714,400
DoubleTree by Hilton Alana Waikiki	1975	32,115,600	43,424,000	75,539,600
Assessments per Room	*# of Rms*			
The Laylow, Autograph Collection	251	$148,571	$170,017	$318,588
Hyatt Centric Waikiki Beach	230	309,812	268,977	578,788
Surfjack Hotel & Swim Club	111	130,348	91,544	221,892
Embassy Suites by Hilton Waikiki Beach Walk	369	193,715	315,675	509,389
Embassy Suites by Hilton O'ahu Kapolei	180	20,529	241,863	262,392
Hampton by Hilton O'ahu Kapolei	175	10,932	146,086	157,018
Residence Inn by Marriott O'ahu Kapolei	183	42,545	166,293	208,838
Hilton Waikiki Beach	601	133,110	145,740	278,850
Waikiki Beachcomber by Outrigger	496	170,521	147,451	317,973
DoubleTree by Hilton Alana Waikiki	317	101,311	136,984	238,295
Positioned Subject - Per Room	**240**	**$100,000**	**$200,000**	**$300,000**
Positioned Subject - Total		**$24,000,000**	**$48,000,000**	**$72,000,000**

Source: Honolulu County Assessor

We have positioned the future assessment levels of the subject site and proposed improvements based upon the illustrated comparable data. We have positioned the land assessment above that of the hotels located in Kapolei given the subject site's superior location in Downtown Honolulu. However, we note that this positioning remains below that of the more desirable comparables located in Waikiki. We have positioned the improvements assessment based on an average of the illustrated comparable data. Overall, the positioned assessments are well supported by the market data.

Tax rates are based on the city and county budgets, which change annually. The most recent tax rate in this jurisdiction was reported at 13.9%. The following table shows changes in the tax rate during the last several years.

FIGURE 7-19 COUNTY TAX RATES

Year	Real Property Millage Rate
2018/19	12.9
2019/20	13.4
2020/21	13.9

Source: Honolulu County Assessor

Based on comparable assessments and the tax rate information, the proposed subject property's projected property tax expense levels are calculated as follows.

FIGURE 7-20 PROJECTED PROPERTY TAX BURDEN (BASE YEAR)

	Real Property			
	Land	Improvements	Total	School
Positioned (Assessed Value)	$24,000,000	$48,000,000	$72,000,000	$0
Equalization Rate			1.00000	
Millage Rate			13.90000	0.00000
Tax Burden as of Current Assessment Year			$1,000,800	$0

FIGURE 7-21 PROJECTED PROPERTY TAX EXPENSE

	Real Property			
Year	Real Tax Burden (Positioned Prior to Increase)	Base Rate of Tax Burden Increase	% of Positioned Tax Burden	Taxes Payable
Positioned	$1,000,800	—		$1,000,800
2025	$1,000,800	10.4 %	100 %	1,104,964
2026	1,104,964	3.0	100	1,138,113
2027	1,138,113	3.0	100	1,172,256
2028	1,172,256	3.0	100	1,207,424

Insurance Expense

The insurance expense category consists of the cost of insuring the hotel and its contents against damage or destruction by fire, weather, sprinkler leakage, boiler explosion, plate glass breakage, and so forth. General insurance costs also include premiums relating to liability, fidelity, and theft coverage.

Insurance rates are based on many factors, including building design and construction, fire detection and extinguishing equipment, fire district, distance from the firehouse, and the area's fire experience. Insurance expenses do not vary with occupancy.

FIGURE 7-22 INSURANCE EXPENSE

	Comparable Operating Statements					Proposed Subject Property Forecast	
	#1	#2	#3	#4	#5	2025	Deflated Stabilized
Percentage of Revenue	0.8 %	1.1 %	0.4 %	1.5 %	1.1 %	1.2 %	1.0 %
Per Available Room	$862	$1,845	$392	$737	$914	$1,120	$995
Per Occupied Room	$2.58	$6.97	$1.09	$2.35	$2.78	$4.39	$3.41

Reserve for Replacement

Furniture, fixtures, and equipment are essential to the operation of a lodging facility, and their quality often influences a property's class. This category includes all non-real estate items that are capitalized, rather than expensed. The furniture, fixtures, and equipment of a hotel are exposed to heavy use and must be replaced at regular intervals. The useful life of these items is determined by their quality, durability, and the amount of guest traffic and use.

Periodic replacement of furniture, fixtures, and equipment is essential to maintain the quality, image, and income-producing potential of a lodging facility. Because capitalized expenditures are not included in the operating statement but affect an owner's cash flow, a forecast of income and expense should reflect these expenses in the form of an appropriate reserve for replacement.

The International Society of Hospitality Consultants (ISHC) oversees a major industry-sponsored study of the capital expenditure requirements for full-service/luxury, select-service, and extended-stay hotels. The most recent study was published in 2014.[7] Historical capital expenditures of well-maintained hotels were investigated through the compilation of data provided by most of the major hotel companies in the United States. A prospective analysis of future capital expenditure requirements was also performed based upon the cost to replace short- and long-lived building components over a hotel's economic life. The study showed that the

[7] The International Society of Hotel Consultants, *CapEx 2014, A Study of Capital Expenditure in the U.S. Hotel Industry*.

capital expenditure requirements for hotels vary significantly from year to year and depend upon both the actual and effective ages of a property. The results of this study showed that hotel lenders and investors are requiring reserves for replacement ranging from 4% to 5% of total revenue.

Based upon the results of our analysis, our review of the proposed subject asset, and current industry norms, a reserve for replacement equal to 4% of total revenues has been factored into our forecast of revenue and expense for funding the periodic replacement of the proposed subject property's furniture, fixtures, and equipment. This amount has been ramped up during the initial projection period.

Forecast of Revenue & Expense Conclusion

Projected total revenue, gross operating profit, and EBITDA Less Replacement Reserve are set forth in the following table.

FIGURE 7-23 FORECAST OF REVENUE AND EXPENSE CONCLUSION

		Total Revenue		Gross Operating Profit		House	EBITDA Less Replacement Reserve		
	Year	Total	% Change	Total	% Change	Profit Ratio	Total	% Change	As a % of Ttl Rev
Projected	2025	$23,330,000	—	$7,558,000	—	32.5 %	$5,017,000	—	21.6 %
	2026	26,571,000	13.9 %	9,702,000	28.4 %	36.5	6,693,000	33.4 %	25.2
	2027	29,275,000	10.2	11,415,000	17.7	39.0	7,908,000	18.2	27.0
	2028	30,823,000	5.3	12,259,000	7.4	39.7	8,600,000	8.8	27.8
	2029	31,747,000	3.0	12,627,000	3.0	39.7	8,858,000	3.0	27.8

8. Feasibility Analysis

Return on investment can be defined as the future benefits of an income-producing property relative to its acquisition or construction cost. The first step in performing a return-on-investment analysis is to determine the amount to be initially invested. For a proposed property, this amount is most likely to be the development cost of the hotel. Based on the total development cost, the individual investor will utilize a return-on-investment analysis to determine if the future cash flow from a current cash outlay meets his or her own investment criteria and at what level above or below this amount such an outlay exceeds or fails to meet these criteria.

As an individual or company considering investment in hotel real estate, the decision to use one's own cash, an equity partner's capital, or lender financing will be an internal one. Because hotels typically require a substantial investment, only the largest investors and hotel companies generally have the means to purchase properties with all cash. We would anticipate the involvement of some financing by a third party for the typical investor or for those who may be entering the market for hotel acquisitions at this time. In leveraged acquisitions and developments where investors typically purchase or build upon real estate with a small amount of equity cash (20% to 50%) and a large amount of mortgage financing (50% to 80%), it is important for the equity investor to acknowledge the return requirements of the debt participant (mortgagee), as well as his or her own return requirements. Therefore, we will begin our rate-of-return analysis by reviewing the debt requirements of typical hotel mortgagees.

Construction Cost Estimate

Because the subject property is a proposed hotel, we have reviewed the development budget for the proposed subject hotel in performing a cost analysis. The details of this budget, prepared by the developers of the Proposed Chinatown Hotel, are presented in the following table.

HVS

FIGURE 8-1 CONSTRUCTION BUDGET – PROPOSED SUBJECT PROPERTY

Component	Cost	Cost per Room
Hard Costs & Site Improvements		
Hard Cost Construction	$80,000,000	$333,333
Tenant Improvements	3,000,000	12,500
Subtotal Hard Cost & Site Improvements	$83,000,000	$345,833
FF&E		
FF&E	$5,520,000	$23,000
Kitchen & In-House Laundry	960,000	4,000
Technology & Telecommunications	480,000	2,000
Subtotal FF&E	$6,960,000	$29,000
Pre-Opening Costs and Working Capital		
OS&E	$600,000	$2,500
Pre-Opening Costs	600,000	2,500
Working Capital	500,000	2,083
Liquor License	50,000	208
Subtotal Pre-Opening and Working Capital	$1,750,000	$7,292
Soft Costs		
Architecture/Engineering	$2,698,800	$11,245
Financing Costs	2,015,996	8,400
Interior Design	1,799,200	7,497
Insurance	899,600	3,748
Branding Agency	500,000	2,083
Technical Services	252,000	1,050
Franchise Fees	115,000	479
Permitting	100,000	417
Miscellaneous	258,000	1,075
Subtotal Soft Costs	$8,638,596	$35,994
Subtotal (without Land and Developer's Fee)	$100,348,596	$418,119
Site Cost	$11,000,000	$45,833
Subtotal (without Developer's Fee)	$111,348,596	$463,952
Developer's Fee	$2,698,800	$11,245
Total	$114,047,396	$475,197

The construction budget provided by the developer appears to include all typical and adequate costs for the proposed subject property.

Mortgage Component

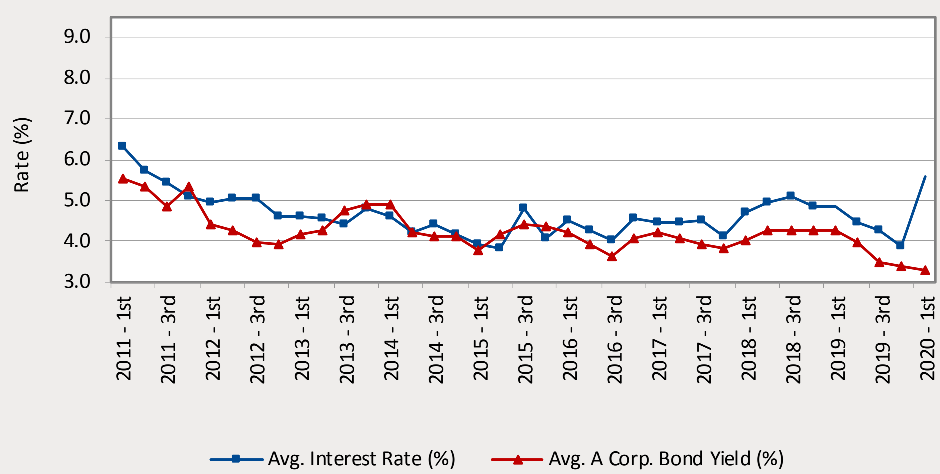
Hotel financing is typically available from a variety of lender types including commercial banks, mortgage REITs, private-debt investors, insurance companies, and CMBS lenders. Over the last several investment cycles, lenders have briefly pulled back from the lodging sector during periods of economic and/or operational distress. However, they have repeatedly been drawn back to the sector by the higher yields generated by hotel financing relative to other commercial real estate.

Data for the mortgage component may be developed from statistics of actual hotel mortgages made by long-term lenders. The American Council of Life Insurance, which represents 20 large life insurance companies, publishes quarterly information pertaining to the hotel mortgages issued by its member companies.

Because of the six- to nine-month lag time in reporting and publishing hotel mortgage statistics, it was necessary to update this information to reflect current lending practices. Our research indicates that the greatest degree of correlation exists between the average interest rate of a hotel mortgage and the concurrent yield on an average-A corporate bond.

The following chart summarizes the average mortgage interest rates of the hotel loans made by these lenders. For the purpose of comparison, the average-A corporate bond yield (as reported by *Moody's Bond Record*) is also shown.

FIGURE 8-2 AVERAGE MORTGAGE INTEREST RATES AND AVERAGE-A CORPORATE BOND YIELDS



Sources: American Council of Life Insurance, Moody's Bond Record, HVS

The relationship between hotel interest rates and the yields from the average-A corporate bond can be detailed through a regression analysis, which is expressed as follows.

$$Y = 0.95165343\ X + 0.81443286$$

Where: Y = Estimated Hotel Mortgage Interest Rate
X = Current Average-A Corporate Bond Yield
(Coefficient of correlation is 95%)

The June 17, 2021, average yield on average-A corporate bonds, as reported by Moody's Investors Service, was 3.13%. When used in the previously presented equation, a factor of 3.13 produces an estimated hotel/motel interest rate of 3.79% (rounded).

Over the extended period of low interest rates throughout much of the last decade, hotel debt was generally available at interest rates between 3.0% and 6.0%, depending on the type of debt, loan-to-value ratio, and the quality of the asset and its market.

In addition to the mortgage interest rate estimate derived from this regression analysis, HVS constantly monitors the terms of hotel mortgage loans made by our institutional lending clients. Fixed-rate debt is being priced at roughly 300 to 500 basis points over the corresponding yield on treasury notes. As of June 17, 2021, the yield on the ten-year T-bill was 1.57%, indicating an interest rate range from 4.6% to 6.6%. Over the course of the last decade, the federal funds rate remained relatively low, peaking at 2.25% to 2.5% in December 2018. Subsequently, in 2019, concern about the trade war and a slowing economy led the Fed to reduce rates three times to a target rate of 1.5% to 1.75%. The rate remained at this level until March 3, 2020, at which point the Federal Reserve (Fed) cut the target rate by a full 50 bps to 1.0% to 1.25%, the first time the agency has instituted an emergency rate cut since 2008; this was followed up by a cut to the benchmark interest rate all the way to 0% on March 16. The Fed instituted these rate cuts to address the growing economic impact from COVID-19. Furthermore, on March 23, the Fed pledged to maintain liquidity in debt markets by purchasing as many government and corporate-backed bonds as necessary. Going forward, the Fed has indicated its intention to keep rates at minimal levels until the economy has fully recovered. Although lenders have increased spreads on hotel loans to offset increased risk during the pandemic, those spreads have begun to narrow and are expected to return to more typical levels as hotel performance improves and the lending environment returns to normal.

Based on our analysis of the current lodging industry mortgage market and adjustments for specific factors, such as the property's site, proposed facility, and conditions in the Honolulu hotel market, it is our opinion that a 4.75% interest, 30-year amortization mortgage with a 0.062598 constant is appropriate for the proposed subject hotel. In the mortgage-equity analysis, we have applied a loan-to-cost ratio of 65%, which is reasonable to expect based on this interest rate and current parameters.

Equity Component

The remaining capital required for a hotel investment generally comes from the equity investor. The rate of return that an equity investor expects over a ten-year holding period is known as the equity yield. Unlike the equity dividend, which is a short-term rate of return, the equity yield specifically considers a long-term holding period (generally ten years), annual inflation-adjusted cash flows, property appreciation, mortgage amortization, and proceeds from a sale at the end of the holding period. To establish an estimate of the equity yield rate that a typical investor would require, we have used two sources of data: past appraisals and investor interviews.

Hotel Sales: Each appraisal performed by HVS uses a mortgage-equity approach in which income is projected and then discounted to a current value at rates reflecting the cost of debt and equity capital. In the case of hotels that were sold near the date of our valuation, we were able to derive the equity yield rate and unlevered discount rate by inserting the ten-year projection, total investment (purchase price and estimated capital expenditure and/or PIP), and debt assumptions into a valuation model and solving for the equity yield. The overall capitalization rates for the historical income and projected first-year income are based on the sales price "as is." The following table shows a representative sample of hotels that were sold on or about the time that we appraised them, along with the derived equity return and discount rates based on the purchase price and our forecast.

FIGURE 8-3 SAMPLE OF HOTELS SOLD

Hotel	Location	Number of Rooms	Date of Sale	Total Property Yield	Equity Yield	Overall Rate Based on Sales Price: Historical Year	Overall Rate Based on Sales Price: Projected Year One
Holiday Inn Casa Grande	Casa Grande, AZ	176	Jan-20	11.6 %	20.0 %	13.5 %	8.0 %
Marriott Griffin Gate Resort & Spa	Lexington, KY	409	Dec-19	11.0	19.3	11.7	9.3
Monarch Beach Resort	Dana Point, CA	400	Nov-19	8.1	14.9	5.5	5.3
Hilton Crystal City	Arlington, VA	393	Nov-19	10.6	18.3	6.3	8.3
Grand Hyatt Denver	Denver, CO	516	Sep-19	10.8	20.4	8.4	8.6
Kimpton Ink48 Hotel New York	New York, NY	222	Sep-19	10.6	16.6	2.4	3.6
Hyatt Regency Atlanta	Atlanta, GA	1,260	Sep-19	10.4	17.8	8.4	8.3
Hotel @ Fifth Avenue	New York, NY	182	Aug-19	10.1	15.1	1.7	5.5
Club Quarters Hotel Times Square	New York, NY	170	Aug-19	8.5	12.8	5.0	5.2
Irvine Marriott	Irvine, CA	496	Jul-19	9.4	15.8	7.2	7.2
Westin Tampa Bay	Tampa, FL	244	Jul-19	10.6	18.6	6.3	7.7
Westchester Marriott	Tarrytown, NY	444	Mar-19	11.3	19.2	7.1	7.7
Renaissance Cruise Port Hotel	Fort Lauderdale, FL	236	Mar-19	10.3	16.8	7.5	8.9
Marriott Mission Valley	San Diego, CA	353	Mar-19	10.4	16.9	8.2	7.8
Halcyon a Hotel in Cherry Creek	Denver, CO	154	Mar-19	9.6	16.7	4.0	6.3
Raleigh Hotel	Miami Beach, FL	105	Feb-19	10.4	16.3	–	4.0
Embassy Suites by Hilton	New York, NY	310	Jan-19	7.6	10.8	–	–
Snow King Resort	Jackson, WY	203	Dec-18	10.0	16.5	6.7	7.1
DoubleTree by Hilton Hotel	Westminster, CO	186	Dec-18	11.5	19.7	6.8	9.3
Topnotch at Stowe Resort & Spa	Stowe, VT	68	Dec-18	9.4	14.9	6.1	7.1
Cavallo Point Lodge	Sausalito, CA	142	Dec-18	9.0	15.2	5.8	6.1
Grand Hotel	Minneapolis, MN	140	Dec-18	10.1	16.2	10.5	8.3
Sheraton Suites	Wilmington, DE	223	Nov-18	11.3	20.3	11.0	11.5
Ritz-Carlton	Kapalua, HI	458	Oct-18	9.7	15.6	3.8	6.7
Embassy Suites by Hilton	Williamsburg, VA	161	Jul-18	10.7	19.4	6.5	8.0
Hilton Washington DC North	Gaithersburg, MD	301	Jul-18	12.5	20.6	6.5	8.0
Embassy Suites by Hilton	Napa, CA	205	Jul-18	8.1	12.2	6.5	6.0
Atlantic Terrace	Montauk, NY	96	Jul-18	10.0	16.1	4.5	5.2
Hyatt Centric	Santa Barbara, CA	200	Jul-18	9.6	15.3	5.5	5.8
Holiday Inn Hotel & Suites	Mesa, AZ	246	Jun-18	10.6	17.9	7.4	9.4
Waldorf Astoria Biltmore	Phoenix, AZ	606	Apr-18	9.5	15.9	6.8	7.0
Waldorf Astoria Grand Wailea	Wailea, HI	776	Apr-18	8.9	14.5	5.2	5.5
Embassy Suites by Hilton	Indianapolis, IN	221	Feb-18	10.9	18.9	8.0	9.1
Westin Tysons Corner	Falls Church, VA	407	Feb-18	10.4	18.1	8.3	8.7
DoubleTree University Area	Minneapolis, MN	140	Feb-18	9.7	17.0	—	7.7
Mystic Hotel Union Square	San Francisco, CA	82	Jan-18	8.9	15.2	6.2	6.4
DoubleTree Guest Suites	Tampa, FL	203	Jan-18	11.1	18.3	8.8	7.6
Sheraton Suites	Plantation, FL	263	Jan-18	12.5	21.2	7.4	9.1
			Min:	7.6 %	10.8 %	1.7 %	3.6 %
			Mean:	10.1	17.0	6.9	7.3
			Median:	10.4	16.8	6.7	7.7
			Max:	12.5	21.2	13.5	11.5

Source: HVS

Investor Interviews: We continuously monitor investor equity-yield requirements through discussions with hotel investors and brokers. During the previous period of market liquidity, we found that equity yield rates typically ranged from a low in the low-to-mid teens for high-barrier-to-entry "trophy assets"; the mid-to-upper teens for high-quality, institutional-grade assets in strong markets; and the upper teens to low 20s for quality assets in more typical markets. Equity yield rates have tended to exceed 20% for aging assets with functional obsolescence and/or other challenging property- or market-related issues. Equity return requirements typically vary with an investment's level of leverage.

The following table summarizes the range of equity yields indicated by hotel sales and investor interviews. We note that there tends to be a lag between the sales data and current market conditions; thus, the full effect of the change in the economy and capital markets may not yet be reflected.

FIGURE 8-4 SUMMARY OF EQUITY YIELD OR INTERNAL RATE OF RETURN REQUIREMENTS

	Pre-COVID		Current	
Source	Data Point Range	Average	Data Point Range	Average
HVS Hotel Sales - Full-Service & Luxury	10.8% - 21.2%	17.0%	—	—
HVS Hotel Sales - Select-Service & Extended-Stay	12.7% - 22.9%	18.5%	—	—
HVS Hotel Sales - Limited-Service	17% - 24.6%	19.7%	—	—
HVS Investor Interviews	13% - 25%			

Based on the assumed 65% loan-to-cost ratio, the risk inherent in achieving the projected income stream, and the anticipated market position of the subject property, it is our opinion that a typical equity investor would anticipate a 14.0% internal rate of return over a ten-year holding period, assuming that the investor obtains financing at the time of the project's completion at the loan-to-cost ratio and interest rate set forth.

Terminal Capitalization Rate

Inherent in this valuation process is the assumption of a sale at the end of the ten-year holding period. The estimated reversionary sale price as of that date is calculated by capitalizing the projected eleventh-year net income by an overall terminal capitalization rate. An allocation for the selling expenses is deducted from this sale price, and the net proceeds to the equity interest (also known as the equity residual) are calculated by deducting the outstanding mortgage balance from the reversion.

We have reviewed several recent investor surveys. The following chart summarizes the averages presented for terminal capitalization rates in various investor surveys during the past decade.

FIGURE 8-5 HISTORICAL TRENDS OF TERMINAL CAPITALIZATION RATES

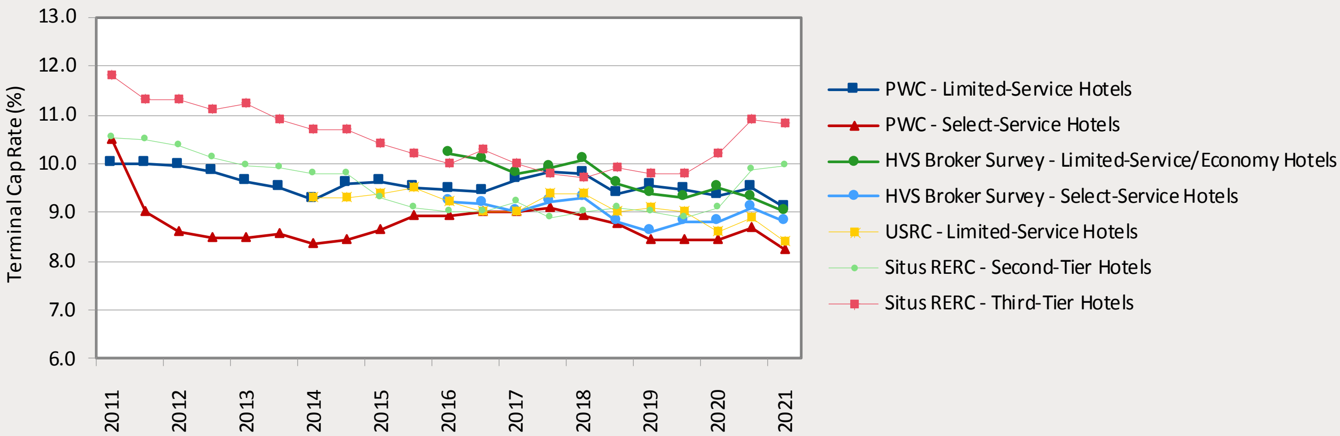


FIGURE 8-6 TERMINAL CAPITALIZATION RATES DERIVED FROM INVESTOR SURVEYS

	Pre-COVID		Current	
Source	**Data Point Range**	**Average**	**Data Point Range**	**Average**
HVS Brokers Survey	*Spring 2020 Survey*		*Spring 2021 Survey*	
Select-Service Hotels	6.0% - 10.5%	8.8%	7.0% - 10.0%	8.8%
Limited-Service & Economy Hotels	6.5% - 12.0%	9.5%	7.5% - 10.0%	9.0%
PWC Real Estate Investor Survey	*1st Quarter 2020 Survey*		*1st Quarter 2021 Survey*	
Select-Service Hotels	7.0% - 10.0%	8.4%	7.0% - 10.0%	8.3%
Limited-Service Hotels	7.75% - 12.0%	9.3%	8.0% - 11.0%	9.1%
USRC Hotel Investment Survey	*Winter 2020 Survey*		*Winter 2021 Survey*	
Limited-Service Hotels	6.5% - 9.3%	8.6%	7.5% - 9.3%	8.4%
Situs RERC Real Estate Report	*1st Quarter 2020 Report*		*4th Quarter 2020 Report*	
Second Tier Hotels	7.3% - 11.5%	9.1%	7.5% - 13.0%	10.0%
Third Tier Hotels	8.0% - 12.0%	10.2%	8.0% - 15.0%	10.8%

For purposes of this analysis, we have applied a terminal capitalization rate of 7.00%. Our final position for the terminal capitalization rate reflects the normalized market for hotel investments and also considers the subject property's attributes. Terminal cap rates are at the low end of the range for quality hotel assets in markets with high barriers to entry and at the high end of the range for older assets or for those suffering from functional obsolescence and/or weak market conditions, reflecting the market's recognition that certain assets have less opportunity for significant appreciation.

Mortgage-Equity Method

As the two participants in a real estate investment, investors and lenders must evaluate their equity and debt contributions based on their particular return requirements. After carefully weighing the risk associated with the projected economic benefits of a lodging investment, the participants will typically make their decision whether or not to invest in a hotel or resort by determining if their investment will provide an adequate yield over an established period. For the lender, this yield will typically reflect the interest rate required for a hotel mortgage over a period that can range from seven to ten years. The yield to the equity participant may consider not only the requirements of a particular investor but also the potential payments to cooperative or ancillary entities, such as limited partner payouts, stockholder dividends, and management company incentive fees.

The return on investment analysis in a hotel acquisition would not be complete without recognizing and reflecting the yield requirements of both the equity and debt participants. The analysis will now calculate the yields to the mortgage and equity participants during a ten-year projection period.

The annual debt service is calculated by multiplying the mortgage component by the mortgage constant.

Mortgage Component	$75,240,000
Mortgage Constant	0.062598
Annual Debt Service	$4,710,000

The yield to the lender based on a 65% debt contribution equates to an interest rate of 4.75%, which is calculated as follows.

FIGURE 8-7 RETURN TO THE LENDER

Year	Total Annual Debt Service		Present Worth of $1 Factor at 4.7%		Discounted Cash Flow
2025	$4,710,000	x	0.955054	=	$4,498,000
2026	4,710,000	x	0.912128	=	4,296,000
2027	4,710,000	x	0.871131	=	4,103,000
2028	4,710,000	x	0.831977	=	3,919,000
2029	4,710,000	x	0.794583	=	3,742,000
2030	4,710,000	x	0.758869	=	3,574,000
2031	4,710,000	x	0.724761	=	3,414,000
2032	4,710,000	x	0.692186	=	3,260,000
2033	4,710,000	x	0.661075	=	3,114,000
2034	65,446,000 *	x	0.631362	=	41,320,000
			Value of Mortgage Component		$75,240,000

*10th year debt service of $4,710,000 plus outstanding mortgage balance of $60,736,000

The following table illustrates the cash flow available to the equity position, after deducting the debt service from the projected net income.

FIGURE 8-8 NET INCOME TO EQUITY

Year	Net Income Available for Debt Service		Total Annual Debt Service		Net Income to Equity
2025	$5,017,000	-	$4,710,000	=	$307,000
2026	$6,693,000	-	4,710,000	=	$1,983,000
2027	$7,908,000	-	4,710,000	=	$3,198,000
2028	$8,600,000	-	4,710,000	=	$3,890,000
2029	$8,858,000	-	4,710,000	=	$4,148,000
2030	$9,124,000	-	4,710,000	=	$4,414,000
2031	$9,397,000	-	4,710,000	=	$4,687,000
2032	$9,638,000	-	4,710,000	=	$4,928,000
2033	$9,885,000	-	4,710,000	=	$5,175,000
2034	$10,182,000	-	4,710,000	=	$5,472,000

In order for the present value of the equity investment to equate to the $40,513,000 capital outlay, the investor must accept a 14.0% return, as shown in the following table.

FIGURE 8-9 EQUITY COMPONENT YIELD

Year	Net Income to Equity		Present Worth of $1 Factor at 14.0%		Discounted Cash Flow
2025	$307,000	x	0.877195	=	$269,000
2026	$1,983,000	x	0.769471	=	1,526,000
2027	$3,198,000	x	0.674976	=	2,159,000
2028	$3,890,000	x	0.592085	=	2,303,000
2029	$4,148,000	x	0.519374	=	2,154,000
2030	$4,414,000	x	0.455592	=	2,011,000
2031	$4,687,000	x	0.399643	=	1,873,000
2032	$4,928,000	x	0.350565	=	1,728,000
2033	$5,175,000	x	0.307514	=	1,591,000
2034	$92,306,000 *	x	0.269749	=	24,899,000
			Value of Equity Component		$40,513,000

*10th year net income to equity of $5,471,738 plus sales proceeds of $86,834,000

Discounted Cash Flow Analysis

The process of converting the projected income stream into an estimate of value via the DCF method is described as follows.

10. An appropriate discount rate is selected to apply to the projected net income before debt service. This rate reflects the "free and clear" internal rate of return to an all-cash purchaser or a blended rate of debt and equity return requirements. The discount rate takes into consideration the degree of perceived risk, anticipated income growth, market attitudes, and rates of return on other investment alternatives, as well as the availability and cost of financing. The discount rate is chosen by reviewing sales transactions and investor surveys and interviewing market participants.
11. A reversionary value reflecting the sales price of the property at the end of the ten-year holding period is calculated by capitalizing the eleventh-year net income by the terminal capitalization rate and deducting typical brokerage and legal fees.
12. Each year's forecasted net income before debt service and depreciation and the reversionary sales proceeds at the end of the ten-year holding period are converted to a present value by multiplying the cash flow by the chosen discount rate for that year in the forecast. The sum of the discounted cash flows equates to the value of the subject property.

The following chart summarizes the averages presented for discount rates in various investor surveys during the past decade.

FIGURE 8-10 HISTORICAL TRENDS OF DISCOUNT RATES

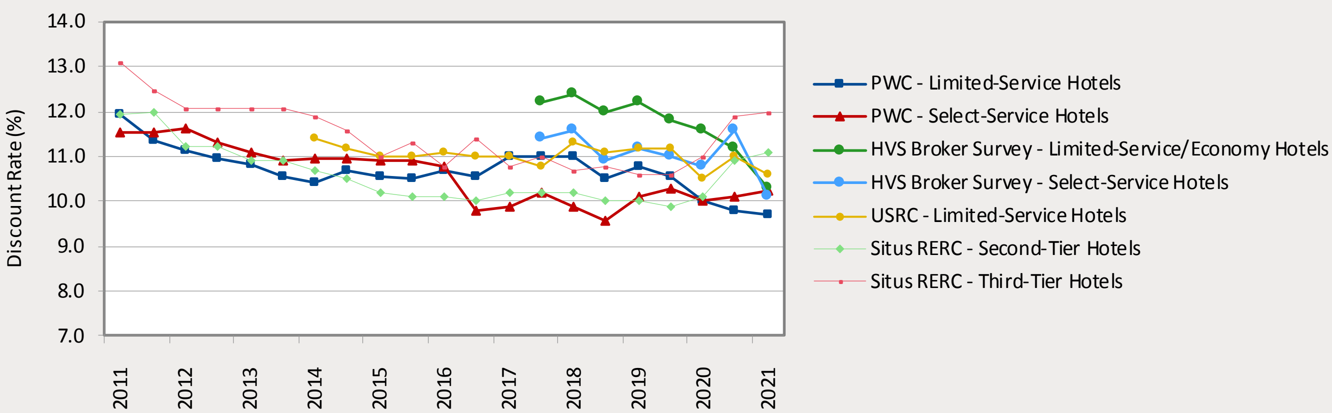


FIGURE 8-11 OVERALL DISCOUNT RATES DERIVED FROM SALES AND INVESTOR SURVEYS

	Pre-COVID		Current	
Source	**Data Point Range**	**Average**	**Data Point Range**	**Average**
HVS Hotel Sales - Full-Service & Luxury	7.6% - 12.5%	10.1%	—	—
HVS Hotel Sales - Select-Service & Extended-Stay	8.3% - 12.7%	10.7%	—	—
HVS Hotel Sales - Limited-Service	10% - 13.9%	11.5%	—	—
HVS Brokers Survey	*Spring 2020 Survey*		*Spring 2021 Survey*	
Select-Service Hotels	6.5% - 18.0%	10.8%	6.0% - 12.0%	10.1%
Limited-Service & Economy Hotels	6.5% - 20.0%	11.6%	5.5% - 12.0%	10.3%
PWC Real Estate Investor Survey	*1st Quarter 2020 Survey*		*1st Quarter 2021 Survey*	
Select-Service Hotels	8.0% - 12.0%	10.0%	8.0% - 12.0%	10.2%
Limited-Service Hotels	7.5% - 12.0%	10.0%	8.0% - 12.0%	9.7%
USRC Hotel Investment Survey	*Winter 2020 Survey*		*Winter 2021 Survey*	
Limited-Service Hotels	7.5% - 11.0%	10.5%	9.7% - 12.0%	10.6%
Situs RERC Real Estate Report	*1st Quarter 2020 Report*		*4th Quarter 2020 Report*	
Second Tier Hotels	6.5% - 13.5%	10.1%	7.5% - 16.0%	11.1%
Third Tier Hotels	9.5% - 13.5%	11.0%	8.0% - 18.0%	12.0%

We note that the averages illustrated in the previous table are derived from wide arrays of data points, and a range of reasonableness extends both lower and higher than the indicated data points. Based on our review of these surveys and sales transactions (see total property yields shown in the table titled *Sample of Hotels Sold*), as well as our interviews of market participants, we have selected a discount rate of 9.00% for our analysis.

Utilizing the discount rate set forth, the DCF procedure is summarized as follows.

FIGURE 8-12 DISCOUNTED CASH FLOW ANALYSIS

Year	EBITDA Less Reserve		Discount Factor @ 9.00%	Discounted Cash Flow
2025	$5,017,321		0.91743	$4,603,047
2026	6,692,900		0.84168	5,633,280
2027	7,908,018		0.77218	6,106,441
2028	8,600,070		0.70843	6,092,507
2029	8,857,937		0.64993	5,757,051
2030	9,123,803		0.59627	5,440,225
2031	9,397,477		0.54703	5,140,742
2032	9,637,856		0.50187	4,836,915
2033	9,885,000		0.46043	4,551,416
2034	157,751,000	*	0.42241	66,635,931
			Estimated Value	$114,797,555
			(SAY)	**$115,000,000**
			Per Room	**$479,000**

Reversion Analysis

11th Year's EBITDA Less Reserves	$10,487,190
Capitalization Rate	7.0%
Total Sales Proceeds	$149,817,000
Less: Transaction Costs @ 1.5%	2,247,255
Net Sales Proceeds	$147,569,745

*10th year net income of $10,182,000 plus sales proceeds of $147,569,745

Conclusion

In determining the potential feasibility of the Proposed Chinatown Hotel, we analyzed the lodging market, researched the area's economics, reviewed the estimated development cost, and prepared a ten-year forecast of income and expense, which was based on our review of the current and historical market conditions, as well as comparable income and expense statements.

The conclusion of this analysis indicates that an equity investor contributing $39,937,000 (roughly 35% of the $114,100,000 development cost) could expect to receive a 14.4% internal rate of return over a ten-year holding period, assuming that the investor obtains financing at the time of the project's completion at the loan-to-value ratio and interest rate set forth. The proposed subject hotel has an opportunity to accommodate an underserved niche in the market. Based on our market analysis, there is sufficient market support for the proposed Chinatown Hotel. Our conclusions are based primarily on the long-term strength of the greater Hawaii lodging market. Our review of investor surveys indicates equity returns ranging from 10.8% to 12.2%, with an average of 17.0%. Based on these parameters, the calculated return to the equity investor, 13.5%, is within the range of market-level returns given the anticipated cost of $114,100,000. We note that the calculated return is based upon the cost estimated by HVS, which includes the developer's administrative costs, as well as an entrepreneurial incentive.

The analysis is based on the extraordinary assumption that the described improvements have been completed as of the stated date of opening. The reader should understand that the completed subject property does not yet exist as of the date of this report. Our feasibility study does not address unforeseeable events that could alter the proposed project, and/or the market conditions reflected in the analyses; we assume that no significant changes, other than those anticipated and explained in this report, shall take place between the date of inspection and stated date of opening. The use of this extraordinary assumption may have affected the assignment results. We have made no other extraordinary assumptions specific to this feasibility study. However, several important general assumptions have been made that apply to this feasibility study and our studies of proposed hotels in general. These aspects are set forth in the Assumptions and Limiting Conditions chapter of this report.

9. Statement of Assumptions and Limiting Conditions

13. This report is set forth as a feasibility study of the proposed subject hotel; this is not an appraisal report.

14. This report is to be used in whole and not in part.

15. No responsibility is assumed for matters of a legal nature, nor do we render any opinion as to title, which is assumed marketable and free of any deed restrictions and easements. The property is evaluated as though free and clear unless otherwise stated.

16. We assume that there are no hidden or unapparent conditions of the sub-soil or structures, such as underground storage tanks, that would affect the property's development potential. No responsibility is assumed for these conditions or for any engineering that may be required to discover them.

17. We have not considered the presence of potentially hazardous materials or any form of toxic waste on the project site. We are not qualified to detect hazardous substances and urge the client to retain an expert in this field if desired.

18. The Americans with Disabilities Act (ADA) became effective on January 26, 1992. We have assumed the proposed hotel would be designed and constructed to be in full compliance with the ADA.

19. We have made no survey of the site, and we assume no responsibility in connection with such matters. Sketches, photographs, maps, and other exhibits are included to assist the reader in visualizing the property. It is assumed that the use of the described real estate will be within the boundaries of the property described, and that no encroachment will exist.

20. All information, financial operating statements, estimates, and opinions obtained from parties not employed by TS Worldwide, LLC are assumed true and correct. We can assume no liability resulting from misinformation.

21. Unless noted, we assume that there are no encroachments, zoning violations, or building violations encumbering the subject site.

22. The property is assumed to be in full compliance with all applicable federal, state, local, and private codes, laws, consents, licenses, and regulations (including the appropriate liquor license if applicable), and that all licenses, permits, certificates, franchises, and so forth can be freely renewed or transferred to a purchaser.

23. All mortgages, liens, encumbrances, leases, and servitudes have been disregarded unless specified otherwise.

24. None of this material may be reproduced in any form without our written permission, and the report cannot be disseminated to the public through advertising, public relations, news, sales, or other media.

25. We are not required to give testimony or attendance in court because of this analysis without previous arrangements and shall do so only when our standard per-diem fees and travel costs have been paid prior to the appearance.

26. If the reader is making a fiduciary or individual investment decision and has any questions concerning the material presented in this report, it is recommended that the reader contact us.

27. We take no responsibility for any events or circumstances that take place subsequent to the date of our field inspection.

28. The quality of a lodging facility's onsite management has a direct effect on a property's economic viability. The financial forecasts presented in this analysis assume responsible ownership and competent management. Any departure from this assumption may have a significant impact on the projected operating results.

29. The financial analysis presented in this report is based upon assumptions, estimates, and evaluations of the market conditions in the local and national economy, which may be subject to sharp rises and declines. Over the projection period considered in our analysis, wages and other operating expenses may increase or decrease because of market volatility and economic forces outside the control of the hotel’s management. We assume that the price of hotel rooms, food, beverages, and other sources of revenue to the hotel will be adjusted to offset any increases or decreases in related costs. We do not warrant that our estimates will be attained, but they have been developed based upon information obtained during the course of our market research and are intended to reflect the expectations of a typical hotel investor as of the stated date of the report.

30. This analysis assumes continuation of all Internal Revenue Servicetax code provisions as stated or interpreted on either the date of value or the date of our field inspection, whichever occurs first.

31. Many of the figures presented in this report were generated using sophisticated computer models that make calculations based on numbers carried out to three or more decimal places. In the interest of simplicity, most numbers have been rounded to the nearest tenth of a percent. Thus, these figures may be subject to small rounding errors.

32. It is agreed that our liability to the client is limited to the amount of the fee paid as liquidated damages. Our responsibility is limited to the client; the use of this report by third parties shall be solely at the risk of the client and/or third parties. The use of this report is also subject to the terms and conditions set forth in our engagement letter with the client.

33. Evaluating and comprising financial forecasts for hotels is both a science and an art. Although this analysis employs various mathematical calculations to provide value indications, the final forecasts are subjective and may be influenced by our experience and other factors not specifically set forth in this report.

34. This study was prepared by TS Worldwide, LLC. All opinions, recommendations, and conclusions expressed during the course of this assignment are rendered by the staff of TS Worldwide, LLC as employees, rather than as individuals.

10. Certification

The undersigned hereby certify that, to the best of our knowledge and belief:

35. the statements of fact presented in this report are true and correct;
36. the reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and are our personal, impartial, and unbiased professional analyses, opinions, and conclusions;
37. we have no present or prospective interest in the property that is the subject of this report and no personal interest with respect to the parties involved;
38. we have no bias with respect to the property that is the subject of this report or to the parties involved with this assignment;
39. our engagement in this assignment was not contingent upon developing or reporting predetermined results;
40. our compensation for completing this assignment is not contingent upon the development or reporting of a predetermined result or direction in performance that favors the cause of the client, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of this study;
41. our analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the Uniform Standards of Professional Appraisal Practice;
42. John Berean personally inspected the property described in this report;
43. no one other than the undersigned prepared the analyses, conclusions, and opinions concerning the real estate that are set forth in this report;
44. John Berean has not performed services, as an appraiser or in any other capacity, on the property that is the subject of this report within the three-year period immediately preceding acceptance of this assignment;
45. the reported analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the requirements of the Code of Professional Ethics and the Standards of Professional Appraisal Practice of the Appraisal Institute;
46. the use of this report is subject to the requirements of the Appraisal Institute relating to review by its duly authorized representatives; and

47. as of the date of this report, John Berean has not completed the Standards and Ethics Education Requirements for Candidates of the Appraisal Institute.

John Berean
Director
TS Worldwide, LLC
State Appraiser License (HI) CGA-1422

DRAFT—Literature Review and Field Inspection for the Chinatown Hotel Project, Honolulu Ahupuaʻa, Honolulu District, Island of Oʻahu, Hawaiʻi

TMK: (1) 1-7-002:013 and 050

Prepared For:

ʻIkenākea Development LLC
1188 Bishop St. Suite 907
Honolulu, HI 96813

April 2022

Keala Pono

Keala Pono Archaeological Consulting, LLC ● PO Box 1645, Kāneʻohe, HI 96744 ● Phone 808.381.2361

DRAFT—Literature Review and Field Inspection for the Chinatown Hotel Project, Honolulu Ahupuaʻa, Honolulu District, Island of Oʻahu, Hawaiʻi

TMK: (1) 1-7-002:013 and 050

Prepared For:

ʻIkenākea Development LLC
1188 Bishop St. Suite 907
Honolulu, HI 96813

Prepared By:

Kālenalani McElroy, MA
Windy Keala McElroy, PhD
and
Michael Graves, PhD

April 2022

Keala Pono Archaeological Consulting, LLC ● PO Box 1645, Kāneʻohe, HI 96744 ● Phone 808.381.2361

MANAGEMENT SUMMARY

Keala Pono Archaeological Consulting prepared a cultural and historical resources literature review and field inspection report for the proposed Chinatown Hotel Project in Honolulu Ahupuaʻa, Honolulu District, on the island of Oʻahu, Hawaiʻi. The project area located at TMK: (1) 1-7-002:013 and 050 is within the Chinatown Historic District and contains a historic building listed on the Hawaiʻi Register of Historic Places. This work was designed to identify any historic properties that may be located on the parcels in anticipation of the proposed construction. The literature review, which consisted of archival research, identified multiple LCA kuleana lots within the project area. Also in the vicinity are fishponds, loʻi deposits, historic trash deposits, structural remnants, as well as pre- and post-contact human burials. It is likely that similar historic properties may occur within the study parcels. A field visit to the site was conducted, and no archaeological resources were observed aside from the previously documented historic building. The parcels have been extensively disturbed by modern use, with much of the project area paved. Nevertheless, because of the occurrence of human burials and subsurface cultural remains in the nearby area, an archaeological inventory survey is recommended.

CONTENTS

FIGURES

TABLES

INTRODUCTION

At the request of ʻIkenākea Development, Keala Pono Archaeological Consulting conducted a literature review and field inspection in anticipation of the proposed Chinatown Hotel construction at TMK: (1) 1-7-002:013 and 050 in Honolulu Ahupuaʻa, Honolulu District, on the island of Oʻahu, Hawaiʻi. This work was designed to identify any historic properties that may be located in the project area in anticipation of the proposed construction.

The report begins with a description of the project area and a historical overview of land use, Hawaiian traditions, and archaeology in the area. Results of the literature review and field visit are summarized, and recommendations are made in the final sections. Hawaiian words and technical terms are defined in a glossary at the end of the document.

Project Location and Environment

The proposed Chinatown Hotel Project is located at 128 Nimitz Highway within the neighborhood of Chinatown in Honolulu Ahupuaʻa, Honolulu District, on the island of Oʻahu (Figures 1 and 2). TMK: (1) 1-7-002:013 is a 25,617 square foot lot owned by C. Q. Yee Hop & Co, Ltd. and Yee Hop Realty, Ltd. This parcel is currently used as a parking lot, and houses a historic building listed on the Hawaii Register of Historic Places. TMK: (1) 1-7-002:050 is a 2,182 square foot lot owned by Yee Hop Realty, Ltd. This is a long and narrow parcel that currently is used as an alley. The project covers a total of 0.64 ac. and (0.26 ha) falls within the Chinatown Historic District, which requires a Special District Permit. The project area is bounded to the north and south by retail buildings, to the east by a small parking lot, and to the west by Nimitz Highway (Figure 3). The project area and surroundings are highly developed.

The leeward coastal plain of Honolulu is comprised of a series of former reef and soils, along with sediment deposits. These features include a late-Pleistocene coral reef substrate that is overlain along the coast with calcareous marine beach sand, often by intermixed terrigenous sediments deposited from streams and nearby slope erosion. Adjacent to streams there are alluvial sediments most of which have originated from weathered volcanic bedrock and then subsequently deposited during flood events. Former reef sediments (i.e., sands) are found along the coastal margin sometimes extending inland onto the coastal plain (Clague 1998). Coastal terrigenous sediments originate on land, later deposited along the coastal plain and these deposits may contain materials mixed with marine sediments that include sands and rocks of the near-shore environment. The current Hawaiian shoreline configuration, including Honolulu Harbor, is the product of late- and post-Pleistocene rising sea levels (Stearns 1978; Macdonald et al. 1983) followed by a mid-Holocene rise in sea level of roughly 1.5–2.0 m (4.9–6.6 ft.); and human landscape modification, much of which occurred within the past 200 years since the arrival of Europeans and Americans to Hawaiʻi.

The project area is relatively flat, and stands at an elevation of approximately 3 m (10 ft.) above mean sea level (AMSL). It is approximately 60 m (200 ft.) from the coast at Honolulu Harbor. Coastal Honolulu experiences an average of 700–750 mm (27.56–29.53 in.) of rain per year (Giambelluca et al. 2013; Juvik and Juvik 1998:56). The most prevalent vegetation found within the harbor area of Honolulu is of exotic origin. Originally this portion of the Honolulu coastal plain would have supported a coastal dry plant community (Wagner et al. 1990:55), most of which would have consisted of shrubs and grasses, along with a few Polynesian introduced taxa such a niu (coconut, *Cocos nucifera*).

Soil survey data (Foote et al. 1972) places the project area predominantly on Ewa silty clay loam, moderately shallow, 0–2% slopes (EmA) with the makai portion located on fill land, mixed (FL)

(Figure 4). According to the United States Department of Agriculture Soil Conservation Service soil survey, these soils are described as:

> **Ewa silty clay loam, moderately shallow, 0–2% slopes (EmA)**
>
> This series consists of well-drained soils in basins and on alluvial fans on the islands of Maui and Oahu. These soils developed in alluvium derived from basic igneous rock. They are nearly level to moderately sloping…Runoff is very slow, and the erosion hazard is no more than slight. This soil is used for sugarcane, truck crops, and pasture (Foote et al. 1972:29–30).
>
> **Fill land, mixed (FL)**
>
> This land type occurs mostly near Pearl Harbor and Honolulu, adjacent to the ocean. It consists of areas filled with material dredged from the ocean or hauled from nearby areas, garbage, and general material from other sources…This land type is used for urban development including airports, housing areas, and industrial facilities (Foote et al. 1972:31).

Also near the project area are Kaena clay, 2–6% slopes (KaB) and Makiki clay loam 0–2% slopes (MkA). The nearby Nuʻuanu Stream exiting into the harbor is shown as Water (W).

The project

The Chinatown Hotel development consists of a 240 guest room lifestyle hotel that includes two food and beverage outlets, 134 parking spaces, a meeting space, a sky lobby, gym and spa, lanais, a museum, a public plaza, and a rooftop swimming pool with a bar and restaurant. The historic building on the property is listed on the Hawaii Register of Historic Places and is part of the Chinatown Historic District. This historic building along with the warehouse, which is also on the parcel will be retained and incorporated into the plans for the new hotel. The historic building is slated for restoration and will be brought back to its original condition including exposing the original basalt rock wall exterior. Of the 25,617 square ft. lot, there is 4,488 square ft. of existing improvements. The hotel will be 16 stories, which is roughly 200 ft. in height.

Figure 1. Project location on a 7.5 minute Honolulu quadrangle map (USGS 1998).

Figure 2. Project location on TMK plat (1) 1-7:002 (State of Hawai'i 1937).

Figure 3. Aerial image showing the project area and greater coastal Honolulu region.

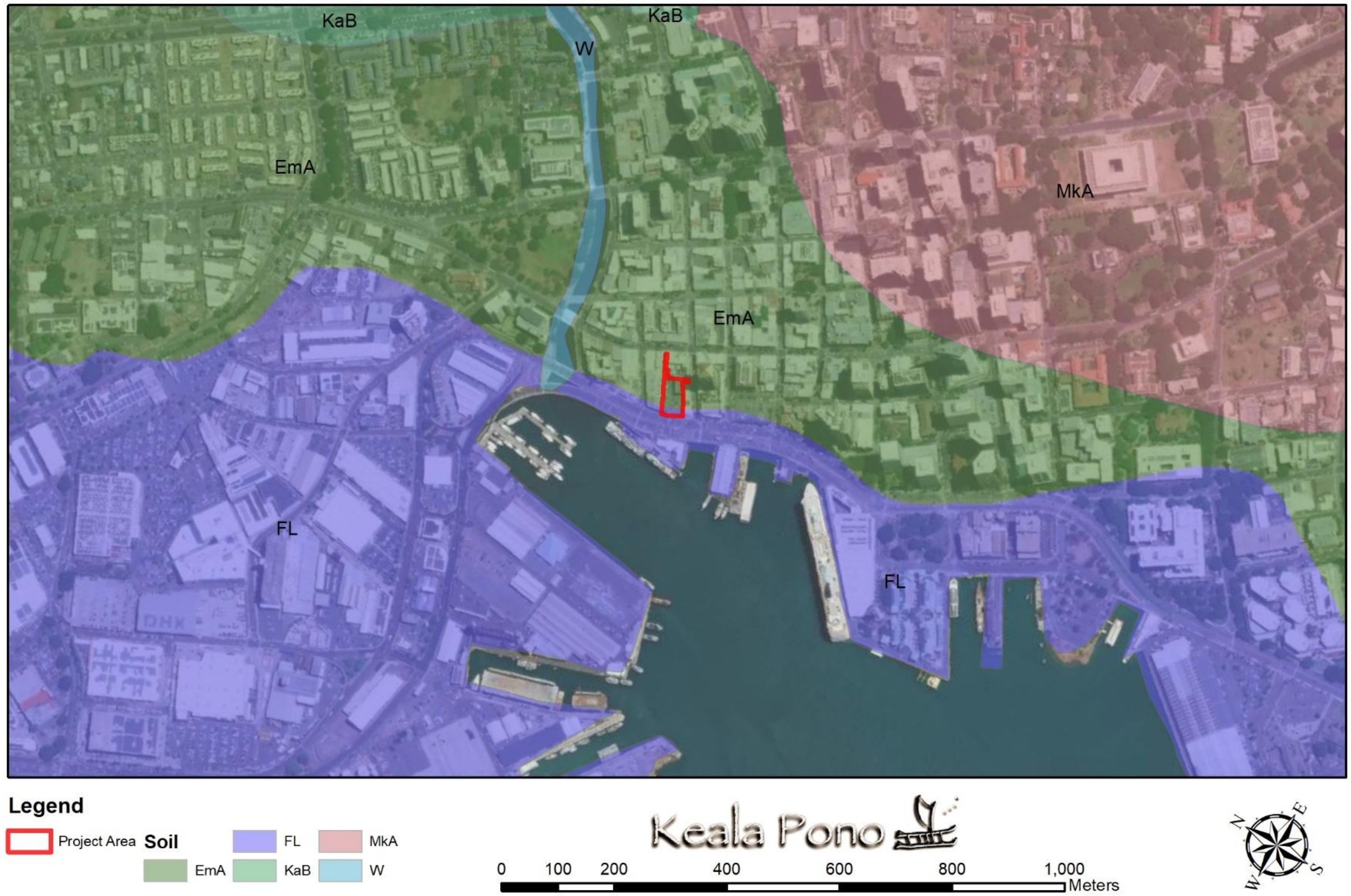


Figure 4. Map of project area soils (data from Foote et al. 1972).

BACKGROUND RESEARCH AND FIELD VISIT

This chapter presents traditional and historic background information for the project region, including place names, Hawaiian proverbs and moʻolelo, land use, Māhele land tenure data, historic maps and photos, a discussion of the history of the harbor, and a summary of previous archaeological research. In the attempt to record and preserve both the tangible (e.g., traditional and historic archaeological sites) and intangible (e.g., moʻolelo, ʻōlelo noʻeau) culture, this research assists in the discussion of anticipated finds. Research was conducted at the Hawaiʻi State Library, the University of Hawaiʻi at Mānoa libraries, the SHPD library, and online on the Waihona ʻAina database and the State of Hawaiʻi Department of Accounting and General Services (DAGS) website. Historical maps, archaeological reports, Māhele data, and historical reference books were among the materials examined.

Moʻolelo and Traditional Land Use in Honolulu

There are a number of traditional Hawaiian sources that describe or name locations within coastal Honolulu and Honolulu Harbor. These provide insights into the manner in which these places were viewed and remembered. Legendary accounts identify events and people formerly associated with Honolulu.

While there is some discussion over the origin of the name Honolulu as either the Hawaiian translation of the given English name “Fair Haven” or “Calm Harbor” which describe the harbor, or the name of a high chief (Westervelt 1915:15), around the early 1800s, the area known as Kou was re-dedicated and given its existing name. Extending from what is now near the junction of Liliha and School Streets, the literal translation of “Honolulu” can be broken down to hono, meaning “abundance” and lulu meaning “calm” or “peace,” with the definition describing the district as having an “abundant calm, or “a pleasant slope of restful land” (Westervelt 1915:14). Early names for Honolulu Harbor include Kou and Māmala.

Kou consisted of the area from Nuʻuanu Avenue to Alakea Street and the land makai of Hotel Street, which encompasses the current study area (Westervelt 1915:15). Kou is also said to be named for the ilāmuku (executive officer) of Oʻahu, Chief Kakuhihewa (Pukui et al. 1974:117–118). The area was a noted gathering place for aliʻi to enjoy kōnane (pebble checkers) and ʻulu maika (bowling), a place where “property and even lives were freely gambled away” (Westervelt 1915:17). Kou’s ʻulu maika track was a hard, smooth track about 3.5 m (12 ft.) wide which extended from the corner of Merchant and Fort Streets, currently the Bank of Hawaiʻi Building, along the makai side of Merchant Street to beyond Nuʻuanu Avenue. It is also believed that Kamehameha I used this ʻulu maika track (Westervelt 1915:17).

Named in honor of a shark woman and chiefess residing at the entrance to Honolulu Harbor, the area known as Māmala extended from the ʻEwa side of Honolulu Harbor to Pearl Harbor. The surf break at the reef was also named after the shark chiefess and was called Ke Kai o Māmala (Pukui et al. 1974:106, 144). When the surf was high, it was known as “Ka-nuku-o-Māmala” or “The nose of Māmala” (Westervelt 1915:52). Chiefess Māmala loved to play kōnane, drink ʻawa and ride the surf in the area. Māmala’s first husband was the shark-man Ouha, who, after becoming a shark-god, made his home outside the reefs of Waikīkī and Koko Head. Māmala’s second husband, chief Honokaupu, was given that land east of Kou, which afterward took on the name of its chief (Westervelt 1915:15). This area of Honokaupu, believed to be near present-day Richards and Queen Streets, was a noted place for aliʻi to engage in ʻulu maika games (Westervelt 1915:17).

Within Kou was the area of Pākākā. Literally meaning "to skim, as in stones over water" (Pukui et al. 1974:175), Pākākā was the name of the canoe landing at Honolulu Harbor and was also known for Pākākā Heiau, which stood on the western side of the foot of Fort Street. Built before the time of Kakuhihewa, Pākākā was later "owned" by Kīnaʻu, the mother of Kamehameha IV, V, and Victoria Kamāmalu. For centuries preceding, this heiau served as an important meeting place for kāhuna (Westervelt 1915:21). Liholiho, Kamehameha II, built a palace complex in this area in 1821, possibly on the old Pākākā Heiau platform. The wharf at Pākākā may also have been part of the original heiau complex. Klieger (1997:15–16) has suggested that the Pākākā Palace complex may have lasted until around 1826, when a new royal compound was built for Kamehameha III within the town of Honolulu, near the modern junction of Alakea and Beretania Streets.

In 1816, the Honolulu Fort called Kekuanohu, was also built in this area. The fort was demolished in 1857 and the material from the wall was used to build a waterfront retaining wall (Pukui et al. 1974:107), which was then filled in to create new land, called the Esplanade.

Place Names

Place names for coastal Honolulu and neighboring locations are presented in Table 1. They include names of ahupuaʻa, wahi pana, and various natural landforms that likely served as landmarks, including ridges, streams, gulches, mountain tops, springs, and coastlines. The names are presented here alphabetically and these doubtless do not exhaust the total. Sources consulted for these names include historical and contemporary maps land award indices, a portion of the related testimonies, and archaeological and historical reports.

In addition to their literal meanings, which often reflect the setting or events, or individuals associated with them, place names serve as toponyms. As Thornton (1997:209) notes "Places names are…. [i]nteresting…because they intersect three fundamental domains of cultural analysis: language, thought, and the environment." They can record and preserve aspects of history, not only by their associated archaeological or material remains but also through the events and stories said to be associated with a given place (Basso 1988). Place names inform not only on the structure and content of the physical environment but also how it is perceived, conceptualized, classified, and utilized (Thornton 1997:209). By virtue of their physical nature, they are applied to locations on the landscape and serve to promote and prompt mental maps, especially when other place names associated with other locations provide relational, hierarchical, or directional information (Basso 1988). Thus, place names can be a spatial means for remembering or memorializing events, people, or other kinds of things on a landscape. It may be possible to reconstruct or identify aspects of traditional Hawaiian land use and social organization from these names.

ʻŌlelo Noʻeau

Traditional proverbs and wise sayings, also known as ʻōlelo noʻeau, are another means by which the history of Hawaiian locales have been recorded. In 1983, Mary Kawena Pukui published a volume of close to 3,000 ʻōlelo noʻeau that she collected throughout the islands. The introductory chapter of that book reminds us that if we could understand these proverbs and wise sayings well, then we would understand Hawaiʻi well (Pukui 1983).

Numerous ʻōlelo noʻeau reference coastal Honolulu and the areas surrounding Honolulu Harbor. ʻŌlelo noʻeau relevant to the area provide useful insight into the landscape, subsistence, and local resources. They are as follows:

Table 1. Traditional Place Names for Coastal Honolulu (partly adapted from O'Hare 2013:11–12)

Place Name	Description	Notes	Sources
Āpua	mo'o	Located below Queen Street. Land awards: RPG 2706 to Eliz. Kauwa, 0.17 acre. PEM: fish basket.	Soehren 2010; GR 26
Halāi'imaile	place	Area in downtown Honolulu near the present Library, former name of the palace grounds and the home of Boki and Liliha and other royalty. Land Awards: LCAw 191:2 to Kekauonohi for Haalelea, 0.50 acre house lot. PEM: lit., maile vines strewn	Soehren 1910; Pukui et al. 1974:39; IN 342; Metcalf 1847
Hale Kauwiila	place	Coastal property due east of Fort Honolulu.	Metcalf 1847
Honolulu	ahupua'a	Refers generally to the Honolulu Harbor, but other names included Kou and Māmala. Honolulu is recognized as an ahupua'a containing numerous 'ili and numerous land were claimed. Said to be bounded by Kapālama, by Makiki, and Nu'uanu Valley. Westervelt (1915:14) suggests the terms reflects the union of the words "hono" and "lulu". "The old Hawaiians say that 'Hono' means 'abundance' and 'lulu' means 'calm,' or 'peace,' or 'abundance of peace.' PEM, lit., protected bay.	McAlister 1933:80; Pukui et al. 1974:49-50; Soehren 2010; Westervelt 1915; MB 8, 9
Honuakaha	'ili 'āina	Old section of Honolulu near Kawaiaha'o cemetery.	Pukui et al. 1974: 51; IN 707, NR 3:136; Monsarrat 1897
Iwilei	'ili 'āina	Coastal section to west of Nu'uanu Stream. Land Awards: LCAw 3142 to Hoaliku: "Apana 3. He kahuahale iloko o Iwilei, Kapalama... Apana 4. Ekolu puuone iloko o Iwilei, Kapalama..." 2.20 acres. LCAw 1034 & 8400 to Kapauahi: "Apana 1. Pahale ma Iwilei, Lele o Kalawahine..." 0.659 acre. Also LCAw 808 to Kalaeloa, 918 to Upai, 8322 to Kamakena, all of which are placed in Honolulu, not in Kapālama. Claim no. 2040 by Kahahawai for "he wahi kai... ma" PEM: collarbone or a unit of measurement. Ka ili o Kalawahine o Iwilei ke kai was not awarded.	Pukui et al. 1974; Soehren 2010; Metcalf 1847-49
Kaakaukukui	kohola, reef	Filled in reef, Honolulu Harbor, the land section at coast makai of Kawaiaha'o Cemetery, with lots of salt pans and the Leper Hospital. Lit., the right (or north) light	Pukui et al. 1974: 59; Pukui et al. 1974; Soehren 2010; Covington 1881

Table 1. (continued)

Place Name	Description	Notes	Sources
Koholaloa; alt. Kaholaloa, Kulolola	kohola, reef	Old name for Sand Island, the bay and the reef area to the east of Nu‘uanu Stream and Kawa Pond PEM: long reef.	Pukui et al. 1974:115; Covington 1881
Kaka‘ako	‘ili ‘āina	Land Awards: LCAw 4457 to Kaloa, 0.48 acre. Also LCAw 247 to Lunalilo, 2019 to Pupule, 3455 to Kaule for Liliha. Claim no. 8047 by Ehu was not awarded. PEM: not translated.	Pukui et al. 1974:115; Soehren 2010; IN 711; NR 5:482; Monsarrat 1897
Kapu‘ukolo	‘ili ‘āina	Old section of Honolulu bounded by the mouth of Nu‘uanu Stream and Honolulu Harbor, depicted on reconstructed 1810 map of Honolulu. Land Awards: LCAw 2944B to Akoni, 0.03 acre. Also LCAw 22 to G. Kawaina, 22 to Weloula for heirs, 28 to Keaniani, 30 to Kahoowaha, 57 to Kou, 66 to Napahi, 151 to Nauoo, 256 to Kulukini, 548 to Kinopu, 1039 to Kamanu, 2065 to Keo for Kawai, 2944 to P. F. Manini, 6685 to Mokuohai. Claim no. 8644 by Kawai was not awarded.	Pukui, et al. 1974; Soehren 2010; Rockwood and Barrère 1959; Metcalf 1847; Monsarrat 1897
Kawa Pond	loko	When this wall [on the Waikahalulu Reef at the foot of Maunakea Street] was built the wall of the Loko called ‘Kawa’ was taken down and the size of the Loko reduced. Located in the vicinity of the present Awa Street, Iwilei. PEM: dive; leaping place.	Soehren 2010; Monsarrat 1897; Wall 1891; Alexander 1908
Kewalo	place	Basin and surfing area. Lit., the calling (as an echo)	Pukui et al. 1974:109; Thrum 1892
Kīkīhale	‘ili ‘āina	Old section of Honolulu bordered by Maunakea and King Streets to Nu‘uanu Stream, depicted on reconstructed 1810 map of Honolulu. Said to be named for the daughter of Chief Kou. Land awards: LCAw 3 to Kaapuiki for Keomailani, 0.89 acre. Also LCAw 36 to Napoeha, 100 to Hoomoeapule, 128B to Kekoa, 136 & 137 to Maalahia, 606 to Haula for Kaou, 686 to Naeole, 1043 to Kamakahonu, 9003 to Kahoomana. Also RPG 25, 39, 50, 55, 1755, 3164. PEM: not translated.	Pukui et al. 1974:110; Metcalf 1847; Monsarrat 1897
Kou	Likely once an ‘ili	Kou is said to be the original place name for the Honolulu Harbor area, "…including the area from Nu‘uanu Avenue to Alakea Street and from Hotel Street to the sea, noted for kōnane (ancient game resembling checkers) and for ulu maika (bowling), and said to be named for the executive officer of Chief Kākuhihewa of O‘ahu" (Pukui et al. 1974:117–118). PEM: kou tree, Cordia subcordata.	Pukui et al 1974:117-118; Soehren 2010

Table 1. (continued)

Place Name	Description	Notes	Sources
Kuloloia	kahakai, beach	Former beach near the shoreline edge of Fort Street, extending to Kaka‘ako (Pukui et al. 1974:121) said to be the home of several chiefesses related to Ka‘ahumanu, Keopūolani, and Kalaniakua.	Rockwood and Barrère 1959
Kūwili	‘ili kū	Coastal section to west of Nu‘uanu Stream. Returned by Kamāmalu, retained by the Gov. as Fort Land at the Māhele. Land Awards: LCAw 12FL to Kahoowahaloa, 0.87 acre. Also LCAw 9FK, 27FL, 61FL, 63FL, 64FL, 65FL, 66FL, 76FL, 77FL, 80FL, 81FL, 82FL, 83FL, 591, 826, 1089, 1284, 2333, 2440B. PEM: lit, stand swirling.	Soehren 2010; MB 6,215; IN 46,724; Metcalf 1847
Māmala	kū‘ono, bay	Area extending from Honolulu Harbor to Pearl Harbor named for a shark woman who lived at the entrance of Honolulu Harbor and often played kōnane. She left her shark husband, ‘Ouha, for Honoka‘upu. ‘Ouha then became the shark god of Waikīkī and of Koko Head (Pukui et al. 1974: 106). In the song Nā ka Pueo, the Pueo-kahi was a ship named for a place near Hāna, Maui, named for a pueo kupua (owl demigod). Honolulu harbor was called Māmala.	Pukui et al. 1974: 106; Rockwood and Barrère 1959; USGS 1953
Nihoa	land section	Nihoa was the waterfront area in downtown Honolulu formerly owned by Ka‘ahumanu and named by her in honor of her visit to Nihoa Island (‘Ī‘ī 1959:166). This area had a sandy beach where natives could land and pull up their canoes on shore. In the early nineteenth century, Western ships were also beached here for mooring and repair. In the time of Kamehameha I, “the shore at Nihoa . . . was a shipyard where foreign style vessels were being made by Hawaiians under the tutelage of whites” (‘Ī‘ī 1959:64). PEM: firmly set.	Pukui et al. 1974; Soehren 2010; MB 165; Rockwood and Barrère 1959
Nu‘uanu	kahawai, stream	Stream rises at about 1100 ft. elevation, is dammed at 1038 ft. to form Nu‘uanu Reservoir 4, then flows along eastern side of Nu‘uanu Valley to Honolulu Harbor. PEM: cool height	Soehren 2010; USGS 1953

Table 1. (continued)

Place Name	Description	Notes	Sources
Pākākā alt. Honolulu Fort	heiau, fortress, canoe landing	Pākāka was the name of a coastal point, a canoe landing, the name of a wharf built off the point in 1827, and the name of a heiau previously built on the point. In 1816, the Honolulu Fort (pāpū) called Kekuanohu, was also built in this area. In 1857 the fort was torn down and the building materials used to create a retaining wall (Pukui et al. 1974:30), Site 66. Honolulu... The famous temple of Honolulu was Pākāka, located at the foot of Fort Street. (McAllister 1933). PEM: to skim, as stones over water.	Pukui et al. 1974:175; Soehren 2010; McAllister 1933:8
Pamoo	land section, poss. moʻo		Metcalf 1847
Pulakolaho, alt. Pualoalo	ʻili kū	Adjacent to Honolulu Harbor near Custom House. Land Awards: Retained by I. Piikoi at the Māhele, LCAw 10605:1, 12.02 acres. Also LCAw 10613 to A. Paki, 809 to Keoahu, 2 to Robert Kilday. PEM: short for pua aloalo, hibiscus flower.	Soehren 2010; MB 17; IN 727; Metcalf 1847
Waikahalulu	ʻili kū	Located north of Honolulu Harbor; the seaward portion of Waikahalulu was awarded to the Government by LCAw 11,219 as submerged land, but disputed by Queen Kalama. See Honolulu Harbor and Waikahalulu Reef. Land Awards: Retained by H. Kalama at the Māhele, LCAw 4452:11, 3.21 acres. Also LCAw 727, 935, 942, 1154, 1155, 1161, 1162, 1163, 1286, 1612, 1726, 9119. Claims no. 1348 by Kapohaku, 1610 by Kaiai, 1611 by Kahiwa were not awarded. PEM: lit., water [of] the roaring.	Alexander 1885; 1908:19; Soehren 2010; Metcalf 1847

Abbreviations used: AB: Awards Book, Land Commission; GR: Index of All Grants, Part Index; IN: Indices of Awards, Land Commission; FR: Foreign Register, Land Commission; FT: Foreign Testimony, Land Commission; LCAw: Land Commission Award; MB: Māhele Book; NR: Native Register, Land Commission; NT: Native Testimony, Land Commission; PEM: Pukui, et al. 1974; RM: Registered Map; RPG: Royal Patent Grant No.

Honolulu

This term would eventually be used to refer to the town and city of Honolulu. It likely originally meant "protected bay" referring primarily to the harbor (Pukui et al. 1974:49–50).

> Hoʻā ke ahi, kōʻala ke ola. O na hale wale no ka i Honolulu; o ka ʻai a me ka iʻa i Nuʻuanu.
>
> *Light the fire for there is life-giving substance. Only the houses stand in Honolulu; the vegetable food and meat are in Nuʻuanu.*

An expression of affection for Nuʻuanu. In olden days, much of the taro lands were found in Nuʻuanu, which supplied Honolulu with *poi*, taro greens, *ʻoʻopu*, and freshwater shrimp. So it is said that only houses stand in Honolulu. Food comes from Nuʻuanu. (Pukui 1983:109)

Ka lā ikiiki o Honolulu.

The intensely warm days of Honolulu.

People from the country often claim that Honolulu is excessively warm. (Pukui 1983:154)

Ka ua Kukalahale o Honolulu.

The Kukalahale rain of Honolulu.

The rain that announces itself to the homes by the pattering it makes on the roofs as it falls. Often mentioned in songs. (Pukui 1983:170)

Kou

This term may be an older name for the harbor area. Kou refers to a native wood (*Cordia subcordata*), used for cups, dishes, and calabashes (Pukui and Elbert 1986:167).

Hui aku na maka i Kou.

The faces will meet in Kou.

We will all meet there. Kou (now central Honolulu) was the place where the chiefs played games, and people came from everywhere to watch. (Pukui 1983:120)

Hāhā pōʻele ka pāpaʻi o Kou.

The crabs of Kou are groped for in the dark.

Applied to one who goes groping in the dark. The chiefs held *kōnane* and other games at the shore of Kou (now central Honolulu), and people came from everywhere to watch. Very often they remained until it was too dark to see and had to grope for their companions. (Pukui 1983:50–51)

Ke awa laʻi lulu o Kou.

The peaceful harbor of Kou.

Honolulu Harbor (Pukui 1983:182)

Ola ke awa o Kou i ka ua Waʻahila.

Life comes to the harbor of Kou because of the Waʻahila rain.

It is the rain of Nuʻuanu that gives water to Kou (central Honolulu). Pukui (1983:272)

Māmala

Mālama refers to the entrance to Honolulu Harbor that was named for a shark goddess.

He kai hele kohana ko Māmala.

A sea for going naked is at Māmala.

The entrance to Honolulu Harbor was known as Māmala. In time of war the people took off their clothes and traveled along the reef to avoid meeting the enemy on land. Pukui (1983:74)

Ka nuku o Māmala.

The mouth of Māmala.

The entrance to Honolulu Harbor, named for a shark goddess who once lived in the vicinity. (Pukui 1983:163)

Ke kai ʻau umauma o Māmala.

The sea of Māmala, where one swims at the surface.

Māmala is the entrance to Honolulu Harbor. (Pukui 1983:185)

Na ʻale kuehu o Māmala.

The billows of Māmala with wind-blown sprays.

Māmala is the entrance to Honolulu Harbor. (Pukui 1983:185)

Ka iʻa maunu lima o Kuloloia.

The hand-baited fish of Kuloloia.

Small eels (*pūhi ʻōilo*) that were caught by placing bait on the open palm of one hand with the fingers held wide apart. When the eels came up to take the bait, the fingers were clenched into a tight fist, grabbing the eels tightly by the heads. (Pukui 1983:149)

Makani, Ua, and Au (Wind, Rain, and Weather)

With their lives closely connected to the natural environment and physical surroundings, Hawaiian winds and rains were individually named and associated with a specific place, region or island. These wind and rain names can offer further insight to cultural traditions and beliefs of the area.

There are several notable winds and rains named within Honolulu. Kūkala-hale is a wind of Honolulu (Pukui and Elbert 1986). The on-shore sea breeze blowing through Māmala and Honolulu is known as ʻAoʻaoa or ʻAoa (Nakuina 1992:54; Pukui and Elbert 1971:KR-1). A north wind of Honolulu is named Mooae. Muululu is another wind of Honolulu (Bishop Museum Archives:1342) whose name may be translated as "chilled," or mūʻululū (Pukui and Elbert 1971:236). The Kiʻowao rain comes from uplands "drenching the blossoming plants" (Kamakau 1992:6). Other winds associated with Honolulu are Alaʻeli, Kolo puʻepuʻe or Kō momona (Pukui and Elbert 1986).

The previously mentioned wind Kūkala-hale, is also the name of a rain which is described as announcing "itself to the homes by the pattering it makes on the roofs as it falls" (Pukui 1983:170). A beneficial rain of Mānoa and Nuʻu-anu is Waʻahila which is said to give water to Kou (Pukui 1983:272). Kuiʻilima is also a rain of Honolulu (Pukui and Elbert 1986). Kūkalahale of Honolulu was mentioned in a song called *He Aloha nō ʻO Honolulu* that was written by Lot Kauwe:

Goodbye Honolulu	*He aloha nō ʻo Honolulu*
In the Kūkalahale rain	*I ka ua Kūkalahale*
Māmala, the entrance of Honolulu Harbor	*Ka nuku aʻo Māmala*
Lies behind	*ʻAu aʻe nei mahope*
Ahead	*Kau mai ana mamua*
The shady groves of Lele	*Ka malu ʻulu aʻo Lele*
Lighthouse is always burning	*Kukui ʻaʻā mau*
And not extinguished by the Kauaʻula rain	*Pio ʻole i ke Kauaʻula*

(Kauwe 2011)

Moʻolelo

Two moʻolelo are presented below that are relevant to the Honolulu Harbor area. These include the story of ʻAiʻai, who established the practice of building fishing koʻa, and an account of Hiʻiaka's travels through the area.

The Story of ʻAiʻai

An insightful moʻolelo referring to Kakaʻako is found within "The Story of ʻAiʻai," the son of the fish god of Hawaiʻi, Kuʻula. While there may be several versions of the same moʻolelo, the following summary is based on M.K. Nakuina's version of the story which was translated by Moke Manu and can be found in Thomas G. Thrum's *Hawaiian Folk Tales* (Thrum 1998).

Presiding over and controlling the fish of the sea, Kuʻula had a human body and had miraculous power (mana kupua) over fish and was known to be able to make fish appear at the sounding of his call (Thrum 1998:215). His son, Aiai-a-Ku-ula (Aiai of Kuʻula), is noted as establishing fishing shrines on land, where fishermen were obliged to offer their first catch in reverence of the powerful demi-god, Kuʻula (Thrum 1998:227). Traveling throughout the Hawaiian Islands erecting koʻa ʻāina ʻaumakua (fishing shrines), ʻAiʻai made his way to Kālia and Kakaʻako. There, he befriended a man named Apua and lived with him in this district governed by the chief named Kou, a very skilled aku fisherman and generous chief, whose territory extended from Māmala to Moanalua, including Pākākā at the sea of Kuloloia, as well as the place called Ulukua, which is now the lighthouse location of Honolulu Harbor (Thrum 1998:247).

One day while living with Apua in Kakaʻako, ʻAiʻai meandered to the shores of Kuloloia, then to Pākākā and Kapapoko, and met a young woman named Puiwa who was gathering limu and fishing for crabs. Puiwa, acting in a very forward way, asked ʻAiʻai to marry her and the two were married and had a son whom ʻAiʻai named Puniaiki. One day while ʻAiʻai and his wife were catching ʻoʻopu and ʻōpae in a brook, Puniaiki, who was sitting upon the bank of the stream, began to cry. Advising his wife to attend to the child's cries, Puiwa saucily responded, enraging ʻAiʻai. Calling upon his powerful ancestors, ʻAiʻai manifested a dark cloud which created heavy rains that flooded the stream, sweeping the ʻoʻopu, ʻōpae, and Puniaiki toward the sea. Downstream, the daughter of chief Kikihale found a very large ʻoʻopu which she watered and put in a calabash to care for as a pet. Seeing the fish being taken out of the water, ʻAiʻai recognized that his child had changed from his human form to that of an ʻoʻopu. Raised as an ʻoʻopu, Puniaiki developed into a human child and went on to marry the chief's daughter, and continued to establish fishing koʻa, with the Kou stone for Honolulu and Kaumakapili.

Kaʻākaukukui

The area of Kaʻākaukukui associated with Honolulu Harbor is mentioned in the legend of Hiʻiaka, one of the beloved sisters of the Hawaiian volcano goddess, Pele. Traveling around Oʻahu on land, Hiʻiaka and her companions decided to voyage from Puʻuloa (Pearl Harbor) to Waikīkī by canoe. At Puʻuloa, Hiʻiaka met a party who were planning on traveling on to the house of the chiefess Peleʻula in Waikīkī. Hiʻiaka recited a chant, telling the people that, although they were going by land and she was going by sea, they would meet again in Kou.

One portion of the chant refers to Kaʻākaukukui as the "pool," possibly referencing the salt ponds of the area (Hoʻoulumāhiehie 2006a:277; Hoʻoulumāhiehie 2006b:297):

And what of me, O Honokaʻupu, my love	*A pehea lā au, e Honokaʻupu, kuʻu aloha*
Upon the crest of the surf at Uhi and ʻOā	*I ka welelau nalu kai o Uhi, o ʻŌa*

Eyes in the living realm (night) of oblivion	*ʻO nā makai ke ao (pō) o poina*
Where am I, O my love	*Ma hea lā wau, e ke aloha lā*
Kou is the coral flat	*ʻO Kou ka papa*
Kaʻākaukukui is the pool	*ʻO Kaʻākaukukui ka loko*
Some ʻalamihi indeed	*ʻO ka ʻalamihi aʻe nō*
Wait all day until night	*ʻO ka lā a pō iho*
Friends shall meet in Kou.	*Hui aku i Kou nā maka*.
And what of me, O Honokaʻupu, my love	*A pehea lā au, e Honokaʻupu, kuʻu aloha*
Upon the crest of the surf at Uhi and ʻOā	*I ka welelau nalu kai o Uhi, o ʻŌa*
Yes in the living realm (night) of oblivion	*ʻO nā makai ke ao (pō) o poina*
Where am I, O my love	*Ma hea lā wau, e ke aloha lā*
Kou is the coral flat	*ʻO Kou ka papa*
Kaʻākaukukui is the pool	*ʻO Kaʻākaukukui ka loko*
Some ʻalamihi indeed	*ʻO ka ʻalamihi aʻe nō*
Wait all day until night	*ʻO ka lā a pō iho*
Friends shall meet in Kou.	*Hui aku i Kou nā maka*.

Historic Honolulu

Sources of information that help to reconstruct the history of coastal Honolulu during the historic era include historic maps, drawings, photographs, unpublished historic documents (e.g., land testimonies), and accounts from both Hawaiians and European voyagers. These can be sorted into three periods: the early 19th century until about 1840, the mid-19th century between 1840 and 1870; and the late 19th century. During the earliest interval, Honolulu and its harbor retained much of the traditional Hawaiian settlement pattern but with a few introduced features (such as Fort Honolulu). Mid-century Honolulu was a time of substantial change, with the Māhele and conversion of land ownership to fee simple. European and American residents of Hawaiʻi were awarded property or purchased lots soon after this division of land. The coastline was the focus of considerable building and dredging of the reef and passage into the harbor proper. Finally, in the late 19th century, Honolulu became a fully urban city with streets and other infrastructure, such as piers, that are still recognizable today.

Early 19th Century Accounts and Maps

As Fitzpatrick (1986) noted, in the early 19th century Honolulu Harbor and the nearby coastal settlement did not resemble the semi-urbanized town that it would become by the middle of the century. The Russian explorer, Otto von Kotzebue was apparently the first European visitor to map south Oʻahu including Honolulu Harbor, the nearby houses, and a variety of production features such as fields, fishponds, and salt ponds. The original harbor was quite small, narrow, and curved, fed by water from Nuʻuanu Stream. With the development of regular trade and when Kamehameha I moved the royal residence to Honolulu, the harbor took on increasing importance as fresh food and water needed to be replenished. Piers or wharves also became important infrastructure to support the sandalwood trade, including trade with China, as well as the whaling industry.

Historical reconstructions suggest the harbor was about 200 ft. wide, and nearly 4,000 ft. long. Portions of the coral reef were exposed at low tide and at its deepest it may have extended to 30 ft.

(HDOT 2008). Western ships were unable to sail into the harbor because the passage created by the outflow of Nuʻuanu Stream was narrow. Alexander (1908:13) stated that when Otto von Kotzebue visited the harbor in 1815, his ship was towed in by eight double-hulled canoes. By 1809, Kamehameha I moved his capital to Honolulu, and with that a number of Hawaiian and western style buildings were established, for housing, commercial activity, and for storage.

There are a few renderings based on original maps and later descriptions by Native Hawaiians for Honolulu in the first two decades of the 19th century. The first of these are sketch maps of Honolulu ca. 1810, one developed by Paul Rockwood based on descriptions by the noted Hawaiian historian John Papa ʻĪʻī (Figure 5). The plan view outline of the harbor is shown along with a number of named areas, houses and other structures, along with fields. At the south end of the harbor was Pākākā Point, where there was a large heiau, later to be replaced by the construction of Fort Honolulu. A small wharf was in this area. A number of streets are already in place by this time including Maunakea Street near the project area.

The Rockwood map also shows a shipyard on the west side of the harbor and a house complex associated with Francisco de Paula Marin, a Spaniard who arrived in the Hawaiian Islands in 1793 or 1794 and who quickly became a confidante of Kamehameha. He recorded in his journal, "…in the end of 1809 and beginning of 1810 I was employed building a stone house for the King" (Gast and Conrad 1973:200).

Marin notes this was the first stone structure in Honolulu, which at that time was:

> …a village of several hundred native dwellings centered around the grass houses of Kamehameha on Pakaka Point near the foot of what is now Fort Street. Of the 60 white residents on Oahu, nearly all lived in the village, and many were in the service of the king. (Gast and Conrad 1973:29)

There is a second reconstruction of Honolulu from this same time (Klieger 1997) that shows much more detail, such as a canoe landing and a complex that included Pākākā Heiau located just west of the fort (Figure 6). The "wharf" appears to be a rocky landing on the southwest edge of the harbor.

In 1816 the Russian commander Otto von Kotzebue visited the Hawaiian Islands over a two-year period. He produced a number of documented observations:

The harbor did not appear as a sheltered basin but rather opened directly to the ocean through a reef that had been cut by Nuʻuanu Stream, on the western end of the harbor. Kotzebue's map depicts major features of the landscape, but also a number of cultural features such as fishponds, what appear to be ponded fields as well as dryland fields, salt pans, Fort Honolulu, and what appear to be trails.

Kotzebue describes this area (as translated in Fitzpatrick 1986:50):

> Close to the shore you see verdant vallies adorned with palm and banana-trees, under which the inhabitations of the savages lie scattered; behind this, the land gradually rises, all the hills are covered with a smiling verdure, and bear the stamp of industry.

Kotzebue goes on to say (as translated in Fitzpatrick 1986:51):

> Artificial taro fields, which may justly be called taro lakes, cited my attention. Each of them forms a regular square of 160 feet, and is enclosed with stone all round like our basins. This field, or rather pond….contained two feet of water… of which the taro is planted, as it does not thrive except in such a wet situation… The fields are gradually lower, and the same water which led from an elevated spring or rivulet, can water a large plantation.

He also notes:

> In the spaces between fields, which are from three to six feet broad, there are very pleasant shady avenues, and on both sides banana and sugar-canes are planted. The taro fields afford another advantage; for the fish which are caught…thrive admirably when put into them. (Fitzpatrick 1986:51)

And as for houses, Kotzebue went on to note:

> These are scattered in a seemingly random manner and connected by meandering paths, but all in a band that parallels the shoreline. There was the stone house of Francisco Paula de Marin and a fort. (Fitzpatrick 1986: 51)

Fort Honolulu is described by Kotzebue (in Fitzpatrick 1986:52) as:

> The fort in the back-ground of the harbor of Hanarura [Honolulu], which Mr. Young has erected…is merely a dry brick wall, without bastions or towers, and without ditches…The fort itself is nothing more than a square, provided with embrasures; the walls are two fathoms high, made of coral stone.

Kotzebue also described fishponds, one of which, probably Kawa Fishpond, was located on the northwest side of Honolulu Harbor:

> In the same manner as they here keep river-fish, they manage in the sea with sea-fish, where they sometimes take advantage of the outward coral reefs, and draw from them to the short a wall of coral stone, which makes, even in the sea, good reservoirs for fish. Such a reservoir costs much labour, but not so much skill as the taro field, where both are united. (Fitzpatrick 1986: 51)

Along with the fort, Honolulu had a few other non-traditional structures and features, including the stone house reportedly occupied by Francisco Paula de Marin, often referred to as "Manini." Marin's residence was located just south of the current project area. A map by Tabulevich (1819) displays the home of Marin, shown as a white stone house, in what is now downtown Honolulu (map not reproduced here because of copyright). There is another European-style building that sits on the large wharf adjacent to Fort Honolulu. This map, like others of this time period, continues to show traditional Hawaiian housing dispersed across the Honolulu coast and a bit inland.

In 1819, a French ship commanded by de Freycinet arrived in the Hawaiian Islands whereupon he observed:

> The port of Onorourou [Honolulu], generally frequented today by all the European vessels that come to the islands, is without doubt the most favorable location with respect to shelter, commerce, and resources for the supply of ships. The town of Onorourou is located on a large, flat plain. It is on the shores of a bay of the same name. The houses, similar to the most part to those of Owhyhi [Hawai'i] and of Mowi [Maui], are however interspersed with a certain number of houses built of stone that belong for the most part to Europeans or to Anglo-Americans. (de Freycinet 1978:42)

The death of King Liholiho and his wife Kamāmalu in 1824 while visiting London resulted in the next series of maps of Honolulu by Charles Robert Malden, produced in 1825 (Figure 7). Malden's map of Honolulu provides an accurate scale to cultural features on the southern O'ahu coast (Fitzpatrick 1986:60).

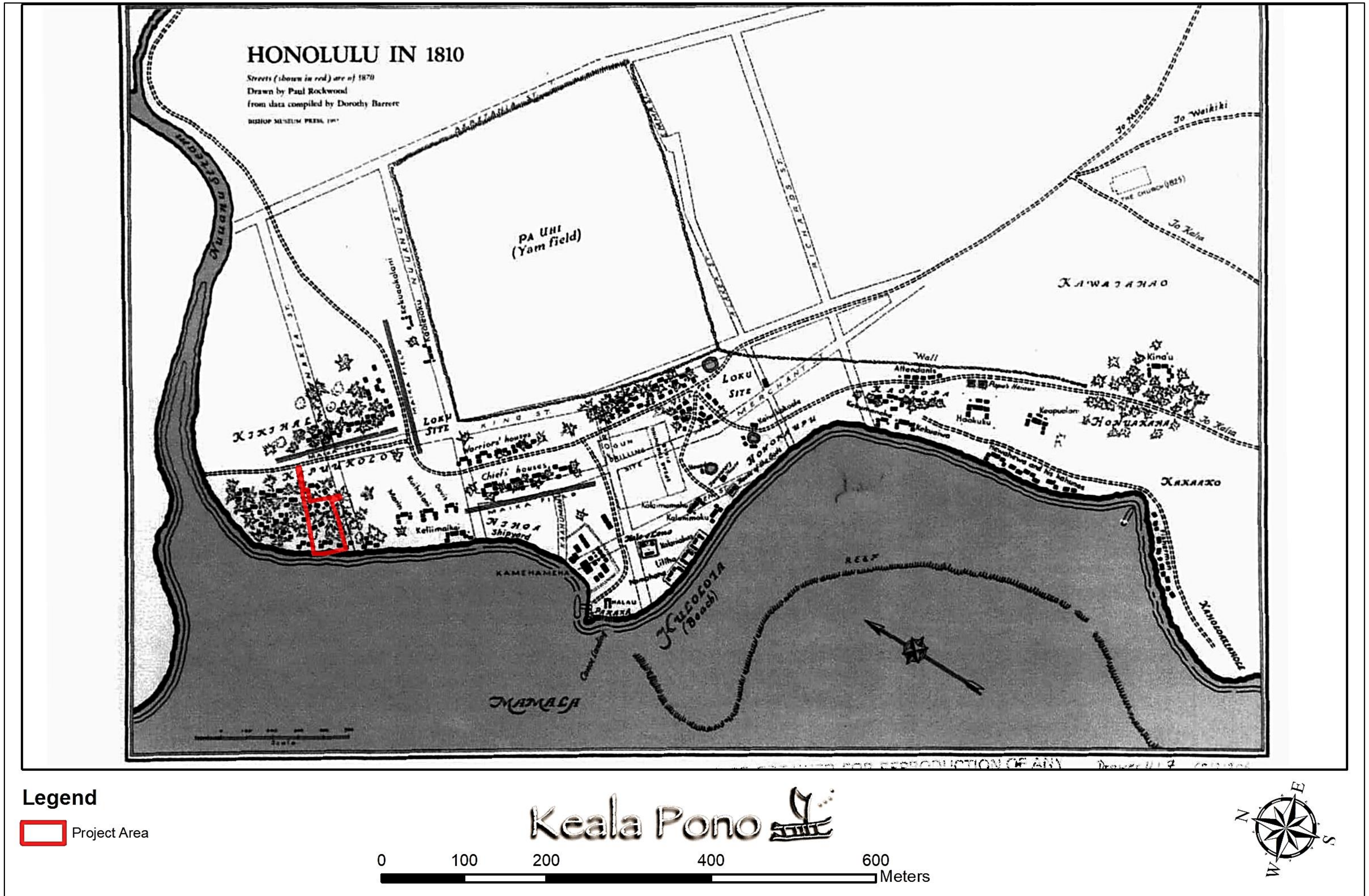


Figure 5. Early map of Honolulu, reconstructed from recollections by John Papa ʻĪʻī (Rockwood and Barrère 1959). Note that streets had been established at this time, there were locations set aside for housing chiefs and their supporters, along with a cluster of houses near the mouth of Nuʻuanu Stream within a grove of coconut palms.

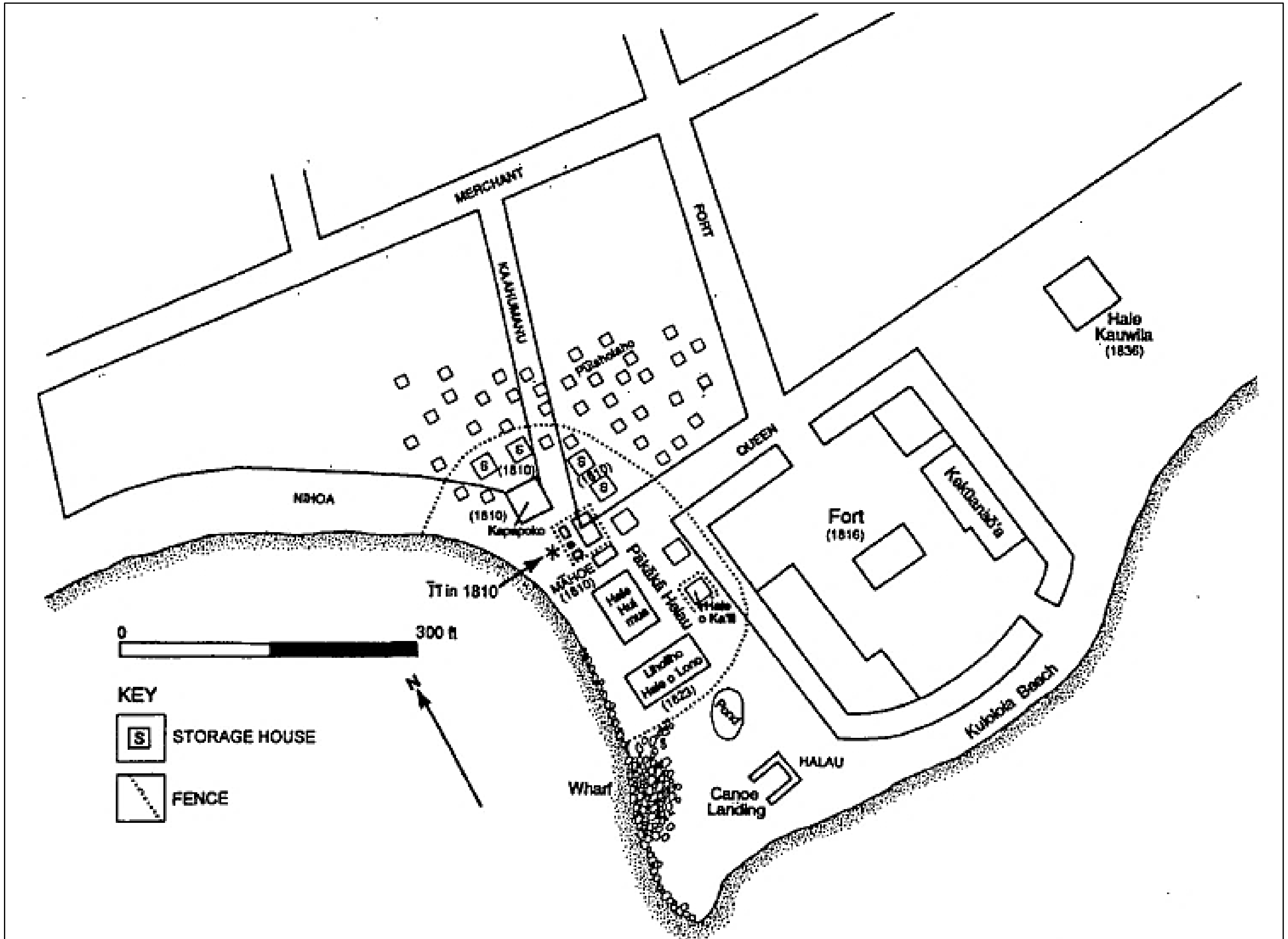


Figure 6. Reconstruction of Honolulu Harbor and adjacent areas for 1810 based on recollections by ʻĪʻī, supplemented with other historical sources (Klieger 1997). The project area is off the map to the left.

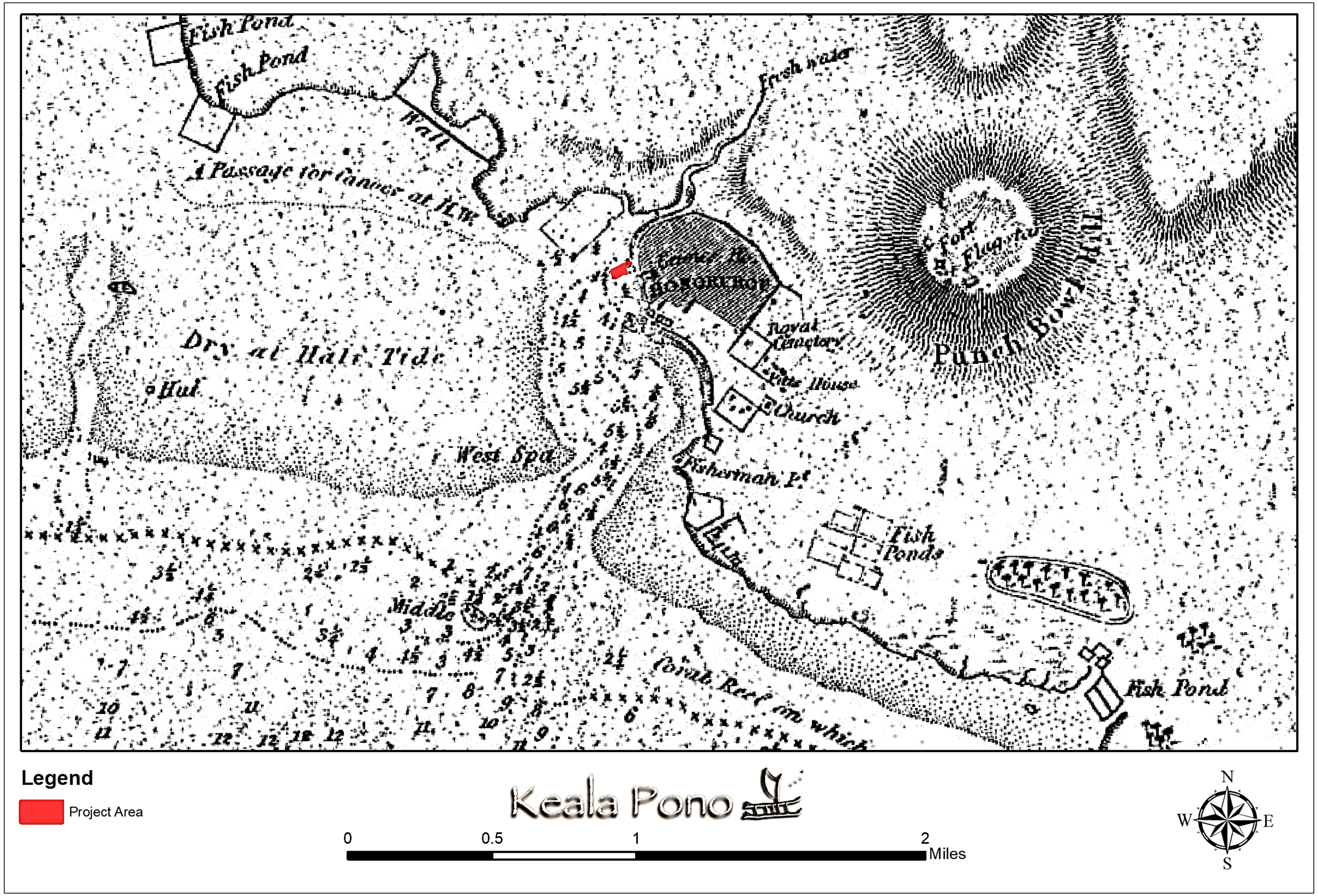


Figure 7. South Coast of Woahoo and Honoruru Harbour, Sandwich Islands (Malden 1825). Detailed map of Honolulu Harbor and passage, along with major buildings, Fort Honolulu, and Kawa Fishpond.

This page left intentionally blank.

Malden writes of the harbor (in Fitzpatrick 1986:62):

> This part of the reef is covered at half flood; at low water it is dry, and is then generally crowded with the lower orders of the Natives, who get from it a considerable part of their daily subsistence, consisting of the small fish left in pools, crabs, shellfish…

Other traditional features noted include a number of “morai” (heiau), Kawa Fishpond, and other ponds located along the shore to the north and east. More recent features mapped were the fort, an adjacent wharf and house, and various homes and commercial buildings. Of these it is noted that:

> …there are several good stone dwellings built by Europeans, and timber houses, the frames of which have been brought from America and finished here…there are, however, two or three tolerably regular streets and what may be called the public place, where Kariamoku’s house is situated, and near it the Christian church. (Fitzpatrick 1986:62)

An 1821 painting attributed to C.E. Bensell shows the harbor area (Figure 8), although aspects of the drawing are exaggerated, for example the placement of Honolulu Harbor and Fort Honolulu (Forbes 1992:97–98). There are at least two piers or wharves identified in this painting, the first adjacent to the fort, and the other located within Honolulu Harbor proper. Two sailing vessels are shown at anchor within the harbor and traditional canoes can also be seen. Development remains scattered across the landscape with most homes in the traditional style and just a few western-style buildings.

By 1828, Honolulu Harbor had become a defining feature for the area. Captain Jacobus Boelen describes the harbor and some landmarks that can be seen from the water:

> The port is formed by a steep, hard coral-and-sand bank extending parallel to the coast, here almost east and west, and on which a steady heavy surf beats with even more force when there is a SW or southerly wind. Between the bank and the coast, nature has formed a basin that in its greatest length stretches north-south; this is the harbor of Honoruru, which means safe harbor. It is a very appropriate name, for the reef, which at full tide is for the greater part above water and at half tide completely so, encloses the port and protects the ships as well as if they were in a closed dock. The shore around this harbor forms two bights, between which is a small cape that I shall call Morai Point because a morai [Pākākā Heiau] can be seen on it. From Morai Point a shoal extends about a cable’s length from the shore, dividing the harbor into two oval-shaped basins, of which I shall call the northern one the inner roadstead, and the southern one the outer roadstead. The south side of the latter is prolonged in direction of almost SW by S and NE by N into a channel over the bar to the sea, forming the entrance to Honoruru harbor. The east corner of the mouth of this channel can be approximately sounded by bringing Diamond-hill in the direction of South 57 [degrees] East, dev.c. on a distance of about a mile and a half. (Boelen 1988:43)

Drawings of Honolulu (Figures 9 and 10) reinforce this view. Two anonymous drawings from 1834 showing different perspectives place Kawaiahaʻo Church among the center of town, “intermingling and contrasting with the larger residences of the *aliʻi*” (Forbes 1992:106). More western style houses were built by this time, along with residences that combined western frames with deeply sloping roofs, reminiscent of traditional Hawaiian forms.

An 1839 painting by Francois-Edmond Paris, *Honolulu, Capital of Oahu, View of the Harbor*, shows Honolulu Fort, what is now Queen and Fort Streets to the left, along with a mixture of western style buildings alongside the traditional thatched houses (Figure 11).

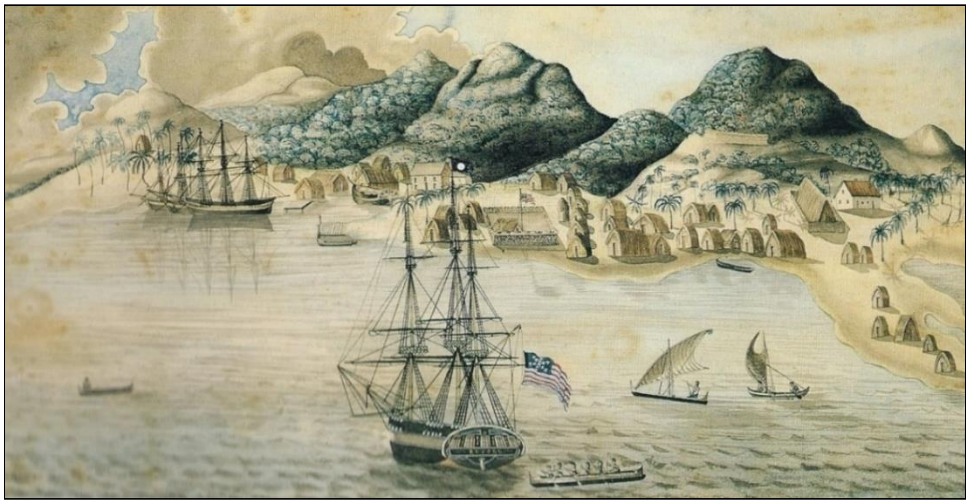


Figure 8. View of the Island of Woahoo in the Pacific, attributed to C.E. Bensell, 1821, watercolor, Peabody Museum of Salem (reprinted in Forbes 1992:97).

Figure 9. Town of Honolulu, Island of Woahoo, Sandwich Islands, from Under the Punchbowl Hill, 1834 (reprinted in Forbes 1992:106).

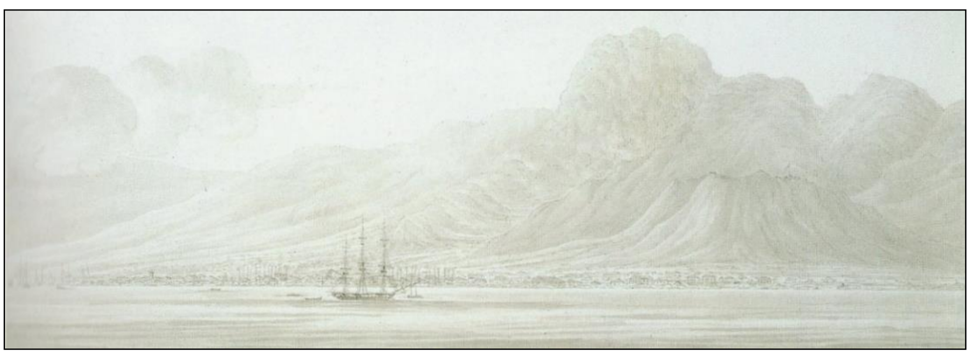


Figure 10. Honolulu from the Anchorage outside the Reef, Island of Woahoo, Anonymous, 1834, pen and ink wash over pencil, B.P. Bishop Museum (reprinted in Forbes 1992:107).

Figure 11. Honolulu, Capital of Oahu, View of the Harbor, 1839 (Paris 1839).

In 1840–41, a scientific expedition to Hawai‘i was organized by the United States government, later published by Wilkes (1856), the commander of the expedition. Wilkes’s observations (in Fitzpatrick 1986:69) regarding Honolulu describe it as:

> …very conspicuous from the sea, and has more of the appearance of a civilized land, with its churches and spires than any other island in Polynesia….The fort, with its numerous embrasures, and the shipping, lying in the contracted reef-harbour, give an air of importance, that could hardly be expected in a Polynesian island or harbor.

Regarding the harbor area, Wilkes noted (in Fitzpatrick 1986:69):

> The place showed much stir of business, owing principally to the work of repairing vessels, and the attendance on them by the natives. The landing is upon a small wharf, erected on piles; and these appeared sufficient accommodation for the vessels in the harbour at this time. The number was nine.

While in Honolulu, Wilkes was asked by the king, Kauikeaouli (Kamehameha III) to survey the harbor. At this time Kamehameha noted that the water in the harbor had become more shallow, due in part to quarrying of coral (Fitzpatrick 1986:72). As it turned out, the source of the problem was not the removal of coral but sedimentation from Nu‘uanu Stream as it emptied into the harbor area.

Honolulu Harbor was first dredged in 1840, and the material was used as fill along the coast. Through the 1800s, the harbor was surveyed to determine its depths, which at that time prevented large ships from entering. Siltation from Nu‘uanu Stream continued to plague the harbor from the early to mid-19th century, and foreign vessels often dumped ballast and trash into the harbor, adding to the problem. In 1848 a breakwater was built at Emme’s Wharf, fronting Maunakea Street near the project area, to cut off the western portion of the harbor from the mouth of Nu‘uanu Stream (HDOT 2008).

Mid-19th Century and the Māhele

Traditionally in Hawai‘i, land title was held by the ali‘i nui (paramount chief), and land use rights were assigned to a series of ali‘i and konohiki, who in turn provided parcels of land to families belonging to the maka‘āinana. Konohiki managed the ahupua‘a lands; ‘ili, smaller land divisions, within the konohiki-controlled ahupua‘a. The maka‘āinana were expected to provide a portion of agricultural output to the konohiki and/or other chiefs from working their assigned lands. These traditional land titles assist in identifying previous land claims in the project area.

Drastic modification of the traditional Hawaiian land tenure system, one in which all titles were vested in the king, began with the appointment of the Board of Commissioners to Quiet Land Titles by Kamehameha III in 1845. The Māhele, or the official dividing of the lands, took place during the first few months of 1848 when the king and his senior chiefs chose their interests in the lands of the Kingdom. This division of land was recorded in the Māhele Book. The King retained substantial land holdings as Crown Lands, while approximately the same amount of land was designated as Government Lands. Konohiki Awards were made as lesser chiefs presented their claims before the Land Commission.

The Kuleana Act of 1850 was passed allowing foreigners to obtain land. In addition, citizens could now present claims before the Land Commission for parcels that they were cultivating within the Crown, Government, or Konohiki lands. By 1855 the Land Commission had made visits to all of the islands and had received testimony for about 12,000 land claims. Ultimately, about 10,000 land claims, called kuleana, were awarded to maka‘āinana totaling only about 30,000 acres.

Not surprisingly, the downtown and harbor area of Honolulu had numerous land claims, not only by Hawaiians but by resident Americans and Europeans (Figure 12, Table 2). Māhele testimony for LCAs in and near the project area is provided in Appendix A. Seven LCA awards were identified as land claims to the project area. These are LCA 256 awarded to Kulukini, LCA 151 awarded to Nauoo, LCA 2944b to Akoni, LCA 2944 granted to P.F. Manini (Don Francisco de Paula Marin), LCA 30 ‘āpana 2 awarded to Kahoowaha, the small LCA 2065 awarded to Keo Bolabola, and LCA 1039 awarded to Kamanu. Māhele records provide few details regarding the land use of these lots, however LCA 256, 1039, and LCA 2944 were house lots. The latter is described as having four homes on the property, which was surrounded by a fence. The LCA had one house that was enclosed by a fence, which had fallen down and was not rebuilt at the time of the Māhele. LCA 151 was first given to Nauoo by Kamehameha I and Kahoowaha of LCA 30 explains in historical documents that his parents lived on the land from the time of the Battle of Nu‘uanu and that neighbors built their homes on property that was his.

Due to growth in population and commercial activity many of the LCA parcels awarded during the Māhele were claimed as residences (i.e., houses) or stores. Near the harbor and current project area, a large section of land was awarded to the Spaniard Don Francisco de Paula Marin that was later subdivided and sold. LCA 2944 at the north corner of the project area was also awarded to him.

As trade on the Honolulu waterfront developed, there was a need to build larger wharves in the harbor. This was done by using materials to fill in and cover the shallow reef in the downtown area and parts of the harbor. Additionally, a 2,000 ft. retaining wall was built in the water beyond the reef, and that space to the retaining wall, too, was filled in. The Honolulu Fort was demolished, and its materials were used to build this retaining wall or used as landfill for the extension of land. The initial demolition of the fort and construction of the filled waterfront area, later called the Esplanade, started in 1857. By 1870, the Esplanade encompassed 8.9 ha (22 ac.) of newly created land, from Fort Street to Alakea Street (Thrum 1896).

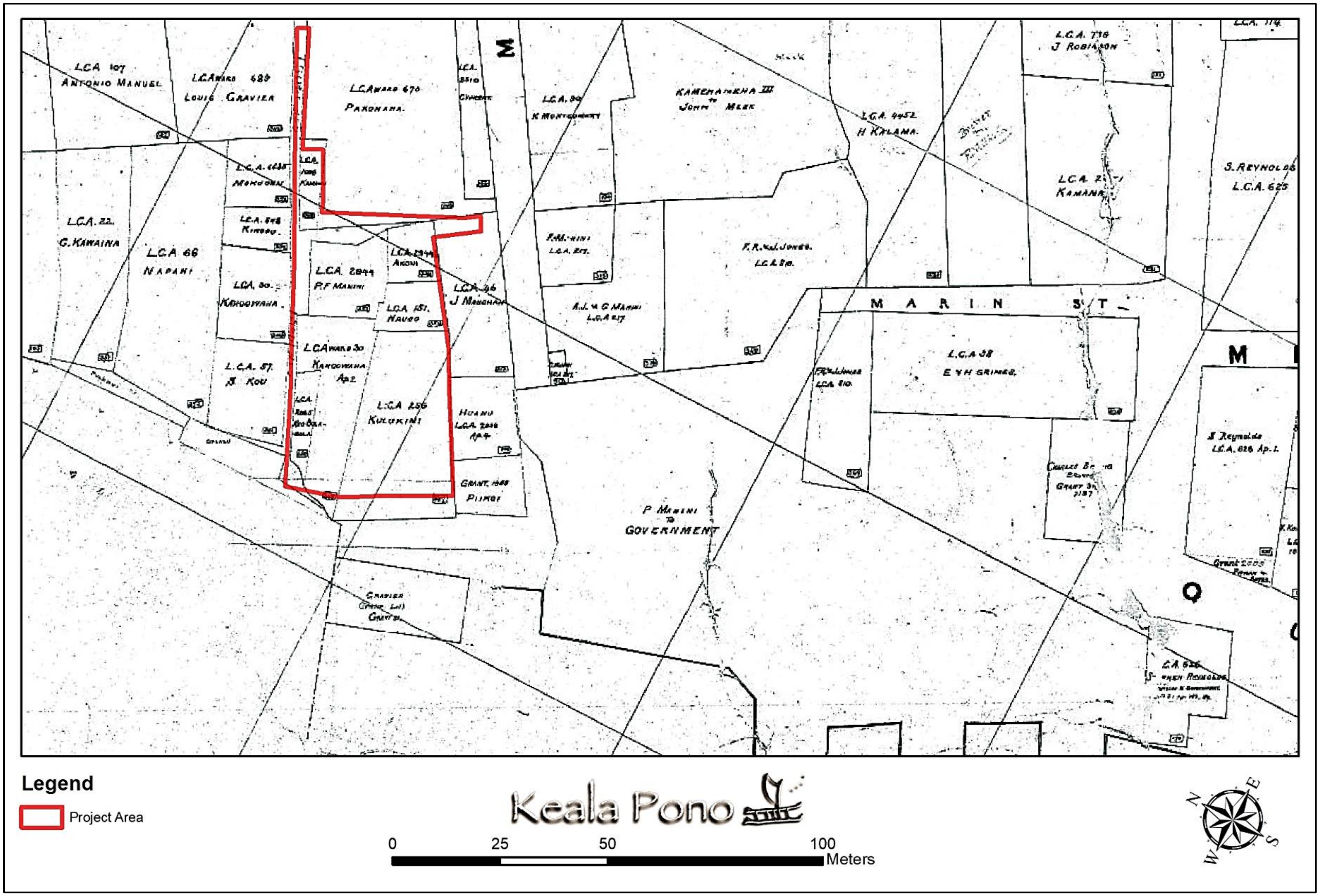


Figure 12. Map of Land Commission Awards near the project area (Lyons 1886).

Table 2. Listing of Land Commission Awards in and Near the Project Area (from Lyons 1886; Awards in Bold are Within the Project Area)

Award No.	Claimant	LCA
8	Kamaha and Pumiula	Yes
16	Eli Jones	Yes
22	G. Kawaina	Yes
30	**Kahoowaha**	**Yes**
33	E & H Grimes	Yes
46	J. Maughan	Yes
57	S. Kou	Yes
66	Napahi	Yes
81	Gravier	
90	K Montgomery	Yes
107	Antonio Manuel	Yes
114	Paki	Yes
151	**Nauoo**	**Yes**
168	M. Kekuanao	Yes
169	M. Kekuanooa	Yes
186	Victoria Kamalulu	Yes
217	A.J. & G. Manini	Yes
247	William Lunalilo	Yes
256	**Kulukini**	**Yes**
548	Kinopu	Yes
620	S. Reynolds	Yes
625	Stephen Reynolds	Yes
626	Stephen Reynolds	Yes
649	Kaiole	Yes
670	Pakohana	Yes
689	Louis Gravier	Yes
736	J. Robinson	Yes
784	Robinson?	Yes
810	F.R. & J. Jones	Yes
1039	**Kamanu**	**Yes**

Table 2. (continued)

Award No.	Claimant	LCA
1287	B.F. Snow	
1753	Kalaimoku	
1893	E. H. Allen Sailors Home	
1955	Piikoi	
2008	Pitman &Bates	
2065	**Keo Bola-Bola**	**Yes**
2734	J. Robinson	
2744	J Robinson	
2844	P.F. Manini	Yes
2838	Huanu	Yes
2944	**P.F. Manini**	**Yes**
2944B	**Akoni**	**Yes**
3188	Kawana?	
3122	Seaman's Chapel Lot	Yes
3187	Charles Brenig	
3192	Hawaha	
3222	E. Cuhna	
4452	H. Kalama	Yes
4882	William French	Yes
6685	Mokuohai	
7107?	Charles ???	
8510	C. Vincent	Yes
10806	Kamehameha III	Yes
11219	Government	
11225	Kekualoa	Yes

Late 19th Century Honolulu and Harbor

The second half of the 19th century saw sweeping transformations throughout the landscape of the islands as Hawai'i became an international hub of commercial activity. This was especially apparent on the island of O'ahu in the Honolulu area and on Maui in Lahaina, which became the economic centers of the archipelago. The harbor of Honolulu and nearby coastal area saw increased business as Honolulu itself was rapidly urbanized. This is reflected in the abundance of place names of the era (Table 3). There has been debate regarding the oldest wharf

Table 3. Listing of Historic (Post-Contact Period) Place Names in Coastal Honolulu

Place Name	Description	Notes	Sources
Boat House or Landing	building, pier	Just south of Pier 12.	U.S. Interior Department 1886; Dodge 1887
C. Brewer’s Company, alt. H.B Company	building, commercial		Metcalf 1847; U.S. Interior Department 1886; Dodge 1887
Brewer’s Wharf, alt. Market Wharf or Reynolds’ Wharf	pier	On or near location of Pier 12, also known as Market Wharf and Reynolds’ Wharf.	U.S. Interior Department 1886; Dodge 1887; Wall 1891
Cattle Wharf	pier	Across the harbor from Pier 12.	Wall 1885
Custom House, alt. Old Custom House, Old Refinery	building, government		Metcalf 1847; U.S. Interior Department 1886; Dodge 1887
Custom House Wharf, Old Custom House Wharf	pier	In the vicinity of Pier 15.	Anonymous n.d.
G. Emme’s Shipyard		On or near location of Pier 15 in the vicinity of the project area.	U.S. Interior Department 1886
Esplanade	historic street, downtown Honolulu		
Fish Market	building, commercial	Located adjacent to Fish Market Wharf at the west end of Honolulu Harbor, south of Honolulu Iron Works.	U.S. Interior Department 1886; Dodge 1887
Fish Market Wharf	pier	Labeled as Sorenson’s Wharf on U.S. Interior Department (1886) map; fronting Smith St.	Dodge 1887
Fort Honolulu Pākākā, Honolulu Fort	fortress, canoe landing, heiau		Metcalf 1847; U.S. Interior Department 1886; Pukui et al. 1974:175; Soehren 2010; McAllister 1933:8
Fort Street (see Fort Honolulu)	historic street, downtown Honolulu	Fort Street, principal street, downtown Honolulu. At its foot was Fort Honolulu, built in 1816 and destroyed in 1857. The Hawaiian name Pāpū was adopted in 1850.	Webster 1858; U.S. Interior Department 1886; Dodge 1887; Pukui et al. 1974:30
Hackfeld’s	building, commercial		U.S. Interior Department 1886

Table 3. (continued)

Place Name	Description	Notes	Sources
Honolulu Iron Works	building, industrial	Located west of Nuʻuanu Street and south of Marin Street near Honolulu Harbor.	U.S. Interior Department 1886; Dodge 1887
Ice House	building, commercial		Anonymous n.d.
Judd Wharf (see Pacific Navigation Wharf)	pier	Located between Piers 12 and 15 not far from	
Kekaulike Street	historic street, downtown Honolulu	Aʻala section, Honolulu, named for the mother of David Kawananakoa and Kuhio Kalaniʻanaole. She was the sister of Queen Kapiʻolani. Closest street to the north of the project area.	Pukui et al. 1974: 106; Monsarrat 1897; Wall 1891
Kewalo	land section	Located east of downtown Honolulu, along coast.	Thrum 1892
King Street	historic street, downtown Honolulu	King Street, principal street, Honolulu, (Pukui et al. 1974:112; Monsarrat 1897) named in 1850 for Hawaiian kings. East boundary of the block of the project area.	U.S. Interior Department 1886
Marin Street	historic street, downtown Honolulu	Located north of Honolulu Iron Works and west of Merchant Street.	Dodge 1887
Maunakea Street	historic street, downtown Honolulu	Important street south of the project area, downtown Honolulu, probably named for an Inter-island steamer.	Pukui et al 1974:148; Wall 1891; Monsarrat 1897; U.S. Interior Department 1886
Merchant Street	historic street, downtown Honolulu	Located one block in from former Queen Street (now Ala Moana), near Honolulu Harbor. Named in 1850, also called Kāepa.	Pukui et al. 1974:150; U.S. Interior Department 1886; Dodge 1887
Nuʻuanu River	stream		
Nuʻuanu Street	historic street, downtown Honolulu		Dodge 1887
Oceanic S.S. Company	building, commercial	Located on the west end of the Esplanade, at south end of Fort Street where Fort Honolulu was located.	Wall 1891

Table 3. (continued)

Place Name	Description	Notes	Sources
Oceanic S.S. Company Wharf	pier	Located south of Pier 12.	Wall 1885
Pacific Navigation Company	building, commercial	Located between Piers 12 and 15.	Dodge 1887
Pacific Navigation Company Wharf, alt. Judd Wharf	Pier	Located between Piers 12 and 15.	U.S. Interior Department 1886
Pilot's Office	building		U.S. Interior Department 1886
Quarantine Island	islet	Honolulu islet on the Kaholaloa Reef in Honolulu Harbor, formerly known as Moku-ʻākulikuli and Mauli-ola, incorporated into Sand Island.	Wall 1885; RM 1382
Queen Street	historic street, downtown Honolulu	Downtown Honolulu named in 1850 for Queen Kālama, wife of Kamehameha II; joins Ala Moana Blvd.	Pukui et al. 1974:207; Webster 1858; Wall 1891; U.S. Interior Department 1886; Dodge 1887
J. Robinson & Co	building, commercial		Webster 1851
Robinson's Shipyard		On or near Pier 10 and Pier 11.	U.S. Interior Department 1886
Sorenson's Wharf	pier	Fronting Smith St.	U.S. Interior Department 1886
Sumner's Place			Wall 1885
Water House	building		Anonymous n.d.

in Honolulu Harbor (see O'Hare et al. 2014), although it appears to be the Nuʻuanu Street Wharf, which originated as a sunken schooner. The schooner had gone underwater in 1825, but in 1837, it was removed with the approval of King Kamehameha III and Chiefess Kīnaʻu to make way for the wharf construction (Thrum 1893; Alexander 1908).

Two lithographs from this period show the waterfront region where the project area is located (Figures 13 and 14). Among the structures illustrated are the Honolulu Fort, the Robinson & Co. shipyards, the French/Charlton Wharf, the Market House, Brewer's Wharf (today's Pier 12, roughly two blocks from the project area), the Custom House, and the Ladd & Co. Wharf. Various types of vessels are docked in Honolulu Harbor, and a beach leads to the ocean on the south side of the harbor.

Construction of Honolulu Harbor's first seawall was completed in 1874. Historic maps from this time period depict the wharves and surrounding area but do not show the seawall (Figure 15). Not everyone was pleased with the seawall. In 1895, the local newspaper *The Independent* expressed its discontent that the seawall was a breeding ground for black crabs, which they portrayed as dirty creatures. Others, however, welcomed the development of the harbor. One author noted that it was a safe and accommodating harbor,

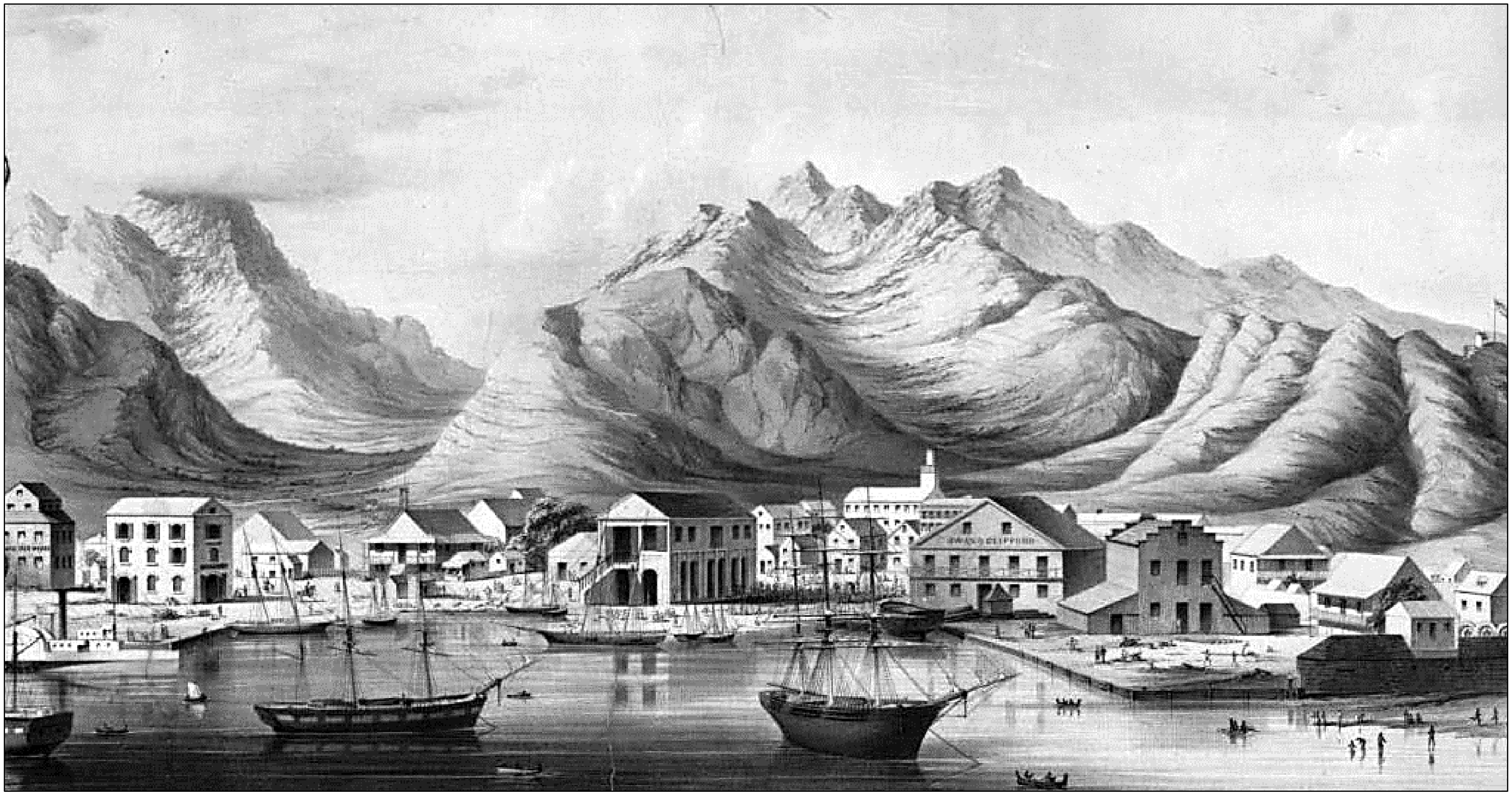


Figure 13. Lithograph (Emmert 1854) showing from right to left: the Honolulu Fort, the Robinson & Co. shipyards, the French/Charlton Wharf, the two-story Market House with Brewer's Wharf (today's Pier 12) in front, (center of lithograph), and the three-story Custom House with the Ladd & Co. Wharf in front. The size and proximity of the buildings is not to scale.

Figure 14. Lithograph (Perkins 1854) showing from right to left: the Robinson & Co. floating wharf, the trapezoidal Brewer's Wharf (today's Pier 12) in front of the Market House, and the three-story Custom House with the Ladd & Co. Wharf in front.

equal to those of Europe and America (HDOT 2008). The 1881 map labels the coast in front of the project area as a cattle wharf. North of Nuʻuanu Stream, Kawa Fishpond is still visible despite the increased development around the harbor area. A map from a decade later shows even more roads in place including Kekaulike Street and Queen Street, which would later become Nimitz Highway (Figure 16). There is also a large market building makai of the property.

According to a Dakin Fire Insurance Map from 1891, the block of the project area had many small and medium-sized dwellings (Figure 17). There was also a church located just outside of the study parcel as well as various businesses along Maunakea Street. These include a laundry, two fruit shops, a tailor, a storage building, a pork shop, a butcher, a barber, and a produce store. A furniture shop and blacksmith were located on the corner of Kekaulike and King Streets. By 1927, the layout and type of buildings as well as the kinds of businesses in the area had changed (Figure 18). In 1919, the C. Q. Yee Hop building was constructed within the study area and was described as a warehouse with one row of wood posts and a concrete floor. The building is still standing within the project area and is currently being used as a warehouse by a descendant of Yee Hop. Kiersten Faulkner of the Hawaiʻi Historic Foundation notes the following about Yee Hop and development in Chinatown:

> …By the outbreak of World War II and the end of this period, Chinatown was a densely packed district, comprised of commercial, industrial, and residential buildings… In the district's southern half, wood and brick warehouses and small light-industrial shop buildings tended to occupy the interior of blocks; the lava rock C. Q. Yee Hop warehouse and dormitory at 112 Nimitz Highway is an extant example of this trend.
>
> Chun Quan (C. Q.) Yee Hop was another successful Chinese merchant. Beginning in 1885 with a one-man meat stand in Chinatown, C. Q. Yee Hop built a multimillion-dollar commercial empire across the Hawaiian Islands over the next seven decades. One of C. Q. Yee Hop's earliest and most significant business ventures, C. Q. Yee Hop Market, operated out of his building at 125 N. King Street for over 40 years. (McElroy et al. 2022:Appendix E)

According to the 1927 map, there are two other smaller buildings within the property at this time that were also used as warehouses. A fire proof construction built in 1926 was used as a produce warehouse and sausage facility complete with electric power, a pig roasting furnace, and an attached smokehouse. The mauka portion of the property had two large buildings, one used as an employee dormitory and warehouse, while the other housed the kitchen, dining room, receiving and shipping shed, and another sausage facility with a smokehouse and furnace. The alley running through the block is already in place at this time. Also on the block were an office and warehouse built in 1919 owned by the Sperry Flour Company, a food products factory, offices, storage buildings, a fish food facility, the King Street Market, and several other warehouses. Many of these same buildings are still in place in 1955, though some of them have new uses (Figure 19). The former Sperry Flour Company building is now a parking lot and the sausage facility is a produce warehouse. Along Maunakea Street is a dry goods shop, sign painting facility, and restaurants.

Maunakea Street Wharf/Emme's Shipyard and Wharf

A small landing known as Maunakea Street Wharf likely existed between Nuʻuanu Avenue and Nuʻuanu Stream, in the vicinity of the study area and current Pier 15 during the early 1800s when Francisco de Paula Marin was granted land there (O'Hare et al. 2014:51). In 1843, Marin's descendants sold some of these lands to the Hawaiian government, and a wharf known as Emme's Wharf was constructed. In 1848, a breakwater was built to reduce siltation in Honolulu Harbor that extended across to Nuʻuanu Stream from Emme's Wharf, just in front of the study area across Nimitz Highway. Around 1900 the wharf was transformed into a 900-ft. triangular pier (HDOT 2008) built on fill land out from natural shoreline. In the following years, the pier was used by various entities, including the military, sampan tuna fishermen, lumber ships, and a fleet of the Matson Navigation Company. No information could be found specifically for the building materials of Emme's Wharf, although it was likely made of the same materials as other wharves in Honolulu Harbor at that time, generally described as stone and timber.

In 1907, the Emme's Shipyard and Wharf vicinity was owned by the U.S. Military and later leased to the Hawaiian Government. The area was used by fishermen who moored vessels along the pier. By 1908 a series of gable-roofed structures with a wooden apron were situated on the pier. Concrete pilings and concrete decks were constructed in the area by 1912. By 1918–1919, Pier 15 was designated as a pier and used to unload lumber from ships (O'Hare et al. 2013). The buildings on the pier were demolished when the mauka end of the pier was converted into Nimitz Highway in the early 1950s. Around 1955–1956, the pier was improved, and a storage shed with a fish auction facility was constructed (HDOT 2008). In 1978 the wooden apron was demolished, but the concrete support pilings were left in place. Mason Architects (2012:9–11) provide details of the pier's construction history:

> It is more likely that Pier 15 was built in the early 20th century. It is pictured in a 1908 photograph which shows that its superstructure at that time was comprised of multiple gable-roof frame buildings joined side-by-side. The footprint of the pier was similar to the existing triangular-shape plan that exists today, however, as noted below, it was larger at this time.
>
> Pier 15 provided anchorage to different vessel types through the mid-twentieth century. It served the sampan fishing fleet into the late-teens/early 1920s when the fleet moved to Kewalo Basin. The relocation of the fleet reduced overcrowding in Honolulu Harbor, and Pier 15 was then designated as a 900-foot lumber pier due to its proximity to land transportation. A circa 1935 photograph shows freight vessels docked at the pier, possibly carrying lumber or other necessities. The pier provided anchorage to a foreign vessel, the German Cruiser KMS Karlsruhe, in 1934. The pier was used for the handling of army freight circa early 1941…
>
> The multi-gabled superstructure remained on the pier until December 1950, when it was demolished as part of a $2 million project to widen (old) Queen Street. A section of Queen Street, between Fort and River Streets, was expanded into an eight-lane expressway (now Nimitz Highway) part of which was built makai of the shoreline, out over the harbor on piles. This project reduced the pier's footprint in size to 65,000 square feet. The southern portion of the site was allocated for a new Fire Station, 14 which was built circa 1951…
>
> A few years later, circa late-1955, the Pier 15 Shed was built directly north of the Fire Station…The floor plan…indicates that the shed was designed with two interior offices, several bathrooms, and a large, open-sided interior space facing the pier apron that included fish auction and fish storage areas. The plan also indicates that the south wall of the shed was solid, with no apertures. Original exterior elevation drawings indicate a wide (11'-6") transite canopy on steel trusses along the makai side of the shed, which provided shade over the fish auction area. The drawings also show a 2'-6" reinforced concrete hood on all other elevations (which is extant today).
>
> Several modifications to the Pier 15 Shed have occurred since the 1950s, at unknown dates. Sometime after 1978, the timber apron that fronted the Pier 15 Shed was removed, so that the Shed now immediately fronts the harbor waters. The partially submerged pilings extant today…are likely remnants of this apron….
>
> Another change that occurred, possibly in connection with the removal of the timber apron, is the modification to the west (makai) wall, and the interior of the shed. The makai-facing office wall was removed (today the entire makai façade consists solely of concrete piers and a metal pipe handrail with chain-link fence infill), and the interior office spaces and bathrooms were removed. Also, sometime after 1978, the wide canopy along the makai-facing wall was removed, and a driveway opening was inserted into the south wall.

History of Chinatown

The bulk of Chinese immigrants arrived in Hawai'i around 1852 under contract to work the sugarcane fields, though a few came to the islands prior as traders. Many of the Chinese came to call Hawai'i home and set up shops in the area of Honolulu known today as Chinatown. The project area is located within this

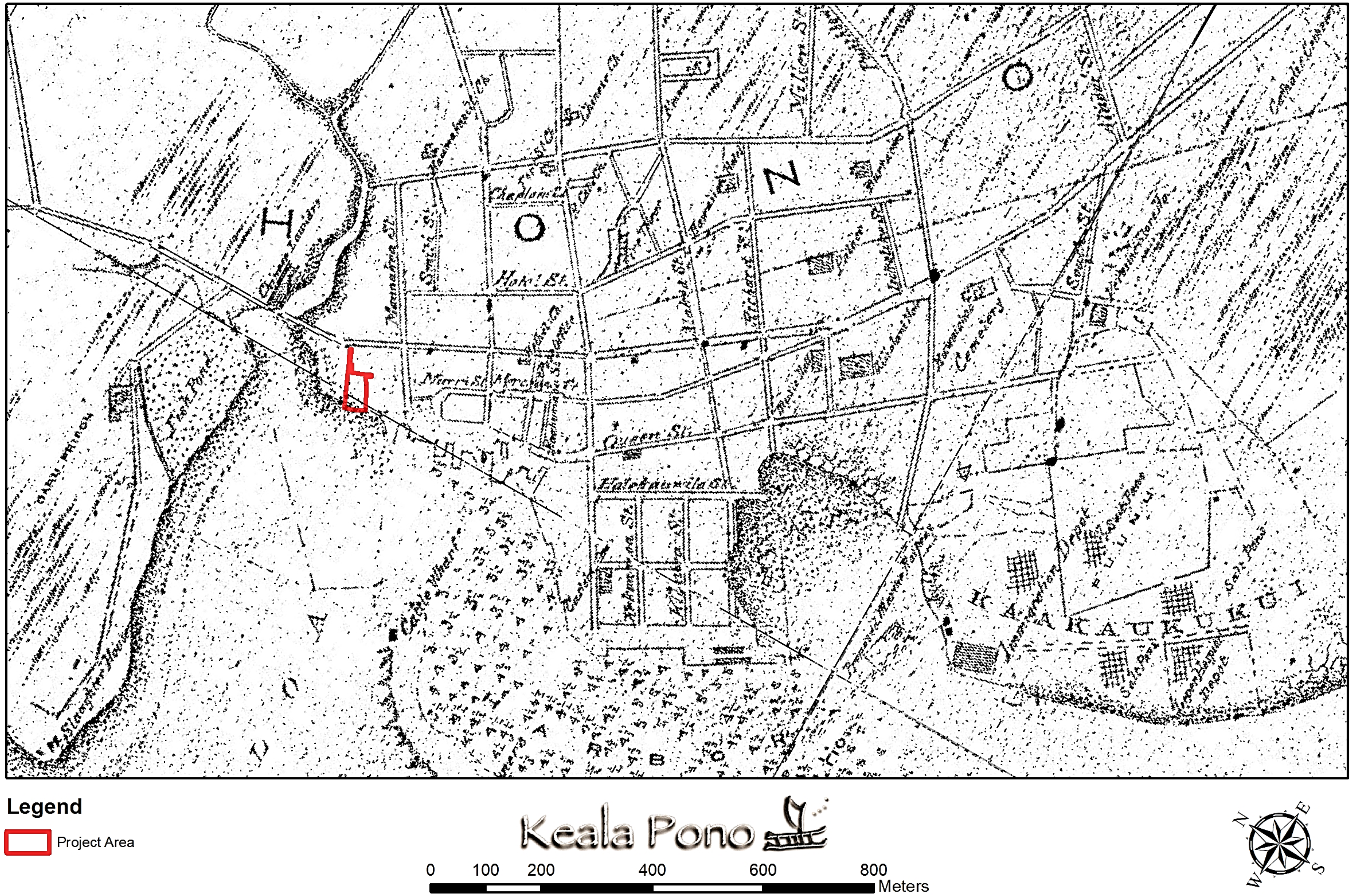


Figure 15. Portion of a map of Kona District, O'ahu (Covington 1881).

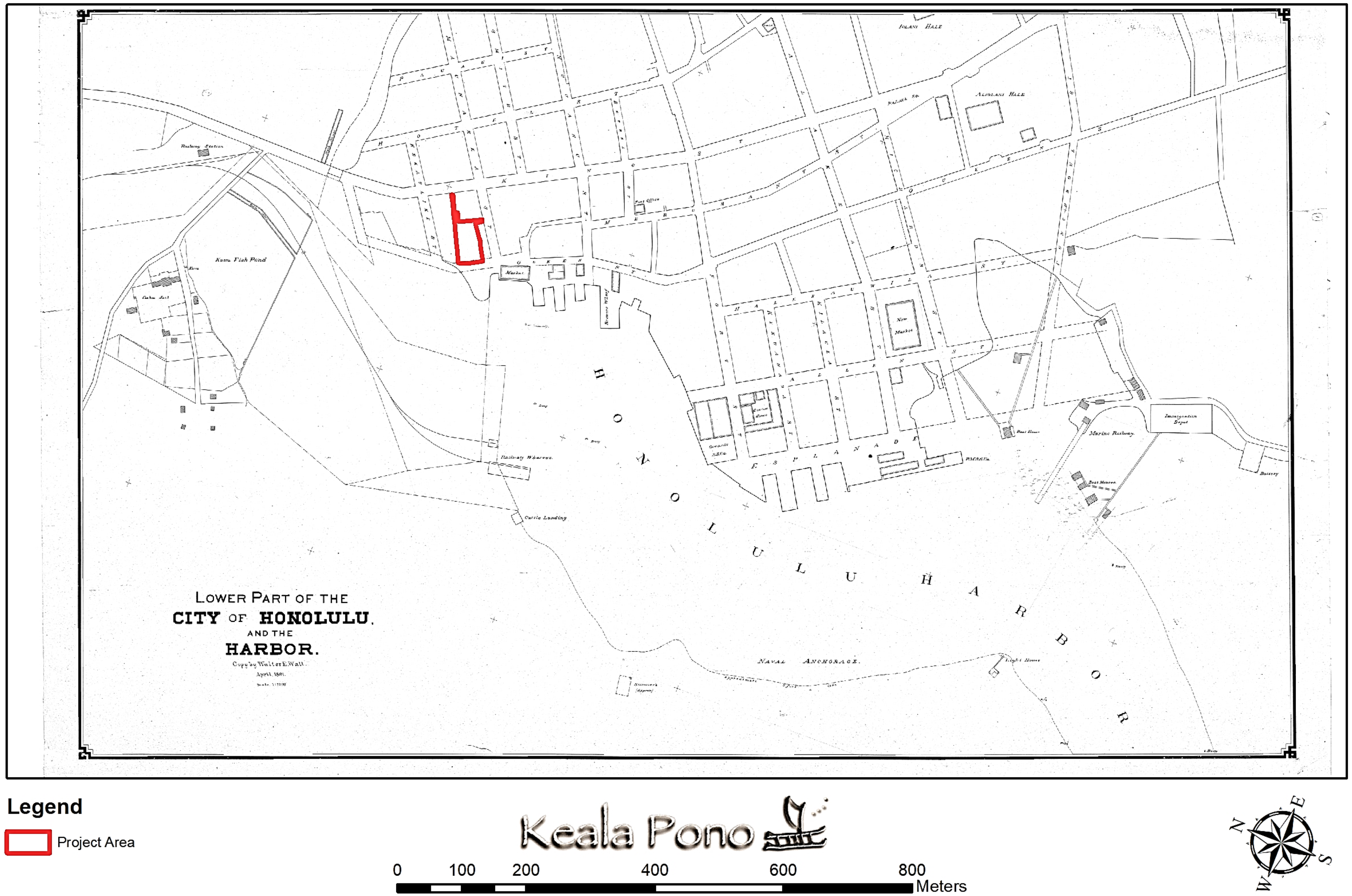


Figure 16. Map of the Lower Part of the City of Honolulu and the Harbor, O'ahu (Wall 1891).

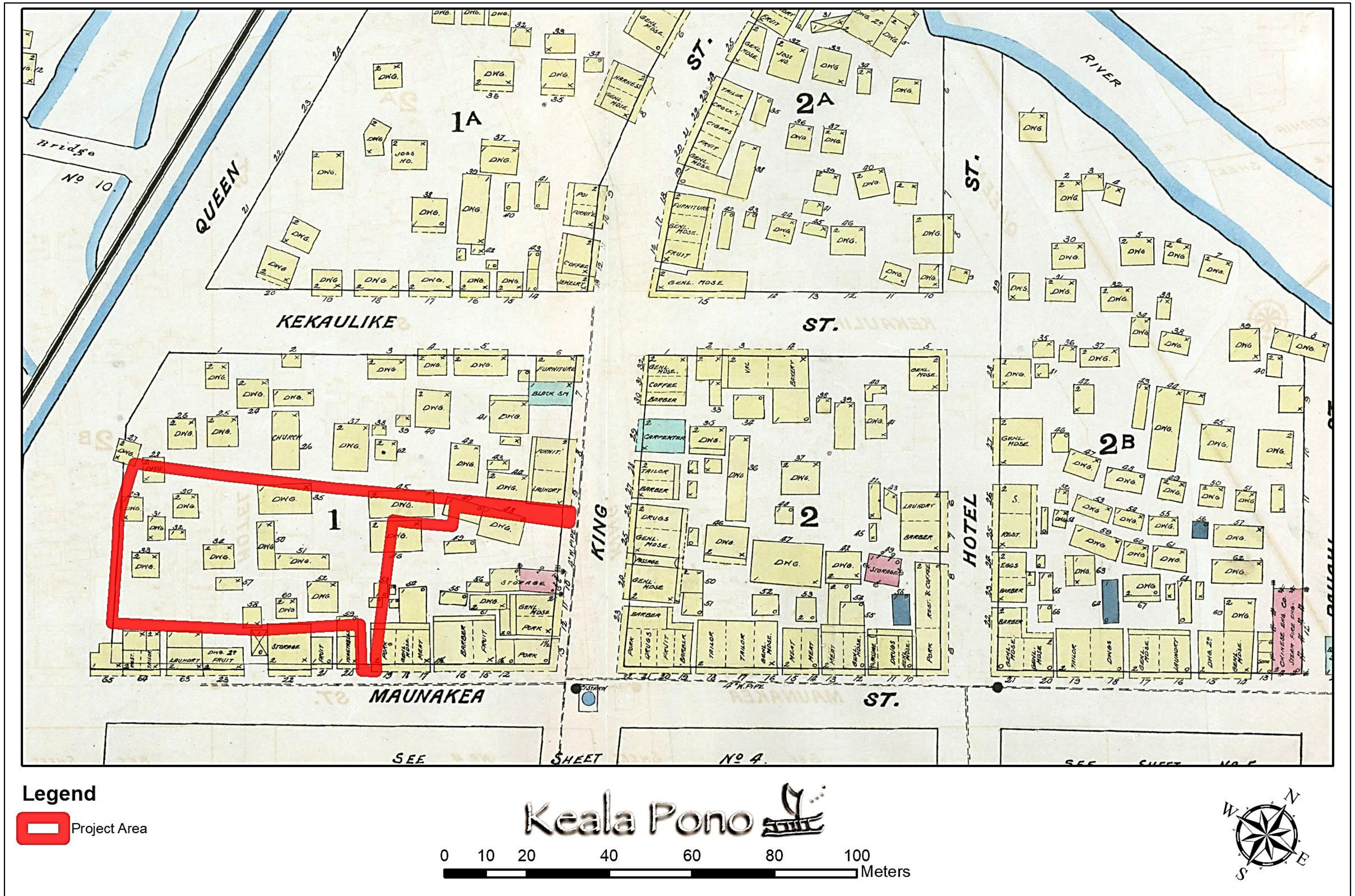


Figure 17. Dakin Fire Insurance Map showing the buildings within and surrounding the project area (Dakin 1891).

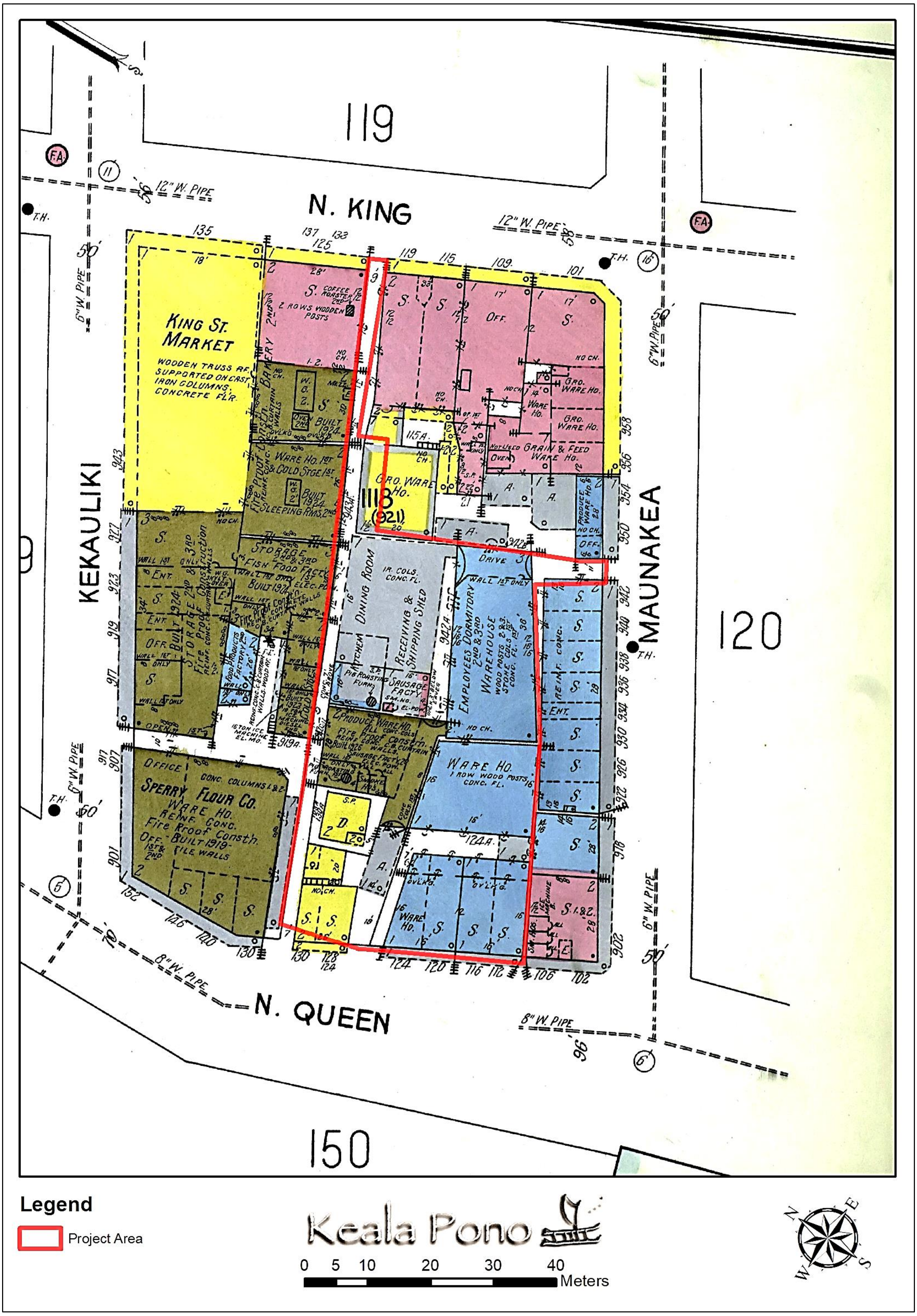


Figure 18. Sanborn Fire Insurance Map showing the project area (Sanborn 1927).

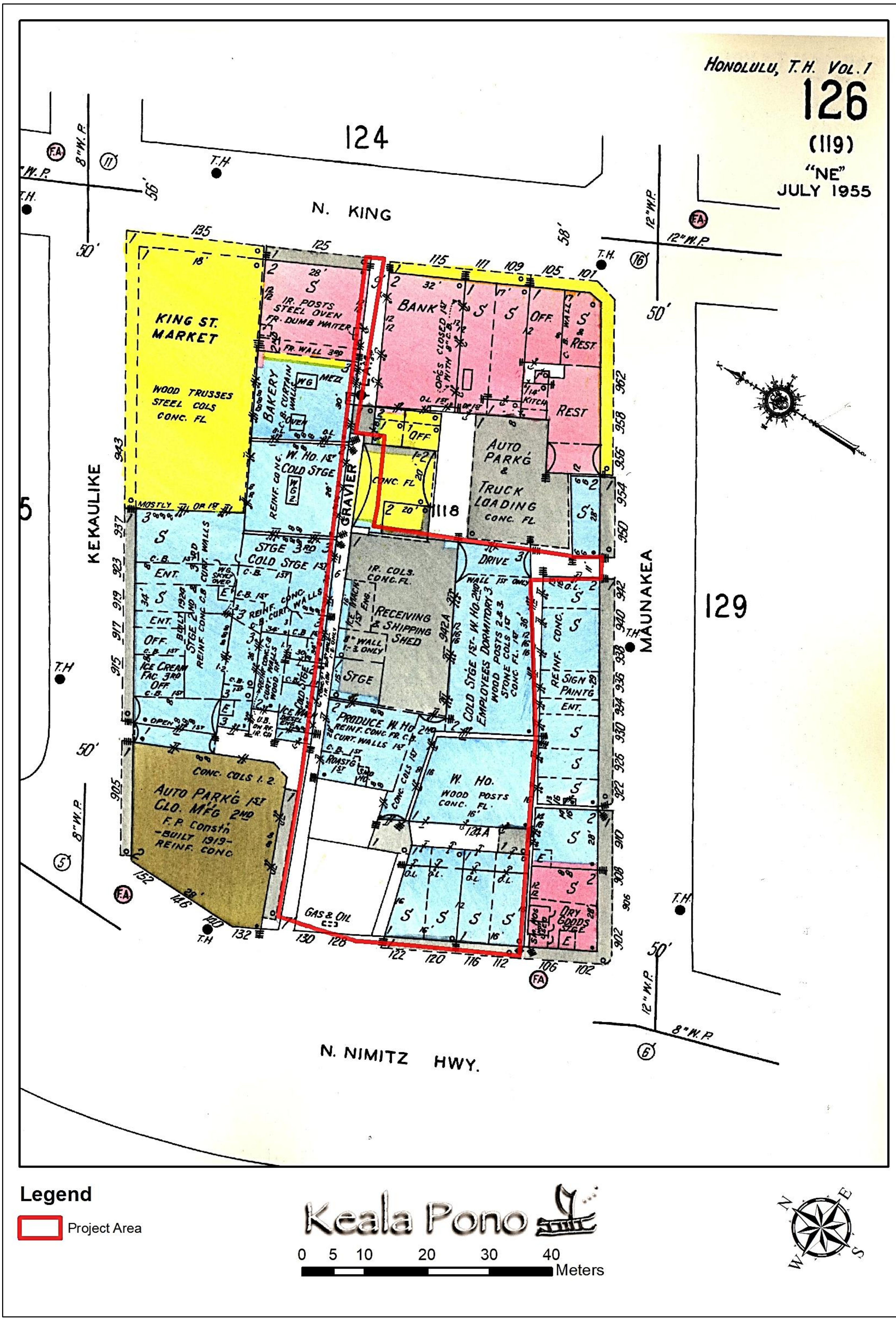


Figure 19. Sanborn Fire Insurance Map showing buildings and their uses within and near the project area (Sanborn 1955).

This page left intentionally blank.

neighborhood, which is considered to be between Nuʻuanu Street, River Street, Kukui Street, and Queen Street. It was densely populated with around 7,000 residents of predominantly Chinese and Japanese descent (Iwamoto 1969). The neighborhood soon became overcrowded, unhygienic, and run down. The bubonic plague quickly spread due to the unsanitary living conditions.

The first three cases of the bubonic plague in Hawaiʻi were discovered in Chinatown in 1899. A total of 61 deaths were reported in a little over three months following this discovery. Deemed out of control, the Hawaii Board of Health decided to set 41 fires to disease-ridden structures in the Chinatown neighborhood:

> [O]n December 30, after careful deliberation, the Board of Health chose fire as the 'surest, most thorough, and most expeditious' method. Fire would destroy the plague germs, kill rats, cleanse the soil and open it up to the purifying influence of sun and air, and would prevent any occupancy of the premises until a safe period of time had elapsed. (Iwamoto 1969:124)

One of these fires, set to Kaumakapili Church, spread with the strong wind to neighboring buildings and destroyed the majority of Chinatown. The fire was finally extinguished right before Nuʻuanu Avenue after damaging eight blocks. After the fires, Chinatown and many of the dilapidated buildings throughout Honolulu were renovated. Wooden structures were rebuilt with sturdier stone, brick, or iron, including those near the project area.

In 1973, the Chinatown Historic District comprised of 15 city blocks, was listed on the National Register of Historic Places (NRHP). The nomination form states that "Chinatown is one of the few areas of Honolulu which has maintained a sense of identity as a community over the years." The project area is located within the Chinatown Historic District which is defined as the area encompassed by Beretania Street, Nuʻuanu Avenue, Nimitz Highway, and the Nuʻuanu Stream at River Street.

Honolulu Timeline

Consolidating vast information regarding events in the history of Honolulu, the following timeline provides a very brief chronology of Honolulu's past and lends further insight to the process through which the region has evolved. This timeline summarizes the historical information presented in this chapter by highlighting points of history, such as significant structures that were built, outbreaks of illnesses, and actions taken by individuals and the government.

Late 1700s	Early visitors arrive in Honolulu, including explorers, scientists, etc.
1795	Kamehameha I conquers Oʻahu.
1809	Kamehameha I moves court, government, and residence to Honolulu. Manini builds stone house for king, the first stone structure in Honolulu.
1810	First maps of Honolulu, based on ʻĪʻī's memories, with harbor, Manini's stone house and complex, and other structures including a canoe landing and Pākākā Heiau.
1816	Honolulu Fort built in response to Russians landing on Oʻahu; coral block material used for the fort construction; Kotzebue maps Honolulu and the harbor.
1818	European building on wharf adjacent to Fort Honolulu; Tabulevich describes Manini's house as of white stone.

1820	Arrival of missionaries associated with the American Board of Commissioners for the "Foreign Missions Sandwich Islands" making Honolulu their headquarters.
1821	Bensell's painting shows two piers, one by the fort and the other within Honolulu Harbor.
1825	Detailed map of Honolulu Harbor and passage, along with major buildings, Fort Honolulu, and Kawa Fishpond (Malden 1825). European houses included stone houses and frame houses of timbers shipped from America. A few good streets are in place.
1827	Aliʻi Kalanimōkū deeded reef land to John Robinson at current Pier 10 and 11 area.
1828	Honolulu Harbor is the defining feature for the area.
1840	Wilkes conducts mapping and sounding of harbor; there is documentation of coral quarrying.
Ca. 1843	Emme's Wharf is built at the current Pier 15 across from the project area.
1845–1848	The Māhele established land ownership into Hawaiian society and granted four types of land awards: those to the Crown, the Hawaiian government, the aliʻi, and Fort Land titles.
1846	Honolulu becomes capital of the Hawaiian Kingdom.
1848	A breakwater is constructed in the vicinity of Pier 15 to curtail runoff from Nuʻuanu Stream.
Ca. early 1850s	Water system established to connect Nuʻuanu Stream and the harbor.
1850	Kuleana, or individual land awards were granted to makaʻāinana (common people).
1852	David Weston founded Honolulu Iron Works and Flour Mill Company and produced hardware for sugar mills. In 1869, Theo H. Davies became owner and in 1876, Alexander Young was brought on as a partner and manager. In 1896, Young retired and Christian J. Hedemann was appointed the new manager.
1853	In March and April of 1853, smallpox was recorded by Dr. Potter at Kahakaʻaulana (Sand Island). Later in May, the disease broke out in Honolulu and was first seen at the house of Kaʻaione in Kakaʻako. Kamakau notes that the first victim was a woman with a tattooed face (maka-paʻele). And while the disease raged on Oʻahu, it did not extend to the other islands (Kamakau 1992:237).
Pre-1880	Coral blocks cut for Esplanade and Honolulu Fort building materials.
1893	The USS *Boston* docks at Pier 12 and its troops play a role in the overthrow of the Hawaiian monarchy.
1895	Cholera epidemic hits Honolulu.
1898	An annexation ceremony is held on Pier 12.
1899	Bubonic plague breaks out in Honolulu, mainly in the downtown and Chinatown areas. On New Year's Eve of 1900, the Board of Health begins to set fires to condemned buildings to control spread of the disease.
1900	Fire in Honolulu destroys most of the buildings in Chinatown. Pier 15 is transformed into a triangular shape.

1950	Parts of Pier 15 are demolished on the mauka section when Nimitz Hwy. is widened.
1973	Chinatown Historic District is listed on the National Register of Historic Places.

Previous Archaeology

As both the capital and major city of Hawai‘i, Honolulu has witnessed many of the most significant social and political events and upheavals since the early 19th century, particularly in the area surrounding the harbor, where various precincts (e.g., Chinatown, Downtown, Capitol District) were established. Previous archaeological research has begun to document this transformation with finds such as historic trash deposits, structural remnants, pondfield remains, and pre- and post-contact burials in the vicinity of the project area. Previous archaeological studies are shown in Figure 20 and Table 4, while archaeological sites are displayed in Figure 21. They are discussed in the text spatially, beginning with studies makai of the current project area. State Inventory of Historic Places (SIHP) numbers are prefixed by 50-80-14.

Several studies took place on Nimitz Highway adjacent to the current study area. An archaeological inventory survey was conducted for water system improvements along the highway between Queen and Awa Streets (McDermott and Mann 2001). A Nu‘uanu Stream bridge, marked as constructed in 1932, was found to actually be a reconstruction of the original. In addition, the Kawa Fishpond (SIHP 5966), was identified during the survey, though it is not near the project area. Later archaeological monitoring for the water system construction activities (Winieski and Hammatt 2001), documented one additional historic property. This was a light-gauge rail from the Honolulu Rapid Transit trolley system (SIHP 5942). Historic material and features were also recorded, including a bottle, a brick-lined manhole, and a brick and mortar alignment.

Railroad remains of SIHP 5942 were also identified at the intersection of Queen Street and Nimitz Highway. Two literature review and field inspections were also completed for water system improvements on Nimitz Highway and other streets in Honolulu (O’Hare et al. 2015; 2016). While the study areas consisted almost entirely of paved streets, a model of archaeological potential was developed, with Nimitz Highway north of Pier 12 designated as low probability for encountering archaeological resources and Nimitz Highway south of Pier 12 designated as high probability.

An extensive study was conducted for the Honolulu High-Capacity Transit Corridor Project (HHCTCP) (Hammatt 2013). The segment closest to the current project area is Section 4, which extends from Middle Street to Ala Moana Center along Nimitz Highway. Although a number of archaeological sites were identified in this segment, only one is located near the current project. SIHP 7427 is situated near Pier 15, at the corner of Nimitz Highway and Kekaulike Street. It includes subsurface structural remains, a historic trash pit, a cultural layer, and one isolated human bone.

Makai of Nimitz Highway, a literature review and field inspection was required for improvements to Piers 12 and 15 (O’Hare et al. 2013). It was suggested that coral blocks makai of Pier 12 may have actually come from the old Honolulu Fort, built in 1816 and dismantled in 1857. It was also noted that Pier 15, built in 1900, was modified in the 1950s due to the construction of Nimitz Highway. Pier 15 was designated as SIHP 7576, while Pier 12 was designated as SIHP 7575.

A historical assessment was completed for the area between Pier 5 and Pier 14 (Wong-Smith and Rosendahl 1990). It was determined that the project area was composed of previously submerged lands. Furthermore, the Aloha Tower and its associated property along with Piers 8–12 were all noted to be historically significant structures. Archaeological monitoring was later conducted along

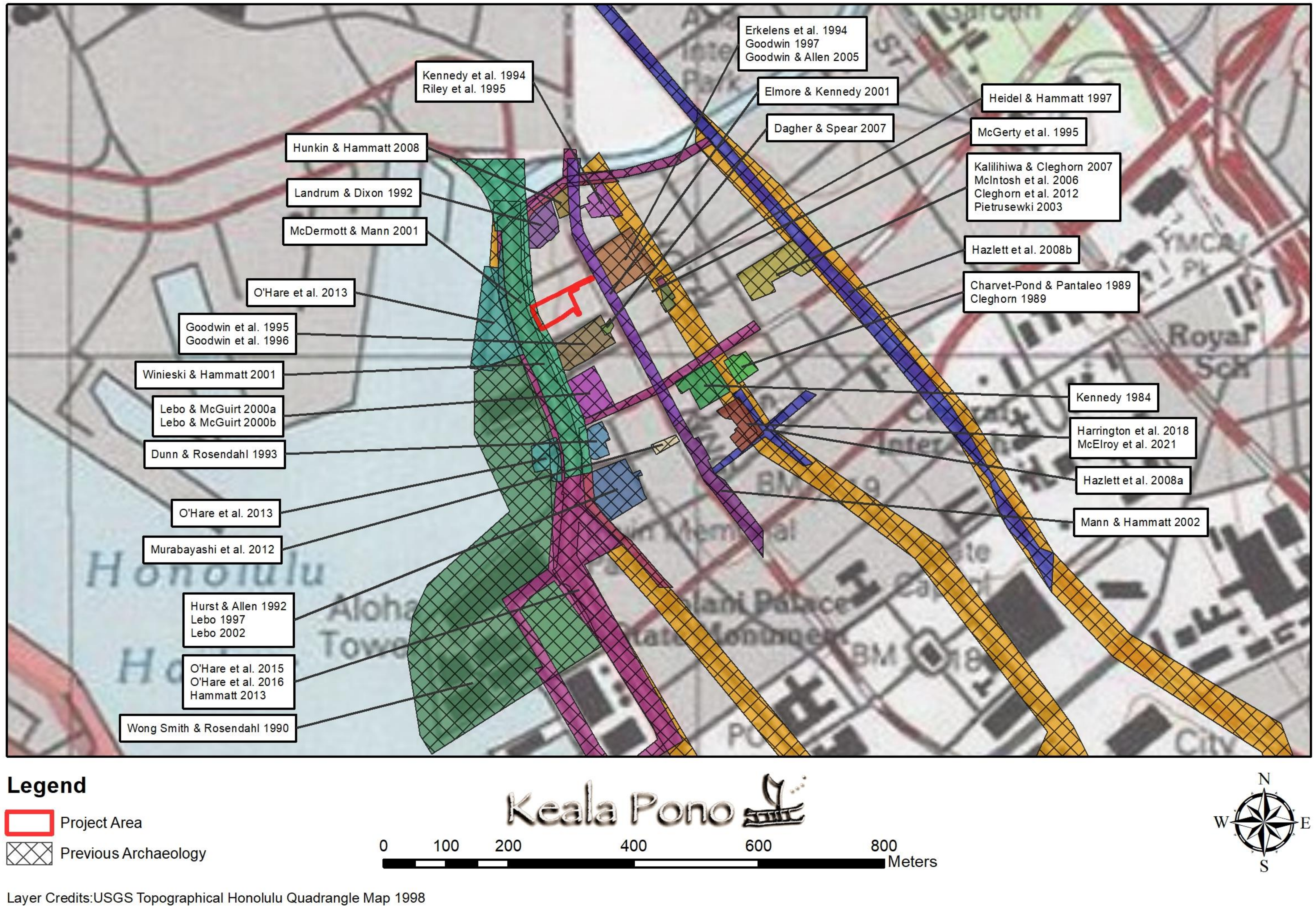
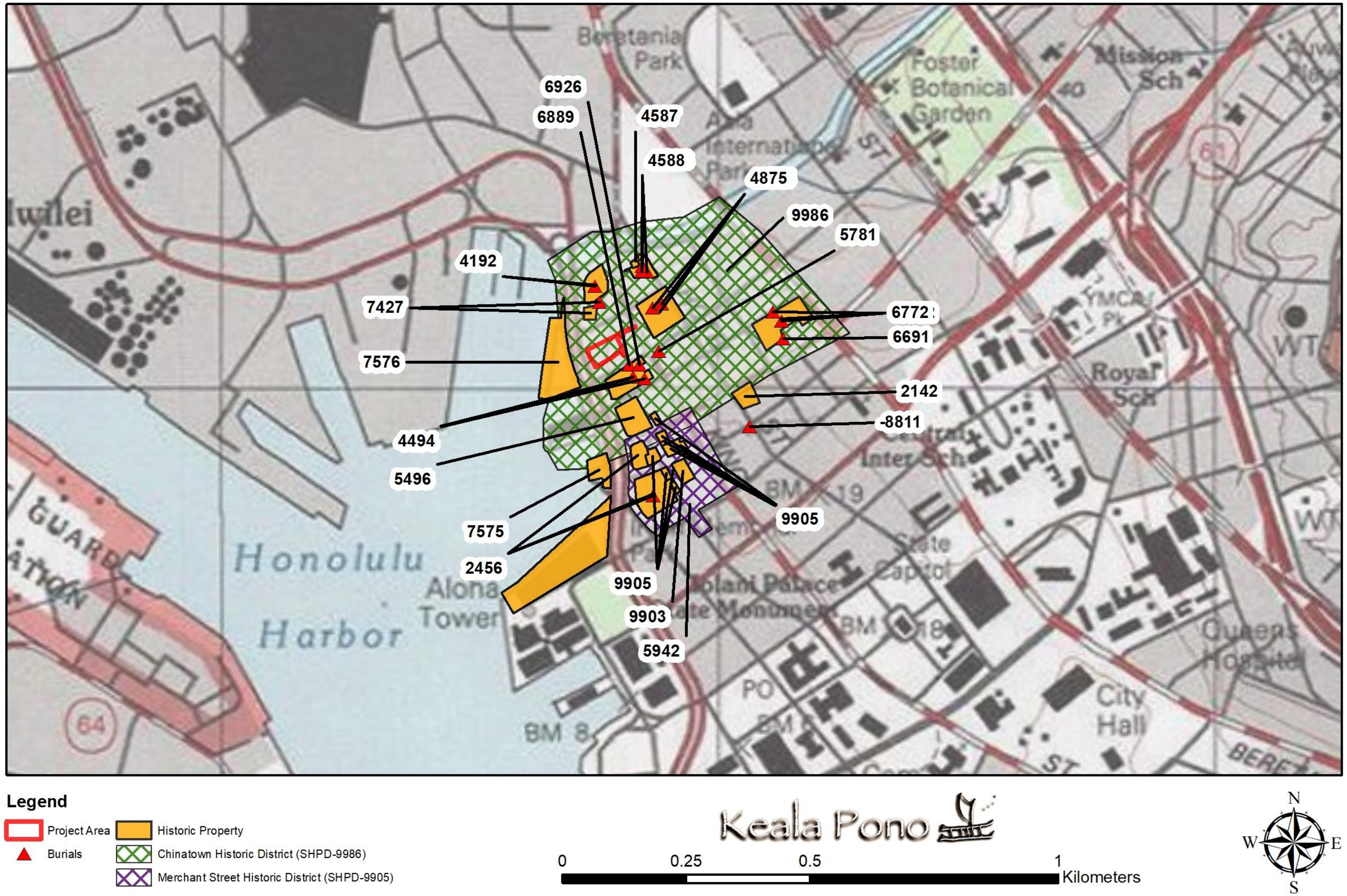


Figure 20. Previous archaeology in the vicinity of the project.



Layer Credits:USGS Topographical Honolulu Quadrangle Map 1998

Figure 21. Archaeological sites in the vicinity of the project area.

Table 4. Previous Archaeological Research in the Vicinity of the Project Area

Author and Year	Location	Work Completed	Results and SIHP # (50-80-14-)
Kennedy 1984	Corner of Hotel and Bethel St.	Test Excavations	Negative findings.
Cleghorn 1989	Chinatown Gateway Plaza	Archaeological Test Excavations	Noted scattered historic artifacts.
Charvet-Pond and Pantaleo 1989	Chinatown Gateway Plaza	Archaeological Monitoring	Documented a ca. 1880–1920 trash deposit (SIHP 2142).
Wong-Smith and Rosendahl 1990	Aloha Tower Vicinity	Historical Assessment	Noted that the area was extensively filled in the historic period.
Hurst and Allen 1992	Harbor Court (Merchant St.)	Archaeological Survey and Monitoring	Identified SIHP 2456, which includes a cultural layer and 18 post-contact features, traditional and historic artifacts, and building debris. The site is in Merchant Street Historic District, SIHP 9905.
Landrum and Dixon 1992	River Nimitz Redevelopment Project	Data Recovery	Documented SIHP 4192, a pre-contact burial and post-contact trash pits, a building foundation, and various artifacts.
Dunn and Rosendahl 1993	Nuʻuanu Court	Archaeological Inventory Survey	Identified SIHP 2456, a cultural layer with traditional and post-contact features. The survey lies within the Merchant Street Historic District (SIHP 9905).
Erkelens et al. 1994	Kekaulike Street Revitalization Project, Diamond Head Block	Burial Report	Reported on a secondary burial of four individuals (SIHP 4587).
Kennedy et al. 1994	Kekaulike Revitalization Project, ʻEwa Block	Archaeological Investigation	Identified SIHP 4587, subsurface fishpond remnants and a subsurface cultural layer with three human burials (SIHP 4588).
McGerty et al. 1995	Hotel St. between Maunakea and Smith St.	Literature Review and Field Check	Archival research suggested that the area was once a maika field in use in the pre-and post-contact eras before it became part of the historic Chinatown.
Riley et al. 1995	Kekaulike Revitalization Project, ʻEwa Block	Data Recovery	Conducted further work at SIHP 4587 fishpond remnants and 4588 cultural layers with three burials; identified cultural material illustrating the transformation from Kīkīhale to Chinatown.
Goodwin et al. 1995	Marin Tower (between Smith and Maunakea St.)	Data Recovery	Reported on features and cultural material, including 15 burials and several displaced skeletal remains with associated coffin material such as nails and grave goods. Grave goods included beads, rings, buttons, iron, a necklace, ceramics, and a knife. (SIHP 4494).
Goodwin et al. 1996	Marin Tower (between Smith and Maunakea St.)	Archaeological Inventory Survey, Data Recovery, Monitoring	Reported on pre- and post-contact features and cultural material, including remnants of the Marin residence, as well as cultural material from the Honolulu Ironworks and Chinese merchant families (SIHP 4494).

Table 4. (continued)

Author and Year	Location	Work Completed	Results
Goodwin 1997	Kekaulike Revitalization Project, Diamond Head Block	Archaeological Inventory Survey	Identified SIHP 4875, a subsurface cultural layer with 105 features indicative of both pre- and post-contact occupation.
Heidel and Hammatt 1997	Corner of Hotel and Maunakea St.	Subsurface Testing	No findings considered significant, but a basement full of post-contact refuse was discovered.
Lebo 1997	Harbor Court	Data Recovery	Further documented SIHP 2456 cultural layers and features (Hurst and Allen 1992); increased the total number of features to 53; in Merchant Street Historic District, Site 9905.
Lebo and McGuirt 2000a	800 Nuʻuanu Project	Archaeological Inventory Survey	Recorded a cultural layer dating from the pre-contact period to the 20^{th} century (SIHP 5496).
Lebo and McGuirt 2000b	800 Nuʻuanu Project	Data Recovery	Further documented the SIHP 5496 cultural layer.
Elmore and Kennedy 2001	King St. between Maunakea and Smith St.	Archaeological Monitoring	Removed a pre-contact burial (SIHP 5781) and placed it under the care of SHPD for future reinterment. Recovered isolated cultural material not associated with the burial.
McDermott and Mann 2001	Nimitz Hwy. between Queen and Awa St.	Archaeological Inventory Survey	Documented Kawa Fishpond (SIHP 5966), although it is not near the current project.
Winieski and Hammatt 2001	River St. to Ala Moana Blvd.	Archaeological Monitoring	Identified railroad remains (SIHP 5942) at the Queen St./Nimitz Hwy. intersection.
Lebo 2002	Harbor Court	Data Recovery	Further studied SIHP 2456 (traditional Hawaiian habitation) (Hurst and Allen 1992; Lebo 1997). Dated initial occupation at ca. AD 1000–1200.
Mann and Hammatt 2002	King St. between Dillingham and South St.	Archaeological Monitoring	Recorded a previously disturbed burial (SIHP 6371) not in the vicinity of the current project.
Pietrusewsky 2003	Corner of Smith and Beretania Streets	Burial Report	Studied the remains of at least 21 individuals of SIHP 6772, most of which were poorly preserved and incomplete. Sex and age distribution of the burials suggest a family cemetery. Dental and skeletal pathologies were observed.
Goodwin and Allen 2005	Kekaulike Revitalization Project, Diamond Head Block	Data Recovery	Dated the SIHP 4875 cultural layer and 105 traditional and post-contact features (Goodwin 1997) to the 13^{th} century; recovered a multitude of cultural material.

Table 4. (continued)

Author and Year	Location	Work Completed	Results
McIntosh et al. 2006	Corner of Smith and Beretania Streets	Archaeological Inventory Survey	Recorded SIHP 6691, which consists of disturbed human remains, historic trash pits, and historic building remnants.
Dagher and Spear 2007	Pacific Town Center, makai side of N. King St.	Archaeological Monitoring	Recorded a human burial that contained two individuals (SIHP 6889), and a wall and historic artifact cache (SIHP 6926).
Kalilihiwa and Cleghorn 2007	Corner of Smith and Beretania Streets	Archaeological Monitoring	Identified SIHP 6772, consisting of 22 sets of human remains, which were reinterred on site.
Hazlett et al. 2008a	Aloha Tower Drive	Archaeological Monitoring	Negative findings.
Hazlett et al. 2008b	Fort Street Mall and Hotel St.	Archaeological Monitoring	Negative findings.
Hunkin and Hammatt 2008	Armstrong Building, N. King St.	Archaeological Monitoring	Negative findings, although the project area was at the Armstrong Building, which is part of the Chinatown Historic District (SIHP 9986).
Cleghorn et al. 2012	Corner of Smith and Beretania St.	Data Recovery	Recorded two human burials assigned to SIHP 6672, as well as pit features, privies, and traditional and historic cultural material.
Hammatt 2013	Middle St. to Ala Moana Center	Archaeological Inventory Survey	Identified many archaeological sites; SIHP 7427 is near the current project and includes subsurface structural remains, a historic trash pit, a cultural layer, and one human bone.
Murabayashi et al. 2012	McCandless Building at 925 Bethel Street	Historic Properties Assessment	Discussed three historic districts and six historic structures.
O’Hare et al. 2013	Pier 12 & 15	Literature Review and Field Inspection	Recommended archaeological monitoring for improvements to the piers.
O’Hare et al. 2015	Various Locations, Including Nimitz Hwy. Fronting the Current Project Area	Literature Review and Field Inspection	Designated Nimitz Hwy. north of Pier 12 as low probability for encountering archaeological resources; designated Nimitz Hwy. south of Pier 12 as high probability.
O’Hare et al. 2016	Various Locations, Including Nimitz Hwy. Fronting the Current Project Area	Literature Review and Field Inspection	Entire study area consists of paved streets, although several sections have high probability of encountering subsurface archaeological resources.

Table 4. (continued)

Author and Year	Location	Work Completed	Results
Harrington et al. 2018	Between Bethel St., S. Hotel St., Fort Street Mall, and Walmart	Literature Review and Field Inspection	Noted that the study area lies in former yam fields. The yam fields were later destroyed by construction of homes, bowling alleys, and stores.
McElroy et al. 2021	Between Bethel St., S. Hotel St., Fort Street Mall, and Walmart	Archaeological Inventory Survey	Identified SIHP 08811, the remains of the historic Empire Theater/Grotto Saloon, including its buried floor, two historic trash deposits, and a fragment of human remains.

Aloha Tower Drive (Hazlett et al. 2008a). No archaeological or cultural resources were identified during this work. Stratigraphy reflected the man-made landfill deposits that were placed off of the original Honolulu shoreline during the development of the harbor. Much of the landfill was dredged material from the harbor, and there was also sedimentary fill which came from other parts of the island.

South of the project area and mauka of Nimitz Highway, several projects were completed at Marin Tower. Human remains were disinterred that were part of SIHP 4494, which included 15 human burials, displaced iwi, and historic material and grave goods. The remains are those of Don Francisco de Paula Marin and his family; descendants assisted in the determination and the reburial process. Marin was an Andalusian Spaniard confidant of Kamehameha I. The remains were later reinterred at another location on the property. Later work identified pre- and post-contact pits and fire pits along with the structural foundations belonging to the Marin family residence dating to 1810–1850 (Goodwin et al. 1996). Cultural material indicated use by the Honolulu Ironworks from 1850–1900, as well as the presence of Chinese merchant shops during the same time period. Other artifacts and structures connected with the urbanization of Honolulu from 1900 to 1950 were also collected and analyzed. A separate report was generated for the burials on the property for SIHP 4494 (Goodwin et al. 1995).

Directly east, and partially overlapping the Marin Tower project area, archaeological monitoring was conducted for renovations of a historic building at the Pacific Gateway Center (Dagher and Spear 2007). Two sites were identified, consisting of a burial and historic structural remains. SIHP 6889 was a burial with two individuals in proximity to each other. Burial 1 was a flexed or partially flexed in situ burial with no discernible burial pit, identified as a young adult male at least 25–30 years of age. Similarly, Burial 2 was a flexed in situ burial with no discernible burial pit identified as an adult female. Based on the burial contexts, the individuals were believed to be of Native Hawaiian ancestry, both identified as probably pre-contact Hawaiians. SIHP 6926 consisted of two historic features. Feature 1 was a stacked and faced foundation wall of mortared basalt cobbles and boulders capped with concrete. Feature 2 was a collapsed molded ceramic storm drain which contained a cache of intact Ing KaPy ceramic vases. Monitoring also identified fill material from the adjacent Marin Tower project that yielded glass bottles, porcelain fragments, metal nails and spikes, marine shell, faunal remains, and two traditional artifacts: a basalt ʻulu maika and a smaller coral ʻulu maika.

Across the street from Pier 14, an archaeological inventory survey was conducted at 800 Nuʻuanu Avenue (Lebo and McGuirt 2000a). Recorded was SIHP 5496, which exhibits stratigraphy and cultural remains for five distinct cultural periods. The first cultural period recorded in the deposit was the pre-contact era (pre-1810). The second cultural period for the site was between 1810 and

1850 when the first foreigners moved in. The third period was between 1850 and the 1890s when early industrial businesses like the Honolulu Iron Works and the Honolulu Flour Mill operated on the property. The fourth period was between the 1890s and 1925 when many businesses were located on site in smaller wooden structures. And finally, the last period spans 1925 to the present. Some of the artifacts collected were traditional, but the majority were of the historic era. The property is within Chinatown and includes wooden frame buildings that once were owned by Kamehameha I's brother, and other buildings owned by Ladd and Co. and Grimes, as well as brick business buildings. Data recovery at the Nuʻuanu Avenue site identified a total of 76 archaeological features (Lebo and McGuirt 2000b). They included post molds, lime-making pits, a basalt rock wall, floors and walls constructed from coral blocks, trash deposits, fire pits, and sewer pipes made of cast-iron.

An archaeological survey was conducted across Nimitz Highway from Pier 12 at Nuʻuanu Court, which lies within the Merchant Street Historic District (SIHP 9905) (Dunn and Rosendahl 1993). One site was recorded, SIHP 2456, a cultural layer with traditional and post-contact features, such as postholes, post molds, pits, a historic ash lens, a foundation wall, a pipe trench, and historic floors. The traditional Hawaiian features of pits and postholes suggest an early habitation area. Radiocarbon analysis indicates initial occupation as early as AD 1250 (Dunn and Rosendahl 1993), and other dates suggest occupation between AD 1000 and AD 1200 (Lebo 2002). The historic artifacts date as early as ca. 1778.

Just south of this and also within the Merchant Street Historic District, considerable work was undertaken at Harbor Court (previously the Kaʻahumanu Parking Garage). During traditional times this was the site of Queen Kaʻahumanu's royal compound, with a palisade, a two-story frame house, and other structures. An early study identified a cultural layer consisting of mostly 19th century building remnants (some identified as named buildings), included as part of SIHP 2456 (Hurst and Allen 1992). The layer also contained ceramics and 19th century bottles, as well as traditional material such as volcanic glass flakes, basalt flakes, and a modified marine shell. In all, there were 18 previously undocumented post-contact era features. These consist of fired-brick foundation remnants, coral block features, an arched brick drainage, domed brick cesspool, basalt block wall, concrete culvert and foundation, metal fuel tank, metal water main, boulder concentration, and a packed-earth floor. In addition, six human burials were identified, all determined to be Native Hawaiian. They were identified as four adult females, one adult male, and one subadult and were reinterred on the site. Of particular note was tooth evulsion in one of the female adult burials, a traditional practice of grief, and also the absence of the leg bones and skull for the subadult burial, which may have indicated the traditional practice of removal as a family keepsake.

Additional data recovery was completed for the Harbor Court project several years later (Lebo 1997). A total of 53 pre-contact and historic-era features were recorded as part of SIHP 2456. The pre-contact deposits were further investigated, and 35 features of SIHP 2456 were newly identified (Lebo 2002). Radiocarbon dating suggests occupation at the site began between AD 1000 and AD 1200. The features included fire pits, pavements, building foundations, post molds, and trash pits. Among the documented artifacts were bottles, ceramics, glass beads, buttons (wood, shell, and bone), metal nails, adzes (stone and shell), flakes (basalt, quartz, chert, flint, jasper, and volcanic glass), modified manufactured glass, fishhook blanks, bone awls, hammerstones, and grinding stones. The reports include extensive information on historic artifact analysis techniques and dates.

In 2012, a historic properties assessment was completed for a proposed Verizon cell site located on the rooftop of the historic McCandless Building at 925 Bethel Street (Murabayashi et al. 2012). The Chinatown Historic District (SIHP 9986), Merchant Street Historic District (SIHP 9905), and the Hawaiʻi Capital Historic District (SIHP 1321) were noted along with six additional historic structures in the area.

North of the project area near Nu’uanu Stream, data recovery was carried out due to the inadvertent discovery of human remains at the River-Nimitz Redevelopment project (Landrum and Dixon 1992). A traditional burial with burial goods was unearthed within marsh deposits. Also documented were four historic-era trash pits and a brick and mortar structural foundation, all of which were recorded as SIHP 4192. Just mauka of this, archaeological monitoring was performed for courtyard renovations at the Armstrong Building in Chinatown (Hunkin and Hammatt 2008). The brick masonry building with a dense basalt bluestone exterior, part of the Chinatown Special District (SIHP 9986), had been constructed in 1905 to replace an 1890s building that was destroyed by the 1900 Chinatown fire.

Several studies were conducted for the Kekaulike Revitalization Project between King and Hotel Streets in the block between River and Maunakea Streets. Four human burials were discovered in the Diamond Head Block of the project (Erkelens et al. 1994). The burials were incomplete, highly fragmentary, and all found in a secondary context. One was an adult male in his 20s, another was a 15 to 18 year-old female, the third was a 3 or 4 year-old girl, and the last was a human fetus. A site number was not given to the burials at that time. In the ‘Ewa Block, at 165 and 175 N. Hotel Street, SIHP 4587 and 4588 were documented (Kennedy et al. 1994). The former consisted of subsurface fishpond remains. The latter contained 53 features, including pre- and post-contact burials, traditional post holes and fire pits, a post-contact burn layer and trash pits, and building foundations made of crushed coral. Recovered historic material included 489 ceramics, 302 intact bottles, 47 buttons, 26 metal objects, such as coins, and a few miscellaneous items such as beads, clay pipe pieces, and marbles. Traditional artifacts were not as abundant, consisting of eight animal bones, five shells, and four lithic items. Further data recovery efforts commenced for SIHP 4587 and 4588 the next year (Riley et al. 1995). Excavation of 64 test units revealed a wealth of artifacts from the pre- and post-contact eras, faunal material, and midden. These results showed the development of the property from a traditional village to a modern urban area.

In 1997 an archaeological inventory survey at the Kekaulike Project Diamond Head Block identified SIHP 4875 (Goodwin 1997). This consisted of a cultural layer with 105 traditional Hawaiian and post-contact features including post holes, trash pits, privies, foundation remnants of a coral and brick building, and traditional fire pits. Subsequently, data recovery was conducted at the Kekaulike Diamond Head Block (Goodwin and Allen 2005). Radiocarbon dating of SIHP 4875 suggested likely occupation of the area as early as the 13th century and almost certainly by the 16th century. Excavation of a 19th century blacksmith’s shop and four kauhale yielded more than 8,552 artifacts, including a traditional Hawaiian pendant, a fishhook, matting, and lithic, shell, and urchin spine tools, as well as a large number of imports from Asia, North America, and Europe. These include ceramics, bottle glass, and nine beads known as “Russian” beads. Some of the artifacts indicate mixing of traditional and foreign ideas: Hawaiian coins, a pendant made on an imported shell, and iron fishhooks. There was also a large amount of midden, composed of a variety of faunal remains of both traditional and introduced taxa. Archaeological features included post molds, fire pits, fence lines, refuse pits, and living floors. A secondary burial, that of a fetus, was discovered near a house deposit. Much of the evidence reflects intensive occupation of 19th century Kīkīhale.

Archaeological monitoring was performed for sidewalk improvements on King Street between Maunakea and Smith Streets (Elmore and Kennedy 2001). A pre-contact burial was inadvertently discovered (SIHP 5781). In addition, the backdirt yielded artifacts including glass and ceramic fragments, a shark tooth and possible shark tooth tool, a fishhook, and a possible drilled shell (all part of SIHP 5781). However, none of the artifacts could be proven to be grave goods associated with the burial.

There are several studies that took place to the east and southeast of the current study area. In 2002, archaeological monitoring was carried out for the King Street Rehabilitation project, located on King

Street, between Dillingham Boulevard and South Street (Mann and Hammatt 2002). An incomplete burial in poor condition (SIHP 6371) was inadvertently discovered near the intersection of King and Punchbowl Streets. In addition, a pit feature containing faunal remains was identified near the intersection of King and Richards Streets. Stratigraphy on a portion of King Street between South and Bethel Streets displayed a dry clay loam layer which contained historic trash and artifacts.

A literature review and field check were completed for two properties between Maunakea and Smith Streets (McGerty et al. 1995). Background research during this project suggested that the parcels were in the ‘ili of Kīkīhale and near the maika field known as Kalanikahua. In the post-contact period, these parcels became a part of Chinatown and were located within the boundaries of the 1900 Chinatown fire. Northwest, adjacent to this in the same block, archaeological testing was conducted near the intersection of Hotel and Maunakea Streets (Heidel and Hammatt 1997). Nothing significant was recorded, although a historic basement filled with modern debris was noted.

At the corner of Smith and Beretania Streets, several studies were completed for the Smith-Beretania Parking Lot. An archaeological inventory survey recorded SIHP 6691, which consists of a possible pre-contact deposit, disturbed human remains, historic trash pits, and historic building remnants (McIntosh et al. 2006). A total of 68 subsurface features were identified, including cooking features, trash pits, midden deposits, and building foundations, some of which date to the 1900 Chinatown fire. Recovered cultural material consisted of a few traditional Hawaiian items such as an ‘ulu maika, an adze, and poi pounder fragments, and an abundance of historic artifacts including European and Asian glass and ceramics. Data recovery added to the knowledge of the archaeological sites by documenting two human burials assigned to SIHP 6672, as well as pit features, privies, and traditional and historic cultural material (Cleghorn et al. 2012). Archaeological monitoring for the project recorded additional burials of SIHP 6772, which in total consists of 22 sets of human remains that were reinterred on site (Kalilihiwa and Cleghorn 2007). The remains were further studied and noted as poorly preserved and incomplete (Pietrusewsky 2003). Sex and age distribution of the burials suggest a family cemetery. Dental and skeletal pathologies were also observed, such as various dental maladies, tooth ablation, and a bone fracture.

At Fort Street Mall and Hotel Street, archaeological monitoring produced no findings (Hazlett et al. 2008b). Adjacent to the north end of the monitored area, early excavations were conducted at a parking lot on the makai side of Hotel Street between Kekaulike and River Streets (Kennedy 1984). Stratigraphy consisted of fill above a coral substrate. Test excavations were later completed for construction activity at Chinatown Gateway Plaza, on the makai side of Hotel Street, between Nu‘uanu Avenue and Bethel Street (Cleghorn 1989). Extensive subsurface disturbance was noted, and fill layers contained scattered historic artifacts. Archival research indicated that the site was probably used for agriculture and habitation in the pre-contact era. Four buildings on the lot at the time of study were dated to 1891, 1924, 1925, and 1933. Archaeological testing revealed a historic trash deposit, SIHP 2142, which contained cultural material dating from the 1880s to the 1920s. Archaeological monitoring was then conducted for the Chinatown Gateway construction (Charvet-Pond and Pantaleo 1989). The monitoring recorded materials from the SIHP 2142 trash deposit, including ceramics, metal, slate, and glass bottles, most of which dated to ca. 1880–1920.

Two studies were completed for the block between Bethel Street, S. Hotel Street, Fort Street Mall, and Walmart. Archival research for an archaeological literature review and field inspection revealed that the area was once within a yam field, or pā uhi and may not have been inhabited until the early post-contact era (Harrington et al. 2018). By the mid-1800s Hawaiian and Euro-American homes and two bowling alleys occupied the block. By the late-1800s a variety of small retail businesses emerged, and by 1906 the Empire Theater was established within a previous building on the lot. An archaeological inventory survey identified SIHP 08811, the remains of the historic Empire

Theater/Grotto Saloon, including its the buried floor, two historic trash deposits, and a fragment of human remains (McElroy et al. 2021).

Summary of Background Research and Anticipated Finds

Honolulu Harbor and its environs were well established prior to the arrival of Europeans in the late 18th century. Native Hawaiian accounts identify the harbor as a significant location associated with various resources, named people and deities, along with a number of traditional activities. The environment was characterized by the named winds and rains. Sections of the coral reef were also named and these likely served as fishing grounds for local families. Fresh water was found in Nuʻuanu Stream on the northwest end of the harbor. A number of the named places adjacent to the harbor were associated with extended families and their homes. Hence, daily life revolved around both the marine resources of the harbor (and neighboring fishponds and salt ponds), as well as cultivated lands just inland from the coast. The main focus of ritual activity was the heiau at Pākākā Point, but fishing shrines are also mentioned in traditional accounts.

The arrival of foreigners in Hawaiʻi brought about drastic changes to the islands. During the late 1700s and 1800s, Honolulu grew from a small village to a bustling city, and the project area is located within what is now the Chinatown Historic District (SIHP 9986). Piers 12 and 15 were established early in Honolulu's post-contact history, with Pier 15 located just across the street from the project area. It was established around 1843, when it was known as Emme's Wharf. In addition, the prominent residence of Francisco Paula de Marin was situated just south of the current project. On the project area itself is C. Q. Yee Hop building, which was constructed in 1919 and is currently used as a warehouse.

Previous archaeological research has covered the Honolulu Harbor vicinity fairly well, with projects spanning much of the length of Nimitz Highway, and key studies completed for areas such as Marin Tower, Harbor Court, 800 Nuʻuanu Avenue, and the Chinatown Gateway Plaza. These and other projects have provided archaeological evidence for transformation of the Honolulu Harbor area over time with finds such as cultural layers, historic trash deposits, structural remnants, pondfield remains, and pre- and post-contact burials.

The entire study area has undergone extensive previous disturbance, and it is not likely that any surface archaeological features remain aside from the historic building. Nevertheless, subsurface archaeological materials or deposits may be encountered during construction, as evidenced by the finds of previous studies in the vicinity. Potential archaeological remains that might be encountered in the project area include remnants of agricultural activity (pondfield deposits and other features associated with loʻi), sites related to LCAs of the study area, remains associated with the development of Chinatown, Honolulu Harbor, and the city of Honolulu (deposits from the Chinatown fire, structural remnants, cultural material from merchant families), and human burials.

Field Inspection

A field visit was conducted on April 19, 2022 by Keala Pono archaeologist Jeffrey Lapinad. The parcels and alleyway were walked to identify any surface archaeological resources. The study area contains a parking lot, paved alley, and the historic building. Most of the study area is open and flat with excellent visibility, and the entire project area has been disturbed by modern development (Figures 22–26). Nevertheless, there are small, scattered pockets of landscaping or invasive plants within the open areas and these were not further inspected. No surface archaeological resources besides the previously documented historic building were observed during this brief field visit.

Figure 22. Overview of project area showing parking lot, historic building (center), and alley (between pink and white buildings); orientation is to the east.

Figure 23. Yee Hop & Co. historic building, with the parking lot in the foreground; orientation is to the southeast.

Figure 24. Inscription on the northeast corner of the historic building with the date 1919 and "C. Q. YEE HOP & CO LTD." Orientation is to the north.

Figure 25. Parking lot with Nimitz Highway and Pier 15 in the background; orientation is to the southwest.

Figure 26. Alley; orientation is to the southwest.

ASSESSMENT AND RECOMMENDATIONS

A literature review and field inspection was conducted for TMK: (1) 1-7-002:013 and 050 in Honolulu Ahupuaʻa, Honolulu District, on the island of Oʻahu, Hawaiʻi where the Chinatown Hotel is proposed. The project area covers 0.64 ac. and (0.26 ha) on the two properties. The literature review consisted of archival research, and an archaeological field inspection was conducted. The project area is within the Chinatown Historic District and contains a historic building listed on the Hawaiʻi Register of Historic Places. The field noted this building, and did not identify any new surface archaeological resources, as the entirety of the project area is paved or has been affected by extensive development.

Several archaeological implications can be made based on the literature review presented above. Key data include LCA information, historical maps, the results of previous archaeological work, and other information for previous land use. The project area vicinity is developed with a historic structure, small landscaped areas, parking lots, and an alley. It is not likely that any surface archaeological features remain, and a brief field visit produced no findings other than the one historic building known for the property. Nevertheless, subsurface archaeological materials or deposits may be encountered during ground disturbance.

Results of Land Commission Awards Search

There are seven kuleana LCA awards located within the project area and many more in the immediate vicinity. Māhele data indicate that these were house lots. Documents mention there were few houses in this area at the time and most belonged to local fishermen. A large land section not far from the study parcel was granted to Francisco de Paula Marin, a close ally of King Kamehameha I. He was also awarded LCA 2944 on the same block as the project area.

Results of Historical Map Research

Several maps and paintings were found that depict the project area and a selection of these dating from 1825–1955 are presented above. These maps illustrate the dramatic changes that took place in the region. The earliest map shows the Honolulu area with several fishponds and just a few structures and roads. By the 1850s, the region is depicted as a bustling harbor and port town with large, Western-style buildings lining the waterfront. Maps from the 20th century present dwellings, which were soon converted to a wide range of businesses within and surrounding the study parcels. Of note are various warehouses, an employee dormitory, a sausage facility, and the Sperry Flour Company. The C. Q. Yee Hop building that is currently within the project area was constructed in 1919 and is depicted on historic maps. The building is currently being used as a warehouse by a descendant of Yee Hop.

Knowledge from Previous Archaeological Studies

No previous archaeological research has been done within the project area itself, although several studies have been completed for the adjacent Nimitz Highway. Previous studies conducted nearby can help inform on the kinds of subsurface archaeological resources that may be found within the current project area. Prior archaeological investigations have identified a variety of historic properties, including cultural layers, historic trash deposits, structural remnants, pondfield remains, and pre- and post-contact burials. The closest known archaeological sites to the study property consists of a human burial containing two individuals (SIHP 6889), and a wall and historic artifact cache (SIHP 6926) makai of North King Street (Dagher and Spear 2007). The historic building within the project area is listed on the Hawaiʻi Register of Historic Places.

Insights on Previous Land Use

The Honolulu Ahupuaʻa and harbor area was culturally significant, as noted in place names, proverbs, and narrative. Native Hawaiian accounts identify the harbor as an important location associated with various resources, named people and deities, along with a number of traditional activities. It was a region with marine and fresh water resources, and supported traditional subsistence activities such as fishing, salt gathering, and aquaculture. Hence, daily life revolved around both the marine resources of the harbor (and neighboring fishponds and salt ponds), as well as cultivated lands of kalo and sweet potato just inland from the coast. The main focus of ritual activity was the heiau at Pākākā Point, but fishing shrines are also mentioned in traditional accounts.

The arrival of foreigners to Hawaiʻi brought about drastic changes to the Honolulu area due to its harbor. During the late 1700s and 1800s, Honolulu grew from a small village to a major city, and Kamehameha I established it as the capital in 1809. The project area is located within what is now the Chinatown Historic District (SIHP 9986). Piers 12 and 15 were established early in Honolulu's post-contact history, with Pier 15 (Emme's Wharf) constructed ca. 1843 just across the street from the project area. In addition, the prominent residence of Francisco Paula de Marin was situated just south of the current project, and as mentioned above, the C. Q. Yee Hop building that was constructed in 1919 still remains on the project property.

Summary and Recommendations

A variety of cultural and historical resources may potentially be found within the project area, such as the remains of agricultural activity (pondfield deposits and other features associated with loʻi), features associated with LCAs of the study area (house sites and other remnants of habitation), historic vestiges related to the development of Chinatown, Honolulu Harbor, and the city of Honolulu (deposits from the Chinatown fire, structural remnants, cultural material from merchant families), and human burials. Because of the occurrence of human remains and other known archaeological sites in the vicinity, an archaeological inventory survey should be conducted. The survey should have a subsurface testing component so that buried archaeological resources that might be disturbed by construction are identified and properly treated.

GLOSSARY

ahupuaʻa	Traditional Hawaiian land division usually extending from the uplands to the sea.
ʻāina	Land.
aliʻi	Chief, chiefess, monarch.
aliʻi nui	High chief.
ʻāpana	Piece, slice, section, part, land segment, lot, district.
au	Current; to flow, as a current.
ʻaumakua	Family or personal gods. The plural form of the word is ʻaumākua.
ʻawa	The shrub *Piper methysticum,* or kava, the root of which was used as a ceremonial drink throughout the Pacific.
heiau	Place of worship and ritual in traditional Hawaiʻi.
ilāmuku	Executive officer.
ʻili	Traditional land division, usually a subdivision of an ahupuaʻa.
ʻili kūpono	An ʻili within an ahupuaʻa that was nearly independent. Tribute was paid to the ruling chief rather than the chief of the ahupuaʻa, and when an ahupuaʻa changed hands, the ʻili kūpono were not transferred to the new ruler.
ʻiliʻāina	Land area; a land section, next in importance to ahupuaʻa and usually a subdivision of an ahupuaʻa.
iwi	Bone.
kahakai	Beach, seashore, coast.
kahawai	Stream, creek, river; valley, ravine, gulch, whether wet or dry.
kahuna	An expert in any profession, often referring to a priest, sorcerer, or magician.
kalo	The Polynesian-introduced *Colocasia esculenta,* or taro, the staple of the traditional Hawaiian diet.
koʻa	Fishing shrine.
kohola	Reef.
kōnane	A traditional Hawaiian game played with pebbles on a wooden or stone board.
konohiki	The overseer of an ahupuaʻa ranked below a chief; land or fishing rights under control of the konohiki; such rights are sometimes called konohiki rights.
kou	The flowering tree, *Cordia subcordata*, either native to Hawaiʻi or introduced by Polynesians.
kukui	The candlenut tree, or *Aleurites moluccana,* the nuts of which were eaten as a relish and used for lamp fuel in traditional times.
kuleana	Right, title, property, portion, responsibility, jurisdiction, authority, interest, claim, ownership.
kūono	Bay, cove, nook, cranny.
kupua	Demigod, hero, or supernatural being below the level of a full-fledged deity.

ku‘ula A stone god used to attract fish, an altar near the sea, or a hut where fishing gear was kept with ku‘ula images to invoke their power.

limu Refers to all sea plants, such as algae and edible seaweed.

lo‘i, lo‘i kalo An irrigated terrace or set of terraces for the cultivation of taro.

loko Inside, interior. Pond, lake, pool.

Māhele The 1848 division of land.

maile *Alyxia olivaeformis*, a fragrant native shrub used for twining.

maka‘āinana Common people, or populace; translates to “people that attend the land.”

makai Toward the sea.

makani Wind, breeze.

mana Divine power.

mauka Inland, upland, toward the mountain.

midden A heap or stratum of refuse normally found on the site of an ancient settlement. In Hawai‘i, the term generally refers to food remains, whether or not they appear as a heap or stratum.

mo‘o Narrow strip of land, smaller than an ‘ili.

mo‘olelo A story, myth, history, tradition, legend, or record.

niu The Polynesian-introduced tree *Cocos nucifera*, or coconut.

‘ōlelo no‘eau Proverb, wise saying, traditional saying.

o‘opu Fish of the families *Eleotridae*, *Gobiidae*, and *Bleniidae*.

‘ōpae Shrimp.

pā Fence, wall, enclosure; dish, flat basin; the mother-of-pearl shell (*Pinctada margaritifera*).

pāpū Fort or fortress.

pua aloalo Hibiscus flower.

pueo The Hawaiian short-eared owl, *Asio flammeus sandwichensis*, a common ‘aumakua.

ua Rain, rainy, to rain.

uhi The yam *Dioscorea alata*, commonly grown for food.

‘ulu maika Stone used in the maika game, similar to bowling.

wahi pana Sacred places or legendary places that may or may not be kapu, or taboo.

REFERENCES

Alexander, W.D.

1908 Early Improvements in Honolulu Harbor. *Hawaiian Historical Society Annual Report* for *the Year 1907*. Hawaiian Gazette Company, Honolulu.

Anonymous

1834 Honolulu from the Anchorage outside the Reef, Island of Woahoo. Pen and ink wash over pencil. Reprinted in Forbes, D.W. (1992) *Encounters with Paradise. Views of Hawaii and its People, 1778-1941*. Honolulu Academy of Arts, Honolulu.

n.d. Brewer's Wharf. Registered Map No.819. No Scale. On file, Land Survey Office, Department of Accounting and General Services, State of Hawai'i, Honolulu.

Basso, K.H.

1988 Speaking with names: Language and landscape among the Western Apache. *Cultural Anthropology* 3: 99–130.

Bensell, C.E.

1821 View of the Island of Woahoo in the Pacific. Watercolor. Original at Peabody Museum of Salem, Massachusetts.

Bishop Museum Archives

n.d. Names of different winds. Henriques Collection. Hawaiian Ethnological Notes (HEN) I:1841–1851. Bernice Pauahi Bishop Museum Archives, Honolulu.

Boelen, J.

1988 *A Merchant's Perspective: Captain Jacobus Boelen's Narrative of his Visit to Hawai'i in 1828*. Hawaiian Historical Society, Honolulu.

Charvet-Pond, A. and J. Pantaleo

1989 *Chinatown Gateway Plaza Project: Part I - Summary of Pre-Field Literature and Documents Search for the Proposed Park in Downtown Honolulu (TMK 2-1-03:15, 23, 24, and 25)*. Bernice Pauahi Bishop Museum, Honolulu.

Clague, D.A.

1998 "Geology of the Hawaiian Islands," in *Atlas of Hawai'i*. Edited by Sonia P. Juvik and James O. Juvik, pp. 37–46. The University of Hawai'i Press.

Cleghorn, P.

1989 *Letter Report on Archaeological Test Excavations for the Chinatown Gateway Plaza Project*. Bernice Pauahi Bishop Museum, Honolulu.

Cleghorn, P.L, B. Whitehead, J.L. Putzi, C.C. LeSuer, J. McIntosh, L. Pearson, and R. Davies

2012 *Block 10 Archaeological Data Recovery Investigations at the Smith-Beretania Parking Lot, Honolulu, Kona District, O'ahu Island [TMK: (1) 7-4-004:000]*.Pacific Legacy, Inc., Kailua, Hawai'i.

Covington, R.

1881 Main Part of the Kona District, Oahu. Registered Map No. 1382. Scale: 1 inch = 1,000 feet. On file, Land Survey Office, Department of Accounting and General Services, State of Hawai'i, Honolulu.

Dagher, C.A. and R.L. Spear

2007 *An Archaeological Monitoring Report for the Pacific Town Gateway Center Project Located at 410 North King Street, Honolulu, Nu'uanu Ahupua'a, Honolulu (Kona) District, Island of O'ahu, Hawai'i*. Scientific Consultant Services, Inc., Honolulu.

Dakin Publishing
1891 Fire Insurance Map of Honolulu, Hawaiian Islands. Honolulu Sheet 9. Scale 1 inch = 50 feet.

de Freycinet, L.C.S.
1978 Hawai‘i in 1819: A Narrative Account. *Voyage around the World Undertaken by Order of the King Performed on his Majesty's Corvettes L'Uranie and L'Physicenne in the Years 1817, 1818, 1819, and 1820*. Historical Narrative, Vol. 2, Part 2: Book 4. Pacific Anthropological Records, No. 26. Bernice Pauahi Bishop Museum, Honolulu.

Dodge, F.S.
1887 Map of the Inner Harbor Front. Registered Map, 1392. Scale: 1:240 On file, Land Survey Office, Department of Accounting and General Services, State of Hawai‘i, Honolulu.

Dunn, A.E. and P.H. Rosendahl
1993 *Archaeological Inventory Survey, Nu‘uanu Court Project, Land of Nu‘uanu, Kona District, Island of O‘ahu (TMK: 2-1-02:26)*. Paul H. Rosendahl, PhD, Inc., Hilo, Hawai‘i.

Elmore, M. and J. Kennedy
2001 *An Archaeological Monitoring Report for the City and County of Honolulu Miscellaneous Sidewalk Improvements Project, in the Ahupua'a of Nu'uanu, Honolulu District, Island of O'ahu*. Archaeological Consultants of the Pacific, Inc., Haleiwa, Hawai‘i.

Emmert, P.
1854 View of Honolulu from the Harbor, No. 1. Lithograph. Original at Honolulu Academy of Arts, Honolulu.

Erkelens, C., M. Pietrusewsky, R. Ikehara-Quebral, and V. Sava
1994 *Interim Report on Human Skeletal Remains, Kekaulike-Diamond Head Project, Honolulu, Kona, O‘ahu*. International Archaeological Research Institute, Inc., Honolulu.

Fitzpatrick, G.
1986 *The Early Mapping of Hawai‘i.* Editions Limited, Honolulu.

Foote, D., E. Hill, S. Nakamura, and F. Stephens
1972 *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*. U.S. Department of Agriculture, Soil Conservation Service. Published in cooperation with the University of Hawai‘i Agricultural Experiment Station, Washington, D.C.

Forbes, D.W.
1992 Reprint of watercolor "Looking toward Honolulu from Waikiki, 1848. Private Collection, In, *Encounters with Paradise. Views of Hawaii and its People, 1778-1941,* p. 93. Honolulu Academy of Arts, Honolulu.

Gast, R.H. and A.C. Conrad
1973 Don Francisco de Paula Marin. A Biography by Ross H Gast. *The Letters and Journal of Francisco de Paula Marine*, edited by Agnes C. Conrad. University of Hawai‘i Press, Honolulu.

Giambelluca, T.W., Q. Chen, A.G. Frazier, J.P. Price, Y.-L. Chen, P.-S. Chu, J.K. Eischeid, and D.M. Delparte
2013 Online Rainfall Atlas of Hawai‘i. *Bulletin of the American Meteorological. Society* 94: 313-316, doi: 10.1175/BAMS-D-11-00228.1.

Goodwin, C.
1997 *Archaeological Inventory Survey of the Kekaulike Diamond Head Project, Site 50-8-14-4875, Honolulu, Island of O‘ahu*. International Archaeological Research Institute, Inc., Honolulu.

Goodwin, C. and J. Allen

2005 *Kikihale to Honolulu: From Village to City-Archaeological Data Recovery at Site 50-80-14-4875, Kekaulike Diamond Head Block, Nu‘uanu Ahupua‘a, Honolulu, O‘ahu, Hawai‘i*. International Archaeological Research Institute, Inc., Honolulu.

Goodwin, C., F. Beardsley, S. Wickler, and B. Jones

1996 *Honoruru to Honolulu: From Village to City, Volume 1: History and Archaeology of a City Block; Archaeological Data Recovery Report, Marin Tower Property, Site No. 50-80-14-4494, Honolulu, Hawai‘i*. International Archaeological Research Institute, Inc., Honolulu.

Goodwin, C., M. Pietrusewsky, M. Toomay Douglas, and R. Ikehara-Quebral

1995 *Honoruru to Honolulu: From Village to City, Volume II: The Burials.* International Archaeological Research Institute, Inc., Honolulu.

Hammatt, H.H.

2013 *Archaeological Inventory Survey Report For City Center (Section 4) of the Honolulu High-Capacity Transit Corridor Project, Kalihi, Kapālama, Honolulu, and Waikīkī Ahupua‘a, Honolulu (Kona) District, Island of O‘ahu, TMK [1] 1-2, 1-5, 1-7, 2-1, 2-3 (Various Plats and Parcels)*. Five Volumes. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Harrington, K.I, G.M. Farley, and D.W. Shideler

2018 *Archaeological Literature Review and Field Inspection Report to Support Consultation with SHPD for the Honolulu Bethel Hotel Project, Honolulu Ahupua‘a, Honolulu District, O‘ahu.* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

HDOT (Hawai‘i Department of Transportation)

2008 *History of O‘ahu's Harbors.* Hawai‘i Department of Transportation, Harbors Division. Online at http://www.hawaii.gov/dot/harbors/oahu/ history.htm

Hazlett, A., S. Fehrenbach, and H.H. Hammatt

2008a *Archaeological Monitoring Report for a 12-Inch and 16-Inch Water Main Installation Project on Aloha Tower Drive, Nimitz Highway, and Richards Street (Job 04-024), Honolulu Ahupua‘a, Honolulu District, O‘ahu Island Tax Map Key (TMK): [1] 2-1-014 & [1] 2-1-027*. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Hazlett, A., R. Runyon, L. Loynaz, and H.H. Hammatt

2008b *Archaeological Monitoring Report for the Fort Street Mall and Hotel Street Sewer Replacement/Rehabilitation (SMPR 60) Honolulu Ahupua‘a, Honolulu District, O‘ahu Island TMK: (1) 2-1-002, (1) 2-1-003, and (1) 2-1-010-012*. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Heidel, M.J. and H.H. Hammatt

1997 *Archaeological Testing of a 1,700 Sq. Foot Lot in Chinatown, Ahupua‘a of Nu‘uanu, District of Kona, Island of O‘ahu (TMK 1-7-03:14)*. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Ho‘oulumāhiehie

2006a *The Epic Tale of Hi‘iakaikapoliopele*. As Told by Ho‘oulumāhiehie. Translated by M. Puakea Nogelmeier. Awaiaulu Press, Honolulu.

2006b *Ka Mo‘olelo o Hi‘iakaikapoliopele.* Original Hawaiian text taken from series of articles in *Ka Na‘i Aupuni* 1905-1906. Awaiaulu Press, Honolulu.

Hunkin, N. and H.H. Hammatt

2008 *Archaeological Monitoring Report for the Armstrong Building Courtyard Renovation Project, Honolulu Ahupua‘a, Honolulu District, O‘ahu Island, TMK: [1] 1-7-002:038*. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Hurst, G. and J. Allen

1992 *Archaeological Survey of the Harbor Court (Ka'ahumanu Parking Structure) Project on O'ahu, Hawai'i*. Anthropology Department, Bernice Pauahi Bishop Museum, Honolulu.

'Ī'ī, J.P.

1959 *Fragments of Hawaiian History*. Mary Kawena Pukui, translator. Bishop Museum Press, Honolulu.

Iwamoto, L.

1969 The Plague and Fire of 1899–1900 in Honolulu. In *Hawaii Historical Review Selected Readings*. Hawaiian Historical Society, Honolulu.

Juvik, S.P. and J.O. Juvik, editors

1998 *Atlas of Hawai'i.* University of Hawai'i Press, Honolulu.

Kalilihiwa, S. and P.L. Cleghorn

2007 *Archaeological Monitoring for the Smith-Beretania Parking Lot, State Site No. 50-80-12-6772, Honolulu, Island of O'ahu*. Pacific Legacy, Inc., Kailua, Hawai'i.

Kamakau, S.M.

1992 *Ruling Chiefs of Hawai'i*. Revised edition. Kamehameha Schools, Honolulu.

Kauwe, L.

2011 *He Aloha Nō 'O Honolulu* (Goodbye to Honolulu). Song written by Lot Kauwe. http://www.huapala.org/Hea/Healoha_No_Honolulu.html. Accessed February 14, 2022.

Kennedy, J.

1984 *Archaeological Investigations at TMK 2-1-02: 38 and 39, Honolulu, Hawaii*. Archaeological Consultants of Hawaii, Inc., Hale'iwa, Hawai'i.

Kennedy, J., J. Brennan, T. Denham, S. Ireland, J.R. Moore, and T.J. Riley

1994 *An Archaeological Inventory Survey with Subsurface Testing Report for the Kekaulike Revitalization Project, Ewa Block, Located at TMK: 1-7-03:32 in Nu'uanu Ahupua'a, Honolulu District, Island of Oahu*. Archaeological Consultants of Hawai'i, Inc., Hale'iwa, Hawai'i.

Klieger, P.C.

1997 Historical Background. In *Native Hawaiian and Euro-American Culture Change in Early Honolulu, Archaeological Data Recovery, Harbor Court Property, Site No. 50-80-14-2456, Honolulu, Hawai'i*, by Susan Lebo, 1997, pp. 7–32. Bernice Pauahi Bishop Museum, Honolulu.

Landrum, J. and B. Dixon

1992 *Emergency Mitigation of Archaeological Resources at the River-Nimitz Redevelopment Project, Site 50-Oa-A5-16, Nu'uanu, Kona District, O'ahu, Hawai'i*. Public Archaeology Section, Applied Research Group, Bernice Pauahi Bishop Museum, Honolulu.

Lebo, S.A. (editor)

1997 *Native Hawaiian and Euro-American Culture Change in Early Honolulu, Culture Change in Early Honolulu. Archaeological Data Recovery, Harbor Court Property, Site No. 50-80-14-2456, Honolulu, Hawai'i,* edited by Susan A. Lebo. Anthropology Department, Bishop Museum, Honolulu.

2002 *Pulaholaho and Charlton's Claim: Archaeological Data Recovery at Harbor Court, Downtown Honolulu (Site 50-80-14-2456)*. Paul H. Rosendahl, Ph.D. Inc, Hilo, Hawai'i.

Lebo, S.A. and M.D. McGuirt

2000a *Geoarchaeology at 800 Nu'uanu, Archaeological Inventory Survey of Site 50-80-14-5496 (TMK 1-7-02:02), Honolulu, Hawai'i*. Bernice Pauahi Bishop Museum, Honolulu.

2000b *Pili Grass, Wood Frame, Brick and Concrete: Archaeological Data Recovery at 800 Nuuanu (Site 50-80-14-5496), TMK 1-7-02:02*. Anthropology Department, Bishop Museum, Honolulu.

Lyons, C.J.

1886 Map of Honolulu Land Titles. Registered Map No. 1390. Scale: 1 inch = 1,000 feet. On file, Land Survey Office, Department of Accounting and General Services, State of Hawai‘i, Honolulu.

Macdonald, G.A., A.T. Abbott, and F.L. Peterson

1983 *Volcanoes in the Sea*. Second edition. University of Hawai‘i Press, Honolulu.

Malden, Lieut. C.R.

1825 South Coast Woahoo and Honorurou Habour. Map by Lt. Charles R. Malden from the British ship *Blonde*. Registered Map No. 640. On file at the Hawai‘i Land Survey Division, Department of Accounting and General Services, 1151 Punchbowl St., Room 210, Honolulu, Hawai‘i.

Mann, M. and H.H. Hammatt

2002 *Archaeological Monitoring Report for the King Street Rehabilitation Project, Honolulu Ahupua‘a, Kona District, Island of O‘ahu (TMK 2-1 por. and 1-7 por.)*. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Mason Architects, Inc.

2012 *Draft—Honolulu Harbor Piers 12 and 15 Improvements Impact Analysis on Piers 12 and 15, Hawaii Capital Special District, and Chinatown Special District*. Mason Architects, Inc., Honolulu.

McAllister, J.G.

1933 *Archaeology of Oahu*. Bishop Museum Bulletin 104. Bernice Pauahi Bishop Museum, Honolulu.

McDermott, M. and M.M. Mann

2001 *Archaeological Inventory Survey for the Proposed Nimitz Highway Water System Improvements, Part I, Downtown Honolulu, Nu‘uanu Ahupua‘a, District of Kona, Island of O‘ahu, (TMK 1-5-08, 1-7-01, 2-1-02)*. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

McElroy, K., C. Dagher, W.K. McElroy, and M.W. Graves

2022 *DRAFT – Cultural Impact Assessment for the Chinatown Hotel Project, Honolulu Ahupua‘a, Honolulu District, Island of O‘ahu, Hawai‘i*. Keala Pono Archaeological Consulting, Kāne‘ohe, Hawai‘i.

McElroy, W.K., M.W. Graves, M. Pinsonneault, K. McElroy, and M. Edwards

2021 *Archaeological Inventory Survey for the Honolulu Bethel Hotel Project, Honolulu Ahupua‘a, Honolulu District, Island of O‘ahu, Hawai‘i TMK: (1) 2-1-002:001 and :007*. Keala Pono Archaeological Consulting, Kāne‘ohe, Hawai‘i.

McGerty, L., P. Mills, and R. Spear

1995 *An Archaeological Assessment of the Chinatown Community Service Center Project, Ahupua‘a of Nu‘uanu, District of Kona, Island of O‘ahu, (TMK 1-7- 00314 and 15)*. Scientific Consultant Services, Inc. Honolulu.

McIntosh, J., J.L. Putzi, C.C. LeSuer, and P.L. Cleghorn

2006 *Archaeological Inventory Survey at "Block 10": The Smith-Beretania Parking Lot, Ahupua'a of Honolulu, Kona District, Island of O‘ahu TMK: 1-7-004:004*. Pacific Legacy, Inc., Kailua, Hawai‘i.

Metcalf, T.

1847 Honolulu. Map by T. Metcalf. Copied by J. Lidgate [sic; Lydgate]. Registered Map 242. 1 inch = 6 chains. On file, Land Survey Office, Department of Accounting and General Services, State of Hawai‘i, Honolulu.

Monsarrat, M.D.

1897 Honolulu, Hawaiian Islands. Registered Map, 1910. Scale: 1 inch = 1,000 ft. On file, Land Survey Office, Department of Accounting and General Services, State of Hawai‘i, Honolulu.

Murabayashi, K. E.H.R. Jourdane, and T.S. Dye

2012 *Historic Properties Assessment for the Proposed VZW HON Honolulu Cell Site, Honolulu Ahupua‘a, Kona District, O‘ahu Island, TMK (1) 2-1-002:013*. T.S. Dye & Colleagues, Archaeologists, Inc., Honolulu.

Nakuina, M.

1992 *The Wind Gourd of La‘amaomao.* Second edition. Esther T. Mookini, and Sarah Nākoa, translators. Kalamaku Press, Honolulu.

O’Hare, C.R., D.W. Shideler, and H.H. Hammatt

2013 *Archaeological Literature Review and Field Inspection for the Pier 12 and Pier 15 Improvement Project, Honolulu Harbor, Honolulu Ahupua‘a, Honolulu District, Island of O‘ahu TMK: [1] 2-1-001:043, 044, 045, 055, 056*. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

2014 *Final Archaeological Monitoring Plan for the Pier 12 and Pier 15 Improvement Project, Honolulu Harbor, Honolulu Ahupua‘a, Honolulu District, O‘ahu TMKs: [1] 2-1-001:043-045, 046 por., 049-056*. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

2015 *Archaeological Literature Review and Field Inspection Report for the Board of Water Supply (BWS) Honolulu Water System Improvements (WSI) Environmental Assessment Honolulu Ahupua‘a, Honolulu (Kona) District, O‘ahu TMKs: [1] 1-5, 1-7, 2-1, 2-3, 2,-4, and 2-6: Various Plats and Parcels*. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

2016 *Archaeological Literature Review and Field Inspection Report for the Board of Water Supply (BWS) Honolulu Water System Improvements (WSI) Environmental Assessment Honolulu Ahupua‘a, Honolulu (Kona) District, O‘ahu TMKs: [1] 1-5, 1-7, 2-1, 2-3, 2,-4, and 2-6:Various Plats and Parcels*. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Paris, F.E.

1839 Honolulu, Capital of Oahu, View of the Harbor. Reprinted in Forbes, D.W. (1992) Encounters with Paradise. Views of Hawaii and its People, 1778-1941. Honolulu Academy of Arts, Honolulu.

Perkins, E.T.

1854 Lithograph of “Honolulu with a view of Nuuanu, the Custom House, the Bethel Market and Palace Fort.” Artist, Edward T. Perkins. Lithograph of Snyder, Black, & Sturn, New York. Published in, *Na Motu; or Reef Rovings in the South Pacific*, by Edward T. Perkins, p. 112. Pudney & Russell, New York.

Pietrusewsky, M.

2003 “Osteology of the Human Skeletal Remains from the Smith-Beretania Parking Lot and Park Project, Chinatown, Honolulu, Hawai‘i.” In Kalilihiwa and Cleghorn (2007). *Archaeological Monitoring for the Smith-Beretania Parking Lot, State Site No. 50-80-12-6772, Honolulu, Island of O‘ahu*. Pacific Legacy, Inc., Kailua, Hawai‘i.

Pukui, M.K.

1983 *‘Ōlelo No‘eau; Hawaiian Proverbs and Poetical Sayings*. Bernice P. Bishop Museum Special Publication No. 71. Bishop Museum Press, Honolulu.

Pukui, M.K. and S.H. Elbert

1971 *Na Ua Mai Ka Puke Wehewehe ʻOlelo ʻo Hawaiian Dictionary*. University of Hawaiʻi Press, Honolulu.

1986 *Hawaiian Dictionary*. Revised edition. University of Hawaiʻi Press, Honolulu.

Pukui, M.K., S.H. Elbert, and E.T. Mookini

1974 *Place Names of Hawaiʻi*. University of Hawaiʻi, Honolulu.

Riley, T.J., J. Kennedy, J.R. Moore, S. Ireland, and E. Yoshifuku

1995 *A Report on Archaeological Data Recovery at Sites 50-80-14-4587 and 50-80-14-4588 for the Kekaulike Revitalization Project, Ewa Block, Nuʻuanu Ahupuaʻa, Honolulu District, Island of Oʻahu, Volume I of III*. Archaeological Consultants of Hawaii, Inc., Haleʻiwa, Hawaiʻi.

Rockwood, P. and D. Barrère

1959 The Area from Nuuanu Stream to Kuloloia Beach as described by Ii." Map by Paul Rockwood. Research by Dorothy Barrère Scaled plan view map in, *Fragments of Hawaiian History*, by John Papa ʻĪʻī, 1959, p. 65. Bishop Museum Press, Honolulu.

Sanborn Map Company

1927 Insurance Maps of Honolulu, Territory of Hawaii. Volume I Sheet 119. Scale 1 inch = 50 feet.

1955 Insurance Maps of Honolulu, Territory of Hawaii. Volume I Sheet 126. Scale 1 inch = 50 feet.

Soehren, L.

2010 A Catalog of Hawaiian Place Names, Compiled from the Records of the Boundary Commission and the Board of Commissioners to Quiet Land Titles of the Kingdom of Hawaiʻi. Ulukau: The Hawaiian Electronic Library. http://ulukau.org/cgi-bin/hpn?e=p-0mahele--00-0-0--010---4------0-01--1en-Zz-1---20-about---00031-00110escapewin-00&a=d&a=p&p=intro(accessed 10 October 2014).

State of Hawaiʻi

1937 TMK Map, Zone 1 Sec 7 Plat 02. *Por. "China Town Historic District," Honolulu, Oahu, Hawaii*. Scale 1 in. = 40 ft. Department of Finance, Property Assessment Division, Honolulu.

Stearns, H.T.

1978 *Quaternary Shorelines in the Hawaiian Islands.* Bishop Museum Bulletin 237. Bishop Museum Press, Honolulu.

Tabulevich

1819 Honolulu Harbor. Reprinted in G. Fitzpatrick, 1986, pp. 52–53. *The Early Mapping of Hawaii*, Editions Limited, Honolulu.

Thornton, T.F.

1997 Anthropological studies of Native American place naming. *American Indian Quarterly* 21 (2): 209–228.

Thrum, T.G.

1892 Honolulu Harbor Improvements. *Hawaiian Almanac and Annual for 1893*. Thomas G. Thrum, Honolulu.

1893 Fifty Years of Hawaiian Commercial Development. *Hawaiian Annual and Almanac for 1894*.

1896 Hawaiian Commercial Development. *Hawaiian Almanac and Annual for 1896*. Thomas G. Thrum, Honolulu.

1998 *Hawaiian Folk Tales, A Collection of Native Legends*. Mutual Publishing, Honolulu.

USGS (U.S. Geological Survey)
1998 Honolulu Quadrangle. 7.5 minute series. Scale 1:24000.

1953 Honolulu USGS 7.5-minute topographic quadrangle. USGS Information Services, Denver, Colorado.

U.S. Interior Department
1886 Map of Honolulu Harbor and Town. Registered Map No. 1119. 1 inch = 1,000 feet. On file, Land Survey Office, Department of Accounting and General Services, State of Hawai‘i, Honolulu.

Wagner, W.L., D.R. Herbst, and S.H. Sohmer
1990 *Manual of the Flowering Plants of Hawaii, Volume 1***.** University of Hawai‘i and Bishop Museum Press, Honolulu.

Wall, W.A.
1885 Map of Reef Titles near Honolulu. Registered Map No. 1690. 1 inch = 1,000 feet. On file, Land Survey Office, Department of Accounting and General Services, State of Hawai‘i, Honolulu.

1891 Lower Part of the City of Honolulu, and the Harbor. Registered Map 1558. Scale 1:1200. On file, Land Survey Office, Department of Accounting and General Services, State of Hawai‘i, Honolulu.

Webster, W.
1851 Plan of part of Waikahalulu on the Reef of Honolulu belonging to H. Kalama. Registered Map No. 244. Scale: 1 inch = 100 feet. On file, Land Survey Office, Department of Accounting and General Services, State of Hawai‘i, Honolulu.

1858 Honolulu Water Lots, Plan No. 1. Registered Map No.283. Scale: 1 inch = 100 feet. On file, Land Survey Office, Department of Accounting and General Services, State of Hawai‘i, Honolulu.

Westervelt, W.D.
1915 *Legends of Old Honolulu.* Collected and Translated from the Hawaiian by W.D. Westervelt. Charles E. Tuttle Co., Rutland.

Wilkes, C.
1856 *Narrative of the United States Exploring Expedition, During the Years 1838, 1839, 1840, 1841, 1842, Vol. III.* G.P. Putnam & Company, New York.

Winieski, J.P. and H.H. Hammatt
2001 *Archaeological Monitoring Report for the Nimitz Highway Reconstructed Sewer, Honolulu, O‘ahu, Hawai‘i (TMK 1-7-02, 03 and 2-1-02, 13-16, 25, 27, 29-32)*. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Wong-Smith, H. and P.H. Rosendahl
1990 *Aloha Tower Complex Historical Assessment, Honolulu Harbor, Island of Oahu, TMK [2]-1-01*. Paul H. Rosendahl, Ph.D., Inc., Hilo, Hawai‘i.

FORD & ASSOCIATES, INC.
ENVIRONMENTAL SCIENTISTS & ENGINEERS

Phase I Environmental Site Assessment

Commercial Property
Located at 128 North Nimitz Highway
(Tax Map Key Numbers [TMKs]: [1] 1-7-002: Parcel 013
and Portions of Parcels 023 and 050)
Honolulu, Oahu, Hawaii

FAI Project No. 21-1888

December 1, 2021

Prepared for:

C.Q. Yee Hop & Company, Limited and Yee Hop Realty, Limited
c/o Carlsmith Ball LLP
1001 Bishop Street, Suite 2100
Honolulu, Hawaii 96813

Prepared by:

Ford & Associates, Inc.
928 Nuuanu Avenue, Suite 505
Honolulu, Hawaii 96817
808.426.6927

TABLE OF CONTENTS

Figures

Photographs

Appendices

References

LIST OF ACRONYMS

ACM	Asbestos-Containing Materials
AOC	Area of Concern
AST	Aboveground Storage Tank
ASTM	ASTM International
AULs	Activity and Use Limitations
Bgs	Below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Chemicals of Concern
DOD	Department of Defense
DPP	Department of Planning and Permitting
CORRACTS	Resource Conservation and Recovery Act Corrective Action
EDR	Environmental Data Resources, Inc.
EDR Hist Auto	EDR Exclusive Historic Gas Stations
EDR Hist Cleaner	EDR Exclusive Historical Cleaners
EDR MGP	EDR Proprietary Manufactured Gas Plants
ESA	Environmental Site Assessment
FAI	Ford & Associates, Inc.
FEMA	Federal Emergency Management Agency
FUDS	Formerly Used Defense Site
HDOH	State of Hawaii Department of Health
HEER	Hazard Evaluation and Emergency Response
HFD	Honolulu Fire Department
HI BROWNFIELDS	State Brownfields
HI ENG CONTROLS	State Engineering Controls
HI INST CONTROL	State Institutional Control
HI VCP	State Voluntary Response Program
LBP	Lead-Based Paint
LLP	Landowner Liability Protections
LUST	Leaking Underground Storage Tank
mg/L	Milligrams per Liter
NESHAPS	National Emissions Standards for Hazardous Air Pollutants
NFA	No Further Action
OSHA	Occupational Safety and Health Administration
PAHs	Polycyclic Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
ppm	Parts per million
RCRA	Resource Conservation and Recovery Act
RCRA-LQG	RCRA-Large Quantity Generator
RCRA-NonGen/NLR	RCRA Non-Generator/No Longer Regulated
RCRA- TSDF	RCRA-Treatment, Storage and Disposal
RCRA-VSQG	RCRA-Very Small Quantity Generator
SALs	Soil Action Levels

SEMS	Superfund Enterprise Management System
SEMS-ARCHIVE	Superfund Enterprise Management System–Archive
SHWB	Solid and Hazardous Waste Branch
SHWS	State Hazardous Waste Site
SWRCY	State Landfill/Solid Waste Recycling
TMK	Tax Map Key
TPH	Total Petroleum Hydrocarbons
UIC	Underground Injection Control
U.S.C.	United States Code
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	Underground storage tank
VEC	Vapor Encroachment Condition
VES	Vapor Encroachment Screen

EXECUTIVE SUMMARY

Carlsmith Ball LLP, on behalf of C.Q. Yee Hop & Company, Limited and Yee Hop Realty, Limited, retained Ford & Associates, Inc. (FAI) to conduct a Phase I Environmental Site Assessment (Phase I ESA or assessment) of the commercial property located at 128 North Nimitz Highway (Tax Map Key Numbers [TMKs]: [1] 1-7-002: Parcel 013 and portions of Parcels 023 and 050) in Honolulu, Oahu, Hawaii (the "subject property"). The objective of the Phase I ESA was to provide an independent, professional opinion regarding recognized environmental conditions, as defined by ASTM International (ASTM), associated with the subject property. This Phase I ESA was requested in association with an acquisition.

FAI performed this Phase I ESA under the conditions of, and in accordance with, Proposal Number 21P-3063, dated July September 3, 2021, and ASTM International Practice E1527-13, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* as a guideline. Any exceptions to, or deletions from, this practice are described in Sections 1.2 and 1.3 of this report.

The subject property is approximately 28,000 square feet in area and is improved with a 3-story commercial building that was constructed in 1919 and an asphalt-paved parking lot. The third floor and more than half of the second floor in the building collapsed in the distant past, so only a portion of the second floor remains. The building is currently used for the storage of equipment and supplies, and includes an area on the second floor where lacquer spraying and other finishing of wooden furniture is sometimes conducted. The parking lot on the subject property is a commercial parking lot with a manned pay booth. The northwest edge of the subject property includes a portion of the narrow roadway known as Gravier Lane.

The City and County of Honolulu Real Property Assessment Division database designates the subject property as TMKs: (1) 1-7-002: Parcel 013 and portions of Parcels 023 and 050, and lists the Property Class as "Commercial." The City and County of Honolulu, Department of Planning and Permitting (DPP) database indicates that the subject property is currently zoned "BMX-4 Central Business Mixed Use," and the State Land Use designation is "Urban District." The DPP database also indicates that the subject property is located within the Chinatown Special District.

The historical research presented in this assessment has established the use of the subject property since 1897. In addition, information on historic uses of adjoining properties was also obtained. A chronological summary of the historic uses of the subject and adjoining/nearby properties is presented below.

The earliest available topographic map, from 1897, depicts the subject property as part of an area labeled "Pukolo," showing a small church building on the northwest adjoining area. No structures are depicted in the subject property. The earliest available fire insurance map, dated 1914, shows the southwest portion of the subject property developed with a few buildings, including one building with four stores, and one building divided into two dwellings and one store. The northeastern area of the subject property is only partially developed with a portion of a warehouse that extends onto the northeast adjoining property. The 1927 fire insurance map depicts the subject property completely developed with various structures. The west side of the subject property is depicted with five stores, one warehouse, one apartment, and one dwelling. The south-central portion of the subject property is depicted with one medium-sized warehouse and one medium-sized warehouse with employee dormitory. The north-central portion of the subject property is depicted with a medium-sized structure, but the labeled is not legible. The northern side of the subject property is depicted with a building labeled “Dining Room,” “Kitchen,” and “Receiving and Shipping Shed,” and a small building labeled “Sausage Factory.” The southeast portion of the subject property is depicted with a store.

The 1950 fire insurance map shows no significant changes to the subject property, except that two of the storefronts on the west side of the subject property are no longer depicted, and the sausage factory and a produce warehouse are combined into a larger building. The 1955 fire insurance map shows no significant changes, except the west corner of the subject property is depicted with a structure labeled “Gas & Oil,” likely indicating a gas station. The 1963 fire insurance map shows no significant changes, except the “Gas & Oil” building is no longer labeled and the stores along the southwest side of the subject property are no longer depicted. The fire insurance maps dated from 1972 to 1978 how no significant changes, except that the southwest side of the subject property is depicted without any structures. The fire insurance maps dated from 1985 to 1993 also show no significant changes, except one additional building is depicted on the southwest portion of the subject property.

The DPP database indicates that the current commercial building on the subject property was constructed in 1919. Based on interviews with the property owners, the second floor of the building was formerly used as a dormitory for Chinese Immigrants. It was also indicated that the subject property formerly included a gas station with underground storage tanks (USTs), located along North Nimitz Highway, and ammonia refrigeration equipment formerly operated on the subject property. In addition, the structures formerly located on the subject property (other than the current building) were demolished and removed in 1998-1999.

The earliest available records at the City and County of Honolulu Real Property Tax Office indicate that the majority of the subject property (TMK: [1] 1-7-002: Parcel 013) was owned by C.Q. Yee Hop in 1951 (which changed its name to C.Q. Yee Hop & Co. Ltd. the same year). Land was added to Parcel 013. Including a parcel owned by Gertrude Straub in 1939 and a parcel owned by Yee Hop Realty Ltd. in 1943. Current owners listed as C.Q. Yee Hop & Co. Ltd. and Yee Hop Realty Ltd. The Parcel 023 portion of the subject property was owned by Gertrude S. Straub in 1940, and was deeded to Yee Hop Realty, Ltd. in 1943. A portion of Parcel 023 was leased to Bank of Hawaii in 1963, and a lease was issued to Fong, Tom, Woo & Young Associates in 1969. In 1977, a portion of Parcel 023 was leased to Ten Hing Inc. and the lessee, Fong, Tom, Woo & Young Associates, changed its name to Universal Equity Inc. The Parcel 050 portion of the subject property was owned by the State of Hawaii and Yee Hop Realty Ltd. in 1963, with the name of the parcel listed as “Gravier Lane.” The entire parcel was deeded to Yee Hop Realty, Ltd. in 1969.

This Assessment has revealed no evidence of recognized environmental conditions, as defined by ASTM, in connection with the subject property, except for the following:

- **Former Onsite USTs** – Based on the 1955 fire insurance map and interviews with the property owners, the subject property formerly included a gas station with USTs. The former gas station may have also included other subsurface structures of environmental concern such as in-ground hydraulic car lifts or in-ground oil-water separators. Although no past petroleum hydrocarbon releases have been reported at the subject property, there is no documentation available regarding the past removal and closure of the USTs or other subsurface structures of concern. Therefore, there is a potential that the USTs and/or other subsurface structures were never removed/closed, and a potential for past petroleum hydrocarbon releases to impact the subject property.

This finding is considered a recognized environmental condition because there is a potential for past petroleum hydrocarbon releases from the USTs and/or other subsurface structures to impact the subject property. FAI recommends conducting a subsurface investigation at the former gas station site to assess potential impacts to the subsurface.

- **Adjoining State Hazardous Waste Site (SHWS)** - The east adjoining property, the Yee Hop Building at 950 Maunakea Street, is listed as a SHWS facility due to diesel found in the soil. The State of Hawaii Department of Health (HDOH) Hazard Evaluation and Emergency Response (HEER) Office is listed as the Lead Agency and the SHWS is listed as "Hazard Present," "Ongoing Response," and "Controls Required to Manage Contamination." FAI reviewed the HDOH, HEER case file for this site, which included a 2004 UST closure report and a 2004 "Review of UST Closure Report" letter from the HEER Office.

  According to the closure report, a 1,000-gallon fuel oil UST was closed in-place approximately two feet east of the Yee Hop Building in 2004. This UST site is located approximately 50 feet to the east-southeast and hydrologically up-gradient to the subject property. Visible staining and petroleum odors were observed on the soil below the bottom of the tank, and soil samples collected from the UST pit and analyzed showed total petroleum hydrocarbons (TPH) as oil and TPH as diesel well above the HDOH soil action levels (SALs). No further action was recommended due to the location of the impacted soil, which would compromise the structural integrity of the Yee Hop building if over-excavated, and because the fuel oil was viscous and should not migrate. However, the HDOH's review letter states that, because the vertical extent of contamination was not determined and there was no determination of the presence of free product in the groundwater, a groundwater monitoring well close to the south end of the UST site should be installed and sampled. This was required to determine the extent of the contamination prior to granting the site a "no further action" (NFA) status. There was no documentation indicating that the well was ever installed/sampled.

  This finding is considered a recognized environmental condition because the former UST site is located nearby and is hydrologically up-gradient to the subject property, and the SHWS has not received a "No Further Action" determination from the HDOH, HEER Office. FAI recommends conducting a limited subsurface investigation, including the installation and sampling of a groundwater monitoring well on the east-southeast portion of the subject property to assess potential impacts from the nearby SHWS site.

This assessment has revealed the following environmental conditions, which are not considered recognized environmental conditions, as defined by ASTM, but may be considered business environmental risks:

- **Onsite Suspect Asbestos-Containing Materials (ACM)** – The building on the subject property was constructed in 1919 and, therefore, may include ACM. Suspect ACM were observed at the subject property during FAI's site visit, including: gypsum wall/ceiling board with joint tape/compound, drop-in acoustical ceiling panels, mortar, and asphalt pavement. Other suspect ACM such as caulking/sealant between building components and/or roofing materials may also be present but hidden from view

  This finding is not considered a recognized environmental condition because ACM in buildings is not considered an ASTM issue. However, FAI recommends that, prior to any activities (i.e., repair, renovation, demolition) which may disturb suspect ACM, these and similar materials should be sampled and analyzed for possible asbestos content. If the materials are found to contain asbestos, the building owner or leased space tenant may be required to comply with applicable United States Environmental Protection Agency (USEPA), OSHA, National Emission Standards for Hazardous Air Pollutants (NESHAPS), and state and local regulations.

- **Onsite Suspect Lead-Based Paint (LBP)** – LBP was commonly used for corrosion protection in the 1960s, and in prime, intermediate, and finish coats well into the 1970s. The building at the subject property was constructed in 1919 and may include LBP.

  This finding is not considered a recognized environmental condition because LBP in buildings is not considered an ASTM issue. However, FAI recommends that paint sampling be conducted to determine the presence or absence of LBP prior to renovation or demolition activities that may disturb painted surfaces. If the paints are found to contain lead, the building owner or leased space tenant may be required to comply with applicable federal, state, and local regulations.

- **Onsite Fluorescent Light Ballasts with Polychlorinated Biphenyls (PCBs) -** Fluorescent light fixtures were present in the building at the subject property. Many fluorescent light ballasts manufactured prior to 1980 may contain PCBs. The building at the subject property was constructed prior to 1980 and may include PCB light ballasts.

  This finding is not considered a recognized environmental condition because PCB light ballasts are considered a *de minimis* environmental issue. However, FAI recommends that the ballasts be inspected for "No PCBs" labels prior to planned renovation/demolition activities involving the removal of fluorescent light fixtures. If the ballasts are not labeled, these units must be disposed of at an approved PCB waste facility.

1.0 INTRODUCTION

Carlsmith Ball LLP, on behalf of C.Q. Yee Hop & Company, Limited and Yee Hop Realty, Limited, retained Ford & Associates, Inc. (FAI) to conduct a Phase I Environmental Site Assessment (Phase I ESA or assessment) of the commercial property located at 128 North Nimitz Highway (Tax Map Key Numbers [TMKs]: [1] 1-7-002: Parcel 013 and portions of Parcels 023 and 050) in Honolulu, Oahu, Hawaii (the “subject property”). The objective of the Phase I ESA was to provide an independent, professional opinion regarding recognized environmental conditions, as defined by ASTM International (ASTM), associated with the subject property. This Phase I ESA was requested in association with an acquisition.

1.1 PURPOSE

The purpose of the assessment is to follow ASTM Practice E1527-13 (ASTM E1527-13), which defines good commercial and customary practice in the United States of America for conducting an environmental assessment of a parcel of commercial real estate with respect to the range of contaminants within the scope of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. [United States Code] §9601) and petroleum products. As such, this practice is intended to permit a user to satisfy one of the requirements to qualify for the innocent landowner, contiguous property owner, or bona fide prospective purchaser limitations on CERCLA liability (hereinafter, the “landowner liability protections,” or “LLPs”): that is, the practice that constitutes all appropriate inquiries into the previous ownership and uses of the property consistent with good commercial and customary practice as defined at 42 U.S.C. §9601(35)(B).

The term “recognized environmental condition” means the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. *De minimis* conditions are those conditions that generally do not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. *De minimis* conditions are not considered recognized environmental conditions.

1.2 SCOPE OF WORK

FAI performed this Phase I ESA under the conditions of, and in accordance with Proposal Number 21P-3063, dated July September 3, 2021 and ASTM Practice E1527-13, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* as a guideline. ASTM Practice E 1527-13 constitutes “all appropriate inquiry” into the previous ownership and uses of a property consistent with good commercial or customary practice” as defined at 42 U.S.C. §9601(35)(B). This practice also permits the user to satisfy one of the requirements to qualify for “LLPs” under CERCLA.

This assessment included the following components:

- Investigate historical use(s) of the subject property through reasonably ascertainable historical information, such as aerial photographs, fire insurance maps, land use maps, city directories, and/or agency records for evidence of prior land use that could have led to recognized environmental conditions.

- Review available information on general geology and topography of the subject property, local groundwater conditions, sources of water, power, and sewer, and proximity to ecologically sensitive receptors, such as streams, that might be impacted by recognized environmental conditions and environmental issues.

- Review environmental records available from the property owner, current lessee, or site contact including regulatory agency reports, permits, registrations, and consultants' reports for evidence of recognized environmental conditions and activity and use limitations (AULs).

- Interview, or attempt to interview, the subject property owner, current lessee, current lessee's operations personnel, key site personnel, and others, regarding current and previous uses of the property, particularly activities involving hazardous substances and petroleum products.

- Conduct an onsite reconnaissance of the subject property for visual evidence of recognized environmental conditions, including:

    - Existing or potential soil and water contamination, as evidenced by soil or pavement staining or discoloration, stressed vegetation, or indications of waste dumping or burial

    - Pits, ponds, or lagoons

    - Containers of hazardous substances or petroleum products

    - Electrical and hydraulic equipment that may contain polychlorinated biphenyls (PCBs), such as electrical transformers and hydraulic hoists

    - Underground and aboveground storage tanks (USTs and ASTs, respectively)

- Perform a site property line visual assessment of adjacent properties for evidence of potential offsite environmental conditions that may affect the subject property.

- Review a commercial database summary of federal and state and tribal regulatory agency records pertinent to the subject property and offsite facilities located within ASTM-specified search distances from the subject property.

- As part of the Phase I ESA, conduct Vapor Encroachment Screening to assess the potential for chemical and petroleum hydrocarbon vapor impacts to the subject property from onsite and offsite sources, in accordance with the ASTM E2600-15 Standard.

- Prepare this written report, including our findings and conclusions.

FAI representative Mr. Tim Swartz, Senior Project Manager and Environmental Professional as defined in §312.10 of 40 Code of Federal Regulations (CFR) 312 (see Section 11.0), conducted the site walkthrough portion of the assessment on September 28, 2021, accompanied by Mr. Mike Chun, President of Yee Hop Realty, Ltd.

Copies of selected relevant documents and supporting information are included in the applicable appendices. Resumes for assessors and Environmental Professionals involved in this assessment are included in Appendix A. The Subject Property Location Map and Subject Property Vicinity Map are included behind the *Figures* Tab. Photographs taken at the time of the walkthrough are included behind the *Photographs* Tab.

1.3 LIMITING CONDITIONS AND EXCEPTIONS OF THE ASSESSMENT

Information obtained for this assessment from sources (listed in the appendices), to the extent it was relied on to form our opinion, is assumed to be correct and complete. FAI is not responsible for the quality or content of information from these sources.

1.3.1 Unavailable Documentation

The requested documents regarding the subject property were made available for review during this assessment.

1.3.2 Data Gaps

The ASTM Practice indicates that all obvious uses of the property shall be identified from the present, back to the property's first developed use, or back to 1940, whichever is earlier. Any significant "data gaps" which affect the ability of the Environmental Professional to identify recognized environmental conditions shall be noted.

Historical subject property ownership and/or use information was obtained for the time period, 1897 to present. Based on this information, FAI has established the history of uses of the subject property since 1940 or first development, whichever is earlier.

This Phase I ESA report contains data gaps due of the lack of historical records at five-year intervals. However, based on our review of the available historical documents, lack of additional historical information does not appear to be a significant data gap.

1.3.3 Lack of Access/ Reconnaissance Limitations

FAI did not encounter significant access or reconnaissance limitations at the subject property.

1.4 RELIANCE

The information and opinions rendered in this report are exclusively for use by C.Q. Yee Hop & Company, Limited and Yee Hop Realty, Limited. FAI will not distribute or publish this report without consent except as required by law or court order. The information and opinions expressed in this report are given in response to a limited assignment and should be considered and implemented only in light of that assignment. The services provided by FAI in completing this project were consistent with normal standards of the profession. No other warranty, expressed or implied, is made.

2.0 USER PROVIDED INFORMATION

ASTM E1527-13 defines "User" as the party seeking to use Practice E1527 to complete a Phase I ESA of the subject property. ASTM E1527-13 specifies that certain tasks associated with identifying potential recognized environmental conditions at the subject property should be performed by the User and provided to the Environmental Professional (i.e., User's Responsibilities). FAI understands that C.Q. Yee Hop & Company, Limited and Yee Hop Realty, Limited are the Users as defined by ASTM E1527-13, and have provided the User a questionnaire, requesting specific information.

The User Questionnaire included requests for information on the following:

(1) Environmental liens and AULs that are filed or recorded against the property;
(2) "Specialized knowledge" of the User;
(3) Relationship of the purchase price to the fair market value of the property if it were not contaminated;
(4) Commonly known or reasonable ascertainable information;
(5) The degree of obviousness of the presence or likely presence of contamination at the property, and the ability to detect the contamination by appropriate investigation;
(6) The presence of Proceedings Involving the Property (e.g., litigation, regulatory agency rulings, violations);
(7) The reason for performing the Phase I ESA; and
(8) Other information/documents (e.g., site plan, ALTA survey).

Based on FAI's review of the User provided information, no evidence of recognized environmental conditions at the subject property was noted, except that a gas station with USTs was formerly located on the subject property, along Nimitz Highway, and ammonia refrigeration equipment formerly operated on the subject property. The completed User Questionnaire is included in Appendix B.

3.0 SUBJECT PROPERTY DESCRIPTION

3.1 SUBJECT PROPERTY LOCATION AND CURRENT USE

The subject property is located at 128 North Nimitz Highway (additional address listed for Parcel 013 is 112 North Nimitz Highway) in the densely developed Chinatown district of downtown Honolulu, Oahu, Hawaii, in a commercial setting.

The subject property is approximately 28,000 square feet in area and is improved with a 3-story commercial building that was constructed in 1919 and an asphalt-paved parking lot. The third floor and more than half of the second floor in the building collapsed in the distant past, so only a portion of the second floor remains. The building is currently used for the storage of equipment and supplies, and includes an area on the second floor where lacquer spraying and other finishing of wooden furniture is sometimes conducted. The parking lot on the subject property is a commercial parking lot with a manned pay booth. The northwest edge of the subject property includes a portion of the narrow roadway known as Gravier Lane.

The City and County of Honolulu Real Property Assessment Division database designates the subject property as TMKs: (1) 1-7-002: Parcel 013 and portions of Parcels 023 and 050, and lists the Property Class as “Commercial.” The City and County of Honolulu, Department of Planning and Permitting (DPP) database indicates that the subject property is currently zoned “BMX-4 Central Business Mixed Use,” and the State Land Use designation is “Urban District.” The DPP database also indicates that the subject property is located within the Chinatown Special District.

3.2 CURRENT USES OF ADJOINING AND NEARBY PROPERTIES

The area surrounding the subject property consists of commercial properties. These adjoining and nearby properties were observed from the subject property, and are listed below:

<u>North</u>: Fair & White Skin Care and Troy Enterprise Fresh Fish Market

<u>Northeast</u>: Golden Palace Seafood Restaurant and Bank of Hawaii

<u>East</u>: HI Design Barber & Lounge

<u>Southeast</u>: Aunty’s Market, New Chee Wo Tong Herbs Store, Honolulu Adventist Community Gospel Center, Aloha Curtain Wholesale & Retail, Association of Chinese from Vietnam, Cambodia & Laos, and Sum’s Beauty Center

<u>South</u>: North Nimitz Highway, beyond which are the Harbor Police Station and Pier 14 at Honolulu Harbor

<u>Southwest</u>: North Nimitz Highway, beyond which are the Harbor Police Station and Pier 15 at Honolulu Harbor

West: North Nimitz Highway, beyond which is Pier 15 at Honolulu Harbor

Northwest: K. Kaya Fishing Supplies, Restaurant Equipment Hawaii, Santos Mart Seafood Market

3.3 PHYSICAL SETTING

General information on the physical setting of the subject property was assessed through visual observations, and review of the following documents: (1) United States Geological Survey (USGS) topographic maps, (2) soil survey information, and (3) aquifer identification information. The physical setting is described below:

- **Soils:** Ewa silty clay loam, moderately shallow, 0 to 2 percent slopes on the majority of the subject property and "Fill land, mixed" on the southwest portion of the subject property (Environmental Data Resources, Inc. [EDR] Radius Map Report, 2020; United States Department of Agriculture [USDA] Soil Conservation Service, 2014)
- **Elevation:** Approximately 8 to 12 feet above mean sea level (EDR Radius Map Report, 2019; USGS, Honolulu Quadrangle, 2013)
- **Estimated Depth to Shallow Groundwater:** Approximately 5 to 10 feet (based on topography; USGS, Honolulu Quadrangle, 2013)
- **Estimated Shallow Groundwater Flow Direction:** South-southwest, toward the Pacific Ocean coastline (EDR Radius Map Report, 2020; USGS, Honolulu Quadrangle, 2013)
- **Nearby Surface Water/ Drainage Features:** Honolulu Harbor, located approximately 190 feet southwest of the subject property (USGS, Honolulu Quadrangle, 2013)

The Aquifer Identification and Classification for Oahu: Groundwater Protection Strategy for Hawaii (Mink, J.F. and L.S. Lau, 1990), published by the Water Resources Research Center at the University of Hawaii, was reviewed for information on groundwater conditions below the subject property. The report describes the upper and lower aquifers below the subject property as part of the Nuuanu aquifer system of the Honolulu sector, on the Island of Oahu.

The upper aquifer is an unconfined basal aquifer of the sedimentary type, occurring in non-volcanic lithology. Its status is described as a replaceable water supply with moderate salinity (1,000 to 5,000 milligrams per liter [mg/L] Chloride) that is currently used, but it is not used for drinking water purposes and is not considered ecologically important. This aquifer has a high vulnerability to contamination.

The lower aquifer is a confined basal aquifer of the flank type, occurring in horizontally extensive lavas. Its status is described as an irreplaceable, fresh (<250 mg/L Chloride) drinking water supply that is currently used. This aquifer has a low vulnerability to contamination.

The subject property is located below the State of Hawaii Department of Health (HDOH) Safe Drinking Water Branch defined Underground Injection Control (UIC) line. Areas above the UIC line denote potential underground drinking water sources. Areas below the UIC line generally denote groundwater that is unsuitable for drinking water purposes. Consequently, the aquifers underlying the subject property are not considered a potential drinking water source.

The subsurface conditions under the subject property are interpreted from available data and may vary. Estimated groundwater flow direction is based on topography and nearby water features unless otherwise noted. Topography is not always a reliable basis for predicting groundwater flow direction. The local groundwater gradient under the subject property may be influenced naturally by zones of higher or lower permeability, or artificially by nearby pumping or recharge, and may deviate from the regional trend.

4.0 HISTORICAL USE INFORMATION REVIEW

A review of available historical and related information was performed. This included a review of ASTM Standard Historical Sources, Agency/Department records/personnel interviews and other documents.

4.1 SUMMARY OF HISTORICAL USE

The following historical use summary incorporates information obtained from maps, aerial photographs, land title records, government agencies, interviews, and other components of the assessment process.

The historical research presented in this assessment has established the use of the subject property since 1897. In addition, information on historic uses of adjoining properties was also obtained. A chronological summary of the historic uses of the subject and adjoining/nearby properties is presented below.

The earliest available topographic map, from 1897, depicts the subject property as part of an area labeled "Pukolo," showing a small church building on the northwest adjoining area. No structures are depicted in the subject property. The earliest available fire insurance map, dated 1914, shows the southwest portion of the subject property developed with a few buildings, including one building with four stores, and one building divided into two dwellings and one store. The northeastern area of the subject property is only partially developed with a portion of a warehouse that extends onto the northeast adjoining property. The 1927 fire insurance map depicts the subject property completely developed with various structures. The west side of the subject property is depicted with five stores, one warehouse, one apartment, and one dwelling. The south-central portion of the subject property is depicted with one medium-sized warehouse and one medium-sized warehouse with employee dormitory. The north-central portion of the subject property is depicted with a medium-sized structure, but the labeled is not legible. The northern side of the subject property is depicted with a building labeled "Dining Room," "Kitchen," and "Receiving and Shipping Shed," and a small building labeled "Sausage Factory." The southeast portion of the subject property is depicted with a store.

The 1950 fire insurance map shows no significant changes to the subject property, except that two of the storefronts on the west side of the subject property are no longer depicted, and the sausage factory and a produce warehouse are combined into a larger building. The 1955 fire insurance map shows no significant changes, except the west corner of the subject property is depicted with a structure labeled "Gas & Oil," likely indicating a gas station. The 1963 fire insurance map shows no significant changes, except the "Gas & Oil" building is no longer labeled and the stores along the southwest side of the subject property are no longer depicted. The fire insurance maps dated from 1972 to 1978 how no significant changes, except that the southwest side of the subject property is depicted without any structures. The fire insurance maps dated from 1985 to 1993 also show no significant changes, except one additional building is depicted on the southwest portion of the subject property.

The DPP database indicates that the current commercial building on the subject property was constructed in 1919. Based on interviews with the property owners, the second floor of the building was formerly used as a dormitory for Chinese immigrants. It was also indicated that the subject property formerly included a gas station with USTs, located along North Nimitz Highway, and ammonia refrigeration equipment formerly operated on the subject property. In addition, the structures formerly located on the subject property (other than the current building) were demolished and removed in 1998-1999.

The earliest available records at the City and County of Honolulu Real Property Tax Office indicate that the majority of the subject property (TMK: [1] 1-7-002: Parcel 013) was owned by C.Q. Yee Hop in 1951 (which changed its name to C.Q. Yee Hop & Co. Ltd. the same year). Land was added to Parcel 013 including a parcel owned by Gertrude Straub in 1939 and a parcel owned by Yee Hop Realty Ltd. in 1943. Current owners listed as C.Q. Yee Hop & Co. Ltd. and Yee Hop Realty Ltd. The Parcel 023 portion of the subject property was owned by Gertrude S. Straub in 1940, and was deeded to Yee Hop Realty, Ltd. in 1943. A portion of Parcel 023 was leased to Bank of Hawaii in 1963, and a lease was issued to Fong, Tom, Woo & Young Associates in 1969. In 1977, a portion of Parcel 023 was leased to Ten Hing Inc. and the lessee, Fong, Tom, Woo & Young Associates, changed its name to Universal Equity Inc. The Parcel 050 portion of the subject property was owned by the State of Hawaii and Yee Hop Realty Ltd. in 1963, with the name of the parcel listed as “Gravier Lane.” The entire parcel was deeded to Yee Hop Realty, Ltd. in 1969.

4.2 USGS TOPOGRAPHIC MAPS

Historic topographic maps for the subject property and vicinity were reviewed from EDR and FAI’s map collection for the years 1897, 1928, 1953, 1954, 1959, 1969, 1970, 1983, 1998, and 2013. Topographic maps provided by EDR are included in Appendix C. Key findings noted during this review are as follows:

- The earliest available topographic map, from 1897, depicts the subject property as part of an area labeled “Pukolo,” showing a small church building on the northwest adjoining area. No structures are depicted in the subject property. All of the current roadways are shown in the general area, although the road along the southwest side of the subject property (currently North Nimitz Highway) is labeled “Queen Street.”

- The 1928 topographic map depicts the subject property and adjoining areas to the northeast and southwest as part of a rectangular-shaped building complex that extends along Maunakea Street, North King Street, Kekaulike Street, and North Nimitz Highway. The general area surrounding the subject property are improved with similar building complexes.

- The topographic maps dated from 1953 to 1998 appear similar and show the subject property and adjoining properties shaded pink or gray to depict a built-up area of unspecified development. No buildings/structures are depicted in the general area of the subject property except on the 1959 map, which depicts a building on the southwest adjoining property, beyond North Nimitz Highway.

- No significant changes are shown on the 2013 topographic map, except the area of the subject property is no longer shaded.

4.3 AERIAL PHOTOGRAPHS

Aerial photographs, including the subject and adjoining properties, were reviewed from EDR and Google Earth.™ Photographs taken in the years 1952, 1968, 1978, 1985, 1992, 2000, 2004, 2008, 2011, 2012, 2013, 2014, 2016, and 2019 were reviewed. Aerial photographs provided by EDR are included in Appendix D. Key findings noted during this review are as follows:

- The five earliest available aerial photographs, dated from 1952 to 1992, show the subject property fully developed with multiple small- and medium-sized commercial buildings. All of the current roadways are shown in the general area. The surrounding properties were also densely developed with commercial buildings.

- The remaining aerial photographs, dated from 2000 to 2019, show the subject property with the current building and parking lot, much as it appeared during FAI's recent site visit.

4.4 FIRE INSURANCE MAPS

Fire insurance maps typically depict either the locations of manufacturing and industrial facilities within the city limits or potential hazards existing within individual building structures. In many cases, evidence of environmental concern, such as locations of USTs, can be found by reviewing fire insurance maps.

FAI obtained and reviewed Sanborn Fire Insurance Maps for the subject property and adjoining areas from EDR. Fire insurance maps were available for the years 1914, 1928, 1950, 1955, 1963, 1974-1976, 1978, 1985, 1991, and 1993. The report provided by EDR is included in Appendix E. Key findings noted during this review are as follows:

- **<u>1914 Sanborn Map</u>**

  The earliest available fire insurance map, dated 1914, shows the southwest portion of the subject property developed with a few buildings, including one building with four stores, and one building divided into two dwellings and one store. The northeastern area of the subject property is only partially developed with a portion of a warehouse that extends onto the northeast adjoining property.

  The south adjoining property is depicted with one building divided into two stores with one elevator. The north adjoining property is depicted with a large structure labeled "City Market" and multiple smaller structures labeled "Kitchens." The northeast adjoining property is depicted with two large structure, one labeled "King Street Market" and the other labeled "Store," with additional unlabeled smaller structures are depicted behind the store building. The east adjoining property is depicted with multiple stores, storage areas, and a warehouse and is generally labeled "Ozaki General Merchandise." The southern side of the subject property is bordered by a roadway labeled "N. Queen Street;" the southeastern side of the subject property is bordered by a roadway labeled "Maunakea Street;" a roadway labeled "North King Street" is depicted northeast of the subject property; and a roadway labeled "Kekaulike Street" is depicted northeast of the subject property.

- **1927 Sanborn Map**

  The 1927 fire insurance map depicts the subject property completely developed with various structures. The west side of the subject property is depicted with five stores, one warehouse, one apartment, and one dwelling. The south-central portion of the subject property is depicted with one medium-sized warehouse and one medium-sized warehouse with employee dormitory. The north-central portion of the subject property is depicted with a medium-sized structure, but the labeled is not legible. The northern side of the subject property is depicted with a building labeled “Dining Room,” “Kitchen,” and “Receiving and Shipping Shed,” and a small building labeled “Sausage Factory.” The southeast portion of the subject property is depicted with a store.

  The southeast adjoining property is depicted with multiple stores. The northeast adjoining property is depicted with numerous structures including stores, warehouses, a bank, grocery warehouses, and offices. The northwest adjoining property is depicted with multiple structures, including those labeled “Sperry Flour Company,” “Stores,” “Warehouses,” and other labels that are illegible. The east-southeast nearby property, beyond Maunakea Street, is labeled “Auto Stand” and includes an auto repairing structure and an office with canopy labeled “Gasoline & Oils,” located approximately 75 feet south (and cross-gradient) of the subject property.

- **1950 Sanborn Map**

  The 1950 fire insurance map shows no significant changes to the subject property, except that two of the storefronts on the west side of the subject property are no longer depicted, and the sausage factory and a produce warehouse are combined into a larger building.

- **1955 Sanborn Map**

  The fire insurance map dated 1955 shows no significant changes to the subject property, except the west corner of the subject property is depicted with a structure labeled “Gas & Oil,” likely indicating a gas station. The building on the northwest adjoining property which was previously labeled “Sperry Flour Company” is now labeled “Auto Parking and Clothes Manufacturing.” One of the southeast adjoining store buildings is now labeled “Sign and Painting.” One of the warehouses on the northeast adjoining property is now labeled “Auto Parking and Truck Loading.”

- **1963 Sanborn Map**

  The 1963 fire insurance map shows no significant changes to the subject property, except the building previously labeled “Gas & Oil” is no longer labeled and the stores along the southwest side of the subject property are no longer depicted. The east adjoining property is depicted as a vacant lot with a small office building. The “Auto Stand” that previously included an auto repairing structure and office with canopy labeled “Gasoline & Oils,” beyond Maunakea Street, is now depicted with a large structure labeled “Open Deck Garage.”

- **1974-1978 Sanborn Maps**

  The fire insurance maps dated from 1972 to 1978 appear similar and show no significant changes to the subject property, except that the southwest side of the subject property is depicted without any structures. The northeast adjoining property is depicted with three buildings, including one labeled "Store," one labeled "Bank," and one labeled "Office." The northwest adjoining property is generally labeled "Fisher Printing Co."

- **1985-1993 Sanborn Maps**

  The fire insurance maps dated from 1985 to 1993 show no significant changes to the subject property, except one additional building is depicted on the southwest portion of the subject property. Multiple southeast adjoining stores are relabeled as commercial spaces.

4.5 RECORDED LAND TITLE RECORDS

Information provided to FAI by the User with respect to environmental liens or AULs was discussed in Section 3.0. The ASTM Standard recommends that the User retain a title company or title professional to provide recorded land title records.

As part of this assessment, FAI attempted to obtain reasonably ascertainable recorded land title records and lien records that are filed under federal, state, tribal, or local law. This work is generally limited to a review of these records for the presence of environmental liens and AULs. FAI purchased and reviewed an Environmental Lien and AUL Search report provided by EDR, dated September 17, 2021 and included in Appendix F. FAI's review of the land title records did not reveal environmental liens or AULs associated with the subject property.

According to available records at the City and County of Honolulu Real Property Tax Assessment Office, the subject property is designated as TMKs: (1) 1-7-002: Parcel 013 and portions of Parcels 023 and 050. Historical ownership and lease records are summarized in the following table:

Parcel	Year	Property Transaction
TMK No.: (1) 1-7-002: Parcel 013	1951	Earliest available records, indicating parcel was owned by C.Q. Yee Hop.
	1951	Change of owner's name to C.Q. Yee Hop & Co. Ltd.
	1963	Land was added to Parcel 013 from TMKs: (1) 1-7-002: Parcels 012, 015, and 022, which were also previously owned by C.Q. Yee Hop & Co. Ltd.
	1990	Land was added to Parcel 013 from TMKs: (1) 1-7-002: Parcels 014 and 044. Parcel 014 was previously owned by Yee Hop Realty Ltd. since 1952, and Parcel 044 was previously owned by Gertrude Straub in 1939 and was deeded to Yee Hop Realty Ltd. in 1943. Current owners listed as C.Q. Yee Hop & Co. Ltd. and Yee Hop Realty Ltd.
TMK No.: (1) 1-7-002: Parcel 023	1940	Earliest available records, indicating parcel was owned by Gertrude S. Straub.

Parcel	Year	Property Transaction
TMK No.: (1) 1-7-002: Parcel 023 (continued)	1943	Parcel deeded to Yee Hop Realty, Ltd.
	1963	Portion of parcel leased to Bank of Hawaii.
	1969	Portion of parcel leased to Fong, Tom, Woo & Young Associates.
	1977	Portion of parcel leased to Ten Hing Inc.
	1977	Lessee name changed from Fong, Tom, Woo & Young Associates to Universal Equity Inc.
TMK No.: (1) 1-7-002: Parcel 050	1963	Earliest available records, indicating parcel was owned by the State of Hawaii and Yee Hop Realty Ltd., with the name of the parcel listed as "Gravier Lane."
	1969	Entire parcel deeded to Yee Hop Realty, Ltd.

4.6 CITY DIRECTORY

A city directory provides names of former businesses and occupants of the subject property, which may indicate potential environmental concerns associated with the business. A city directory report was provided by EDR, and is included in Appendix G. The report includes records from 1992, 1995, 2000, 2005, 2010, 2014, and 2017.

The EDR city directory report does not include any listings for businesses/tenants at the subject property. The report includes several listings of businesses on two of the north adjoining properties (101 and 111 North King Street); however, none of the businesses appear to be of potential environmental concern for the subject property.

4.7 AGENCY CONTACTS

4.7.1 Building, Planning, and/or Zoning Departments

The City and County of Honolulu DPP database was reviewed to obtain historical use information for the subject property, which includes the land parcels designated as TMKs: (1) 1-7-002: Parcel 013 and portions of Parcels 023 and 050. The database indicates that the subject property is currently zoned "BMX-4 Central Business Mixed Use," and the State Land Use designation is "Urban District." The DPP database also indicates that the subject property is located within the Chinatown Special District. The City and County of Honolulu Real Property Assessment Division database lists the Property Class as "Commercial."

The DPP database indicates that the current commercial building on the subject property was constructed in 1919. The building is listed as an approximately 4,488 square-foot, single-story structure; however, it was originally constructed as a three-story building. The DPP database lists two demolition permits for the subject property, dated 1995 and 1996.

4.7.2 Fire Department

The City and County of Honolulu Fire Department (HFD) was contacted on September 29, 2021 to obtain information regarding any fires, complaints, permits, or violations involving hazardous material use, USTs, or ASTs on record for the subject property.

FAI received an e-mail response from the HFD on September 30, 2021, indicating that the HFD has no records of fires, complaints, permits, or violations involving hazardous material use, USTs, or ASTs for the subject property.

4.7.3 Department of Health, Solid and Hazardous Waste Branch

The HDOH, Solid and Hazardous Waste Branch (SHWB) databases of registered USTs and leaking USTs (LUSTs) were reviewed to obtain information regarding any USTs or LUSTs at the subject property or adjoining properties.

The subject property was not listed in the SHWB databases of USTs and LUSTs.

The north adjoining property was listed on the SHWB database with two 1,000-gallon USTs listed as "Permanently Out of Use," with no LUST releases reported.

4.7.4 Department of Health, Hazard Evaluation and Emergency Response Office

The HDOH Hazard Evaluation and Emergency Response (HEER) Office Release Notification database was reviewed to obtain information regarding any spills or other environmental incidents, which may have occurred at the subject property or adjoining properties.

Subject Property

FAI reviewed the HEER database of reported releases, which does not include any listings for the subject property.

East-Southeast Adjoining Property

The east-southeast adjoining property, the Yee Hop Building at 950 Maunakea Street, is listed as a State Hazardous Waste Site (SHWS) in the EDR database report (see Section 5.0) for diesel found in soil. The HEER Office is listed as the Lead Agency and the SHWS is listed as "Hazard Present" and "Ongoing Response," with a "Low" Hazard Priority. Use restrictions are listed as "Controls Required to Manage Contamination." No additional data was provided in the EDR report; however, FAI reviewed the HDOH, HEER case file for this site. The case file included a 2004 Underground Storage Tank Closure report prepared by Kimura International and dated October 2004, and a 2004 "Review of UST Closure Report" letter from the HEER Office.

According to the report, a 1,000-gallon fuel oil UST was closed in-place approximately 2 feet to the east of the Yee Hop building on July 19, 2004. This UST site is located approximately 50 feet east-southeast of the subject property. Visible staining and petroleum odors were observed on the soil below the bottom of the tank. Two soil samples were collected, one from each end of the UST. The soil samples were analyzed for total petroleum hydrocarbons (TPH) as oil, TPH as diesel, and polycyclic aromatic hydrocarbons (PAHs). Both samples contained TPH as oil at concentrations of 9,200 parts per million (ppm) and 23,000 ppm, which were above the HDOH soil action levels (SALs) of 5,000 ppm for TPH as oil. Also, TPH as diesel was detected at a concentration of 11,000 ppm in the soil sample collected from the south end of the UST, which was above the HDOH SAL of 5,000 ppm for TPH as diesel.

Kimura International recommended no further action due to the location of the impacted soil, which would compromise the structural integrity of the adjacent Yee Hop building if over-excavated, and because the fuel oil was viscous and should not migrate. The HDOH reviewed the closure report and stated that, because the vertical extent of contamination was not determined and there was no determination of the presence of free product in the groundwater, a groundwater monitoring well close to the south end of the UST site should be installed and sampled. This was required to determine the extent of the contamination prior to granting the site a “no further action” (NFA) status. No additional documents were provided in the HEER case file.

Based on FAI’s review of the HEER documents, this nearby SHWS has a potential to impact the subject property and is considered a recognized environmental condition.

4.8 PREVIOUS ENVIRONMENTAL REPORTS

No previous environmental reports on the subject property were made available during this assessment.

5.0 STANDARD FEDERAL, STATE, AND TRIBAL ENVIRONMENTAL RECORD SOURCES

Available government database information prepared by EDR was reviewed to evaluate both the subject property and any listed sites within ASTM-recommended search distances. Federal, state, tribal, and local databases reviewed are included in Appendix H.

Unmappable sites were also listed in the EDR report. Unmappable sites are sites that cannot be plotted with confidence, but can be located by zip code or city name. In general, a site cannot be geocoded due to inaccurate or missing information provided by its applicable agency. Cross-referencing addresses and site names, as well as a visual reconnaissance of surrounding properties, has been completed for the unmappable facility sites in the database report.

SUBJECT PROPERTY

Facility Index System (FINDS): The subject property is listed in the FINDS database under the name "Gouvea's Sausage Factory," located at 128 North Nimitz Highway." The FINDS listing merely indicates that the facility is included in other government databases; specifically, the Occupational Safety and Health Administration (OSHA) database. However, no pertinent information on this listing was included in the EDR report.

NEARBY PROPERTIES

A total of 233 listings were identified within ASTM-recommended search distances from the subject property, listed as follows:

- Two Superfund Enterprise Management System (SEMS) sites
- Three SEMS–Archive (SEMS-ARCHIVE) sites
- Two Resource Conservation and Recovery Act (RCRA) Corrective Action (CORRACTS) sites
- Two RCRA-Treatment, Storage and Disposal (TSDF) sites
- One RCRA Large Quantity Generator (LQG) sites
- Six RCRA Very Small Quantity Generator (RCRA-VSQG) sites
- 130 SHWS sites
- 30 LUST sites; nine UST sites
- Six State Engineering Controls (HI ENG CONTROLS) sites
- Nine State Institutional Control (HI INST CONTROL) sites
- Two State Voluntary Response Program (HI VCP) site
- Three State Brownfields (HI BROWNFIELDS) sites
- One State Landfill/Solid Waste Disposal (SWRCY) site
- Nine RCRA Non-Generator/No Longer Regulated (NonGen/NLR) sites
- 12 Formerly Used Defense Site (FUDS) sites
- One Department of Defense (DOD) site
- Two EDR Proprietary Manufactured Gas Plants (EDR MGP) sites

- Two EDR Exclusive Historical Auto Stations (EDR Hist Auto) sites
- One EDR Exclusive Historical Cleaners (EDR Hist Cleaner) site.

Four nearby sites with the potential to impact the subject property were evaluated in detail and are listed as follows:

Facility/Address	Database	Orientation from Subject Property	Environmental Concern
Yee Hop Building Maunakea Street 950 Maunakea Street	SHWS	Approximately 50 feet east-southeast	Yes; SHWS for diesel found in soil is listed as “Hazard Present” and “Response Ongoing and Necessary,” with a “Low” Hazard Priority. Use restrictions are listed as “Controls Required to Manage Contamination.” FAI reviewed the HDOH, HEER case file for this site (see Section 4.7.4 above), which indicated the HEER required that a monitoring well be installed at the south fill port of the closed-in-place UST. However, no additional information is available. Based on our review, this SHWS has a potential to impact the subject property.
C.Q. Yee Hop & Co. Ltd 111 North King Street	UST	Adjacent to the northeast	No; UST site listed with two 1,000-gallon gasoline USTs, with no reported releases.
C&CH Waterfront Fire Station 111 North Nimitz Highway	LUST	141 feet southwest	No; LUST site (Release ID: 910027) listed as “Site Cleanup Completed (NFA).”
Kekaulike Diamond Head Block Revitalization 163 North Hotel Street	SHWS, SPILLS	446 feet north-northeast	No; SHWS listed for petroleum contaminated soil, site listed as “No Hazard Present for Unrestricted Residential Use,” and the site received a letter of completion. Additionally, the site is hydrologically cross-gradient and too distant to reasonably affect the subject property.

The other listed sites are not expected to present an environmental concern to the subject property because they require no further action, or based FAI’s review, are too distant and/or topographically down-gradient or cross-gradient relative to the subject property to reasonably affect it.

6.0 SITE RECONNAISSANCE

6.1 GENERAL OBSERVATION

The subject property was assessed on foot and was viewed from all adjacent public thoroughfares. At the time of the site walkthrough on September 28, 2021, the subject property was improved with a 3-story commercial building constructed of stone and mortar and an asphalt-paved parking lot. The third floor and more than half of the second floor in the building collapsed in the distant past, so only a portion of the second floor remains. The ground floor of the building was being used for the storage of equipment and supplies, including lumber, power tools, and 1- and 5-gallon containers of paints, coatings, and paint thinner. The second floor also included some stored items, plus an area where lacquer spraying and other finishing of wooden furniture is sometimes conducted. Twelve 1-gallon and smaller containers of lacquer, Danish oil, and thinner were observed in this area.

The ground floor of the building also includes an open-sided room in the northeast portion, which was being used to store lumber and equipment. A 55-gallon drum of refrigeration oil (not in secondary containment) and 14 empty, 5-gallon lard buckets were also observed in this room. A storm drain opening (covered with two metal plates) was observed in the concrete floor of this room. The exterior wall on the northeast side of the building was observed with a small, fenced enclosure containing a 30-gallon drum of used cooking oil, which is used by the northeast adjoining Golden Palace Seafood Restaurant, according to Mr. Chun.

The parking lot on the subject property is a commercial parking lot with a manned pay booth. FAI inspected the westernmost portion of the parking lot where the former “Gas & Oils” area was depicted on the 1955 fire insurance map (see Section 4.4 above). However, no evidence of the former “Gas & Oils” area was observed. FAI observed a large steel plate on the pavement in at the north corner of the parking lot. According to Mr. Chun, the steel plate covers an in-ground food grease interceptor that is used by the northeast adjoining Golden Palace Seafood Restaurant. A short driveway was observed at the east corner of the subject property, which provides access to the subject property from Maunakea Street.

No evidence of current or former USTs, in-ground hydraulic equipment, cesspools, or other subsurface structures of environmental concern was noted on the subject property. In addition, no significant surface staining or other evidence of chemical/petroleum releases was observed on the subject property during FAI’s site visit.

6.2 HAZARDOUS SUBSTANCE AND PETROLEUM PRODUCTS (OTHER THAN UST/AST)

The subject property was assessed for signs of use, storage, or disposal of hazardous substances and/or petroleum products (other than those stored in USTs/ASTs, see Section 6.3 below). Property uses where these types of materials are typically found include: vehicle service bays, vehicle repair operations, auto body shops and related activities (e.g., solvents, cleaners, degreasers, lubricants, paints, antifreeze); dry cleaners, rug cleaners, steam laundries, Laundromats with self-serve dry clean machines (e.g., chlorinated solvents, Naphtha, mineral spirits); manufacturing operations, plating facilities, and other industrial/commercial operations. For purposes of this assessment, this does not include use/storage of small quantities of typical janitorial and maintenance materials (if any), unless considered relevant. Hazardous Wastes (if any) are further discussed in Section 6.4 below.

No visual evidence was observed, and no information was obtained to indicate the current and/or potential past presence of the above noted items, except for the following:

- One 55-gallon drum of refrigeration oil stored in the open-sided room in the northeast portion of the building

- Twelve 5-gallon buckets and 13, 1-gallon cans of paints, coatings, and paint thinner, located on shelves in the central storage room on the ground floor of the building

- Five 5-gallon canisters of gasoline, located on a shelf in the central storage room on the ground floor of the building

- Twelve 1-gallon and smaller containers of lacquer, Danish oil, and thinner, located on a table on the second floor of the building

The above-listed containers were observed in generally good condition with no significant staining or other evidence of releases observed on or around the containers.

6.3 STORAGE TANKS

6.3.1 <u>Underground Storage Tanks</u>

The subject property was assessed for evidence of USTs. The assessment consisted of noting evidence (e.g., fill ports, vent piping, dispensing equipment, pavement variations) indicating that USTs are currently or were previously located on the subject property.

No visual evidence was observed, and no other information was obtained, to indicate the current and/or potential past presence of USTs at the subject property, except for the former "Gas & Oils" area depicted on the westernmost portion of the subject property on the 1955 fire insurance map (see Section 4.4 above). "Gas & Oils" areas on fire insurance maps oftentimes indicate the presence of gas stations with USTs.

6.3.2 <u>Aboveground Storage Tanks</u>

The subject property was assessed for evidence of ASTs, such as concrete foundations or saddles, pedestals or steel support structures, indicating that ASTs were previously located on the subject property.

No visual evidence was observed, and no other information was obtained, to indicate the current and/or potential past presence of ASTs at the subject property, except for the former "Gas & Oils" area depicted on the westernmost portion of the subject property on the 1955 fire insurance map (see

Section 4.4 above). "Gas & Oils" areas on fire insurance maps may indicate the past presence of ASTs containing gasoline and/or oils.

6.3.3 In-Ground Hydraulic Equipment

The subject property was assessed for evidence of in-ground hydraulic equipment (e.g., hydraulic elevators or lifts that have hydraulic fluid-containing reservoirs or jacks below ground surface) or other types of hydraulic equipment. Hydraulic fluid in equipment installed in 1978 or before may contain PCBs.

No visual evidence was observed, and no other information was obtained, to indicate the current and/or potential past presence of in-ground hydraulic equipment at the subject property, except for the former "Gas & Oils" area depicted on the westernmost portion of the subject property on the 1955 fire insurance map (see Section 4.4 above). "Gas & Oils" areas on fire insurance maps may indicate the past presence of gas stations with in-ground hydraulic lifts.

6.4 WASTES

The subject property was assessed for evidence suggesting the generation or disposal of "wastes" onsite (e.g., drums, dumpsters, debris piles). Observations suggesting the presence of wastes onsite are presented below. This includes observations/information suggesting: 1) the placement of significant quantities of "fill" materials (from an unknown or potentially contaminated source); or 2) the "disposal" of wastes/debris/trash onsite.

No evidence of wastes was observed at the subject property during FAI's site visit, except for the 30-gallon drum of used cooking oil stored in the small, fenced enclosure along the northeast exterior wall of the building. This drum belongs to the northeast adjoining Golden Palace Seafood Restaurant, according to Mr. Chun. In addition, a garbage dumpster serviced by Honolulu Disposal Service was observed on the southernmost portion of the parking lot.

It should also be noted that the type of soil found on the southwest portion of the subject property is designated as "Fill land, mixed" (USDA Soil Conservation Service, 2014). This soil type consists of areas filled with material dredged from the ocean or hauled from nearby areas, garbage, and general material from other sources.

6.5 POLYCHLORINATED BIPHENYLS

The subject property was assessed for the presence of liquid-cooled electrical units (e.g., transformers) and major sources of hydraulic fluid (e.g., elevators, lifts). Such units are notable because they may be potential PCB sources. Potential PCB-containing in-ground hydraulic equipment (if any) was discussed in Section 6.3.3.

No large suspect PCB units such as electrical transformers were observed at the subject property during FAI's site visit.

FAI observed fluorescent light fixtures (with electrical ballasts) in the building at the subject property. Fluorescent light ballasts manufactured prior to 1980 may contain PCBs. Because the building at the subject property was constructed prior to 1980, the light fixtures may include PCB ballasts. If the light fixtures will be removed and disposed during future renovation/demolition activities, the ballasts should be inspected for “No PCBs” labels prior to removal and disposal. If any of them are not labeled “No PCBs,” the unlabeled ballasts should be handled and disposed as PCB waste.

6.6 WASTE WATER AND STORM WATER DISCHARGE

The subject property was assessed for evidence of waste or process water discharges (if any) and storm water discharges. For purposes of this assessment, this generally includes discharges other than domestic waste water from sinks and toilets. In addition, properly functioning septic systems used strictly for residential and most commercial operations generally do not represent a cause for concern. Exceptions can include those instances where hazardous substances/petroleum products may be discharged through the system (e.g., spent solvents at an auto repair facility).

No evidence of waste water or waste water discharge was observed at the subject property.

The storm water runoff from the subject property flows via sheet flow to the southwest, into North Nimitz Highway and the associated storm drains. The nearest curbside storm drain opening observed was located near the corner of North Nimitz Highway and Maunakea Street.

6.7 WELLS

The subject property was assessed for evidence of wells (e.g., dry, irrigation, injection, abandoned, monitor, supply).

No evidence of wells was observed on the subject property during FAI’s recent site visit.

According to the EDR report, the water well closest to the subject property is identified as Well ID No. 3-1852-001. It is located approximately 75 feet north of the subject property. This well is listed under the name “Ala Moana Blvd” and it was drilled in 1937 to a depth of 60 feet. The owner/user of the well is listed as “Chun Hoon Market” and the use of the well is listed as “Other.”

7.0 INTERVIEWS

The purpose of the interview(s) was to obtain additional information related to 1) the current and past operations at the subject and/or adjoining properties that may result in recognized environmental conditions; and 2) the presence of Proceedings Involving the Property (e.g., litigation, regulatory agency rulings, violations). FAI interviewed the following personnel:

FAI interviewed Mr. Mike Chun, President of Yee Hop Realty, Ltd., during the site walkthrough on September 28, 2021. He was forthcoming with information for which he had knowledge.

- Mr. Chun has worked for his family at the subject property for over 60 years and has managed the subject property for over 30 years. He stated that the current building on the subject property was constructed in 1919, and the second floor of the building was formerly used as a dormitory for Chinese immigrants. Mr. Chun also stated that the subject property formerly included a gas station with USTs, located along North Nimitz Highway, and several large refrigeration units used for food storage formerly occupied the subject property. He further stated that the former commercial structures at the subject property were demolished and removed in 1998-1999.

- According to Mr. Chun, the third floor and most of the second floor in the building collapsed many years ago, and the building has mostly been used for material storage since that time. He stated that a portion of the second floor is sometimes used for finishing unfinished wood furniture and includes a lacquer spraying area with a ventilation system.

- According to Mr. Chun, the 30-gallon drum of used cooking oil located in the fenced enclosure on the northeast side of the building is used by the northeast adjoining Golden Palace Seafood Restaurant. He further stated that the in-ground food grease interceptor (covered with a steel plate) located at the north corner of the subject property is also used by the Golden Palace Seafood Restaurant.

- Mr. Chun was asked if he had any information regarding onsite USTs, in-ground hydraulic equipment, cesspools, chemical spills or releases, and/or government violations associated with the subject property. He was unaware of any of these items or other environmental issues at the subject property, and was not aware of any government violations associated with the subject property.

- Mr. Chun was asked the following and responded to the best of his knowledge:

Any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the property.	Yes ____	No **X**

Any pending, threatened or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the property.	Yes _____	No **X**
Any notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products.	Yes ____	No **X**

8.0 TIER 1 VAPOR ENCROACHMENT SCREEN (VES)

The VES was conducted in accordance with ASTM E2600-15, Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions. A VES is often conducted in conjunction with a Phase I ESA as much of the information utilized is common to both processes. The goal of a VES is to identify if a potential vapor encroachment condition (VEC) may exist at a subject property. A VEC is defined as the presence or likely presence of chemicals of concern (COC) vapors in the subsurface of a subject property caused by the release of vapors from contaminated soil and/or groundwater either on or near the subject property.

A Tier 1 VES includes obtaining and reviewing information on the subject property and adjoining properties. This includes information on the following: user provided information; physical setting information; existing/planned use of the subject property; types of structures/existing or planned on the subject property; surrounding area description; selected Federal, State, Local and Tribal environmental records sources; historical records related to the past use of the subject property and adjoining properties within the area of concern (AOC), 1/3 to 1/10 mile; the likely COC; and the presence of significant natural or man-made conduits that can serve as preferential pathways, such as utility corridors, sewers, storm drains, etc. (Note: These "preferential pathways" may provide for a more direct route for vapors to encroach upon the subject property).

An evaluation of information for the Tier 1 VES includes two tests: 1) a search distance test to evaluate the proximity of the target property to known or suspected "contaminated properties", and 2) a chemicals of concern test to determine the likely presence of COCs at the subject property or properties within the AOC. In evaluating the data, the distance and proximity to potentially contaminated off-site properties must be evaluated, including whether they are up-, cross-, or down-gradient relative to the subject property. A brief summary of relevant information considered for the Tier 1 screening follows:

Use of Property:	Commercial building used for the storage of equipment and supplies, with a second floor area where lacquer spraying and other finishing of wooden furniture is conducted.
Soil Characteristics:	Ewa silty clay loam, moderately shallow, 0 to 2 percent slopes on the majority of the subject property and "Fill land, mixed" on the southwestern side of the subject property (EDR Radius Map Report, 2020; USDA Soil Conservation Service, 2014)
Depth to Groundwater:	Approximately 5 to 10 feet (based on topography; USGS, Honolulu Quadrangle, 2013)
Preferential Pathways:	Underground utilities currently exist onsite.

The subject property and three nearby properties were identified within the AOC and are considered VECs. The names, addresses, types of COCs, orientation from the subject property, and cleanup status for these facilities are listed in the following table:

Location of Known or Suspect Contaminated Properties	Type of COC	Orientation from Subject Property (Distance/Direction /Gradient)	Cleanup "Status" or Comments
128 North Nimitz Highway	Petroleum Hydrocarbons	Subject Property	Based on the 1955 fire insurance map and interviews with the property owners, the subject property formerly included a gas station with USTs. Although no UST releases have been reported, there is no documentation available regarding the past removal and closure of the USTs. Therefore, there is a potential that the USTs were never removed/closed, and a potential for past UST releases to impact the subject property.
Yee Hop Building Maunakea Street 950 Maunakea Street	Petroleum Hydrocarbons	Approximately 50 feet east-southeast/up-gradient	This facility includes a SHWS listed as "Hazard Present" and "Ongoing Response," with a "Low" Hazard Priority for diesel oil found in soil during the removal of a 1,000-gallon fuel UST. The HDOH required a monitoring well be installed; however, no additional information was available. Based on our review, this SHWS has a potential to impact the subject property.

Location of Known or Suspect Contaminated Properties	Type of COC	Orientation from Subject Property (Distance/Direction /Gradient)	Cleanup "Status" or Comments
C&CH Waterfront Fire Station 111 North Nimitz Highway	Petroleum Hydrocarbons	141 feet southwest/down-gradient	This facility includes a LUST site listed as "Site Cleanup Completed (NFA);" however, the site is hydrologically cross-gradient and too distant to reasonably affect the subject property.
Kekaulike Diamond Head Block Revitalization 163 North Hotel Street	Petroleum Hydrocarbons	446 feet north-northeast/cross-gradient	This facility includes a SHWS due to petroleum contaminated soil. However, the site is listed as "No Hazard Present for Unrestricted Residential Use," and the SHWS received a letter of completion. Additionally, the site is hydrologically cross-gradient and too distant to reasonably affect the subject property.

The VES process has been completed in accordance with the Standard. Based on our review of available information, the VECs identified at the subject property and east-southeast adjoining property are considered recognized environmental conditions because there is evidence of a past release of petroleum hydrocarbons, or the potential for a past release of petroleum hydrocarbons to impact the subject property. The other two identified VECs are not considered recognized environmental conditions based on their statuses and locations relative to the subject property.

9.0 NON-ASTM ISSUES

Non-ASTM issues include potential environmental concerns that are not considered recognized environmental conditions but may be considered business environmental risks. The non-ASTM issues covered in this Phase I ESA report include suspect Asbestos-Containing Materials (ACM), radon gas, suspect Lead-Based Paint (LBP), and wetlands.

9.1 ASBESTOS-CONTAINING MATERIALS (ACM)

The subject property was inspected for the presence of suspect ACM such as ceiling and roofing materials, and presumed ACM as defined by the Occupational Safety and Health Administration (OSHA) (29 CFR 1926.1101), which includes thermal system insulation and surfacing material, if building construction was prior to 1981. Asphalt and vinyl flooring material installed prior to 1980 must also be considered asbestos-containing unless proven otherwise.

Based on DPP records, the building on the subject property was constructed in 1919 and may include ACM. Suspect ACM were observed at the subject property during FAI's site visit, including: gypsum wall/ceiling board with joint tape/compound, drop-in acoustical ceiling panels, mortar, and asphalt pavement. Other suspect ACM such as caulking/sealant between building components and/or roofing materials may also be present but hidden from view.

Prior to any activities (i.e., repair, renovation, demolition) which may disturb untested, suspect ACM, these and similar materials should be sampled and analyzed for possible asbestos content. If these materials are found to contain asbestos, the building owner or leased space tenant may be required to comply with applicable United States Environmental Protection Agency (USEPA), OSHA, National Emission Standards for Hazardous Air Pollutants (NESHAPS), and state and local regulations.

9.2 RADON

Radon is a naturally occurring radioactive gas formed by the decay of uranium in bedrock and soil. The potential adverse health effects associated with radon gas depend on various factors, such as the concentration of the gas and duration of exposure. The concentration of radon gas in a building depends on subsurface soil conditions, the integrity of the building's foundation, and the building's ventilation system.

Due to the relatively young geological age (less than five million years) of the southernmost islands of the Hawaiian archipelago, radon gas does not occur at elevated levels in native soils.

9.3 LEAD-BASED PAINT (LBP)

Lead-based paint was commonly used for corrosion protection in the 1960s, and in prime, intermediate, and finish coats well into the 1970s. Regulations specifically addressing LBP include Housing and Urban Development (1995) guidelines and the Consumer Product Safety Act (1977). These guidelines define LBP as paint containing 0.5% lead by weight (5,000 ppm) for housing. The Consumer Product Safety Commission defines lead-containing paint as paint containing greater than 0.009% lead by weight (90 ppm) for consumer products. There is no industrial definition. There are specific testing methods for sampling and analyzing lead in paint.

Because the building on the subject property was constructed in 1919, the paints on the building are considered suspect LBP. The only way to determine if LBP is present is to sample and analyze the painted surfaces for lead content. Sampling and analysis of paints was not conducted during this Phase I ESA.

The presence or absence of LBP should be assessed prior to renovation or demolition activities that may disturb painted surfaces. If lead is identified in the paints, USEPA and OSHA regulations should be followed when disturbing the paints (i.e., sanding, drilling, grinding, or removing paint).

9.4 WETLANDS

The subject property was inspected for the presence of sensitive ecological areas by noting environmental indicators (e.g., wetlands vegetation, floodplains) located on or immediately adjoining the subject property.

No sensitive ecological areas were observed on the subject property. The nearest body of water is Honolulu Harbor, located approximately 190 feet west of the subject property. The United States Fish and Wildlife Service (USFWS) National Wetland Map describes this water body as an Estuarine and Marine Deepwater habitat, classified as: System "Marine;" Subsystem "Subtidal; " Class "Unconsolidated Bottom;" Water Regime "Subtidal;" and Special Modifier "Excavated."

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) was reviewed to determine if the subject property is located in a flood hazard area. According to the FEMA/FIRM index map (FEMA/FIRM Panel No. 15003C0362G, dated November 5, 2014), the subject property is located within Flood Zone X, which denotes areas determined to be outside the 0.2% annual chance floodplain.

10.0 FINDINGS, OPINIONS, AND CONCLUSIONS

FAI has performed a Phase I ESA in conformance with the scope and limitations of ASTM Practice E1527-13 for the commercial property located at 128 North Nimitz Highway (TMKs: [1] 1-7-002: Parcel 013 and portions of Parcels 023 and 050) in Honolulu, Oahu, Hawaii (the "subject property"). Any exceptions to, or deletions from, this practice are described in Sections 1.2 and 1.3 of this report.

This Assessment has revealed no evidence of recognized environmental conditions, as defined by ASTM, in connection with the subject property, except for the following:

- **Former Onsite USTs** – Based on the 1955 fire insurance map and interviews with the property owners, the subject property formerly included a gas station with USTs. The former gas station may have also included other subsurface structures of environmental concern such as in-ground hydraulic car lifts or in-ground oil-water separators. Although no past petroleum hydrocarbon releases have been reported at the subject property, there is no documentation available regarding the past removal and closure of the USTs or other subsurface structures of concern. Therefore, there is a potential that the USTs and/or other subsurface structures were never removed/closed, and a potential for past petroleum hydrocarbon releases to impact the subject property.

  This finding is considered a recognized environmental condition because there is a potential for past petroleum hydrocarbon releases from the USTs and/or other subsurface structures to impact the subject property. FAI recommends conducting a subsurface investigation at the former gas station location to assess potential impacts to the subsurface.

- **Offsite SHWS** - The east adjoining property, the Yee Hop Building at 950 Maunakea Street, is listed as a SHWS facility due to diesel found in the soil. The HDOH, HEER Office is listed as the Lead Agency and the SHWS is listed as "Hazard Present," "Ongoing Response," and "Controls Required to Manage Contamination." FAI reviewed the HDOH, HEER case file for this site, which included a 2004 UST closure report and a 2004 "Review of UST Closure Report" letter from the HEER Office.

  According to the closure report, a 1,000-gallon fuel oil UST was closed in-place approximately two feet east of the Yee Hop Building in 2004. This UST site is located approximately 50 feet to the east-southeast and hydrologically up-gradient to the subject property. Visible staining and petroleum odors were observed on the soil below the bottom of the tank, and soil samples collected from the UST pit and analyzed showed TPH as oil and TPH as diesel well above the HDOH SALs. No further action was recommended due to the location of the impacted soil, which would compromise the structural integrity of the Yee Hop building if over-excavated, and because the fuel oil was viscous and should not migrate. However, the HDOH's review letter states that, because the vertical extent of contamination was not determined and there was no determination of the presence of free product in the groundwater, a groundwater monitoring well close to the south end of the UST site should be installed and sampled. This was required to determine the extent of the contamination prior to granting the site NFA status. There was no documentation indicating that the well was ever installed/sampled.

This finding is considered a recognized environmental condition because the former UST site is located nearby and is hydrologically up-gradient to the subject property, and the SHWS has not received a “No Further Action” determination from the HDOH, HEER Office. FAI recommends conducting a limited subsurface investigation, including the installation and sampling of a groundwater monitoring well on the east-southeast portion of the subject property to assess potential impacts from the nearby SHWS site.

This assessment has revealed the following environmental conditions, which are not considered recognized environmental conditions, as defined by ASTM, but may be considered business environmental risks:

- **Onsite Suspect ACM** – The building on the subject property was constructed in 1919 and, therefore, may include ACM. Suspect ACM were observed at the subject property during FAI’s site visit, including: gypsum wall/ceiling board with joint tape/compound, drop-in acoustical ceiling panels, mortar, and asphalt pavement. Other suspect ACM such as caulking/sealant between building components and/or roofing materials may also be present but hidden from view

  This finding is not considered a recognized environmental condition because ACM in buildings is not considered an ASTM issue. However, FAI recommends that, prior to any activities (i.e., repair, renovation, demolition) which may disturb suspect ACM, these and similar materials should be sampled and analyzed for possible asbestos content. If the materials are found to contain asbestos, the building owner or leased space tenant may be required to comply with applicable USEPA, OSHA, NESHAPS, and state and local regulations.

- **Onsite Suspect LBP** – LBP was commonly used for corrosion protection in the 1960s, and in prime, intermediate, and finish coats well into the 1970s. The building at the subject property was constructed in 1919 and may include LBP.

  This finding is not considered a recognized environmental condition because LBP in buildings is not considered an ASTM issue. However, FAI recommends that paint sampling be conducted to determine the presence or absence of LBP prior to renovation or demolition activities that may disturb painted surfaces. If the paints are found to contain lead, the building owner or leased space tenant may be required to comply with applicable federal, state, and local regulations.

- **Onsite Fluorescent Light Ballasts with PCBs -** Fluorescent light fixtures were present in the building at the subject property. Many fluorescent light ballasts manufactured prior to 1980 may contain PCBs. The building at the subject property was constructed prior to 1980 and may include PCB light ballasts.

  This finding is not considered a recognized environmental condition because PCB light ballasts are considered a *de minimis* environmental issue. However, FAI recommends that the ballasts be inspected for “No PCBs” labels prior to planned renovation/demolition activities involving the removal of fluorescent light fixtures. If the ballasts are not labeled, these units must be disposed of at an approved PCB waste facility.

11.0 SIGNATURES

Certification of both Environmental Professionals signing below:

I declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in §312.10 of 40 CFR 312. I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. I have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Tim Swartz
Senior Project Manager

Daniel P. Ford P.G.
Principal Geologist

The figures, photographs, appendices, and references were not included for this Environmental Assessment.

EPA ENVIRONMENTAL PLANNING & ASSESSMENTS

CHINATOWN HOTEL

HONOLULU, HAWAII

PEDESTRIAN WIND COMFORT ASSESSMENT

PROJECT #2204654

APRIL 29, 2022

SUBMITTED TO

Christopher M. Flaherty
Chief Executive Officer

3 Leaf Holdings/Ikenakea Development
1188 Bishop St., Suite 907
Honolulu, Hawai'i 96813
T: 209.483.8105

c/o
Grant Chang, AIA, LEED AP
Director of Architecture, Hawai'i
Lowney Architecture
grant@lowneyarch.com

SUBMITTED BY

Leo (Yi) Zeng, M.Eng.
Technical Coordinator
Yi.Zeng@rwdi.com

Saba Saneinejad, Ph.D.
Senior Technical Coordinator / Associate Principal
Saba.Saneinejad@rwdi.com

Analene Belanger, P. Eng., PMP
Senior Project Manager / Principal
analene.belanger@rwdi.com

RWDI USA LLC
421 SW 6th Avenue, Suite 450
Portland, Oregon 97204
T: 503.467.4710

1. INTRODUCTION

Rowan Williams Davies & Irwin Inc. (RWDI) was retained to assess the potential wind comfort conditions at pedestrian levels on and around the proposed Chinatown Hotel (aka Nimitz Hotel) located at 128 Nimitz Highway in Honolulu, Hawaii. The objective of this assessment is to provide an evaluation of the potential wind impact of the proposed development.

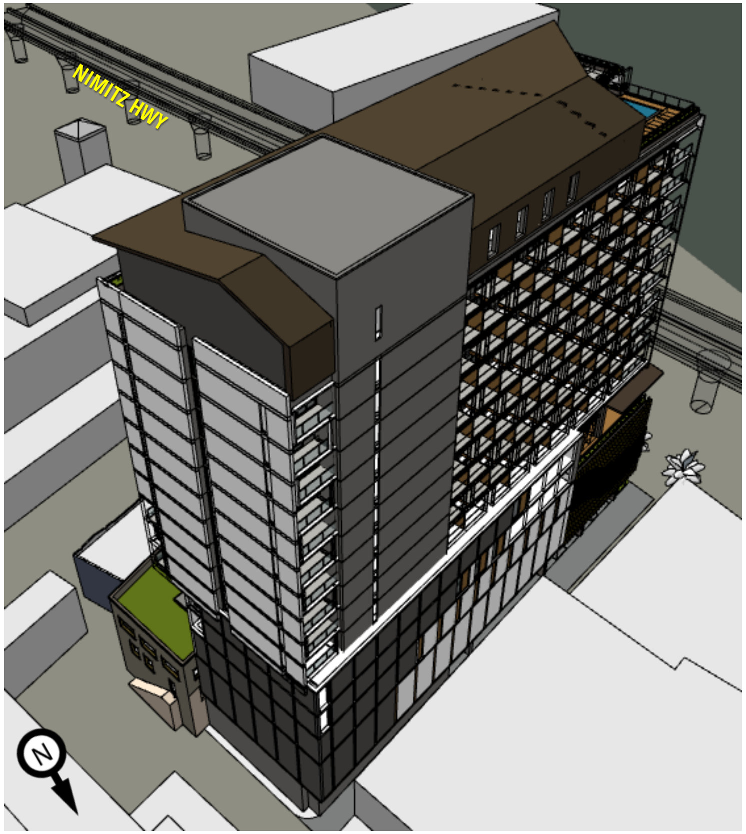
The project site is located along Nimitz Highway, south of Kekaulike Street, west of North King Street, and north of Maunakea Street (Image 1). It is a 15-story hotel tower development and includes outdoor terraces on Level 4 and roof. The project is surrounded by low to mid-rise buildings in the proximity to the north, east and south. Tall buildings exist to the distant northeast through south (Arts District, Downtown and Universities). Honolulu Harbor is to the west.

Key areas of interest for this assessment includes sidewalks, abutter roof, main entrance, Level 2 and 3 parking areas, and terraces on Level 4 and roof (Image 2).

Image 1: Aerial View of the Existing Site and Surroundings (Courtesy Google™ Earth)

1. INTRODUCTION

VIEW FROM SOUTHWEST



VIEW FROM NORTHEAST

Image 2: 3D Model of the Proposed Project

2. BACKGROUND

2.1 Objective

The objective of this assessment is to provide an evaluation of the potential wind impact of the proposed development on pedestrian areas around it. This quantitative assessment was based on Computational Fluid Dynamics (CFD) simulations of wind flows on a virtual model of the project and surroundings using *Orbital Stack*, an in-house CFD tool.

The simulated wind flow information was combined with the local wind records and compared to the RWDI criteria for gauging wind comfort and safety in patron-occupied areas. The assessment is based on the following:

- A review of the regional long-term meteorological data from Honolulu International Airport;
- 3D model received on April 5, 2022;
- The use of *Orbital Stack*, an in-house computational fluid dynamics (CFD) tool, to simulate wind flows and aid in the assessment of wind comfort; and,
- Our engineering judgment, experience, and expert knowledge of wind flows around buildings[1-3].

2.2 CFD in Urban Wind Modeling

Computational fluid dynamics (CFD) is a numerical modeling technique for simulating wind flow in complex environments. For urban wind modeling, CFD techniques are used to generate a virtual wind tunnel where flows around the site, surroundings and the study building(s) are simulated at full scale. The computational domain that covers the site and surroundings is divided into millions of small cells where calculations are performed, which allows for the “mapping” of wind conditions across the entire study domain. CFD excels as a tool for urban wind modeling for providing early design advice, resolving complex flow physics, comparing designs and site scenarios and helping diagnose problematic wind condition.

The computational method used in the current assessment leverages detailed simulations of the unsteady, transient and turbulent nature of wind in high resolution and detail. This approach allows a high degree of accuracy in the prediction of mean and gust wind characteristics within the pedestrian realm.

3. METHODOLOGY

3.1 Simulation Model

Wind flows were simulated using Orbital Stack, an in-house computational fluid dynamics (CFD) tool, for the Existing and Proposed site configurations with the existing surroundings. The computer model of the project building and the existing site with the proximity model are shown in Images 3 to 5.

For the purposes of this computational study, the 3D models were simplified to include only the necessary building and terrain details that would affect the wind flows around the proposed development. Landscaping was not included in the computer model in order to provide more conservative wind predictions.

Wind flows approaching from 12 directions were simulated (30°, 40°, 50°, 60°, 70°, 80°, 90°, 140°, 180°, 230°, 290°, 330°), accounting for the directionality of more than 90% of historic wind records (See Section 3.2). The information obtained was then combined with the long-term wind records to predict wind speeds in the simulated areas (i.e. 5 ft above concerned levels). For further details about the simulation method, refer to Appendix A.

Image 3: Computer Model of the Proposed Hotel

3. METHODOLOGY

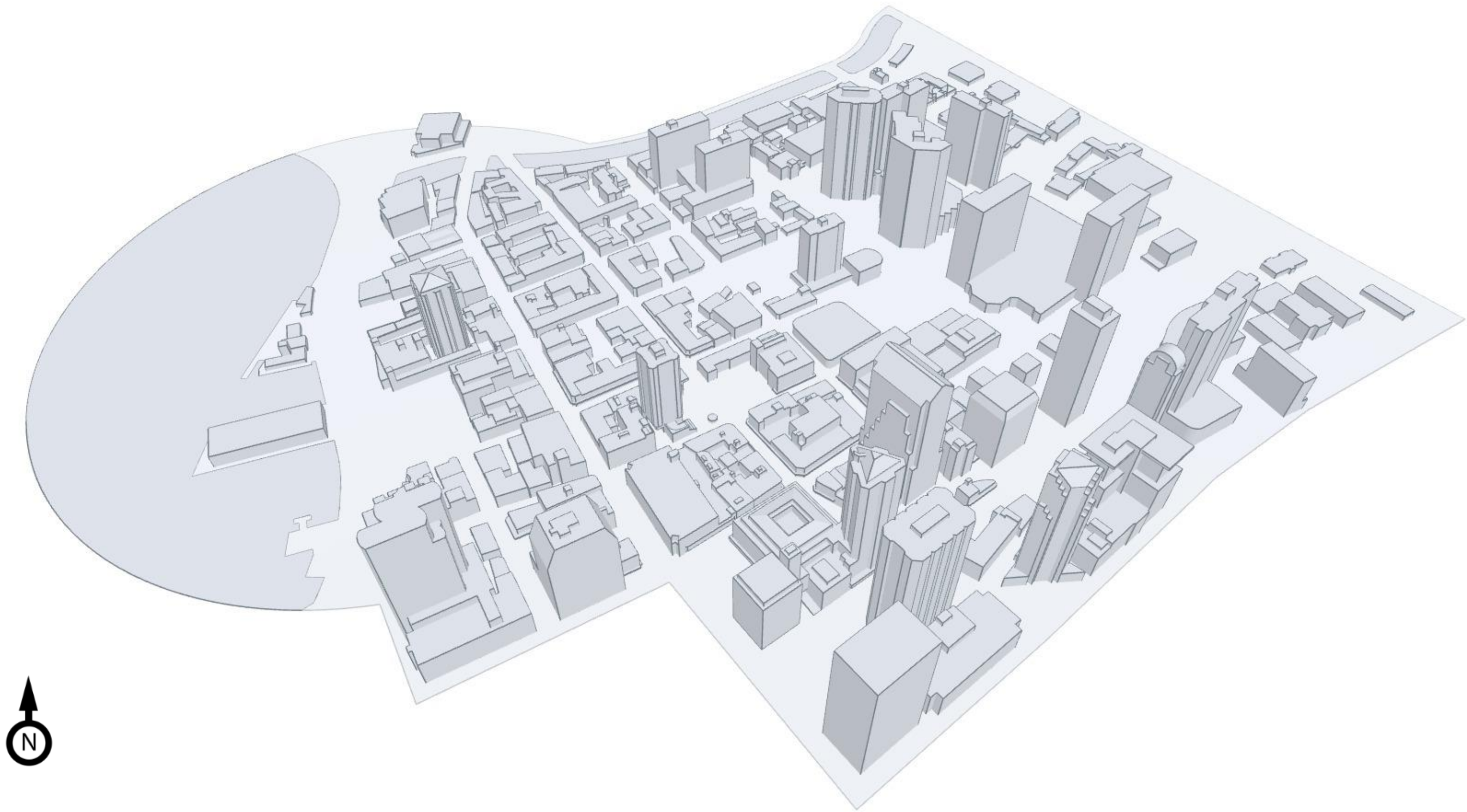


Image 4: Computer Model – Existing Site and Surroundings

3. METHODOLOGY

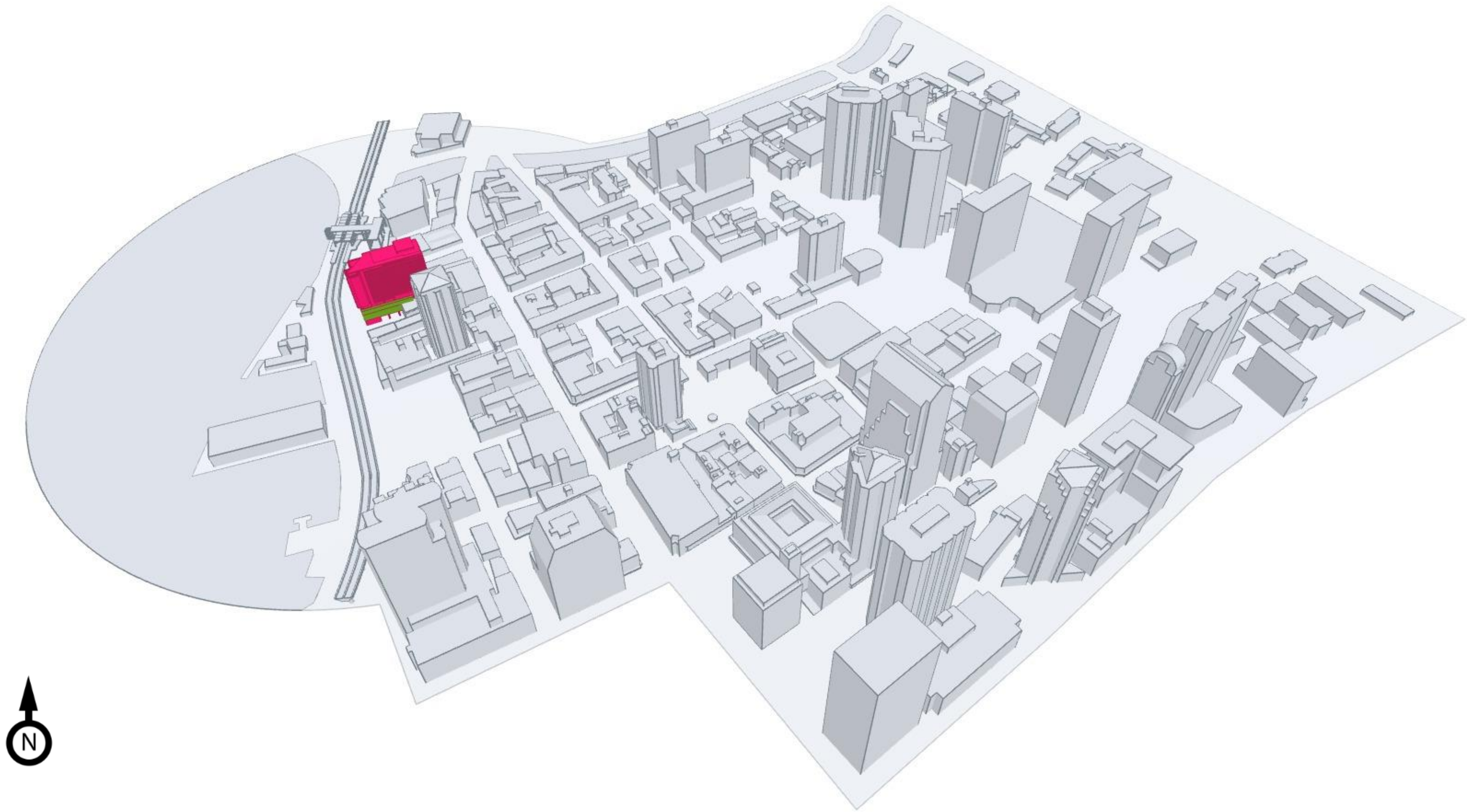
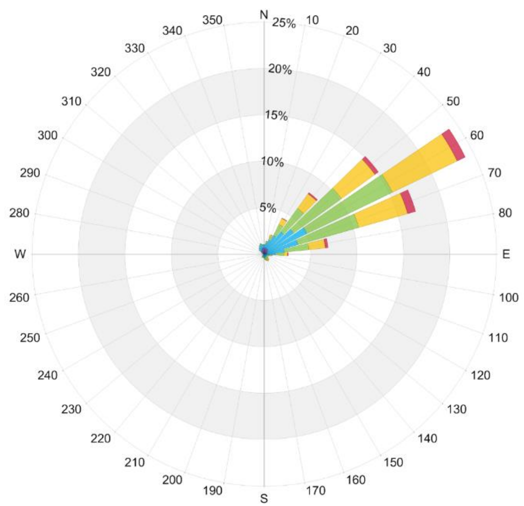


Image 5: Computer Model - Proposed Development and Surroundings (Including the Future Highway Bridges)

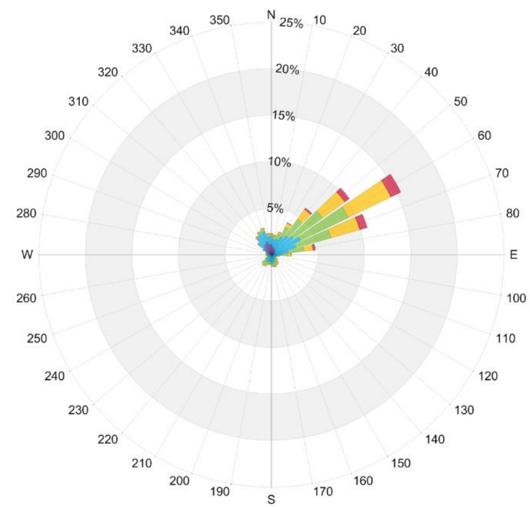
3.2 Wind Climate

Long-term Wind statistics recorded at Honolulu International Airport between 1989 and 2019, inclusive, were analyzed for the summer (May through October) and winter (November through April) seasons. Image 6 graphically depicts the directional distributions of wind frequencies and speeds for these two seasons. Winds in the area are almost exclusively from the northeast as indicated by the wind roses. The highest wind speeds (greater than 15 mph) measured at the airport (at an anemometer height of 30 ft occur more often in the summer (25.9%) than in the winter (19.8%) and could result in severe wind impacts depending on the exposure, orientation and massing design of the project.

Wind statistics were combined with the wind tunnel data to predict the frequency of occurrence of full-scale wind speeds. The full-scale wind predictions were then compared with the wind criteria for pedestrian comfort and safety.



Summer (May to October)



Winter (November to April)

Wind Speed (mph)	Probability (%) Summer	Probability (%) Winter
Calm	3.6	7.2
1-5	9.3	15.1
6-10	26.4	30.9
11-15	34.8	27.0
16-20	23.1	16.4
>20	2.8	3.4

Image 6: Directional Distribution of Winds Recorded at Honolulu International Airport (1989 to 2019)

3. METHODOLOGY

3.3 Criteria

The RWDI pedestrian wind criteria are used in the current study; the criteria presented in the table below, addresses pedestrian safety and comfort. These criteria have been developed by RWDI through research and consulting practice since 1974. They have also been widely accepted by municipal authorities, building designers and the city planning community. Note that regional differences in wind climate and thermal conditions, acclimatization to the local climate, as well as variations in age, health, clothing, etc. can affect a person's perception of the wind climate.

Pedestrian Comfort

Pedestrian comfort is quantified by Gust Equivalent Mean (GEM) speed, a calculated mean speed with the gust factored in.

GEM Speed = max (Mean Speed, Gust/1.85)

*Gust Speed = Mean + 3*RMS Speed.*

Pedestrian comfort is associated with common wind speeds conducive to different levels of human activity. A comfort categorization is applied if the GEM speeds are below the respective speed threshold for at least 80% of the time between 6:00 and 23:00. Nightly hours between 0:00 and 5:00 are excluded from the comfort assessment since limited usage of outdoor spaces is anticipated in that period. Speeds that exceed the criterion for Walking are categorized Uncomfortable.

Comfort Category	GEM Speed (mph)	Description (Based on seasonal compliance of 80%)
Sitting	≤ 6	Calm or light breezes desired for outdoor seating areas where one can read a paper without having it blown away
Standing	≤ 8	Gentle breezes suitable for main building entrances, bus stops, and other places where pedestrians may linger
Strolling	≤ 10	Moderate winds appropriate for window shopping and strolling along a downtown street, plaza or park
Walking	≤ 12	Relatively high speeds that can be tolerated if one's objective is to walk, run or cycle without lingering
Uncomfortable	> 12	Strong winds considered a nuisance for all pedestrian activities. Wind mitigation is typically recommended

Pedestrian Safety

Pedestrian safety is associated with Gust Speeds that can adversely affect a person's balance and footing. These are usually infrequent events but deserve special attention due to the potential impact on pedestrian safety.

Safety Criterion	Gust Speed (mph)	Description (Based on annual exceedance of 9 hrs or 0.1% of time)
Exceeded	> 56	Excessive gusts that can adversely affect one's balance and footing. Wind mitigation is typically required.

4. RESULTS AND DISCUSSION

4.1 Presentation of Results

The results of the assessment are presented in Section 4.3. The results are presented as color contours of wind speeds calculated at a horizontal plane 5 ft above the concerned level. The speeds have been assessed against the wind criteria (Section 3.3).

Numerical information relating to the results at select points of interest are presented in Appendix B. Discrete points were selected to provide insight of the magnitude of the predicted wind speeds on the project site.

A discussion of the results with respect to the prescribed criteria, applicability of the results, and recommendations for wind control follows in Section 4.3.

Target Conditions

For the current development, wind speeds comfortable for walking or strolling are appropriate for sidewalks and walkways where pedestrians are likely to be active and moving intentionally. Lower wind speeds comfortable for standing are required for building entrances and areas where people are expected to be engaged in passive activities. Calm wind speeds suitable for sitting or standing are desired in areas where prolonged periods of passive activities are anticipated, such as outdoor amenity areas and terraces.

4.2 Common Wind Flow Mechanisms

Buildings tend to intercept and redirect winds around them; taller the massing intercepting predominant winds, greater the redirected volume of flow and potential wind impact at lower elevations. The mechanism in which winds are directed down the height of a building is called *Downwashing*. These flows subsequently move around exposed building corners and between buildings, causing a localized increase in wind activity due to *Corner Acceleration* and *Channeling*. These flow patterns are illustrated in Image 7. Low roofs are subject to downwashing flows and tend to be windy, as is the case with the abutter roof. Addressing wind issues on such large roofs generally involve strategies that reduce exposure to the prevailing wind direction or creating smaller areas that are locally protected from the ambient flows (cabanas, partitions or privacy screens, tall vegetation, etc.).

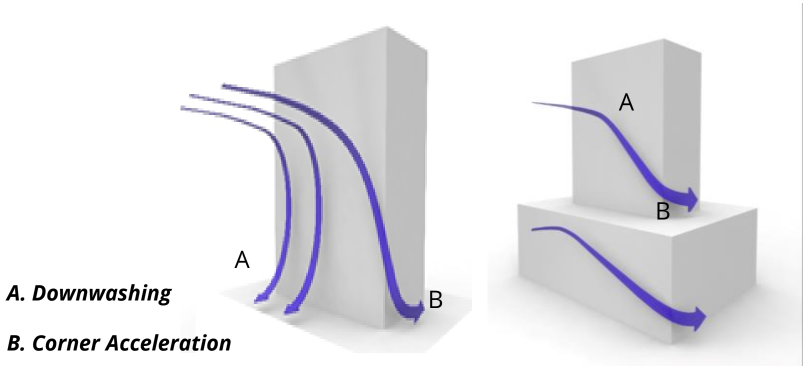


Image 7: General Wind Flow Mechanisms

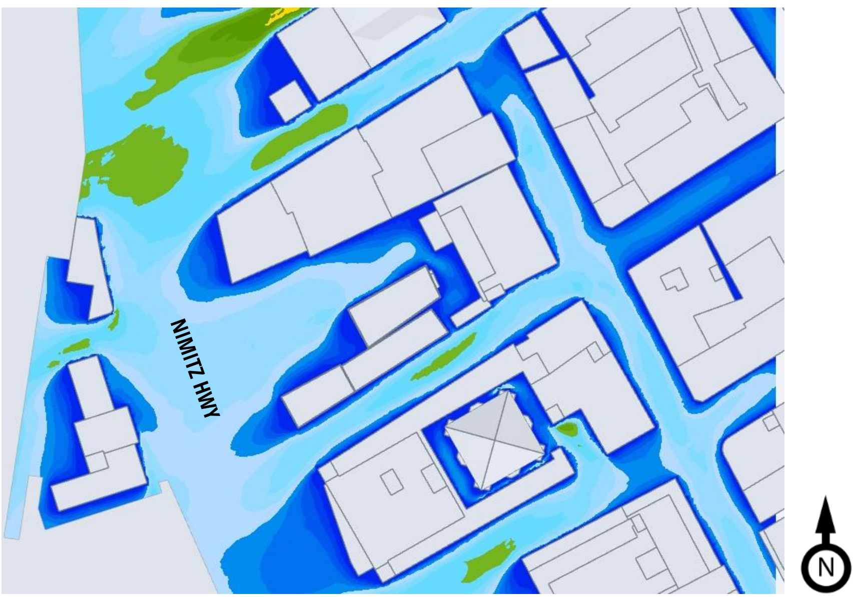
4. RESULTS AND DISCUSSION

4.3 Predicted Wind Comfort Conditions

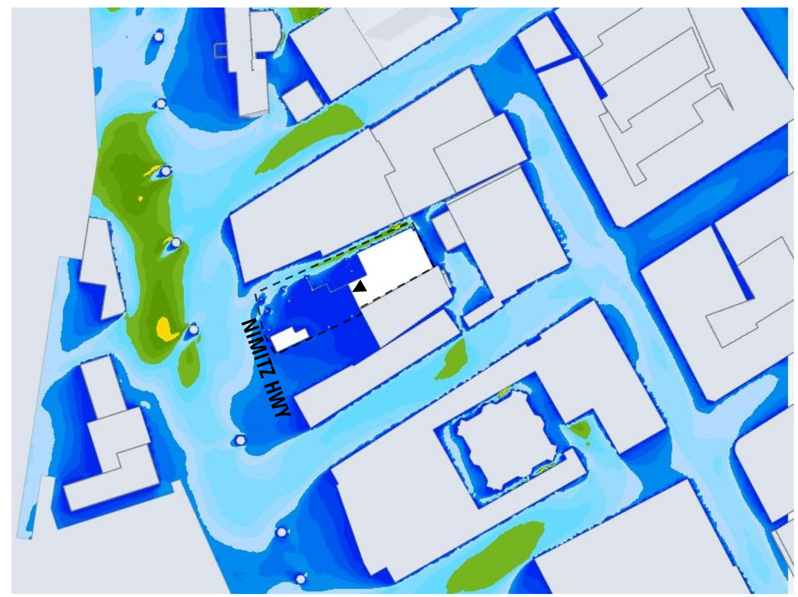
The predicted wind comfort conditions for the existing and proposed scenarios are presented in Images 8 to 14 for the summer and winter assessments. The results are presented as colour contours of wind speeds calculated based on the wind criteria (Section 3.3).

The wind activity in the areas assessed are not predicted to exceed the safety criterion for both the Existing and Proposed scenarios.

A) EXISTING SCENARIO – SUMMER (MAY TO OCTOBER)



B) PROPOSED SCENARIO – SUMMER (MAY TO OCTOBER)



▶ Main Entrance

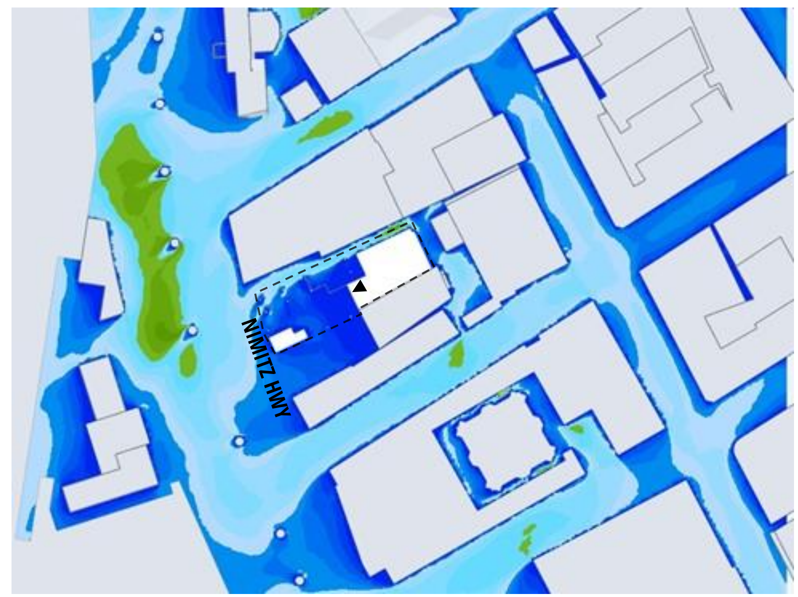
Image 8: Predicted Wind Comfort Conditions – Grade Level – Summer (May to October)

4.3 Predicted Wind Comfort Conditions

SITTING | STANDING | STROLLING | WALKING | UNCOMFORTABLE

A) EXISTING SCENARIO – WINTER (NOVEMBER TO APRIL)

B) PROPOSED SCENARIO – WINTER (NOVEMBER TO APRIL)



▶ Main Entrance

Image 9: Predicted Wind Comfort Conditions – Grade Level – Winter (November to April)

4. RESULTS AND DISCUSSION

4.3 Predicted Wind Comfort Conditions

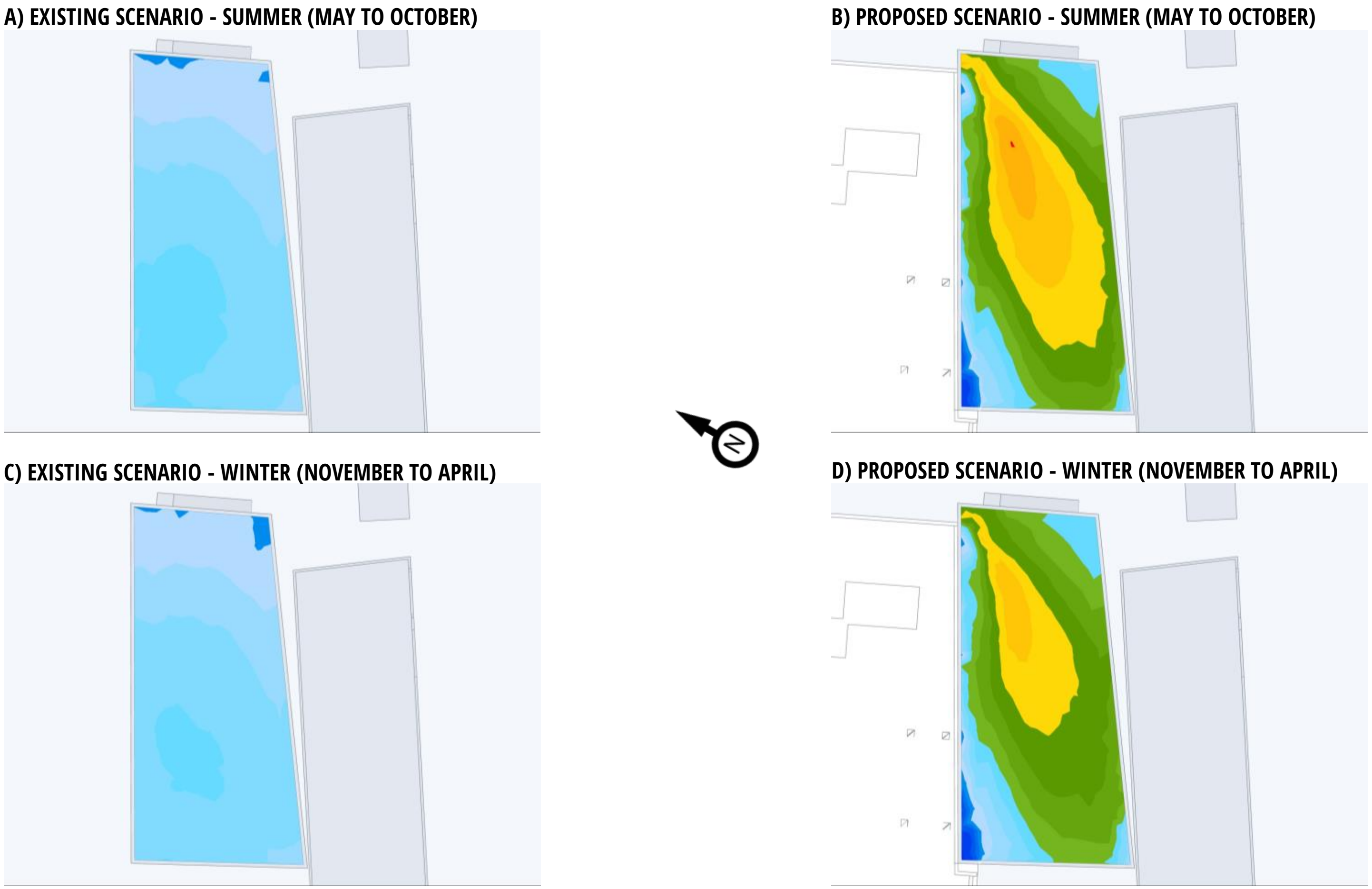
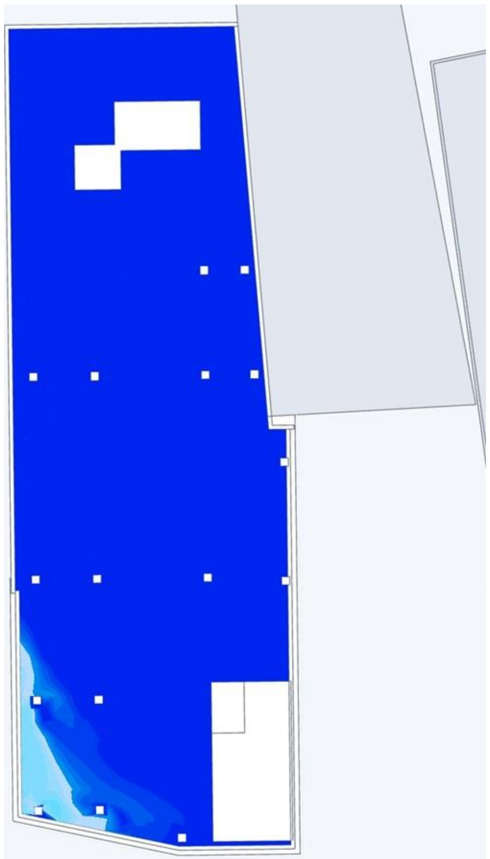


Image 10: Predicted Wind Comfort Conditions – Abutter Roof

4. RESULTS AND DISCUSSION

4.3 Predicted Wind Comfort Conditions

A) SUMMER (MAY TO OCTOBER)



B) WINTER (NOVEMBER TO APRIL)

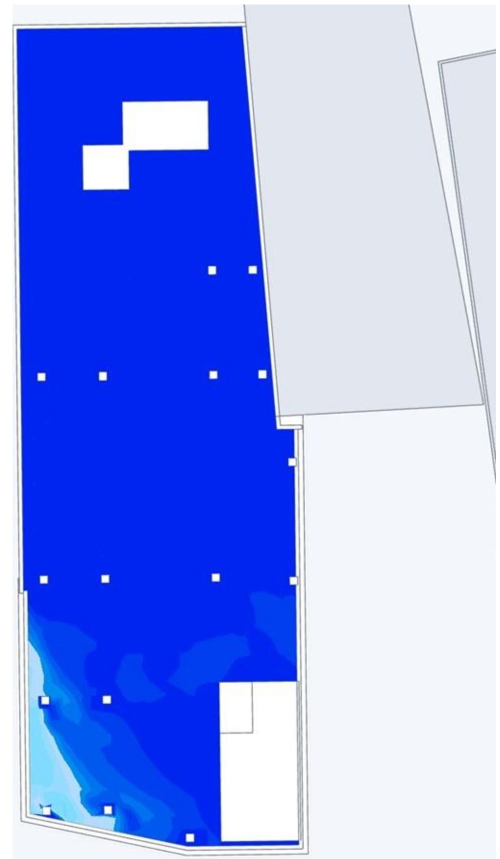


Image 11: Predicted Wind Comfort Conditions – Level 2 Parking

4.3 Predicted Wind Comfort Conditions

A) SUMMER (MAY TO OCTOBER)

B) WINTER (NOVEMBER TO APRIL)

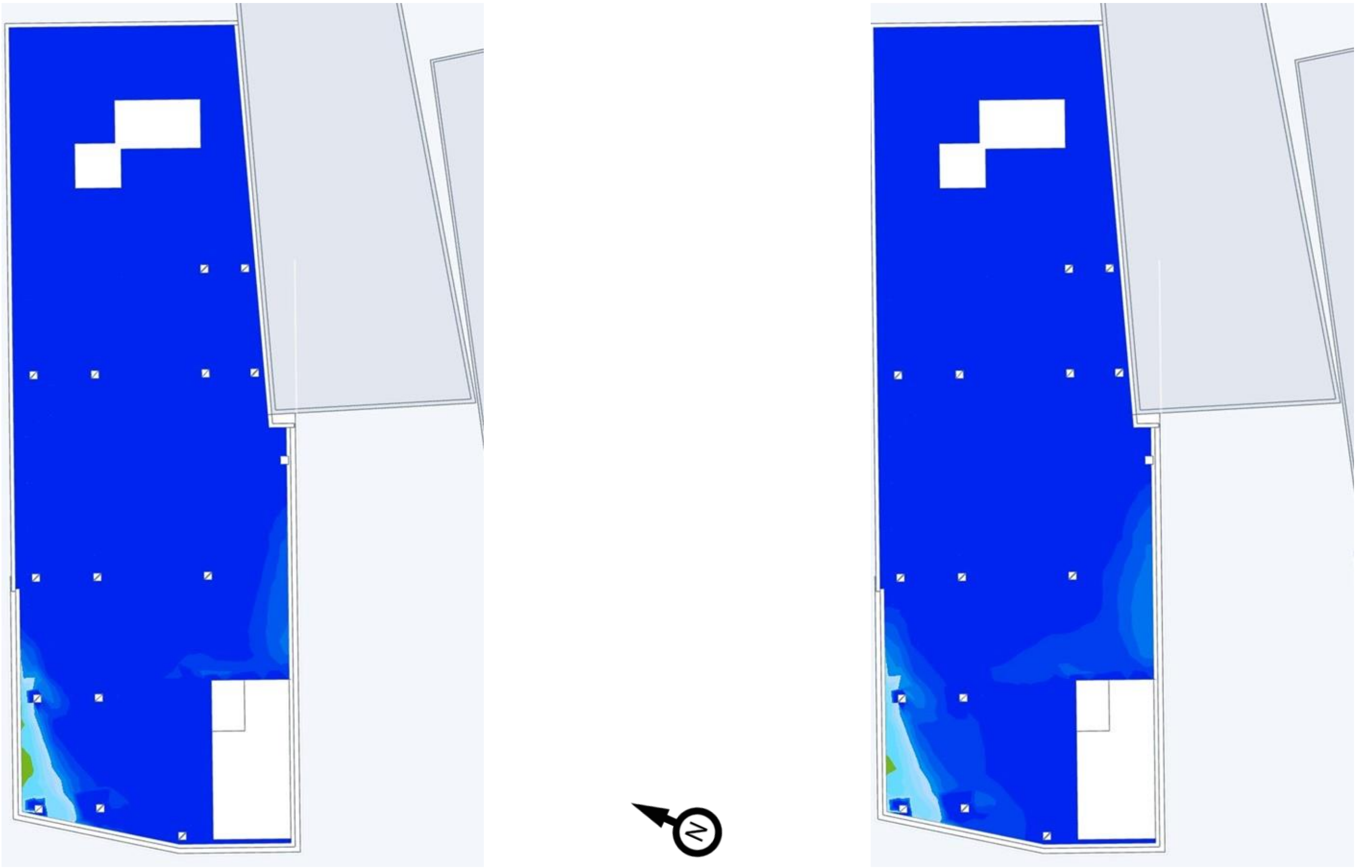


Image 12: Predicted Wind Comfort Conditions – Level 3 Parking

4. RESULTS AND DISCUSSION

4.3 Predicted Wind Comfort Conditions

A) SUMMER (MAY TO OCTOBER)

B) WINTER (NOVEMBER TO APRIL)

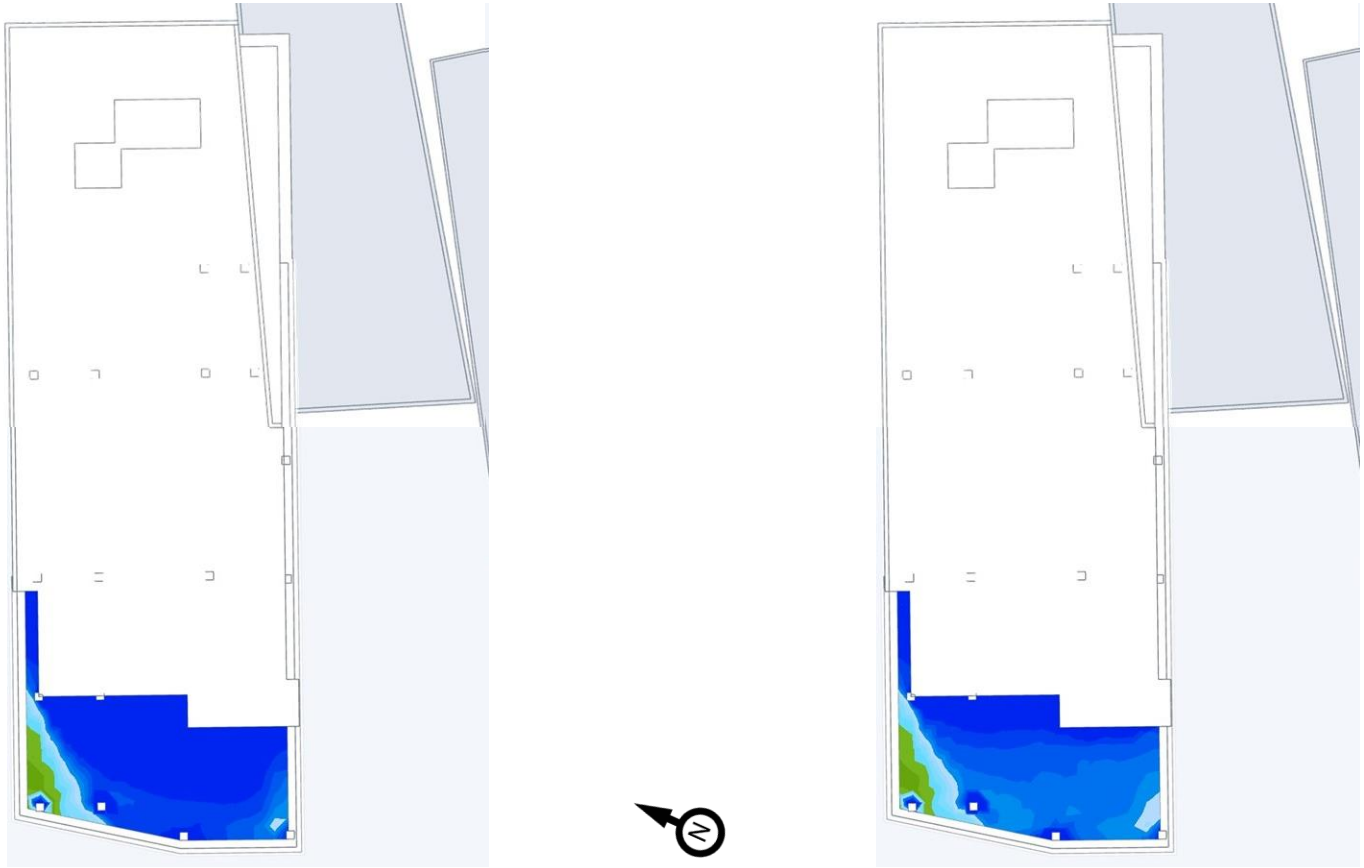


Image 13: Predicted Wind Comfort Conditions – Level 4 Terrace

4. RESULTS AND DISCUSSION

4.3 Predicted Wind Comfort Conditions

A) SUMMER (MAY TO OCTOBER)

B) WINTER (NOVEMBER TO APRIL)

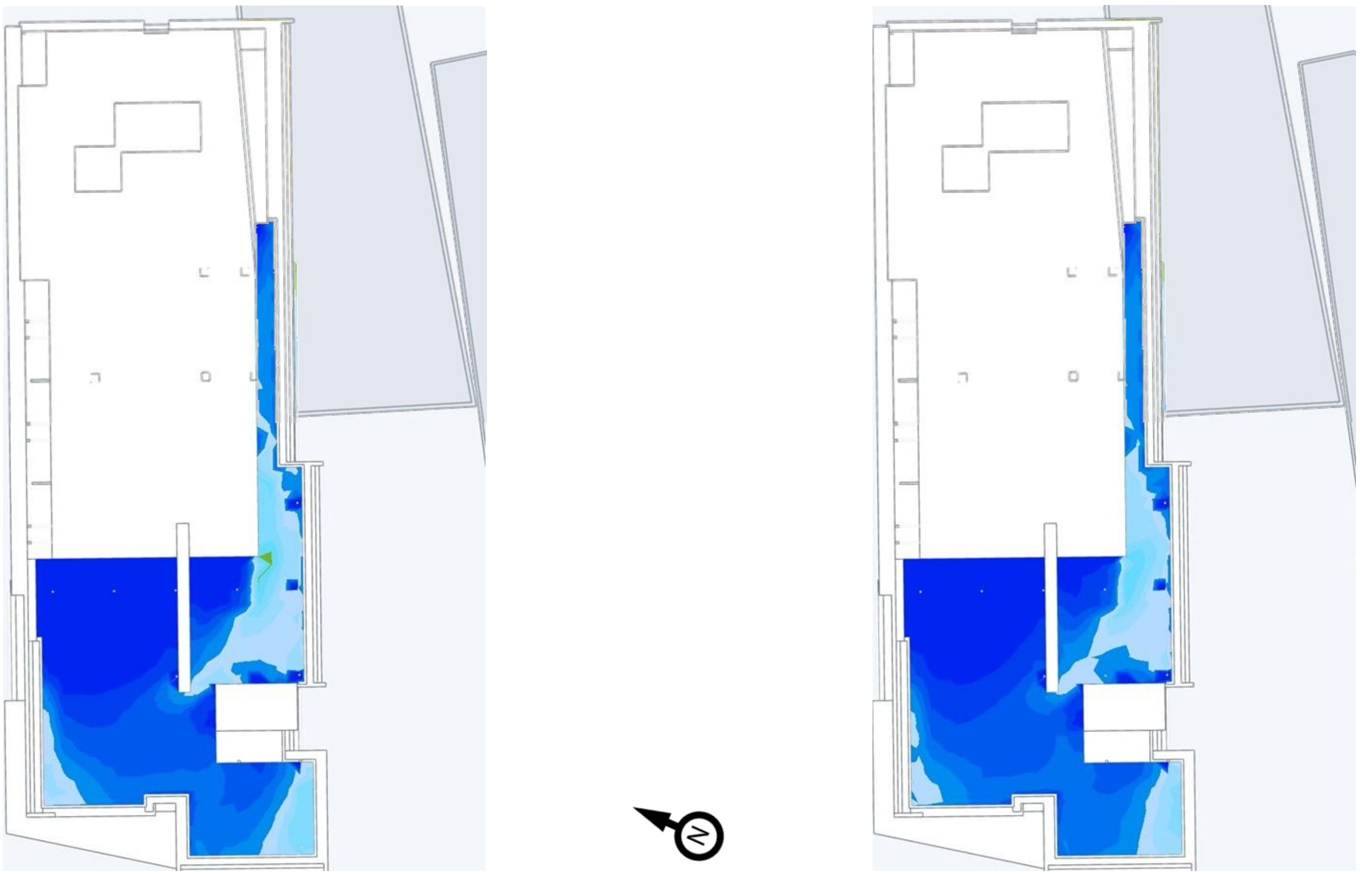


Image 14: Predicted Wind Comfort Conditions – Roof Terrace

4.3.1 Overview

The proposed development is not expected to alter grade-level wind conditions around the site significantly, due to its massing aligned with the prevailing northeasterly winds and the low roofs of the existing neighboring buildings.

The predominant winds are expected to mostly flow along the wide northwest and southeast facades of the proposed building, as a result, the prevailing winds will be intercepted and redirected mainly by the narrow northeast façade. In addition, most of the redirected winds are anticipated to be disrupted by the low roofs of the neighboring buildings before reaching grade level.

4.3.2 Grade Level

In the Existing scenario, wind conditions along the surrounding sidewalks are comfortable for strolling or standing throughout the year (Images 8A and 9A). Closer to the building perimeters, conditions are mostly comfortable for sitting. These conditions are suitable for the intended sidewalk and walkway use.

With the addition of the proposed development, wind conditions on and are around the project site are expected to remain similar (Images 8B and 9B). Slightly increased wind speeds, comfortable for strolling or walking, are anticipated underneath the future highway bridges (green and yellow areas in Images 8B and 9B). This increase in wind speeds is mainly caused by winds channeling underneath the bridges. Positively, these conditions are still suitable for the intended pedestrian use.

4.3.3 Main Entrance

The main entrance is located at the leeward side (southwest) of the proposed building, sheltered by the building undercut. Wind conditions at the main entrance are expected to be comfortable for sitting throughout the year (8B and 9B), which is suitable for the intended use.

4.3.4 Abutter Roof

Wind conditions on the existing abutter roof are comfortable for sitting or standing before the proposed development is in place (Images 10A and 10C, Locations 1 to 6 in Appendix B). With the addition of the proposed development, elevated wind speeds, comfortable for strolling or walking, are anticipated at most areas on the abutter roof (Images 10B and 10D, Locations 1 to 6 in Appendix B).

The increase wind speeds is mainly caused by the prevailing northeasterly winds downwashing off the northeast façade of the proposed tower, and then flow around the east tower corner due to corner acceleration (Image 7). If improved wind conditions are desired on the abutter roof, a tall parapet along the east edge and a trellis on the east side will help keep the downwashing winds away from this area, as shown in Image 15.

The design team may also consider cabanas/trellises, partitions or privacy screens, tall vegetation placed to the northeast of designated seating areas. Examples of these wind control strategies are shown in Image 16.

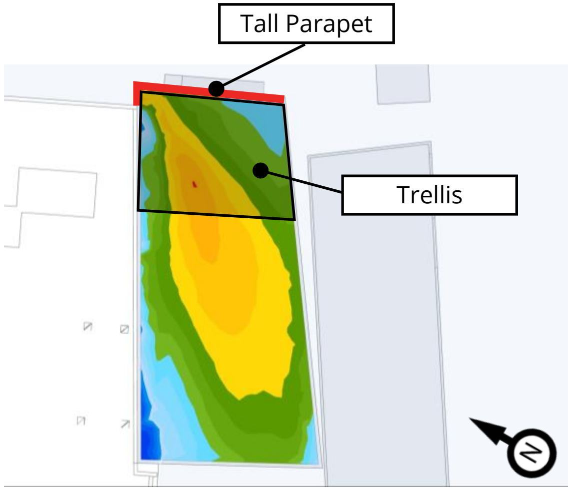


Image 15: Tall Parapet and Trellis Mitigation Measures on the Abutter Roof

4. RESULTS AND DISCUSSION

Image 16: Examples of Trellises, Screens, Vegetation and Tall Guardrail around Relaxed-Use Areas

<u>**4.3.5 Parking**</u>

Wind conditions on the Levels 2 and 3 parking are expected to be comfortable for sitting or standing throughout the year (Images 11 and 12), which is suitable for the intended use.

<u>**4.3.6 Level 4 Terrace**</u>

Wind conditions on the Level 4 terrace are expected to be comfortable for sitting at most areas throughout the year (dark blue areas in Image 13), which is ideal for passive activities.

Slightly higher wind speeds, comfortable for standing or strolling, are anticipated around the west corner of the Level 4 terrace (green and light blue areas in Image 13, Locations 7 and 8 in Appendix B). Taller guardrail or tall planters along the north side of the terrace could help reduce wind speeds. Examples are shown in Image 16.

<u>**4.3.7 Roof Terrace**</u>

Wind speeds increase with elevation; the height of roof terrace is above most of the surrounding buildings to the northeast (prevailing wind direction). Positively, most of the roof terrace areas will be sheltered by the mechanical penthouse massing from the prevailing northeasterly winds.

Wind conditions on the roof terrace are expected to be comfortable for sitting at most areas throughout the year (dark blue areas in Image 14), which is ideal for passive activities.

Due to the increase in elevation and exposure to the prevailing winds, slightly higher wind speeds, comfortable for standing, are anticipated at isolated areas on the east, west and south parts of the roof terrace (light blue regions in Image 14, Locations 9 to 13 in Appendix B). These conditions are considered acceptable as a light breeze is often preferred to improve thermal comfort in a warm climate such as Honolulu. If lower wind speeds are desired at these areas, taller guardrail or planters along the north and east sides of the terrace, as well as wind screens and/or tall vegetation placed to the north and east of the designated seating areas could be considered. Examples are presented in Image 16.

5. REFERENCES

1. H. Wu, C.J. Williams, H.A. Baker and W.F. Waechter (2004), "Knowledge-based Desk-Top Analysis of Pedestrian Wind Conditions", *ASCE Structure Congress 2004,* Nashville, Tennessee.

2. H. Wu and F. Kriksic (2012). "Designing for Pedestrian Comfort in Response to Local Climate", *Journal of Wind Engineering and Industrial Aerodynamics*, vol.104-106, pp.397-407.

3. C.J. Williams, H. Wu, W.F. Waechter and H.A. Baker (1999), "Experience with Remedial Solutions to Control Pedestrian Wind Problems", *10th International Conference on Wind Engineering*, Copenhagen, Denmark.

4. Perez, R., Ineichen, P., Seals, R., Michalsky, J., & Stewart, R. (1990). Modeling daylight availability and irradiance components from direct and global irradiance. Solar energy, 44(5), 271-289.

APPENDIX A

SIMULATION DETAILS

APPENDIX A: SIMULATION DETAILS

Computational Fluid Dynamics (CFD) simulations were undertaken in order to predict the flow of wind in and around the site. Multiple wind directions were simulated in order to understand the range of possible flow conditions. The inflow directions chosen for simulation were such that the directionality of more than 90% of the local wind records were represented. For wind direction sectors that were not simulated, the flow information from the nearest and representative simulated direction was used. The input conditions for each simulation was a representation of the atmospheric boundary layer appropriate for the given upwind conditions from the site at a reference speed.

The flow conditions were then solved using a Large Eddy Simulation (LES) approach. This technique allows for the prediction of mean wind flows as well as the effect of transient phenomena (i.e., gusts). Simulations were run for a sufficiently long duration to acquire statistically significant predictions of both mean and fluctuating wind velocity components. The speeds thus calculated were then combined into an equivalent mean value and normalized by the reference* speed into a 'velocity ratio' which is used in later analysis. Hourly records from long-term wind records were applied to the velocity ratios generated from the flow simulations to generate statistics of wind speeds and frequency of occurrence at various points of interest.

* Speed at 600m elevation in open exposure, typically unaffected by ground level structures.

APPENDIX B

POINT DATA QUANTIFICATION

APPENDIX B: POINT DATA QUANTIFICATION

Image B1 identifies the discrete points that were selected to be analyzed for refined quantitative data. The predicted wind speeds pertaining to the comfort and safety assessments are provided in the table that follows.

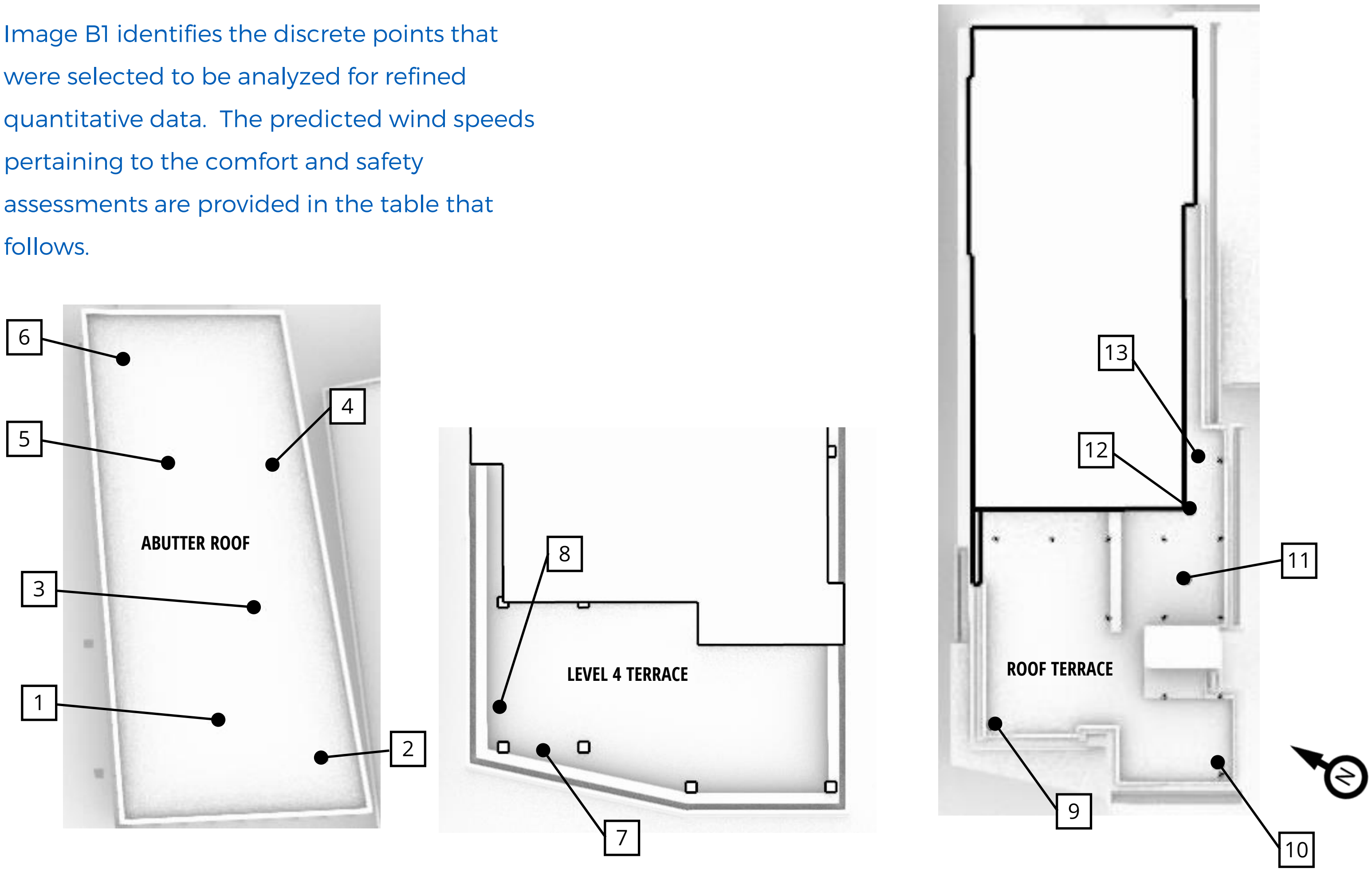


Image B1: Quantified Points Around the Development

Appendix B: Pedestrian Wind Comfort and Safety Conditions

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (mph)	Rating	Speed (mph)	Rating	Speed (mph)	Rating
1	Existing	8	Standing	7	Standing	28	Pass
	Proposed	10	Strolling	9	Strolling	34	Pass
2	Existing	7	Standing	7	Standing	27	Pass
	Proposed	10	Strolling	9	Strolling	37	Pass
3	Existing	7	Standing	7	Standing	29	Pass
	Proposed	10	Strolling	10	Strolling	39	Pass
4	Existing	7	Standing	7	Standing	25	Pass
	Proposed	10	Strolling	9	Strolling	32	Pass
5	Existing	7	Standing	7	Standing	27	Pass
	Proposed	12	Walking	11	Walking	39	Pass
6	Existing	6	Sitting	6	Sitting	25	Pass
	Proposed	11	Walking	10	Strolling	40	Pass
7	Existing	-	-	-	-	-	-
	Proposed	7	Standing	8	Standing	32	Pass
8	Existing	-	-	-	-	-	-
	Proposed	9	Strolling	9	Strolling	35	Pass
9	Existing	-	-	-	-	-	-
	Proposed	7	Standing	6	Sitting	22	Pass
10	Existing	-	-	-	-	-	-
	Proposed	7	Standing	7	Standing	28	Pass
11	Existing	-	-	-	-	-	-
	Proposed	7	Standing	6	Sitting	30	Pass
12	Existing	-	-	-	-	-	-
	Proposed	8	Standing	8	Standing	34	Pass
13	Existing	-	-	-	-	-	-
	Proposed	7	Standing	7	Standing	36	Pass

Season	Months	Hours
Summer	May - October	6:00 - 23:00 for comfort
Winter	November - April	6:00 - 23:00 for comfort
Annual	January - December	0:00 - 23:00 for safety

Configurations	
Existing	Existing site and surroundings
Proposed	Project with existing surroundings

Comfort Speed (mph) (20% Seasonal Exceedance)	
≤ 6	Sitting
7 - 8	Standing
9 - 10	Strolling
11 - 12	Walking
> 12	Uncomfortable

Safety Speed (mph) (0.1% Annual Exceedance)	
≤ 56	Pass
> 56	Exceeded

B.D. NEAL & ASSOCIATES
Applied Meteorology • Air Quality • Computer Science
73-4610 KALOKO LOA PLACE • KAILUA-KONA, HAWAII 96740 • TELPHONE (808) 329-1627
EMAIL: bdneal@bdneal.com

June 8, 2022

Ms. Patti Barbee
Ikenakea Development
Hawaiian Community Development Board
1188 Bishop Street, Suite 907
Honolulu, Hawaii 96813

Subject: Chinatown Hotel and Hale O Kekaulike Projects
Air Quality Impact Assessment

Dear Ms. Barbee:

In response to your request, we have examined the potential air quality impacts related to the proposed Chinatown Hotel and Hale O Kekaulike Projects located in the Chinatown Special District, Honolulu, Oahu. The results of this examination along with background information related to this issue and recommended mitigation measures are summarized below.

Project Descriptions

Ikenakea Development is proposing two projects to be built on adjacent properties in the Chinatown Special District in Downtown Honolulu on the island of Oahu. The Chinatown Hotel Project includes a 16-story, 240-room hotel with roughly 2,200 square feet of meeting space, a rooftop bar and restaurant, a museum, and parking space to accommodate 134 vehicles. The Chinatown Hotel project site is situated near the intersection of Nimitz Highway and Kekaulike Street, which is adjacent to the Holau transit station, the future Honolulu Rail transit stop in Chinatown. Construction of the project is expected to be completed by year 2025.

Adjacent to the Chinatown Hotel Project site is the Hale O Kekaulike Project site. This project proposes to construct a 6-story, 50-unit affordable, transit-oriented development. Of the 50 units, 49 of these units will be studios rented to senior residents aged 55+ who earn a maximum of 30% to 50% of the area median income. A single 1-bedroom unit will be reserved for the building manager. Ground floor retail space will be included in the project. No onsite parking stalls will be provided for residents or guests. Construction of the project is anticipated to be completed by year 2024.

Ambient Air Quality Standards

Both federal and state standards have been established to maintain ambient air quality. At the present time, seven parameters are regulated including: particulate matter, sulfur dioxide, hydrogen sulfide, nitrogen dioxide, carbon monoxide, ozone and lead. The federal and state standards pertain to most of the same parameters, although at present, for several of the parameters regulated, the federal standards are more stringent than the Hawaii standards.

Regional and Local Climatology

Regional and local climate together with the amount and type of human activity generally dictate the air quality of a given location. Winds are predominantly trade winds which are deviated somewhat from the northeast toward the east or southeast by the local terrain. During winter, occasional storms may generate strong winds from the south (kona winds) for brief periods. When the trade winds or kona winds are weak or absent, landbreeze-seabreeze circulations may develop. Wind speeds are often lower compared to more exposed coastal locations, but the trade winds still provide relatively good ventilation much of the time. Temperatures in the Oahu area leeward of the Koolaus are generally very moderate with average daily temperatures ranging from about 70°F to 84°F. Extreme temperatures range from about 53°F to about 95°F. Rainfall is relatively low with an average of about 30 inches per year in the Chinatown area.

Existing Air Quality Conditions

Air quality in the vicinity of the project presently is mostly affected by emissions from vehicular sources which emit carbon monoxide, nitrogen oxides, hydrocarbons and other air pollutants. Air quality data from the nearest monitoring stations operated by the Hawaii Department of Health suggest that all state and national air quality standards are currently being met in the project area.

Air Quality Impacts of Project

Short-term direct and indirect impacts on air quality could potentially occur during project redevelopment activities. For a project of this nature, there are two potential types of air pollution emissions that could directly result in short-term air quality impacts during project demolition and construction phases: (1) fugitive dust from building demolition, soil excavation, aggregate processing and vehicle movement; and (2) exhaust emissions from on-site construction equipment. Indirectly, there also could be short-term air quality impacts from the disruption of traffic on nearby roadways, from slow-moving construction equipment traveling to and from the project site, and from a temporary increase in local traffic caused by commuting construction workers.

Fugitive dust emissions from demolition and construction activities are difficult to estimate accurately because of their elusive nature of emission and because the potential for dust generation varies greatly depending upon the type of soil at the construction site, the amount and type of dirt-disturbing activity taking place, the moisture content of exposed soil in work areas, and the wind speed. The U.S. EPA has provided a rough estimate for uncontrolled fugitive dust emissions from construction activity of 1.2 tons per acre per month under conditions of "medium" activity, moderate soil silt content (30%), and precipitation/evaporation (P/E) index of 50. Uncontrolled fugitive dust emissions from project demolition and construction work would likely be somewhere near this level. In any case, State of Hawaii Air Pollution Control Regulations prohibit visible emissions of fugitive dust from construction activities at the project property line. Thus, an effective dust control plan for the project construction phase should be prepared.

Adequate fugitive dust control can usually be accomplished by the establishment of a frequent watering program to keep bare-dirt surfaces in active construction areas from becoming significant sources of dust. On days without rainfall, construction areas should be watered at least twice during the workday to help keep dust to a minimum. Control regulations further stipulate that open-bodied trucks be covered at all times when in motion if they are transporting materials likely to give rise to airborne dust. Haul trucks tracking dirt onto paved streets from unpaved areas are oftentimes a significant source of dust in construction areas. Some means to alleviate this problem, such as tire washing or road cleaning, may be appropriate. Dust monitoring could be considered as a means to quantitatively evaluate the effectiveness of dust control measures.

On-site mobile and stationary construction equipment also will emit air pollutants from engine exhausts. The largest of this equipment is usually diesel-powered. Nitrogen oxides emissions from diesel engines can be relatively high compared to gasoline-powered equipment, but the standards for nitrogen dioxide are set on an annual basis and are not likely to be violated by short-term construction equipment emissions. Also, the short-term (1-hour) standard for nitrogen dioxide is based on a three-year average; thus, it is unlikely that relatively short-term construction emissions would exceed the standard. Carbon monoxide emissions from diesel engines, on the other hand, are low and should be relatively insignificant compared to vehicular emissions on nearby roadways. Indirectly, slow-moving construction vehicles on roadways leading to and from the project site could obstruct the normal flow of traffic to such an extent that overall vehicular emissions increase. This impact can be mitigated by moving heavy construction equipment during periods of low traffic volume. Likewise, the schedules of commuting construction workers can be adjusted to avoid peak hours in the project vicinity.

After the period of construction, long-term impacts on air quality from motor vehicle exhausts can potentially occur at or near any project that attracts large volumes of motor vehicle traffic. Carbon monoxide emissions are usually the primary issue, and public areas near traffic-congested intersections are the main concern. The proposed projects will primarily be accessed from driveways off Nimitz Highway. Two separate traffic impact analysis reports (TIARs) were prepared for the two projects. The Chinatown Hotel TIAR examined three existing nearby roadway intersections. These included Nimitz Highway at Maunakea Street, Nimitz Highway at 120 Nimitz Driveway, and North King at Maunakea Street. The Hale O Kekaulike TIAR evaluated two intersections which included Nimitz Highway at Kekaulike Street and Kekaulike Street at North King Street.

The project TIARs indicate that the existing traffic level-of-service (LOS) at these intersections is reasonably good, and in the years 2024 and 2025, it was found that with the projects this would continue to be the case. The TIARs estimate that project traffic in the years 2024/2025 would account for less than about one percent increase in traffic at the nearby intersections studied.

Based on extensive experience in assessing traffic-related air quality impacts, traffic volume increases of less than about 5 percent or less than about 100 vehicles per hour or traffic approach volumes of less than about 1,000 vehicles per hour do not cause any significant impacts on air quality if adequate traffic level-of-service is provided. Considering the small project-related traffic volumes that are expected and the reasonably good traffic level-of-service that is forecast, traffic from the proposed projects should have no measurable long-term impacts on air pollution levels in the project area. Although a detailed air quality modeling study could be performed to quantitatively predict project impacts, such an analysis is probably unwarranted.

Depending on the demand levels, long-term impacts on air quality are also possible due to indirect emissions associated with a development's electrical power and solid waste disposal requirements. Electrical demand and solid waste disposal demand for these two projects is expected to be very small in comparison to the present island-wide demand for these services. Also, with respect to the electrical demand, Hawaiian Electric is moving forward with a goal of providing all power from renewable sources by the year 2045, which will essentially eliminate any indirect emissions from project electrical power use. Nevertheless, incorporating energy conservation design features and promoting conservation and recycling programs within the proposed development could serve to further reduce any associated impacts and conserve the island's resources.

In summary, short-term impacts from fugitive dust during project demolition and construction phases may potentially occur. Because of this, an effective dust control plan for the period of construction should be prepared and implemented. After construction, any long-term impacts on air quality from motor vehicle traffic related to this project will likely be negligible and any indirect impacts from electrical power use and solid waste disposal should be insignificant.

Please call me if you have any questions concerning the information presented herein or if you wish to discuss this matter further.

Very truly yours,

Barry D. Neal
Certified Consulting
Meteorologist

SHINSATO ENGINEERING, INC.

CONSULTING GEOTECHNICAL ENGINEERS

98-747 KUAHAO PLACE, SUITE E
PEARL CITY, HAWAII 96782
PHONE: (808) 487-7855
FAX: (808) 487-7854

March 11, 2022
Project No. 22-0020

Patti Tancayo Barbee
Ikenakea Development
Hawaiian Community Development Board
1188 Bishop Street, Suite 907
Honolulu, Hawaii 96813

Subject: Report - Phase 1
Geotechnical Engineering Investigation
Ikenakea Development
Proposed China Town Hotel
128 Nimitz Highway
Honolulu, Hawaii 96813
TMK: (1) 1-7-002:013

Dear Ms. Barbee:

This report presents the information obtained for a Phase 1 investigation of the subject site.

1.0 PROJECT INFORMATION

The property is located on the northeast side of Honolulu Harbor on the mauka side of North Nimitz Highway between the cross streets of Kekaulike and Maunakea. The attached Vicinity Map, Plate A-1 shows the location of the site relative to the streets and landmarks.

It is proposed to develop the site for a 240 unit hotel in the China Town district of Honolulu. The property is currently an asphalt paved parking lot plus a three-story brick building in the southeast portion of the property.

2.0 SOIL AND GEOLOGIC INFORMATION

2.1 Near Surface Soil Conditions

From the USDA Soil Conservation Service "Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai and Lanai, State of Hawaii," the eastern (mauka side) three-quarters of the site is located in an area designated as Ewa silty clay loam, moderately shallow, 0 to 2 percent slopes (EmA). The western one-quarter of the site is designated as Fill Land, mixed (FL). See the attached plan for the approximate locations of these soils.

The Ewa series consists of well-drained soils in basins and on alluvial fans. They developed in alluvium derived from basic igneous rock. In a representative profile of the series, the surface layer is dark reddish-brown silty clay loam about 18 inches thick. The subsoil is dark reddish-brown and dark red silty clay loam about 42-inches thick. The substratum is coral limestone, sand and gravelly alluvium. In the EmA portion of the series, the depth to coral limestone is 20 to 50 inches. The estimated soil properties are as follows:

- Unified Soil Classification: ML or CL (low plasticity clay and silt)
- Shrink-swell potential: moderate
- Corrosivity to uncoated steel: low
- Corrosivity to concrete: low

Fill Land, mixed (FL) is described as land that “consists of areas filled with material from dredging, excavation from adjacent uplands, garbage, and bagasse and slurry from sugar mills”. The FL portion “occurs mostly near Pearl Harbor and in Honolulu, adjacent to the ocean. It consists of areas filled with material dredged from the ocean or hauled from nearby areas, garbage, and general material from other sources”.

2.2 Subsurface Soil Deposits

A review of soil and geologic literature and maps of the area indicate that the site is likely to be underlain by soil material to 3.5 to 8 feet followed by coral of varying degree of hardness and thickness.

The upper soil may consist of old fill material such as coralline and basaltic sand, gravel, cobbles and boulders with glass and metal debris. This may be underlain by loose to dense black cinder sand and clayey silt, by coral limestone then by alluvium of brown clayey silt with rounded basaltic gravel.

3.0 PRELIMINARY FOUNDATION DESIGN INFORMATION

Based on the anticipated subsurface conditions and proposed structure, the most suitable foundation system to support the structure would be ACIP (auger cast-in-place) piles. A mat foundation system may adversely affect the adjacent buildings due the potential for surcharge loading on the adjacent buildings.

Unlike precast-prestressed concrete piles which are driven, the ACIP piles are installed with minimal vibration and noise. Attached is a reference document describing the ACIP piles.

Currently 18 and 24 inch diameter auger-cast-in-place (ACIP) piles are being used for support of high rise structures that require deep foundations. The allowable axial load capacities for the 18 and 24 inch ACIP piles generally vary from 200 to 800 kips per pile depending on the consistency and thickness of the underlying formations, and the installation depth. Larger diameter piles may be available to increase the pile capacity and reduce the number of piles.

It is estimated that the embedment depths of the ACIP piles to provide the design bearing capacities would be on the order to 80 to 100 feet. Pile load tests should be performed to confirm the bearing capacity.

Some of the special considerations include but may not be limited to the following:

- The presence of very dense to hard coral limestone may require predrilling in order to install the ACIP piles.
- The underlying coral formation may vary in thickness and consistency. Test borings should be drilled during the design phase to establish a soil/geologic profile of the underlying coral formation. Special inspection should be provided during construction to verify the subsurface conditions.

Patti Tancayo Barbee
Ikenakea Development
Hawaiian Community Development Board
March 11, 2022
Page Three

Should you have any questions or require any further information, please do not hesitate to contact us.

Very truly yours,

SHINSATO ENGINEERING, INC.

Lawrence S. Shinsato, P.E.
President

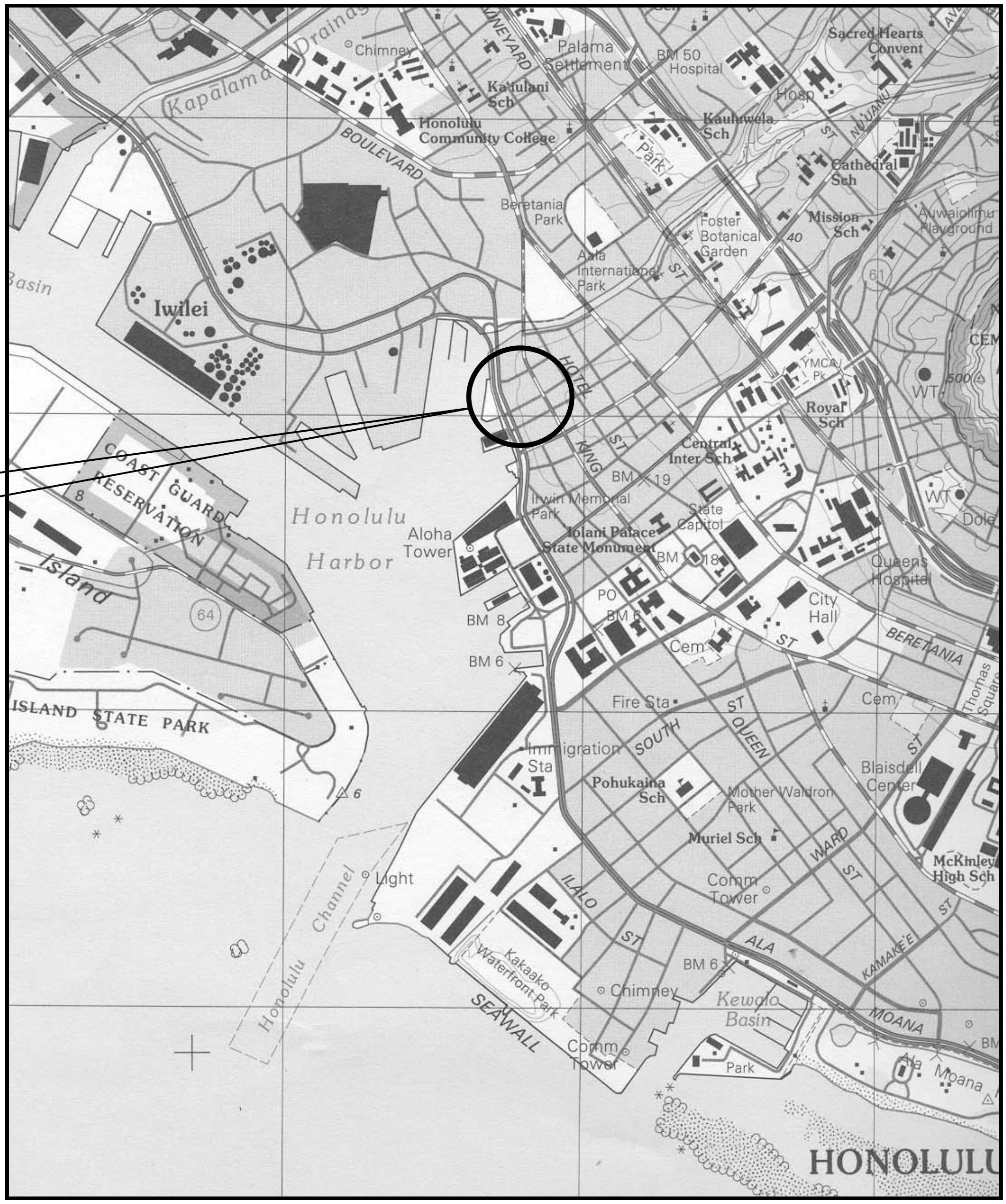
LAWRENCE S. SHINSATO
LICENSED PROFESSIONAL ENGINEER
No. 4169-C
HAWAII, U.S.A.

This work was prepared by me
or under my supervision.
License Expires 04/30/22

LSS:ls

Attachments/

VICINITY MAP



REFERENCE:
USGS TOPOGRAPHIC MAP
HONOLULU QUADRANGLE
DATED 1998

CHINA TOWN HOTEL DEVELOPMENT **128 NIMITZ HIGHWAY** **TMK: (1) 1-7-002:013**	
Shinsato Engineering, Inc. *Consulting Geotechnical Engineers* 98-747 Kuahao Pl. Pearl City, HI 96782	PROJECT NO. 22-0020 DATE: 03/2022 SCALE: 1"=2000' PLATE A-1

City & County of Honolulu

Department of Planning & Permitting (DPP)

Property Information

128 N NIMITZ HWY

Thursday, March 10, 2022 | 6:29:47 PM

General Information

TMK:	17002013:0000
Building Value:	$51,800.00
Building Exemption:	$0.00
Land Value:	$7,787,600.00
Land Exempt:	$0.00
Acres:	0
Square Feet	25,617
Property Tax Class:	Commercial
City:	Honolulu / Kapalama
Zip Code:	96817
Realtor Neighborhood:	Chinatown

Nearest Park: Pauahi Recreation Center show route

Tax Bill Owner Information

Name	Type	Address	Address 2	City State Zip
YEE HOP REALTY LTD	Fee Owner			
C Q YEE HOP & CO LTD	Fee Owner		P O BOX 1759	HONOLULU HI 96806

2010 Census Information

Tract Number:	005200
Block Number:	1001
Population (block):	697

Voting Information

City Council Member:	Carol Fukunaga
Polling Place:	Central Middle Sch
Address:	1302 Queen Emma St
Neighborhood Board:	Downtown-Chinatown

School and Transit Information

Elementary School:	Kaiulani	show route
High School:	MCKINLEY	show route
Near Transit Route:		Yes
Near Bus Routes:	101, 102, 103, 19, 1L, 20, 2L, 40, 42, 43, 81, 83, 84, 84A, 90, 91, 92, 93, 94, 96, 97, 98, 98A, A, C, W1, W2	

Zoning and Flood Information

Zoning (LUO) Designation:	BMX-4
Ohana Zoning Designation:	Ineligible
FEMA Flood Designation:	X
Tsunami Evacuation Zone:	Yes

more public safety info >>

Page Tools: PRINT | BOOKMARK | EMAIL | STREET/BIRD'S EYE

More info: ZONE INFO | BUILDING PERMITS | PROPERTY TAX

A Primer on Augercast Piles

By Jason P. Black, P.E., S.E.

In many parts of the country, augercast piles have become a popular choice where deep foundation solutions are required. This popularity is owed to their relative cost, quick installation time, and versatility over a wide range of soil conditions when compared to other deep foundation alternatives.

What are they?

Augercast piles are typically 12 to 24 inches in diameter, but diameters of 36 inches have been used successfully. Grout strengths usually range from 3,000 to 5,000 psi, and contain up to 12 sacks of cement per cubic yard. Similar to conventional drilled shafts, augercast piles can derive resistance from both side friction and end bearing. Allowable vertical axial load capacities typically range from about 40 to 150 tons, depending on the pile size and soil conditions.

How are they built?

Augercast piles are constructed using a continuous flight hollow stem auger that is powered by a drill motor. The auger and drill motor (leads) are usually suspended by crane, as shown on *Figure 1*.

The piles are installed by drilling the auger to a prescribed depth or until bearing is achieved. Grout is then pumped under pressure down the hollow stem of the auger flight through a hole at the base. To help this hole from becoming plugged by drill spoils, a sacrificial plug is inserted at the base of the auger before drilling and is blown out when the grout pumping begins.

As the grout is pumped, the auger is withdrawn (while spinning) at a slow rate, leaving a continuous column of grout. About 5 to 15 feet of grout head should be maintained above the base of the auger while the auger is extracted so that the grout has a displacing action, forcing the loose drill spoils to the surface of the hole where they are removed from the flights of the auger by laborers. The spoils are usually removed from the area of the augercast pile as they pile up, but nonetheless, augercast pile installation is a messy operation!

In seismic regions, pre-assembled rebar cages should be lowered into the grouted pile soon after the drilling equipment is removed from the grouted hole (*Figure 2*). The cages typically consist of vertical bars surrounded by spiral reinforcement in the upper 10 to 30 feet. The length of the cage containing the spiral reinforcement is usually limited to 25 to 30 feet, because it can be difficult to insert longer cages as the grout can become relatively viscous. Whether in a seismic region or not, it is considered good practice by many engineers to install at least one central, vertical bar the full length of the pile. Additional full length bars may be required if the piles will be used to resist uplift forces.

After the grout sets, the upper portion of the piles is exposed by excavating the surrounding soil. The grout is then chipped away, exposing the pile reinforcement so that it can be cast in place with the pile cap or grade beam (*Figure 3*). Alternatively, if soil conditions permit, the "wet" grout above the final bottom of pile cap/grade beam elevation can be removed before the cage installation to avoid subsequent grout chipping.

IBC 1810.3.3 requires a minimum spacing of at least 6 pile diameters center-to-center for piles installed within 12 hours, unless approved by the building official. One of the pitfalls of installing piles too closely too soon is that the piles may damage the integrity of "green" adjacent piles. This is usually evidenced by a drop in the grout level of the adjacent pile. If this occurs, IBC requires that the suspect pile be replaced.

When should they be considered?

Augercast piles are best suited for sites with soft to medium dense soil conditions. They can be socketed into dense soil or weak rock to achieve higher end bearing, but the amount of embedment into these layers can be limited, since the downward drilling force imposed during drilling is generally limited by the self weight of the auger and drill motor suspended from the crane. Therefore, these piles may not be appropriate where significant embedment is required into dense soil or rock.

Augercast piles are particularly advantageous over drilled shafts in cases where groundwater or loose soil conditions cause sloughing, since drilled shafts would require slurry or casing to keep the holes open. Such measures add cost and slow construction of drilled shafts.

They also offer advantages over driven piles where hammer impact noise and vibrations are a concern. Thus, augercast piles are a popular choice in urban settings or where pile installation is required in close proximity to existing buildings or other structures that may be sensitive to settlement.

Augercast piles can be used in low over-head clearance conditions by adding and then removing segments of auger during drilling. To help ensure continuity of the grouted hole during this process, it is typical (and required by IBC 1810.3.3) to re-drill and grout at least 5 feet every time a segment of auger is removed since the process involves arresting grouting to remove the auger segments. The minimum head clearance required will depend on the specific drilling equipment; however, some contractors claim that augercast piles can be installed in less than 10 feet of head clearance.

Figure 1: Crane with Drill Leads (Photo courtesy of McDowell NW, Inc.)

REVISED DRAFT—Cultural Impact Assessment for the Chinatown Hotel Project, Honolulu Ahupuaʻa, Honolulu District, Island of Oʻahu, Hawaiʻi

TMK: (1) 1-7-002:013 and 050

Prepared For:

ʻIkenākea Development LLC
1188 Bishop St. Suite 907
Honolulu, HI 96813

July 2022

Keala Pono Archaeological Consulting, LLC ● PO Box 1645, Kāneʻohe, HI 96744 ● Phone 808.381.2361

REVISED DRAFT— Cultural Impact Assessment for the Chinatown Hotel Project, Honolulu Ahupuaʻa, Honolulu District, Island of Oʻahu, Hawaiʻi

TMK: (1) 1-7-002:013 and 050

Prepared For:

ʻIkenākea Development LLC
1188 Bishop St. Suite 907
Honolulu, HI 96813

Prepared By:

Kālenalani McElroy, MA
Cathleen Dagher, BA
Windy Keala McElroy, PhD
and
Michael Graves, PhD

July 2022

Keala Pono

Keala Pono Archaeological Consulting, LLC ● PO Box 1645, Kāneʻohe, HI 96744 ● Phone 808.381.2361

MANAGEMENT SUMMARY

Keala Pono Archaeological Consulting prepared a Cultural Impact Assessment (CIA) for the proposed Chinatown Hotel Project in Honolulu Ahupuaʻa, Honolulu District, on the island of Oʻahu, Hawaiʻi. The project area located at TMK: (1) 1-7-002:013 and 050 is within the Chinatown Historic District and contains a historic building listed on the Hawaiʻi Register of Historic Places. This CIA was designed to identify any cultural resources or practices that may occur in the area and to gain an understanding of the community's perspectives on the proposed project.

The background research synthesizes traditional and historic accounts and land use history for Chinatown and the greater Honolulu area. The background study illustrated that this region is remembered in ʻōlelo noʻeau, moʻolelo, and a multitude of place names. It was a region that was important for its natural resources and harbor and was an area favored by aliʻi. Māhele documents record seven LCA kuleana lots within the project area and many nearby. Also in the vicinity are previously documented fishponds, loʻi deposits, historic trash deposits, structural remnants, as well as pre- and post-contact human burials.

Community consultations were performed to obtain information about the cultural significance of the subject property and the surrounding area, as well as to address possible concerns of community members regarding the effects of the proposed project on places of cultural or traditional importance. Interviews with five community members were completed. Interviews with individuals knowledgeable about the project lands produced information on its rich cultural history. Historic buildings, human burials, and cultural deposits related to the Chinatown fires were among the archaeological sites mentioned. The interviewees also noted the cultural practices of gathering marine resources, as well as the Chinese Lion Dance, martial arts, and preparation of traditional Chinese food.

Several concerns were voiced, including the height of the new hotel, the new hotel not being compatible with the look and feel of the Chinatown Historic District and the possibility of impacting natural and cultural resources such as human remains and/or subsurface cultural layers, as well as ground water. Another concern was the height of the proposed hotel. Recommendations and mitigations for the project include the following:

- conduct environmental coring before construction begins
- reduce the height of the new construction
- hold an Asian cultural ceremony at ground breaking
- respect ancestral lands
- be beholden to the community for the greater good
- be mindful of the history and to build something that works in Chinatown

CONTENTS

Figures

Tables

INTRODUCTION

At the request of ʻIkenākea Development, Keala Pono Archaeological Consulting conducted a Cultural Impact Assessment (CIA) for the proposed Chinatown Hotel construction at TMK: (1) 1-7-002:013 and 050 in Honolulu Ahupuaʻa, Honolulu District, on the island of Oʻahu, Hawaiʻi. The CIA was designed to identify any cultural resources or practices that may occur in the area and to gain an understanding of the community's perspectives on the proposed project.

The report begins with a description of the study area and a historical overview of land use and archaeology in the area. The next section presents methods and results of the ethnographic survey. Results of the CIA are summarized and recommendations are made in the final section. Hawaiian words, flora and fauna, and technical terms are defined in a glossary. Also included are appendices with documents relevant to the ethnographic survey, including full transcripts of the interviews.

Project Location and Environment

The proposed Chinatown Hotel Project is located at 128 Nimitz Highway within the neighborhood of Chinatown in Honolulu Ahupuaʻa, Honolulu District, on the island of Oʻahu (Figures 1 and 2). TMK: (1) 1-7-002:013 is 25,446 square feet, while TMK: (1) 1-7-002:050 is 2,182 square feet. Both parcels are owned by C. Q. Yee Hop & Co, Ltd. and Yee Hop Realty, Ltd. These parcels are currently used as a parking lot, and houses a historic building listed on the Hawaii Register of Historic Places, which is used as a warehouse. The project covers a total of 0.58 ac. (0.24 ha) and falls within the Chinatown Historic District, which requires a Special District Permit. The project area is bounded to the north and south by retail buildings, to the east by a small parking lot, and to the west by Nimitz Highway (Figure 3). The project area and surroundings are highly developed.

The leeward coastal plain of Honolulu is comprised of a series of former reef and soils, along with sediment deposits. These features include a late-Pleistocene coral reef substrate that is overlain along the coast with calcareous marine beach sand, often by intermixed terrigenous sediments deposited from streams and nearby slope erosion. Adjacent to streams there are alluvial sediments most of which have originated from weathered volcanic bedrock and then subsequently deposited during flood events. Former reef sediments (i.e., sands) are found along the coastal margin sometimes extending inland onto the coastal plain (Clague 1998). Coastal terrigenous sediments originate on land, later deposited along the coastal plain and these deposits may contain materials mixed with marine sediments that include sands and rocks of the near-shore environment. The current Hawaiian shoreline configuration, including Honolulu Harbor, is the product of late- and post-Pleistocene rising sea levels (Stearns 1978; Macdonald et al. 1983) followed by a mid-Holocene rise in sea level of roughly 1.5–2.0 m (4.9–6.6 ft.); and human landscape modification, much of which occurred within the past 200 years since the arrival of Europeans and Americans to Hawaiʻi.

The project area is relatively flat, and stands at an elevation of approximately 3 m (10 ft.) above mean sea level (AMSL). It is approximately 60 m (200 ft.) from the coast at Honolulu Harbor. Coastal Honolulu experiences an average of 700–750 mm (27.56–29.53 in.) of rain per year (Giambelluca et al. 2013; Juvik and Juvik 1998:56). The most prevalent vegetation found within the harbor area of Honolulu is of exotic origin. Originally this portion of the Honolulu coastal plain would have supported a coastal dry plant community (Wagner et al. 1990:55), most of which would have consisted of shrubs and grasses, along with a few Polynesian introduced taxa such a niu (coconut, *Cocos nucifera*).

Soil survey data (Foote et al. 1972) places the project area predominantly on Ewa silty clay loam, moderately shallow, 0–2% slopes (EmA) with the makai portion located on fill land, mixed (FL)

(Figure 4). According to the United States Department of Agriculture Soil Conservation Service soil survey, these soils are described as:

> **Ewa silty clay loam, moderately shallow, 0–2% slopes (EmA)**
>
> This series consists of well-drained soils in basins and on alluvial fans on the islands of Maui and Oahu. These soils developed in alluvium derived from basic igneous rock. They are nearly level to moderately sloping…Runoff is very slow, and the erosion hazard is no more than slight. This soil is used for sugarcane, truck crops, and pasture (Foote et al. 1972:29–30).
>
> **Fill land, mixed (FL)**
>
> This land type occurs mostly near Pearl Harbor and Honolulu, adjacent to the ocean. It consists of areas filled with material dredged from the ocean or hauled from nearby areas, garbage, and general material from other sources…This land type is used for urban development including airports, housing areas, and industrial facilities (Foote et al. 1972:31).

Also near the project area are Kaena clay, 2–6% slopes (KaB) and Makiki clay loam 0–2% slopes (MkA). The nearby Nuʻuanu Stream exiting into the harbor is shown as Water (W).

The Project

The Chinatown neighborhood, centered around the bustling port, has a long history of being a thriving economic center supplying transient businessmen, migrants, sailors, and other visitors to the island with food, lodging, and entertainment. With few accommodation options left in the area resulting in most tourists never setting foot in Chinatown, this hotel project aims to revitalize the neighborhood and bring economic activity to an area that once relied heavily on businesses that catered to visitors, including a number of hotels.

The Chinatown Hotel development consists of a 240 guest room lifestyle hotel that includes two food and beverage outlets, 134 parking spaces, a meeting space, a sky lobby, gym and spa, lanais, a museum, a public plaza, and a rooftop swimming pool with a bar and restaurant. The historic building on the property is listed on the Hawaii Register of Historic Places and is part of the Chinatown Historic District. This historic warehouse will be retained and incorporated into the plans for the new hotel. The historic building is slated for restoration and will be brought back to its original condition including exposing the original basalt rock wall exterior. Of the 25,446 square ft. lot, there is 4,488 square ft. of existing improvements. The hotel will be 16 stories, which is roughly 200 ft. in height.

Layer Credits:USGS Topographical Honolulu Quadrangle Map 1998

Figure 1. Project location on a 7.5 minute Honolulu quadrangle map (USGS 1998).

Layer Credits:TMK017002

Figure 2. Project location on TMK plat (1) 1-7:002 (State of Hawai‘i 1937).

Figure 3. Aerial image showing the project area and greater coastal Honolulu region.

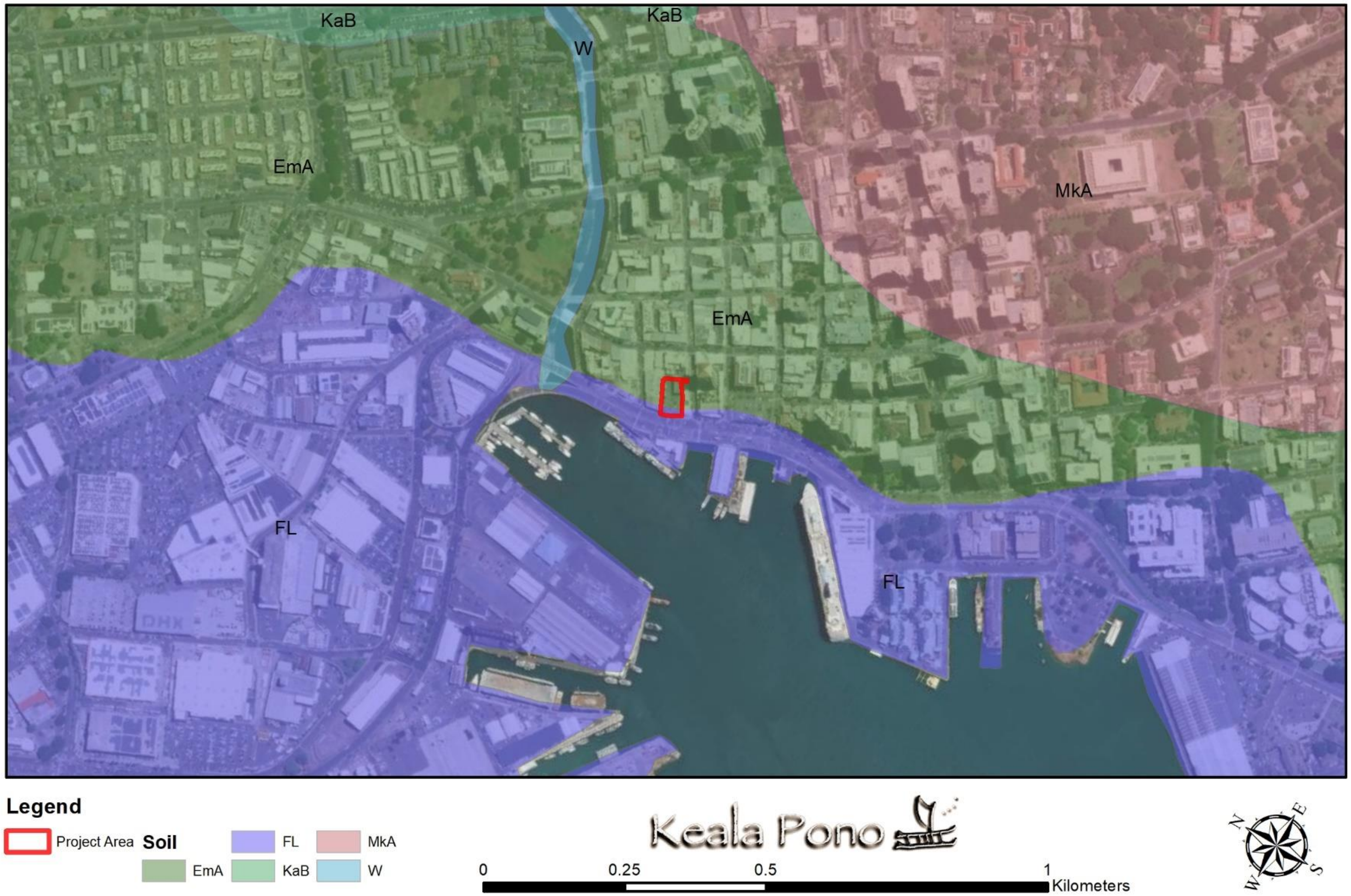


Figure 4. Map of project area soils (data from Foote et al. 1972).

BACKGROUND

This chapter presents traditional and historic background information for the project region, including place names, Hawaiian proverbs and moʻolelo, land use, Māhele land tenure data, historic maps and photos, a discussion of the history of the harbor, and a summary of previous archaeological research. In the attempt to record and preserve both the tangible (e.g., traditional and historic archaeological sites) and intangible (e.g., moʻolelo, ʻōlelo noʻeau) culture, this research assists in the discussion of anticipated finds. Research was conducted at the Hawaiʻi State Library, the University of Hawaiʻi at Mānoa libraries, the SHPD library, and online on the Waihona ʻAina database and the State of Hawaiʻi Department of Accounting and General Services (DAGS) website. Historical maps, archaeological reports, Māhele data, and historical reference books were among the materials examined.

Moʻolelo and Traditional Land Use in Honolulu

There are a number of traditional Hawaiian sources that describe or name locations within coastal Honolulu and Honolulu Harbor. These provide insights into the manner in which these places were viewed and remembered. Legendary accounts identify events and people formerly associated with Honolulu.

While there is some discussion over the origin of the name Honolulu as either the Hawaiian translation of the given English name "Fair Haven" or "Calm Harbor" which describe the harbor, or the name of a high chief (Westervelt 1915:15), around the early 1800s, the area known as Kou was re-dedicated and given its existing name. Extending from what is now near the junction of Liliha and School Streets, the literal translation of "Honolulu" can be broken down to hono, meaning "abundance" and lulu meaning "calm" or "peace," with the definition describing the district as having an "abundant calm, or "a pleasant slope of restful land" (Westervelt 1915:14). Early names for Honolulu Harbor include Kou and Māmala.

Kou consisted of the area from Nuʻuanu Avenue to Alakea Street and the land makai of Hotel Street, which encompasses the current study area (Westervelt 1915:15). Kou is also said to be named for the ilāmuku (executive officer) of Oʻahu, Chief Kakuhihewa (Pukui et al. 1974:117–118). The area was a noted gathering place for aliʻi to enjoy kōnane (pebble checkers) and ʻulu maika (bowling), a place where "property and even lives were freely gambled away" (Westervelt 1915:17). Kou's ʻulu maika track was a hard, smooth track about 3.5 m (12 ft.) wide which extended from the corner of Merchant and Fort Streets, currently the Bank of Hawaiʻi Building, along the makai side of Merchant Street to beyond Nuʻuanu Avenue. It is also believed that Kamehameha I used this ʻulu maika track (Westervelt 1915:17).

Named in honor of a shark woman and chiefess residing at the entrance to Honolulu Harbor, the area known as Māmala extended from the ʻEwa side of Honolulu Harbor to Pearl Harbor. The surf break at the reef was also named after the shark chiefess and was called Ke Kai o Māmala (Pukui et al. 1974:106, 144). When the surf was high, it was known as "Ka-nuku-o-Māmala" or "The nose of Māmala" (Westervelt 1915:52). Chiefess Māmala loved to play kōnane, drink ʻawa and ride the surf in the area. Māmala's first husband was the shark-man Ouha, who, after becoming a shark-god, made his home outside the reefs of Waikīkī and Koko Head. Māmala's second husband, chief Honokaupu, was given that land east of Kou, which afterward took on the name of its chief (Westervelt 1915:15). This area of Honokaupu, believed to be near present-day Richards and Queen Streets, was a noted place for aliʻi to engage in ʻulu maika games (Westervelt 1915:17).

Within Kou was the area of Pākākā. Literally meaning “to skim, as in stones over water” (Pukui et al. 1974:175), Pākākā was the name of the canoe landing at Honolulu Harbor and was also known for Pākākā Heiau, which stood on the western side of the foot of Fort Street. Built before the time of Kakuhihewa, Pākākā was later “owned” by Kīnaʻu, the mother of Kamehameha IV, V, and Victoria Kamāmalu. For centuries preceding, this heiau served as an important meeting place for kāhuna (Westervelt 1915:21). Liholiho, Kamehameha II, built a palace complex in this area in 1821, possibly on the old Pākākā Heiau platform. The wharf at Pākākā may also have been part of the original heiau complex. Klieger (1997:15–16) has suggested that the Pākākā Palace complex may have lasted until around 1826, when a new royal compound was built for Kamehameha III within the town of Honolulu, near the modern junction of Alakea and Beretania Streets.

In 1816, the Honolulu Fort called Kekuanohu, was also built in this area. The fort was demolished in 1857 and the material from the wall was used to build a waterfront retaining wall (Pukui et al. 1974:107), which was then filled in to create new land, called the Esplanade.

Place Names

Place names for coastal Honolulu and neighboring locations are presented in Table 1. They include names of ahupuaʻa, wahi pana, and various natural landforms that likely served as landmarks, including ridges, streams, gulches, mountain tops, springs, and coastlines. The names are presented here alphabetically and these doubtless do not exhaust the total. Sources consulted for these names include historical and contemporary maps land award indices, a portion of the related testimonies, and archaeological and historical reports.

In addition to their literal meanings, which often reflect the setting or events, or individuals associated with them, place names serve as toponyms. As Thornton (1997:209) notes “Places names are…. [i]nteresting…because they intersect three fundamental domains of cultural analysis: language, thought, and the environment.” They can record and preserve aspects of history, not only by their associated archaeological or material remains but also through the events and stories said to be associated with a given place (Basso 1988). Place names inform not only on the structure and content of the physical environment but also how it is perceived, conceptualized, classified, and utilized (Thornton 1997:209). By virtue of their physical nature, they are applied to locations on the landscape and serve to promote and prompt mental maps, especially when other place names associated with other locations provide relational, hierarchical, or directional information (Basso 1988). Thus, place names can be a spatial means for remembering or memorializing events, people, or other kinds of things on a landscape. It may be possible to reconstruct or identify aspects of traditional Hawaiian land use and social organization from these names.

ʻŌlelo Noʻeau

Traditional proverbs and wise sayings, also known as ʻōlelo noʻeau, are another means by which the history of Hawaiian locales have been recorded. In 1983, Mary Kawena Pukui published a volume of close to 3,000 ʻōlelo noʻeau that she collected throughout the islands. The introductory chapter of that book reminds us that if we could understand these proverbs and wise sayings well, then we would understand Hawaiʻi well (Pukui 1983).

Numerous ʻōlelo noʻeau reference coastal Honolulu and the areas surrounding Honolulu Harbor. ʻŌlelo noʻeau relevant to the area provide useful insight into the landscape, subsistence, and local resources. They are as follows:

Table 1. Traditional Place Names for Coastal Honolulu (partly adapted from O'Hare 2013:11–12)

Place Name	Description	Notes	Sources
Āpua	moʻo	Located below Queen Street. Land awards: RPG 2706 to Eliz. Kauwa, 0.17 acre. PEM: fish basket.	Soehren 2010; GR 26
Halāiʻimaile	place	Area in downtown Honolulu near the present Library, former name of the palace grounds and the home of Boki and Liliha and other royalty. Land Awards: LCAw 191:2 to Kekauonohi for Haalelea, 0.50 acre house lot. PEM: lit., maile vines strewn	Soehren 1910; Pukui et al. 1974:39; IN 342; Metcalf 1847
Hale Kauwiila	place	Coastal property due east of Fort Honolulu.	Metcalf 1847
Honolulu	ahupuaʻa	Refers generally to the Honolulu Harbor, but other names included Kou and Māmala. Honolulu is recognized as an ahupuaʻa containing numerous ʻili and numerous land were claimed. Said to be bounded by Kapālama, by Makiki, and Nuʻuanu Valley. Westervelt (1915:14) suggests the terms reflects the union of the words "hono" and "lulu". "The old Hawaiians say that 'Hono' means 'abundance' and 'lulu' means 'calm,' or 'peace,' or 'abundance of peace.' PEM, lit., protected bay.	McAlister 1933:80; Pukui et al. 1974:49-50; Soehren 2010; Westervelt 1915; MB 8, 9
Honuakaha	ʻili ʻāina	Old section of Honolulu near Kawaiahaʻo cemetery.	Pukui et al. 1974: 51; IN 707, NR 3:136; Monsarrat 1897
Iwilei	ʻili ʻāina	Coastal section to west of Nuʻuanu Stream. Land Awards: LCAw 3142 to Hoaliku: "Apana 3. He kahuahale iloko o Iwilei, Kapalama... Apana 4. Ekolu puuone iloko o Iwilei, Kapalama..." 2.20 acres. LCAw 1034 & 8400 to Kapauahi: "Apana 1. Pahale ma Iwilei, Lele o Kalawahine..." 0.659 acre. Also LCAw 808 to Kalaeloa, 918 to Upai, 8322 to Kamakena, all of which are placed in Honolulu, not in Kapālama. Claim no. 2040 by Kahahawai for "he wahi kai... ma" PEM: collarbone or a unit of measurement. Ka ili o Kalawahine o Iwilei ke kai was not awarded.	Pukui et al. 1974; Soehren 2010; Metcalf 1847-49
Kaakaukukui	kohola, reef	Filled in reef, Honolulu Harbor, the land section at coast makai of Kawaiahaʻo Cemetery, with lots of salt pans and the Leper Hospital. Lit., the right (or north) light	Pukui et al. 1974: 59; Pukui et al. 1974; Soehren 2010; Covington 1881

Table 1. (continued)

Place Name	Description	Notes	Sources
Koholaloa; alt. Kaholaloa, Kulolola	kohola, reef	Old name for Sand Island, the bay and the reef area to the east of Nuʻuanu Stream and Kawa Pond PEM: long reef.	Pukui et al. 1974:115; Covington 1881
Kakaʻako	ʻili ʻāina	Land Awards: LCAw 4457 to Kaloa, 0.48 acre. Also LCAw 247 to Lunalilo, 2019 to Pupule, 3455 to Kaule for Liliha. Claim no. 8047 by Ehu was not awarded. PEM: not translated.	Pukui et al. 1974:115; Soehren 2010; IN 711; NR 5:482; Monsarrat 1897
Kapuʻukolo	ʻili ʻāina	Old section of Honolulu bounded by the mouth of Nuʻuanu Stream and Honolulu Harbor, depicted on reconstructed 1810 map of Honolulu. Land Awards: LCAw 2944B to Akoni, 0.03 acre. Also LCAw 22 to G. Kawaina, 22 to Weloula for heirs, 28 to Keaniani, 30 to Kahoowaha, 57 to Kou, 66 to Napahi, 151 to Nauoo, 256 to Kulukini, 548 to Kinopu, 1039 to Kamanu, 2065 to Keo for Kawai, 2944 to P. F. Manini, 6685 to Mokuohai. Claim no. 8644 by Kawai was not awarded.	Pukui, et al. 1974; Soehren 2010; Rockwood and Barrère 1959; Metcalf 1847; Monsarrat 1897
Kawa Pond	loko	When this wall [on the Waikahalulu Reef at the foot of Maunakea Street] was built the wall of the Loko called ʻKawaʼ was taken down and the size of the Loko reduced. Located in the vicinity of the present Awa Street, Iwilei. PEM: dive; leaping place.	Soehren 2010; Monsarrat 1897; Wall 1891; Alexander 1908
Kewalo	place	Basin and surfing area. Lit., the calling (as an echo)	Pukui et al. 1974:109; Thrum 1892
Kīkīhale	ʻili ʻāina	Old section of Honolulu bordered by Maunakea and King Streets to Nuʻuanu Stream, depicted on reconstructed 1810 map of Honolulu. Said to be named for the daughter of Chief Kou. Land awards: LCAw 3 to Kaapuiki for Keomailani, 0.89 acre. Also LCAw 36 to Napoeha, 100 to Hoomoeapule, 128B to Kekoa, 136 & 137 to Maalahia, 606 to Haula for Kaou, 686 to Naeole, 1043 to Kamakahonu, 9003 to Kahoomana. Also RPG 25, 39, 50, 55, 1755, 3164. PEM: not translated.	Pukui et al. 1974:110; Metcalf 1847; Monsarrat 1897
Kou	Likely once an ʻili	Kou is said to be the original place name for the Honolulu Harbor area, "…including the area from Nuʻuanu Avenue to Alakea Street and from Hotel Street to the sea, noted for kōnane (ancient game resembling checkers) and for ulu maika (bowling), and said to be named for the executive officer of Chief Kākuhihewa of Oʻahu" (Pukui et al. 1974:117–118). PEM: kou tree, Cordia subcordata.	Pukui et al 1974:117-118; Soehren 2010

Table 1. (continued)

Place Name	Description	Notes	Sources
Kuloloia	kahakai, beach	Former beach near the shoreline edge of Fort Street, extending to Kaka‘ako (Pukui et al. 1974:121) said to be the home of several chiefesses related to Ka‘ahumanu, Keopūolani, and Kalaniakua.	Rockwood and Barrère 1959
Kūwili	‘ili kū	Coastal section to west of Nu‘uanu Stream. Returned by Kamāmalu, retained by the Gov. as Fort Land at the Māhele. Land Awards: LCAw 12FL to Kahoowahaloa, 0.87 acre. Also LCAw 9FK, 27FL, 61FL, 63FL, 64FL, 65FL, 66FL, 76FL, 77FL, 80FL, 81FL, 82FL, 83FL, 591, 826, 1089, 1284, 2333, 2440B. PEM: lit, stand swirling.	Soehren 2010; MB 6,215; IN 46,724; Metcalf 1847
Māmala	kū‘ono, bay	Area extending from Honolulu Harbor to Pearl Harbor named for a shark woman who lived at the entrance of Honolulu Harbor and often played kōnane. She left her shark husband, ‘Ouha, for Honoka‘upu. ‘Ouha then became the shark god of Waikīkī and of Koko Head (Pukui et al. 1974: 106). In the song Nā ka Pueo, the Pueo-kahi was a ship named for a place near Hāna, Maui, named for a pueo kupua (owl demigod). Honolulu harbor was called Māmala.	Pukui et al. 1974: 106; Rockwood and Barrère 1959; USGS 1953
Nihoa	land section	Nihoa was the waterfront area in downtown Honolulu formerly owned by Ka‘ahumanu and named by her in honor of her visit to Nihoa Island (‘Ī‘ī 1959:166). This area had a sandy beach where natives could land and pull up their canoes on shore. In the early nineteenth century, Western ships were also beached here for mooring and repair. In the time of Kamehameha I, “the shore at Nihoa . . . was a shipyard where foreign style vessels were being made by Hawaiians under the tutelage of whites” (‘Ī‘ī 1959:64). PEM: firmly set.	Pukui et al. 1974; Soehren 2010; MB 165; Rockwood and Barrère 1959
Nu‘uanu	kahawai, stream	Stream rises at about 1100 ft. elevation, is dammed at 1038 ft. to form Nu‘uanu Reservoir 4, then flows along eastern side of Nu‘uanu Valley to Honolulu Harbor. PEM: cool height	Soehren 2010; USGS 1953

Table 1. (continued)

Place Name	Description	Notes	Sources
Pākākā alt. Honolulu Fort	heiau, fortress, canoe landing	Pākāka was the name of a coastal point, a canoe landing, the name of a wharf built off the point in 1827, and the name of a heiau previously built on the point. In 1816, the Honolulu Fort (pāpū) called Kekuanohu, was also built in this area. In 1857 the fort was torn down and the building materials used to create a retaining wall (Pukui et al. 1974:30), Site 66. Honolulu... The famous temple of Honolulu was Pākāka, located at the foot of Fort Street. (McAllister 1933). PEM: to skim, as stones over water.	Pukui et al. 1974:175; Soehren 2010; McAllister 1933:8
Pamoo	land section, poss. moʻo		Metcalf 1847
Pulakolaho, alt. Pualoalo	ʻili kū	Adjacent to Honolulu Harbor near Custom House. Land Awards: Retained by I. Piikoi at the Māhele, LCAw 10605:1, 12.02 acres. Also LCAw 10613 to A. Paki, 809 to Keoahu, 2 to Robert Kilday. PEM: short for pua aloalo, hibiscus flower.	Soehren 2010; MB 17; IN 727; Metcalf 1847
Waikahalulu	ʻili kū	Located north of Honolulu Harbor; the seaward portion of Waikahalulu was awarded to the Government by LCAw 11,219 as submerged land, but disputed by Queen Kalama. See Honolulu Harbor and Waikahalulu Reef. Land Awards: Retained by H. Kalama at the Māhele, LCAw 4452:11, 3.21 acres. Also LCAw 727, 935, 942, 1154, 1155, 1161, 1162, 1163, 1286, 1612, 1726, 9119. Claims no. 1348 by Kapohaku, 1610 by Kaiai, 1611 by Kahiwa were not awarded. PEM: lit., water [of] the roaring.	Alexander 1885; 1908:19; Soehren 2010; Metcalf 1847

Abbreviations used: AB: Awards Book, Land Commission; GR: Index of All Grants, Part Index; IN: Indices of Awards, Land Commission; FR: Foreign Register, Land Commission; FT: Foreign Testimony, Land Commission; LCAw: Land Commission Award; MB: Māhele Book; NR: Native Register, Land Commission; NT: Native Testimony, Land Commission; PEM: Pukui, et al. 1974; RM: Registered Map; RPG: Royal Patent Grant No.

Honolulu

This term would eventually be used to refer to the town and city of Honolulu. It likely originally meant "protected bay" referring primarily to the harbor (Pukui et al. 1974:49–50).

> Hoʻā ke ahi, kōʻala ke ola. O na hale wale no ka i Honolulu; o ka ʻai a me ka iʻa i Nuʻuanu.
>
> *Light the fire for there is life-giving substance. Only the houses stand in Honolulu; the vegetable food and meat are in Nuʻuanu.*

An expression of affection for Nuʻuanu. In olden days, much of the taro lands were found in Nuʻuanu, which supplied Honolulu with *poi*, taro greens, *ʻoʻopu*, and freshwater shrimp. So it is said that only houses stand in Honolulu. Food comes from Nuʻuanu. (Pukui 1983:109)

Ka lā ikiiki o Honolulu.

The intensely warm days of Honolulu.

People from the country often claim that Honolulu is excessively warm. (Pukui 1983:154)

Ka ua Kukalahale o Honolulu.

The Kukalahale rain of Honolulu.

The rain that announces itself to the homes by the pattering it makes on the roofs as it falls. Often mentioned in songs. (Pukui 1983:170)

Kou

This term may be an older name for the harbor area. Kou refers to a native wood (*Cordia subcordata*), used for cups, dishes, and calabashes (Pukui and Elbert 1986:167).

Hui aku na maka i Kou.

The faces will meet in Kou.

We will all meet there. Kou (now central Honolulu) was the place where the chiefs played games, and people came from everywhere to watch. (Pukui 1983:120)

Hāhā pōʻele ka pāpaʻi o Kou.

The crabs of Kou are groped for in the dark.

Applied to one who goes groping in the dark. The chiefs held *kōnane* and other games at the shore of Kou (now central Honolulu), and people came from everywhere to watch. Very often they remained until it was too dark to see and had to grope for their companions. (Pukui 1983:50–51)

Ke awa laʻi lulu o Kou.

The peaceful harbor of Kou.

Honolulu Harbor (Pukui 1983:182)

Ola ke awa o Kou i ka ua Waʻahila.

Life comes to the harbor of Kou because of the Waʻahila rain.

It is the rain of Nuʻuanu that gives water to Kou (central Honolulu). Pukui (1983:272)

Māmala

Mālama refers to the entrance to Honolulu Harbor that was named for a shark goddess.

He kai hele kohana ko Māmala.

A sea for going naked is at Māmala.

The entrance to Honolulu Harbor was known as Māmala. In time of war the people took off their clothes and traveled along the reef to avoid meeting the enemy on land. Pukui (1983:74)

Ka nuku o Māmala.

The mouth of Māmala.

The entrance to Honolulu Harbor, named for a shark goddess who once lived in the vicinity. (Pukui 1983:163)

Ke kai ʻau umauma o Māmala.

The sea of Māmala, where one swims at the surface.

Māmala is the entrance to Honolulu Harbor. (Pukui 1983:185)

Na ʻale kuehu o Māmala.

The billows of Māmala with wind-blown sprays.

Māmala is the entrance to Honolulu Harbor. (Pukui 1983:185)

Ka iʻa maunu lima o Kuloloia.

The hand-baited fish of Kuloloia.

Small eels (*pūhi ʻōilo*) that were caught by placing bait on the open palm of one hand with the fingers held wide apart. When the eels came up to take the bait, the fingers were clenched into a tight fist, grabbing the eels tightly by the heads. (Pukui 1983:149)

Makani, Ua, and Au (Wind, Rain, and Weather)

With their lives closely connected to the natural environment and physical surroundings, Hawaiian winds and rains were individually named and associated with a specific place, region or island. These wind and rain names can offer further insight to cultural traditions and beliefs of the area.

There are several notable winds and rains named within Honolulu. Kūkala-hale is a wind of Honolulu (Pukui and Elbert 1986). The on-shore sea breeze blowing through Māmala and Honolulu is known as ʻAoʻaoa or ʻAoa (Nakuina 1992:54; Pukui and Elbert 1971:KR-1). A north wind of Honolulu is named Mooae. Muululu is another wind of Honolulu (Bishop Museum Archives:1342) whose name may be translated as "chilled," or mūʻululū (Pukui and Elbert 1971:236). The Kiʻowao rain comes from uplands "drenching the blossoming plants" (Kamakau 1992:6). Other winds associated with Honolulu are Alaʻeli, Kolo puʻepuʻe or Kō momona (Pukui and Elbert 1986).

The previously mentioned wind Kūkala-hale, is also the name of a rain which is described as announcing "itself to the homes by the pattering it makes on the roofs as it falls" (Pukui 1983:170). A beneficial rain of Mānoa and Nuʻu-anu is Waʻahila which is said to give water to Kou (Pukui 1983:272). Kuiʻilima is also a rain of Honolulu (Pukui and Elbert 1986). Kūkalahale of Honolulu was mentioned in a song called *He Aloha nō ʻO Honolulu* that was written by Lot Kauwe:

Goodbye Honolulu	*He aloha nō ʻo Honolulu*
In the Kūkalahale rain	*I ka ua Kūkalahale*
Māmala, the entrance of Honolulu Harbor	*Ka nuku aʻo Māmala*
Lies behind	*ʻAu aʻe nei mahope*
Ahead	*Kau mai ana mamua*
The shady groves of Lele	*Ka malu ʻulu aʻo Lele*
Lighthouse is always burning	*Kukui ʻaʻā mau*
And not extinguished by the Kauaʻula rain	*Pio ʻole i ke Kauaʻula*

(Kauwe 2011)

Mo‘olelo

Two mo‘olelo are presented below that are relevant to the Honolulu Harbor area. These include the story of ‘Ai‘ai, who established the practice of building fishing ko‘a, and an account of Hi‘iaka's travels through the area.

The Story of ‘Ai‘ai

An insightful mo‘olelo referring to Kaka‘ako is found within "The Story of ‘Ai‘ai," the son of the fish god of Hawai‘i, Ku‘ula. While there may be several versions of the same mo‘olelo, the following summary is based on M.K. Nakuina's version of the story which was translated by Moke Manu and can be found in Thomas G. Thrum's *Hawaiian Folk Tales* (Thrum 1998).

Presiding over and controlling the fish of the sea, Ku‘ula had a human body and had miraculous power (mana kupua) over fish and was known to be able to make fish appear at the sounding of his call (Thrum 1998:215). His son, Aiai-a-Ku-ula (Aiai of Ku‘ula), is noted as establishing fishing shrines on land, where fishermen were obliged to offer their first catch in reverence of the powerful demi-god, Ku‘ula (Thrum 1998:227). Traveling throughout the Hawaiian Islands erecting ko‘a ‘āina ‘aumakua (fishing shrines), ‘Ai‘ai made his way to Kālia and Kaka‘ako. There, he befriended a man named Apua and lived with him in this district governed by the chief named Kou, a very skilled aku fisherman and generous chief, whose territory extended from Māmala to Moanalua, including Pākākā at the sea of Kuloloia, as well as the place called Ulukua, which is now the lighthouse location of Honolulu Harbor (Thrum 1998:247).

One day while living with Apua in Kaka‘ako, ‘Ai‘ai meandered to the shores of Kuloloia, then to Pākākā and Kapapoko, and met a young woman named Puiwa who was gathering limu and fishing for crabs. Puiwa, acting in a very forward way, asked ‘Ai‘ai to marry her and the two were married and had a son whom ‘Ai‘ai named Puniaiki. One day while ‘Ai‘ai and his wife were catching ‘o‘opu and ‘ōpae in a brook, Puniaiki, who was sitting upon the bank of the stream, began to cry. Advising his wife to attend to the child's cries, Puiwa saucily responded, enraging ‘Ai‘ai. Calling upon his powerful ancestors, ‘Ai‘ai manifested a dark cloud which created heavy rains that flooded the stream, sweeping the ‘o‘opu, ‘ōpae, and Puniaiki toward the sea. Downstream, the daughter of chief Kikihale found a very large ‘o‘opu which she watered and put in a calabash to care for as a pet. Seeing the fish being taken out of the water, ‘Ai‘ai recognized that his child had changed from his human form to that of an ‘o‘opu. Raised as an ‘o‘opu, Puniaiki developed into a human child and went on to marry the chief's daughter, and continued to establish fishing ko‘a, with the Kou stone for Honolulu and Kaumakapili.

Ka‘ākaukukui

The area of Ka‘ākaukukui associated with Honolulu Harbor is mentioned in the legend of Hi‘iaka, one of the beloved sisters of the Hawaiian volcano goddess, Pele. Traveling around O‘ahu on land, Hi‘iaka and her companions decided to voyage from Pu‘uloa (Pearl Harbor) to Waikīkī by canoe. At Pu‘uloa, Hi‘iaka met a party who were planning on traveling on to the house of the chiefess Pele‘ula in Waikīkī. Hi‘iaka recited a chant, telling the people that, although they were going by land and she was going by sea, they would meet again in Kou.

One portion of the chant refers to Ka‘ākaukukui as the "pool," possibly referencing the salt ponds of the area (Ho‘oulumāhiehie 2006a:277; Ho‘oulumāhiehie 2006b:297):

And what of me, O Honoka‘upu, my love	*A pehea lā au, e Honoka‘upu, ku‘u aloha*
Upon the crest of the surf at Uhi and ‘Oā	*I ka welelau nalu kai o Uhi, o ‘Ōa*

Eyes in the living realm (night) of oblivion	*ʻO nā makai ke ao (pō) o poina*
Where am I, O my love	*Ma hea lā wau, e ke aloha lā*
Kou is the coral flat	*ʻO Kou ka papa*
Kaʻākaukukui is the pool	*ʻO Kaʻākaukukui ka loko*
Some ʻalamihi indeed	*ʻO ka ʻalamihi aʻe nō*
Wait all day until night	*ʻO ka lā a pō iho*
Friends shall meet in Kou.	*Hui aku i Kou nā maka*.
And what of me, O Honokaʻupu, my love	*A pehea lā au, e Honokaʻupu, kuʻu aloha*
Upon the crest of the surf at Uhi and ʻOā	*I ka welelau nalu kai o Uhi, o ʻŌa*
Yes in the living realm (night) of oblivion	*ʻO nā makai ke ao (pō) o poina*
Where am I, O my love	*Ma hea lā wau, e ke aloha lā*
Kou is the coral flat	*ʻO Kou ka papa*
Kaʻākaukukui is the pool	*ʻO Kaʻākaukukui ka loko*
Some ʻalamihi indeed	*ʻO ka ʻalamihi aʻe nō*
Wait all day until night	*ʻO ka lā a pō iho*
Friends shall meet in Kou.	*Hui aku i Kou nā maka*.

Historic Honolulu

Sources of information that help to reconstruct the history of coastal Honolulu during the historic era include historic maps, drawings, photographs, unpublished historic documents (e.g., land testimonies), and accounts from both Hawaiians and European voyagers. These can be sorted into three periods: the early 19th century until about 1840, the mid-19th century between 1840 and 1870; and the late 19th century. During the earliest interval, Honolulu and its harbor retained much of the traditional Hawaiian settlement pattern but with a few introduced features (such as Fort Honolulu). Mid-century Honolulu was a time of substantial change, with the Māhele and conversion of land ownership to fee simple. European and American residents of Hawaiʻi were awarded property or purchased lots soon after this division of land. The coastline was the focus of considerable building and dredging of the reef and passage into the harbor proper. Finally, in the late 19th century, Honolulu became a fully urban city with streets and other infrastructure, such as piers, that are still recognizable today.

Early 19th Century Accounts and Maps

As Fitzpatrick (1986) noted, in the early 19th century Honolulu Harbor and the nearby coastal settlement did not resemble the semi-urbanized town that it would become by the middle of the century. The Russian explorer, Otto von Kotzebue was apparently the first European visitor to map south Oʻahu including Honolulu Harbor, the nearby houses, and a variety of production features such as fields, fishponds, and salt ponds. The original harbor was quite small, narrow, and curved, fed by water from Nuʻuanu Stream. With the development of regular trade and when Kamehameha I moved the royal residence to Honolulu, the harbor took on increasing importance as fresh food and water needed to be replenished. Piers or wharves also became important infrastructure to support the sandalwood trade, including trade with China, as well as the whaling industry.

Historical reconstructions suggest the harbor was about 200 ft. wide, and nearly 4,000 ft. long. Portions of the coral reef were exposed at low tide and at its deepest it may have extended to 30 ft.

(HDOT 2008). Western ships were unable to sail into the harbor because the passage created by the outflow of Nuʻuanu Stream was narrow. Alexander (1908:13) stated that when Otto von Kotzebue visited the harbor in 1815, his ship was towed in by eight double-hulled canoes. By 1809, Kamehameha I moved his capital to Honolulu, and with that a number of Hawaiian and western style buildings were established, for housing, commercial activity, and for storage.

There are a few renderings based on original maps and later descriptions by Native Hawaiians for Honolulu in the first two decades of the 19th century. The first of these are sketch maps of Honolulu ca. 1810, one developed by Paul Rockwood based on descriptions by the noted Hawaiian historian John Papa ʻĪʻī (Figure 5). The plan view outline of the harbor is shown along with a number of named areas, houses and other structures, along with fields. At the south end of the harbor was Pākākā Point, where there was a large heiau, later to be replaced by the construction of Fort Honolulu. A small wharf was in this area. A number of streets are already in place by this time including Maunakea Street near the project area.

The Rockwood map also shows a shipyard on the west side of the harbor and a house complex associated with Francisco de Paula Marin, a Spaniard who arrived in the Hawaiian Islands in 1793 or 1794 and who quickly became a confidante of Kamehameha. He recorded in his journal, "…in the end of 1809 and beginning of 1810 I was employed building a stone house for the King" (Gast and Conrad 1973:200).

Marin notes this was the first stone structure in Honolulu, which at that time was:

> …a village of several hundred native dwellings centered around the grass houses of Kamehameha on Pakaka Point near the foot of what is now Fort Street. Of the 60 white residents on Oahu, nearly all lived in the village, and many were in the service of the king. (Gast and Conrad 1973:29)

There is a second reconstruction of Honolulu from this same time (Klieger 1997) that shows much more detail, such as a canoe landing and a complex that included Pākākā Heiau located just west of the fort (Figure 6). The "wharf" appears to be a rocky landing on the southwest edge of the harbor.

In 1816 the Russian commander Otto von Kotzebue visited the Hawaiian Islands over a two-year period. He produced a number of documented observations:

The harbor did not appear as a sheltered basin but rather opened directly to the ocean through a reef that had been cut by Nuʻuanu Stream, on the western end of the harbor. Kotzebue's map depicts major features of the landscape, but also a number of cultural features such as fishponds, what appear to be ponded fields as well as dryland fields, salt pans, Fort Honolulu, and what appear to be trails.

Kotzebue describes this area (as translated in Fitzpatrick 1986:50):

> Close to the shore you see verdant vallies adorned with palm and banana-trees, under which the inhabitations of the savages lie scattered; behind this, the land gradually rises, all the hills are covered with a smiling verdure, and bear the stamp of industry.

Kotzebue goes on to say (as translated in Fitzpatrick 1986:51):

> Artificial taro fields, which may justly be called taro lakes, cited my attention. Each of them forms a regular square of 160 feet, and is enclosed with stone all round like our basins. This field, or rather pond….contained two feet of water… of which the taro is planted, as it does not thrive except in such a wet situation… The fields are gradually lower, and the same water which led from an elevated spring or rivulet, can water a large plantation.

He also notes:

> In the spaces between fields, which are from three to six feet broad, there are very pleasant shady avenues, and on both sides banana and sugar-canes are planted. The taro fields afford another advantage; for the fish which are caught…thrive admirably when put into them. (Fitzpatrick 1986:51)

And as for houses, Kotzebue went on to note:

> These are scattered in a seemingly random manner and connected by meandering paths, but all in a band that parallels the shoreline. There was the stone house of Francisco Paula de Marin and a fort. (Fitzpatrick 1986: 51)

Fort Honolulu is described by Kotzebue (in Fitzpatrick 1986:52) as:

> The fort in the back-ground of the harbor of Hanarura [Honolulu], which Mr. Young has erected…is merely a dry brick wall, without bastions or towers, and without ditches…The fort itself is nothing more than a square, provided with embrasures; the walls are two fathoms high, made of coral stone.

Kotzebue also described fishponds, one of which, probably Kawa Fishpond, was located on the northwest side of Honolulu Harbor:

> In the same manner as they here keep river-fish, they manage in the sea with sea-fish, where they sometimes take advantage of the outward coral reefs, and draw from them to the short a wall of coral stone, which makes, even in the sea, good reservoirs for fish. Such a reservoir costs much labour, but not so much skill as the taro field, where both are united. (Fitzpatrick 1986: 51)

Along with the fort, Honolulu had a few other non-traditional structures and features, including the stone house reportedly occupied by Francisco Paula de Marin, often referred to as “Manini.” Marin’s residence was located just south of the current project area. A map by Tabulevich (1819) displays the home of Marin, shown as a white stone house, in what is now downtown Honolulu (map not reproduced here because of copyright). There is another European-style building that sits on the large wharf adjacent to Fort Honolulu. This map, like others of this time period, continues to show traditional Hawaiian housing dispersed across the Honolulu coast and a bit inland.

In 1819, a French ship commanded by de Freycinet arrived in the Hawaiian Islands whereupon he observed:

> The port of Onorourou [Honolulu], generally frequented today by all the European vessels that come to the islands, is without doubt the most favorable location with respect to shelter, commerce, and resources for the supply of ships. The town of Onorourou is located on a large, flat plain. It is on the shores of a bay of the same name. The houses, similar to the most part to those of Owhyhi [Hawai‘i] and of Mowi [Maui], are however interspersed with a certain number of houses built of stone that belong for the most part to Europeans or to Anglo-Americans. (de Freycinet 1978:42)

The death of King Liholiho and his wife Kamāmalu in 1824 while visiting London resulted in the next series of maps of Honolulu by Charles Robert Malden, produced in 1825 (Figure 7). Malden’s map of Honolulu provides an accurate scale to cultural features on the southern O‘ahu coast (Fitzpatrick 1986:60).

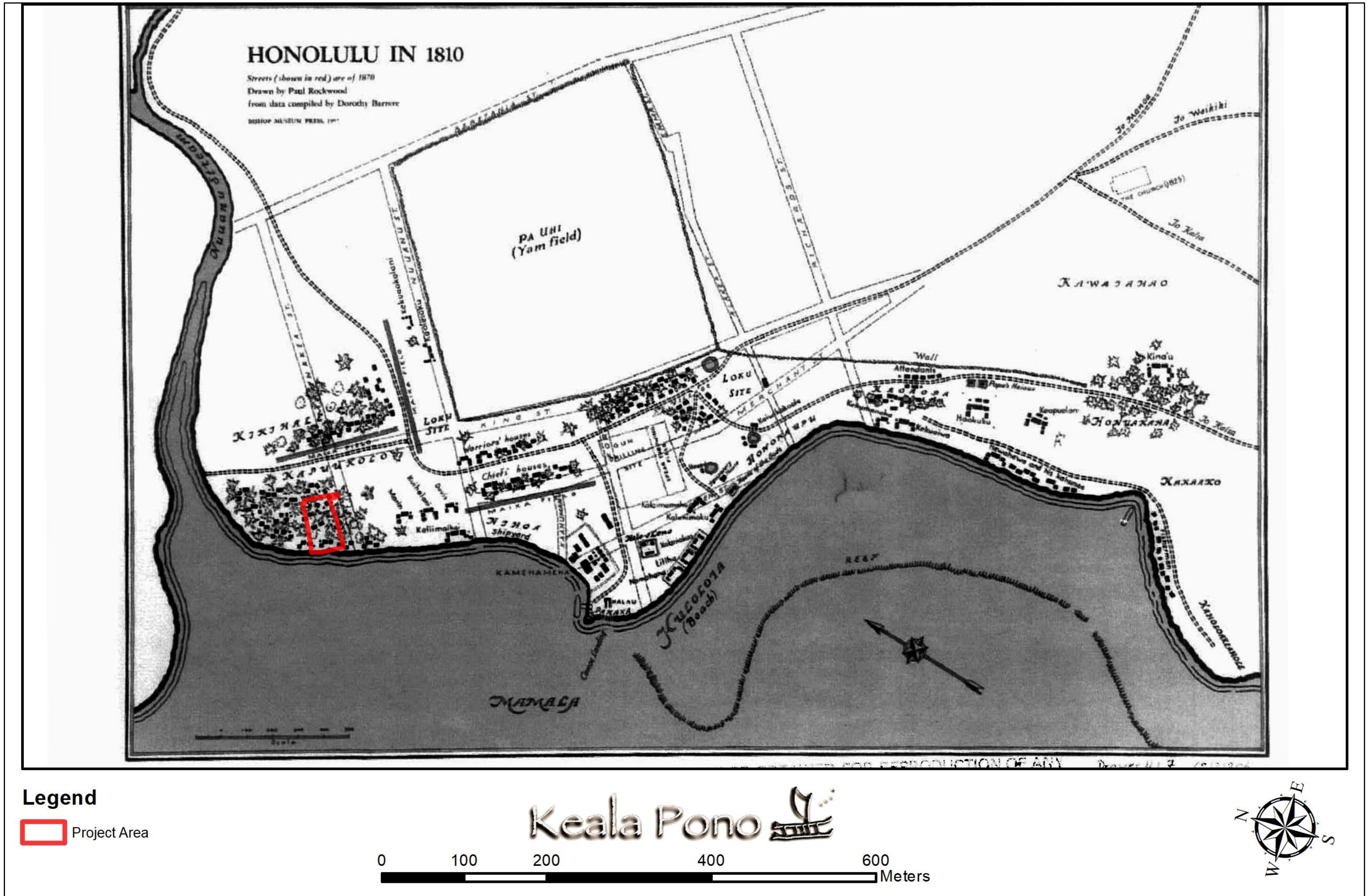


Figure 5. Early map of Honolulu, reconstructed from recollections by John Papa ʻĪʻī (Rockwood and Barrère 1959). Note that streets had been established at this time, there were locations set aside for housing chiefs and their supporters, along with a cluster of houses near the mouth of Nuʻuanu Stream within a grove of coconut palms.

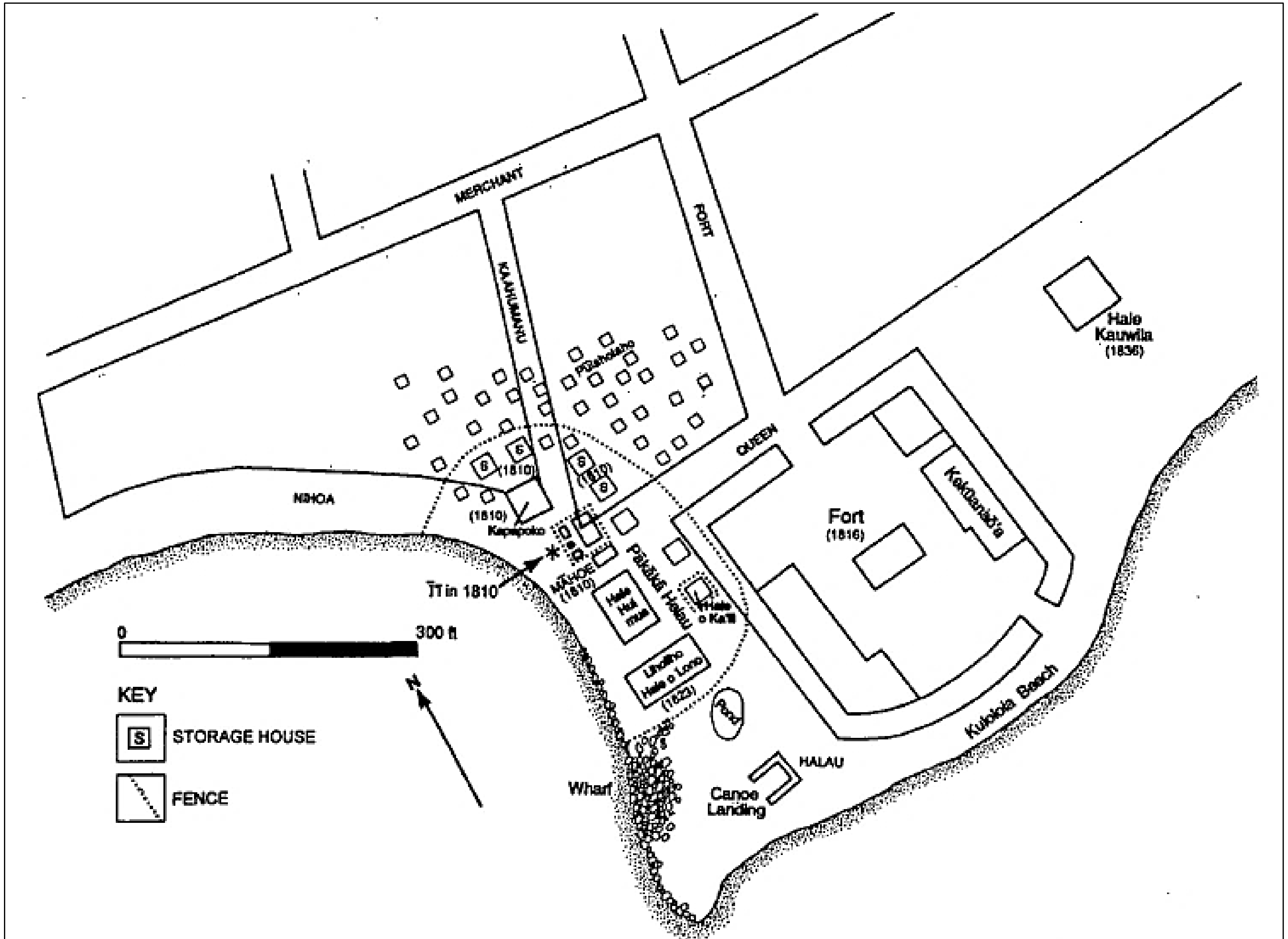


Figure 6. Reconstruction of Honolulu Harbor and adjacent areas for 1810 based on recollections by ʻĪʻī, supplemented with other historical sources (Klieger 1997). The project area is off the map to the left.

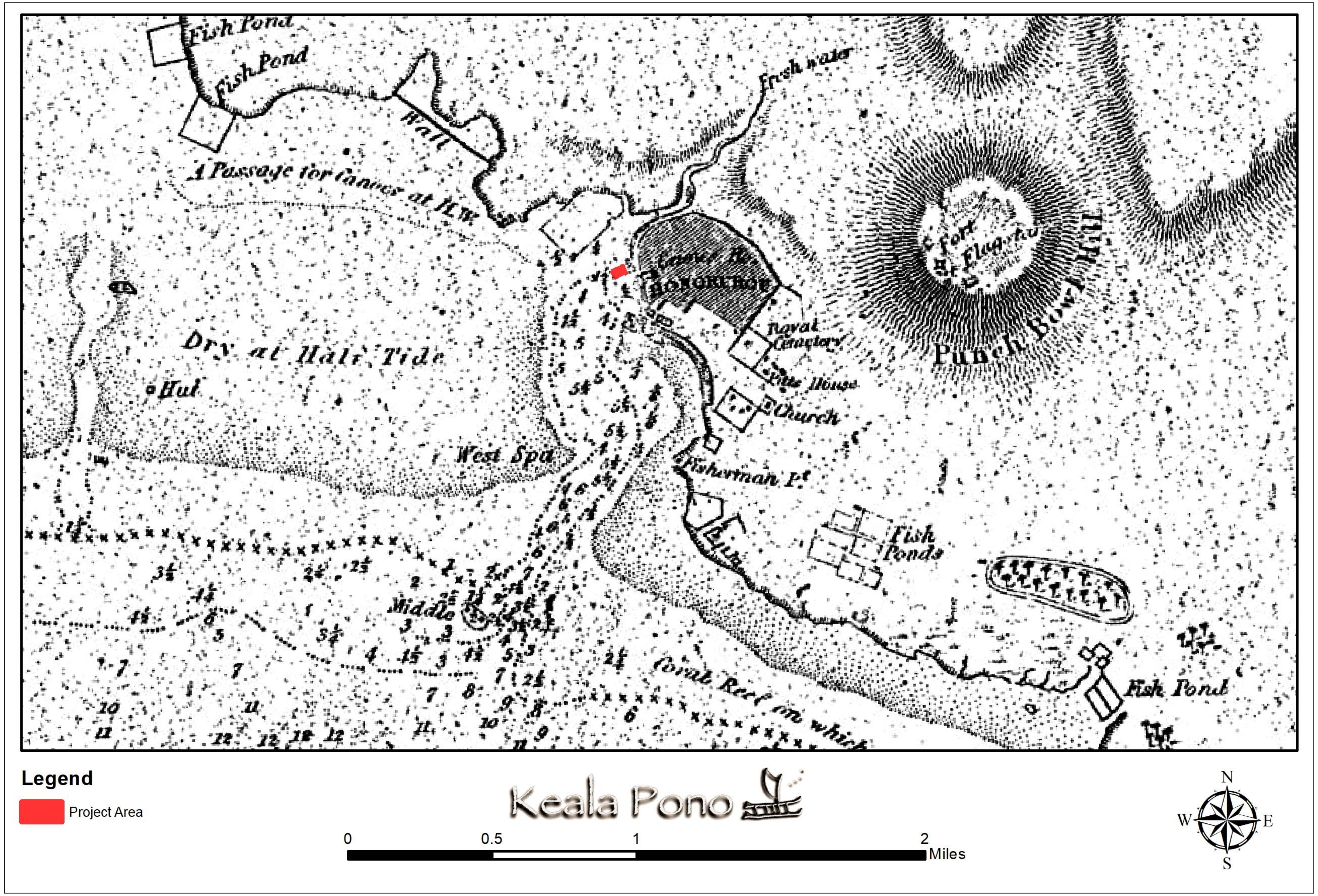


Figure 7. South Coast of Woahoo and Honoruru Harbour, Sandwich Islands (Malden 1825). Detailed map of Honolulu Harbor and passage, along with major buildings, Fort Honolulu, and Kawa Fishpond.

This page left intentionally blank.

Malden writes of the harbor (in Fitzpatrick 1986:62):

> This part of the reef is covered at half flood; at low water it is dry, and is then generally crowded with the lower orders of the Natives, who get from it a considerable part of their daily subsistence, consisting of the small fish left in pools, crabs, shellfish…

Other traditional features noted include a number of "morai" (heiau), Kawa Fishpond, and other ponds located along the shore to the north and east. More recent features mapped were the fort, an adjacent wharf and house, and various homes and commercial buildings. Of these it is noted that:

> …there are several good stone dwellings built by Europeans, and timber houses, the frames of which have been brought from America and finished here…there are, however, two or three tolerably regular streets and what may be called the public place, where Kariamoku's house is situated, and near it the Christian church. (Fitzpatrick 1986:62)

An 1821 painting attributed to C.E. Bensell shows the harbor area (Figure 8), although aspects of the drawing are exaggerated, for example the placement of Honolulu Harbor and Fort Honolulu (Forbes 1992:97–98). There are at least two piers or wharves identified in this painting, the first adjacent to the fort, and the other located within Honolulu Harbor proper. Two sailing vessels are shown at anchor within the harbor and traditional canoes can also be seen. Development remains scattered across the landscape with most homes in the traditional style and just a few western-style buildings.

By 1828, Honolulu Harbor had become a defining feature for the area. Captain Jacobus Boelen describes the harbor and some landmarks that can be seen from the water:

> The port is formed by a steep, hard coral-and-sand bank extending parallel to the coast, here almost east and west, and on which a steady heavy surf beats with even more force when there is a SW or southerly wind. Between the bank and the coast, nature has formed a basin that in its greatest length stretches north-south; this is the harbor of Honoruru, which means safe harbor. It is a very appropriate name, for the reef, which at full tide is for the greater part above water and at half tide completely so, encloses the port and protects the ships as well as if they were in a closed dock. The shore around this harbor forms two bights, between which is a small cape that I shall call Morai Point because a morai [Pākākā Heiau] can be seen on it. From Morai Point a shoal extends about a cable's length from the shore, dividing the harbor into two oval-shaped basins, of which I shall call the northern one the inner roadstead, and the southern one the outer roadstead. The south side of the latter is prolonged in direction of almost SW by S and NE by N into a channel over the bar to the sea, forming the entrance to Honoruru harbor. The east corner of the mouth of this channel can be approximately sounded by bringing Diamond-hill in the direction of South 57 [degrees] East, dev.c. on a distance of about a mile and a half. (Boelen 1988:43)

Drawings of Honolulu (Figures 9 and 10) reinforce this view. Two anonymous drawings from 1834 showing different perspectives place Kawaiahaʻo Church among the center of town, "intermingling and contrasting with the larger residences of the *aliʻi*" (Forbes 1992:106). More western style houses were built by this time, along with residences that combined western frames with deeply sloping roofs, reminiscent of traditional Hawaiian forms.

An 1839 painting by Francois-Edmond Paris, *Honolulu, Capital of Oahu, View of the Harbor*, shows Honolulu Fort, what is now Queen and Fort Streets to the left, along with a mixture of western style buildings alongside the traditional thatched houses (Figure 11).

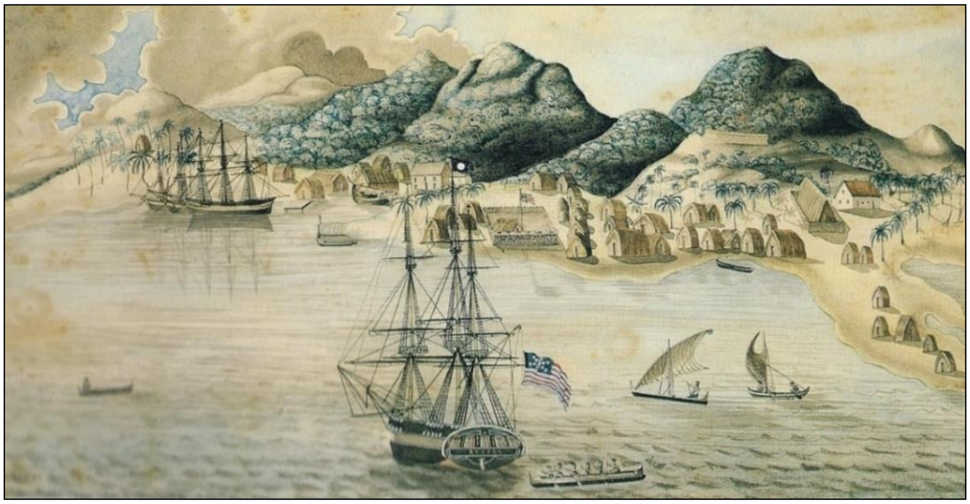


Figure 8. View of the Island of Woahoo in the Pacific, attributed to C.E. Bensell, 1821, watercolor, Peabody Museum of Salem (reprinted in Forbes 1992:97).

Figure 9. Town of Honolulu, Island of Woahoo, Sandwich Islands, from Under the Punchbowl Hill, 1834 (reprinted in Forbes 1992:106).

Figure 10. Honolulu from the Anchorage outside the Reef, Island of Woahoo, Anonymous, 1834, pen and ink wash over pencil, B.P. Bishop Museum (reprinted in Forbes 1992:107).

Figure 11. Honolulu, Capital of Oahu, View of the Harbor, 1839 (Paris 1839).

In 1840–41, a scientific expedition to Hawai‘i was organized by the United States government, later published by Wilkes (1856), the commander of the expedition. Wilkes's observations (in Fitzpatrick 1986:69) regarding Honolulu describe it as:

> …very conspicuous from the sea, and has more of the appearance of a civilized land, with its churches and spires than any other island in Polynesia….The fort, with its numerous embrasures, and the shipping, lying in the contracted reef-harbour, give an air of importance, that could hardly be expected in a Polynesian island or harbor.

Regarding the harbor area, Wilkes noted (in Fitzpatrick 1986:69):

> The place showed much stir of business, owing principally to the work of repairing vessels, and the attendance on them by the natives. The landing is upon a small wharf, erected on piles; and these appeared sufficient accommodation for the vessels in the harbour at this time. The number was nine.

While in Honolulu, Wilkes was asked by the king, Kauikeaouli (Kamehameha III) to survey the harbor. At this time Kamehameha noted that the water in the harbor had become more shallow, due in part to quarrying of coral (Fitzpatrick 1986:72). As it turned out, the source of the problem was not the removal of coral but sedimentation from Nu‘uanu Stream as it emptied into the harbor area.

Honolulu Harbor was first dredged in 1840, and the material was used as fill along the coast. Through the 1800s, the harbor was surveyed to determine its depths, which at that time prevented large ships from entering. Siltation from Nu‘uanu Stream continued to plague the harbor from the early to mid-19th century, and foreign vessels often dumped ballast and trash into the harbor, adding to the problem. In 1848 a breakwater was built at Emme's Wharf, fronting Maunakea Street near the project area, to cut off the western portion of the harbor from the mouth of Nu‘uanu Stream (HDOT 2008).

Mid-19th Century and the Māhele

Traditionally in Hawaiʻi, land title was held by the aliʻi nui (paramount chief), and land use rights were assigned to aliʻi and konohiki, who in turn provided parcels of land to the makaʻāinana families. Konohiki managed the ahupuaʻa lands; ʻili, smaller land divisions, within the konohiki-controlled ahupuaʻa. The makaʻāinana were expected to provide a portion of agricultural output to the konohiki and/or other chiefs from working their assigned lands. These traditional land titles assist in identifying previous land claims in the project area.

Drastic modification of the traditional Hawaiian land tenure system, one in which all titles were vested in the king, began with the appointment of the Board of Commissioners to Quiet Land Titles by Kamehameha III in 1845. The Māhele, or the official dividing of the lands, took place during the first few months of 1848 when the king and his senior chiefs chose their interests in the lands of the Kingdom. This division of land was recorded in the Māhele Book. The King retained substantial land holdings as Crown Lands, while approximately the same amount of land was designated as Government Lands. Konohiki Awards were made as lesser chiefs presented their claims before the Land Commission.

The Kuleana Act of 1850 was passed allowing foreigners to obtain land. In addition, citizens could now present claims before the Land Commission for parcels that they were cultivating within the Crown, Government, or Konohiki lands. By 1855 the Land Commission had made visits to all of the islands and had received testimony for about 12,000 land claims. Ultimately, about 10,000 land claims, called kuleana, were awarded to makaʻāinana totaling only about 30,000 acres.

Not surprisingly, the downtown and harbor area of Honolulu had numerous land claims, not only by Hawaiians but by resident Americans and Europeans (Figure 12, Table 2). Nine LCA awards were identified as land claims to the project area. These are LCA 256 awarded to Kulukini, LCA 151 awarded to Nauoo, LCA 2944b to Akoni, LCA 2944 to P.F. Manini (Don Francisco de Paula Marin), LCA 30 ʻāpana 2 awarded to Kahoowaha, the small LCA 2065 awarded to Keo Bolabola, LCA 1039 awarded to Kamanu, LCA 46 granted to Joseph Maughan, and LCA 670 awarded to Pakohana. Māhele records provide few details regarding the land use of these lots, however LCA 46, 256, 670, 1039, and LCA 2944 were house lots. The latter is described as having four homes on the property, which was surrounded by a fence. The LCA had one house that was enclosed by a fence, which had fallen down and was not rebuilt at the time of the Māhele. LCA 670 was enclosed and had nine houses. Pakohana inherited the house lot from her mother in 1836. Joseph Maughan's testimony for LCA 46 states that the land previously belonged to his father-in-law, Mr. Manini (Marin) and was known locally as the cow yard. Mr. Manini gave this land to Maughan in November 1833. The lot is described as having a house and a small yard. LCA 151 was first given to Nauoo by Kamehameha I and Kahoowaha of LCA 30 explains that his parents lived on the land from the time of the Battle of Nuʻuanu and that neighbors built their homes on property that was his.

Due to growth in population and commercial activity many of the LCA parcels awarded during the Māhele were claimed as residences (i.e., houses) or stores. Near the harbor and current project area, a large section of land was awarded to the Spaniard Don Francisco de Paula Marin that was later subdivided and sold. LCA 2944 at the north corner of the project area was also awarded to him.

As trade on the Honolulu waterfront developed, there was a need to build larger wharves in the harbor. This was done by using materials to fill in and cover the shallow reef in the downtown area and parts of the harbor. Additionally, a 2,000 ft. retaining wall was built in the water beyond the reef, and that space to the retaining wall, too, was filled in. The Honolulu Fort was demolished, and its materials were used to build this retaining wall or used as landfill for the extension of land. The initial demolition of the fort and construction of the filled waterfront area, later called the Esplanade, started in 1857. By 1870, the Esplanade encompassed 8.9 ha (22 ac.) of newly created land, from Fort Street to Alakea Street (Thrum 1896).

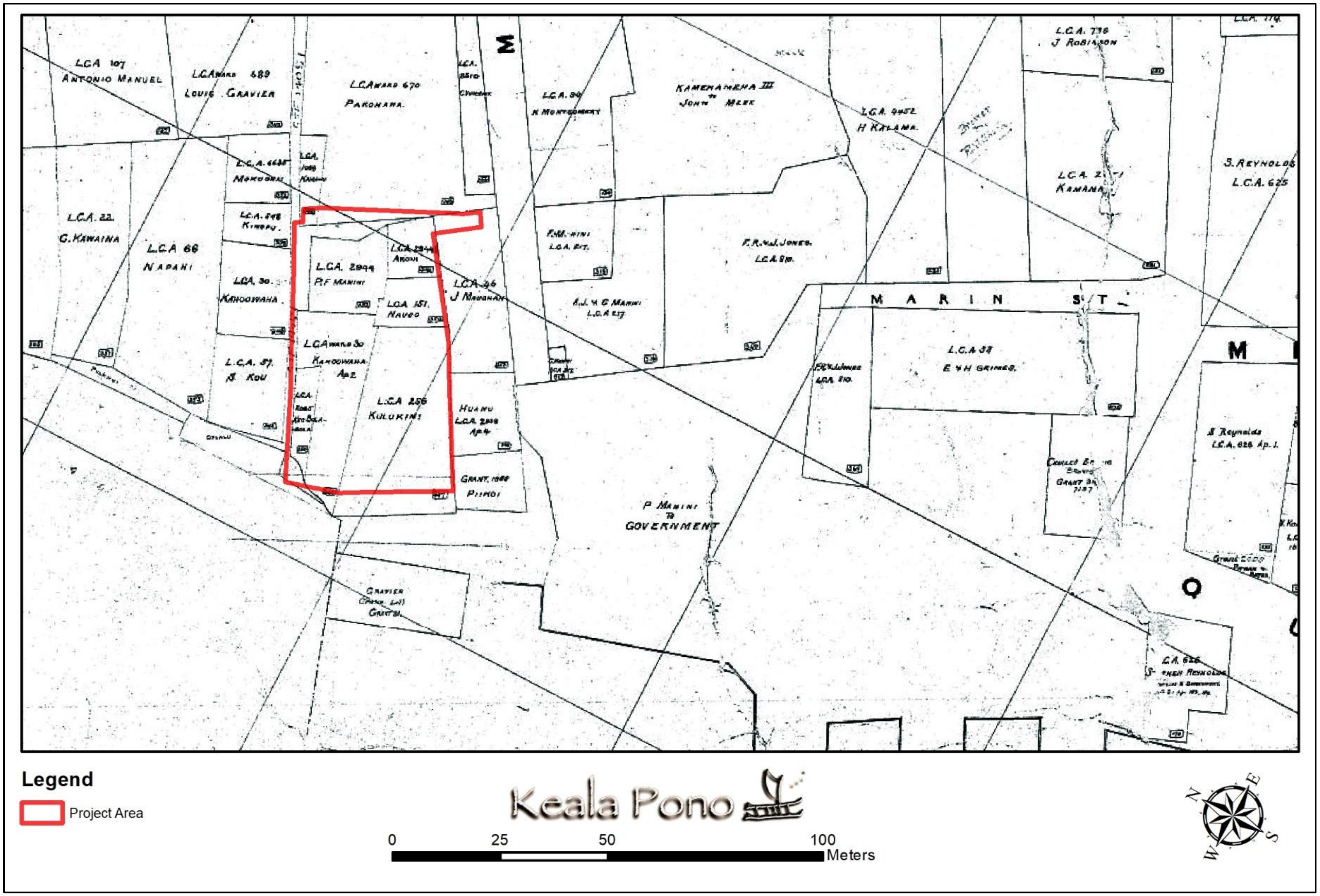


Figure 12. Map of Land Commission Awards near the project area (Lyons 1886).

Table 2. Listing of Land Commission Awards in and Near the Project Area (from Lyons 1886; Awards in Bold are Within the Project Area)

Award No.	Claimant	LCA
8	Kamaha and Pumiula	Yes
16	Eli Jones	Yes
22	G. Kawaina	Yes
30	**Kahoowaha**	**Yes**
33	E & H Grimes	Yes
46	**J. Maughan**	**Yes**
57	S. Kou	Yes
66	Napahi	Yes
81	Gravier	
90	K Montgomery	Yes
107	Antonio Manuel	Yes
114	Paki	Yes
151	**Nauoo**	**Yes**
168	M. Kekuanao	Yes
169	M. Kekuanooa	Yes
186	Victoria Kamalulu	Yes
217	A.J. & G. Manini	Yes
247	William Lunalilo	Yes
256	**Kulukini**	**Yes**
548	Kinopu	Yes
620	S. Reynolds	Yes
625	Stephen Reynolds	Yes
626	Stephen Reynolds	Yes
649	Kaiole	Yes
670	**Pakohana**	**Yes**
689	Louis Gravier	Yes
736	J. Robinson	Yes
784	Robinson?	Yes
810	F.R. & J. Jones	Yes
1039	**Kamanu**	**Yes**

Table 2. (continued)

Award No.	Claimant	LCA
1287	B.F. Snow	
1753	Kalaimoku	
1893	E. H. Allen Sailors Home	
1955	Piikoi	
2008	Pitman &Bates	
2065	**Keo Bola-Bola**	**Yes**
2734	J. Robinson	
2744	J Robinson	
2844	P.F. Manini	Yes
2838	Huanu	Yes
2944	**P.F. Manini**	**Yes**
2944B	**Akoni**	**Yes**
3188	Kawana?	
3122	Seaman's Chapel Lot	Yes
3187	Charles Brenig	
3192	Hawaha	
3222	E. Cuhna	
4452	H. Kalama	Yes
4882	William French	Yes
6685	Mokuohai	
7107?	Charles ???	
8510	C. Vincent	Yes
10806	Kamehameha III	Yes
11219	Government	
11225	Kekualoa	Yes

Late 19th Century Honolulu and Harbor

The second half of the 19th century saw sweeping transformations throughout the landscape of the islands as Hawaiʻi became an international hub of commercial activity. This was especially apparent on the island of Oʻahu in the Honolulu area and on Maui in Lahaina, which became the economic centers of the archipelago. The harbor of Honolulu and nearby coastal area saw increased business as Honolulu itself was rapidly urbanized. This is reflected in the abundance of place names of the era (Table 3). There has been debate regarding the oldest wharf

Table 3. Listing of Historic (Post-Contact Period) Place Names in Coastal Honolulu

Place Name	Description	Notes	Sources
Boat House or Landing	building, pier	Just south of Pier 12.	U.S. Interior Department 1886; Dodge 1887
C. Brewer’s Company, alt. H.B Company	building, commercial		Metcalf 1847; U.S. Interior Department 1886; Dodge 1887
Brewer’s Wharf, alt. Market Wharf or Reynolds’ Wharf	pier	On or near location of Pier 12, also known as Market Wharf and Reynolds’ Wharf.	U.S. Interior Department 1886; Dodge 1887; Wall 1891
Cattle Wharf	pier	Across the harbor from Pier 12.	Wall 1885
Custom House, alt. Old Custom House, Old Refinery	building, government		Metcalf 1847; U.S. Interior Department 1886; Dodge 1887
Custom House Wharf, Old Custom House Wharf	pier	In the vicinity of Pier 15.	Anonymous n.d.
G. Emme’s Shipyard		On or near location of Pier 15 in the vicinity of the project area.	U.S. Interior Department 1886
Esplanade	historic street, downtown Honolulu		
Fish Market	building, commercial	Located adjacent to Fish Market Wharf at the west end of Honolulu Harbor, south of Honolulu Iron Works.	U.S. Interior Department 1886; Dodge 1887
Fish Market Wharf	pier	Labeled as Sorenson’s Wharf on U.S. Interior Department (1886) map; fronting Smith St.	Dodge 1887
Fort Honolulu Pākākā, Honolulu Fort	fortress, canoe landing, heiau		Metcalf 1847; U.S. Interior Department 1886; Pukui et al. 1974:175; Soehren 2010; McAllister 1933:8
Fort Street (see Fort Honolulu)	historic street, downtown Honolulu	Fort Street, principal street, downtown Honolulu. At its foot was Fort Honolulu, built in 1816 and destroyed in 1857. The Hawaiian name Pāpū was adopted in 1850.	Webster 1858; U.S. Interior Department 1886; Dodge 1887; Pukui et al. 1974:30
Hackfeld’s	building, commercial		U.S. Interior Department 1886

Table 3. (continued)

Place Name	Description	Notes	Sources
Honolulu Iron Works	building, industrial	Located west of Nuʻuanu Street and south of Marin Street near Honolulu Harbor.	U.S. Interior Department 1886; Dodge 1887
Ice House	building, commercial		Anonymous n.d.
Judd Wharf (see Pacific Navigation Wharf)	pier	Located between Piers 12 and 15 not far from	
Kekaulike Street	historic street, downtown Honolulu	Aʻala section, Honolulu, named for the mother of David Kawananakoa and Kuhio Kalaniʻanaole. She was the sister of Queen Kapiʻolani. Closest street to the north of the project area.	Pukui et al. 1974: 106; Monsarrat 1897; Wall 1891
Kewalo	land section	Located east of downtown Honolulu, along coast.	Thrum 1892
King Street	historic street, downtown Honolulu	King Street, principal street, Honolulu, (Pukui et al. 1974:112; Monsarrat 1897) named in 1850 for Hawaiian kings. East boundary of the block of the project area.	U.S. Interior Department 1886
Marin Street	historic street, downtown Honolulu	Located north of Honolulu Iron Works and west of Merchant Street.	Dodge 1887
Maunakea Street	historic street, downtown Honolulu	Important street south of the project area, downtown Honolulu, probably named for an Inter-island steamer.	Pukui et al 1974:148; Wall 1891; Monsarrat 1897; U.S. Interior Department 1886
Merchant Street	historic street, downtown Honolulu	Located one block in from former Queen Street (now Ala Moana), near Honolulu Harbor. Named in 1850, also called Kāepa.	Pukui et al. 1974:150; U.S. Interior Department 1886; Dodge 1887
Nuʻuanu River	stream		
Nuʻuanu Street	historic street, downtown Honolulu		Dodge 1887
Oceanic S.S. Company	building, commercial	Located on the west end of the Esplanade, at south end of Fort Street where Fort Honolulu was located.	Wall 1891

Table 3. (continued)

Place Name	Description	Notes	Sources
Oceanic S.S. Company Wharf	pier	Located south of Pier 12.	Wall 1885
Pacific Navigation Company	building, commercial	Located between Piers 12 and 15.	Dodge 1887
Pacific Navigation Company Wharf, alt. Judd Wharf	Pier	Located between Piers 12 and 15.	U.S. Interior Department 1886
Pilot’s Office	building		U.S. Interior Department 1886
Quarantine Island	islet	Honolulu islet on the Kaholaloa Reef in Honolulu Harbor, formerly known as Moku-ʻākulikuli and Mauli-ola, incorporated into Sand Island.	Wall 1885; RM 1382
Queen Street	historic street, downtown Honolulu	Downtown Honolulu named in 1850 for Queen Kālama, wife of Kamehameha II; joins Ala Moana Blvd.	Pukui et al. 1974:207; Webster 1858; Wall 1891; U.S. Interior Department 1886; Dodge 1887
J. Robinson & Co	building, commercial		Webster 1851
Robinson’s Shipyard		On or near Pier 10 and Pier 11.	U.S. Interior Department 1886
Sorenson’s Wharf	pier	Fronting Smith St.	U.S. Interior Department 1886
Sumner’s Place			Wall 1885
Water House	building		Anonymous n.d.

in Honolulu Harbor (see O’Hare et al. 2014), although it appears to be the Nuʻuanu Street Wharf, which originated as a sunken schooner. The schooner had gone underwater in 1825, but in 1837, it was removed with the approval of King Kamehameha III and Chiefess Kīnaʻu to make way for the wharf construction (Thrum 1893; Alexander 1908).

Two lithographs from this period show the waterfront region where the project area is located (Figures 13 and 14). Among the structures illustrated are the Honolulu Fort, the Robinson & Co. shipyards, the French/Charlton Wharf, the Market House, Brewer’s Wharf (today’s Pier 12, roughly two blocks from the project area), the Custom House, and the Ladd & Co. Wharf. Various types of vessels are docked in Honolulu Harbor, and a beach leads to the ocean on the south side of the harbor.

Construction of Honolulu Harbor’s first seawall was completed in 1874. Historic maps from this time period depict the wharves and surrounding area but do not show the seawall (Figure 15). Not everyone was pleased with the seawall. In 1895, the local newspaper *The Independent* expressed its discontent that the seawall was a breeding ground for black crabs, which they portrayed as dirty creatures. Others, however, welcomed the development of the harbor. One author noted that it was a safe and accommodating harbor,

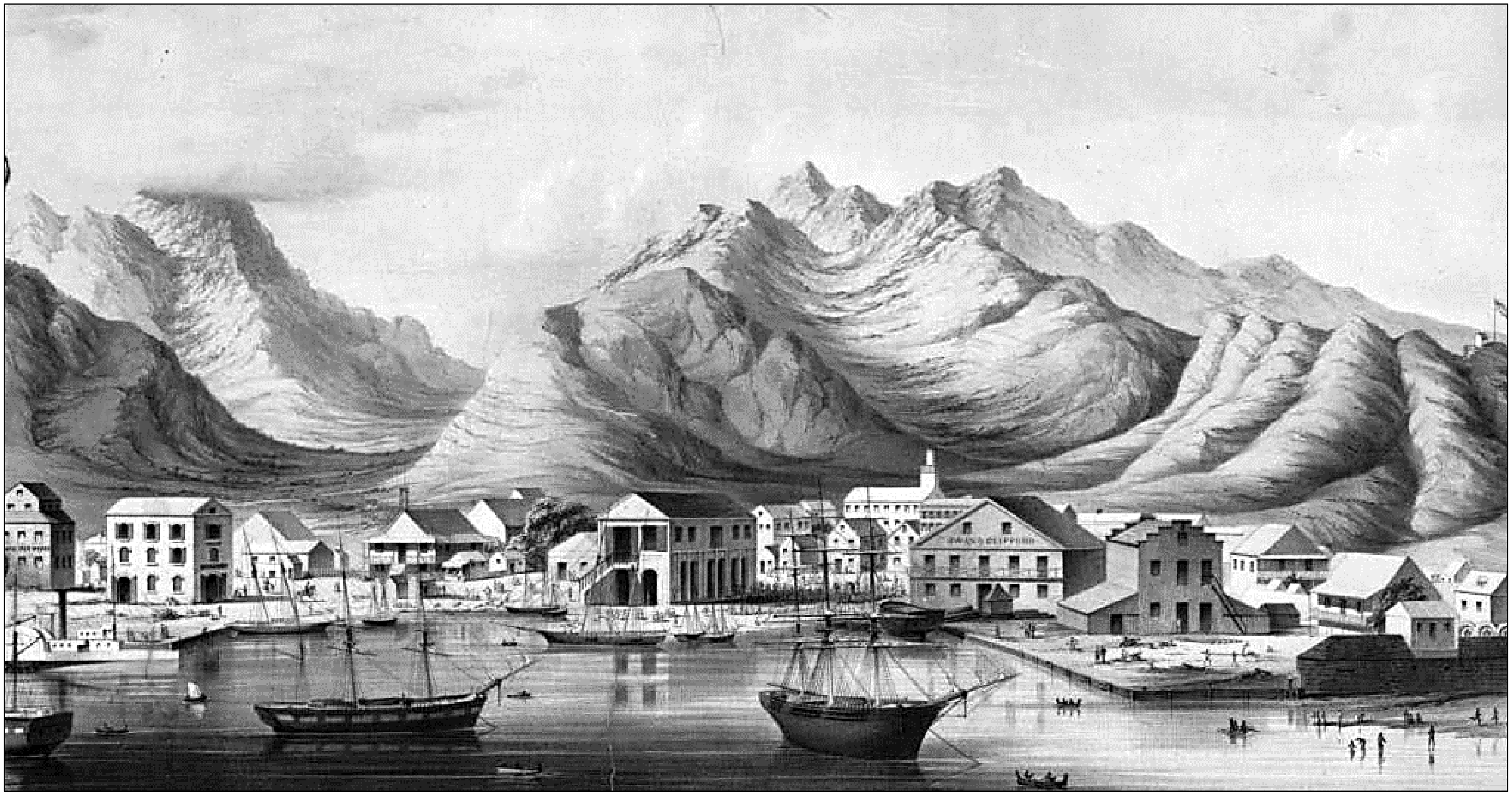


Figure 13. Lithograph (Emmert 1854) showing from right to left: the Honolulu Fort, the Robinson & Co. shipyards, the French/Charlton Wharf, the two-story Market House with Brewer's Wharf (today's Pier 12) in front, (center of lithograph), and the three-story Custom House with the Ladd & Co. Wharf in front. The size and proximity of the buildings is not to scale.

Figure 14. Lithograph (Perkins 1854) showing from right to left: the Robinson & Co. floating wharf, the trapezoidal Brewer's Wharf (today's Pier 12) in front of the Market House, and the three-story Custom House with the Ladd & Co. Wharf in front.

equal to those of Europe and America (HDOT 2008). The 1881 map labels the coast in front of the project area as a cattle wharf. North of Nuʻuanu Stream, Kawa Fishpond is still visible despite the increased development around the harbor area. A map from a decade later shows even more roads in place including Kekaulike Street and Queen Street, which would later become Nimitz Highway (Figure 16). There is also a large market building makai of the property.

According to a Dakin Fire Insurance Map from 1891, the block of the project area had many small and medium-sized dwellings (Figure 17). There was also a church located just outside of the study parcel as well as various businesses along Maunakea Street. These include a laundry, two fruit shops, a tailor, a storage building, a pork shop, a butcher, a barber, and a produce store. A furniture shop and blacksmith were located on the corner of Kekaulike and King Streets. By 1927, the layout and type of buildings as well as the kinds of businesses in the area had changed (Figure 18). In 1919, the C. Q. Yee Hop building was constructed within the study area and was described as a warehouse with one row of wood posts and a concrete floor. The building is still standing within the project area and is currently being used as a warehouse by a descendant of Yee Hop. Kiersten Faulkner of the Hawaiʻi Historic Foundation notes the following about Yee Hop and development in Chinatown (see Appendix E):

> …By the outbreak of World War II and the end of this period, Chinatown was a densely packed district, comprised of commercial, industrial, and residential buildings… In the district's southern half, wood and brick warehouses and small light-industrial shop buildings tended to occupy the interior of blocks; the lava rock C. Q. Yee Hop warehouse and dormitory at 112 Nimitz Highway is an extant example of this trend.
>
> Chun Quan (C. Q.) Yee Hop was another successful Chinese merchant. Beginning in 1885 with a one-man meat stand in Chinatown, C. Q. Yee Hop built a multimillion-dollar commercial empire across the Hawaiian Islands over the next seven decades. One of C. Q. Yee Hop's earliest and most significant business ventures, C. Q. Yee Hop Market, operated out of his building at 125 N. King Street for over 40 years.

According to the 1927 map, there are two other smaller buildings within the property at this time that were also used as warehouses. A fire proof construction built in 1926 was used as a produce warehouse and sausage facility complete with electric power, a pig roasting furnace, and an attached smokehouse. The mauka portion of the property had two large buildings, one used as an employee dormitory and warehouse, while the other housed the kitchen, dining room, receiving and shipping shed, and another sausage facility with a smokehouse and furnace. The alley running through the block is already in place at this time. Also on the block were an office and warehouse built in 1919 owned by the Sperry Flour Company, a food products factory, offices, storage buildings, a fish food facility, the King Street Market, and several other warehouses. Many of these same buildings are still in place in 1955, though some of them have new uses (Figure 19). The former Sperry Flour Company building is now a parking lot and the sausage facility is a produce warehouse. Along Maunakea Street is a dry goods shop, sign painting facility, and restaurants.

Maunakea Street Wharf/Emme's Shipyard and Wharf

A small landing known as Maunakea Street Wharf likely existed between Nuʻuanu Avenue and Nuʻuanu Stream, in the vicinity of the study area and current Pier 15 during the early 1800s when Francisco de Paula Marin was granted land there (O'Hare et al. 2014:51). In 1843, Marin's descendants sold some of these lands to the Hawaiian government, and a wharf known as Emme's Wharf was constructed. In 1848, a breakwater was built to reduce siltation in Honolulu Harbor that extended across to Nuʻuanu Stream from Emme's Wharf, just in front of the study area across Nimitz Highway. Around 1900 the wharf was transformed into a 900-ft. triangular pier (HDOT 2008) built on fill land out from natural shoreline. In the following years, the pier was used by various entities, including the military, sampan tuna fishermen, lumber ships, and a fleet of the Matson Navigation Company. No information could be found specifically for the building materials of Emme's Wharf, although it was likely made of the same materials as other wharves in Honolulu Harbor at that time, generally described as stone and timber.

In 1907, the Emme's Shipyard and Wharf vicinity was owned by the U.S. Military and later leased to the Hawaiian Government. The area was used by fishermen who moored vessels along the pier. By 1908 a series of gable-roofed structures with a wooden apron were situated on the pier. Concrete pilings and concrete decks were constructed in the area by 1912. By 1918–1919, Pier 15 was designated as a pier and used to unload lumber from ships (O'Hare et al. 2013). The buildings on the pier were demolished when the mauka end of the pier was converted into Nimitz Highway in the early 1950s. Around 1955–1956, the pier was improved, and a storage shed with a fish auction facility was constructed (HDOT 2008). In 1978 the wooden apron was demolished, but the concrete support pilings were left in place. Mason Architects (2012:9–11) provide details of the pier's construction history:

> It is more likely that Pier 15 was built in the early 20th century. It is pictured in a 1908 photograph which shows that its superstructure at that time was comprised of multiple gable-roof frame buildings joined side-by-side. The footprint of the pier was similar to the existing triangular-shape plan that exists today, however, as noted below, it was larger at this time.
>
> Pier 15 provided anchorage to different vessel types through the mid-twentieth century. It served the sampan fishing fleet into the late-teens/early 1920s when the fleet moved to Kewalo Basin. The relocation of the fleet reduced overcrowding in Honolulu Harbor, and Pier 15 was then designated as a 900-foot lumber pier due to its proximity to land transportation. A circa 1935 photograph shows freight vessels docked at the pier, possibly carrying lumber or other necessities. The pier provided anchorage to a foreign vessel, the German Cruiser KMS Karlsruhe, in 1934. The pier was used for the handling of army freight circa early 1941…
>
> The multi-gabled superstructure remained on the pier until December 1950, when it was demolished as part of a $2 million project to widen (old) Queen Street. A section of Queen Street, between Fort and River Streets, was expanded into an eight-lane expressway (now Nimitz Highway) part of which was built makai of the shoreline, out over the harbor on piles. This project reduced the pier's footprint in size to 65,000 square feet. The southern portion of the site was allocated for a new Fire Station, 14 which was built circa 1951…
>
> A few years later, circa late-1955, the Pier 15 Shed was built directly north of the Fire Station…The floor plan…indicates that the shed was designed with two interior offices, several bathrooms, and a large, open-sided interior space facing the pier apron that included fish auction and fish storage areas. The plan also indicates that the south wall of the shed was solid, with no apertures. Original exterior elevation drawings indicate a wide (11'-6") transite canopy on steel trusses along the makai side of the shed, which provided shade over the fish auction area. The drawings also show a 2'-6" reinforced concrete hood on all other elevations (which is extant today).
>
> Several modifications to the Pier 15 Shed have occurred since the 1950s, at unknown dates. Sometime after 1978, the timber apron that fronted the Pier 15 Shed was removed, so that the Shed now immediately fronts the harbor waters. The partially submerged pilings extant today…are likely remnants of this apron….
>
> Another change that occurred, possibly in connection with the removal of the timber apron, is the modification to the west (makai) wall, and the interior of the shed. The makai-facing office wall was removed (today the entire makai façade consists solely of concrete piers and a metal pipe handrail with chain-link fence infill), and the interior office spaces and bathrooms were removed. Also, sometime after 1978, the wide canopy along the makai-facing wall was removed, and a driveway opening was inserted into the south wall.

History of Chinatown

The bulk of Chinese immigrants arrived in Hawaiʻi around 1852 under contract to work the sugarcane fields, though a few came to the islands prior as traders. Many of the Chinese came to call Hawaiʻi home and set up shops in the area of Honolulu known today as Chinatown. The project area is located within this

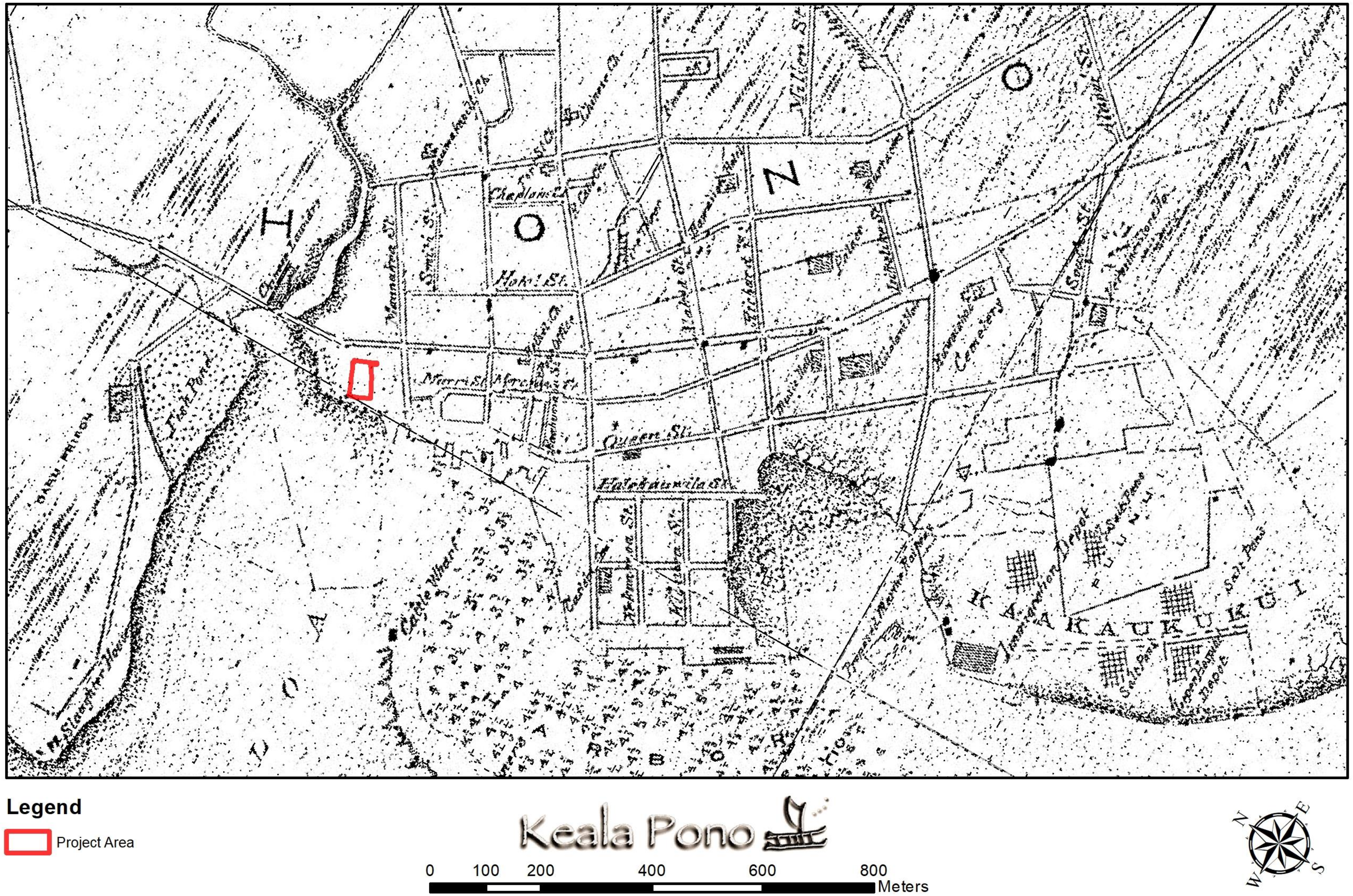


Figure 15. Portion of a map of Kona District, Oʻahu (Covington 1881).

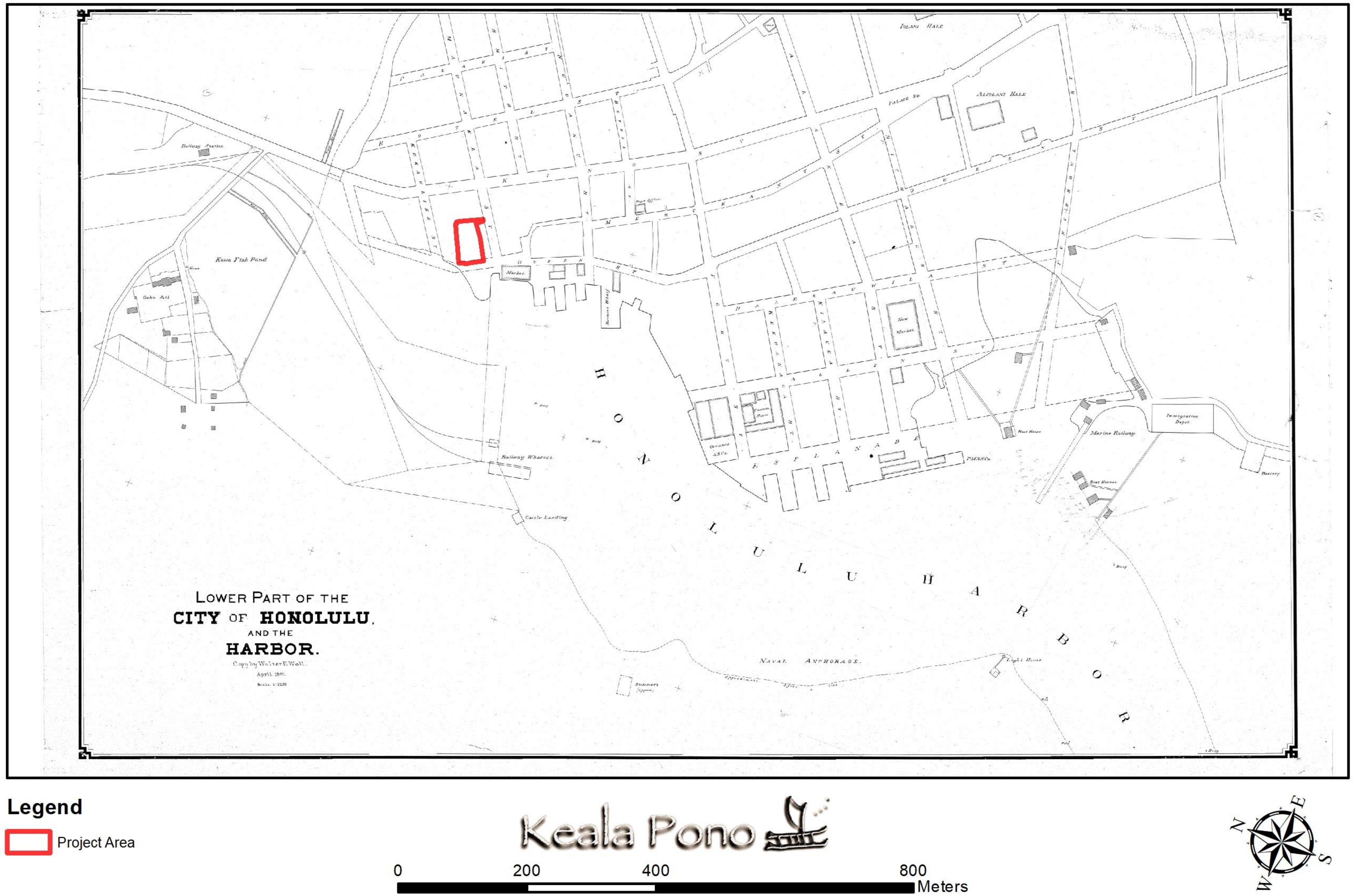


Figure 16. Map of the Lower Part of the City of Honolulu and the Harbor, O'ahu (Wall 1891).

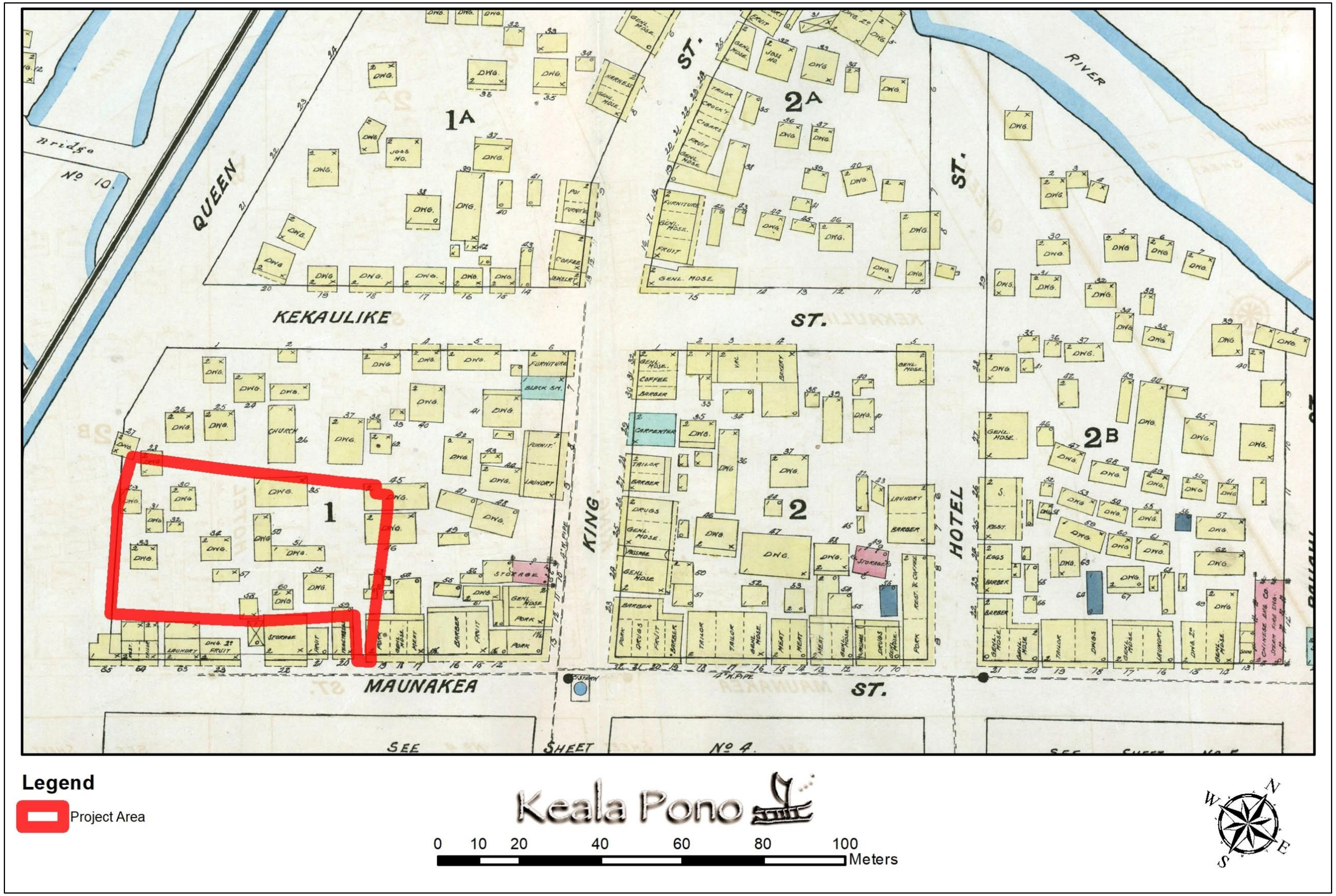


Figure 17. Dakin Fire Insurance Map showing the buildings within and surrounding the project area (Dakin 1891).

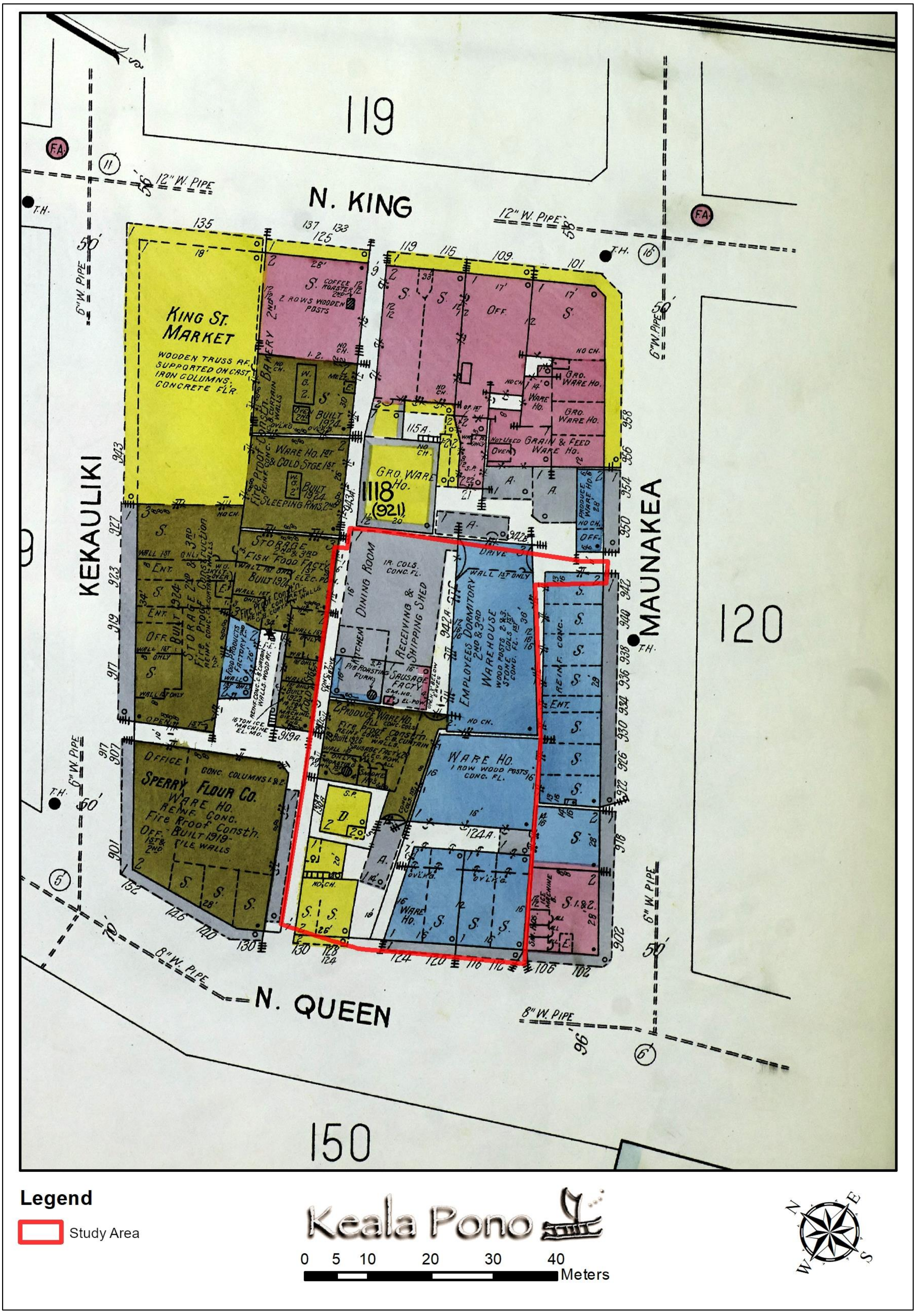


Figure 18. Sanborn Fire Insurance Map showing the project area (Sanborn 1927).

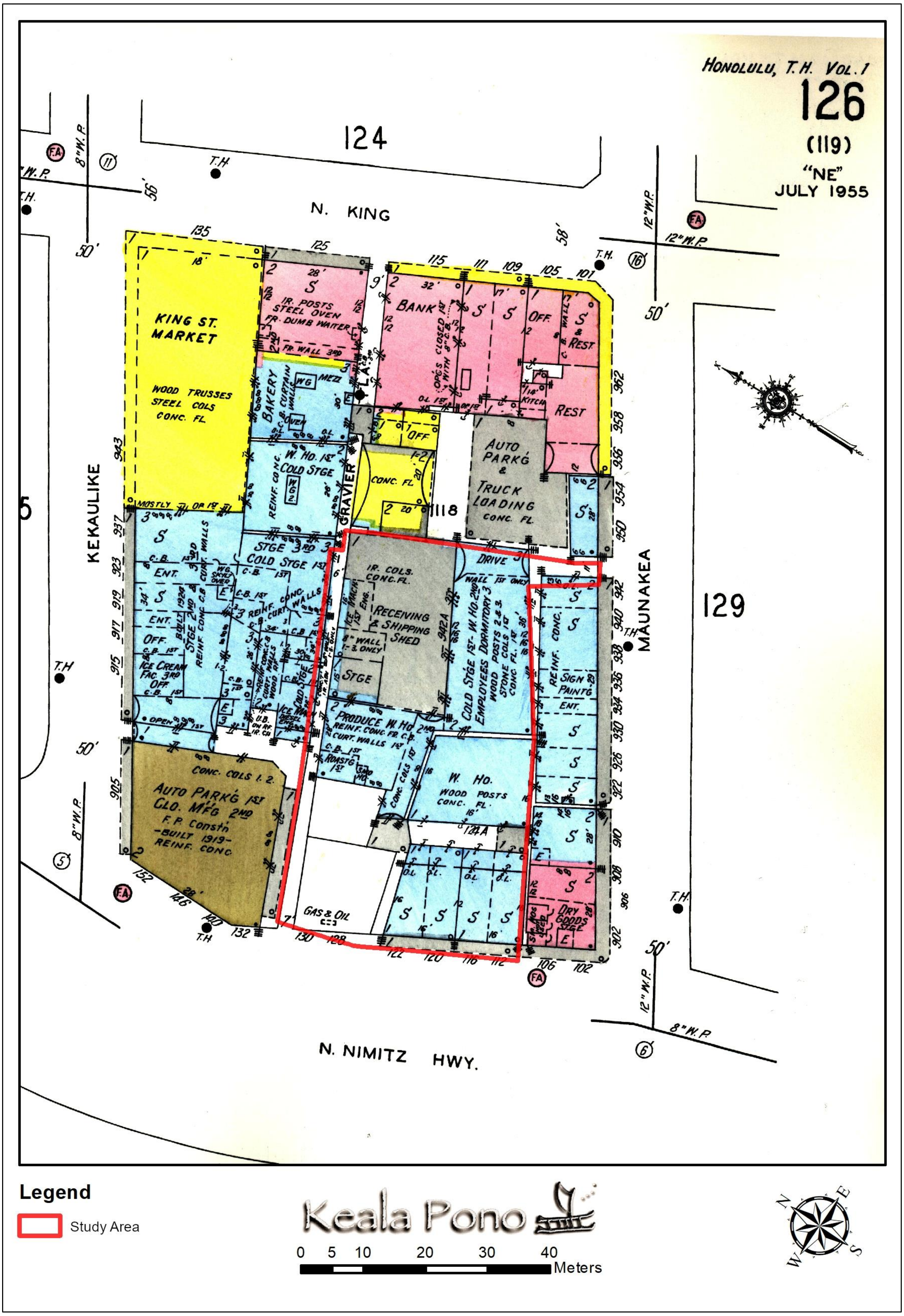


Figure 19. Sanborn Fire Insurance Map showing buildings and their uses within and near the project area (Sanborn 1955).

This page left intentionally blank.

neighborhood, which is considered to be between Nuʻuanu Street, River Street, Kukui Street, and Queen Street. It was densely populated with around 7,000 residents of predominantly Chinese and Japanese descent (Iwamoto 1969). The neighborhood soon became overcrowded, unhygienic, and run down. The bubonic plague quickly spread due to the unsanitary living conditions.

The first three cases of the bubonic plague in Hawaiʻi were discovered in Chinatown in 1899. A total of 61 deaths were reported in a little over three months following this discovery. Deemed out of control, the Hawaii Board of Health decided to set 41 fires to disease-ridden structures in the Chinatown neighborhood:

> [O]n December 30, after careful deliberation, the Board of Health chose fire as the 'surest, most thorough, and most expeditious' method. Fire would destroy the plague germs, kill rats, cleanse the soil and open it up to the purifying influence of sun and air, and would prevent any occupancy of the premises until a safe period of time had elapsed. (Iwamoto 1969:124)

One of these fires, set to Kaumakapili Church, spread with the strong wind to neighboring buildings and destroyed the majority of Chinatown. The fire was finally extinguished right before Nuʻuanu Avenue after damaging eight blocks. After the fires, Chinatown and many of the dilapidated buildings throughout Honolulu were renovated. Wooden structures were rebuilt with sturdier stone, brick, or iron, including those near the project area.

In 1973, the Chinatown Historic District comprised of 15 city blocks, was listed on the National Register of Historic Places (NRHP). The nomination form states that "Chinatown is one of the few areas of Honolulu which has maintained a sense of identity as a community over the years." The project area is located within the Chinatown Historic District which is defined as the area encompassed by Beretania Street, Nuʻuanu Avenue, Nimitz Highway, and the Nuʻuanu Stream at River Street.

Honolulu Timeline

Consolidating vast information regarding events in the history of Honolulu, the following timeline provides a very brief chronology of Honolulu's past and lends further insight to the process through which the region has evolved. This timeline summarizes the historical information presented in this chapter by highlighting points of history, such as significant structures that were built, outbreaks of illnesses, and actions taken by individuals and the government.

Late 1700s	Early visitors arrive in Honolulu, including explorers, scientists, etc.
1795	Kamehameha I conquers Oʻahu.
1809	Kamehameha I moves court, government, and residence to Honolulu. Manini builds stone house for king, the first stone structure in Honolulu.
1810	First maps of Honolulu, based on ʻĪʻī's memories, with harbor, Manini's stone house and complex, and other structures including a canoe landing and Pākākā Heiau.
1816	Honolulu Fort built in response to Russians landing on Oʻahu; coral block material used for the fort construction; Kotzebue maps Honolulu and the harbor.
1818	European building on wharf adjacent to Fort Honolulu; Tabulevich describes Manini's house as of white stone.

1820	Arrival of missionaries associated with the American Board of Commissioners for the “Foreign Missions Sandwich Islands” making Honolulu their headquarters.
1821	Bensell’s painting shows two piers, one by the fort and the other within Honolulu Harbor.
1825	Detailed map of Honolulu Harbor and passage, along with major buildings, Fort Honolulu, and Kawa Fishpond (Malden 1825). European houses included stone houses and frame houses of timbers shipped from America. A few good streets are in place.
1827	Aliʻi Kalanimōkū deeded reef land to John Robinson at current Pier 10 and 11 area.
1828	Honolulu Harbor is the defining feature for the area.
1840	Wilkes conducts mapping and sounding of harbor; there is documentation of coral quarrying.
Ca. 1843	Emme’s Wharf is built at the current Pier 15 across from the project area.
1845–1848	The Māhele established land ownership into Hawaiian society and granted four types of land awards: those to the Crown, the Hawaiian government, the aliʻi, and Fort Land titles.
1846	Honolulu becomes capital of the Hawaiian Kingdom.
1848	A breakwater is constructed in the vicinity of Pier 15 to curtail runoff from Nuʻuanu Stream.
Ca. early 1850s	Water system established to connect Nuʻuanu Stream and the harbor.
1850	Kuleana, or individual land awards were granted to makaʻāinana (common people).
1852	David Weston founded Honolulu Iron Works and Flour Mill Company and produced hardware for sugar mills. In 1869, Theo H. Davies became owner and in 1876, Alexander Young was brought on as a partner and manager. In 1896, Young retired and Christian J. Hedemann was appointed the new manager.
1853	In March and April of 1853, smallpox was recorded by Dr. Potter at Kahakaʻaulana (Sand Island). Later in May, the disease broke out in Honolulu and was first seen at the house of Kaʻaione in Kakaʻako. Kamakau notes that the first victim was a woman with a tattooed face (maka-paʻele). And while the disease raged on Oʻahu, it did not extend to the other islands (Kamakau 1992:237).
Pre-1880	Coral blocks cut for Esplanade and Honolulu Fort building materials.
1893	The USS *Boston* docks at Pier 12 and its troops play a role in the overthrow of the Hawaiian monarchy.
1895	Cholera epidemic hits Honolulu.
1898	An annexation ceremony is held on Pier 12.
1899	Bubonic plague breaks out in Honolulu, mainly in the downtown and Chinatown areas. On New Year’s Eve of 1900, the Board of Health begins to set fires to condemned buildings to control spread of the disease.
1900	Fire in Honolulu destroys most of the buildings in Chinatown. Pier 15 is transformed into a triangular shape.

1950	Parts of Pier 15 are demolished on the mauka section when Nimitz Hwy. is widened.
1973	Chinatown Historic District is listed on the National Register of Historic Places.

Previous Archaeology

As both the capital and major city of Hawaiʻi, Honolulu has witnessed many of the most significant social and political events and upheavals since the early 19th century, particularly in the area surrounding the harbor, where various precincts (e.g., Chinatown, Downtown, Capitol District) were established. Previous archaeological research has begun to document this transformation with finds such as historic trash deposits, structural remnants, pondfield remains, and pre- and post-contact burials in the vicinity of the project area. Previous archaeological studies are shown in Figure 20 and Table 4, while archaeological sites are displayed in Figure 21. They are discussed in the text spatially, beginning with studies makai of the current project area. State Inventory of Historic Places (SIHP) numbers are prefixed by 50-80-14.

Several studies took place on Nimitz Highway adjacent to the current study area. An archaeological inventory survey was conducted for water system improvements along the highway between Queen and Awa Streets (McDermott and Mann 2001). A Nuʻuanu Stream bridge, marked as constructed in 1932, was found to actually be a reconstruction of the original. In addition, the Kawa Fishpond (SIHP 5966), was identified during the survey, though it is not near the project area. Later archaeological monitoring for the water system construction activities (Winieski and Hammatt 2001), documented one additional historic property. This was a light-gauge rail from the Honolulu Rapid Transit trolley system (SIHP 5942). Historic material and features were also recorded, including a bottle, a brick-lined manhole, and a brick and mortar alignment.

Railroad remains of SIHP 5942 were also identified at the intersection of Queen Street and Nimitz Highway. Two literature review and field inspections were also completed for water system improvements on Nimitz Highway and other streets in Honolulu (O'Hare et al. 2015; 2016). While the study areas consisted almost entirely of paved streets, a model of archaeological potential was developed, with Nimitz Highway north of Pier 12 designated as low probability for encountering archaeological resources and Nimitz Highway south of Pier 12 designated as high probability.

An extensive study was conducted for the Honolulu High-Capacity Transit Corridor Project (HHCTCP) (Hammatt 2013). The segment closest to the current project area is Section 4, which extends from Middle Street to Ala Moana Center along Nimitz Highway. Although a number of archaeological sites were identified in this segment, only one is located near the current project. SIHP 7427 is situated near Pier 15, at the corner of Nimitz Highway and Kekaulike Street. It includes subsurface structural remains, a historic trash pit, a cultural layer, and one isolated human bone.

Makai of Nimitz Highway, a literature review and field inspection was required for improvements to Piers 12 and 15 (O'Hare et al. 2013). It was suggested that coral blocks makai of Pier 12 may have actually come from the old Honolulu Fort, built in 1816 and dismantled in 1857. It was also noted that Pier 15, built in 1900, was modified in the 1950s due to the construction of Nimitz Highway. Pier 15 was designated as SIHP 7576, while Pier 12 was designated as SIHP 7575.

A historical assessment was completed for the area between Pier 5 and Pier 14 (Wong-Smith and Rosendahl 1990). It was determined that the project area was composed of previously submerged lands. Furthermore, the Aloha Tower and its associated property along with Piers 8–12 were all noted to be historically significant structures. Archaeological monitoring was later conducted along

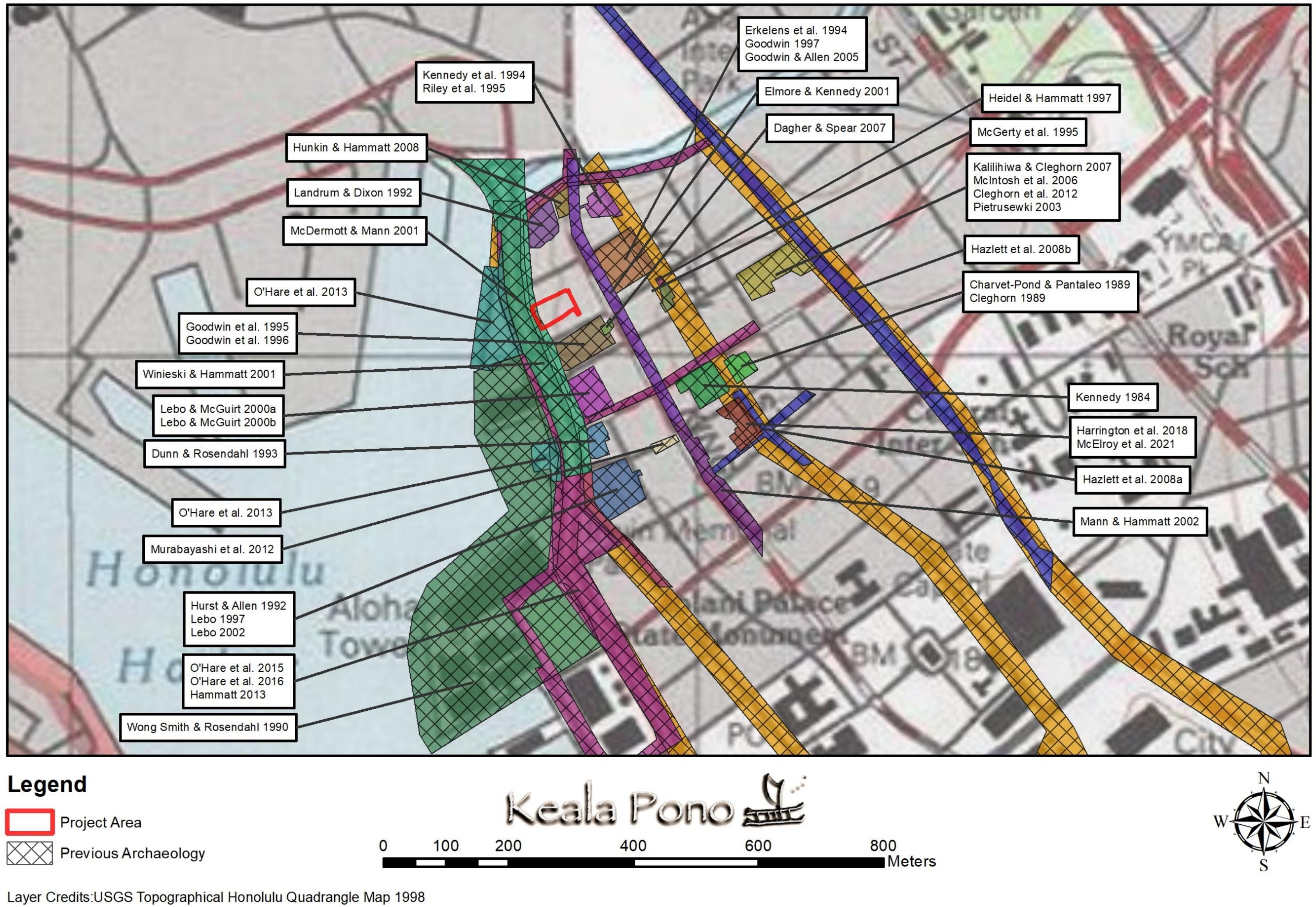


Figure 20. Previous archaeology in the vicinity of the project.

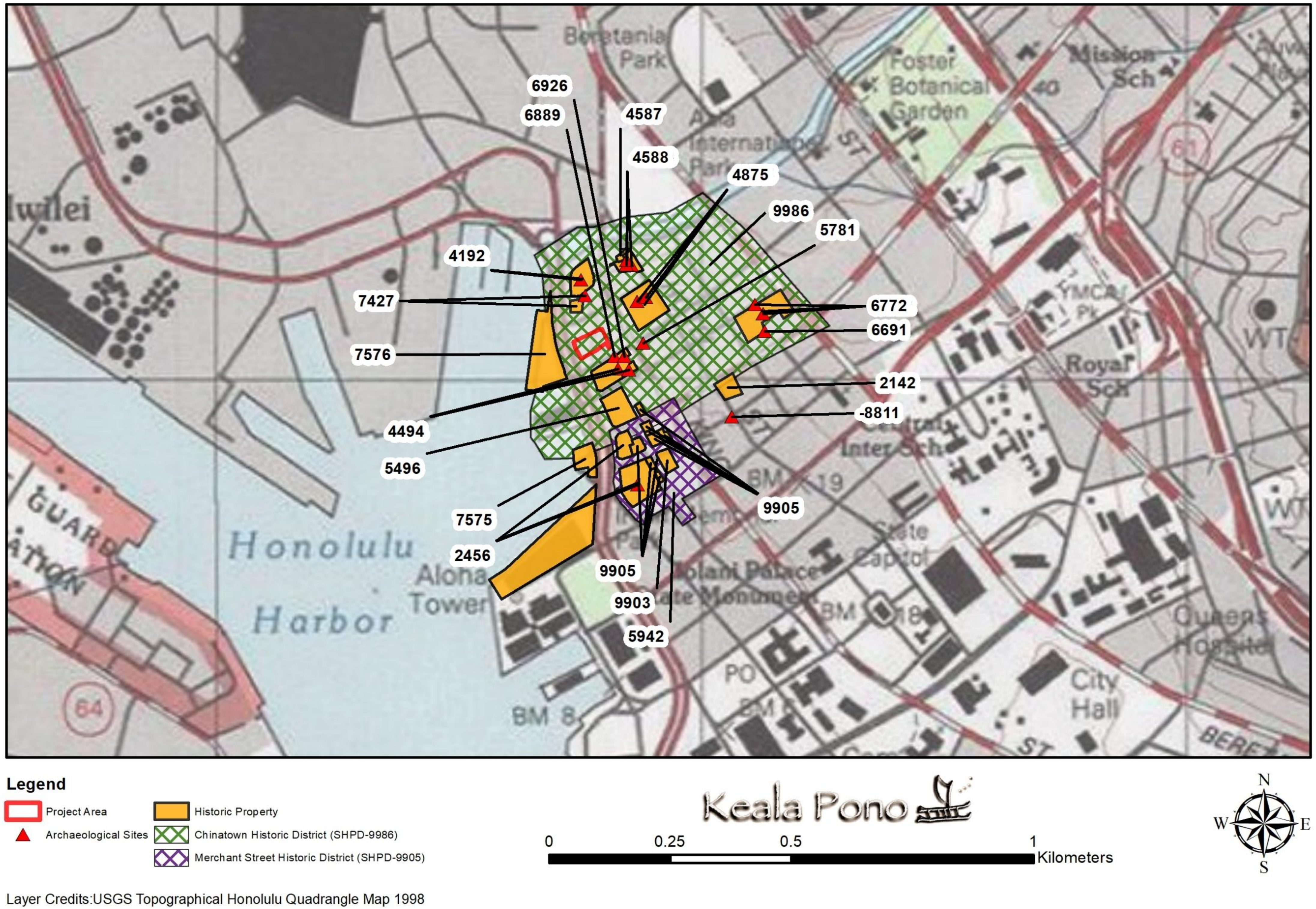


Figure 21. Archaeological sites in the vicinity of the project area.

Table 4. Previous Archaeological Research in the Vicinity of the Project Area

Author and Year	Location	Work Completed	Results and SIHP # (50-80-14-)
Kennedy 1984	Corner of Hotel and Bethel St.	Test Excavations	Negative findings.
Cleghorn 1989	Chinatown Gateway Plaza	Archaeological Test Excavations	Noted scattered historic artifacts.
Charvet-Pond and Pantaleo 1989	Chinatown Gateway Plaza	Archaeological Monitoring	Documented a ca. 1880–1920 trash deposit (SIHP 2142).
Wong-Smith and Rosendahl 1990	Aloha Tower Vicinity	Historical Assessment	Noted that the area was extensively filled in the historic period.
Hurst and Allen 1992	Harbor Court (Merchant St.)	Archaeological Survey and Monitoring	Identified SIHP 2456, which includes a cultural layer and 18 post-contact features, traditional and historic artifacts, and building debris. The site is in Merchant Street Historic District, SIHP 9905.
Landrum and Dixon 1992	River Nimitz Redevelopment Project	Data Recovery	Documented SIHP 4192, a pre-contact burial and post-contact trash pits, a building foundation, and various artifacts.
Dunn and Rosendahl 1993	Nu‘uanu Court	Archaeological Inventory Survey	Identified SIHP 2456, a cultural layer with traditional and post-contact features. The survey lies within the Merchant Street Historic District (SIHP 9905).
Erkelens et al. 1994	Kekaulike Street Revitalization Project, Diamond Head Block	Burial Report	Reported on a secondary burial of four individuals (SIHP 4587).
Kennedy et al. 1994	Kekaulike Revitalization Project, ‘Ewa Block	Archaeological Investigation	Identified SIHP 4587, subsurface fishpond remnants and a subsurface cultural layer with three human burials (SIHP 4588).
McGerty et al. 1995	Hotel St. between Maunakea and Smith St.	Literature Review and Field Check	Archival research suggested that the area was once a maika field in use in the pre-and post-contact eras before it became part of the historic Chinatown.
Riley et al. 1995	Kekaulike Revitalization Project, ‘Ewa Block	Data Recovery	Conducted further work at SIHP 4587 fishpond remnants and 4588 cultural layers with three burials; identified cultural material illustrating the transformation from Kīkīhale to Chinatown.
Goodwin et al. 1995	Marin Tower (between Smith and Maunakea St.)	Data Recovery	Reported on features and cultural material, including 15 burials and several displaced skeletal remains with associated coffin material such as nails and grave goods. Grave goods included beads, rings, buttons, iron, a necklace, ceramics, and a knife. (SIHP 4494).
Goodwin et al. 1996	Marin Tower (between Smith and Maunakea St.)	Archaeological Inventory Survey, Data Recovery, Monitoring	Reported on pre- and post-contact features and cultural material, including remnants of the Marin residence, as well as cultural material from the Honolulu Ironworks and Chinese merchant families (SIHP 4494).

Table 4. (continued)

Author and Year	Location	Work Completed	Results
Goodwin 1997	Kekaulike Revitalization Project, Diamond Head Block	Archaeological Inventory Survey	Identified SIHP 4875, a subsurface cultural layer with 105 features indicative of both pre- and post-contact occupation.
Heidel and Hammatt 1997	Corner of Hotel and Maunakea St.	Subsurface Testing	No findings considered significant, but a basement full of post-contact refuse was discovered.
Lebo 1997	Harbor Court	Data Recovery	Further documented SIHP 2456 cultural layers and features (Hurst and Allen 1992); increased the total number of features to 53; in Merchant Street Historic District, Site 9905.
Lebo and McGuirt 2000a	800 Nuʻuanu Project	Archaeological Inventory Survey	Recorded a cultural layer dating from the pre-contact period to the 20th century (SIHP 5496).
Lebo and McGuirt 2000b	800 Nuʻuanu Project	Data Recovery	Further documented the SIHP 5496 cultural layer.
Elmore and Kennedy 2001	King St. between Maunakea and Smith St.	Archaeological Monitoring	Removed a pre-contact burial (SIHP 5781) and placed it under the care of SHPD for future reinterment. Recovered isolated cultural material not associated with the burial.
McDermott and Mann 2001	Nimitz Hwy. between Queen and Awa St.	Archaeological Inventory Survey	Documented Kawa Fishpond (SIHP 5966), although it is not near the current project.
Winieski and Hammatt 2001	River St. to Ala Moana Blvd.	Archaeological Monitoring	Identified railroad remains (SIHP 5942) at the Queen St./Nimitz Hwy. intersection.
Lebo 2002	Harbor Court	Data Recovery	Further studied SIHP 2456 (traditional Hawaiian habitation) (Hurst and Allen 1992; Lebo 1997). Dated initial occupation at ca. AD 1000–1200.
Mann and Hammatt 2002	King St. between Dillingham and South St.	Archaeological Monitoring	Recorded a previously disturbed burial (SIHP 6371) not in the vicinity of the current project.
Pietrusewsky 2003	Corner of Smith and Beretania Streets	Burial Report	Studied the remains of at least 21 individuals of SIHP 6772, most of which were poorly preserved and incomplete. Sex and age distribution of the burials suggest a family cemetery. Dental and skeletal pathologies were observed.
Goodwin and Allen 2005	Kekaulike Revitalization Project, Diamond Head Block	Data Recovery	Dated the SIHP 4875 cultural layer and 105 traditional and post-contact features (Goodwin 1997) to the 13th century; recovered a multitude of cultural material.

Table 4. (continued)

Author and Year	Location	Work Completed	Results
McIntosh et al. 2006	Corner of Smith and Beretania Streets	Archaeological Inventory Survey	Recorded SIHP 6691, which consists of disturbed human remains, historic trash pits, and historic building remnants.
Dagher and Spear 2007	Pacific Town Center, makai side of N. King St.	Archaeological Monitoring	Recorded a human burial that contained two individuals (SIHP 6889), and a wall and historic artifact cache (SIHP 6926).
Kalilihiwa and Cleghorn 2007	Corner of Smith and Beretania Streets	Archaeological Monitoring	Identified SIHP 6772, consisting of 22 sets of human remains, which were reinterred on site.
Hazlett et al. 2008a	Aloha Tower Drive	Archaeological Monitoring	Negative findings.
Hazlett et al. 2008b	Fort Street Mall and Hotel St.	Archaeological Monitoring	Negative findings.
Hunkin and Hammatt 2008	Armstrong Building, N. King St.	Archaeological Monitoring	Negative findings, although the project area was at the Armstrong Building, which is part of the Chinatown Historic District (SIHP 9986).
Cleghorn et al. 2012	Corner of Smith and Beretania St.	Data Recovery	Recorded two human burials assigned to SIHP 6672, as well as pit features, privies, and traditional and historic cultural material.
Hammatt 2013	Middle St. to Ala Moana Center	Archaeological Inventory Survey	Identified many archaeological sites; SIHP 7427 is near the current project and includes subsurface structural remains, a historic trash pit, a cultural layer, and one human bone.
Murabayashi et al. 2012	McCandless Building at 925 Bethel Street	Historic Properties Assessment	Discussed three historic districts and six historic structures.
O'Hare et al. 2013	Pier 12 & 15	Literature Review and Field Inspection	Recommended archaeological monitoring for improvements to the piers.
O'Hare et al. 2015	Various Locations, Including Nimitz Hwy. Fronting the Current Project Area	Literature Review and Field Inspection	Designated Nimitz Hwy. north of Pier 12 as low probability for encountering archaeological resources; designated Nimitz Hwy. south of Pier 12 as high probability.
O'Hare et al. 2016	Various Locations, Including Nimitz Hwy. Fronting the Current Project Area	Literature Review and Field Inspection	Entire study area consists of paved streets, although several sections have high probability of encountering subsurface archaeological resources.

Table 4. (continued)

Author and Year	Location	Work Completed	Results
Harrington et al. 2018	Between Bethel St., S. Hotel St., Fort Street Mall, and Walmart	Literature Review and Field Inspection	Noted that the study area lies in former yam fields. The yam fields were later destroyed by construction of homes, bowling alleys, and stores.
McElroy et al. 2021	Between Bethel St., S. Hotel St., Fort Street Mall, and Walmart	Archaeological Inventory Survey	Identified SIHP 08811, the remains of the historic Empire Theater/Grotto Saloon, including its buried floor, two historic trash deposits, and a fragment of human remains.

Aloha Tower Drive (Hazlett et al. 2008a). No archaeological or cultural resources were identified during this work. Stratigraphy reflected the man-made landfill deposits that were placed off of the original Honolulu shoreline during the development of the harbor. Much of the landfill was dredged material from the harbor, and there was also sedimentary fill which came from other parts of the island.

South of the project area and mauka of Nimitz Highway, several projects were completed at Marin Tower. Human remains were disinterred that were part of SIHP 4494, which included 15 human burials, displaced iwi, and historic material and grave goods. The remains are those of Don Francisco de Paula Marin and his family; descendants assisted in the determination and the reburial process. Marin was an Andalusian Spaniard confidant of Kamehameha I. The remains were later reinterred at another location on the property. Later work identified pre- and post-contact pits and fire pits along with the structural foundations belonging to the Marin family residence dating to 1810–1850 (Goodwin et al. 1996). Cultural material indicated use by the Honolulu Ironworks from 1850–1900, as well as the presence of Chinese merchant shops during the same time period. Other artifacts and structures connected with the urbanization of Honolulu from 1900 to 1950 were also collected and analyzed. A separate report was generated for the burials on the property for SIHP 4494 (Goodwin et al. 1995).

Directly east, and partially overlapping the Marin Tower project area, archaeological monitoring was conducted for renovations of a historic building at the Pacific Gateway Center (Dagher and Spear 2007). Two sites were identified, consisting of a burial and historic structural remains. SIHP 6889 was a burial with two individuals in proximity to each other. Burial 1 was a flexed or partially flexed in situ burial with no discernible burial pit, identified as a young adult male at least 25–30 years of age. Similarly, Burial 2 was a flexed in situ burial with no discernible burial pit identified as an adult female. Based on the burial contexts, the individuals were believed to be of Native Hawaiian ancestry, both identified as probably pre-contact Hawaiians. SIHP 6926 consisted of two historic features. Feature 1 was a stacked and faced foundation wall of mortared basalt cobbles and boulders capped with concrete. Feature 2 was a collapsed molded ceramic storm drain which contained a cache of intact Ing KaPy ceramic vases. Monitoring also identified fill material from the adjacent Marin Tower project that yielded glass bottles, porcelain fragments, metal nails and spikes, marine shell, faunal remains, and two traditional artifacts: a basalt ‘ulu maika and a smaller coral ‘ulu maika.

Across the street from Pier 14, an archaeological inventory survey was conducted at 800 Nu‘uanu Avenue (Lebo and McGuirt 2000a). Recorded was SIHP 5496, which exhibits stratigraphy and cultural remains for five distinct cultural periods. The first cultural period recorded in the deposit was the pre-contact era (pre-1810). The second cultural period for the site was between 1810 and

1850 when the first foreigners moved in. The third period was between 1850 and the 1890s when early industrial businesses like the Honolulu Iron Works and the Honolulu Flour Mill operated on the property. The fourth period was between the 1890s and 1925 when many businesses were located on site in smaller wooden structures. And finally, the last period spans 1925 to the present. Some of the artifacts collected were traditional, but the majority were of the historic era. The property is within Chinatown and includes wooden frame buildings that once were owned by Kamehameha I's brother, and other buildings owned by Ladd and Co. and Grimes, as well as brick business buildings. Data recovery at the Nuʻuanu Avenue site identified a total of 76 archaeological features (Lebo and McGuirt 2000b). They included post molds, lime-making pits, a basalt rock wall, floors and walls constructed from coral blocks, trash deposits, fire pits, and sewer pipes made of cast-iron.

An archaeological survey was conducted across Nimitz Highway from Pier 12 at Nuʻuanu Court, which lies within the Merchant Street Historic District (SIHP 9905) (Dunn and Rosendahl 1993). One site was recorded, SIHP 2456, a cultural layer with traditional and post-contact features, such as postholes, post molds, pits, a historic ash lens, a foundation wall, a pipe trench, and historic floors. The traditional Hawaiian features of pits and postholes suggest an early habitation area. Radiocarbon analysis indicates initial occupation as early as AD 1250 (Dunn and Rosendahl 1993), and other dates suggest occupation between AD 1000 and AD 1200 (Lebo 2002). The historic artifacts date as early as ca. 1778.

Just south of this and also within the Merchant Street Historic District, considerable work was undertaken at Harbor Court (previously the Kaʻahumanu Parking Garage). During traditional times this was the site of Queen Kaʻahumanu's royal compound, with a palisade, a two-story frame house, and other structures. An early study identified a cultural layer consisting of mostly 19th century building remnants (some identified as named buildings), included as part of SIHP 2456 (Hurst and Allen 1992). The layer also contained ceramics and 19th century bottles, as well as traditional material such as volcanic glass flakes, basalt flakes, and a modified marine shell. In all, there were 18 previously undocumented post-contact era features. These consist of fired-brick foundation remnants, coral block features, an arched brick drainage, domed brick cesspool, basalt block wall, concrete culvert and foundation, metal fuel tank, metal water main, boulder concentration, and a packed-earth floor. In addition, six human burials were identified, all determined to be Native Hawaiian. They were identified as four adult females, one adult male, and one subadult and were reinterred on the site. Of particular note was tooth evulsion in one of the female adult burials, a traditional practice of grief, and also the absence of the leg bones and skull for the subadult burial, which may have indicated the traditional practice of removal as a family keepsake.

Additional data recovery was completed for the Harbor Court project several years later (Lebo 1997). A total of 53 pre-contact and historic-era features were recorded as part of SIHP 2456. The pre-contact deposits were further investigated, and 35 features of SIHP 2456 were newly identified (Lebo 2002). Radiocarbon dating suggests occupation at the site began between AD 1000 and AD 1200. The features included fire pits, pavements, building foundations, post molds, and trash pits. Among the documented artifacts were bottles, ceramics, glass beads, buttons (wood, shell, and bone), metal nails, adzes (stone and shell), flakes (basalt, quartz, chert, flint, jasper, and volcanic glass), modified manufactured glass, fishhook blanks, bone awls, hammerstones, and grinding stones. The reports include extensive information on historic artifact analysis techniques and dates.

In 2012, a historic properties assessment was completed for a proposed Verizon cell site located on the rooftop of the historic McCandless Building at 925 Bethel Street (Murabayashi et al. 2012). The Chinatown Historic District (SIHP 9986), Merchant Street Historic District (SIHP 9905), and the Hawaiʻi Capital Historic District (SIHP 1321) were noted along with six additional historic structures in the area.

North of the project area near Nu'uanu Stream, data recovery was carried out due to the inadvertent discovery of human remains at the River-Nimitz Redevelopment project (Landrum and Dixon 1992). A traditional burial with burial goods was unearthed within marsh deposits. Also documented were four historic-era trash pits and a brick and mortar structural foundation, all of which were recorded as SIHP 4192. Just mauka of this, archaeological monitoring was performed for courtyard renovations at the Armstrong Building in Chinatown (Hunkin and Hammatt 2008). The brick masonry building with a dense basalt bluestone exterior, part of the Chinatown Special District (SIHP 9986), had been constructed in 1905 to replace an 1890s building that was destroyed by the 1900 Chinatown fire.

Several studies were conducted for the Kekaulike Revitalization Project between King and Hotel Streets in the block between River and Maunakea Streets. Four human burials were discovered in the Diamond Head Block of the project (Erkelens et al. 1994). The burials were incomplete, highly fragmentary, and all found in a secondary context. One was an adult male in his 20s, another was a 15 to 18 year-old female, the third was a 3 or 4 year-old girl, and the last was a human fetus. A site number was not given to the burials at that time. In the 'Ewa Block, at 165 and 175 N. Hotel Street, SIHP 4587 and 4588 were documented (Kennedy et al. 1994). The former consisted of subsurface fishpond remains. The latter contained 53 features, including pre- and post-contact burials, traditional post holes and fire pits, a post-contact burn layer and trash pits, and building foundations made of crushed coral. Recovered historic material included 489 ceramics, 302 intact bottles, 47 buttons, 26 metal objects, such as coins, and a few miscellaneous items such as beads, clay pipe pieces, and marbles. Traditional artifacts were not as abundant, consisting of eight animal bones, five shells, and four lithic items. Further data recovery efforts commenced for SIHP 4587 and 4588 the next year (Riley et al. 1995). Excavation of 64 test units revealed a wealth of artifacts from the pre- and post-contact eras, faunal material, and midden. These results showed the development of the property from a traditional village to a modern urban area.

In 1997 an archaeological inventory survey at the Kekaulike Project Diamond Head Block identified SIHP 4875 (Goodwin 1997). This consisted of a cultural layer with 105 traditional Hawaiian and post-contact features including post holes, trash pits, privies, foundation remnants of a coral and brick building, and traditional fire pits. Subsequently, data recovery was conducted at the Kekaulike Diamond Head Block (Goodwin and Allen 2005). Radiocarbon dating of SIHP 4875 suggested likely occupation of the area as early as the 13th century and almost certainly by the 16th century. Excavation of a 19th century blacksmith's shop and four kauhale yielded more than 8,552 artifacts, including a traditional Hawaiian pendant, a fishhook, matting, and lithic, shell, and urchin spine tools, as well as a large number of imports from Asia, North America, and Europe. These include ceramics, bottle glass, and nine beads known as "Russian" beads. Some of the artifacts indicate mixing of traditional and foreign ideas: Hawaiian coins, a pendant made on an imported shell, and iron fishhooks. There was also a large amount of midden, composed of a variety of faunal remains of both traditional and introduced taxa. Archaeological features included post molds, fire pits, fence lines, refuse pits, and living floors. A secondary burial, that of a fetus, was discovered near a house deposit. Much of the evidence reflects intensive occupation of 19th century Kīkīhale.

Archaeological monitoring was performed for sidewalk improvements on King Street between Maunakea and Smith Streets (Elmore and Kennedy 2001). A pre-contact burial was inadvertently discovered (SIHP 5781). In addition, the backdirt yielded artifacts including glass and ceramic fragments, a shark tooth and possible shark tooth tool, a fishhook, and a possible drilled shell (all part of SIHP 5781). However, none of the artifacts could be proven to be grave goods associated with the burial.

There are several studies that took place to the east and southeast of the current study area. In 2002, archaeological monitoring was carried out for the King Street Rehabilitation project, located on King

Street, between Dillingham Boulevard and South Street (Mann and Hammatt 2002). An incomplete burial in poor condition (SIHP 6371) was inadvertently discovered near the intersection of King and Punchbowl Streets. In addition, a pit feature containing faunal remains was identified near the intersection of King and Richards Streets. Stratigraphy on a portion of King Street between South and Bethel Streets displayed a dry clay loam layer which contained historic trash and artifacts.

A literature review and field check were completed for two properties between Maunakea and Smith Streets (McGerty et al. 1995). Background research during this project suggested that the parcels were in the ʻili of Kīkīhale and near the maika field known as Kalanikahua. In the post-contact period, these parcels became a part of Chinatown and were located within the boundaries of the 1900 Chinatown fire. Northwest, adjacent to this in the same block, archaeological testing was conducted near the intersection of Hotel and Maunakea Streets (Heidel and Hammatt 1997). Nothing significant was recorded, although a historic basement filled with modern debris was noted.

At the corner of Smith and Beretania Streets, several studies were completed for the Smith-Beretania Parking Lot. An archaeological inventory survey recorded SIHP 6691, which consists of a possible pre-contact deposit, disturbed human remains, historic trash pits, and historic building remnants (McIntosh et al. 2006). A total of 68 subsurface features were identified, including cooking features, trash pits, midden deposits, and building foundations, some of which date to the 1900 Chinatown fire. Recovered cultural material consisted of a few traditional Hawaiian items such as an ʻulu maika, an adze, and poi pounder fragments, and an abundance of historic artifacts including European and Asian glass and ceramics. Data recovery added to the knowledge of the archaeological sites by documenting two human burials assigned to SIHP 6672, as well as pit features, privies, and traditional and historic cultural material (Cleghorn et al. 2012). Archaeological monitoring for the project recorded additional burials of SIHP 6772, which in total consists of 22 sets of human remains that were reinterred on site (Kalilihiwa and Cleghorn 2007). The remains were further studied and noted as poorly preserved and incomplete (Pietrusewsky 2003). Sex and age distribution of the burials suggest a family cemetery. Dental and skeletal pathologies were also observed, such as various dental maladies, tooth ablation, and a bone fracture.

At Fort Street Mall and Hotel Street, archaeological monitoring produced no findings (Hazlett et al. 2008b). Adjacent to the north end of the monitored area, early excavations were conducted at a parking lot on the makai side of Hotel Street between Kekaulike and River Streets (Kennedy 1984). Stratigraphy consisted of fill above a coral substrate. Test excavations were later completed for construction activity at Chinatown Gateway Plaza, on the makai side of Hotel Street, between Nuʻuanu Avenue and Bethel Street (Cleghorn 1989). Extensive subsurface disturbance was noted, and fill layers contained scattered historic artifacts. Archival research indicated that the site was probably used for agriculture and habitation in the pre-contact era. Four buildings on the lot at the time of study were dated to 1891, 1924, 1925, and 1933. Archaeological testing revealed a historic trash deposit, SIHP 2142, which contained cultural material dating from the 1880s to the 1920s. Archaeological monitoring was then conducted for the Chinatown Gateway construction (Charvet-Pond and Pantaleo 1989). The monitoring recorded materials from the SIHP 2142 trash deposit, including ceramics, metal, slate, and glass bottles, most of which dated to ca. 1880–1920.

Two studies were completed for the block between Bethel Street, S. Hotel Street, Fort Street Mall, and Walmart. Archival research for an archaeological literature review and field inspection revealed that the area was once within a yam field, or pā uhi and may not have been inhabited until the early post-contact era (Harrington et al. 2018). By the mid-1800s Hawaiian and Euro-American homes and two bowling alleys occupied the block. By the late-1800s a variety of small retail businesses emerged, and by 1906 the Empire Theater was established within a previous building on the lot. An archaeological inventory survey identified SIHP 08811, the remains of the historic Empire

Theater/Grotto Saloon, including its the buried floor, two historic trash deposits, and a fragment of human remains (McElroy et al. 2021).

Summary of Background Research

Honolulu Harbor and its environs were well established prior to the arrival of Europeans in the late 18th century. Native Hawaiian accounts identify the harbor as a significant location associated with various resources, named people and deities, along with a number of traditional activities. The environment was characterized by the named winds and rains. Sections of the coral reef were also named and these likely served as fishing grounds for local families. Fresh water was found in Nuʻuanu Stream on the northwest end of the harbor. A number of the named places adjacent to the harbor were associated with extended families and their homes. Hence, daily life revolved around both the marine resources of the harbor (and neighboring fishponds and salt ponds), as well as cultivated lands just inland from the coast. The main focus of ritual activity was the heiau at Pākākā Point, but fishing shrines are also mentioned in traditional accounts.

The arrival of foreigners in Hawaiʻi brought about drastic changes to the islands. During the late 1700s and 1800s, Honolulu grew from a small village to a bustling city, and the project area is located within what is now the Chinatown Historic District (SIHP 9986). Piers 12 and 15 were established early in Honolulu's post-contact history, with Pier 15 located just across the street from the project area. It was established around 1843, when it was known as Emme's Wharf. In addition, the prominent residence of Francisco Paula de Marin was situated just south of the current project. On the project area itself is C. Q. Yee Hop building, which was constructed in 1919 and is currently used as a warehouse.

Previous archaeological research has covered the Honolulu Harbor vicinity fairly well, with projects spanning much of the length of Nimitz Highway, and key studies completed for areas such as Marin Tower, Harbor Court, 800 Nuʻuanu Avenue, and the Chinatown Gateway Plaza. These and other projects have provided archaeological evidence for transformation of the Honolulu Harbor area over time with finds such as cultural layers, historic trash deposits, structural remnants, pondfield remains, and pre- and post-contact burials.

The entire study area has undergone extensive previous disturbance, and it is not likely that any surface archaeological features remain aside from the historic building. Nevertheless, subsurface archaeological materials or deposits may be encountered during construction, as evidenced by the finds of previous studies in the vicinity. Potential archaeological remains that might be encountered in the project area include remnants of agricultural activity (pondfield deposits and other features associated with loʻi), sites related to LCAs of the study area, remains associated with the development of Chinatown, Honolulu Harbor, and the city of Honolulu (deposits from the Chinatown fire, structural remnants, cultural material from merchant families), and human burials.

ETHNOGRAPHIC SURVEY

Not all information can be found in the archives, in textbooks, or at the library. Rather, it is through the stories, knowledge and experiences of our kamaʻāina and kūpuna, that hidden information is found. Through them we are able to better understand the past and plan for our future. With the goal to identify and understand the importance of, and potential impacts to, traditional Hawaiian and/or historic cultural resources and traditional cultural practices of the project area in Chinatown, ethnographic interviews were conducted with community members who are knowledgeable about the area.

Methods

This Cultural Impact Assessment was conducted through a multi-phase process from February through April 2022. Guiding documents for this work include The Hawaiʻi Environmental Council's Guidelines for Assessing Cultural Impacts, A Bill for Environmental Impact Statements, and Act 50 (State of Hawaiʻi). Personnel involved with this study include Windy McElroy, PhD, Principal Investigator of Keala Pono Archaeological Consulting and Cathleen Dagher, BA, Ethnographer.

Interviewees were selected because they met one or more of the following criteria: 1) was referred by Keala Pono Archaeological Consulting or ʻIkenākea Development LLC; 2) had/has ties to the project area or vicinity; 3) is a known Hawaiian cultural resource person; 4) is a known Hawaiian traditional practitioner; or 5) was referred by other cultural resource professionals. Five individuals participated in the current study. Manaʻo and ʻike shared during these interviews are included in this report.

Due to Covid-19, some written or videoconference interviews were substituted for in-person interviews; one group interview was held in person, however. The interviews were taped using a Sony digital recorder or for the written interview, responses were received by email. During the interviews, each person was provided with a map or aerial photograph of the subject property, the Agreement to Participate (Appendix A), and Consent Form (Appendix B), and briefed on the purpose of the Cultural Impact Assessment. Research categories were addressed in the form of open questions which allowed the interviewee to answer in the manner that he or she was most comfortable. Follow-up questions were asked based on the interviewee's responses or to clarify what was said.

Transcription was completed by listening to recordings and typing what was said. A copy of the edited transcript was sent to each interviewee for review, along with the Transcript Release Form. The Transcript Release Form provided space for clarifications, corrections, additions, or deletions to the transcript, as well as an opportunity to address any objections to the release of the document (Appendix C). When the forms were returned, transcripts were corrected to reflect any changes made by the interviewee.

Several potential interviewees were contacted, resulting in two individual interviews and one group interview conducted (Table 5). The ethnographic analysis process consisted of examining each transcript and organizing information into research themes, or categories. Research topics include connections to the project lands, Chinatown and Honolulu history, changes over time, archaeological sites and cultural practices, and concerns and recommendations for the project. Edited transcripts are presented in Appendices D–G.

Table 5. List of Individuals Contacted

Name and Connection	Method of Contact	Result of Contact
Mana Cáceres (Cultural Descendant, OIBC ‘Ewa District Representative; CEO of ‘Ohana Kūpono Consulting)	Email	Completed a Zoom interview
Dr. Lynette Hi‘iolani Cruz (HPU College of Liberal Arts, Department of History and International Studies)	Email, phone	No response
Kiersten Faulkner (Executive Director, Historic Hawai‘i Foundation)	Email	Completed a written interview
Sifu Ernest Loo (Kung Fu Master, Cultural Practitioner)	Email, phone	In-person group interview
Dr. Puakea Nogelmeier (Professor Emeritus of Hawaiian Language at the University of Hawai’i, Mānoa; Executive Director of Awaiaulu)	Email	Declined
Kaleo Paik (O‘ahu ‘Aha Moku Council)	Email	No response
Chu Lan Shubert-Kwock (Founder and President, Chinatown Business and Community Association; President, Associated Chinese University Women; President, US China Peoples Friendship Association; Member, Downtown /Chinatown Neighborhood Board; Chair/Board Member, State of Hawaii, Small Business Regulatory Review Board; Small Business Owner)	Email, phone	In-person group interview, follow up in-person interview
Sifu Kimo Wong (Gung Fu Master, Cultural Practitioner)	Email, phone	In-person group interview
Kumu Hinaleimoana Wong-Kalu (Cultural Practitioner, Former OIBC Chair)	Email	No response

Interviewee Background

The following section presents background information for each interviewee, in their own words. This includes information on the interviewee’s ‘ohana and where the interviewee was born and raised. The interviewees are Mana Cáceres, Kiersten Faulkner, Sifu Ernest Loo, Chu Lan Shubert-Kwock, and Sifu Kimo Wong. Kiersten Faulkner provided written responses to the interview questions, while the other interviews were either in person or by virtual, via Zoom.

Mana Cáceres

> My name is Norman Kaleilani Cáceres. I also go by Mana….My parents are from Hawai‘i, O‘ahu but they moved to California right before I was born. So I was born in California. I grew up in Washington State. After I graduated high school in 1995 I moved to the Big Island to go to the University of Hawai‘i at Hilo. I spent a few years, graduated with my BA in Communications. During my time there I met my wife and we started a family in Hilo. After Hilo we moved to Kona for about a year or two and in 2004 we moved to O‘ahu where we’ve been here ever since.

In the past maybe 10 to 15 years I've been doing work on genealogy and since then I've been handed the responsibility of continuing the work and the research for the genealogy. My grand aunt who passed away two years ago at the age of 101, she passed that torch to be kind of, you know, the record keeper of the genealogy to me at her 100th birthday a few years ago. And it was, you know, having to look through her research and adding my own research that I got, that me and my family got involved with burial treatment plans and the caring of Native Hawaiian human remains. Basically due to a project that was on the Big Island that impacted my 7th generation great grandfather, so it was kind of, it was the reason why my family and I are state recognized cultural descendants to iwi on the Big Island and more particularly for these projects we are recognized to iwi kūpuna that was found during the AIS work for the rail.

Kiersten Faulkner

Kiersten Faulkner has served as executive director of Historic Hawaiʻi Foundation since 2006. She oversees all aspects of its preservation programs, strategic planning, business lines and operational matters. She holds a Master of Arts in Urban and Environmental Policy from Tufts University and is a member of the College of Fellows of the American Institute of Certified Planners (FAICP).

Historic Hawaiʻi Foundation is a statewide nonprofit organization established in 1974 to encourage the preservation of sites, buildings, structures, objects and districts that are significant to the history of Hawaiʻi. HHF is an organization with a demonstrated interest in the undertaking and a concern for the effects on historic properties.

Sifu Ernest Loo

My father came on a boat from Canton, China, in 1945. His destination was San Francisco…his village, said it was a good place to come to America. But, when the ship arrived in Honolulu, he kinda went, "I want to stay here," so he jumped ship. He really, really jumped ship. And then, he went swim and after a period, some fishermen saved him. So, they said, "What do you want to do?" He said, "I want to stay here. It's very peaceful."

So, he jumped ship and then the fisherman saved him. They said, What are you doing?" He said, "I want to live here." So, the fisherman said, "Oh, I have the same history. I want to stay here, too. So, why don't you come live…do you have a place?" He said, "No. I have no money. No nothing. I just came off the boat." So, the fisherman took him to his house on Maunakea Street and he lived there - with nothing on his back. And what so happened was, there was a place, Char Hung Sat, and he learned how to make manapua. And that's how he survived. So, he worked for three years. Then in 1948, he sent money back to Canton, China, to bring his wife over here and the daughter.

I was born at St. Francis, in 1950. My sister is ten years older. And then, my mom, after she came here she worked at Char Hung Sat, too, as a dishwasher…And then, I have a younger sister that was born in 1952 and my younger brother [was born] in 1954. We lived in the Chinatown area until 1965…I had a restaurant in 1976. So, if you want to fast forward! I graduated from U.H. and Chaminade in 1972. Then I was a CPA [Certified Public Accountant]….[Then] I started a restaurant, a Chinese restaurant. It was called Silver Dragon in Kam Shopping Center.…So, in 1980, I sold my share of the Silver Dragon and I used that money to open a restaurant in Mānoa. So, I had it for 10 years and from there, I was always in the restaurant food business.

Chu Lan Shubert-Kwock

Born in Singapore…Been here since 1975. [My family was] wealthy. Very committed to the community. Raised me right so that I can help those who are not educated who need help. "Use your knowledge for the betterment of humanity" was the mantra in my house.

Be involved and be caring, professional, and just help the community because knowledge must be shared and used for good. Because when I was a girl, my mother fought for me to be educated. Most girls never got a chance to have an education and they usually just sent girls to the village school for Chinese. And in Singapore in those days if you're Chinese educated you cannot be doctor or a nurse. You can be a Chinese teacher, but it's very limited in terms of career mobility. And so my mom wanted me to be a doctor or somebody useful that saved lives. I tried to be a lawyer. But, in those days Singapore did not allow girl students to be a lawyer. They were interested in becoming educators for a lot of people because we need teachers, social workers and nurses. We don't need lawyers because there was nobody suing anybody in those days because the country was so poor. So, they only selected like six boys out of our school to be in the law school. It was a very small place. So, I couldn't be a lawyer. But, I always wanted to be a lawyer because I wanted to make laws that are universal that helped humanity.

My dream was always to go to undeveloped countries to help women get an education and to give women a chance. All my life I've been fighting…fighting to have equality for women and to help women become effective in the home, and in the classroom, in society… I think women would be better administrators and better stewards of the land because they understand nature and they understand the importance of god's doing. Because that's why women are gifted by god to be able to bear children and to nurse them. Women live longer, in spite of all the stress that they have to go through. So, I think that we're built better and stronger than men so that we can withstand a lot more suffering and sacrifices. Women should never give up no matter where they are from. Because we have to be brave enough to make changes, be willing to sacrifice, and get punished for speaking our minds. Women and girls have to realize that we have as good a brain as our counterparts. And who knows, we might even be better. So, we should never feel less because we're born women. In fact, we should be stronger. We can compete just as much even though physically we might not be as strong as men. However, our brain muscle is equally strong. And I don't believe muscle has to be physical.

Sifu Kimo Wong

If I start with my father's side, my grandfather came from China in 1889. He was 12 years old. He came from the Chung-san District which is where most of the people in Hawaiʻi came from, Chung-san - South China.… And so, because it takes about a month or month and a half [to make the trip from China to Hawaiʻi, his trade was a cook. But, he came by himself. He ended up on the Big Island. And he worked, luckily, for the missionary family – the Lyman family. He saved his money and eventually he opened up the Ola Meat Market – a pretty popular meat market. Wong's Meat Market. He had a business there and then he used to deliver the meat to all the plantation workers in that area. He was able to raise 15 kids.

He [my grandfather] married my grandmother, who was from Waiʻanae…So, they [his maternal grandparents] bought the property on Liliha Street and they built a home. In fact, they had three homes. Had apartment units in the back. And they rented it all out. Yeah. And she worked at Dole Cannery, my grandmother.

My father was born here. He was in the medical [school], just about residency, when World War II got to him. So, he went to the military. When he came back he kind of lost interest in medicine. But, but! He took on aviation in the military, with the army. His brother was a medic, but he liked aviation. He liked the trooper, the parachute – that kind of macho thing. So, when he got back, he actually was one of the first pilots for United Airlines.…I was born at Queens Hospital in 1956…Eventually, we moved to the Nuʻuanu area.

I grew up in the Nuʻuanu area…I graduated from university – double major in finance and marketing. But, that wasn't my passion. My passion was the martial arts. I started when I was four…Gung fu was not like how it is today. The Gung fu schools and even the Lion Dance schools and the Gung Fu Shaolin were very traditional. You learned the old styles. You sit for hours and stances because that's the foundation that you have to develop. Discipline. It's not about the fighting and all this. You learn it as you earn it. In fact a lot of them did not have a belt system until later when kids wanted ranking. Give ʻem a green stripe or whatever. It's all discipline, it's purely discipline and focus and understanding.

Topical Breakouts

The following sections are extended quotations from the interviews, organized by topic. Interviewees provided information on connections to the project lands, the history of Chinatown and Honolulu, changes to the area over time, as well as archaeological sites and cultural practices. They also shared their concerns and recommendations for the proposed Chinatown Hotel Project.

Connections to the Chinatown and Honolulu Area

…My family and I are state recognized cultural descendants to iwi on the Big Island and more particularly for these projects we are recognized to iwi kūpuna that was found during the AIS work for the rail. And so on the map that you sent me, you can see, I think it's one block west, you can see the proposed rail station. So that's where recognized descendants to the human remains that are on that project. [Mana Cáceres]

…we were able to prove that we had ancestors living in the area because on my mom's side we have genealogy that ties us to Kakaʻako and kind of this area too. So it was kind of interesting when you mentioned the possibility of that building being tied to like seamen. My great grandfather was enlisted and I think he was in the Navy, but he went on ships leaving from that area. [Mana Cáceres]

As I mentioned, my grand aunt officially gave me the responsibility to kind of continue on her life work. You know, she died when she was 101 years old. She spent maybe 80 years of that, maybe 70 years of that doing research for family and then genealogy, it's pretty comprehensive. But it's from her own research and then sitting down with her daughter, my mom's cousin, learning family stories and moʻolelo of my great grandfather and how it kind of ties into this area specifically. [Mana Cáceres]

…my great grandfather raised his family in the Kakaʻako area, the Honolulu area, and then so when my mom was born, she was raised by her grandmother in the Kakaʻako area too…[Mana Cáceres]

Um yeah, so my great grandfather's name was William Huihui, who went by Bill. He was born in 1875 in Pauoa. But he enlisted in the military, and he kept on enlisting. But him and his wife raised his family on Queen Street in Kakaʻako. [Mana Cáceres]

Sources of knowledge include the Chinatown National Historic District nomination (1973) and proposed update (2021); City & County of Honolulu Special District Design Guidelines (1991); "A Close Call: Saving Honolulu's Chinatown" (2005); and personal interviews and discussions with property owners, managers and members of grassroots organizations located in the district. [Kiersten Faulkner]

Historic Hawaiʻi Foundation has been instrumental in efforts to preserve, protect, interpret and restore historic properties in the Chinatown Historic District for over 50 years. Several of HHF's founding members were instrumental in nominating Chinatown to the National Register of Historic Places in the early 1970s. HHF worked with the City & County of Honolulu to establish the Chinatown Special Design District in the 1990s. HHF developed a walking tour map with historic information for self-guided tours in the 1990s. HHF has hosted numerous educational seminars for property owners, architects, planners and engineers into best practices and standards for repair, rehabilitation and restoration of historic properties and character-defining features in partnership with the City & County of Honolulu's Department of Planning & Permitting and the Chinatown Merchants Association. HHF is the publisher of the book "A Close Call: Saving Honolulu's Chinatown" by Nancy Bannick with David Cheever and Scott Cheever (2005). HHF has supported historic property tax incentives and grant programs to assist property owners with financial resources to support the restoration of historic buildings. HHF engages in educational and advocacy efforts to protect the historic district and its contributing buildings, objects, sites and structures. [Kiersten Faulkner]

My grandmother, she was born here, also, on my mother's side….Her brothers had a temple right down on…where the Ching development is…On Beretania. The whole block, but it was a small temple…Eventually, we moved to the Nuʻuanu area. [Sifu Kimo Wong]

I don't know if Ernie knows this. I don't know if Ernie knows this story. But for Char Hung Sut, the Char Hung Sut manapua is famous today because of his father. The reason is that at a certain point, this is only through rumors! The Char Hung Sut was owned by the Mau family, right?...Right, Mr. Mau them. His [Sifu Loo's] father used to work for him. And he [Sifu Loo's father] used to make all the manapua. I think your father wanted to open a small business. Took all the business from Mr. Mau. So Mr. Mau came and begged him, begged him! To come back! [Sifu Kimo Wong]

As Sifu Loo was mentioning, everyone struggled. They were eating manapua and rice. My God! And they were striving to build a family foundation. And we had the house, but eventually, my grandmother passed away. My mother…sold the property and Mr. Loo's family was – they were living downstairs. They're living downstairs! And this is what gets me! They're living downstairs. The upstairs house was bigger and had the property and the downstairs was probably the cheapest. It was the basement! And Mr. Loo's father built his fortune and they bought the whole property! [laughter]. [Sifu Kimo Wong]

We lived in the Chinatown area until 1965…Like he said, the goal was whatever money you collect, you build up to buy your own property. That was the goal. We were, we were very frugal. But, like I said…a guy from China jump ship with zero dollars and he saved all his work money to buy an apartment house. [Sifu Ernest Loo]

I saw such a tremendous neglect in Chinatown and its rich culture and history. I saw our Chinese societies, we have over 150 societies. They were all inwardly beneficial to themselves. There was no community service, there was no volunteerism because most of the societies owned their buildings, had money in the bank, collected rent, but they were only benefitting their own clans. To me, it's very selfish because they expect government and everybody else to take care of the community…This is fundamentally wrong to me, because we live in a society not by ourselves. We live in society with other people. So, it is our community and we should be giving back. I started volunteering over 30 years ago and then about 15 years ago, in 2009, when Sunny Wong, who was our Mayor of Chinatown, died – the city was under Mufi Hannemann. Chinatown was going from bad to worse – terrible crimes. There was the crack cocaine. There were all kinds of drugs. Prostitution was very high. Lots of crime. There was a vacuum left by Sunny Wong's death. Sunny was working with Mayor Harris and I was working with them. We did things like Night in Chinatown. We did parades. We did the Dragon Boat Festival. We donated money and time and brainwork. Then everything fell to the wayside when Hannemann took over. Things got so bad that almost every shop in Chinatown was robbed or broken into. They came to me and said, "Do something. Do something." So, I approached then-City Council member Rod Tam to do something. We formed the CBCA, which stands for the Chinatown Business and Community Association. The reason I picked this name is because we wanted to represent the voices of our residents and our businesses because we are a community. Our motto is "To Preserve and Protect Chinatown." We want to make Chinatown into a shining jewel with this rich heritage. [Chu Lan Shubert-Kwock]

I am a lifelong student of history. I particularly love world history. I study the history of all the civilizations. I am just a nut. [laughs] I like history because I love the study about people and history tells you. Now I don't mean… I don't read one writer. I like different writers. I read different writers. I just have a consummate interest in people and how they impact the community they live in. [Chu Lan Shubert-Kwock]

I own a home and business for many years. So, I own two successful businesses. I own ABC Mortgage for 28 years. And I own… I used to own Shubert Properties and after my divorce, in 1998, I formed Chu Lan Properties. So I still do real estate. I don't do it on a big scale any more. I'm a one-man army. So, I used to be making a lot of money because I had two companies and a lot of staff, two offices. But then, when my divorce happened it kinda like took me six years to recover from the devastation. And then I started to think…think about myself how to recover from this trauma. Then I got more active in volunteerism and doing that. So I refocused my life because in the past I was focused on making money and being successful, living on top of the hill, which I did. Built a big house. So now I have a small house, but I don't live there because of my work in Chinatown. So, I had to move into Chinatown, pay rent in order to run for office. [Chu Lan Shubert-Kwock]

So, Neighborhood Board you need to live in your district. I've been living in Chinatown all these years but paying rent here and also paying a mortgage at home. So, I sacrificed. I've been doing that because I wanted to. Not for any other reason than that there is no one watching out for Chinatown and all the problems in Chinatown because the City was neglecting Chinatown…politicians...And all the small business people have no voice. That's why I got involved. It's not for egotistical reasons. It's because I felt a calling that somebody has to take care of the garbage. Somebody has to sweep…pick up the garbage from the street. I'm not just going to skip over it. I have done this for years now. I've been volunteering in the beginning when I was very wealthy… So, when I became poorer I actually work in Chinatown, pay both sides, and dedicate myself to a lot of the work. And so, I started the collaboration with the City – both complaining and also assisting. Highlighting the problems. I got a lot of things done in Chinatown over the years. [Chu Lan Shubert-Kwock]

…I will say that this administration is a little different because they hired some people like myself who are idealistic. Who look to the future as something that is infinite for our next generation and generation. Not just the myopic short term, "Let's get through this four years and when you're in your second year start gearing up to get donations for re-election for next four years." You know. So, a lot of that mindset that kills good programs, it's that short term. And so the administration doesn't have a long-term view or long-term solution because they're merely looking at the next election. And the corruption that happens because of the need for money for the election. [Chu Lan Shubert-Kwock]

… I founded [The Chinese Business and Community Organization]. And so, we are never rich. But, we don't ask for a lot of money….The reason I ask for a $5 donation is because in the past we have a lot of people come and eat for free. We cannot afford them and they have no interest in Chinatown. They just come to eat because, "Wow. Free."… The reason we do this once a month is to open up so they can have a comfortable breakfast, too comfortable to share, and then we're also promoting business in Chinatown, dim sum, something new for people. Something that's good. So, we never have a meeting outside of Chinatown. It's always to help a restaurant. And all our parties, every year, we have it in a Chinese Chinatown restaurant. So that they can benefit from our efforts…So, every month we pay a hundred something dollars for the meal every month and we maybe collect $50. $60. $40. We collect $30 dollars, too. But, we manage to survive. [laughs] [Chu Lan Shubert-Kwock]

History of Chinatown and Honolulu

[The subject property where the Chinatown Hotel is going to be built] belongs to the Chun family. This was a powerful merchant family that owns a lot of property and businesses in Chinatown. This family owned the first market in Chinatown. This hotel site has now been passed down to the fifth generation. They are selling the parking lot along with the historic black stone building. [Chu Lan Shubert-Kwock]

Chun Quan (C. Q.) Yee Hop was another successful Chinese merchant. Beginning in 1885 with a one-man meat stand in Chinatown, C. Q. Yee Hop built a multimillion-dollar commercial empire across the Hawaiian Islands over the next seven decades. One of C. Q. Yee Hop's earliest and most significant business ventures, C. Q. Yee Hop Market, operated out of his building at 125 N. King Street for over 40 years. [Kiersten Faulkner]

The 20-year period between 1920 and the outbreak of World War II saw continued construction in Chinatown. Most of the few remaining vacant lots were infilled, and the interior of blocks continued filling with buildings during this period. As highlighted by the C. Q. Yee Hop building at 125 North King Street, the construction of multiple rear additions onto the commercial-block buildings was also common during this period, with the interior of some blocks nearly entirely occupied with additions, freestanding apartments, tenements, and auxiliary buildings…Some buildings from previous periods were demolished between 1920 and 1941 to make way for new buildings, as was the case in the 900 block of Kekaulike Street, where the old City Market was removed and a new warehouse was built in its place. The period also saw the expansion of Honolulu Harbor and improvements to roadway infrastructure and Nuʻuanu Stream. By the outbreak of World War II and the end of this period, Chinatown was a densely packed district, comprised of commercial, industrial, and residential buildings. [Kiersten Faulkner]

The rich heritage is not exclusive to the Chinese alone, even though the Chinese were the first immigrants to the Hawaiian Islands, and they had lucrative businesses, wealth and properties. The early Chinese businessmen had a lucrative business with the King of Hawaiʻi – the Kingdom of Hawaiʻi, where they exported all of the sandalwood from Hawaiʻi. That's why Chinatown was known as "Sandalwood Island" or "Sandalwood Mountain." And then, came the Big Five – the sugarcane industry and the pineapple industry. And later on, around the 1850s, they recruited Chinese plantations laborers who were different from the Chinese gold miners and railroad laborers. In Hawaiʻi there was better treatment of the Chinese plantation workers. They were not discriminated against by the Kingdom of Hawaiʻi. The local people and the Chinese plantation workers got along well. The Hawaiian Kingdom allowed Chinese men to marry with Hawaiian ladies…A lot of Hawaiian people have Chinese ancestry and were raised as both Chinese and Hawaiians. Then came the Japanese, the Puerto Ricans, the Portuguese, then everybody came. They were all in the sugarcane business. The white folks who ran the plantations were known as the "lunas" or the captains. They had whips they used to whip the workers. They built these little ramshackle villages for the workers to live in, plantation villages. So the workers can live in these ramshackle plantation huts with no bathrooms and no running water. They used outhouses. Some of these still remain in certain parts of Hawaiʻi – in Kalihi, in Waipahu you see these ramshackle plantation buildings. I also felt like so many wealthy people who did well in Chinatown, but did not do enough for Chinatown. [Chu Lan Shubert-Kwock]

…[T]he first Chinese billionaire in Hawaiʻi was actually the Financial Minister or Councilperson to the King and advised him on business. King Kamehameha and his family had a lot of business doings and they were able to learn about international trade from the Chinese traders. [Chu Lan Shubert-Kwock]

With the Chinese traders that are wealthy and who come here to trade were sanctioned by the Manchurian government. They had a special license to be able to trade. So many of these people went to Japan, England, Europe to trade. And long time ago there was a Viceroy from the Ming Dynasty that traveled around the world looking for new lands, and new places to influence, and materials. And the secret was really to look for a longevity herb to prolong the life of the Emperor. That's why they have this…So they actually sent out a lot of envoys and ships in search for this mystical longevity herb to bring back. So, many of these voyages were not successful and they all landed in like Japan, Okinawa, South America, everywhere else that you have colonies of Chinese people. They cannot go back because if they went back they will be beheaded for not finding the drug – the herb. So, settlements happened in all these parts of the world because these ships landed. So, they used to have this famous Chinese junk that traveled around the world. In fact, there is a book written by a Chinese-American in California about the California mountains that the Chinese Viceroy had found and there were pictures, paintings of the mountain range in California made 2,000 years ago. [Chu Lan Shubert-Kwock]

Money flowed like water [talking about Chinese gangs, organized crime, and how they protected the people from being victimized by criminals]. That's what Chinatown is built on. All these buildings and the buildings in the back….You know, the Society members meet in secrecy….So…the Chinese did feel they needed protecting at that time, of course…But a lot of it had turned into where a lot of them, the children became policemen, attorneys. They developed into society… [Sifu Kimo Wong]

I think already a lot of things have passed, you know, from the '20s up through the '60s and all that. You know, the underground tunnels [that were used] for the shipping, for easy walking, and also…interconnected to the buildings…A lot of them were used later for opium, trading… [Sifu Kimo Wong]

You know where the Wo Fat Building is? They have a basement underground. They would open the door on the street and shoot stuff down….I used to work at Wo Fat and I know the bottom level was always dry…You know Maunakea Street? Trucks would park there, open the steel doors and slid everything down…. [Sifu Ernest Loo]

…Somewhere in my genealogy there's hand drawn maps, which is kind of cool. I didn't realize that there was almost every block had some kind of church, you know. Not this exact area, but closer to you know, Queen Street and stuff like that. There was the Hawaiian Church, then the Chinese Church, the Japanese Church, so it was kind of cool to see. You know, looking back in time at those kind of stories and maps, you can kind of see that in this area in particular it was kind of a melting pot of cultures. So I always find that interesting. The Portuguese had their own church. Everybody was in Kaka'ako. [Mana Cáceres]

…Even though I was raised in Washington State every so often when we would come to visit Hawai'i and visit relatives, they were no longer living in the area in Honolulu anymore. But my mom would still drive us around and point out the places that were kind of important to her when she grew up, even though a lot of them weren't there anymore. I don't know if they still have the, she used to call it the holy ghost parade. It was a Catholic Church in Kaka'ako that they used to do a religious type of parade. [Mana Cáceres]

Changes over time

No, it wasn't this nice [when asked if Chinatown looks the same as today]! No! [laughs] It was wooden buildings, really, only two-stories [high]. It's not like this. Did you ever see in the movies how old Chinese houses look like? You have a regular door knob…how you lock your door is get a hatch and you lock one side. You had one window and then your bed was really a wooden bed, you get a mattress…it's really a rooming house because you share a bathroom, you share a kitchen. Everything is shared… You put two beds over there - we shared. Your father and mother shared. There is no divider. And then you have a small little table for your dinner and wooden stools for chairs… Yes, one big room. And then, go to the bathroom, go outside. Take a bath, go outside. [Sifu Ernest Loo]

I think Chinatown, every Chinatown grows differently. In Hawaiʻi, you know, you notice there's not too many Chinese restaurants. You see a different culture, you have different generations of Chinese coming in, new immigrants coming through. Right now, when you look at what Chinese are coming through, not necessary one from Hong Kong is going to open a business because they all have wealth. Not from Taiwan, they all have wealth…The Fukienese people, right?...Yeah, and so they come in, they have a lot of money, they open businesses, and they start to prosper. [Sifu Kimo Wong]

The Chinese they moved out of the Chinatown area. [Sifu Kimo Wong]

See right now in Honolulu, Chinatown, you have the Vietnamese. They have the money now…See, all the Cantonese, they are the older people, their kids are selling their properties and the Vietnamese are buying them up. [Sifu Ernest Loo]

Archaeological Sites and Cultural Practices

I think it's a high likelihood [of encountering burials], yeah. [Mana Cáceres]

…From what I have seen research wise, it looks like that area is more of like historic period. You know, I'm not sure exactly where the old, the actual coastline was in ancient times or whatnot, but from what I know that whole area, especially where that project is, I believe is all built on fill that was brought in. [Mana Cáceres]

You know I think with the scary part with any place in Hawaiʻi is even though it's imported fill you know, there's a high likelihood that you do have iwi kūpuna in the fill also. So of course, me and my family, it's always a concern of ours no matter where on the island the development is happening. [Mana Cáceres]

…The more Diamond Head you go, you have a lot more salt pans, those are cultural and then the historic salt pans the more Diamond Head you go…I don't think there's anything [traditional gathering practices] within these exact parcels or in the immediate area. [Mana Cáceres]

I know that in the reports, the archaeological inventory survey reports for that rail, the Chinatown station that I've mentioned a few times, I believe they found a layer that was associated with the Chinatown fire. [Mana Cáceres]

It's more of the bones and the iwi, and all that stuff. That might be, you know, around this whole area. [Sifu Kimo Wong]

A lot of this is Hawaiian bones…[Sifu Kimo Wong]

And you learn a lot culturally, as well. Lu Kong. My grandfather – Ng Poon…I trained at four year old. So, after school, I would go to the disciplinary training and learn different arts. At that time, in the '60s, a lot of…the Chinese had a lot of societies that helped other Chinese. It could go by village, it could go by last name, it could go by district, whatever it might be, even by unions….The Chinese were bound together putting their money, and they'll help out other Chinese, as well. But, among the Chinese societies, there's also like club fights – disagreements and all this. So, a lot of the clubs would get these Gung Fu guys to help send a message. [laughter]. So, at that time, it was like you wanted to develop, whoever, to have that recognition. [Sifu Kimo Wong]

So, I was just one of them that was trained with my grand-uncle. Until later when he passed away, my father wanted me to continue and my mother wanted me to continue. But my grandfather belonged to that society, the one that supported…the revolution after the last emperor to reign in the Republic of China. So, anyway, that's where I ended up… So, sometimes, we had a lot of Gung Fu schools opening. At that time, most of the Chinese societies, the older ones, accepted only Chinese. But then, in '74, when Bruce Lee came around, everybody wanted to learn Gung Fu. But me, I'm coming from the traditional side. You had a lot of other people from the mainland that were coming here, mostly like in Wahiawa, Schofield, and all this. They learn taekwondo or something else and they'll say [it's] Gung Fu. [Sifu Kimo Wong]

In our style, we just block. So, if a guy is punching me, you just block. You punch me, I'll block you. You kick me, I'll block…So, it's like this, no matter how you punch me, I'll block you until you get tired. I'm moving your energy away someplace else. I'm not stressing out. You are the one killing yourself. No matter how hard you punch, how much you blast, you are gonna blast, you are gonna get tired out first. You're gonna get tired, you quit, you walk away. 'Cause, you know, you're punching a brick wall, who's gonna win?...We were taught pressure points. But like they say, "In America, you kill somebody or you paralyze somebody, you're in trouble."…You're responsible. So, that's why I say, we play defensive…There are pressure points around the neck area…These are killing points...In other words, we're taught to hit certain spots at the right angle, you get paralyzed, you die. We were taught that in case you have to defend yourself that way. Your professor says, "I'll show you, but I'm not the one who showed you. You found out. In case you have to use it, I didn't teach you." It's like a secret weapon…So, in other words, like I said, everything was defense. That's why we don't enter or carry much anger…In other words, when it comes to Kung Fu fighting, the defense always screwing up the offense. So, it's two families combined their teaching choosing defense vs. offense, it's easier. Less stress, really…And less blame. 'Cause like I said, even though you might be a martial arts student, do not pick a fight. Never pick a fight. In other words, just be humble, walk away. But, in case you get robbed or something, you know what to do. [Sifu Ernest Loo]

That was the foundation and use the foundation of the Gung Fu, of defense, walk away. In gaining the discipline and the control to understand it, to lose the emotion. Now, of course if you have to defend yourself because someone is going to be killing you or your family…You lose the emotion because the emotion without the discipline, without having to stand in a meditative state, then you are not in balance with yourself. If you are in a balanced state and understanding, you have control of yourself no matter if someone is yelling at you, bullying you, pushing you, even hitting you, it doesn't matter because it flows out. The same energy is still…but at that moment in time it's a yang energy. So, you learn how to control that energy and bring everything into proper perspective because you have no emotions vs. a person that has emotions when someone pushes them or walking on the street and threatens them, they become emotional. And realizing the fact of the Gung Fu, you start – there's no end. [Sifu Kimo Wong]

Basically, look at the so-called tradition, you're looking at the strongest stance. They call it the five stances. Wing Chun was developed by a nun, Ng Mui, because as she moved away from the temple, the classical guys, they wanted to challenge. So, she developed, Ng Mui, developed a system to go against straight powerful blows utilizing the mechanics and the physics of the female body. It's very interesting. I mean develops…Develop close range fighting. Because they [women] don't have the power of as man, a wide range fight. They believe once you're in close, most of the system was from a far defense stance….Most of Wing Chun stays close. But, in order to be close you got to be somewhat what people believe you're being is aggressive, but it is actually defensive by striking [laughter]. So, say you have a strike only. Say you have a block only. Wing Chun application is blocking and striking at the same time. Simultaneously…So, it has to be what people see as aggressive, but is actually a form of defense as well, because it came out of the temple. The Gung Fu men became very famous because of the Boxer Rebellion. They didn't have guns and weapons, so they relied on the Gung Fu men to become the fighters. They're part of the revolution. A lot of it has to do with the revolution that's why a lot of it is secrecy. And the death touch, the nerve touch, is to kill, if you need to. You know, you can strike and a person maybe will eventually get a blood clot and die one month later… [Sifu Kimo Wong]

There's a whole long history of why it developed and all this. But, even the Lion Dance itself, the traditional Lion Dance, which Sifu Ernie does – the stance, the movements – it's all Gung Fu motions. And because it's disguised as where when the Emperor killed all the Gung Fu men off and as they hid in the Shaolin temple and the Quing burns the Shaolin. The Gung Fu guys came up with…developed this Lion Dance that's going to bring blessings. Short story! And so they practiced the exercising and the passing of the…and the eating the lettuce – all symbolic: the money, the leases, and all this stuff – it's a whole different story. But, they're developing a discipline...They pick up and that's when they start dancing. The old school, even myself and Sifu Ernie know, but you cannot teach kids…And you assume this stance and you hold the head up for hours – for hours! The tail – the head is up and you get a whack because the head is popping out, But, that is all the discipline. Not how you supposed to do. That's part of it, but the discipline and the cultivation of this discipline of the Lion Dance, Gung Fu, comes out for the development of what Sifu Ernie does. [Sifu Kimo Wong]

In order to Lion Dance, you have to learn Kung Fu, the basics that's how you save your energy. So, instead of targeting…you have to fight with Kung Fu using the emotion of the lion. You get your stamina from the lion. Just like I want to whack…instead the hand of the lion will come up, you use the hand of the lion to show that motion. That's how the…Lion Dance. Because you show different emotion by doing it. [Sifu Ernest Loo]

[The Lion Dance is] for fun and I feel good about it. You know why? I have a feeling the lion protects me. The lion protects you. It's a spiritual thing. It's a non-paying job, but I feel good doing it. You know why? The guy upstairs, somebody, is watching over you. [Sifu Ernest Loo]

And that's the life cycle. Eventually, we all leave. Whatever we accomplish, we understand the accomplishment is not just for now…But, when I pass, I'm aware there is life afterwards…But I know this goodness I am doing, through whatever I can do, whatever it might be to other people, to other things, culturally, we put our heart to it, and we do it well. Because if you ever see Sifu Loo do the Lion Dance, it's not just the lion. When he goes and gives the gift, I can see how happy he is…It is the emotional feeling of the blessing that he feels he is giving… [Sifu Kimo Wong]

A lot of the Chinese culture stopped during the Communist time. The "Bamboo Curtain" came down – they got rid of all the Gung Fu, the training, philosophy, the temple, everything…But, the culture traveled from there with our grandparents…That's the difference. [Sifu Kimo Wong]

The proposed projects are located within the Chinatown National Historic District, which was designated on the National Register of Historic Places on January 17, 1973 (State Inventory of Historic Places [SIHP] Number 50-80-14-09042) and on the Hawai'i Register of Historic Places on November 25, 1985 (SIHP Number 50-80-14-09986)…. In recognition of its historic significance and architectural character, Chinatown was designated as a Special District in the City's Land Use Ordinance. [Kiersten Faulkner]

In the district's [Chinatown Historic District's] southern half, wood and brick warehouses and small light-industrial shop buildings tended to occupy the interior of blocks; the lava rock C. Q. Yee Hop warehouse and dormitory at 112 Nimitz Highway is an extant example of this trend. [Kiersten Faulkner]

The historic Yee Hop Building is classified as "high preservation value" designated as a contributing building to the district with recommendations to retain and reuse the building. The parking, streetscape, materials and architectural detailing. [Kiersten Faulkner]

See this dragon [at the intersection of Kekaulike and King Street]? That's a CBCA dragon. Because we don't have an arch, so this is the closest thing to an arch…So, when we put that dragon down…it was placed specifically to face the ocean – the head and the direction, because that is very important. It's not like people are stepping on it – that is important. But, the mana of the dragon is flowing to give blessings….It's in the most prominent crosswalk. [Chu Lan Shubert-Kwock]

So, we put it there because for years we had very bad luck – very bad things happening. We had the white powder, we had the rats, we had all kinds of things. So, we decided to have the dragon and a lot of things calmed down after that. [Chu Lan Shubert-Kwock]

Some people think it's superstitious and all that, but we think it brings harmony. [Sifu Kimo Wong]

We still have a lot of petty crime, but as far as the big things… So the dragon puts out the blessing because it has the mana….Are you Indian? No, but if you are Indian, you know about Shiva. Shiva has a lot of transforming, different personalities. Guan Yin, the goddess of mercy, transformed herself. Buddha transforms. So, they can take any form, but they are out there to do good. So, the dragon, for Chinese people, is the most imperial and the most auspicious creature – creature with the power. That's why in Chinese we call the Emperor the dragon…He's got his mandate from heaven. So, everything connected with the Emperor has to be dragon. That's where the power comes from. And this is 5,000 years old. [Chu Lan Shubert-Kwock]

Concerns and Recommendations

I got no complaints. I welcome development. Developments like this will get rid of all the homeless…If you have an abandoned area like this, you have homeless…I am in favor this because the more active people you have, the less you have crime, the less you have homeless. [Sifu Ernest Loo]

Like I said, no objection to any new development…[Sifu Ernest Loo]

Because I think these developers understand halo, because you develop other properties, right? You develop Kaka'ako…any kind of development creates a positive halo, right? A positive halo overpowers…a society's less fortunate – [it] becomes more powerful, more robust, more people, more activity. It's like a light…And generally, that's how it's always been. Because we always welcome it. The entrepreneurial spirit of the Asian and all that. You look at China!…This Chinatown is like the old village China. We've visited China many times. It's so modern… [Sifu Kimo Wong]

So, you know, development is always positive. Speaking individually and speaking for what I understand from the community, because of that halo creating the positive – the light. [Sifu Kimo Wong]

So to me, again speaking for myself, the Asians have that development is good; development is better; better for the future, for our kids and their kids. You know, without development you're always going to have stagnation. And of course you have to respect the ancestral grounds. [Sifu Kimo Wong]

You can't resist change. It will always be part of existence. And that's the philosophy I grew up with from my parents. Change, investment, risk, buying, developing. You move – like water…If you don't, you stagnate…Like Sifu Loo, to continue to do the Lion Dance, people see it as, "Oh, it's so nice!"...People don't see the hard work… [Sifu Kimo Wong]

That's what I recommend….when all this starts … to harmonize the energy…we Lion Dance… I think there should be some kind of Asian cultural ceremony during the ground breaking. [Sifu Kimo Wong]

I think the only concern that I would have is because of its close proximity to the water and any type of drilling or augering for structural elements like grade beams or pile caps. You know, it would just, it's a concern that you know, if they drill and you know, the concrete gets into the water source or something I guess. [Mana Cáceres]

Another, something that I suggested if it isn't already planned would be some kind of environmental coring, core samples I think it's called. So you can do that to check, you know there's usually somebody there that checks contamination levels…if there's any contaminants in there. I know for the rail station, they also brough in those little drill rigs to see just how far the different sediment layers were. [Mana Cáceres]

And I'm really excited now that you mentioned that they were going to preserve that existing building. [Mana Cáceres]

I think, you know everybody's main concern, especially since a lot of the reports or maps of the area does show a lot of red triangles that indicate the different iwi kūpuna or human remains that were found during monitoring. And that general area, you know I think the majority of people's concerns would be the finding of iwi kūpuna. [Mana Cáceres]

…I remember growing up in Singapore, under Kennedy, they were giving our schools milk powder and cornmeal and flour. The Singaporean diet don't eat that. So, what did they do? They turned around and feed the pigs with it. And then the American public say, "Oh, I helped this country." "We helped this country." But, it's not their diet. They don't eat that. So, to me it's a failure in understanding others' culture. And understanding food. And how to help a family you have to understand who they are and what they eat and what they care about. So, if I'm to work with an Afghanistan family who's a farmer and who has goats, I would not give them pigs' food. What are they gonna do with pigs' food? The goats don't eat corn. It's an insult. This is what I think is wrong when we have a foreign policy or our government has people that do not understand other cultures or look down on other cultures or think they know everything. This is where the mistakes are happening. I have a City government official come and talk to me and say, "We know what's good for Chinatown." I say, "Really? You know what's good for Chinatown? Tell me what do you know that's good?" "Oh, Complete Streets is good for Chinatown." I said, "Really? You have enough space to put in a Complete Streets and to do all of this and you see what the f*ck it is? It's not good for us. But, you shove it down our throat just like the rail. At no charge. Because you have the power. You can make any excuses and fudge any survey. So, it's what you want. Not what we want. [Chu Lan Shubert-Kwock]

You cannot just protect what so happens to be your friend when you sit on the Board and you won't say anything. Got to be honest… To be honest is to do the right thing for the bigger reason not because of this person. This one could die and another director take over and whatever. So, why be beholden that person? You have to be beholden to the community for the greater good. For the greater good. So, like I said, I could die tomorrow, this afternoon, or whatever. But, whatever I do, has to be for the greater good. And your reputation is the most important thing in the world that you cannot buy. [Chu Lan Shubert-Kwock]

…[W]hat we want is for them to be mindful of the history and to build something that works in Chinatown – harmonize. It has to be harmonious… Because this is a piece of history, here, for the rest of the world. Not only for Hawaiʻi – it's for the whole United States, and internationally. And this is a very important place internationally because Dr. Sun Yat-sen, the father of modern China, was educated here… [Chu Lan Shubert-Kwock]

When you break the ground for such an important building because you are touching spirits, touching a lot of stuff from way back. So, you need to have a ceremony to request their permission and to ask for their blessings. So, it's a Taoist and Buddhist ceremony… because we are going to be disturbing the balance… [Chu Lan Shubert-Kwock]

…The TOD [Transit Oriented Development] Neighborhood Plan height map (page 2-23) conflicts with the Chinatown Special District allowed heights, indicating that 200-feet would be allowed on parcels ʻEwa of Maunakea Street. The TOD Special District regulations state that: "If any regulation pertaining to the TOD special district conflicts with another special district regulation or unilateral agreement in effect, the regulation applicable to the other special district or unilateral agreement in effect will take precedence" (Ordinance 17-54, Sec. 21-9.100 (b)). Therefore, the subject parcel should be limited to new construction of no higher than 80-feet. [Kiersten Faulkner]

For the proposed Chinatown Hotel, HHF [Hawaiʻi Historic Foundation] recommends:

1. We strongly support the proposed stabilization, rehabilitation and adaptive reuse of the historic Yee Hop Building, also in accordance with the Secretary of the Interior's Standards and Guidelines for the Treatment of Historic Properties.
2. New construction on the surface parking lot is appropriate and can be supported, so long as the height does not exceed 80-feet and the bulk, mass, materials and architectural design are consistent with the national preservation standards and the Honolulu Chinatown Special District Design Guidelines as they relate to new construction in a historic district.
3. HHF does not support allowing height variances to exceed the 80-foot limit in this location. Our preference would be for new construction of no more than 3-4 stories for greater compatibility. [Kiersten Faulkner]

Summary of Ethnographic Survey

The five interviewees have connections and knowledge about the Chinatown project lands and vicinity. One individual is a representative on the Oʻahu Island Burial Council (OIBC) and CEO of ʻOhana Kūpono Consulting who has familial ties to the Honolulu area. Another interviewee is the Executive Director of the Historic Hawaiʻi Foundation and has extensive knowledge of the history and historic buildings of the Honolulu and Chinatown region. Two interviewees have resided in Chinatown or the greater area and are masters of traditional Chinese martial arts and practice lion dancing. Another interviewee is a long time business owner in Chinatown, the president of Chinatown Business and Community Association, and a Downtown-Chinatown Neighborhood Board member.

The interviewees shared a strong awareness of the history and historic properties of the region. It was noted that the project parcel is located within the Chinatown Historic District and contains the C.Q. Yee Hop historic building that is of high preservation value. The significant number of human remains in the vicinity was also mentioned a number of times. There are known human burials nearby in which one interviewee is a recognized cultural descendant. The same interviewee stated that deposits from the Chinatown fires were present within a cultural layer in the area and may be present within the current project area. Within the project area itself, the interviewees also expect that iwi kūpuna and cultural layers might be found. The interviewees noted Chinese cultural practices that are still carried out in the vicinity of the project area. These include the Lion Dance, martial arts, and the preparation of traditional Chinese food. These practices are characteristic of Chinatown and continue to be important today.

Several interviewees are in favor of the hotel project, which they believe will bring new development and opportunities to the community. Others noted that they were in support of the proposed rehabilitation and reuse of the historic C. Q. Yee Hop into the hotel plans. Interviewees also voiced their concerns for the project. Some specific concerns raised are the possibility of encountering human remains and/or subsurface cultural layers and the scale of the building not being compatible with the look and feel of the Chinatown Historic District. There was also concern that the development may impact natural resources such as contaminating the ground water, and that respect needs to be maintained for these ancestral grounds. The interviewees' recommendations and mitigations for the project focused on environmental contamination, retaining the aesthetic of the Chinatown Historic District, and incorporating Asian culture and traditions. These are: 1) to conduct environmental coring before construction begins; 2) to limit the height of the new construction; 3) to hold an Asian cultural ceremony at ground breaking; 4) to be beholden to the community for the greater good; and 5) to be mindful of the history and to build something that works in Chinatown.

SUMMARY AND RECOMMENDATIONS

An examination of traditional and historic land use for Honolulu as demonstrated in moʻolelo, historic literature, and archaeological investigations, shows that this area was able to sustain a large population with its plentiful marine resources of the harbor (and neighboring fishponds and salt ponds), as well as cultivated lands just inland from the coast. Moʻolelo and ʻōlelo noʻeau express the importance of the harbor and its natural resources. The environment was characterized by named winds and rains. Sections of the coral reef were also named and these likely served as fishing grounds for local families. Fresh water was found in Nuʻuanu Stream on the northwest end of the harbor. Honolulu was known as a region for playing games such as kōnane and ʻulu maika, which even the aliʻi participated in.

In the historic era, Honolulu was a significant location for foreigners from many countries who would anchor in the harbor. Of particular importance to this area are the Chinese immigrants, many of whom were taken by the beauty of the island and its resemblance to the land left behind, and decided to make Honolulu their home. Many of the Chinese saw or created business opportunities in an effort to support their families here and those who remained behind. Thus, the area quickly became a main hub for Chinese residences, businesses, and trade. The current project area is within the Chinatown Historic District and contains the historic C. Q. Yee Hop building, which is listed on the Hawaiʻi Register of Historic Places.

Previous archaeological studies express the complexity of Honolulu's past, with a mix of traditional and historic properties within a region that has undergone extensive development throughout the years. Historic trash deposits, structural remains, cultural layers, fishpond deposits, railroad remnants, and iwi kūpuna are just a few archaeological finds that have been identified. Historic resources identified in Chinatown are associated with residential homes, businesses, transportation, construction, and burial. The C. Q. Yee Hop building is the only previously-identified archaeological site known for the project area itself.

Cultural Resources, Practices, and Beliefs Identified

Archival research and ethnographic interviews compiled for the current study reveal that the harbor was an important location associated with various resources, named people and deities, along with a number of traditional activities. It was a region with marine and fresh water resources, and supported traditional subsistence activities such as fishing, salt gathering, and aquaculture. A number of the named places adjacent to the harbor were associated with extended families and their homes. Hence, daily life revolved around both the marine resources of the harbor (and neighboring fishponds and salt ponds), as well as cultivated lands of kalo and sweet potato just inland from the coast. The main focus of ritual activity was the heiau at Pākākā Point, but fishing shrines are also mentioned in traditional accounts. Within the project area itself, the interviewees expect that historic buildings, cultural layers, and human burials may be encountered. One interviewee noted that iwi kūpuna and deposits from the Chinatown fires have been found near the current study parcels, while another pointed out that the historic C. Q. Yee Hop building on the property was used as a warehouse and dormitory and is designated as "high preservation value" to the Historic District.

With regard to traditional Hawaiian cultural practices and beliefs, the gathering of marine resources in the harbor was important in the past, though not believed to be practiced at the project area today. Other practices of the region include collecting salt, which is done closer to Kakaʻako. One interviewee believed that there should not be any issues with access to gathering or other cultural practices.

It should also be noted that there are many Chinese residents and merchants who still live and work in the area and have a long history there. Chinese cultural practices are still carried out in the vicinity of the project area, although not necessarily within the project area itself. While there are many cultural traditions which continue to be practiced by the Chinese residents today, those identified during the consultation process include the Lion Dance, martial arts, and the preparation of traditional Chinese food. These practices are characteristic of Chinatown and continue to be important today.

The interviewees also mentioned Chinese beliefs such as working hard to better one's life, as well as several beliefs related to specific schools of martial arts. The interviewees of Chinese descent stated that many Chinese believe that development is good, that it generates new businesses, which in turn, promotes a better future for the community and better lives for the children. While maintaining that the ancestral lands need to be protected, Chinese philosophy embraces change through development as a way to move the culture forward and to prevent the culture from stagnating.

Potential Effects of the Proposed Project

The proposed project has the potential to affect cultural resources located within the study area as well as affect natural resources of the vicinity and the general aesthetic of the Chinatown Historic District. Awareness of this should be at the forefront of the project to prevent any adverse effects from occurring. An interviewee mentioned the possibility of contaminating fresh water resources and recommended having environmental coring done prior to construction to mitigate any negative effects to natural resources. It was also noted that there is a high possibility of encountering iwi kūpuna and cultural layers since human burials and deposits from the Chinatown fires have been found nearby. Another interviewee supported the preservation and reuse of the historic building but opposed the project since she believed it did not fit the aesthetic of the area and would be too tall. Other interviewees supported the project since they believed it would bring new development and opportunities to the community, which is in line with Chinese cultural beliefs regarding progress.

Confidential Information Withheld

During the course of researching the present report and conducting the ethnographic survey program, none of the interviewees requested that sensitive information be withheld in confidentiality.

Conflicting Information

No conflicting information was obvious in analyzing the ethnographic interviews. On the contrary, a number of themes were repeated and information was generally confirmed by independent sources. The interviewees emphasized the historical and cultural significance of the area.

Recommendations/Mitigations

Several concerns were voiced, including the new hotel not being compatible with the look and feel of the Chinatown Historic District and the possibility of impacting natural and cultural resources such as human remains and/or subsurface cultural layers, as well as ground water. Another concern was the height of the proposed hotel. Recommendations and mitigations for the project include the following:

- conduct environmental coring before construction begins
- reduce the height of the new construction
- hold an Asian cultural ceremony at ground breaking

- respect ancestral lands
- be beholden to the community for the greater good
- be mindful of the history and to build something that works in Chinatown

Summary and Conclusion

In sum, background research and oral history interviews identified archaeological resources within the project area and in the nearby region. An archaeological inventory survey is recommended to determine if any surface or subsurface cultural resources remain on the property, with special care to look out for iwi kūpuna and cultural layers. The community should be kept informed on the construction plans, and their concerns and recommendations should be considered during all phases of the proposed work. The project lands contain a historic building and the area is clearly significant in both the past and present.

GLOSSARY

ahupuaʻa	Traditional Hawaiian land division usually extending from the uplands to the sea.
ʻāina	Land.
aliʻi	Chief, chiefess, monarch.
aliʻi nui	High chief.
ʻāpana	Piece, slice, section, part, land segment, lot, district.
au	Current; to flow, as a current.
ʻaumakua	Family or personal gods. The plural form of the word is ʻaumākua.
ʻawa	The shrub *Piper methysticum*, or kava, the root of which was used as a ceremonial drink throughout the Pacific.
heiau	Place of worship and ritual in traditional Hawaiʻi.
ilāmuku	Executive officer.
ʻili	Traditional land division, usually a subdivision of an ahupuaʻa.
ʻili kūpono	An ʻili within an ahupuaʻa that was nearly independent. Tribute was paid to the ruling chief rather than the chief of the ahupuaʻa, and when an ahupuaʻa changed hands, the ʻili kūpono were not transferred to the new ruler.
ʻiliʻāina	Land area; a land section, next in importance to ahupuaʻa and usually a subdivision of an ahupuaʻa.
ʻike	To see, know, feel; knowledge, awareness, understanding.
iwi	Bone.
kahakai	Beach, seashore, coast.
kahawai	Stream, creek, river; valley, ravine, gulch, whether wet or dry.
kahuna	An expert in any profession, often referring to a priest, sorcerer, or magician.
kalo	The Polynesian-introduced *Colocasia esculenta*, or taro, the staple of the traditional Hawaiian diet.
kamaʻāina	Native-born.
koʻa	Fishing shrine.
kohola	Reef.
kōnane	A traditional Hawaiian game played with pebbles on a wooden or stone board.
konohiki	The overseer of an ahupuaʻa ranked below a chief; land or fishing rights under control of the konohiki; such rights are sometimes called konohiki rights.
kou	The flowering tree, *Cordia subcordata*, either native to Hawaiʻi or introduced by Polynesians.
kukui	The candlenut tree, or *Aleurites moluccana*, the nuts of which were eaten as a relish and used for lamp fuel in traditional times.
kuleana	Right, title, property, portion, responsibility, jurisdiction, authority, interest, claim, ownership.

kūono Bay, cove, nook, cranny.

kupua Demigod, hero, or supernatural being below the level of a full-fledged deity.

kupuna Grandparent, ancestor; kūpuna is the plural form.

ku‘ula A stone god used to attract fish, an altar near the sea, or a hut where fishing gear was kept with ku‘ula images to invoke their power.

limu Refers to all sea plants, such as algae and edible seaweed.

lo‘i, lo‘i kalo An irrigated terrace or set of terraces for the cultivation of taro.

loko Inside, interior. Pond, lake, pool.

Māhele The 1848 division of land.

maile *Alyxia olivaeformis*, a fragrant native shrub used for twining.

maka‘āinana Common people, or populace; translates to "people that attend the land."

makai Toward the sea.

makani Wind, breeze.

mana Divine power.

mana‘o Thoughts, opinions, ideas.

mauka Inland, upland, toward the mountain.

midden A heap or stratum of refuse normally found on the site of an ancient settlement. In Hawai‘i, the term generally refers to food remains, whether or not they appear as a heap or stratum.

mo‘o Narrow strip of land, smaller than an ‘ili.

mo‘olelo A story, myth, history, tradition, legend, or record.

niu The Polynesian-introduced tree *Cocos nucifera*, or coconut.

‘ōlelo no‘eau Proverb, wise saying, traditional saying.

o‘opu Fish of the families *Eleotridae*, *Gobiidae*, and *Bleniidae*.

‘ōpae Shrimp.

pā Fence, wall, enclosure; dish, flat basin; the mother-of-pearl shell (*Pinctada margaritifera*).

pāpū Fort or fortress.

pua aloalo Hibiscus flower.

pueo The Hawaiian short-eared owl, *Asio flammeus sandwichensis*, a common ‘aumakua.

sifu, shifu A Chinese title that designates a master, skilled person, or teacher.

ua Rain, rainy, to rain.

uhi The yam *Dioscorea alata*, commonly grown for food.

‘ulu maika Stone used in the maika game, similar to bowling.

wahi pana Sacred places or legendary places that may or may not be kapu, or taboo.

REFERENCES

Alexander, W.D.

1908 Early Improvements in Honolulu Harbor. *Hawaiian Historical Society Annual Report* for *the Year 1907*. Hawaiian Gazette Company, Honolulu.

Anonymous

1834 Honolulu from the Anchorage outside the Reef, Island of Woahoo. Pen and ink wash over pencil. Reprinted in Forbes, D.W. (1992) *Encounters with Paradise. Views of Hawaii and its People, 1778-1941*. Honolulu Academy of Arts, Honolulu.

n.d. Brewer's Wharf. Registered Map No.819. No Scale. On file, Land Survey Office, Department of Accounting and General Services, State of Hawai‘i, Honolulu.

Basso, K.H.

1988 Speaking with names: Language and landscape among the Western Apache. *Cultural Anthropology* 3: 99–130.

Bensell, C.E.

1821 View of the Island of Woahoo in the Pacific. Watercolor. Original at Peabody Museum of Salem, Massachusetts.

Bishop Museum Archives

n.d. Names of different winds. Henriques Collection. Hawaiian Ethnological Notes (HEN) I:1841–1851. Bernice Pauahi Bishop Museum Archives, Honolulu.

Boelen, J.

1988 *A Merchant's Perspective: Captain Jacobus Boelen's Narrative of his Visit to Hawai‘i in 1828*. Hawaiian Historical Society, Honolulu.

Charvet-Pond, A. and J. Pantaleo

1989 *Chinatown Gateway Plaza Project: Part I - Summary of Pre-Field Literature and Documents Search for the Proposed Park in Downtown Honolulu (TMK 2-1-03:15, 23, 24, and 25)*. Bernice Pauahi Bishop Museum, Honolulu.

Clague, D.A.

1998 "Geology of the Hawaiian Islands," in *Atlas of Hawai‘i*. Edited by Sonia P. Juvik and James O. Juvik, pp. 37–46. The University of Hawai‘i Press.

Cleghorn, P.

1989 *Letter Report on Archaeological Test Excavations for the Chinatown Gateway Plaza Project*. Bernice Pauahi Bishop Museum, Honolulu.

Cleghorn, P.L, B. Whitehead, J.L. Putzi, C.C. LeSuer, J. McIntosh, L. Pearson, and R. Davies

2012 *Block 10 Archaeological Data Recovery Investigations at the Smith-Beretania Parking Lot, Honolulu, Kona District, O‘ahu Island [TMK: (1) 7-4-004:000]*.Pacific Legacy, Inc., Kailua, Hawai‘i.

Covington, R.

1881 Main Part of the Kona District, Oahu. Registered Map No. 1382. Scale: 1 inch = 1,000 feet. On file, Land Survey Office, Department of Accounting and General Services, State of Hawai‘i, Honolulu.

Dagher, C.A. and R.L. Spear

2007 *An Archaeological Monitoring Report for the Pacific Town Gateway Center Project Located at 410 North King Street, Honolulu, Nu‘uanu Ahupua‘a, Honolulu (Kona) District, Island of O‘ahu, Hawai‘i*. Scientific Consultant Services, Inc., Honolulu.

Dakin Publishing
1891 Fire Insurance Map of Honolulu, Hawaiian Islands. Honolulu Sheet 9. Scale 1 inch = 50 feet.

de Freycinet, L.C.S.
1978 Hawai‘i in 1819: A Narrative Account. *Voyage around the World Undertaken by Order of the King Performed on his Majesty's Corvettes L'Uranie and L'Physicenne in the Years 1817, 1818, 1819, and 1820*. Historical Narrative, Vol. 2, Part 2: Book 4. Pacific Anthropological Records, No. 26. Bernice Pauahi Bishop Museum, Honolulu.

Dodge, F.S.
1887 Map of the Inner Harbor Front. Registered Map, 1392. Scale: 1:240 On file, Land Survey Office, Department of Accounting and General Services, State of Hawai‘i, Honolulu.

Dunn, A.E. and P.H. Rosendahl
1993 *Archaeological Inventory Survey, Nu‘uanu Court Project, Land of Nu‘uanu, Kona District, Island of O‘ahu (TMK: 2-1-02:26)*. Paul H. Rosendahl, PhD, Inc., Hilo, Hawai‘i.

Elmore, M. and J. Kennedy
2001 *An Archaeological Monitoring Report for the City and County of Honolulu Miscellaneous Sidewalk Improvements Project, in the Ahupua'a of Nu'uanu, Honolulu District, Island of O'ahu*. Archaeological Consultants of the Pacific, Inc., Haleiwa, Hawai‘i.

Emmert, P.
1854 View of Honolulu from the Harbor, No. 1. Lithograph. Original at Honolulu Academy of Arts, Honolulu.

Erkelens, C., M. Pietrusewsky, R. Ikehara-Quebral, and V. Sava
1994 *Interim Report on Human Skeletal Remains, Kekaulike-Diamond Head Project, Honolulu, Kona, O‘ahu*. International Archaeological Research Institute, Inc., Honolulu.

Fitzpatrick, G.
1986 *The Early Mapping of Hawai‘i.* Editions Limited, Honolulu.

Foote, D., E. Hill, S. Nakamura, and F. Stephens
1972 *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*. U.S. Department of Agriculture, Soil Conservation Service. Published in cooperation with the University of Hawai‘i Agricultural Experiment Station, Washington, D.C.

Forbes, D.W.
1992 Reprint of watercolor "Looking toward Honolulu from Waikiki, 1848. Private Collection, In, *Encounters with Paradise. Views of Hawaii and its People, 1778-1941*, p. 93. Honolulu Academy of Arts, Honolulu.

Gast, R.H. and A.C. Conrad
1973 Don Francisco de Paula Marin. A Biography by Ross H Gast. *The Letters and Journal of Francisco de Paula Marine*, edited by Agnes C. Conrad. University of Hawai‘i Press, Honolulu.

Giambelluca, T.W., Q. Chen, A.G. Frazier, J.P. Price, Y.-L. Chen, P.-S. Chu, J.K. Eischeid, and D.M. Delparte
2013 Online Rainfall Atlas of Hawai‘i. *Bulletin of the American Meteorological. Society* 94: 313-316, doi: 10.1175/BAMS-D-11-00228.1.

Goodwin, C.
1997 *Archaeological Inventory Survey of the Kekaulike Diamond Head Project, Site 50-8-14-4875, Honolulu, Island of O‘ahu*. International Archaeological Research Institute, Inc., Honolulu.

Goodwin, C. and J. Allen

2005 *Kikihale to Honolulu: From Village to City-Archaeological Data Recovery at Site 50-80-14-4875, Kekaulike Diamond Head Block, Nu‘uanu Ahupua‘a, Honolulu, O‘ahu, Hawai‘i*. International Archaeological Research Institute, Inc., Honolulu.

Goodwin, C., F. Beardsley, S. Wickler, and B. Jones

1996 *Honoruru to Honolulu: From Village to City, Volume 1: History and Archaeology of a City Block; Archaeological Data Recovery Report, Marin Tower Property, Site No. 50-80-14-4494, Honolulu, Hawai‘i*. International Archaeological Research Institute, Inc., Honolulu.

Goodwin, C., M. Pietrusewsky, M. Toomay Douglas, and R. Ikehara-Quebral

1995 *Honoruru to Honolulu: From Village to City, Volume II: The Burials.* International Archaeological Research Institute, Inc., Honolulu.

Hammatt, H.H.

2013 *Archaeological Inventory Survey Report For City Center (Section 4) of the Honolulu High-Capacity Transit Corridor Project, Kalihi, Kapālama, Honolulu, and Waikīkī Ahupua‘a, Honolulu (Kona) District, Island of O‘ahu, TMK [1] 1-2, 1-5, 1-7, 2-1, 2-3 (Various Plats and Parcels)*. Five Volumes. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Harrington, K.I, G.M. Farley, and D.W. Shideler

2018 *Archaeological Literature Review and Field Inspection Report to Support Consultation with SHPD for the Honolulu Bethel Hotel Project, Honolulu Ahupua‘a, Honolulu District, O‘ahu.* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

HDOT (Hawai‘i Department of Transportation)

2008 *History of O‘ahu’s Harbors.* Hawai‘i Department of Transportation, Harbors Division. Online at http://www.hawaii.gov/dot/harbors/oahu/ history.htm

Hazlett, A., S. Fehrenbach, and H.H. Hammatt

2008a *Archaeological Monitoring Report for a 12-Inch and 16-Inch Water Main Installation Project on Aloha Tower Drive, Nimitz Highway, and Richards Street (Job 04-024), Honolulu Ahupua‘a, Honolulu District, O‘ahu Island Tax Map Key (TMK): [1] 2-1-014 & [1] 2-1-027*. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Hazlett, A., R. Runyon, L. Loynaz, and H.H. Hammatt

2008b *Archaeological Monitoring Report for the Fort Street Mall and Hotel Street Sewer Replacement/Rehabilitation (SMPR 60) Honolulu Ahupua‘a, Honolulu District, O‘ahu Island TMK: (1) 2-1-002, (1) 2-1-003, and (1) 2-1-010-012*. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Heidel, M.J. and H.H. Hammatt

1997 *Archaeological Testing of a 1,700 Sq. Foot Lot in Chinatown, Ahupua‘a of Nu‘uanu, District of Kona, Island of O‘ahu (TMK 1-7-03:14)*. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Ho‘oulumāhiehie

2006a *The Epic Tale of Hi‘iakaikapoliopele*. As Told by Ho‘oulumāhiehie. Translated by M. Puakea Nogelmeier. Awaiaulu Press, Honolulu.

2006b *Ka Mo‘olelo o Hi‘iakaikapoliopele.* Original Hawaiian text taken from series of articles in *Ka Na‘i Aupuni* 1905-1906. Awaiaulu Press, Honolulu.

Hunkin, N. and H.H. Hammatt

2008 *Archaeological Monitoring Report for the Armstrong Building Courtyard Renovation Project, Honolulu Ahupua‘a, Honolulu District, O‘ahu Island, TMK: [1] 1-7-002:038*. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Hurst, G. and J. Allen

1992 *Archaeological Survey of the Harbor Court (Ka'ahumanu Parking Structure) Project on O'ahu, Hawai'i*. Anthropology Department, Bernice Pauahi Bishop Museum, Honolulu.

'Ī'ī, J.P.

1959 *Fragments of Hawaiian History*. Mary Kawena Pukui, translator. Bishop Museum Press, Honolulu.

Iwamoto, L.

1969 The Plague and Fire of 1899–1900 in Honolulu. In *Hawaii Historical Review Selected Readings*. Hawaiian Historical Society, Honolulu.

Juvik, S.P. and J.O. Juvik, editors

1998 *Atlas of Hawai'i.* University of Hawai'i Press, Honolulu.

Kalilihiwa, S. and P.L. Cleghorn

2007 *Archaeological Monitoring for the Smith-Beretania Parking Lot, State Site No. 50-80-12-6772, Honolulu, Island of O'ahu*. Pacific Legacy, Inc., Kailua, Hawai'i.

Kamakau, S.M.

1992 *Ruling Chiefs of Hawai'i*. Revised edition. Kamehameha Schools, Honolulu.

Kauwe, L.

2011 *He Aloha Nō 'O Honolulu* (Goodbye to Honolulu). Song written by Lot Kauwe. http://www.huapala.org/Hea/Healoha_No_Honolulu.html. Accessed February 14, 2022.

Kennedy, J.

1984 *Archaeological Investigations at TMK 2-1-02: 38 and 39, Honolulu, Hawaii*. Archaeological Consultants of Hawaii, Inc., Hale'iwa, Hawai'i.

Kennedy, J., J. Brennan, T. Denham, S. Ireland, J.R. Moore, and T.J. Riley

1994 *An Archaeological Inventory Survey with Subsurface Testing Report for the Kekaulike Revitalization Project, Ewa Block, Located at TMK: 1-7-03:32 in Nu'uanu Ahupua'a, Honolulu District, Island of Oahu*. Archaeological Consultants of Hawai'i, Inc., Hale'iwa, Hawai'i.

Klieger, P.C.

1997 Historical Background. In *Native Hawaiian and Euro-American Culture Change in Early Honolulu, Archaeological Data Recovery, Harbor Court Property, Site No. 50-80-14-2456, Honolulu, Hawai'i*, by Susan Lebo, 1997, pp. 7–32. Bernice Pauahi Bishop Museum, Honolulu.

Landrum, J. and B. Dixon

1992 *Emergency Mitigation of Archaeological Resources at the River-Nimitz Redevelopment Project, Site 50-Oa-A5-16, Nu'uanu, Kona District, O'ahu, Hawai'i*. Public Archaeology Section, Applied Research Group, Bernice Pauahi Bishop Museum, Honolulu.

Lebo, S.A. (editor)

1997 *Native Hawaiian and Euro-American Culture Change in Early Honolulu, Culture Change in Early Honolulu. Archaeological Data Recovery, Harbor Court Property, Site No. 50-80-14-2456, Honolulu, Hawai'i,* edited by Susan A. Lebo. Anthropology Department, Bishop Museum, Honolulu.

2002 *Pulaholaho and Charlton's Claim: Archaeological Data Recovery at Harbor Court, Downtown Honolulu (Site 50-80-14-2456)*. Paul H. Rosendahl, Ph.D. Inc, Hilo, Hawai'i.

Lebo, S.A. and M.D. McGuirt

2000a *Geoarchaeology at 800 Nu'uanu, Archaeological Inventory Survey of Site 50-80-14-5496 (TMK 1-7-02:02), Honolulu, Hawai'i*. Bernice Pauahi Bishop Museum, Honolulu.

2000b *Pili Grass, Wood Frame, Brick and Concrete: Archaeological Data Recovery at 800 Nuuanu (Site 50-80-14-5496), TMK 1-7-02:02*. Anthropology Department, Bishop Museum, Honolulu.

Lyons, C.J.

1886 Map of Honolulu Land Titles. Registered Map No. 1390. Scale: 1 inch = 1,000 feet. On file, Land Survey Office, Department of Accounting and General Services, State of Hawai‘i, Honolulu.

Macdonald, G.A., A.T. Abbott, and F.L. Peterson

1983 *Volcanoes in the Sea*. Second edition. University of Hawai‘i Press, Honolulu.

Malden, Lieut. C.R.

1825 South Coast Woahoo and Honorurou Habour. Map by Lt. Charles R. Malden from the British ship *Blonde*. Registered Map No. 640. On file at the Hawai‘i Land Survey Division, Department of Accounting and General Services, 1151 Punchbowl St., Room 210, Honolulu, Hawai‘i.

Mann, M. and H.H. Hammatt

2002 *Archaeological Monitoring Report for the King Street Rehabilitation Project, Honolulu Ahupua‘a, Kona District, Island of O‘ahu (TMK 2-1 por. and 1-7 por.)*. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Mason Architects, Inc.

2012 *Draft—Honolulu Harbor Piers 12 and 15 Improvements Impact Analysis on Piers 12 and 15, Hawaii Capital Special District, and Chinatown Special District*. Mason Architects, Inc., Honolulu.

McAllister, J.G.

1933 *Archaeology of Oahu*. Bishop Museum Bulletin 104. Bernice Pauahi Bishop Museum, Honolulu.

McDermott, M. and M.M. Mann

2001 *Archaeological Inventory Survey for the Proposed Nimitz Highway Water System Improvements, Part I, Downtown Honolulu, Nu‘uanu Ahupua‘a, District of Kona, Island of O‘ahu, (TMK 1-5-08, 1-7-01, 2-1-02)*. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

McElroy, W.K., M.W. Graves, M. Pinsonneault, K. McElroy, and M. Edwards

2021 *Archaeological Inventory Survey for the Honolulu Bethel Hotel Project, Honolulu Ahupua‘a, Honolulu District, Island of O‘ahu, Hawai‘i TMK: (1) 2-1-002:001 and :007*. Keala Pono Archaeological Consulting, Kāne‘ohe, Hawai‘i.

McGerty, L., P. Mills, and R. Spear

1995 *An Archaeological Assessment of the Chinatown Community Service Center Project, Ahupua‘a of Nu‘uanu, District of Kona, Island of O‘ahu, (TMK 1-7- 00314 and 15)*. Scientific Consultant Services, Inc. Honolulu.

McIntosh, J., J.L. Putzi, C.C. LeSuer, and P.L. Cleghorn

2006 *Archaeological Inventory Survey at “Block 10”: The Smith-Beretania Parking Lot, Ahupua'a of Honolulu, Kona District, Island of O‘ahu TMK: 1-7-004:004*. Pacific Legacy, Inc., Kailua, Hawai‘i.

Metcalf, T.

1847 Honolulu. Map by T. Metcalf. Copied by J. Lidgate [sic; Lydgate]. Registered Map 242. 1 inch = 6 chains. On file, Land Survey Office, Department of Accounting and General Services, State of Hawai‘i, Honolulu.

Monsarrat, M.D.

1897 Honolulu, Hawaiian Islands. Registered Map, 1910. Scale: 1 inch = 1,000 ft. On file, Land Survey Office, Department of Accounting and General Services, State of Hawaiʻi, Honolulu.

Murabayashi, K. E.H.R. Jourdane, and T.S. Dye

2012 *Historic Properties Assessment for the Proposed VZW HON Honolulu Cell Site, Honolulu Ahupuaʻa, Kona District, Oʻahu Island, TMK (1) 2-1-002:013*. T.S. Dye & Colleagues, Archaeologists, Inc., Honolulu.

Nakuina, M.

1992 *The Wind Gourd of Laʻamaomao.* Second edition. Esther T. Mookini, and Sarah Nākoa, translators. Kalamaku Press, Honolulu.

O'Hare, C.R., D.W. Shideler, and H.H. Hammatt

2013 *Archaeological Literature Review and Field Inspection for the Pier 12 and Pier 15 Improvement Project, Honolulu Harbor, Honolulu Ahupuaʻa, Honolulu District, Island of Oʻahu TMK: [1] 2-1-001:043, 044, 045, 055, 056*. Cultural Surveys Hawaiʻi, Inc., Kailua, Hawaiʻi.

2014 *Final Archaeological Monitoring Plan for the Pier 12 and Pier 15 Improvement Project, Honolulu Harbor, Honolulu Ahupuaʻa, Honolulu District, Oʻahu TMKs: [1] 2-1-001:043-045, 046 por., 049-056*. Cultural Surveys Hawaiʻi, Inc., Kailua, Hawaiʻi.

2015 *Archaeological Literature Review and Field Inspection Report for the Board of Water Supply (BWS) Honolulu Water System Improvements (WSI) Environmental Assessment Honolulu Ahupuaʻa, Honolulu (Kona) District, Oʻahu TMKs: [1] 1-5, 1-7, 2-1, 2-3, 2,-4, and 2-6: Various Plats and Parcels*. Cultural Surveys Hawaiʻi, Inc., Kailua, Hawaiʻi.

2016 *Archaeological Literature Review and Field Inspection Report for the Board of Water Supply (BWS) Honolulu Water System Improvements (WSI) Environmental Assessment Honolulu Ahupuaʻa, Honolulu (Kona) District, Oʻahu TMKs: [1] 1-5, 1-7, 2-1, 2-3, 2,-4, and 2-6:Various Plats and Parcels*. Cultural Surveys Hawaiʻi, Inc., Kailua, Hawaiʻi.

Paris, F.E.

1839 Honolulu, Capital of Oahu, View of the Harbor. Reprinted in Forbes, D.W. (1992) Encounters with Paradise. Views of Hawaii and its People, 1778-1941. Honolulu Academy of Arts, Honolulu.

Perkins, E.T.

1854 Lithograph of "Honolulu with a view of Nuuanu, the Custom House, the Bethel Market and Palace Fort." Artist, Edward T. Perkins. Lithograph of Snyder, Black, & Sturn, New York. Published in, *Na Motu; or Reef Rovings in the South Pacific,* by Edward T. Perkins, p. 112. Pudney & Russell, New York.

Pietrusewsky, M.

2003 "Osteology of the Human Skeletal Remains from the Smith-Beretania Parking Lot and Park Project, Chinatown, Honolulu, Hawaiʻi." In Kalilihiwa and Cleghorn (2007). *Archaeological Monitoring for the Smith-Beretania Parking Lot, State Site No. 50-80-12-6772, Honolulu, Island of Oʻahu*. Pacific Legacy, Inc., Kailua, Hawaiʻi.

Pukui, M.K.

1983 *ʻŌlelo Noʻeau; Hawaiian Proverbs and Poetical Sayings*. Bernice P. Bishop Museum Special Publication No. 71. Bishop Museum Press, Honolulu.

Pukui, M.K. and S.H. Elbert

1971 *Na Ua Mai Ka Puke Wehewehe ʻOlelo ʻo Hawaiian Dictionary*. University of Hawaiʻi Press, Honolulu.

1986 *Hawaiian Dictionary*. Revised edition. University of Hawaiʻi Press, Honolulu.

Pukui, M.K., S.H. Elbert, and E.T. Mookini
1974 *Place Names of Hawai'i*. University of Hawai'i, Honolulu.

Riley, T.J., J. Kennedy, J.R. Moore, S. Ireland, and E. Yoshifuku
1995 *A Report on Archaeological Data Recovery at Sites 50-80-14-4587 and 50-80-14-4588 for the Kekaulike Revitalization Project, Ewa Block, Nu'uanu Ahupua'a, Honolulu District, Island of O'ahu, Volume I of III*. Archaeological Consultants of Hawaii, Inc., Hale'iwa, Hawai'i.

Rockwood, P. and D. Barrère
1959 The Area from Nuuanu Stream to Kuloloia Beach as described by Ii." Map by Paul Rockwood. Research by Dorothy Barrère Scaled plan view map in, *Fragments of Hawaiian History*, by John Papa 'Ī'ī, 1959, p. 65. Bishop Museum Press, Honolulu.

Sanborn Map Company
1927 Insurance Maps of Honolulu, Territory of Hawaii. Volume I Sheet 119. Scale 1 inch = 50 feet.

1955 Insurance Maps of Honolulu, Territory of Hawaii. Volume I Sheet 126. Scale 1 inch = 50 feet.

Soehren, L.
2010 A Catalog of Hawaiian Place Names, Compiled from the Records of the Boundary Commission and the Board of Commissioners to Quiet Land Titles of the Kingdom of Hawai'i. Ulukau: The Hawaiian Electronic Library. http://ulukau.org/cgi-bin/hpn?e=p-0mahele--00-0-0--010---4------0-01--1en-Zz-1---20-about---00031-00110escapewin-00&a=d&a=p&p=intro(accessed 10 October 2014).

State of Hawai'i
1937 TMK Map, Zone 1 Sec 7 Plat 02. *Por. "China Town Historic District," Honolulu, Oahu, Hawaii*. Scale 1 in. = 40 ft. Department of Finance, Property Assessment Division, Honolulu.

Stearns, H.T.
1978 *Quaternary Shorelines in the Hawaiian Islands.* Bishop Museum Bulletin 237. Bishop Museum Press, Honolulu.

Tabulevich
1819 Honolulu Harbor. Reprinted in G. Fitzpatrick, 1986, pp. 52–53. *The Early Mapping of Hawaii*, Editions Limited, Honolulu.

Thornton, T.F.
1997 Anthropological studies of Native American place naming. *American Indian Quarterly* 21 (2): 209–228.

Thrum, T.G.
1892 Honolulu Harbor Improvements. *Hawaiian Almanac and Annual for 1893*. Thomas G. Thrum, Honolulu.

1893 Fifty Years of Hawaiian Commercial Development. *Hawaiian Annual and Almanac for 1894*.

1896 Hawaiian Commercial Development. *Hawaiian Almanac and Annual for 1896*. Thomas G. Thrum, Honolulu.

1998 *Hawaiian Folk Tales, A Collection of Native Legends*. Mutual Publishing, Honolulu.

USGS (U.S. Geological Survey)
1998 Honolulu Quadrangle. 7.5 minute series. Scale 1:24000.

1953 Honolulu USGS 7.5-minute topographic quadrangle. USGS Information Services, Denver, Colorado.

U.S. Interior Department

1886 Map of Honolulu Harbor and Town. Registered Map No. 1119. 1 inch = 1,000 feet. On file, Land Survey Office, Department of Accounting and General Services, State of Hawai‘i, Honolulu.

Wagner, W.L., D.R. Herbst, and S.H. Sohmer

1990 *Manual of the Flowering Plants of Hawaii, Volume 1***.** University of Hawai‘i and Bishop Museum Press, Honolulu.

Wall, W.A.

1885 Map of Reef Titles near Honolulu. Registered Map No. 1690. 1 inch = 1,000 feet. On file, Land Survey Office, Department of Accounting and General Services, State of Hawai‘i, Honolulu.

1891 Lower Part of the City of Honolulu, and the Harbor. Registered Map 1558. Scale 1:1200. On file, Land Survey Office, Department of Accounting and General Services, State of Hawai‘i, Honolulu.

Webster, W.

1851 Plan of part of Waikahalulu on the Reef of Honolulu belonging to H. Kalama. Registered Map No. 244. Scale: 1 inch = 100 feet. On file, Land Survey Office, Department of Accounting and General Services, State of Hawai‘i, Honolulu.

1858 Honolulu Water Lots, Plan No. 1. Registered Map No.283. Scale: 1 inch = 100 feet. On file, Land Survey Office, Department of Accounting and General Services, State of Hawai‘i, Honolulu.

Westervelt, W.D.

1915 *Legends of Old Honolulu.* Collected and Translated from the Hawaiian by W.D. Westervelt. Charles E. Tuttle Co., Rutland.

Wilkes, C.

1856 *Narrative of the United States Exploring Expedition, During the Years 1838, 1839, 1840, 1841, 1842, Vol. III.* G.P. Putnam & Company, New York.

Winieski, J.P. and H.H. Hammatt

2001 *Archaeological Monitoring Report for the Nimitz Highway Reconstructed Sewer, Honolulu, O‘ahu, Hawai‘i (TMK 1-7-02, 03 and 2-1-02, 13-16, 25, 27, 29-32)*. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Wong-Smith, H. and P.H. Rosendahl

1990 *Aloha Tower Complex Historical Assessment, Honolulu Harbor, Island of Oahu, TMK [2]-1-01*. Paul H. Rosendahl, Ph.D., Inc., Hilo, Hawai‘i.

APPENDIX A: AGREEMENT TO PARTICIPATE

Agreement to Participate in the Cultural Impact Assessment for the Chinatown Hotel Development
Cathleen Dagher, Ethnographer, Keala Pono Archaeological Consulting

You are invited to participate in a Cultural Impact Assessment (CIA) for the proposed Chinatown Hotel Development project in Honolulu Ahupuaʻa, Honolulu (Kona District, on Oʻahu (herein referred to as "the Project"). The Assessment is being conducted by Keala Pono Archaeological Consulting (Keala Pono), a cultural resource management firm, for the ʻIkenākea Development LLC. The ethnographer will explain the purpose of the Assessment, the procedures that will be followed, and the potential benefits and risks of participating. A brief description of the Assessment is written below. Feel free to ask the ethnographer questions if the procedures need further clarification. If you decide to participate, please sign the attached Consent Form. A copy of this form will be provided for you to keep.

Description of the Project

This CIA is being conducted to collect information about the Project in Chinatown, through interviews with individuals who are knowledgeable about this area, and/or about information including (but not limited to) cultural practices and beliefs, moʻolelo, mele, or oli associated with this area. The goal of this Assessment is to identify and understand the importance of any traditional Hawaiian and/or historic cultural resources, or traditional cultural practices within the Project. This Assessment will also attempt to identify any effects that the proposed development may have on cultural resources present, or once present within the Project area.

The proposed project will be located at 128 Nimitz Highway, Honolulu, Hawaiʻi 96813, within TMK: (1) 1-7-002:013. The project area is located within the Historic Chinatown District (State Inventory of Historic Properties Site # 50-80-14- 9927), which was placed on the National Register of Historic Places in January 1973.

The project will be a ground-up hotel development that will serve as an anchor for the community and catalyst for investment and redevelopment of the area. It will bring jobs, foot traffic, and tax revenues that have historically only benefited areas such as Ala Moana and Waikīkī to Chinatown. Over the next four years the site will be redeveloped into a lifestyle hotel with 240 guestrooms, two food and beverage outlets, meeting space, a museum, and a rooftop pool. With 240 rooms, 134 parking spaces, 2,177 square feet of meeting space, and a rooftop bar and restaurant with outdoor seating, the project is well-situated to provide business and leisure travelers with an upscale option outside of Waikīkī.

Currently, the property is used as parking for the surrounding retail and as a storage building for the refurbishing of used furniture. The project is within the Chinatown Special District, which will require a Special District Permit. The stand-alone building on the property is a historic building listed on the Hawaii Register of Historic Places as part of the Chinatown Historic District, which will also require approval through the 6E process with the State Historic Preservation Division. This project will retain the existing single-story historic structure, the Yee Hop & Co. warehouse, and incorporates it into their plans for the site.

Procedures

After agreeing to participate in the Assessment and signing the Consent Form, the ethnographer will digitally record your interview and it may be transcribed in part or in full. The transcript may be sent to you for editing and final approval. Data from the interview will be used as part of the ethno-historical report for this project and transcripts may be included in part or in full as an appendix to the report. The ethnographer may take notes and photographs and ask you to spell out names or unfamiliar words.

Discomforts and Risks

Possible risks and/or discomforts resulting from participation in this Assessment may include, but are not limited to the following: being interviewed and recorded; having to speak loudly for the recorder; providing information for reports which may be used in the future as a public reference; your uncompensated dedication of time; possible misunderstanding in the transcribing of information; loss of privacy; and worry that your comments may not be understood in the same way you understand them. It is not possible to identify all potential risks, although reasonable safeguards have been taken to minimize them.

Benefits

This Assessment will give you the opportunity to express your thoughts and opinions and share your knowledge, which will be considered, shared, and documented for future generations. Your sharing of knowledge may be instrumental in the preservation of cultural resources, practices, and information.

Confidentiality

Your rights of privacy, confidentiality and/or anonymity will be protected upon request. You may request, for example, that your name and/or sex not be mentioned in the Assessment material, such as in written notes, on tape, and in reports; or you may request that some of the information you provide remain off-the-record and not be recorded in any way. To ensure protection of your privacy, confidentiality and/or anonymity, you should immediately inform the ethnographer of your requests. The ethnographer will ask you to specify the method of protection and note it on the attached Consent Form.

Refusal/Withdrawal

At any time during the interview process, you may choose to not participate any further and ask the ethnographer for the tape and/or notes. If the transcription of your interview is to be included in the report, you will be given an opportunity to review your transcript, and to revise or delete any part of the interview.

APPENDIX B: CONSENT FORM

Consent Form

I, ________________________, am a participant in the Cultural Impact Assessment for the Chinatown Hotel Development project in Honolulu Ahupuaʻa, Honolulu (Kona) District, on Oʻahu (herein referred to as "the Project"). I understand that the purpose of the Assessment is to conduct oral history interviews with individuals knowledgeable about the Project and the surrounding area of Chinatown. I understand that Keala Pono Archaeological Consulting and/or ʻIkenākea Development LLC will retain the product of my participation (digital recording, transcripts of interviews, etc.) as part of their permanent collection and that the materials may be used for scholarly, educational, land management, and other purposes.

_______ I hereby grant to Keala Pono Archaeological Consulting and ʻIkenākea Development, LLC ownership of the physical property delivered to the institution and the right to use the property that is the product of my participation (e.g., my interview, photographs, and written materials) as stated above. By giving permission, I understand that I do not give up any copyright or performance rights that I may hold.

_______ I also grant to Keala Pono Archaeological Consulting, and ʻIkenākea Development, LLC my consent for any photographs provided by me or taken of me in the course of my participation in the Assessment to be used, published, and copied by Keala Pono Archaeological Consulting and ʻIkenākea Development, LLC and its assignees in any medium for purposes of the Assessment.

_______ I agree that Keala Pono Archaeological Consulting and ʻIkenākea Development, LLC may use my name, photographic image, biographical information, statements, and voice reproduction for this Assessment without further approval on my part.

_______ If transcriptions are to be included in the report, I understand that I will have the opportunity to review my transcripts to ensure that they accurately depict what I meant to convey. I also understand that if I do not return the revised transcripts after two weeks from the date of receipt, my signature below will indicate my release of information for the draft report, although I will still have the opportunity to make revisions during the draft review process.

By signing this permission form, I am acknowledging that I have been informed about the purpose of this Assessment, the procedure, how the data will be gathered, and how the data will be analyzed. I understand that my participation is strictly voluntary, and that I may withdraw from participation at any time without consequence.

Consultant Signature **Date**

Print Name **Phone**

Address

Thank you for participating in this valuable study.

APPENDIX C: TRANSCRIPT RELEASE

Transcript Release

I, ________________________, am a participant in the Cultural Impact Assessment for the Chinatown Hotel Development project in Honolulu Ahupuaʻa, Honolulu (Kona) District, on Oʻahu (herein referred to as "the Project") and was interviewed for the Assessment. I have reviewed the transcripts of the interview and agree that the transcript is complete and accurate except for those matters delineated below under the heading "CLARIFICATION, CORRECTIONS, ADDITIONS, DELETIONS."

I agree that Keala Pono Archaeological Consulting and/or ʻIkenākea Development LLC may use and release my identity, biographical information, and other interview information, for the purpose of including such information in a report to be made public, subject to my specific objections, to release as set forth below under the heading "OBJECTIONS TO RELEASE OF INTERVIEW MATERIALS."

CLARIFICATION, CORRECTIONS, ADDITIONS, DELETIONS:

OBJECTIONS TO RELEASE OF INTERVIEW MATERIALS:

Consultant Signature	**Date**
Print Name	**Phone**
Address	

APPENDIX D: INTERVIEW WITH MANA CÁCERES

TALKING STORY WITH MANA CÁCERES (MC)
Ethnographer: Cathleen Dagher (CD)
Date: 4/19/2022

CD: So first I'm going to just tell you a little bit about the CIA process. So I'm going to interview you today. It's going to be kind of different. It's going to be two projects but basically one set of questions. They're both in Chinatown. They're on adjacent lots. They're both on Nimitz…One is on Kekaulike, the corner of Kekaulike and Nimitz and the other one is just on the Diamond Head side of that. And so I'm taping us. I'm recording on Zoom but I also have my little digital on just for back up. Well, anyway, once this is over I'll write up the transcript and I'll send it to you and then you can edit it as you see fit. You can correct it. You can elaborate if there are points that you think are important and you want to add more detail. Sometimes I can't understand words, so you can fill those in or correct the spelling. It's your manaʻo so basically you can do whatever you want. And then I'll send you a transcript release form and when you're happy with the way it reads, you can sign off on it.

MC: Okay.

CD: So let's see. Let's start with the Chinatown Hotel. I'm just going to give you a little background on what it is. So the address is 120 Nimitz Highway and both of these projects are located within the Historic Chinatown District and the hotel is going to be a ground up hotel development. There's a historic building on the property. I believe it's where the seamen used to stay back in the early historic period. So they're going to keep that building and I believe they're just going to refurbish it and make it part of the hotel. And then the other project, that's the one on the corner of Nimitz and Kekaulike, that's going to be affordable housing for senior citizens. Okay? Are you ready to begin?

MC: Yup.

CD: So I'm going to ask you a series of questions as soon as I find them. I keep losing things. I just printed them out. Hold on one second.

MC: No problem.

CD: Yeah sorry. Alright. Thank you for waiting. First of all, will you please state your full name and tell me about yourself, where you were born, where you grew up, where you went to school.

MC: My name is Norman Kaleilani Cáceres. I also go by Mana. I was…my parents are from Hawaiʻi, Oʻahu but they moved to California right before I was born. So I was born in California. I grew up in Washington State. After I graduated high school in 1995 I moved to the Big Island to go to the University of Hawaiʻi at Hilo. I spent a few years, graduated with my BA in Communications. During my time there I met my wife and we started a family in Hilo. After Hilo we moved to Kona for about a year or two and in 2004 we moved to Oʻahu where we've been here ever since.

In the past maybe 10 to 15 years I've been doing work on genealogy and since then I've been handed the responsibility of continuing the work and the research for the genealogy. My grand aunt who passed away two years ago at the age of 101, she passed that torch to be kind of, you know, the record keeper of the genealogy to me at her 100th birthday a few years ago. And it was, you know, having to look through her research and adding my own research that I got, that me and my family got involved with burial treatment plans and the caring of Native Hawaiian human remains. Basically due to a project that was on the Big Island that impacted my 7th generation great grandfather, so it was kind of, it was the reason why my family and I are state recognized cultural descendants to iwi on the Big Island and more particularly for these projects we are recognized to iwi kūpuna that was found during the AIS work for the rail. And so on the map that you sent me, you can see, I think it's one block west, you can see the proposed rail station. So that's where recognized descendants to the human remains that are on that project.

CD: I see. Actually there's a rail station that's right by where the senior housing is going to be. That's the spot?

MC: Yes.

CD: Okay, thank you. So that's how you're connected to the area?

MC: Yeah. And we were able to prove that we had ancestors living in the area because on my mom's side we have genealogy that ties us to Kakaʻako and kind of this area too. So it was kind of interesting when you mentioned the possibility of that building being tied to like seamen. My great grandfather was enlisted and I think he was in the Navy, but he went on ships leaving from that area. So when you mentioned that I was like, oh. It piqued my interest to get more stories as it links to my own family.

CD: It all ties together.

MC: Yup, yeah.

CD: Okay. So what ways have you acquired your knowledge about this area? From your family, personal research?

MC: Yes. Family, personal research. As I mentioned, my grand aunt officially gave me the responsibility to kind of continue on her life work. You know, she died when she was 101 years old. She spent maybe 80 years of that, maybe 70 years of that doing research for family and then genealogy, it's pretty comprehensive. But it's from her own research and then sitting down with her daughter, my mom's cousin, learning family stories and moʻolelo of my great grandfather and how it kind of ties into this area specifically. There's, somewhere in my genealogy there's hand drawn maps, which is kind of cool. I didn't realize that there was almost every block had some kind of church, you know. Not this exact area, but closer to you know, Queen Street and stuff like that. There was the Hawaiian Church, then the Chinese Church, the Japanese Church, so it was kind of cool to see. You know, looking back in time at those kind of stories and maps, you can kind of see that in this area in particular it was kind of a melting pot of cultures. So I always find that interesting. The Portuguese had their own church. Everybody was in Kakaʻako.

CD: It's a really interesting area. Do you want to share any of those moʻolelo?

MC: Um yeah, so my great grandfather's name was William Huihui, who went by Bill. He was born in 1875 in Pauoa. But he enlisted in the military, and he kept on enlisting. But him and his wife raised his family on Queen Street in Kakaʻako. When he retired from the military, he became a police officer. During the military I believe he learned how to, he became a boxer. When he came back to Hawaiʻi he started training the police officers in boxing, so he became a well-known coach. Like in the early 1900s. So that's why my family and I are a little bit more invested in the things happening around Kakaʻako and Honolulu because of the close family ties it has with my family and especially um, like this. One of the projects that you guys are doing a CIA for, you know the senior housing one is particularly an interest to us because you know, we care for iwi kūpuna, the remains of our ancestors, but we also see opportunities like this where projects, very needed projects to kind of care for our living elders also.

CD: So did you spend time there when you were growing up?

MC: Well, sorry say again?

CD: Well I was going to ask you if you knew how the area had changed. If you spent time there and saw how the Chinatown area had changed.

MC: Yeah…my great grandfather raised his family in the Kaka‘ako area, the Honolulu area, and then so when my mom was born, she was raised by her grandmother in the Kaka‘ako area too, so even though I was raised in Washington State every so often when we would come to visit Hawai‘i and visit relatives, they were no longer living in the area in Honolulu anymore. But my mom would still drive us around and point out the places that were kind of important to her when she grew up, even though a lot of them weren't there anymore. I don't know if they still have the, she used to call it the holy ghost parade. It was a Catholic Church in Kaka‘ako that they used to do a religious type of parade.

CD: Oh that's interesting, yeah. So that was like when your mom was young? Like in the '20s or something?

MC: My mom, let me see if I can pull up a calendar to help me out a little bit here.

CD: Oh wait, maybe it was later.

MC: Yeah, later than that. Like the '60s. '50s, '60s.

CD: I was thinking of your grandparents. Okay cool. Okay. And then let's see. What about traditional sites and historically significant buildings in that area?

MC: Um, from what I have seen research wise, it looks like that area is more of like historic period. You know, I'm not sure exactly where the old, the actual coastline was in ancient times or whatnot, but from what I know that whole area, especially where that project is, I believe is all built on fill that was brought in.

CD: So that project area also is fill, is that what you're saying?

MC: Yeah. I think that's what, from the information that I've seen from our involvement with the rail station.

CD: Okay and the maps yeah?

MC: Yeah, the majority of that is imported fill.

CD: Let's see, so do you think that at the hotel site, that's the most Diamond Head project area, do you think that would affect any areas of cultural significance or access to areas of cultural significance?

MC: I don't think so. You know I think with the scary part with any place in Hawai‘i is even though it's imported fill you know, there's a high likelihood that you do have iwi kūpuna in the fill also. So of course, me and my family, it's always a concern of ours no matter where on the island the development is happening. But as far as what I know, I don't think this project is going to block any access or destroy any cultural properties.

CD: And then what about the senior citizens housing? That's right on Kekaulike Street. Is that where your iwi kūpuna were?

MC: Ah, it was on the other side of Kekaulike Street. Almost, on the opposite side.

CD: On the ʻEwa side?

MC: Yeah, yes.

CD: Oh okay, so across the street. Alright, well do you think it's likely that there might still be burials in the subsurface deposits of either of those two sites?

MC: I think it's a high likelihood, yeah.

CD: Okay. And then are you aware of any traditional gathering practices at the Chinatown Hotel site, the senior citizen site, or in the surrounding area? Say the coastal area for example?

MC: Not so much on this portion of Honolulu. I think the more Diamond Head you go, you have a lot more salt pans, those are cultural and then the historic salt pans the more Diamond Head you go, but I, not to my knowledge. I don't think there's anything within these exact parcels or in the immediate area.

CD: Okay. What about, say marine resources for example? Do you think the development might impact, do people still fish down there and would that be impacted?

MC: Not to my knowledge. I'm not sure. Could be. I think the only concern that I would have is because of its close proximity to the water and any type of drilling or augering for structural elements like grade beams or pile caps. You know, it would just, it's a concern that you know, if they drill and you know, the concrete gets into the water source or something I guess.

CD: Oh, you mean like the fresh water?

MC: Yeah, yeah.

CD: Like the ground water rather than the ocean water.

MC: Yeah.

CD: Okay. Let's see. So what could be done to lessen those effects? Do you have any suggestions?

MC: Um, well I know last week there was a presentation to the Oʻahu Island Burial Council and I guess you guys are prepping for the archaeological inventory survey. Another, something that I suggested if it isn't already planned would be some kind of environmental coring, core samples I think it's called. So you can do that to check, you know there's usually somebody there that checks contamination levels…if there's any contaminants in there. I know for the rail station, they also brough in those little drill rigs to see just how far the different sediment layers were.

CD: Okay. And then during construction, so they would do the coring beforehand or they would…

MC: Yes.

CD: But they'd also be on site…while the development is occurring, while the foundation I guess is being put in. The same folks would be on site to test for toxicity in the water and contamination. Is that what you're saying?

MC: I think that's done sometimes.

CD: Okay. Okay. Are you aware of any cultural concerns the community might have related to cultural practices within either of those two sites or the greater area, surrounding area?

MC: I don't think so. I think, you know everybody's main concern, especially since a lot of the reports or maps of the area does show a lot of red triangles that indicate the different iwi kūpuna or human remains that were found during monitoring. And that general area, you know I think the majority of people's concerns would be the finding of iwi kūpuna.

CD: There's a lot in that area. There's a lot in Kaka'ako.

MC: Yes, yeah.

CD: Yeah, okay. And then do you know of anyone else I should talk to? Kūpuna, kama'āina, local residents that might have information that they would like to share?

MC: Um, let's see. Manny or Manuel Kuloloio.

CD: Oh Manny. I know him.

MC: Yeah. He knows a lot about this area. He would be a good source I think.

CD: Okay.

MC: Yeah he would be the person I would suggest the most. Just his knowledge of the area.

CD: Yeah him and his sister too maybe. I know they have ties to that area.

MC: Yes, yeah the harbor and the area in general, yeah.

CD: Okay. Alright. Is there anything else you would like to share?

MC: I know that in the reports, the archaeological inventory survey reports for that rail, the Chinatown station that I've mentioned a few times, I believe they found a layer that was associated with the Chinatown fire.

CD: Oh okay.

MC: I'd be interested to see if during the archaeological inventory survey for these two sites for this project…if you guys found evidence of this also. I'd be interested to learn that.

CD: Yeah, that would be interesting. Okay and then what about mo'olelo, oli, anything like that that you'd like to share?

MC: I can ask. I can follow up and ask my wife and my children if they know any.

CD: Okay. Alright well thank you Mana. I think that pretty much covers everything.

MC: Thank you.

CD: Thank you so much.

MC: Mahalo. Just please keep me informed as the project progresses. My family and I look forward to seeing the progression of things. And I'm really excited now that you mentioned that they were going to preserve that existing building.

CD: Let's see. Hold on. I have it somewhere.

MC: Because I know that that wall right there, it's a nice, you can tell that it's that old brick wall. I think you can see it from the street.

CD: Yeah. I think, well I saw that building. It almost looks like it's constructed from coral but it's got this thick, really uneven white mortar.

MC: Yup, yeah.

CD: Let's see. Okay this is the building. [CD reads from project description] "The standalone building on the property is the historic building listed on the Hawai'i Register of Historic Places as part of the Chinatown Historic District, which requires special approval through the 6E process with the State Historic Preservation Division. The project will retain the existing single story historic structure, the Yee Hop and Company Warehouse and incorporate it into their plans." That might be a different building then, a single story historic structure. The one I'm thinking of was at least four stories high.

MC: Yeah, there's a big wall right? Just like you mentioned the uneven grout.

CD: But that's in the taller building. I'm not sure which building that they're going to preserve then.

MC: Yeah. Oh okay.

CD: Sorry about that. I thought that was the only one on the property. I can find out and email you.

MC: I think that's the one. During the OIBC presentation, I think that's the building they highlighted that they were going to preserve it.

CD: The one that's like four or five stories high?

MC: Yeah.

CD: I sure hope so. To me that area is so interesting. It's so unique and you're right, it's a total cultural melting pot, everyone was there. So it's really, really rich in history, it's rich in culture, and um there's so much. The archaeology there is so interesting also. Alright, anything else?

MC: No, that's good. Mahalo!

APPENDIX E: INTERVIEW WITH KIERSTEN FAULKNER

Kiersten Faulkner
Executive Director, Historic Hawai‘i Foundation
Comments to Keala Pono Archaeological Consulting
RE proposals Chinatown Hotel Development and the Hale O Kekaulike projects
April 19, 2022

1) To start please state your name and tell us about yourself (e.g., where/when you were born, where you grew up, where you went to school).

Kiersten Faulkner has served as executive director of Historic Hawai‘i Foundation since 2006. She oversees all aspects of its preservation programs, strategic planning, business lines and operational matters. She holds a Master of Arts in Urban and Environmental Policy from Tufts University and is a member of the College of Fellows of the American Institute of Certified Planners (FAICP).

Historic Hawai‘i Foundation is a statewide nonprofit organization established in 1974 to encourage the preservation of sites, buildings, structures, objects and districts that are significant to the history of Hawai‘i. HHF is an organization with a demonstrated interest in the undertaking and a concern for the effects on historic properties.

3) What is your association to the subject property (family land, work place, etc.)?

Historic Hawai‘i Foundation has been instrumental in efforts to preserve, protect, interpret and restore historic properties in the Chinatown Historic District for over 50 years. Several of HHF’s founding members were instrumental in nominating Chinatown to the National Register of Historic Places in the early 1970s. HHF worked with the City & County of Honolulu to establish the Chinatown Special Design District in the 1990s. HHF developed a walking tour map with historic information for self-guided tours in the 1990s. HHF has hosted numerous educational seminars for property owners, architects, planners and engineers into best practices and standards for repair, rehabilitation and restoration of historic properties and character-defining features in partnership with the City & County of Honolulu’s Department of Planning & Permitting and the Chinatown Merchants Association. HHF is the publisher of the book “A Close Call: Saving Honolulu’s Chinatown” by Nancy Bannick with David Cheever and Scott Cheever (2005). HHF has supported historic property tax incentives and grant programs to assist property owners with financial resources to support the restoration of historic buildings. HHF engages in educational and advocacy efforts to protect the historic district and its contributing buildings, objects, sites and structures.

4) What are the ways you have acquired special knowledge of this area (from your ‘ohana, personal research, specific sources)?

Sources of knowledge include the Chinatown National Historic District nomination (1973) and proposed update (2021); City & County of Honolulu Special District Design Guidelines (1991); “A Close Call: Saving Honolulu’s Chinatown” (2005); and personal interviews and discussions with property owners, managers and members of grassroots organizations located in the district.

5) Could you share your mana‘o relevant to the area and Chinatown or greater Honolulu the surrounding region (personal anecdotes, mo‘olelo, mele, oli, place names, etc.)?

<u>Chinatown Historic District (Hawai‘i and National Registers of Historic Places)</u>

The proposed projects are located within the Chinatown National Historic District, which was designated on the National Register of Historic Places on January 17, 1973 (State Inventory of Historic Places [SIHP] Number 50-80-14-09042) and on the Hawaiʻi Register of Historic Places on November 25, 1985 (SIHP Number 50-80-14-09986).

The statement of historic significance in the nomination to list Chinatown on the state and national registers of historic places notes that the "portion of Honolulu immediately adjacent to the harbor at the mouth of Nuʻuanu Stream holds the longest continuous history of native and immigrant settlement and where the story of Hawaiʻi's common folk has been most compactly unfolded."

The Chinatown historic district "reflects vividly in its building, institutions and people the full impact of the city's role as a center of attraction for many diverse races and cultures" (Chinatown (HI) Historical District Nomination to the National Register of Historic Places, 1973).

<u>Chinatown Special District (City and County of Honolulu)</u>

In recognition of its historic significance and architectural character, Chinatown was designated as a Special District in the City's Land Use Ordinance. The City promulgated the Special District Design Guidelines in April 1991. The purposes of the Special District and the Design Guidelines include:

- To preserve and enhance the historic character of Chinatown;
- To retain the low rise urban form and character in the historic interior core…while allowing for moderate redevelopment at the mauka and makai edges of the District;
- To preserve and restore, to the extent possible, buildings and sites of historic, cultural and/or architectural significance, and encourage new development which is compatible with and complements these buildings and sites….

The Special District established both architectural guidelines and height limits to achieve these objectives. The subject parcel is located within an area that allows construction up to 80-feet high on the parcels ʻEwa of Maunakea Street and up to 250-feet high on parcels Diamond Head of Maunakea Street (see Chinatown Special District Precinct Boundaries and Height Limits, ROH21-9.9).

<u>Chinatown-Downtown Transit Oriented Development</u>

In anticipation of a planned elevated heavy rail system to be constructed along Nimitz Highway, with a station at Kekaulike Street, the City adopted "transit oriented development" (TOD) special districts to encourage "more livable communities that take advantage of the benefits of transit" through the efficient use of land. Among the stated goals for each TOD zone is to "increase the quality of life through rejuvenated community character, <u>preservation and enhancement of historic, cultural, scenic, natural and other community resources and landmarks</u>" (emphasis added).

While the City has adopted the Chinatown-Downtown Neighborhood TOD Plan (Resolution 20-120, CD1 July 2020), the area has not been rezoned to the TOD special district.

The TOD Plan's stated land use goals for Chinatown include, "<u>the scale and character of historic buildings and historic Chinatown are maintained</u> … and key opportunities for development are pursued on parking lots along Nimitz Highway" (page 1-11, emphasis added).

The plan also states that "The TOD Plan encourages the preservation and reuse of historic resources, through the continued use of the special district regulations in Chinatown…buildings may be preserved and improved through adaptive reuse, allowing new businesses to occupy historic structures" (page 2-11, emphasis added).

However, the TOD Neighborhood Plan height map (page 2-23) conflicts with the Chinatown Special District allowed heights, indicating that 200-feet would be allowed on parcels ʻEwa of Maunakea Street.

The Land Use Ordinance has a provision that addresses this conflict of height limitations. The TOD Special District regulations state that: "If any regulation pertaining to the TOD special district conflicts with another special district regulation or unilateral agreement in effect, the regulation applicable to the other special district or unilateral agreement in effect will take precedence" (Ordinance 17-54, Sec. 21-9.100 (b)).

Therefore, the subject parcel should be limited to new construction of no higher than 80-feet.

State Historic Preservation Reviews

Hawaiʻi Revised Statues (HRS) 6E-10 states, "Before any construction, alteration, disposition or improvement of any nature…may be commenced which will affect an historic property on the Hawaiʻi register of historic places, the landowner shall notify the department (State Historic Preservation Division of the Department of Land and Natural Resources) of the construction, alteration, disposition or improvement of any nature and allow the department the opportunity for review of the effect … on the historic property."

The State Historic Preservation Division (SHPD) review of proposed alterations to historic properties follows national standards and guidelines for the appropriate treatment of historic properties, including both considerations for the historic building and for compatible and harmonious new construction in a historic district.

Federal Historic Preservation Compliance

The materials indicate the financing source for the low-income housing including the Low Income Tax Credit (LIHTC). This is a federal funding source administered through the U.S. Department of Housing and Urban Development. Section 106 of the National Historic Preservation Act requires federal agencies to take into account the effects of their actions on historic properties (36 CFR 800). Use of the federal funds will therefore require the developer to comply with the regulations to avoid, minimize and mitigate adverse effects to historic properties, including consideration of alternative locations.

Honolulu Transit Programmatic Agreement to Resolve Adverse Effects to Historic Properties

The City is an Invited Signatory to the "Programmatic Agreement Among the U.S Department of Transportation Federal Transit Administration, the Hawaiʻi State Historic Preservation Officer, the United States Navy and the Advisory Council on Historic Preservation Regarding the Honolulu High-Capacity Transit Corridor Project in the City and County of Honolulu, Hawaiʻi" [PA] (2011), which is a binding agreement executed under

Section 106 of the National Historic Preservation Act as a condition of federal funding for the City's Transit project.

PA Stipulation IX.E. states, "In the Chinatown and Merchant Street Historic Districts, these specific additional requirements shall apply regarding unanticipated cumulative adverse effects…the City shall follow the process described below to address unanticipated and reasonably foreseeable present and future non-Project actions that could, in combination with the (Transit) Project, have cumulative adverse effects on the historic resources in the Chinatown and Merchant Street Historic Districts…that may cause irreversible or long-term adverse effects on qualifying characteristics."

It is clear from the myriad federal, state and local laws, statutes, ordinances, rules, regulations and procedures that Hawaiʻi takes seriously the obligation and responsibility to be good stewards and caretakers of its historic resources. The historic, cultural and natural resources of Hawaiʻi are a great legacy and irreplaceable treasures.

7) Do you know of any traditional sites or historically significant buildings which are or were located on the Chinatown Hotel project site or the adjacent Hale O Kekaulike project site--for example: cultural sites, archaeological sites, historic structures and/or burials? Please elaborate.

The National Register of Historic Places proposed update (October 2021) includes the following Statement of Significance:

> "Honolulu's vibrant and bustling Chinatown Historic District provides a tangible link to some of the most important themes in the history of Honolulu's development – such as urbanization, commercial development, in-migration, settlement, and cultural resilience. The deep-water port in Honolulu Harbor stimulated commercial development along the waterfront and in the adjacent district by the early nineteenth century. In the 1850s, demand for labor on Hawaiʻi's sugar plantations spurred the immigration of Asian plantation workers from China (1852), Japan (1868; 1885), Korea (1903), and the Philippines (1905). Population diversity characterized Chinatown throughout the district's history, making the "Chinatown" moniker somewhat deceptive. As historian Clarence Glick writes, "There was a time when there was some justification for speaking of a Chinatown in Honolulu, but even at the 'peak' of Chinatown's career from one-fourth to one-half of Honolulu's Chinese were living outside Chinatown." With Honolulu Harbor as Hawaiʻi's primary port of immigration, the adjacent commercial district— today known as Chinatown— became a migrant and settler gateway to employment and social connectivity. In Chinatown, settlers constructed a distinct community to meet their commercial, social, and cultural needs. Chinatown remained integrated into Honolulu's urban fabric via the street grid and streetcar lines, sharing similar Western urban forms like rectilinear buildings sited flush with lot lines to maximize space. At the same time, the district supported unique types of businesses and social gathering places necessary to maintain immigrants' traditional cultural practices in a foreign land. The density and vibrancy of ongoing cultural activity in Chinatown distinguish the district from the surrounding urban neighborhoods, as does its architecture. Asian-influenced motifs embellish many of the district's buildings and combined with a range of popular Americanized styles from various eras, the district's buildings document how Hawaiʻi's diverse Asian cultures interacted with the American cultural mainstream over time. The combination of these deep and rich cultural and historical associations lends the Chinatown Historic District significance at the statewide level under National Register Criteria A and C, in the areas of Community Planning and Development, Commerce, Ethnic Heritage, and Architecture. Additionally,

> Chinatown was identified as a Traditional Cultural Property by the National Park Service in National Register Bulletin 38: Guidelines for Evaluating and Documenting Traditional Cultural Properties because it ‘reflects the cultural values and traditions of its inhabitants not only in its architectural details but also in its organization of space and the activities that go on there.’ ”

The specific locations affected by the proposed projects include:

1) **905 Kekaulike Street** is now known as the **Kaya Fishing Supply**, but was originally the **Sperry Flour Company**. It dates to 1919 and is historically significant under Criterion C (design and construction achievements) and contributes to the significance of the national historic district. (NR update, Oct. 2021).

Architectural Historian Stanley Solamillo provided additional information about the building (correspondence to Faulkner, July 2021):

- It was built in 1919 with decorative cornice and wrap around canopy for the (General Mills) Sperry Flour Company and functioned in this capacity until roughly 1949.
- Subsequently purchased in 1950 by C.Q. Yee Hop for $60,000.
- Mission-style façade (canopy/bays, etc) were altered in 1950 as part of the Territory’s “Makai Arterial” project to transform Queen Street into Nimitz Highway.
- Fishing organizations started moving in to the bldg early 1950s. K. Kaya arrived on site roughly 1961. His shop was formerly located nearby at 116 Queen Street. Kaichi Kaya is credited with being the originator of “Shave Ice” – although that was in the late 1800s/early 1900s, long before K. Kaya moved into this building.

2) C. Q. Yee Hop warehouse, 112 Nimitz Highway:

The 20-year period between 1920 and the outbreak of World War II saw continued construction in Chinatown. Most of the few remaining vacant lots were infilled, and the interior of blocks continued filling with buildings during this period. As highlighted by the **C. Q. Yee Hop building** at 125 North King Street, the construction of multiple rear additions onto the commercial-block buildings was also common during this period, with the interior of some blocks nearly entirely occupied with additions, freestanding apartments, tenements, and auxiliary buildings. These additions often housed apartments, warehouses, and light industrial shops and factories. Some buildings from previous periods were demolished between 1920 and 1941 to make way for new buildings, as was the case in the **900 block of Kekaulike Street**, where the old City Market was removed and a new warehouse was built in its place. The period also saw the **expansion of Honolulu Harbor and improvements to roadway infrastructure and Nu‘uanu Stream**. By the outbreak of World War II and the end of this period, Chinatown was a densely packed district, comprised of commercial, industrial, and residential buildings. (NR update, Oct. 2021).

Chun Quan (C. Q.) Yee Hop was another successful Chinese merchant. Beginning in 1885 with a one-man meat stand in Chinatown, C. Q. Yee Hop built a multimillion-dollar commercial empire across the Hawaiian Islands over the next seven decades. One of C. Q. Yee Hop’s earliest and most significant business ventures, **C. Q. Yee Hop Market**, operated out of his building at 125 N. King Street for over 40 years. (NR update, Oct. 2021).

Many tenement buildings, oftentimes long and narrow and two stories in height, were also constructed during this period. Typically constructed of wood, tenements and their associated buildings, such as kitchens, filled the interior of blocks and were particularly dense in the northern half of the district. Other types of residences, including single-unit dwellings and apartments, built out of wood, concrete, and brick, also appeared in the interior of blocks in this area. In the district's southern half, wood and brick warehouses and small light-industrial shop buildings tended to occupy the interior of blocks; **the lava rock C. Q. Yee Hop warehouse and dormitory at 112 Nimitz Highway** is an extant example of this trend (NR update, Oct 2021).

8) Do you think the Chinatown Hotel development would affect any areas of cultural significance or access to a place of cultural significance? Please elaborate.

The materials indicate that 'Ikenānkea Development and Terra Massa Capital propose to erect a ~15-story (199-foot high) high rise hotel at 128 Nimitz Highway. The property is currently occupied by a surface parking lot and the historic Yee Hop & Co. warehouse. The developer states that the project will restore and incorporate the historic building into the final development plans.

The historic Yee Hop Building is classified as "high preservation value" designated as a contributing building to the district with recommendations to retain and reuse the building. The parking, streetscape, materials and architectural detailing.

11) While development of the area continues, what could be done to lessen the adverse effects on any current cultural practices at the Chinatown Hotel project site?

For the proposed Chinatown Hotel, HHF recommends:

1. We strongly support the proposed stabilization, rehabilitation and adaptive reuse of the historic Yee Hop Building, also in accordance with the Secretary of the Interior's Standards and Guidelines for the Treatment of Historic Properties.
2. New construction on the surface parking lot is appropriate and can be supported, so long as the height does not exceed 80-feet and the bulk, mass, materials and architectural design are consistent with the national preservation standards and the Honolulu Chinatown Special District Design Guidelines as they relate to new construction in a historic district.
3. HHF does not support allowing height variances to exceed the 80-foot limit in this location. Our preference would be for new construction of no more than 3-4 stories for greater compatibility.

APPENDIX F: GROUP INTERVIEW WITH CHU LAN SHUBERT-KWOCK, SIFU ERNEST LOO, AND SIFU KIMO WONG

TALKING STORY WITH CHU LAN SHUBERT-KWOCK (CSK), SIFU EREST LOO (SEL), AND SIFU KIMO WONG (SKW)
Ethnographer: Cathleen Dagher (CD)
Date: 2/8/2022
This was a group interview conducted in-person at the Golden Palace Restaurant, within the Historic Chinatown District.

CD: Okay. So, today is February 8, 2022, and I am in Chinatown with Sifu Ernest Loo and Sifu Kimo Wong [Note that the title *Sifu* (Cantonese) or *Shifu* (Chinese) is used for a skillful person or master, or an instructor of martial arts]. And we are going to be discussing traditional cultural practices in Chinatown…So, who wants to go first, Sifu Loo? I am going to be asking you these questions – I'm interested in knowing about your family. When did your family come here?

SEL: My father came on a boat from Canton, China, in 1945. His destination was San Francisco…his village, said it was a good place to come to America. But, when the ship arrived in Honolulu, he kinda went, "I want to stay here," so he jumped ship. He really, really jumped ship. And then, he went swim and after a period, some fishermen saved him. So, they said, "What do you want to do?" He said, "I want to stay here. It's very peaceful."

CD: How old was he?

SEL: I don't know. He said it was very peaceful. He saw Punchbowl. He saw Diamondhead. And the scenery was nice - just like back home in China. So he said, "I want to get off here." He had not seen San Francisco. But he had just heard about it. But, he just said, "Over here, it's good; tranquil and peaceful." And he wanted to stay here. So, he jumped ship and then the fisherman saved him. They said, What are you doing?" He said, "I want to live here." So, the fisherman said, "Oh, I have the same history. I want to stay here, too. So, why don't you come live…do you have a place?" He said, "No. I have no money. No nothing. I just came off the boat." So, the fisherman took him to his house on Maunakea Street and he lived there - with nothing on his back. And what so happened was, there was a place, Char Hung Sat, and he learned how to make manapua. And that's how he survived. So, he worked for three years. Then in 1948, he sent money back to Canton, China, to bring his wife over here and the daughter.

CD: So, when were you born?

SEL: I was born in 1950.

CD: Oh, over here then. So you grew up in Chinatown?

SEL: Right. I was born at St. Francis, in 1950. My sister is ten years older. And then, my mom, after she came here she worked at Char Hung Sat, too, as a dishwasher. In other words, they don't speak English, it's a foreign country. So, whatever job, menial job, they can get, that is what they did. My father learned how to make manapua. My mother learned how to wash dishes for them. That is how they survived. And then, good thing, the place where they lived, the landlord understood the problem and they decided to rent for a couple years. The landlord said, "Just help me clean up. Help me sweep up rubbish." In other words, they found menial jobs for them to do. In other words, the Chinese, they just take care of their own because when you come from a foreign country, you have no money. So, they help each other. They encourage them to come because they say America is where you find gold.

CD: I have a similar story. My grandparents were all immigrants. My mother's side came from Sicily. My father's side came from Lebanon. So my jedo, my grandfather on my father's side. I think they came over in the mid- to late 1800s. On my mother's side, also. So, I can understand. They grew up in Ohio, in Cleveland. But, same kind of thing.

SEL: Yeah. And then, I have a younger sister that was born in 1952 and my younger brother [was born] in 1954. We lived in the Chinatown area until 1965.

CD: How did it look then? Did it look kind of like this?

SEL: No, it wasn't this nice! No! [laughs] It was wooden buildings, really, only two-stories [high]. It's not like this. Did you ever see in the movies how old Chinese houses look like? You have a regular door knob…how you lock your door is get a hatch and you lock one side. You had one window and then your bed was really a wooden bed, you get a mattress.

CD: So, it was like a small apartment?

SEL: No, it's really a rooming house because you share a bathroom, you share a kitchen. Everything is shared.

CD: I see, but you have you own family quarters?

SEL: Yeah. Actually, I don't know how big it is. You put two beds over there - we shared. Your father and mother shared. There is no divider. And then you have a small little table for your dinner and wooden stools for chairs.

CD: So, like one big room. Okay.

SEL: Yes, one big room. And then, go to the bathroom, go outside. Take a bath, go outside.

CD: So, where did you cook? Inside? Did you have a cook house?

SEL: No. Because my father and my mother worked in a restaurant, we took the leftovers – the leftover char siu bao, noodles, whatever.

CD: Okay. That's really interesting.

SEL: We survived on manapua for, I don't know, for a long while. 'Cause you don't have money, what can you do?

CD: My dad had a restaurant, too. That's the thing. He moved to a small little town and started a restaurant with his brother and sister and his father. So, yeah.

SEL: So, like I said, whatever food they could get was leftover. We were poor. I got news for you, we were poor.

CD: So, where did you go to school?

SEL: It just happened, I went to a school that was just about a block away – Island Paradise. That's where I went to school.

CD: So, your family spoke Chinese at home. Did you learn to speak English in school?

SEL: Yes, because my family know Chinese. Like the rest of the workers, all Chinese.

CD: So, our backgrounds are kind of similar. Different cultures, but same situation.

CD: Is your story kind of the same, Sifu Wong?

KW: Um. Very similar. If I start with my father's side, my grandfather came from China in 1889. He was 12 years old. He came from the Chung-san District which is where most of the people in Hawai'i came from, Chung-san - South China.

CD: C-h-i-n?

SKW: C-h-u-n-g-s-a-n. Actually, Zhuhai, they call it now. It's Chung-san, but in the Zhuhai city area [there] is a smaller town. They are actually rice farmers. Somewhat wealthy. But, in 1889, during the [reign of] the last emperor, a lot of the people were starving. Famine. So, they put these kids on the boat and set sail. So, he was only 12 years old, at that time, but, then wanting to come to Hawai'i. Now, Hawai'i was already accepting contract workers for, you know, sugarcane workers, and all this. But, in 1889 they stopped. They stopped that. So, you couldn't come in as a contract worker or have any jobs. So, the people coming in from China had to have a trade. And so, because it takes about a month or month and a half [to make the trip from China to Hawai'i, his trade was a cook. But, he came by himself. He ended up on the Big Island. And he worked, luckily, for the missionary family – the Lyman family. He saved his money and eventually he opened up the Ola Meat Market – a pretty popular meat market. Wong's Meat Market. He had a business there and then he used to deliver the meat to all the plantation workers in that area. He was able to raise 15 kids. Of these children, 12 were boys. Four of them became doctors. They went to Catholic school. They went to Jefferson Medical. They went to university and then to Jefferson Medical. That is what they strived for.

My father was born here. He was in the medical [school], just about residency, when World War II got to him. So, he went to the military. When he came back he kind of lost interest in medicine. But, but! He took on aviation in the military, with the army. His brother was a medic, but he liked aviation. He liked the trooper, the parachute – that kind of macho thing. So, when he got back, he actually was one of the first pilots for United Airlines.

He [my grandfather] married my grandmother, who was from Wai'anae. So, the only thing that… At that time… She was born here. At that time, she had to have [been] part Hawaiian, because they didn't have [Chinese] females. So, probably, her father's father came here [from China] and married. We don't have that documented. We're still pure Chinese.

CD: Was she part Hawaiian then?

SKW: Very little. That's what we're thinking because there was no female that he could go back to China and come back. In 1889, I mean in the 1920s, or so there were no females that were coming over, you know, no Chinese women, you know.

CD: Do you know why?

SKW: The Chinese came here to work.

CD: So, the women stayed back.

SEL: My father came here to work to make money. So, he sent back to China to bring my mother. Like I said, America is the land of opportunity.

CD: Yeah, that's what everyone thought.

SEL: Yeah. Right.

SKW: So, um, they got married. They lived on the Big Island and then, uh, that's where they gained their prosperity, you might say. They built a business and all this there. Later on, they moved over to Honolulu. Chinese was not spoken. And the reason…

CD: It was not spoken?

SKW: Not in our family. A lot of people don't understand the Chinese dialects. You know, in Cantonese there are many dialects. My grandfather was a Hakka and my grandmother probably didn't even speak [Chinese] because she was born here. So, they couldn't communicate. So, they had to learn broken English. I think that the story is that they strived for education. They strived that that the kids be prosperous and educated. And the monies earned very rarely for themselves, to shelter and all this, bones and all this, jook, the rice soup…But, all the money is for the kids' education. That's on my father's side.

CD: So, both of your families are from Canton, but different districts?

SEL: Different districts.

SKW: My grandmother, she was born here, also, on my mother's side. She married a carpenter, which the family rejected her because they wanted her… She was kind of on the wealthier Chinese. I don't know how they gained their wealth. But, her brothers had a temple right down on… where the Ching development is. Across from [inaudible] housing – had the old homes…

CD: Which street was that?

SKW: On Beretania. The whole block, but it was a small temple.

CD: Is it still there?

SKW: No. No, it came down. So, so, my grandfather, being a carpenter, came here at 12 years old, on my mother's side, also. Eventually, got married. But, uh, the family did not like her to…they kind of rejected her because they wanted her to marry a rich Chinese. So, they [his maternal grandparents] bought the property on Liliha Street and they built a home. In fact, they had three homes. Had apartment units in the back. And they rented it all out. Yeah. And she worked at Dole Cannery, my grandmother. She would walk to Dole Cannery. Like five cents an hour, or something. And again, they had 12 children. [My mother] had three sisters. I was born at Queens Hospital in 1956. But the family already was very entrepreneurial already. They rented out the different areas – the basement area, the dirt area, anywhere, you know, to get that income. And all this. And then, eventually, my father and mother met because my father being on the airlines, he saw my mother. Because my mother, at 18, she graduated from school and wanted to live in Chicago. So, she lived in Chicago for about three years. But, her sister was dying from cancer. So, on her way back, my father sees her. Right. He found out where she lived and was able to meet her. So, that's how they met. Eventually they sold the property, I think to Mr. Loo here.

CD: Is that right? To your family.

SEL: Yeah.

SKW: So, this is really interesting. As Sifu Loo was mentioning, everyone struggled. They were eating manapua and rice. My God! And they were striving to build a family foundation. And we had the house, but eventually, my grandmother passed away. My mother said, "Eh!" She gave up all her share [in the property] because she had two brothers who wanted to, you know. So, she sold the property and Mr. Loo's family was – they were living downstairs. They're living downstairs! And this is what gets me! They're living downstairs. The upstairs house was bigger and had the property and the downstairs was probably the cheapest. It was the basement! And Mr. Loo's father built his fortune and they bought the whole property! [laughter].

CD: Your father? Wow!

SEL: Like he said, the goal was whatever money you collect, you build up to buy your own property. That was the goal. We were, we were very frugal. But, like I said…a guy from China jump ship with zero dollars and he saved all his work money to buy an apartment house. [Inaudible – background noise from the restaurant obscuring dialogue]. I tell myself that - saving pennies, a penny today, a penny tomorrow [inaudible].

CD: Pretty strong and determined, too.

SEL: Yeah.

CD: So, did you guys know each other?

SEL: No.

SKW: No, he was much older.

CD: You were much older?

SEL: Yeah.

SKW: That was back in the '60s. And my father, you know, working at the airlines, and later on he moved over to the Union Head for the AFL-CIO [American Federation of Labor and Congress of Industrial Organizations], you know, taking care of the unions. C.T. Wong, Charles Wong. So, he started to develop small homes in Kaneohe, and all that. He'd buy property and the former Mayor Fasi was moving homes at that time. He would bring the homes that he didn't want to his property, plunk them down, and selling them. That's how he was making his money. Eventually, we moved to the Nuʻuanu area. I think my father didn't feel they had to struggle as much because they always had that meat market. And my mother them didn't feel [that way] because they always had that rental income [inaudible]. But the grandparents came over, my grandparents, nothing in the pocket, penniless. Working hard, saving every penny.

CD: Was there a Chinese community here already when your grandfathers arrived?

SEL: Yeah, oh yeah. They help each other. Because my father, remember, he was so poor people would grow vegetables. They would go, "Here. I know you're poor. We have something to share with you." Even though we don't know these people, they just come. Because, their argument is this: they came here penniless. Somebody helped them. So, it is their turn to help other people.

CD: So, did you raise the pigs used to make the manapua.

SEL: No. No animals! We had chickens. [laughter]

CD: So, what did he put in the manapua?

SEL: Pork! They buy from a...

CD: So, you just raised chickens?

SEL: Yeah, for our dinner. For our food.

SKW: I don't know if Ernie knows this. I don't know if Ernie knows this story. But for Char Hung Sut, the Char Hung Sut manapua is famous today because of his father. The reason is that at a certain point, this is only through rumors! The Char Hung Sut was owned by the Mau family, right?

SEL: Right.

SKW: Right, Mr. Mau them. His [Sifu Loo's] father used to work for him. And he [Sifu Loo's father] used to make all the manapua. I think your father wanted to open a small business. Took all the business from Mr. Mau. So Mr. Mau came and begged him, begged him! To come back!

CD: Right on! That's great!

SEL: My father [inaudible] and come at 11 o'clock at night just to make the yeast for the bread. Somehow he would sneak it in. He was trained and he perfected it. And he would not share his co-workers. He knew he could get job security by mixing his own!

CD: Yeah, secret recipe!

SEL: Yeah, cuz nobody comes at 11 o'clock in the nighttime to…

SKW: And he never duplicated it.

SEL: He died, he died with it.

CD: He didn't even pass it on to you?

SEL: No. I wasn't interested.

SKW: That's the way lot of times even to this day. They want the family members, the children, to strive to become engineers. Ernie can tell you about it. - his kids and all that. If you think about the struggle here - eating manapua, to Ernie's struggle, becoming pretty stable, and then, the family. It's just amazing!

CD: Yeah, you have a lot to be proud of.

SKW: His [Sifu Loo's] son is an engineer.

SEL: Yeah, he's an electrical engineer working for HECO, Hawaiian Electric.

CD: So, is this your restaurant? I saw you doing all the serving.

SKW and SEL: [laughter]

SEL: No. I don't even work here! I had a restaurant in 1976. So, if you want to fast forward! I graduated from U.H. and Chaminade in 1972. Then I was a CPA [Certified Public Accountant]. The only reason why I could get into college was because of ROTC. I had a ROTC scholarship for four years. The government paid for it. So, in 1972, when I graduated, I went to Tripler and didn't pass the physical. They said, "Mr. Loo, your eyes are borderline. You can become a Second Lieutenant now. You're gonna serve two years. But, in two years you're gonna take another physical and at that time they're gonna reject you because you're wearing glasses. But, we'll make you a deal. We'll pay your four years of college, we'll give you spending money, we'll train you to become a Second Lieutenant. You can walk over here scott-free because you will not pass your physical in two years." So, I didn't pay one penny and that's how I got my free education from the government. And from there on, I got my CPA license for one year and then my eyes were getting more worse and I was getting dizzy spells. So, I gave up my CPA license and [inaudible] I started a restaurant, a Chinese restaurant. It was called Silver Dragon in Kam Shopping Center.

CD: What year was that?

SEL: 1977. So, I started a Chinese restaurant there. And from there, I gave that up because I thought if I was going to have a restaurant, I can own my own. So, in 1980, I sold my share of the Silver Dragon and I used that money to open a restaurant in Mānoa. So, I had it for 10 years and from there, I was always in the restaurant food business. What I learned was Chinese service is lousy! If they give you water, fine! They're not gonna pour your tea. So, I said, "No, no, no, no. You gotta change it." And that's how I learned how to be in the food business where the customer's always first… I've been with Chu Lan [Shubert-Kwock] for at least thirty years with the CBCA [Chinese Business Community Association. I've been working with the Chinese community for a while.

CD: That's a pretty good story.

SEL: Yeah. Like Kimo [Sifu Wong], I met him through Lion Dancing, but the property where he lived, that we bought, just happened, across the street was a Lion Dance School on Liliha Street.

CD: On Liliha? What was the cross-street?

SEL: Vineyard! You know where Liliha Shopping Center is?

CD: Yeah.

SEL: That's the property!

SKW: That whole property was the property! The whole block!

SEL: So, when the developer offered my father money, "Oh, here ya go. Take the money," he [my father] had that property for a long time that the developer wanted. So, he [my father] sold it. Then he bought another property. There's no such thing as a 1031 exchange. You just use that money to buy another piece of property. And then, from there on, in 1981, he bought a new property in Waikiki. In Waikiki there's a lot of development. So he, five years later he sold that. He doubled his money. In other words, the developers have the money. They just wanted the property, so he doubled his money. And finally, in 1986 he bought a piece of property on Date Street with a 3-story, 11-unit apartment. [inaudible] Now, I think that's good 'cause I can collect rent from those units [laughter].

SKW: Isn't that interesting?!

SEL: I told my son, "Look, we're kinda rich now because we have apartments, but …my father, he really jumped ship. He really came with zero. And then he developed something like this." I said, "Okay. Now that we have this apartment how much are we invested to make it good so that when I die and pass it on to you, you have to make it good, too." And then, I said, "My father when he came he knew nobody. He only knew Chinese. So, when he got the apartment now, he's only renting to Chinese only." So, my son said, "Are you gonna raise the rent?" I said, "No! I want to pay back what I got from him. Because he came poor. So, when immigrants come over to my apartment, I don't want to collect the rent. They're poor. They're broke. We just take enough to pay the mortgage… That extra hundred dollars a month I could collect...I don't want somebody else that doesn't want to help…'Cause right my tenants…they wanna help me sweep up, wanna help me move the rubbish outside. In other words, they appreciate the low rent and just in return, " I wanna help you. I want to stay here. I don't want you to raise my rent. I'll just do my share to make everybody happy." So, I told my son, " I know I can charge 200 dollars more or a hundred dollars per unit, but then you have other people that don't like each other." In other words, this is one small little village. My own village! [Laughter]. They all come from different districts in China. They all speak some kind of language and they all help each other. It's a small little community. I said, "That was my father's story. I'm going to continue that story."

CD: I like that.

SEL: Yeah. So my son… said, "You can ask for a hundred dollars more." I said, Why?" He said, "So we can get more money." I said, "Oh, so what is that? Friends more important or money? Think about it." For some people, it's…every six months raise the rent – change people. In other words, once you get six months' rent, they move out. Then you're missing one month's rent just to get it ready to rent it out to the next people. Why bother? Let it go. So, right now, we've only raised the rent every three or four years, just to cover…We pay for the bills. Everybody happy. They don't move. [laughter]

CD: That's how the North Shore used to be. It's not like that so much anymore….So, you went to university also, Sifu Wong?

SKW: Yeah, yeah. I grew up in the Nuʻuanu area. Uh, disappointed my mother them because they all wanted…all my cousins went Punahou. I didn't want to go to Punahou. I didn't want my brothers' friends pick on me. They had attitude. I had to go to summer school all the time. But, anyway I graduated from university – double major in finance and marketing. But, that wasn't my passion. My passion was the martial arts. I started when I was four. My grandfather on my mother's side, the one that had the temple had another brother, his name was Umpuon, his name Ng Gau, He had two sons, but he didn't… Gung fu was not like how it is today. The Gung fu schools and even the Lion Dance schools and the Gung Fu Shaolin were very traditional. You learned the old styles. You sit for hours and stances because that's the foundation that you have to develop. Discipline. It's not about the fighting and all this. You learn it as you earn it. In fact a lot of them did not have a belt system until later when kids wanted ranking. Give 'em a green stripe or whatever. It's all discipline, it's purely discipline and focus and understanding.

And you learn a lot culturally, as well. Lu Kong. My grandfather – Ng Poon…I trained at four year old. So, after school, I would go to the disciplinary training and learn different arts. At that time, in the '60s, a lot of…the Chinese had a lot of societies that helped other Chinese. It could go by village, it could go by last name, it could go by district, whatever it might be, even by unions….The Chinese were bound together putting their money, and they'll help out other Chinese, as well. But, among the Chinese societies, there's also like club fights – disagreements and all this. So, a lot of the clubs would get these Gung Fu guys to help send a message. [laughter]. So, at that time, it was like you wanted to develop, whoever, to have that recognition.

So, I was just one of them that was trained with my grand-uncle. Until later when he passed away, my father wanted me to continue and my mother wanted me to continue. But my grandfather belonged to that society, the one that supported…the revolution after the last emperor to reign in the Republic of China. So, anyway, that's where I ended up… So, sometimes, we had a lot of Gung Fu schools opening. At that time, most of the Chinese societies, the older ones, accepted only Chinese. But then, in '74, when Bruce Lee came around, everybody wanted to learn Gung Fu. But me, I'm coming from the traditional side. You had a lot of other people from the mainland that were coming here, mostly like in Wahiawa, Schofield, and all this. They learn taekwondo or something else and they'll say [it's] Gung Fu.

So, somehow these people like you would tell me, "Sifu, why don't you go to the school and tell 'em to shut it down? Don't teach!" So that was my role in that whole circle of play. But then, later on, my background came from Hung Kuen, Sifu Lau Kim, from Kuo Tang, Sifu Lau Kin, and that was my dedication. So, I had a choice to continue, or at that time, I turned it to a business to make money. But if I stayed this traditional way, it was something I cared for, it was something I liked. So, I kinda like broke away from the traditional side. And then, because of the popularity, I looked at it as a marketing opportunity. But then, at that time I met James DeMile, who trained under Bruce Lee. Bruce Lee had some training with Yip Man in Wing Chun. But it was not the classical Wing Chun, it was the modified Wing Chun. Bruce modified it because when Bruce came over he realized the classical way of training – it works – but, even the classical training didn't give you that advanced stages of combat. So, Bruce, meeting all these other non-Chinese guys, who were very competitive, developed fighting skills; boxing, fencing, all this – so, this is the combination.

CD: Oh, more like street fighting?

SKW: Like street fighting. It came down to that. So, that's where I opened up not to do traditional. I taught in '74, '75. In '76, James DeMile left, wanting me to take care of the Hawaiʻi operation and expand it. I expanded it. Huge, yeah? But at that time, I was lucky to get into small stunt work and all that.

CD: So, where did Kung Fu originate? It came from China, but did it start with warriors or was it a spiritual practice that developed into…?

SKW: A lot of people tie in Gung Fu to the Temple of Shaolin. But that's only because …That's not its true origin. There are so many forms of Gung Fu. Maybe Sifu Loo could elaborate on that.

CD: Do you both practice the same style of Gung Fu?

SEL: No. Different.

CD: And your school of thought is called?

SKW: It's Wing Chun, but it's …

SEL: No, it's Choy Li Fut.

CD: How do you spell that?

SEL: C-H-OY-LI-F-U-T

CD: Oh, I haven't heard of that. I have heard of Wing Chun. How are they different?

SEL: Different stance, different style. Choy Li Fut is this: Choy is one family; Li is one family. So, it's two families – a combination…. This is from a different district more on the western side of China. Our style is mostly defensive vs. offensive – more defensive. We are not aggressive.

CD to SKW: Is your stye aggressive?

SKW: I'll explain that in a second.

SEL: In our style, we just block. So, if a guy is punching me, you just block. You punch me, I'll block you. You kick me, I'll block… So, it's like this, no matter how you punch me, I'll block you until you get tired. I'm moving your energy away someplace else. I'm not stressing out…You are the one killing yourself. No matter how hard you punch, how much you blast, you are gonna blast, you are gonna get tired out first. You're gonna get tired, you quit, you walk away. 'Cause, you know, you're punching a brick wall, who's gonna win?...We were taught pressure points. But like they say, "In America, you kill somebody or you paralyze somebody, you're in trouble."…You're responsible. So, that's why I say, we play defensive…There are pressure points around the neck area…These are killing points...In other words, we're taught to hit certain spots at the right angle, you get paralyzed, you die. We were taught that in case you have to defend yourself that way. Your professor says, "I'll show you, but I'm not the one who showed you. You found out. In case you have to use it, I didn't teach you." It's like a secret weapon…So, in other words, like I said, everything was defense. That's why we don't enter or carry much anger…In other words, when it comes to Kung Fu fighting, the defense always screwing up the offense. So, it's two families combined their teaching choosing defense vs. offense, it's easier. Less stress, really…And less blame. 'Cause like I said, even though you might be a martial arts student, do not pick a fight. Never pick a fight. In other words, just be humble, walk away. But, in case you get robbed or something, you know what to do.

SKW: That was the foundation and use the foundation of the Gung Fu, of defense, walk away. In gaining the discipline and the control to understand it, to lose the emotion. Now, of course if you have to defend yourself because someone is going to be killing you or your family…You lose the emotion because the emotion without the discipline, without having to stand in a meditative state, then you are not in balance with yourself. If you are in a balanced state and understanding, you have control of yourself no matter if someone is yelling at you, bullying you, pushing you, even hitting you, it doesn't matter because it flows out. The same energy is still…but at that moment in time it's a yang energy. So, you learn how to control that energy and bring everything into proper perspective because you have no emotions vs. a person that has emotions when someone pushes them or walking on the street and threatens them, they become emotional. And realizing the fact of the Gung Fu, you start – there's no end.

And Sifu Ernie has a very good point, defensive. If you become offensive, it's only gonna escalate. It's only gonna escalate. And of course the law and all this comes into play. And that's why, you know, I think true Gung Fu training, it comes down to the discipline of the individual. Because that's what takes a lot of the students onto a good path of life. Never give up. Failure is nothing. Just pick yourself up. It's small compared to what you want to measure as success. Not success to the material world, not the success of being a doctor, an engineer, a nurse, whatever it might be, but the success of the accomplishment of what you're learning. That's what it comes down to. Traditionally, we didn't have ranks. Because it's not like you pay one month and you get a black belt. No. You're earning not necessarily what you can do, but you are earning what you are developing inside. Because that's where an interesting fact Ernie can delve more into – the Lion Dance.

There's a whole long history of why it developed and all this. But, even the Lion Dance itself, the traditional Lion Dance, which Sifu Ernie does – the stance, the movements – it's all Gung Fu motions. And because it's disguised as where when the Emperor killed all the Gung Fu men off and as they hid in the Shaolin temple and the Quing burns the Shaolin. The Gung Fu guys came up with…developed this Lion Dance that's going to bring blessings. Short story! And so they practiced the exercising and the passing of the…and the eating the lettuce – all symbolic: the money, the leases, and all this stuff – it's a whole different story. But, they're developing a discipline...They pick up and that's when they start dancing. The old school, even myself and Sifu Ernie know, but you cannot teach kids…And you assume this stance and you hold the head up for hours – for hours! The tail – the head is up and you get a whack because the head is popping out, But, that is all the discipline. Not how you supposed to do. That's part of it, but the discipline and the cultivation of this discipline of the Lion Dance, Gung Fu, comes out for the development of what Sifu Ernie does.

SEL: In order to Lion Dance, you have to learn Kung Fu, the basics that's how you save your energy. So, instead of targeting…you have to fight with Kung Fu using the emotion of the lion. You get your stamina from the lion. Just like I want to whack…instead the hand of the lion will come up, you use the hand of the lion to show that motion. That's how the…Lion Dance. Because you show different emotion by doing it.

SKW: In a good Lion Dance, you can see it.

SEL: You can see it…

CD: So all of those movements have meaning and structure.

SEL: Yeah. Right. And then, not to talk bad, but you know all the Kung Fu tournaments? Our Choy Li Fut Society, we do not enter tournaments. You know why? Let's say you win a tournament, okay? Guy says, "I wanna challenge you. You're number one. I wanna see how good you are against me." The guy that loses, the Taekwondo go says, "I wanna find out. I wanna see." And then, I know of one school where a student won one [tournament] and the [losers], the next year, beat the hell out of him and he got paralyzed.

SKW: Yeah.

CD: So, it's not about that.

SEL: So, we don't show off.

SKW: That's not the tradition. That's not the tradition.

SEL: We don't fight. We're not like that – the boxing, "I'm number one." In other words, once you say you're number one, there will be other ones who think they're better.

CD: So, this is all for personal growth, basically. Is that right? Personal growth and defense?

SKW: Yeah.

SEL: Right. Our style is humble, walk away, and do nothing, just defend yourself.

CD to SKW: Is yours too?

SKW: My background is that. My base is that. But because of the Bruce Lee-Era…

SEL: [laughter] They went for all the fighting thing!

SKW: We went for all the fighting thing! Whenever we opened up the school…long story coming back to my basic roots, I couldn't stand what I'm doing because at that point – what happened, because my foundation is here, this is what I know I should be. But, to survive, if I'm gonna – I didn't want to work at the bank at that time. You know, I wanted action! Movies! Tournaments and all this other stuff, right?! That's where, at that moment, I'm gonna make it a career. Because otherwise I'd be starving! So, that's what I did, what I do best – teaching what I call Fake Gung Fu. So, all this Wing Chun and all the other forms, there's a lot more to it. But, all we did in our school was boxing – put a name to it, Gung Fu, and the school grew to thousands! Literally thousands. Here, California, Los Angeles – all over! My school was huge and that's because we knew how to attract. We didn't teach…If we taught the same as…no one would come! Because at that time, competition was through contact, street fighting, Gracie jiujitsu was coming in – they liked that aggressiveness. And that's what we did. But, it was going against my grain, you know. So, in that sense, very aggressive. That's only for the business sense. [laughter] And later on, in my lifetime, I decided to stop all of that because of the change of people coming in. Their attitude to all of this was all about "Teach me how to fight. What can you do for me?" And I said, "You know what? I'm done already." So, then I dedicated myself to the Chinese School teaching Lion Dance and some traditional Gung Fu again. And that's where I'm at right now. [laughter]…If you talk about Wing Chun in itself, my other system with Lau Gar is the Third Eye – very similar to the five stance.

SEL: …The Lau Family Kung Fu. In other words, every family/district has their own family training. So, that's how you get different kinds. Like this Lau Gar style came from the Lau people.

SKW: Basically, look at the so-called tradition, you're looking at the strongest stance. They call it the five stances. Wing Chun was developed by a nun, Ng Mui, because as she moved away from the temple, the classical guys, they wanted to challenge. So, she developed, Ng Mui, developed a system to go against straight powerful blows utilizing the mechanics and the physics of the female body. It's very interesting. I mean develops…Develop close range fighting. Because they [women] don't have the power of as man, a wide range fight. They believe once you're in close, most of the system was from a far defense stance….Most of Wing Chun stays close. But, in order to be close you got to be somewhat what people believe you're being is aggressive, but it is actually defensive by striking [laughter]. So, say you have a strike only. Say you have a block only. Wing Chun application is blocking and striking at the same time. Simultaneously…So, it has to be what people see as aggressive, but is actually a form of defense as well, because it came out of the temple. The Gung Fu men became very famous because of the Boxer Rebellion. They didn't have guns and weapons, so they relied on the Gung Fu men to become the fighters. They're part of the revolution. A lot of it has to do with the revolution that's why a lot of it is secrecy. And the death touch, the nerve touch, is to kill, if you need to. You know, you can strike and a person maybe will eventually get a blood clot and die one month later….

SEL: You know, all these things [are okay] in China "I'll kill you to death," but in America you'll go to jail…It's a different philosophy. That's why my professor knew this, "I'll teach you once, but in case something happens it wasn't me."…That's why you don't see guys fighting. There's no number one…

[Sifu Loo and Sifu Wong begin discussing Chinese gangs, organized crime, and how they protected the people from being victimized by criminals].

SKW:…Money flowed like water. That's what Chinatown is built on. All these buildings and the buildings in the back….You know, the Society members meet in secrecy….So… the Chinese did feel they needed protecting at that time, of course…But a lot of it had turned into where a lot of them, the children became policemen, attorneys. They developed into society. I think Chinatown, every Chinatown grows differently. In Hawai'i, you know, you notice there's not too many Chinese restaurants. You see a different culture, you have different generations of Chinese coming in, new immigrants coming through. Right now, when you look at what Chinese are coming through, not necessary one from Hong Kong is going to open a business because they all have wealth. Not from Taiwan, they all have wealth…The Fukienese people, right?...

SEL: The Fukienese is a different…

SKW: …Yeah, and so they come in, they have a lot of money, they open businesses, and they start to prosper.

SEL: Right. See right now in Honolulu, Chinatown, you have the Vietnamese. They have the money now. They open… See, all the Cantonese, they are the older people, their kids are selling their properties and the Vietnamese are buying them up.

SKW: They did their job. The Chinese did their job: they suffered, they saved, they sent their kids to school. They became…Right?

SKW: The Chinese they moved out of the Chinatown area. They lived Diamond Head, Kahala, Waialae [laughter]. Because they had the wealth….Okay, I think let's talk about cultural impacts. There's a lot of impact, I think, culturally that I think, that…not more that I can see in the Chinese community… It's more of the bones and the iwi, and all that stuff. That might be, you know, around this whole area. I don't know if you know the history – I don't know much about it. I don't know if you know about that building and the stone.

CD: Which building?

SKW: The one you guys are going to be building….

[Sifu Loo and Sifu Wong discuss the cut blue rock, the size, the shape, etc. that was used to construct the historic building located on the subject property].

SKW: I think already a lot of things have passed, you know, from the '20s up through the '60s and all that. You know, the underground tunnels [that were used] for the shipping, for easy walking, and also…interconnected to the buildings…A lot of them were used later for opium, trading…

SEL: You know where the Wo Fat Building is? They have a basement underground. They would open the door on the street and shoot stuff down….I used to work at Wo Fat and I know the bottom level was always dry…You know Maunakea Street? Trucks would park there, open the steel doors and slid everything down….

[Sifu Loo and Sifu Wong discuss the basements in Chinatown being constructed below the water table and yet, managed to be dry enough to be used for storage].

SKW: And I think you probably know the history – Hawai'i becomes very famous because a lot of the money that was raised to support the revolution…the Republic of China before Mao Zedong, Chiang Kai Shek-time – 1930s or so. Because a lot of Chinese already came abroad, had money, still had their heart in China, they supported through the societies and clubs the armies to fight, control the unity of China...I only can speak individually, because I can't speak on behalf of the community, but as far as I know very rarely as I have seen in history, in time have I seen protests…Generally speaking, the Chinese will continue going on, as they are doing, the building will continue, the hotel builds up. You're not going to have that resistance…because they look at future.

SEL: I got no complaints. I welcome development. Developments like this will get rid of all the homeless…If you have an abandoned area like this, you have homeless…I am in favor this because the more active people you have, the less you have crime, the less you have homeless.

SKW: Because I think these developers understand halo, because you develop other properties, right? You develop Kakaʻako…any kind of development creates a positive halo, right? A positive halo overpowers…a society's less fortunate – [it] becomes more powerful, more robust, more people, more activity. It's like a light…And generally, that's how it's always been. Because we always welcome it. The entrepreneurial spirit of the Asian and all that. You look at China!…This Chinatown is like the old village China. We've visited China many times. It's so modern….

So to me, again speaking for myself, the Asians have that development is good; development is better; better for the future, for our kids and their kids. You know, without development you're always going to have stagnation. And of course you have to respect the ancestral grounds. But…there's a certain point in Asian belief it has to be moving forward. A lot of this is Hawaiian bones…So, you know, development is always positive. Speaking individually and speaking for what I understand from the community, because of that halo creating the positive – the light. You know, I study at the temple… and sometimes people want things. I call it "pull." If they want a car, if they want anything, they pull it towards you, right? You know, you want better…more money, a job, a car. But eventually, everything you pull towards you, it will always go away, eventually in life. As you age, as you eventually die, it will always leave you. And there are a lot of things that you push away that will always come back. You push away illness, cancer, disease, age. It will always come back because the day we are born, we breathe in and out exactly 50% of the time. That is the life that we live. We breathe in and we breathe out exactly until the day we die. Now that is the life of the push and the pull. Everything will be occurring for a purpose. You pull in to what you want, develop, eventually it will all be the same…You can't resist change. It will always be part of existence. And that's the philosophy I grew up with from my parents. Change, investment, risk, buying, developing. You move – like water…If you don't, you stagnate…Like Sifu Loo, to continue to do the Lion Dance, people see it as, "Oh, it's so nice!"...People don't see the hard work…

SEL: It's for fun and I feel good about it. You know why? I have a feeling the lion protects me. The lion protects you. It's a spiritual thing. It's a non-paying job, but I feel good doing it. You know why? The guy upstairs, somebody, is watching over you.

SKW: And that's the life cycle. Eventually, we all leave. Whatever we accomplish, we understand the accomplishment is not just for now…But, when I pass, I'm aware there is life afterwards…But I know this goodness I am doing, through whatever I can do, whatever it might be to other people, to other things, culturally, we put our heart to it, and we do it well. Because if you ever see Sifu Loo do the Lion Dance, it's not just the lion. When he goes and gives the gift, I can see how happy he is…It is the emotional feeling of the blessing that he feels he is giving…

CSK: See this dragon? That's a CBCA dragon. Because we don't have an arch, so this is the closest thing to an arch…

SKW: That's what I recommend….when all this starts…to harmonize the energy…we Lion Dance…I think there should be some kind of Asian cultural ceremony during the ground breaking.

CSK: When you break the ground for such an important building because you are touching spirits, touching a lot of stuff from way back. So, you need to have a ceremony to request their permission and to ask for their blessings. So, it's a Taoist and Buddhist ceremony….because we are going to be disturbing the balance…

SKW: …The chi…the balance of the energy.

CSK:… So, when we put that dragon down…it was placed specifically to face the ocean – the head and the direction, because that is very important. It's not like people are stepping on it – that is important. But, the mana of the dragon is flowing to give blessings….It's in the most prominent crosswalk.

CD: Where is it?

SEL: When you go out this door, you know the main traffic light? It's right there.

CSK: When you leave the restaurant, you go left…So, we put it there because for years we had very bad luck – very bad things happening. We had the white powder, we had the rats, we had all kinds of things. So, we decided to have the dragon and a lot of things calmed down after that.

SKW: Some people think it's superstitious and all that, but we think it brings harmony.

CSK: We still have a lot of petty crime, but as far as the big things… So the dragon puts out the blessing because it has the mana….Are you Indian? No, but if you are Indian, you know about Shiva. Shiva has a lot of transforming, different personalities. Guan Yin, the goddess of mercy, transformed herself. Buddha transforms. So, they can take any form, but they are out there to do good. So, the dragon, for Chinese people, is the most imperial and the most auspicious creature – creature with the power. That's why in Chinese we call the Emperor the dragon…He's got his mandate from heaven. So, everything connected with the Emperor has to be dragon. That's where the power comes from. And this is 5,000 years old.

SEL: The Emperor is always purple…

CSK: Red, purple and yellow. [The red] is more of a vermillion color. So, they [the Sifu] have a lot of knowledge into the culture, and especially Hawai'i.

SKW: And the reason [being] because our grandparents and parents came over. A lot of the Chinese culture stopped during the Communist time. The "Bamboo Curtain" came down – they got rid of all the Gung Fu, the training, philosophy, the temple, everything.

CSK: When the Communists took over, they killed our culture.

SKW: But, the culture traveled from there with our grandparents… That's the difference.

CSK: So they brought the culture, this is Southern Chinese culture. But they also…All Chinese culture emanates from the Emperor. And so they have Mandarin, Confucius philosophy about education, the government, how to govern, how to govern your family. So, you have things like so many fears of knowledge. And, also, just the name alone has many different fears…And for instance, I can tell, they can tell which generation of your family you belong to just by your name…So, it's a very, very rich culture, of language, art…

SEL: Like I said, no objection to any new development…

SKW: Yeah.

CSK: I was on the Neighborhood Board that approved this. But, what we want is for them to be mindful of the history and to build something that works in Chinatown – harmonize. It has to be harmonious…Because this is a piece of history, here, for the rest of the world. Not only for Hawai‘i – it’s for the whole United States, and internationally. And this is a very important place internationally because Dr. Sun Yat-sen, the father of modern China, was educated here…

APPENDIX G: FOLLOW-UP INTERVIEW WITH CHU LAN SHUBERT-KWOCK

TALKING STORY WITH CHU LAN SHUBERT-KWOCK (CLSK)

This was a follow-up conversation conducted on May 10, 2022, with Chu Lan Shubert-Kwock conducted in-person at the Golden Palace Restaurant, within the Historic Chinatown District. The interview was conducted by Cathleen Dagher (CD) in advance of the Chinatown Hotel Development Project.

CD: Could you please state your full name.

CSK: Chu Lan Shubert-Kwock. Chinatown Business and Community Association.

[CSK gives her home address in Honolulu]

CD: Okay, can you tell me where you grew up, where you were born.

CSK: Born in Singapore…Been here since 1975.

CD: Wow. Okay. Could you tell me a little bit about your family background?

CSK: Wealthy. Very committed to the community. Raised me right so that I can help those who are not educated who need help. "Use your knowledge for the betterment of humanity" was the mantra in my house. Be involved and be caring, professional, and just help the community because knowledge must be shared and used for good. Because when I was a girl, my mother fought for me to be educated. Most girls never got a chance to have an education and they usually just sent girls to the village school for Chinese. And in Singapore in those days if you're Chinese educated you cannot be doctor or a nurse. You can be a Chinese teacher, but it's very limited in terms of career mobility. And so my mom wanted me to be a doctor or somebody useful that saved lives. I tried to be a lawyer. But, in those days Singapore did not allow girl students to be a lawyer. They were interested in becoming educators for a lot of people because we need teachers, social workers and nurses. We don't need lawyers because there was nobody suing anybody in those days because the country was so poor. So, they only selected like six boys out of our school to be in the law school. It was a very small place. So, I couldn't be a lawyer. But, I always wanted to be a lawyer because I wanted to make laws that are universal that helped humanity.

My dream was always to go to undeveloped countries to help women get an education and to give women a chance. All my life I've been fighting…fighting to have equality for women and to help women become effective in the home, and in the classroom, in society. Because women held up the other half of the sky. So, why shouldn't women have some kind of power? And why should we subject ourselves to the tyranny of our husbands and our brothers? They tell us what to do and that they are right. Because the laws of the land were made by men and without women's participation. Because I think in the old days men held all the power and they made bad decisions. That's why we have so many wars. I think if women were put in charge there'd be less wars because a woman had to bear children, you know, spend nine months, stay up all night feeding them and taking care of them when they are sick. How could women bear to have their children hurt? Men, they think about power, prestige, greed, and money. They don't think about children as being important, but as part of what they own. Children and women become possessions, become chattels to be traded, to be bargained with. Whereas women don't look at children in the same way.

So, I think women would be better administrators and better stewards of the land because they understand nature and they understand the importance of god's doing. Because that's why women are gifted by god to be able to bear children and to nurse them. Women live longer, in spite of all the stress that they have to go through. So, I think that we're built better and stronger than men so that we can withstand a lot more suffering and sacrifices. Women should never give up no matter where they are from. Because we have to be brave enough to make changes, be willing to sacrifice, and get punished for speaking our minds. Women and girls have to realize that we have as good a brain as our counterpart. And who knows, we might even be better. So, we should never feel less because we're born women. In fact, we should be stronger. We can compete just as much even though physically we might not be as strong as men. However, our brain muscle is equally strong. And I don't believe muscle has to be physical. I always believe that a woman is always the rock of the family and that she should exercise that power to educate her man, to educate her sons and brothers that fairness and justice are above all more important than customs. So, if it is about justice, customs have to change. If customs create injustice, then these customs have to change because these customs are traps to control women. For example, in India they used to burn women along with her dead husbands because the women were supposed to accompany theirs husband in the afterlife. These women were living people who had families and children. But because of tyrannical religious customs, women were forced to be burned along with their husbands. It was called suttee, S-U-T-T-E-E, and even after the British Raj banned the practice, people keep on practicing it because they valued customs over the lives of women. No matter what era we are in, that is barbarity. So, there are a lot of monstrous barbarities built into so-called customs that victimize those that are less able to fight back. So, for me, justice is the most important thing in the whole world - before customs, before traditions. So, if there's no justice none of this works. I strongly believe in that. Every woman should have a choice and know how to exercise that choice because making a choice is difficult and filled with risk.

CD: So, tell me about your association with Chinatown, how you came here.

CSK: Well, I came here from Singapore. So, I am not a fifth generation or fourth generation, but, I saw such a tremendous neglect in Chinatown and its rich culture and history.

CD: But, you've been here a long time, yeah?

CSK: Since '75. I saw our Chinese societies, we have over 150 societies. They were all inwardly beneficial to themselves. There was no community service, there was no volunteerism because most of the societies owned their buildings, had money in the bank, collected rent, but they were only benefitting their own clans. To me, it's very selfish because they expect government and everybody else to take care of the community.. This is fundamentally wrong to me, because we live in a society not by ourselves. We live in society with other people. So, it is our community and we should be giving back. I started volunteering over 30 years ago and then about 15 years ago, in 2009, when Sunny Wong, who was our Mayor of Chinatown, died – the city was under Mufi Hannemann. Chinatown was going from bad to worse – terrible crimes. There was the crack cocaine. There were all kinds of drugs. Prostitution was very high. Lots of crime. There was a vacuum left by Sunny Wong's death. Sunny was working with Mayor Harris and I was working with them. We did things like Night in Chinatown. We did parades. We did the Dragon Boat Festival. We donated money and time and brainwork. Then everything fell to the wayside when Hannemann took over. Things got so bad that almost every shop in Chinatown was robbed or broken into. They came to me and said, "Do something. Do something." So, I approached then-City Council member Rod Tam to do something. We formed the CBCA, which stands for the Chinatown Business and Community Association. The reason I picked this name is because we wanted to represent the voices of our residents and our businesses because we are a community. Our motto is "To Preserve and Protect Chinatown." We want to make Chinatown into a shining jewel with this rich heritage.

The rich heritage is not exclusive to the Chinese alone, even though the Chinese were the first immigrants to the Hawaiian Islands, and they had lucrative businesses, wealth and properties. The early Chinese businessmen had a lucrative business with the King of Hawai'i - the Kingdom of

Hawai‘i, where they exported all of the sandalwood from Hawai‘i. That’s why Chinatown was known as “Sandalwood Island” or “Sandalwood Mountain.” And then, came the Big Five - the sugarcane industry and the pineapple industry. And later on, around the 1850s, they recruited Chinese plantations laborers who were different from the Chinese gold miners and railroad laborers. In Hawai‘i there was better treatment of the Chinese plantation workers. They were not discriminated against by the Kingdom of Hawai‘i. The local people and the Chinese plantation workers got along well. The Hawaiian Kingdom allowed Chinese men to marry with Hawaiian ladies. That’s why Hawai‘i is the first legal inter-racial state where you have inter-marriages between the immigrants and native people. Hawai‘i is the only state where you have Hawaiian people with Chinese last names. Big time. A lot of Hawaiian people have Chinese ancestry and were raised as both Chinese and Hawaiians. Then came the Japanese, the Puerto Ricans, the Portuguese, then everybody came. They were all in the sugarcane business. The white folks who ran the plantations were known as the “lunas” or the captains. They had whips they used to whip the workers. They built these little ramshackle villages for the workers to live in, plantation villages. So the workers can live in these ramshackle plantation huts with no bathrooms and no running water. They used outhouses. Some of these still remain in certain parts of Hawai‘i – in Kalihi, in Waipahu you see these ramshackle plantation buildings. I also felt like so many wealthy people who did well in Chinatown, but did not do enough for Chinatown.

CD: And one last thing. So, you’re really involved with the community, but can you tell what you know about the history of the subject property where the Chinatown Hotel’s going to be built.

CSK: It belongs to the Chun family. This was a powerful merchant family that owns a lot of property and businesses in Chinatown. This family owned the first market in Chinatown. This hotel site has now been passed down to the fifth generation. They are selling the parking lot along with the historic black stone building.

CD: Okay. One last, last thing. Can you tell me how you acquired your knowledge about this area?

CSK: I am a lifelong student of history. I particularly love world history. I study the history of all the civilizations. I am just a nut. [laughs] I like history because I love the study about people and history tells you. Now I don’t mean… I don’t read one writer. I like different writers. I read different writers. I just have a consummate interest in people and how they impact the community they live in. Like the first Chinese billionaire in Hawai‘i was actually the Financial Minister or Councilperson to the King and advised him on business. King Kamehameha and his family had a lot of business doings and they were able to learn about international trade from the Chinese traders.

With the Chinese traders that are wealthy and who come here to trade were sanctioned by the Manchurian government. They had a special license to be able to trade. So many of these people went to Japan, England, Europe to trade. And long time ago there was a Viceroy from the Ming Dynasty that traveled around the world looking for new lands, and new places to influence, and materials. And the secret was really to look for a longevity herb to prolong the life of the Emperor. That’s why they have this…So they actually sent out a lot of envoys and ships in search for this mystical longevity herb to bring back. So, many of these voyages were not successful and they all landed in like Japan, Okinawa, South America, everywhere else that you have colonies of Chinese people. They cannot go back because if they went back they will be beheaded for not finding the drug – the herb. So, settlements happened in all these parts of the world because these ships landed. So, they used to have this famous Chinese junk that traveled around the world. In fact, there is a book written by a Chinese-American in California about the California mountains that the Chinese Viceroy had found and there were pictures, paintings of the mountain range in California made 2,000 years ago.

So, they said that Columbus was not the one who found it…California…That the Chinese had actually found a lot of these places. But because history is an interesting animal, revision of history is the biggest crime that happens all the time. So, when you read the sources you have to read so many accounts in order to piece it together yourself. Because they were just like revising history all the time. You started from Japan revised history, the Second World War. You will find Germany revised history. England revised history. India revised history. And places like Russia also revised history. They continue to revise history so that they can be politically acceptable. Even in Cuba they revise history. They forget the original heroes of the uprisings or the revolutions in order to them less and those in power more. Whoever is in power controls the media, the communication, and the revisions to history. We cannot just look at one source of information, but we have to look at many sources and use our own analytical ability to piece the real picture together. A lot of it we can piece together like cultural artifacts, relics, and things like that are left behind. Then we ask the question, "How did that come here?" The history should tell us that. Just because the history didn't say that didn't happen doesn't mean that it didn't.

They found an original human skeleton of a woman in Ethiopia and they said that was the original first Eve, you know, and Adam. Now who's to say it's not true, it is true whatever it is, right? Because until you have a lot of research behind it, right? So, even like medicine or health. People say, "Don't eat eggs. Don't eat butter. Don't this and that." And guess what, 20, 30 years later they have to fall on their faces and say, "Oh yeah these are not harmful." So, my cardiologist and people who tell me, " Don't' do this. Don't do that." They don't have the full knowledge to advise us. But they're all conning us, you know, to some degree that they have the knowledge to back them up, but they don't. So, ultimately you and I, as far as our health is concerned, we listen to our mothers and our grandmothers – how they survive, how they raise family that are healthy. They're used to this treating…They use saltwater, they use ginger, and other traditional foods that are medicine through our diet. And they've been doing it forever. And all of a sudden we hear from Western medicine that all you need is a pill. So, we just like…like me, if I have a to make a choice of looking at traditional, long-proven way and new way, quicker way. So, then you look at it and you say, "How do you treat this symptom?" or "How do you treat the disease?"

Let's say I have a cold. So, my mother would say, "Okay. Drink hot tea with honey and put some lemon in it and put some ginger." It's harmless. It's good for me. It will remove my phlegm. Good. Or I can go and buy, Costco, I can buy the Mucinex and say, "Okay. It will cure the phlegm." But then, do I address the underlying reason why I got sick – because my immune system was down? So, how do I push my immune system? I have to choose between this new medicine and say, "Okay. One is for a quick fix, but in the longer run, I need to do the traditional to really bolster my immunity and eat better and rest. All of these. So, in life it's the same thing. You have politicians making quick solutions and coming up with grand plan. But it's only for the time being. It's not forever…That's why we always hear politicians lie. They never carry through because they are just being expedient. Politically expedient about something. Unless you have somebody who cares enough and has long-term view, no solution can be quick. It always takes time. And you have to deal with the ups and downs of any solution that you have because you're dealing with an uncertainty which is a human being. You're dealing with the uncertainty of a human being. And human beings make up the work force. And you have human beings that disagree and they will not do something even though they think it's right because it's out of their way or it's out of their habit. So, human beings have their comfort zones and things that they like to do because basically, human beings are lazy. So, they would want to take a short cut and not go through the more difficult way of getting something right. So, as long as they look good, sound good they want to do it, right? So, everybody's happy.

Just like we've had this homeless problem for so long because of this thinking that "This sounds good." "Let's put a lot of money in this." "It looks like we're doing something." But, then who's weighing the consequences? It's forgotten. It's moving on to the next target. Moving on to the next event. So, that's why for Chinatown we have 30 years of neglect, money spent but no solution. Because nobody's holding this non-profit who took all this millions of dollars accountable. We haven't asked them, "How much have you really housed people?" "What exactly have you done for this person X, or Y or Z?" "What exactly happened to this person?" "Why is this person still on my street 25 years later with the same problem?" "Why?" You can't completely blame it on the ACLU and you can't completely blame it on just, oh, First Amendment or freedom. No. Not enough was done. Enough to reserve the money that we're giving. Then there is no accountability.

That is why I like very much that the City set up CORE. CORE is the outreach for the homeless to bring in multiple disciplines for mental health, nursing, wound care, housing, advise, and to help this person off the street. So he has more resources to do so…For instance,…we give a lot of money to IHS for transitional housing. But, HIS is set up by federal rules that are not friendly to the homeless. So, they officially remain vacant. But, we already gave the money for the full bed. And then they refused to listen to the complaints from these people about why they're not going there. And the reasons are they don't allow man and woman together, so families cannot live together; they don't allow pets; they don't allow children; they don't allow storage of their property. Now, when you are homeless the few things that you own is very important. And you got to safeguard their possessions. IHS cannot guarantee that. And then, they find out that you have a source of income – maybe Social Security – they want to take 30 percent of that to live in a cubby hole. Who wants to do that? So, you need to look at IHS policy and say, "Is this the money we give them to help the homeless, is this really helping the homeless or helping IHS?" Who questions them? Because politicians who hire them don't want to question them because they already made the selection. They don't't' want to look bad. So, it's the truck nobody chase…IHS says, "Show me your books." What can you do? No? Who's checking on IHS all these years? Nobody.

So, this is just one example. It's not that every homeless facility or people do bad work. I don't think they intentionally want to do bad work. But, it's because they cannot manage. They are overwhelmed and they ask for too much. And they can't do it. They don't want to broadcast the fact that they don't have qualified people or enough staff, or training, or they can't handle this complicated problem. So they hide it. They always give it a nice glossing. And so nobody knows. But, we have to…like I say, in history, in anything you do, you look at the results. Look at the people around their facility. Look at the people that are still homeless. Look at the people that still not accepting the transitional housing. So, what do we do? Won't you need to change their model? So, what is the goal? The goal is not to give money to IHS. The goal is to help these people. Are we achieving that goal of helping people? And are we doing it for political reasons? Yes. Are we doing it for the social economic assistance to these people? Yes and no. How are we helping these people? What kind of program? You can't just say, "These are my rules. Come. Take it or leave it." If you're not successful, you must be doing this. You need to change to change your model. Let's say you want to be a model and your body is so fat you can't be that kind of model that you are going to wear bikinis. You can be a model where you wear a tent outfit. That looks nice. Yeah. So, you've got to change your operation to fit the requirements or to help somebody. So, you can't just say one size fits all. And that's it. And this is exactly what happens. That is why we have the failures that we have.

CD: Do you live in Chinatown?

CSK: Yeah.

CD: You do. Have you lived here since 1975?

CSK: Huh?

CD: You've lived here since 1975?

CSK: No. I own a home and business for many years. So, I own two successful businesses. I own ABC Mortgage for 28 years. And I own… I used to own Shubert Properties and after my divorce, in 1998, I formed Chu Lan Properties. So I still do real estate. I don't do it on a big scale any more. I'm a one-man army. So, I used to be making a lot of money because I had two companies and a lot of staff, two offices. But then, when my divorce happened it kinda like took me six years to recover from the devastation. And then I started to think…think about myself how to recover from this trauma. Then I got more active in volunteerism and doing that. So I refocused my life because in the past I was focused on making money and being successful, living on top of the hill, which I did. Built a big house. So now I have a small house, but I don't live there because of my work in Chinatown. So, I had to move into Chinatown, pay rent in order to run for office.

So, Neighborhood Board you need to live in your district. I've been living in Chinatown all these years but paying rent here and also paying a mortgage at home. So, I sacrificed. I've been doing that because I wanted to. Not for any other reason than that there is no one watching out for Chinatown and all the problems in Chinatown because the City was neglecting Chinatown…politicians... And all the small business people have no voice. That's why I got involved. It's not for egotistical reasons. It's because I felt a calling that somebody has to take care of the garbage. Somebody has to sweep…pick up the garbage from the street. I'm not just going to skip over it. I have done this for years now. I've been volunteering in the beginning when I was very wealthy. I volunteer by giving money and time. So, when I became poorer I actually work in Chinatown, pay both sides, and dedicate myself to a lot of the work. And so, I started the collaboration with the City – both complaining and also assisting. Highlighting the problems. I got a lot of things done in Chinatown over the years.

I have seen five different mayors take place all this time. But, there's always a few bright stars in every station that are willing to go against the grain. To listen and help. But there are a lot that are just operating on themselves, they favor themselves and to follow the narrow minded political gain type of administration. Like Caldwell. Hannemann. Carlisle. That do nothing but just promote their own power or donations to the campaign. And so they are just taking the root from an ill, short-sighted mayor. Not helping. But make the matters worse. So, we are grateful that we have this mayor who is not into that – the greed, the blindness, and lack of history, and lack of knowledge, and not doing what they should do, and what they're elected to do. So, we have a recent success with this administration for the short time that they've been here because the mayor was hired from high-minded people like Mike Formby who then hired the rest of the administration, staff, the directors. Not that all of them are good. There's still many remnants from the old administration. They are on civil service so you cannot fire them. So, from the Assistant Director, Deputy Director down there are many still in the old psyche. You know, like "Do the least you can…politically and see what the mayor…"

But, I will say that this administration is a little different because they hired some people like myself who are idealistic. Who look to the future as something that is infinite for our next generation and generation. Not just the myopic short term, "Let's get through this four years and when you're in your second year start gearing up to get donations for re-election for next four years." You know. So, a lot of that mindset that kills good programs, it's that short term. And so the administration doesn't have a long-term view or long-term solution because they're merely looking at the next election. And the corruption that happens because of the need for money for the election.

Look at the Department of Planning and Permitting. Yeah DPP. So corrupt for years. Everybody knew that, but nobody actually arrested them. You look at the police station, I mean the Police Chief. The corruption for how long? And nobody caught them until the FBI. All of the major cases of corruption were always caught by the FBI and not our own police. Why? That's law enforcement, too. I mean, Deputy Directors, Directors, and staff knew corruption's going on at DPP. How come nobody squeal? Because there's one fundamental flaw in our system. Unions. Unions beget a lot of loyalty among themselves. They will not squeal on each other. That's why we have the problems we have. We keep living in the sh*t. Because nobody wants to stir the pot of sh*t. So they just keep it dormant. It's there. They smell it. They see it. But, nobody's stirring the pot because nobody wants to be called a squealer against the union.

So, unfortunately, the way Hawai‘i is, is that you have many in our legislature, many in our administration who need the money from the union to fund their elections. So, it itself is rewarding corruption. Even unintended corruption. Intended corruption. It's all there. So, how you gonna eradicate that until you get to a point where elections are free, and open, and real. Where everybody gets the same amount of money to run for election. Then you have a fair playing field. Right now, it's not because you have political action groups that can give unlimited amounts of money without revealing who they are. If that is not corruption, if you ask me. So, people are buying elections from the Capital in Washington, D.C. to every state. Until we have enough guts to pull out these kind of self-serving laws, and conflict of interest laws, and lobbyists we're not going to have a clean, free democracy. No, we don't have it. That's why we have the kind of problems we have in this country. Too many self-interests Too many lobbies for special privileges, and too many corporations ripping off our country without paying taxes. How can Amazon not pay a single cent of tax? Huh? How come all these big companies that make billions of dollars don't have to pay any tax? What is wrong? It is very wrong. So, until our citizens can feel free to speak up and say, “ This is wrong. We're not gonna accept that.” But, then you look at people say, “I need my job so, I can't say anything.”

People in government are not allowed to speak up. Why? They are citizens first before they are employees. Why can't they speak up? We have the First Amendment. Or no. You made the amendment but you can't speak up. You cannot speak to the media. If you in government you cannot speak up. Even in union you cannot speak up. Why this gag on the people? What are they afraid of? Because they're doing shady stuff. If they are not doing shady stuff they would not be afraid of. That's what I think. So, a lot of the problems in the USA come from being the most powerful country to now not being a powerful country. We lost so many people because our foreign policy is wrong. Because we think we can buy loyalty. We think we can buy friendship through foreign aid. We don't. We just look at this as very weak. If we reinvent the technology and know-how to help a country learn how to fish rather than giving them all this fish, then we would be better respected. I think, “Because we got so much money that we can buy our farmers. They don't have to produce a single crop.” We give them money. Right? Then we have excess so that we are throwing all our food all over the world. But, do they really eat our food? Is that the food they eat? No. If you really want to help a country, you give them the food they eat. Not give them what you have left over. Not what your farmers grow. Like corn or wheat or milk powder. If that's their diet, fine. If that's not their diet…If they're a rice-eating diet, why are you giving them that?

I always wonder…You know, I remember growing up in Singapore, under Kennedy, they were giving our schools milk powder and cornmeal and flour. The Singaporean diet don't eat that. So, what did they do? They turned around and feed the pigs with it. And then the American public say, “Oh, I helped this country.” “We helped this country.” But, it's not their diet. They don't eat that. So, to me it's a failure in understanding others' culture. And understanding food. And how to help a family you have to understand who they are and what they eat and what they care about. So, if I'm to work with an Afghanistan family who's a farmer and who has goats, I would not give them pigs' food. What are they gonna do with pigs' food? The goats don't eat corn. It's an insult. This is what I think is wrong when we have a foreign policy or our government has people that do not understand other cultures or look down on other cultures or think they know everything. This is where the mistakes are happening. I have a City government official come and talk to me and say, “We know what's good for Chinatown.” I say, “Really? You know what's good for Chinatown? Tell me what do you know that's good?” “Oh, Complete Streets is good for Chinatown.” I said, “Really? You have enough space to put in a Complete Streets and to do all of this and you see what the f*ck it is? It's not good for us. But, you shove it down our throat just like the rail. At no charge. Because you have the power. You can make any excuses and fudge any survey. So, it's what you want. Not what we want."

I can't get him to change things because you're deliberately forcing things down on us. But, I remember, you know, that's what you did. I can't win. But, I don't have to admire him for it. I'm going to tell you that you are f*cked. That's what I do. So, that's why I don't accept money from the City. Or the State. Because I don't want to be beholden to them. Because money has a way of corrupting the soul. In any organization. So, if you get big money from someone, you're not going to be straight up and criticize them for wrong doing. You're gonna keep your mouth shut and look the other way. So, I won't do that. So, this organization is very straightforward. We announce whoever gives us money. We don't cheat. We don't lie.

CD: The Chinese Business and Community Organization? Right?

CSK: It's the one I founded. And so, we are never rich. But, we don't ask for a lot of money….The reason I ask for a $5 donation is because in the past we have a lot of people come and eat for free. We cannot afford them and they have no interest in Chinatown. They just come to eat because, "Wow. Free." You know? We did it for years for free. Like today's meal is $180 dollars. Right? No. We don't collect $180…My bill today, you saw, is $180 dollars. This is how much money is collected today.

[CD and CSK discuss how much the meal the CBCA provided for the meeting cost and whether the donations covered the cost. CSK counts the donated money that was collected today from those who attended the CBCA meeting]

CSK: We have $70. That's $110 we pay. Somebody donated more today. So, it's not like everybody gave us $5.

[CD and CSK discuss further that the donated funds don't cover the cost of the meal, paying the difference, and some people take food home that they didn't pay for]

CSK: The reason we do this once a month is to open up so they can have a comfortable breakfast, too comfortable to share, and then we're also promoting business in Chinatown, dim sum, something new for people. Something that's good. So, we never have a meeting outside of Chinatown. It's always to help a restaurant. And all our parties, every year, we have it in a Chinese Chinatown restaurant. So that they can benefit from our efforts…So, every month we pay a hundred something dollars for the meal every month and we maybe collect $50. $60. $40. We collect $30 dollars, too. But, we manage to survive. [laughs]

CD: Yeah.

CSK: Yeah. Because I think this is where our effectiveness is because we don't get money from the City. Any grants or anything. Because when you do that all of sudden you're not able to have a voice.

CD: And you bring the community together.

CSK: Yeah. Oh. Everybody respects that because they know we're not doing it for money. We're not doing it for me for money. We put in the work. You know we created that dragon over there.

CD: Yeah.

CSK: It cost us $3,500. And when we opened the bathroom we raised the money for that. So, the City offered to give us $5,000. We raised the over $5,000. And then, I was not happy with the City's $5,000 because we have to write a report for them. And we have to do this, that. But, the only good part that came out of it was we were able to convince City Council with our data to open the first hygiene center. And we spent $250,000 on that one. So, we're going to move that hygiene center Safe Haven out in November. Because they have done the thing. They're no longer effective.

CD: The hygiene center? Is that's what it's called? So, it's a place where the homeless can take showers and clean up?

CSK: Yeah. Yeah. Yeah. But, it's very badly managed right now. Safe Haven is another one that took a lot of money, but not effective. I was supportive of them because they were the only organization that was helping the substance abuse homeless. They had the qualified bed to house people. And we needed them at the time, but now we don't. They are kind of like obsolete now because we have other better facilities. Better managed out there. So, you have to call a cat a cat when it's a cat. You know? You cannot just protect what so happens to be your friend when you sit on the Board and you won't say anything. Got to be honest. …To be honest is to do the right thing for the bigger reason not because of this person. This one could die and another director take over and whatever. So, why be beholden that person? You have to be beholden to the community for the greater good. For the greater good. So, like I said, I could die tomorrow, this afternoon, or whatever. But, whatever I do, has to be for the greater good. And your reputation is the most important thing in the world that you cannot buy.

CD: Right on.

ACOUSTIC STUDY FOR THE CHINATOWN HOTEL PROJECT HONOLULU, HAWAII

Prepared for:

IKENAKEA DEVELOPMENT LLC

Prepared by:

Y. EBISU & ASSOCIATES
1126 12th Avenue, Room 305
Honolulu, Hawaii 96816

JUNE 2022

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER 1. SUMMARY

The existing and future traffic noise levels in the vicinity of the proposed Chinatown Hotel Project in Downtown Honolulu (see Figure I-1) were evaluated for their potential impacts and their relationship to current FHA/HUD (Federal Housing Administration/Housing and Urban Development) noise standards. The traffic noise level increases along the access roadways to and from the project site were calculated. No significant increases in traffic noise are predicted to occur along NImitz Highway, Maunakea Street, and North King Street as a result of project plus non-project traffic following project build-out by CY (Calendar Year) 2025. Traffic noise from Nimitz Highway will continue to control background ambient noise levels in the project environs, with traffic noise levels exceeding 65 DNL (Day-Night Sound Level) at existing commercial and future hotel units which front Nimitz Highway. Mitigation of the high traffic noise levels is recommended at the majority of the hotel guest units, and will be available in the form of closure and air conditioning of the future units in the Chinatown Hotel tower building.

Project traffic will not add more than 0.1 DNL additional units of noise along Nimitz Highway, Maunakea Street, and North King Street. These increases of traffic noise levels resulting from project generated traffic are not considered to be significant. These predicted increases in traffic noise levels are very small and not significant.

Following construction of the proposed hotel, HART (Honolulu Authority for Rapid Transportation) rail (train) operations are planned to occur while traveling to and from the Chinatown rail station, with the elevated guideway located along the existing centerline of Nimitz Highway and makai of the Chinatown Hotel. Anticipated start date for the HART rail operations is near the 2030 time frame. The anticipated guideway noise levels were added to the forecasted future traffic noise levels at the Chinatown Hotel in the anticipated project build-out year of 2025 to represent worst case noise contributions from the HART guideway. HART guideway noise levels are predicted to add approximately 1.7 DNL or less to the forecasted traffic noise levels near the 2030 time period. Traffic noise from Nimitz Highway is expected to continue to be the dominant noise source at the Chinatown Hotel, with or without the additional noise contributions from HART rail operations.

Unavoidable, but temporary, noise impacts may occur during construction of the proposed project, particularly during the demolition and excavation activities on the project site. Because construction activities are predicted to be audible at relatively high levels within the project site and at adjoining properties, the quality of the acoustic environment may be degraded to unacceptable levels during periods of construction. Mitigation measures to reduce construction noise to inaudible levels will not be practical in all cases, but the use of quiet equipment is recommended as a standard mitigation measure. The use of drilling and cast-in-place piles for the foundation of the project are recommended to minimize risks of potential noise and vibration impacts on the surrounding area during the construction phase. The implementation of Hawaii State

PROJECT LOCATION MAP AND NOISE MEASUREMENT LOCATIONS

FIGURE I-1

Department of Health permit procedures and curfew periods for construction activities is also expected for this project.

CHAPTER II. PURPOSE

The primary objective of this study was to describe the existing and future traffic noise environment in the environs of the proposed Chinatown Hotel Project in Downtown Honolulu on the island of Oahu. Traffic noise level increases and impacts associated with the proposed development were to be determined within the project site as well as along the public roadways which are expected to service the project traffic. A specific objective was to determine future traffic noise level increases associated with both project and non-project traffic, and the potential noise impacts associated with these increases.

Assessments of possible future impacts from anticipated scheduled HART rail operations short term construction noise at the project site were also included as noise study objectives. Recommendations for minimizing identified noise impacts were also to be provided as required.

CHAPTER III. NOISE DESCRIPTORS AND THEIR RELATIONSHIP TO LAND USE COMPATIBILITY

The noise descriptor currently used by federal agencies (such as FHA/HUD) to assess environmental noise is the Day-Night Average Sound Level (Ldn or DNL). This descriptor incorporates a 24-hour average of instantaneous A-Weighted Sound Levels as read on a standard Sound Level Meter. By definition, the minimum averaging period for the DNL descriptor is 24 hours. Additionally, sound levels which occur during the nighttime hours of 10:00 PM to 7:00 AM are increased by 10 decibels (dB) prior to computing the 24-hour average by the DNL descriptor. A more complete list of noise descriptors is provided in Appendix B to this report.

Table III-1, derived from Reference 1, presents current federal noise standards and acceptability criteria for residential land uses. Land use compatibility guidelines for various levels of environmental noise as measured by the DNL descriptor system are shown in Figure III-1. As a general rule, noise levels of 55 DNL or less occur in rural areas, or in areas which are removed from high volume roadways. In urbanized areas which are shielded from high volume streets, DNL levels generally range from 55 to 65 DNL, and are usually controlled by motor vehicle traffic noise. Residences which front major roadways are generally exposed to levels of 65 DNL, and as high as 75 DNL when the roadway is a high speed freeway. In the project area, traffic noise levels associated with Nimitz Highway are greater than 70 DNL along the Right-of-Way due to the large volume of traffic on that major thoroughfare.

For purposes of determining noise acceptability for funding assistance from federal agencies [FHA/HUD and VA (Veterans Administration)], an exterior noise level of 65 DNL or less is considered acceptable for residences. This standard is applied nationally (Reference 2), including Hawaii. Because of our open-living conditions, the predominant use of naturally ventilated dwellings, and the relatively low exterior-to-interior sound attenuation afforded by these naturally ventilated structures, an exterior noise level of 65 DNL does not eliminate all risks of noise impacts. Because of these factors, and as recommended in Reference 3, a lower level of 55 DNL is considered as the "Unconditionally Acceptable" (or "Near-Zero Risk") level of exterior noise. However, after considering the cost and feasibility of applying the lower level of 55 DNL, government agencies such as FHA/HUD and VA have selected 65 DNL as a more appropriate regulatory standard.

For commercial, industrial, and other non-noise sensitive land uses, exterior noise levels as high as 75 DNL are generally considered acceptable. Exceptions to this occur when naturally ventilated office and other commercial establishments are exposed to exterior levels which exceed 65 DNL.

On the island of Oahu, the State Department of Health (DOH) regulates noise

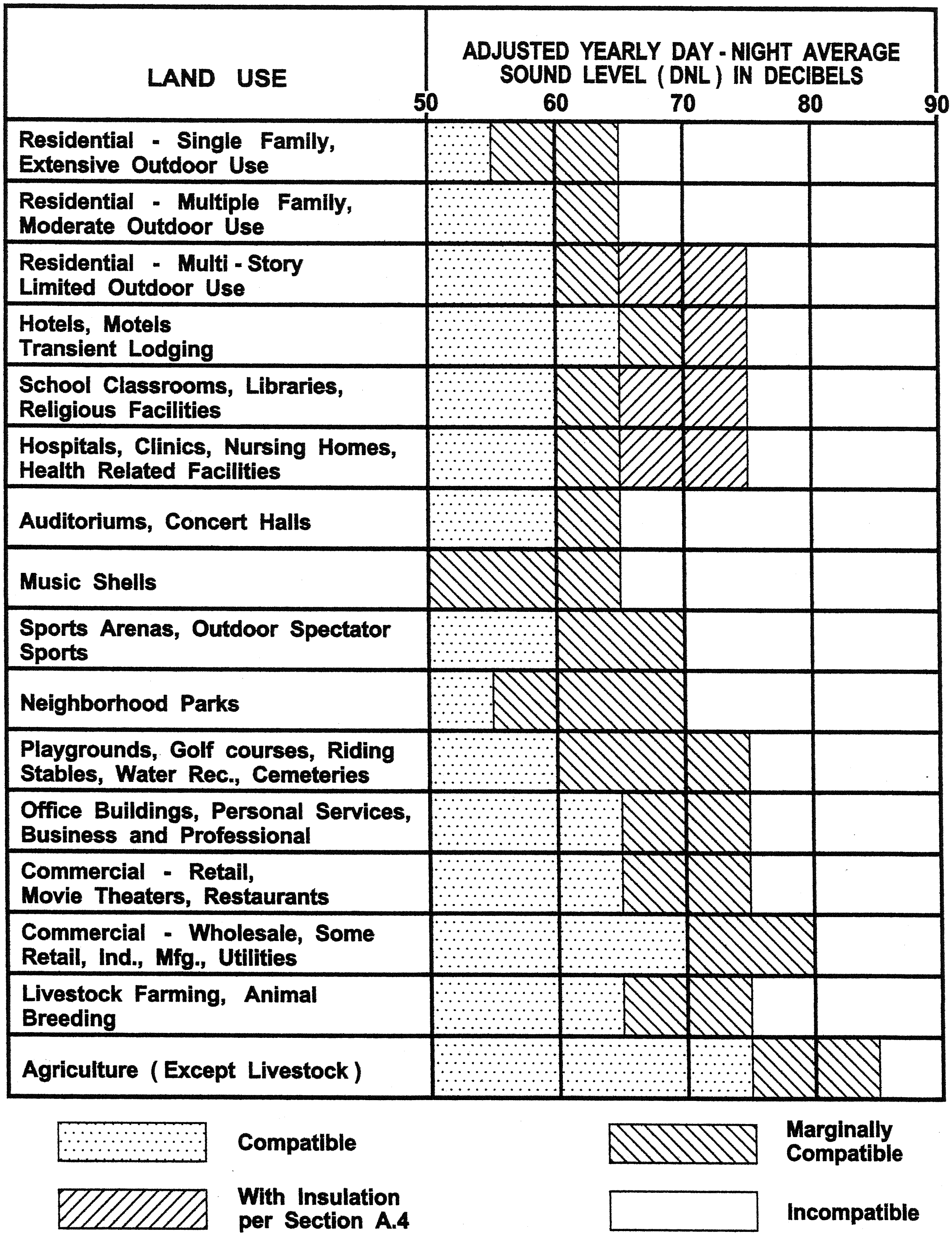
TABLE III-1

EXTERIOR NOISE EXPOSURE CLASSIFICATION (RESIDENTIAL LAND USE)

NOISE EXPOSURE CLASS	DAY–NIGHT SOUND LEVEL	EQUIVALENT SOUND LEVEL	FEDERAL (1) STANDARD
Minimal Exposure	Not Exceeding 55 DNL	Not Exceeding 55 Leq	Unconditionally Acceptable
Moderate Exposure	Above 55 DNL But Not Above 65 DNL	Above 55 Leq But Not Above 65 Leq	Acceptable(2)
Significant Exposure	Above 65 DNL But Not Above 75 DNL	Above 65 Leq But Not Above 75 Leq	Normally Unacceptable
Severe Exposure	Above 75 DNL	Above 75 Leq	Unacceptable

Notes: (1) Federal Housing Administration, Veterans Administration, Department of Defense, and Department of Transportation.

(2) FHWA uses the Leq instead of the Ldn descriptor. For planning purposes, both are equivalent if: (a) heavy trucks do not exceed 10 percent of total traffic flow in vehicles per 24 hours, and (b) traffic between 10:00 PM and 7:00 AM does not exceed 15 percent of average daily traffic flow in vehicles per 24 hours. The noise mitigation threshold used by FHWA for residences is 67 Leq.



LAND USE COMPATIBILITY WITH YEARLY AVERAGE DAY - NIGHT SOUND LEVEL (DNL) AT A SITE FOR BUILDINGS AS COMMONLY CONSTRUCTED.
(Source: American National Standards Institute S12.9 - 1988/Part 5)

FIGURE III-1

from fixed mechanical equipment and construction activities. State DOH noise regulations are expressed in maximum allowable noise limits rather than DNL (see Reference 4). Although they are not directly comparable to noise criteria expressed in DNL, State DOH noise limits for single family residential lands equate to approximately 55 DNL. For multifamily residential, commercial, and resort lands, the State DOH noise limits equate to approximately 60 DNL. For light and heavy industrial lands, the State DOH noise limits equate to approximately 76 DNL. Construction activities, which are typically noisier than the State DOH noise limits, are regulated through the issuance of permits for allowing excessive construction noise during limited time periods.

CHAPTER IV. GENERAL STUDY METHODOLOGY

Existing traffic and background ambient noise levels were measured at three locations (A, B, and C) in the project environs to provide a basis for describing the existing noise environment in the project environs. The locations of the measurement sites are shown in Figure I-1. Location A was on the proposed Chinatown Hotel site in the existing parking lot near the makai boundary line. Location B was at the 2nd Floor public parking level at the Harbor Village Apartments. Location C was at the mauka (Marin Street) end of the parking lot between Nuuanu Avenue and Smith Street, with the microphone raised 13.7 feet above ground level.

Traffic and background ambient noise measurements were performed during the month of April 2022. The results of the traffic noise measurements were compared with calculations of existing traffic noise levels to validate the computer model used. The traffic noise measurement results at Locations A, B, and C, and the comparisons of the measured traffic noise levels with computer model predictions of existing traffic noise levels are summarized in Table IV-1.

Traffic noise calculations for the existing conditions as well as noise predictions for the Year 2025 were performed using the Federal Highway Administration (FHWA) Traffic Noise Model Version 2.5 (Reference 5). Traffic data entered into the noise prediction model were: roadway and receiver locations; hourly traffic volumes, average vehicle speeds; estimates of traffic mix; and "Pavement" propagation loss factor. The traffic data and forecasts for the project (Reference 6), plus the published traffic counts along Nimitz Highway during the pre-COVID period (Reference 7) were the primary sources of data inputs to the model.

Reference 6 did not include existing and future peak hour volumes for eastbound traffic along Nimitz Highway, because eastbound traffic on Nimitz Highway are not expected to influence the westbound traffic volumes along Nimitz Highway fronting the project. Descriptions of existing and future traffic noise levels along Nimitz Highway require inclusion of both eastbound and westbound traffic contributions, so estimates of eastbound traffic volumes for CY 2022 and 2025 were derived from Reference 6 using HDOT traffic counts from August 1, 2018 (Reference 7) to scale westbound traffic volumes available from Reference 6. The notes in Appendix C describe the ratios of traffic volumes contained in both references which were evaluated and used.

Appendix C summarizes the AM and PM peak hour traffic volumes for CY 2022 and 2025 which were used to model existing and future traffic noise along the streets surrounding the project site. For existing and future traffic along the streets surrounding the project site, it was assumed that the average noise levels, or Leq(h), during the PM peak traffic hour were 0.8 dB less than the 24-hour DNL along those roadways. This assumption was based on the HDOT traffic counts of Reference 7 obtained in August 2018 and the traffic noise measurements obtained at Location A during August 6 to 8, 2022. Figure IV-1 depicts the typical hourly traffic noise level variations derived from the HDOT August 1, 2018 traffic data.

TABLE IV-1
TRAFFIC AND BACKGROUND NOISE MEASUREMENT RESULTS

LOCATION	Time of Day (HRS)	Ave. Speed (MPH)	-------- Hourly Traffic Volume -------- AUTO	M.TRUCK	H.TRUCK	Measured Leq (dB)	Predicted Leq (dB)
B. 72 FT from the centerline of Nimitz Highway (4/6/22)	1438 TO 1528	41	4,988	112	55	75.8 (1)	73.6
A. 76 FT from the centerline of Nimitz Highway (4/6/22)	1600 TO 1627	41	5,420	47	43	73.2	73.0
A. 76 FT from the centerline of Nimitz Highway (4/6/22)	1628 TO 1643	40	5,651	36	57	73.0	73.0
A. 76 FT from the centerline of Nimitz Highway (4/6/22)	1646 TO 1711	40	5,507	39	24	72.5	72.4
A. 76 FT from the centerline of Nimitz Highway (4/6/22)	1712 TO 1800	41	4,921	52	15	72.3	72.3

TABLE IV-1 (CONTINUED)
TRAFFIC AND BACKGROUND NOISE MEASUREMENT RESULTS

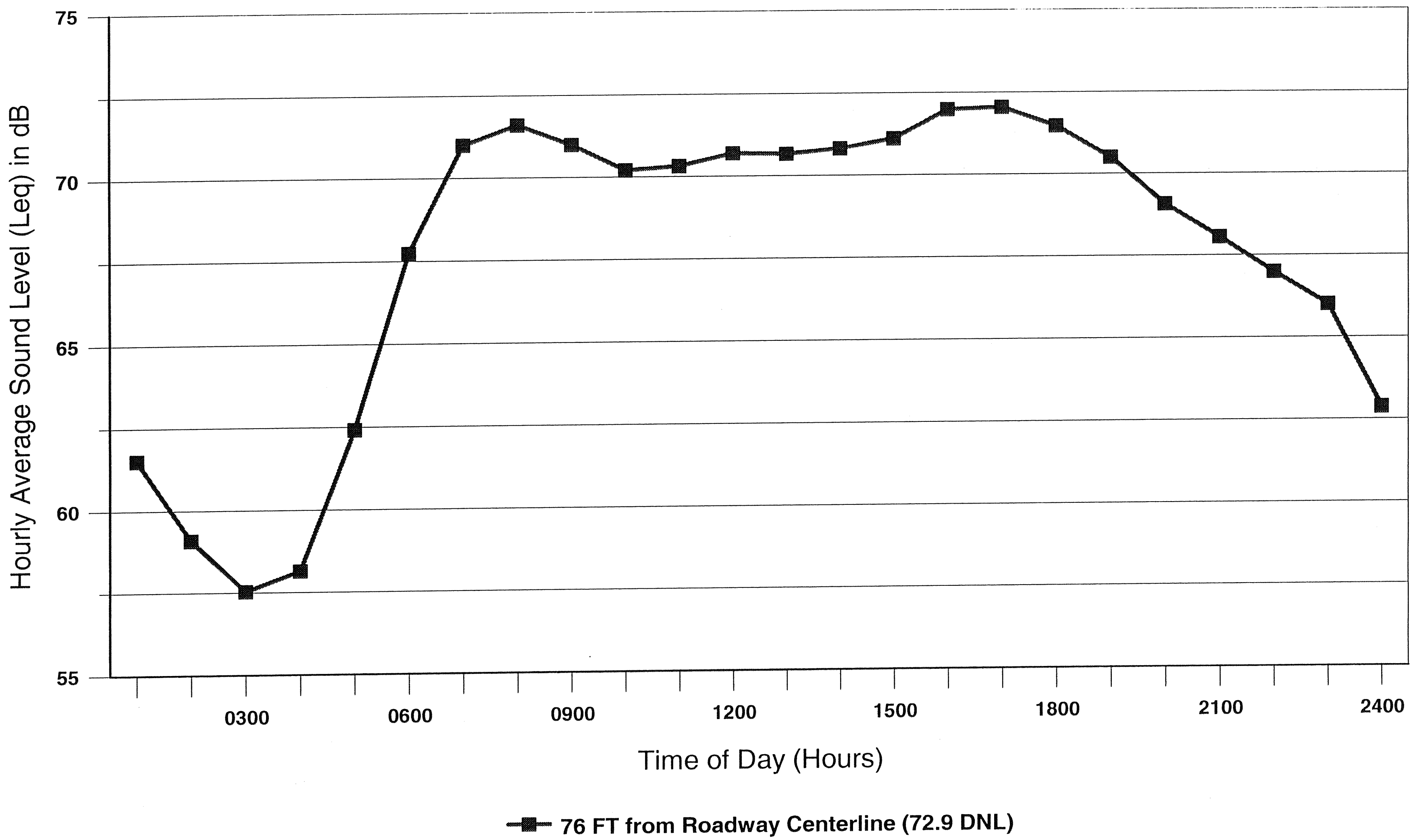
LOCATION	Time of Day (HRS)	Ave. Speed (MPH)	-------- Hourly Traffic Volume -------- AUTO	M.TRUCK	H.TRUCK	Measured Leq (dB)	Predicted Leq (dB)
A. 76 FT from the centerline of Nimitz Highway (4/6/22)	1827 TO 1900	41	Unknown	Unknown	Unknown	71.4	N/A
C. 218 FT from the centerline of Nimitz Highway (4/6/22)	1827 TO 1900	41	Unknown	Unknown	Unknown	64.2	64.2 (2)
A. 76 FT from the centerline of Nimitz Highway (4/7/22)	0707 TO 0807	34	4,452	85	94	71.5	71.4

Notes:

1. Measured value at Location B approximately 2.2 dBA higher than predicted by TNM due to reverberation sound build-u within parking garage.

2. TNM predicted value at Location C was predicted to be 7.2 dBA lower than TNM predicted value at Location A.

FIGURE IV-1
HOURLY TRAFFIC NOISE LEVELS VS. TIME OF DAY
STA. B72009200586; NIMITZ HIGHWAY AT NUUANU STREAM BRIDGE; 8/1/18



Traffic noise calculations for both the existing and future conditions in the project environs were developed for ground level and elevated receptors with and without the benefit of shielding from the proposed Chinatown Hotel. Traffic noise levels were also calculated for future conditions with (Build Alternative) and without (No Build Alternative) the proposed project. The forecasted changes in traffic noise levels over existing levels were calculated with and without the project, and noise impact risks evaluated. The relative contributions of non-project and project traffic to the total noise levels were also calculated, and an evaluation of possible traffic noise impacts was made.

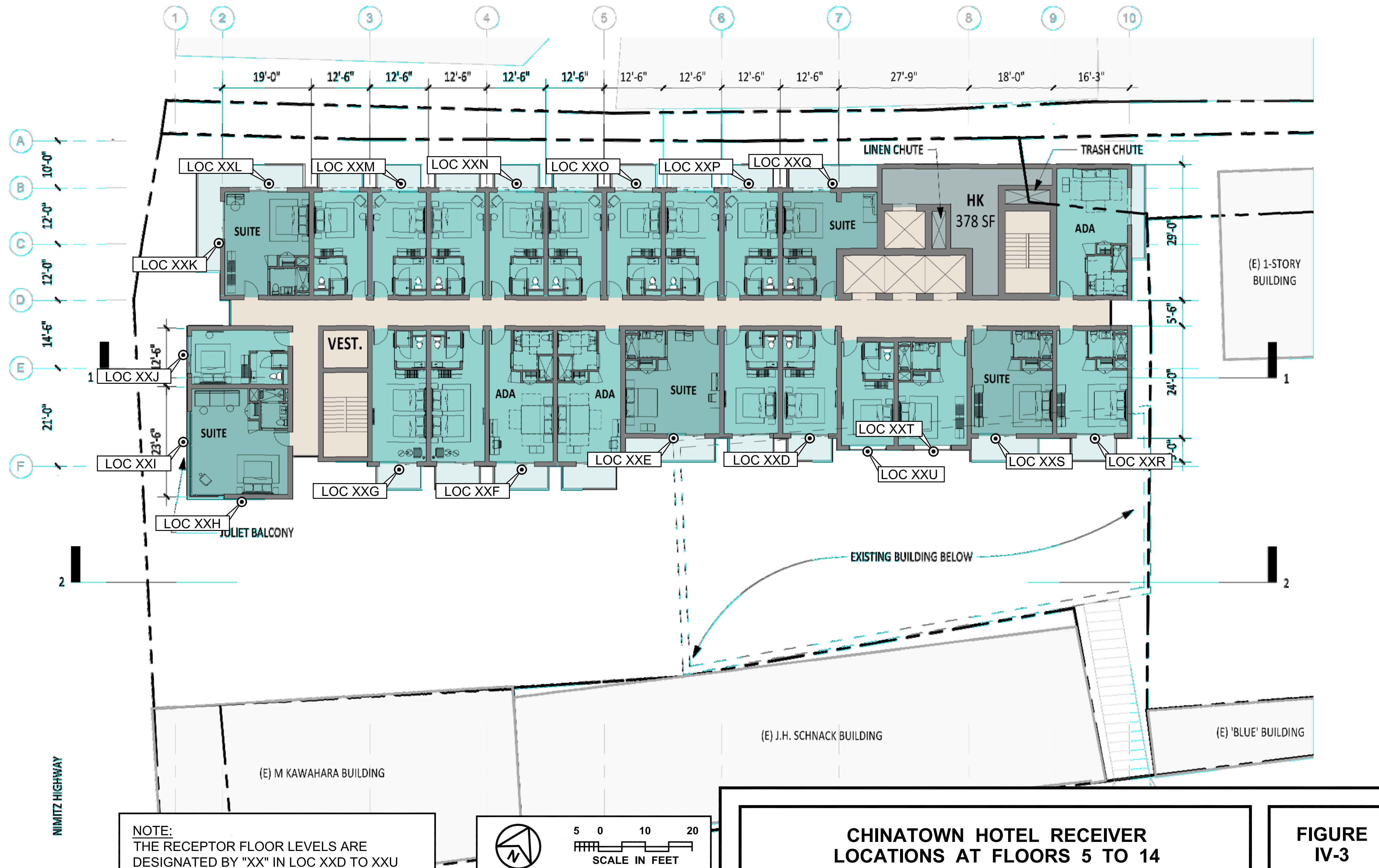
In addition to the evaluations of existing and future roadway traffic noise levels, the evaluation of future noise contributions from the train operations along the planned HART guideway were also included, with both roadway and guideway noise levels combined to describe the anticipated future noise levels following train operations along the HART guideway. The assumed HART guideway location along the centerline of Nimitz Highway is shown in Figure IV-2. The guideway is not expected to be operational until after the project build out year of CY 2025. However, since future roadway traffic noise levels are not anticipated to decline during the period between CY 2025 and the start of HART guideway operations, the addition of the anticipated guideway noise levels to the CY 2025 noise levels should represent a lower limit on the future total exterior noise levels at the Chinatown Hotel.

Information contained in the final EIS for the HART project (Reference 8) was used to describe the anticipated future guideway noise levels at the outdoor windows and lanais of the guest units of Chinatown Hotel. Because the hotel was not anticipated to be a noise sensitive receptor location in the HART EIS, predicted noise levels provided in Reference 8 at Receptor Location AA (901 River Street, or Harbor Village Apartments) were used to describe worst cast rail noise levels at the receptor locations on the makai side of the Chinatown Hotel Tower building (LOC XXI and LOC XXJ in Figure IV-3). Because no noise shielding effects are predicted from the guideway side barriers at the 5th through 14th Floors of the Chinatown Hotel, a worst case guideway noise level (without walls or wheel skirts) of 67 DNL was assumed at LOC 05I and 05J at the 5th Floor level of the hotel, with correspondingly lower DNL values at the higher floors above the 5th Floor to the 14th Floor due to increased distance effects. At hotel receptor locations on the east (Diamond Head) and west (Ewa) faces of the tower building, the effects of noise shielding from the Chinatown Hotel tower were applied. Noise shielding effects from other planned buildings adjacent to the Chinatown Hotel were not included in the future predictions of HART guideway (as well as roadway traffic) noise levels. Predicted HART guideway noise levels were logarithmically added to CY 2025 roadway traffic noise levels to describe total potential future noise levels on the three faces of the Chinatown Hotel tower building shown in Figure IV-3.

The results of the traffic noise measurements and predictions, as well as the predictions of future HART guideway noise levels, were used to describe the existing and future noise levels in the project environs, and to determine if the units of the

RELATIONSHIP OF HART GUIDEWAY TO CHINATOWN HOTEL

FIGURE IV-2



NOTE:
THE RECEPTOR FLOOR LEVELS ARE DESIGNATED BY "XX" IN LOC XXD TO XXU

CHINATOWN HOTEL RECEIVER LOCATIONS AT FLOORS 5 TO 14

FIGURE IV-3

proposed Chinatown Hotel will be exposed to exterior noise levels within the FHA/HUD standard of 65 DNL for noise sensitive receptors. Where predicted future noise levels exceeded the 65 DNL threshold, noise mitigation measures were recommended.

Calculations of average exterior and interior noise levels from construction activities were performed for typical naturally ventilated and air conditioned dwellings. Predicted noise levels were compared with existing background ambient noise levels, and the potential for noise impacts was assessed.

CHAPTER V. EXISTING ACOUSTICAL ENVIRONMENT

The dominant noise contributor to the existing background ambient noise levels within the project area is traffic along Nimitz Highway. The traffic noise contributions from Nimitz Highway were measured at Locations A, B, and C, where shown in Figure I-1, and the results of these measurements are shown in Table IV-1 and Figure V-1.

Table V-1 presents the calculations of traffic noise levels during the PM peak hour along the various roadways in the project environs and at various setback distances from the roadways' centerlines. Table V-2 presents the existing setback distances to the 65, 70, and 75 DNL contours for unobstructed field of views to the vehicles on each roadway. As indicated in Table V-2, as much as 408 feet of buffer space would be required from the centerline of Nimitz Highway at the project location to be clear of the 65 DNL traffic noise contour. Table V-3 presents the calculated CY 2022 DNL values at various locations on the project site where the Chinatown Hotel building is currently sited. Figure IV-3 depicts the various locations on faces of the planned Chinatown Hotel building where the calculations of CY 2022 DNL values were performed. In Figure IV-3 and Table V-3, "XX" designates the floor levels of the various receptor locations shown at the outdoor lanais or exterior windows of the planned hotel guest units. As indicated in Table V-3, CY 2022 traffic noise levels at the site of the planned Chinatown Hotel range from 66 to 73 DNL, and are consistent with the measured traffic plus background DNL level of approximately 74.2 DNL measured at Location A in April 2022 (see Figure V-1).

Based on these measurement and noise modeling results, it was concluded that existing traffic noise levels at the project site currently exceed the FHA/HUD 65 DNL standard, with the dominant noise source being traffic on Nimitz Highway. At receptor locations which are at larger setback distances from Nimitz Highway and/or are shielded from traffic noise by buildings, such as at Location C, existing background ambient noise levels are typically lower due to the larger setback distances and/or the noise shielding effects of the buildings. Noise reductions of 5 to 20 dBA can be expected from these traffic noise reducing effects. In general, these noise shielding effects are greatest at receptors near ground level, and tend to diminish at high rise receptor elevations. Receptor locations which front roadways typically experience the least amount of noise shielding effects, and tend to have the highest traffic noise levels due to both the detrimental effects of smaller buffer distances and the lack of noise shielding effects from intervening buildings.

FIGURE V-1
HOURLY TRAFFIC NOISE LEVELS MEASURED AT LOCATION A
(APRIL 6-7, 2022)

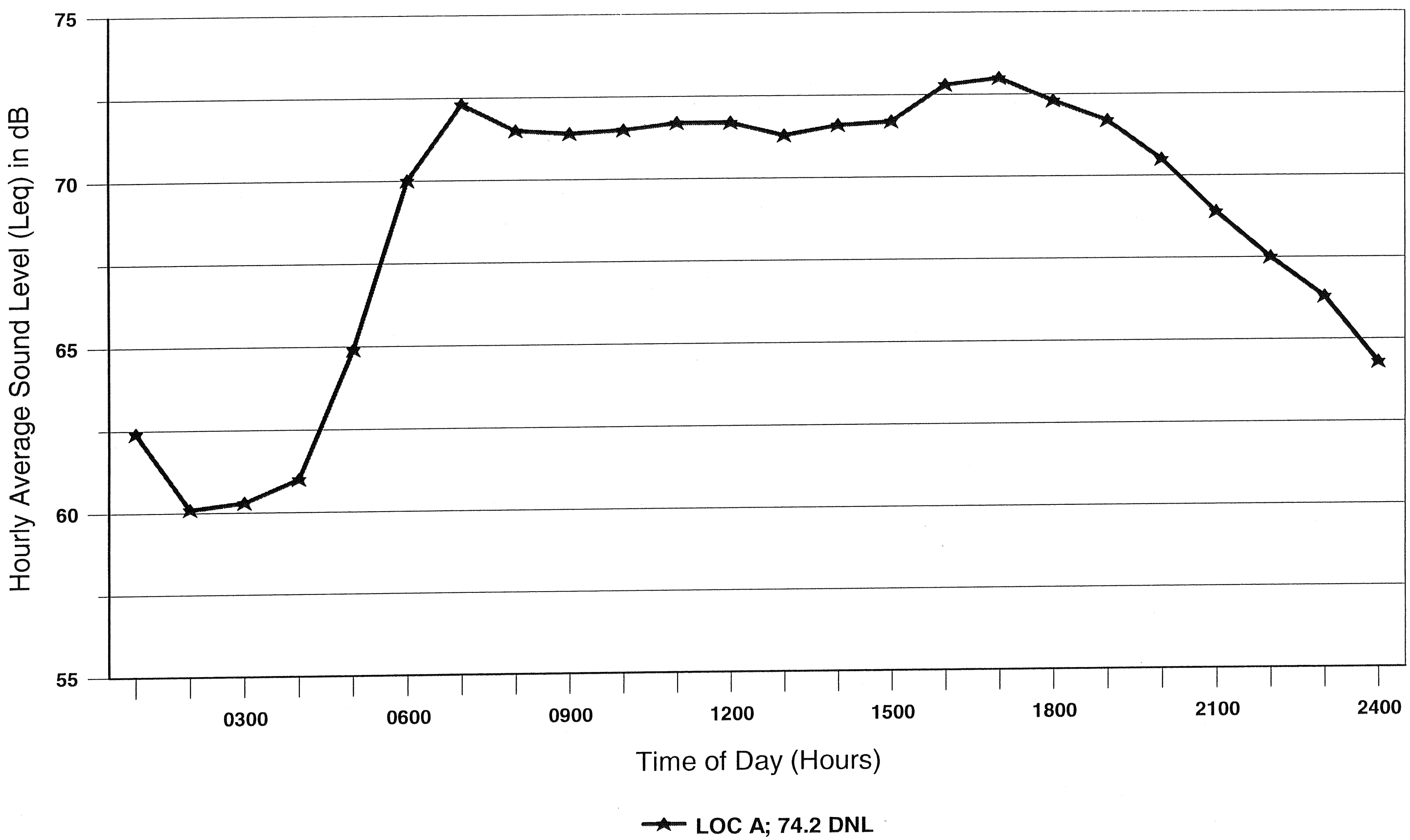


TABLE V-1

EXISTING (CY 2022) TRAFFIC VOLUMES AND NOISE LEVELS ALONG ROADWAYS IN PROJECT AREA (PM PEAK HOUR)

LOCATION	SPEED (MPH)	TOTAL VPH	******* VOLUMES (VPH) ********* AUTOS	M TRUCKS	H TRUCKS	50' Leq	100' Leq	200' Leq
Nimitz Highway E. of Maunakea Street	40	6,392	6,283	51	58	75.4	* 71.7	68.0
Nimitz Highway - Fronting Project	40	6,431	6,322	51	58	75.4	* 71.7	68.0
Nimitz Highway W. of Kekaulike Street	40	6,382	6,274	51	57	75.4	* 71.7	67.9
Maunakea St. Between Nimitz Hwy. and N. King St.	25	87	85	1	1	50.9	47.9	44.6
Maunakea Street Mauka of N. King St.	25	235	231	2	2	54.8	51.8	48.5
N. King St. W. of Maunakea Street	35	1,502	1,437	15	50	67.7	64.5	61.2
N. King St. E. of Maunakea Street	35	1,654	1,582	17	55	68.1	65.0	61.6

Notes:

1. Traffic noise levels calculated for ground level receptors.
2. Pavement and unobstructed field-of-view conditions assumed.
3. * Calculated at 60 FT distance from centerline instead of 50 FT.

TABLE V-2

EXISTING AND CY 2025 DISTANCES TO 65, 70, AND 75 DNL CONTOURS

STREET SECTION	65 DNL SETBACK (FT) EXISTING	65 DNL SETBACK (FT) CY 2025	70 DNL SETBACK (FT) EXISTING	70 DNL SETBACK (FT) CY 2025	75 DNL SETBACK (FT) EXISTING	75 DNL SETBACK (FT) CY 2025
Nimitz Highway E. of Maunakea Street	408	408	160	160	71	71
Nimitz Highway - Fronting Project	408	408	160	160	71	71
Nimitz Highway W. of Kekaulike Street	393	408	158	160	71	71
Maunakea St. Between Nimitz Hwy. and N. King St.	2	2	1	1	0	0
Maunakea Street Mauka of N. King St.	6	6	2	2	1	1
N. King St. W. of Maunakea Street	107	108	36	37	12	13
N. King St. E. of Maunakea Street	118	118	39	40	13	14

Notes:

(1) All setback distances are from the roadways' centerlines.
(2) See Tables V-1 and VI-1 for traffic volume, speed, and mix assumptions.
(3) Setback distances are for ground level receptors with unobstructed fields-of-view.
(4) "Pavement" conditions assumed along all roadways.

TABLE V-3

EXISTING AND FUTURE TRAFFIC NOISE LEVELS
(FUTURE NO BUILD AND BUILD CONDITIONS)

RECEPTOR LOCATION	SETBACK DIST. FROM NIMITZ HWY. C.L.	RECEPTOR EAR ELEVATION	EXISTING (CY 2022) DNL	FUTURE (CY 2025) NO BUILD DNL	BUILD DNL
05D	216 FT	85 FT Above Ground	67	67	63
06D	216 FT	95 FT Above Ground	67	67	63
07D	216 FT	105 FT Above Ground	67	67	63
08D	216 FT	115 FT Above Ground	67	67	63
09D	216 FT	125 FT Above Ground	67	67	63
10D	216 FT	135 FT Above Ground	67	67	63
11D	216 FT	145 FT Above Ground	67	67	63
12D	216 FT	155 FT Above Ground	67	67	63
13D	216 FT	165 FT Above Ground	67	67	63
14D	216 FT	175 FT Above Ground	67	67	63
05E	187 FT	85 FT Above Ground	68	68	63
06E	187 FT	95 FT Above Ground	68	68	62
07E	187 FT	105 FT Above Ground	68	68	63
08E	187 FT	115 FT Above Ground	68	68	62
09E	187 FT	125 FT Above Ground	68	68	62
10F	156 FT	135 FT Above Ground	69	69	65
11F	156 FT	145 FT Above Ground	69	69	65
12F	156 FT	155 FT Above Ground	69	69	65
13F	156 FT	165 FT Above Ground	69	69	65
14F	156 FT	175 FT Above Ground	69	69	65
05G	130 FT	85 FT Above Ground	70	70	65
06G	130 FT	95 FT Above Ground	70	70	65
07G	130 FT	105 FT Above Ground	70	70	66
08G	130 FT	115 FT Above Ground	70	70	66
09G	130 FT	125 FT Above Ground	70	70	65
10G	130 FT	135 FT Above Ground	70	70	66
11G	130 FT	145 FT Above Ground	70	70	65
12G	130 FT	155 FT Above Ground	70	70	65
13G	130 FT	165 FT Above Ground	70	70	65
14G	130 FT	175 FT Above Ground	70	70	65
05H	97 FT	85 FT Above Ground	72	72	68
06H	97 FT	95 FT Above Ground	72	72	68
07H	97 FT	105 FT Above Ground	72	72	68
08H	97 FT	115 FT Above Ground	72	72	68
09H	97 FT	125 FT Above Ground	72	72	68

TABLE V-3 (CONTINUED)

EXISTING AND FUTURE TRAFFIC NOISE LEVELS
(FUTURE NO BUILD AND BUILD CONDITIONS)

RECEPTOR LOCATION	SETBACK DIST. FROM NIMITZ HWY. C.L.	RECEPTOR EAR ELEVATION	EXISTING (CY 2022) DNL	FUTURE (CY 2025) NO BUILD DNL	BUILD DNL
10H	97 FT	135 FT Above Ground	72	72	68
11H	97 FT	145 FT Above Ground	72	72	68
12H	97 FT	155 FT Above Ground	72	72	68
13H	97 FT	165 FT Above Ground	72	72	69
14H	97 FT	175 FT Above Ground	72	72	69
05I	84 FT	85 FT Above Ground	73	73	72
06I	84 FT	95 FT Above Ground	73	73	72
07I	84 FT	105 FT Above Ground	73	73	72
08I	84 FT	115 FT Above Ground	73	73	72
09I	84 FT	125 FT Above Ground	73	73	72
10I	84 FT	135 FT Above Ground	73	73	72
11I	84 FT	145 FT Above Ground	73	73	72
12I	84 FT	155 FT Above Ground	73	73	72
13I	84 FT	165 FT Above Ground	73	73	72
14I	84 FT	175 FT Above Ground	73	73	72
05J	81 FT	85 FT Above Ground	73	73	73
06J	81 FT	95 FT Above Ground	73	73	73
07J	81 FT	105 FT Above Ground	73	73	73
08J	81 FT	115 FT Above Ground	73	73	73
09J	81 FT	125 FT Above Ground	73	73	73
10J	81 FT	135 FT Above Ground	73	73	73
11J	81 FT	145 FT Above Ground	73	73	73
12J	81 FT	155 FT Above Ground	73	73	73
13J	81 FT	165 FT Above Ground	73	73	73
14J	81 FT	175 FT Above Ground	73	73	73
05K	86 FT	85 FT Above Ground	73	73	72
06K	86 FT	95 FT Above Ground	73	73	72
07K	86 FT	105 FT Above Ground	73	73	72
08K	86 FT	115 FT Above Ground	73	73	72
09K	86 FT	125 FT Above Ground	73	73	72
10K	86 FT	135 FT Above Ground	73	73	72
11K	86 FT	145 FT Above Ground	73	73	72
12K	86 FT	155 FT Above Ground	73	73	72
13K	86 FT	165 FT Above Ground	73	73	72
14K	86 FT	175 FT Above Ground	73	73	72

TABLE V-3 (CONTINUED)

EXISTING AND FUTURE TRAFFIC NOISE LEVELS
(FUTURE NO BUILD AND BUILD CONDITIONS)

RECEPTOR LOCATION	SETBACK DIST. FROM NIMITZ HWY. C.L.	RECEPTOR EAR ELEVATION	EXISTING (CY 2022) DNL	FUTURE (CY 2025) NO BUILD DNL	FUTURE (CY 2025) BUILD DNL
05L	94 FT	85 FT Above Ground	72	72	69
06L	94 FT	95 FT Above Ground	72	72	69
07L	94 FT	105 FT Above Ground	72	72	69
08L	94 FT	115 FT Above Ground	72	72	69
09L	94 FT	125 FT Above Ground	72	72	69
10L	94 FT	135 FT Above Ground	72	72	69
11L	94 FT	145 FT Above Ground	72	72	69
12L	94 FT	155 FT Above Ground	72	72	69
13L	94 FT	165 FT Above Ground	72	72	69
14L	94 FT	175 FT Above Ground	72	72	69
05M	121 FT	85 FT Above Ground	71	71	67
06M	121 FT	95 FT Above Ground	71	71	67
07M	121 FT	105 FT Above Ground	71	71	67
08M	121 FT	115 FT Above Ground	71	71	67
09M	121 FT	125 FT Above Ground	71	71	68
10M	121 FT	135 FT Above Ground	71	71	68
11M	121 FT	145 FT Above Ground	71	71	68
12M	121 FT	155 FT Above Ground	71	71	68
13M	121 FT	165 FT Above Ground	70	70	68
14M	121 FT	175 FT Above Ground	70	70	68
05N	145 FT	85 FT Above Ground	70	70	66
06N	145 FT	95 FT Above Ground	70	70	66
07N	145 FT	105 FT Above Ground	70	70	66
08N	145 FT	115 FT Above Ground	70	70	66
09N	145 FT	125 FT Above Ground	70	70	66
10N	145 FT	135 FT Above Ground	70	70	66
11N	145 FT	145 FT Above Ground	70	70	67
12N	145 FT	155 FT Above Ground	70	70	67
13N	145 FT	165 FT Above Ground	70	70	67
14N	145 FT	175 FT Above Ground	70	70	67
05O	170 FT	85 FT Above Ground	69	69	65
06O	170 FT	95 FT Above Ground	69	69	65
07O	170 FT	105 FT Above Ground	69	69	65
08O	170 FT	115 FT Above Ground	69	69	66
09O	170 FT	125 FT Above Ground	69	69	66

TABLE V-3 (CONTINUED)

EXISTING AND FUTURE TRAFFIC NOISE LEVELS
(FUTURE NO BUILD AND BUILD CONDITIONS)

RECEPTOR LOCATION	SETBACK DIST. FROM NIMITZ HWY. C.L.	RECEPTOR EAR ELEVATION	EXISTING (CY 2022) DNL	FUTURE (CY 2025) NO BUILD DNL	BUILD DNL
10O	170 FT	135 FT Above Ground	69	69	66
11O	170 FT	145 FT Above Ground	69	69	66
12O	170 FT	155 FT Above Ground	69	69	66
13O	170 FT	165 FT Above Ground	69	69	66
14O	170 FT	175 FT Above Ground	69	69	66
05P	194 FT	85 FT Above Ground	68	68	65
06P	194 FT	95 FT Above Ground	68	68	65
07P	194 FT	105 FT Above Ground	68	68	65
08P	194 FT	115 FT Above Ground	68	68	65
09P	194 FT	125 FT Above Ground	68	68	65
10P	194 FT	135 FT Above Ground	68	68	65
11P	194 FT	145 FT Above Ground	68	68	65
12P	194 FT	155 FT Above Ground	68	68	65
13P	194 FT	165 FT Above Ground	68	68	65
14P	194 FT	175 FT Above Ground	68	68	65
05Q	212 FT	85 FT Above Ground	68	68	64
06Q	212 FT	95 FT Above Ground	68	68	64
07Q	212 FT	105 FT Above Ground	68	68	64
08Q	212 FT	115 FT Above Ground	68	68	64
09Q	212 FT	125 FT Above Ground	68	68	64
10Q	212 FT	135 FT Above Ground	68	68	64
11Q	212 FT	145 FT Above Ground	68	68	64
12Q	212 FT	155 FT Above Ground	68	68	64
13Q	212 FT	165 FT Above Ground	67	67	64
14Q	212 FT	175 FT Above Ground	67	67	64
05R	277 FT	85 FT Above Ground	66	66	62
06R	277 FT	95 FT Above Ground	66	66	62
07R	277 FT	105 FT Above Ground	66	66	62
08R	277 FT	115 FT Above Ground	66	66	62
09R	277 FT	125 FT Above Ground	66	66	62
10R	277 FT	135 FT Above Ground	66	66	62
11R	277 FT	145 FT Above Ground	66	66	62
12R	277 FT	155 FT Above Ground	66	66	62
13R	277 FT	165 FT Above Ground	66	66	62
14R	277 FT	175 FT Above Ground	66	66	62

TABLE V-3 (CONTINUED)

EXISTING AND FUTURE TRAFFIC NOISE LEVELS
(FUTURE NO BUILD AND BUILD CONDITIONS)

RECEPTOR LOCATION	SETBACK DIST. FROM NIMITZ HWY. C.L.	RECEPTOR EAR ELEVATION	EXISTING (CY 2022) DNL	FUTURE (CY 2025) NO BUILD DNL	BUILD DNL
05S	259 FT	85 FT Above Ground	66	66	62
06S	259 FT	95 FT Above Ground	66	66	62
07S	259 FT	105 FT Above Ground	66	66	62
08S	259 FT	115 FT Above Ground	67	67	62
09S	259 FT	125 FT Above Ground	66	66	61
10S	259 FT	135 FT Above Ground	66	66	62
11S	259 FT	145 FT Above Ground	66	66	61
12S	259 FT	155 FT Above Ground	66	66	62
13S	259 FT	165 FT Above Ground	66	66	62
14S	259 FT	175 FT Above Ground	66	66	62
05T	246 FT	85 FT Above Ground	67	67	63
06T	246 FT	95 FT Above Ground	67	67	63
07T	246 FT	105 FT Above Ground	67	67	63
08T	246 FT	115 FT Above Ground	67	67	63
09T	246 FT	125 FT Above Ground	67	67	63
10T	246 FT	135 FT Above Ground	67	67	63
11T	246 FT	145 FT Above Ground	67	67	63
12T	246 FT	155 FT Above Ground	67	67	63
13T	246 FT	165 FT Above Ground	67	67	63
14T	246 FT	175 FT Above Ground	67	67	63
05U	232 FT	85 FT Above Ground	67	67	63
06U	232 FT	95 FT Above Ground	67	67	63
07U	232 FT	105 FT Above Ground	67	67	63
08U	232 FT	115 FT Above Ground	67	67	63
09U	232 FT	125 FT Above Ground	67	67	63
10U	232 FT	135 FT Above Ground	67	67	63
11U	232 FT	145 FT Above Ground	67	67	63
12U	232 FT	155 FT Above Ground	67	67	63
13U	232 FT	165 FT Above Ground	67	67	63
14U	232 FT	175 FT Above Ground	67	67	63
LOC A	76 FT	7 FT Above Ground	74	74	74
LOC B	72 FT	15 FT Above Ground	74	74	74
LOC C	218 FT	14 FT Above Ground	68	68	68

CHAPTER VI. FUTURE NOISE ENVIRONMENT

Future Traffic Noise Levels. Predictions of future traffic noise levels were made using the traffic volume assignments of Reference 6 and Appendix C for CY 2025 with and without the proposed project. The future projections of non-project and project traffic volumes (as well as the methodology used for estimating eastbound traffic volumes on Nimitz Highway) for the No Build and Build Alternatives are shown in Appendix C.

Table VI-1 contains the CY 2025 traffic volumes and noise levels during the PM peak hour for the Build Alternative at various distances from the roadways' centerlines. Table V-2 contains the CY 2025 setback distances to the 65, 70, and 75 DNL contours under the Build Alternative for unobstructed visual line of sight conditions. Future average vehicle speeds and traffic vehicle mixes along all roadways were assumed to be identical to those used for CY 2022 (see Table V-1).

Table VI-2 shows the expected increases in traffic noise levels from CY 2022 to CY 2025 under the No Build and Build Alternatives due to the projected increases in future traffic volumes along the roadways shown. As shown in Table VI-2, the projected increases in future traffic noise levels with or without the project are essentially zero and should not exceed 0.1 dB along all roadways.

Table V-3 shows the predicted traffic noise levels at the various project receptor locations in CY 2025 under the No Build and Build Alternatives. The noise level reductions shown at receptor locations in the hotel tower between the No Build and Build Alternatives are the result of the beneficial noise shielding effects from the new building's exterior walls under the Build Alternative. Receptor locations located on the mauka (northeast) face of the proposed tower building should not be exposed to traffic noise from the sections of Nimitz Highway due to the noise shielding effects of the tower building. Traffic noise levels from North King Street are predicted to be approximately 64 DNL, and below the FHA/HUD 65 DNL standard, along the mauka face of the proposed tower building.

The dominant traffic noise source in the project area will continue to be traffic noise from Nimitz Highway. Future traffic noise levels along Nimitz Highway by CY 2025 are not expected to increase under the No Build and Build Alternatives. Increases in traffic noise levels along Nimitz Highway are not expected to result from the Chinatown Hotel Project because of the dominating influence of non-project traffic. Similar conclusions were possible for future traffic noise along Maunakea Street and North King Street, where future traffic noise increases associated with the Chinatown Hotel Development were predicted to not exceed 0.1 dB under the Build Alternative.

Future traffic noise levels under the Build Alternative are predicted to exceed the FHA/HUD 65 DNL standard at the exterior lanais and windows of the planned hotel tower building where shown in Table V-3 and Figure IV-3. Highest traffic noise levels are predicted at the exterior windows and lanais of the units on the makai face of the

TABLE VI-1

FUTURE (CY 2025) TRAFFIC VOLUMES AND NOISE LEVELS ALONG ROADWAYS IN PROJECT AREA (PM PEAK HOUR, WITH THE PROJECT)

LOCATION	SPEED (MPH)	TOTAL VPH	******* VOLUMES (VPH) ********* AUTOS	M TRUCKS	H TRUCKS	50' Leq	100' Leq	200' Leq
Nimitz Highway E. of Maunakea Street	40	6,409	6,300	51	58	75.4	* 71.7	68.0
Nimitz Highway - Fronting Project	40	6,411	6,302	51	58	75.4	* 71.7	68.0
Nimitz Highway W. of Kekaulike Street	40	6,405	6,296	51	58	75.4	* 71.7	68.0
Maunakea St. Between Nimitz Hwy. and N. King St.	25	89	87	1	1	51.0	48.0	44.7
Maunakea Street Mauka of N. King St.	25	235	231	2	2	54.8	51.8	48.5
N. King St. W. of Maunakea Street	35	1,512	1,447	15	50	67.8	64.6	61.2
N. King St. E. of Maunakea Street	35	1,662	1,590	17	55	68.2	65.0	61.6

Notes:

1. Traffic noise levels calculated for ground level receptors.
2. Pavement and unobstructed field-of-view conditions assumed.
3. * Calculated at 60 FT distance from centerline instead of 50 FT.

TABLE VI-2

CALCULATIONS OF PROJECT AND NON-PROJECT TRAFFIC NOISE CONTRIBUTIONS (CY 2025) (PM PEAK HOUR LEQ OR DNL)

	NOISE LEVEL INCREASE DUE TO:	
STREET SECTION	NON-PROJECT TRAFFIC	PROJECT TRAFFIC
Nimitz Highway E. of Maunakea Street	0.0	0.0
Nimitz Highway - Fronting Project	0.0	0.0
Nimitz Highway W. of Kekaulike Street	0.0	0.0
Maunakea St. Between Nimitz Hwy. and N. King St.	0.0	0.1
Maunakea Street Mauka of N. King St.	0.0	0.0
N. King St. W. of Maunakea Street	0.0	0.1
N. King St. E. of Maunakea Street	0.0	0.0

hotel tower building at LOC's XXI, XXJ, and XXK in Figure IV-3. The future traffic noise levels at the exterior lanais and windows of guest units on the Ewa and Diamond Head faces of the hotel tower building are predicted to experience decreasing traffic noise levels with increasing distances from Nimitz Highway, and should also experience traffic noise levels which are lower than existing noise levels due to the beneficial noise shielding effects of the hotel tower building. Predicted traffic noise levels by 2025 (and prior to operation of the HART rail system) at guest units on the Diamond Head face of the tower building are anticipated to exceed the FHA/HUD 65 DNL standard at guest units which are at or within 130 FT from the centerline of Nimitz Highway as on the 7th, 8th, and 10th Floors at LOC XXG. Predicted traffic noise levels by 2025 (and prior to operation of the HART rail system) at guest units on the Ewa face of the tower building are anticipated to exceed the FHA/HUD 65 DNL standard at guest units which are at or within 170 FT from the centerline of Nimitz Highway as above the 7th Floor at LOC XXO.

HART Guideway Noise Levels. The assumed location of the future HART guideway in relation to the proposed Chinatown Hotel is shown in Figure IV-2. The guideway centerline's distance from the Chinatown Hotel's makai face is similar to that shown from the Harbor Villages Apartment. Predicted future guideway noise levels at the various guest units of the Chinatown Hotel are shown in Table VI-3 in the "HART GW" column, with worst case noise levels of 64 to 67 DNL at units on the makai face of the hotel. On the Ewa and Diamond Head faces of the hotel tower, future guideway noise levels should not exceed 65 DNL due to the noise shielding effects of the hotel tower building. Because the ear elevations (85+ FT) of the Chinatown Hotel guest units from the 5th through 14th Floors will be well above the HART guideway elevation of approximately 39 FT, no sound attenuation is expected from the HART guideway sound barriers at the Chinatown Hotel receptors. In accordance with FTA (U.S. Federal Transit Authority) noise impact criteria for Category 2 (residential) receptors (see Figure VI-1), Moderate Noise impacts are anticipated at the makai hotel units below the 9th or 10th Floors. At all hotel units on the east and west faces of the hotel, and at units above the 9th Floor on the makai face of the hotel, no noise impacts are anticipated from HART guideway operations. It should be noted that the HART EIS assumed a much higher level (77 DNL) of background traffic noise at Harbor Village Apartments, with approximately 9 dB of sound attenuation from the guideway's noise barrier, which resulted in a "No Impact" determination at Harbor Village Apartments. Because no sound attenuation is anticipated from the guideway barriers at the Chinatown Hotel guest units, a "Moderate Impact" is anticipated from HART guideway operations at guest units located on the makai face of the hotel which are situated below the 11th Floor.

Predicted Roadway Plus HART Guideway Noise Levels. Table VI-3 also shows the predicted minimum future total noise levels with both roadway and HART guideway noise levels combined at some future date beyond 2025. These future noise levels (singly and combined) should not change along the units on the makai face of the hotel, but may change at the units on the east and west faces of the hotel if other tall

TABLE VI-3
CHINATOWN HOTEL
EXISTING AND FUTURE TRAFFIC PLUS HART NOISE LEVELS
(FUTURE WITH PROJECT CONDITION)

RECEPTOR LOCATION	SETBACK DIST. FROM HART GW C.L.	SETBACK DIST. FROM NIMITZ HWY C.L.	RECEPTOR EAR ELEVATION ABOVE GROUND	EXISTING (CY 2022) DNL	FUTURE (CY 2025) LEVELS TRAFFIC DNL	HART GW DNL	TOTAL DNL
05D	219 FT	216 FT	85 FT	67.4	63.2	58.4	64.4
06D	219 FT	216 FT	95 FT	67.4	63.0	58.3	64.3
07D	219 FT	216 FT	105 FT	67.4	63.3	58.2	64.5
08D	219 FT	216 FT	115 FT	67.4	63.0	58.1	64.2
09D	219 FT	216 FT	125 FT	67.4	62.8	58.0	64.0
10D	219 FT	216 FT	135 FT	67.3	63.2	57.9	64.3
11D	219 FT	216 FT	145 FT	67.3	62.9	57.7	64.0
12D	219 FT	216 FT	155 FT	67.3	62.9	57.6	64.0
13D	219 FT	216 FT	165 FT	67.2	63.1	57.5	64.1
14D	219 FT	216 FT	175 FT	67.2	62.8	57.3	63.9
05E	190 FT	187 FT	85 FT	68.3	62.7	59.4	64.4
06E	190 FT	187 FT	95 FT	68.4	62.4	59.3	64.1
07E	190 FT	187 FT	105 FT	68.3	62.6	59.1	64.2
08E	190 FT	187 FT	115 FT	68.3	62.3	59.0	64.0
09E	190 FT	187 FT	125 FT	68.3	62.0	58.9	63.7
10E	190 FT	187 FT	135 FT	68.2	62.3	58.7	63.9
11E	190 FT	187 FT	145 FT	68.3	62.2	58.6	63.8
12E	190 FT	187 FT	155 FT	68.3	62.3	58.4	63.8
13E	190 FT	187 FT	165 FT	68.2	63.1	58.2	64.3
14E	190 FT	187 FT	175 FT	68.2	63.4	58.0	64.5
05F	158 FT	156 FT	85 FT	69.4	64.9	60.6	66.3
06F	158 FT	156 FT	95 FT	69.4	65.0	60.5	66.3
07F	158 FT	156 FT	105 FT	69.4	65.1	60.3	66.3
08F	158 FT	156 FT	115 FT	69.4	65.1	60.2	66.3
09F	158 FT	156 FT	125 FT	69.4	65.1	60.0	66.3
10F	158 FT	156 FT	135 FT	69.3	65.2	59.8	66.3
11F	158 FT	156 FT	145 FT	69.3	65.2	59.5	66.2
12F	158 FT	156 FT	155 FT	69.2	65.2	59.3	66.2
13F	158 FT	156 FT	165 FT	69.2	65.1	59.1	66.1
14F	158 FT	156 FT	175 FT	69.2	65.1	58.9	66.0
05G	132 FT	130 FT	85 FT	70.4	65.3	61.8	66.9
06G	132 FT	130 FT	95 FT	70.4	65.3	61.6	66.8

TABLE VI-3 (CONTINUED)
CHINATOWN HOTEL
EXISTING AND FUTURE TRAFFIC PLUS HART NOISE LEVELS
(FUTURE WITH PROJECT CONDITION)

RECEPTOR LOCATION	SETBACK DIST. FROM HART GW C.L.	SETBACK DIST. FROM NIMITZ HWY C.L.	RECEPTOR EAR ELEVATION ABOVE GROUND	EXISTING (CY 2022) DNL	FUTURE (CY 2025) LEVELS TRAFFIC DNL	HART GW DNL	TOTAL DNL
07G	132 FT	130 FT	105 FT	70.3	65.5	61.4	66.9
08G	132 FT	130 FT	115 FT	70.3	65.5	61.2	66.9
09G	132 FT	130 FT	125 FT	70.2	65.4	60.9	66.7
10G	132 FT	130 FT	135 FT	70.2	65.5	60.7	66.7
11G	132 FT	130 FT	145 FT	70.2	65.4	60.4	66.6
12G	132 FT	130 FT	155 FT	70.2	65.4	60.1	66.5
13G	132 FT	130 FT	165 FT	70.2	65.4	59.8	66.5
14G	132 FT	130 FT	175 FT	70.2	65.4	59.5	66.4
05H	99 FT	97 FT	85 FT	71.9	68.4	63.4	69.6
06H	99 FT	97 FT	95 FT	71.9	68.3	63.2	69.5
07H	99 FT	97 FT	105 FT	71.8	68.4	62.9	69.5
08H	99 FT	97 FT	115 FT	71.8	68.3	62.5	69.3
09H	99 FT	97 FT	125 FT	71.8	68.2	62.2	69.2
10H	99 FT	97 FT	135 FT	71.7	68.3	61.9	69.2
11H	99 FT	97 FT	145 FT	71.7	68.2	61.5	69.0
12H	99 FT	97 FT	155 FT	71.7	68.3	61.1	69.1
13H	99 FT	97 FT	165 FT	71.7	68.6	60.8	69.3
14H	99 FT	97 FT	175 FT	71.6	68.9	60.4	69.5
05I	86 FT	84 FT	85 FT	72.8	72.4	67.1	73.5
06I	86 FT	84 FT	95 FT	72.7	72.3	66.8	73.4
07I	86 FT	84 FT	105 FT	72.7	72.3	66.4	73.3
08I	86 FT	84 FT	115 FT	72.7	72.3	66.0	73.2
09I	86 FT	84 FT	125 FT	72.7	72.3	65.6	73.1
10I	86 FT	84 FT	135 FT	72.7	72.3	65.2	73.1
11I	86 FT	84 FT	145 FT	72.6	72.3	64.8	73.0
12I	86 FT	84 FT	155 FT	72.7	72.4	64.4	73.0
13I	86 FT	84 FT	165 FT	72.6	72.4	64.0	73.0
14I	86 FT	84 FT	175 FT	72.6	72.4	63.7	72.9
05J	85 FT	81 FT	85 FT	72.9	72.5	67.2	73.6
06J	85 FT	81 FT	95 FT	72.9	72.5	66.8	73.5
07J	85 FT	81 FT	105 FT	72.9	72.6	66.5	73.5

TABLE VI-3 (CONTINUED)
CHINATOWN HOTEL
EXISTING AND FUTURE TRAFFIC PLUS HART NOISE LEVELS
(FUTURE WITH PROJECT CONDITION)

RECEPTOR LOCATION	SETBACK DIST. FROM HART GW C.L.	SETBACK DIST. FROM NIMITZ HWY C.L.	RECEPTOR EAR ELEVATION ABOVE GROUND	EXISTING (CY 2022) DNL	FUTURE (CY 2025) LEVELS TRAFFIC DNL	HART GW DNL	TOTAL DNL
08J	85 FT	81 FT	115 FT	72.8	72.5	66.0	73.4
09J	85 FT	81 FT	125 FT	72.8	72.5	65.6	73.3
10J	85 FT	81 FT	135 FT	72.8	72.6	65.3	73.3
11J	85 FT	81 FT	145 FT	72.8	72.6	64.8	73.3
12J	85 FT	81 FT	155 FT	72.8	72.7	64.4	73.3
13J	85 FT	81 FT	165 FT	72.8	72.7	64.1	73.3
14J	85 FT	81 FT	175 FT	72.7	72.6	63.7	73.1
05K	90 FT	86 FT	85 FT	72.7	72.0	66.9	73.2
06K	90 FT	86 FT	95 FT	72.6	72.0	66.6	73.1
07K	90 FT	86 FT	105 FT	72.6	72.1	66.2	73.1
08K	90 FT	86 FT	115 FT	72.5	72.0	65.8	72.9
09K	90 FT	86 FT	125 FT	72.5	72.0	65.5	72.9
10K	90 FT	86 FT	135 FT	72.5	72.0	65.1	72.8
11K	90 FT	86 FT	145 FT	72.5	72.0	64.7	72.7
12K	90 FT	86 FT	155 FT	72.5	72.2	64.3	72.9
13K	90 FT	86 FT	165 FT	72.5	72.2	63.9	72.8
14K	90 FT	86 FT	175 FT	72.5	72.3	63.6	72.8
05L	96 FT	94 FT	85 FT	72.1	69.1	63.0	70.1
06L	96 FT	94 FT	95 FT	72.0	69.4	62.7	70.2
07L	96 FT	94 FT	105 FT	72.0	69.3	62.4	70.1
08L	96 FT	94 FT	115 FT	72.0	69.3	62.1	70.1
09L	96 FT	94 FT	125 FT	72.0	69.2	61.7	69.9
10L	96 FT	94 FT	135 FT	71.9	69.2	61.4	69.9
11L	96 FT	94 FT	145 FT	71.9	69.2	61.0	69.8
12L	96 FT	94 FT	155 FT	71.9	69.3	60.6	69.9
13L	96 FT	94 FT	165 FT	71.9	69.2	60.3	69.7
14L	96 FT	94 FT	175 FT	71.8	69.3	59.9	69.8
05M	126 FT	121 FT	85 FT	70.7	67.2	61.5	68.2
06M	126 FT	121 FT	95 FT	70.7	67.3	61.3	68.3
07M	126 FT	121 FT	105 FT	70.6	67.3	61.0	68.2
08M	126 FT	121 FT	115 FT	70.6	67.4	60.8	68.3

TABLE VI-3 (CONTINUED)
CHINATOWN HOTEL
EXISTING AND FUTURE TRAFFIC PLUS HART NOISE LEVELS
(FUTURE WITH PROJECT CONDITION)

RECEPTOR LOCATION	SETBACK DIST. FROM HART GW C.L.	SETBACK DIST. FROM NIMITZ HWY C.L.	RECEPTOR EAR ELEVATION ABOVE GROUND	EXISTING (CY 2022) DNL	FUTURE (CY 2025) LEVELS TRAFFIC DNL	HART GW DNL	TOTAL DNL
09M	126 FT	121 FT	125 FT	70.6	67.5	60.6	68.3
10M	126 FT	121 FT	135 FT	70.5	67.5	60.3	68.3
11M	126 FT	121 FT	145 FT	70.5	67.5	60.0	68.2
12M	126 FT	121 FT	155 FT	70.5	67.6	59.7	68.3
13M	126 FT	121 FT	165 FT	70.4	67.6	59.4	68.2
14M	126 FT	121 FT	175 FT	70.4	67.5	59.1	68.1
05N	151 FT	145 FT	85 FT	69.6	66.0	60.3	67.0
06N	151 FT	145 FT	95 FT	69.7	66.2	60.2	67.2
07N	151 FT	145 FT	105 FT	69.7	66.4	60.0	67.3
08N	151 FT	145 FT	115 FT	69.7	66.4	59.8	67.3
09N	151 FT	145 FT	125 FT	69.6	66.4	59.6	67.2
10N	151 FT	145 FT	135 FT	69.6	66.4	59.4	67.2
11N	151 FT	145 FT	145 FT	69.6	66.5	59.2	67.2
12N	151 FT	145 FT	155 FT	69.6	66.5	58.9	67.2
13N	151 FT	145 FT	165 FT	69.5	66.5	58.7	67.2
14N	151 FT	145 FT	175 FT	69.5	66.5	58.5	67.1
05O	176 FT	170 FT	85 FT	68.8	65.2	59.3	66.2
06O	176 FT	170 FT	95 FT	68.8	65.3	59.2	66.2
07O	176 FT	170 FT	105 FT	68.8	65.4	59.0	66.3
08O	176 FT	170 FT	115 FT	68.8	65.5	58.9	66.4
09O	176 FT	170 FT	125 FT	68.8	65.6	58.7	66.4
10O	176 FT	170 FT	135 FT	68.8	65.5	58.6	66.3
11O	176 FT	170 FT	145 FT	68.8	65.7	58.4	66.4
12O	176 FT	170 FT	155 FT	68.8	65.7	58.2	66.4
13O	176 FT	170 FT	165 FT	68.7	65.7	58.0	66.4
14O	176 FT	170 FT	175 FT	68.7	65.6	57.8	66.3
05P	200 FT	194 FT	85 FT	68.0	64.5	58.4	65.4
06P	200 FT	194 FT	95 FT	68.0	64.5	58.3	65.4
07P	200 FT	194 FT	105 FT	68.0	64.7	58.2	65.6
08P	200 FT	194 FT	115 FT	68.0	64.7	58.1	65.6
09P	200 FT	194 FT	125 FT	68.0	64.8	58.0	65.6
10P	200 FT	194 FT	135 FT	68.0	64.8	57.8	65.6

TABLE VI-3 (CONTINUED)
CHINATOWN HOTEL
EXISTING AND FUTURE TRAFFIC PLUS HART NOISE LEVELS
(FUTURE WITH PROJECT CONDITION)

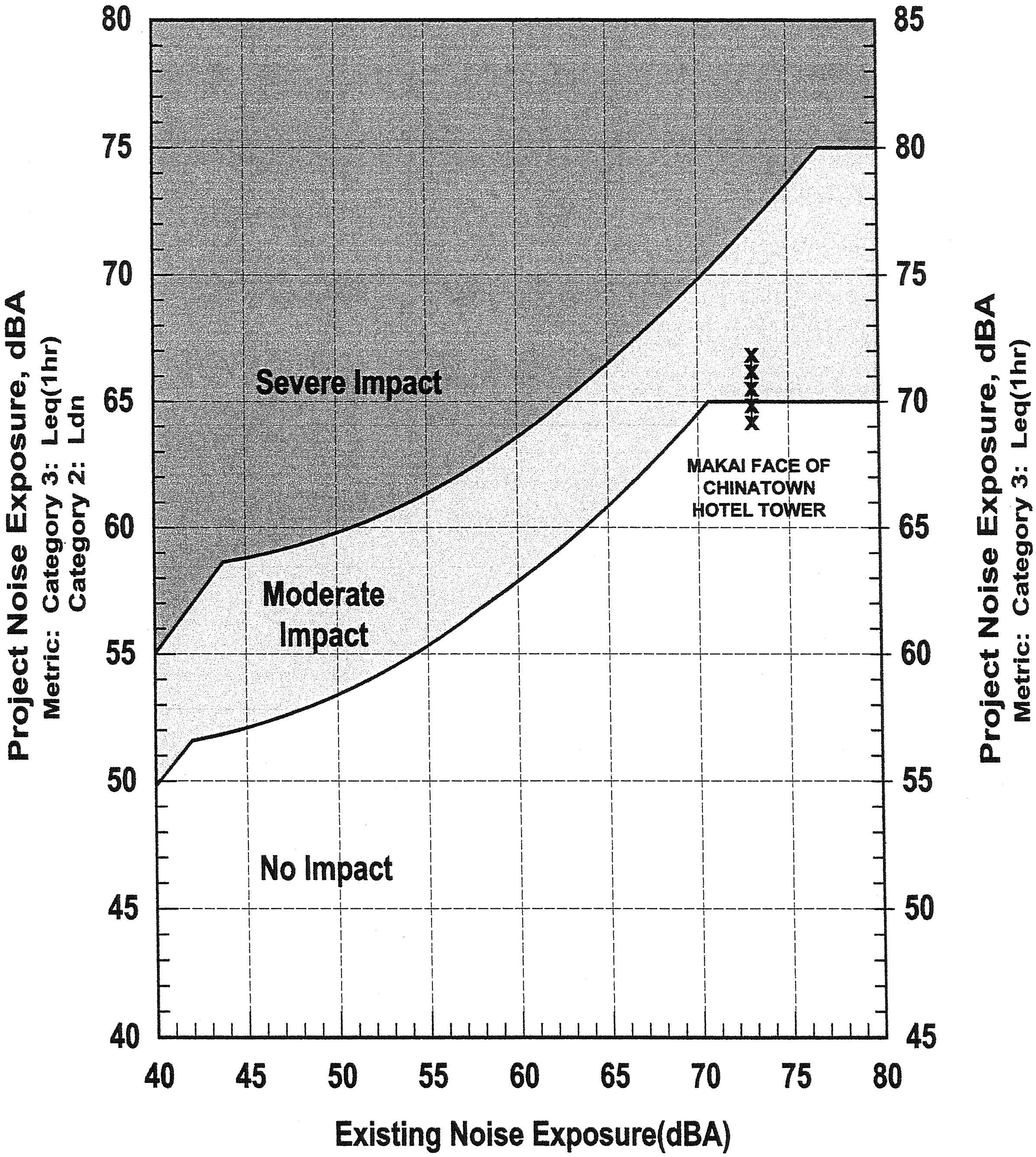
RECEPTOR LOCATION	SETBACK DIST. FROM HART GW C.L.	SETBACK DIST. FROM NIMITZ HWY C.L.	RECEPTOR EAR ELEVATION ABOVE GROUND	EXISTING (CY 2022) DNL	FUTURE (CY 2025) LEVELS TRAFFIC DNL	HART GW DNL	TOTAL DNL
11P	200 FT	194 FT	145 FT	68.0	64.8	57.7	65.6
12P	200 FT	194 FT	155 FT	68.0	64.9	57.5	65.6
13P	200 FT	194 FT	165 FT	67.9	64.9	57.4	65.6
14P	200 FT	194 FT	175 FT	67.9	64.8	57.2	65.5
05Q	218 FT	212 FT	85 FT	67.5	64.0	57.8	64.9
06Q	218 FT	212 FT	95 FT	67.5	64.1	57.7	65.0
07Q	218 FT	212 FT	105 FT	67.6	64.3	57.6	65.1
08Q	218 FT	212 FT	115 FT	67.5	64.2	57.5	65.0
09Q	218 FT	212 FT	125 FT	67.5	64.3	57.4	65.1
10Q	218 FT	212 FT	135 FT	67.5	64.4	57.3	65.2
11Q	218 FT	212 FT	145 FT	67.5	64.4	57.2	65.2
12Q	218 FT	212 FT	155 FT	67.5	64.4	57.0	65.1
13Q	218 FT	212 FT	165 FT	67.4	64.4	56.9	65.1
14Q	218 FT	212 FT	175 FT	67.4	64.3	56.8	65.0
05R	277 FT	277 FT	85 FT	65.9	62.1	56.7	63.2
06R	277 FT	277 FT	95 FT	66.0	62.0	56.6	63.1
07R	277 FT	277 FT	105 FT	66.0	62.1	56.6	63.2
08R	277 FT	277 FT	115 FT	66.0	62.0	56.5	63.1
09R	277 FT	277 FT	125 FT	66.0	61.8	56.5	62.9
10R	277 FT	277 FT	135 FT	66.0	62.2	56.4	63.2
11R	277 FT	277 FT	145 FT	66.0	62.0	56.3	63.0
12R	277 FT	277 FT	155 FT	66.0	61.9	56.2	62.9
13R	277 FT	277 FT	165 FT	65.9	62.1	56.1	63.1
14R	277 FT	277 FT	175 FT	65.9	61.8	56.0	62.8
05S	259 FT	256 FT	85 FT	66.4	61.6	57.2	62.9
06S	259 FT	256 FT	95 FT	66.4	61.5	57.1	62.8
07S	259 FT	256 FT	105 FT	66.4	61.7	57.0	63.0
08S	259 FT	256 FT	115 FT	66.5	61.5	57.0	62.8
09S	259 FT	256 FT	125 FT	66.4	61.2	56.9	62.6
10S	259 FT	256 FT	135 FT	66.4	61.6	56.8	62.8
11S	259 FT	256 FT	145 FT	66.4	61.2	56.7	62.5
12S	259 FT	256 FT	155 FT	66.4	61.9	56.6	63.0

TABLE VI-3 (CONTINUED)
CHINATOWN HOTEL
EXISTING AND FUTURE TRAFFIC PLUS HART NOISE LEVELS
(FUTURE WITH PROJECT CONDITION)

RECEPTOR LOCATION	SETBACK DIST. FROM HART GW C.L.	SETBACK DIST. FROM NIMITZ HWY C.L.	RECEPTOR EAR ELEVATION ABOVE GROUND	EXISTING (CY 2022) DNL	FUTURE (CY 2025) LEVELS TRAFFIC DNL	HART GW DNL	TOTAL DNL
13S	259 FT	256 FT	165 FT	66.3	62.3	56.5	63.3
14S	259 FT	256 FT	175 FT	66.3	62.1	56.4	63.1
05T	246 FT	243 FT	85 FT	66.7	62.9	57.5	64.0
06T	246 FT	243 FT	95 FT	66.7	62.8	57.5	63.9
07T	246 FT	243 FT	105 FT	66.7	62.9	57.4	64.0
08T	246 FT	243 FT	115 FT	66.7	62.9	57.3	64.0
09T	246 FT	243 FT	125 FT	66.7	62.9	57.2	63.9
10T	246 FT	243 FT	135 FT	66.6	62.8	57.1	63.8
11T	246 FT	243 FT	145 FT	66.6	62.8	57.0	63.8
12T	246 FT	243 FT	155 FT	66.6	62.8	56.9	63.8
13T	246 FT	243 FT	165 FT	66.6	62.8	56.8	63.8
14T	246 FT	243 FT	175 FT	66.5	62.7	56.7	63.7
05U	232 FT	229 FT	85 FT	67.0	63.1	58.0	64.3
06U	232 FT	229 FT	95 FT	67.0	63.1	57.9	64.2
07U	232 FT	229 FT	105 FT	67.0	63.1	57.8	64.2
08U	232 FT	229 FT	115 FT	67.0	63.2	57.7	64.3
09U	232 FT	229 FT	125 FT	66.9	63.1	57.6	64.2
10U	232 FT	229 FT	135 FT	66.9	63.1	57.5	64.2
11U	232 FT	229 FT	145 FT	66.9	63.1	57.4	64.1
12U	232 FT	229 FT	155 FT	66.9	63.0	57.3	64.0
13U	232 FT	229 FT	165 FT	66.8	63.0	57.2	64.0
14U	232 FT	229 FT	175 FT	66.7	63.0	57.0	64.0

FIGURE VI-1

FTA NOISE IMPACT CRITERIA FOR CATEGORY 2 LAND USE AT CHINATOWN HOTEL



buildings are constructed in the future on adjacent lots. On the makai face of the hotel, future noise levels will probably exceed 72 DNL by CY 2025, but could exceed 74 DNL following the start of HART rail operations after CY 2025 if traffic noise levels along Nimitz Highway increase after CY 2025. On the Diamond Head face of the tower building, future traffic plus HART noise levels will probably exceed the 65 DNL FHA/HUD noise standard at all guest units makai of LOC XXE. On the Ewa face of the tower building, future traffic plus HART noise levels will probably exceed the 65 DNL FHA/HUD noise standard at all guest units makai of LOC XXQ.

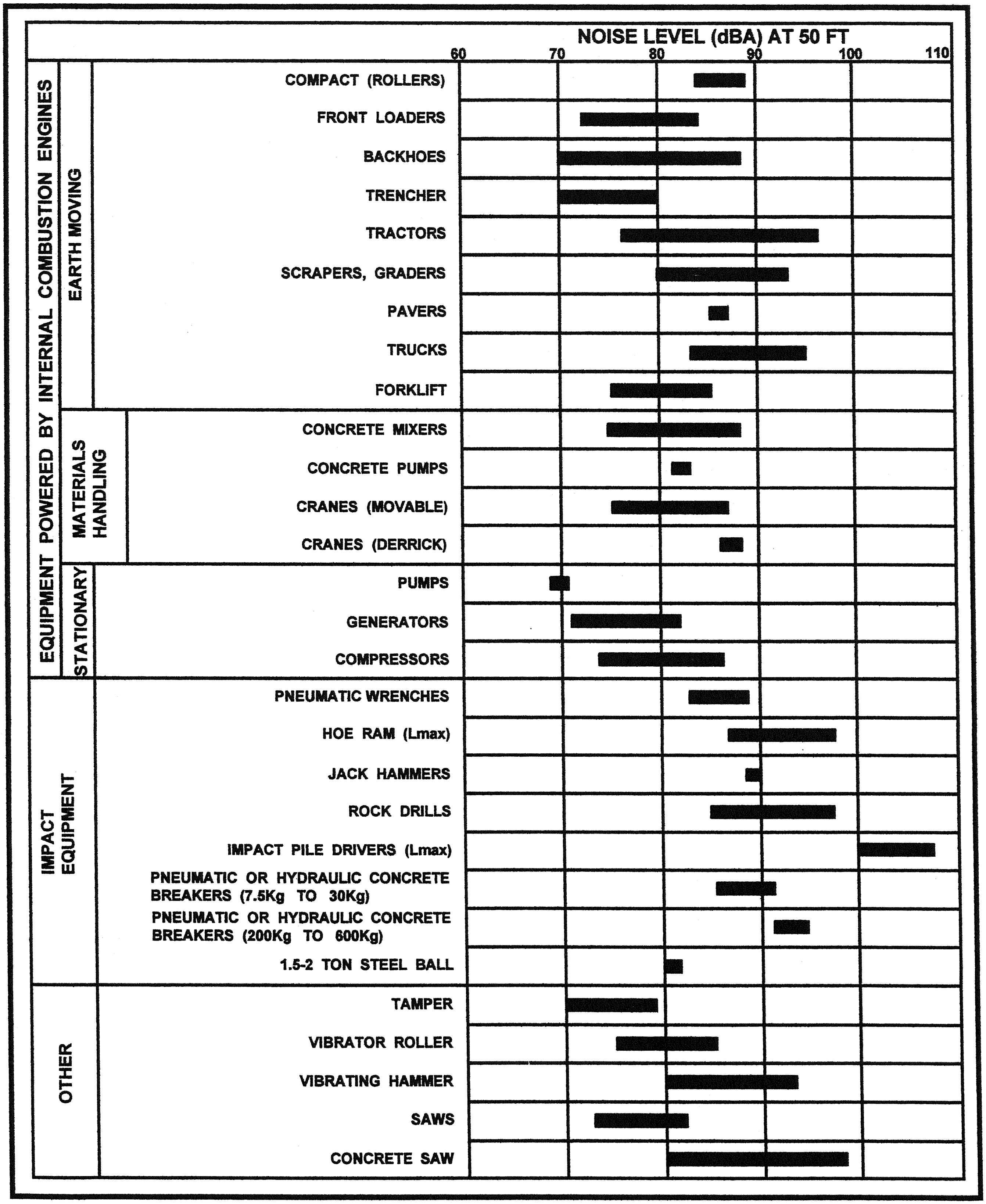
CHAPTER VII. DISCUSSION OF PROJECT-RELATED NOISE IMPACTS AND POSSIBLE MITIGATION MEASURES

Traffic Noise. For the units in the proposed Chinatown Hotel building, where future traffic plus HART noise levels shown in the rightmost column of Table VI-3 exceed 65 DNL, noise mitigation measures are recommended, even if FHA/HUD is not involved with the hotel project. Closure and air conditioning of the units in the building is an effective noise mitigation measure for this project which the hotel guests may expect. Approximately 30 dBA of exterior-to-interior noise reduction is recommended for those guest units which have unobstructed lines-of-sight to Nimitz Highway, and which are makai of LOC XXQ and makai of LOC XXE, where future traffic plus HART noise levels are predicted to exceed 65 DNL. On the mauka face of the Chinatown Hotel building, future traffic noise levels from North King Street are not expected to exceed 65 DNL by 2025, so noise mitigation measures should not be required at the mauka guest units. Similarly, guest units mauka of LOC XXP and mauka of the two ADA guest units at LOC XXF should not require noise mitigation measures

Noise impacts from project related traffic along the roadways which are expected to service the project traffic are not expected due to the relatively low levels of project related traffic noise when compared to the noise levels of non-project related traffic and other noise sources.

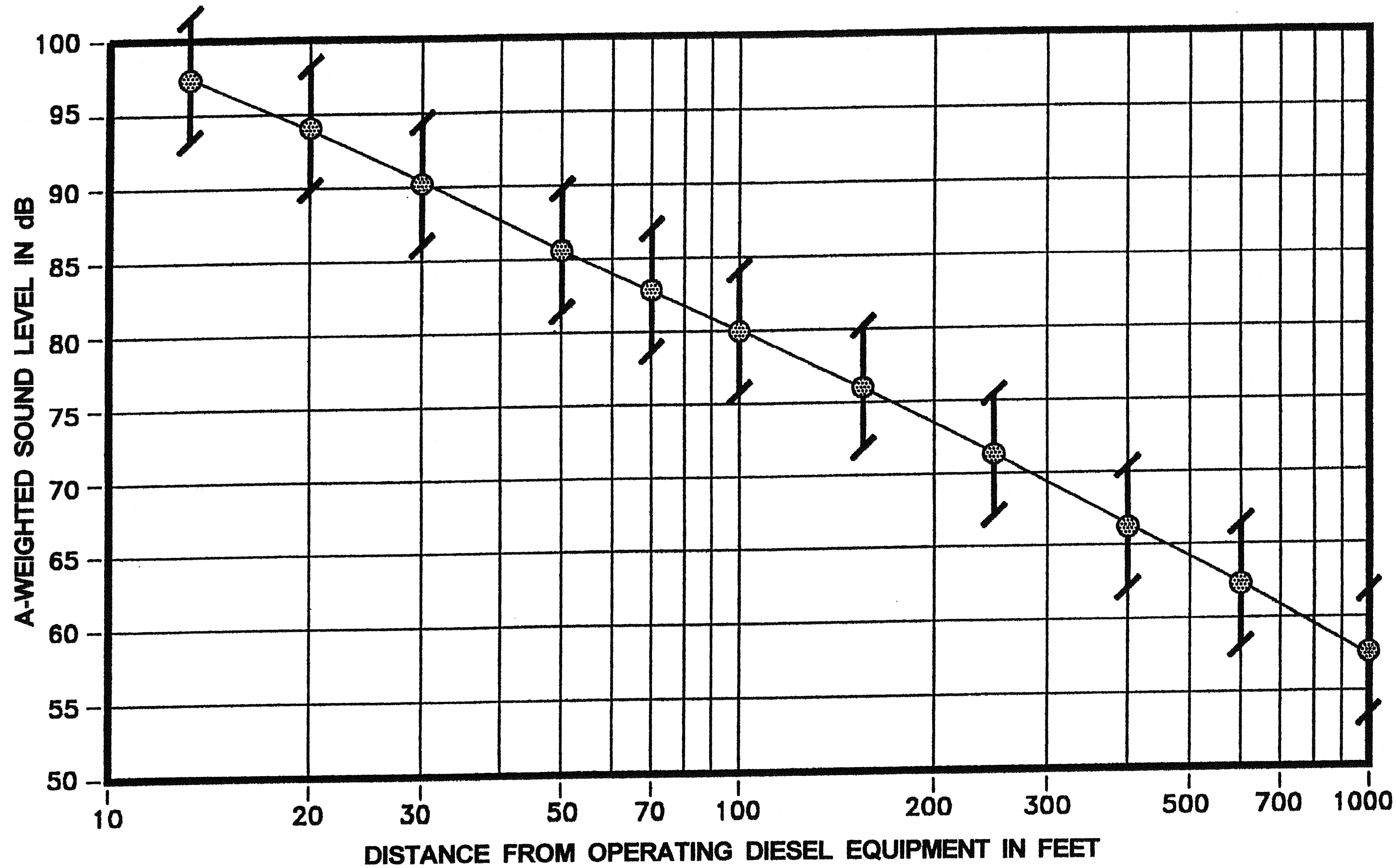
General Construction Noise. Audible construction noise will probably be unavoidable during the entire project construction period. The total time period for construction is unknown, but it is anticipated that the actual work will be moving from one location on the project site to another during that period. Actual length of exposure to construction noise at any receptor location will probably be less than the total construction period for the entire project. Figure VII-1 depicts the range of noise levels of various types of construction equipment when measured at 50 FT distance from the equipment. Typical levels of exterior noise from construction activity (excluding pile driving activity) at various distances from the job site are shown in Figure VII-2. The impulsive noise levels of impact pile drivers are approximately 15 dB higher than the levels shown in Figure VII-2, while the intermittent noise levels of vibratory pile drivers are at the upper end of the noise level ranges depicted in the figure.

Figure VII-2 is useful for predicting exterior noise levels at short distances (within 100 FT) from the work when visual line of sight exists between the construction equipment and the receptor. Direct line-of-sight distances from the construction equipment to existing residential and commercial buildings will range from 13 FT to 130 FT, with corresponding average noise levels of 100 to 80 dBA (plus or minus 5 dBA). For receptors along a cross-street, the construction noise level vs. distance curve of Figure VII-2 should be reduced by approximately 8 dBA when the work is occurring at the intersection with the cross street, and should be reduced by 15 dBA when work is occurring at least 100 FT from the intersection (and the visual line-of-sight is blocked



RANGES OF CONSTRUCTION EQUIPMENT NOISE LEVELS

FIGURE VII-1



ANTICIPATED RANGE OF CONSTRUCTION NOISE LEVELS VS. DISTANCE

FIGURE VII-2

intervening buildings). Typical levels of construction noise inside naturally ventilated and air conditioned structures are approximately 10 and 20 dB less, respectively, than the levels shown in Figure VII-2.

The occupants in the existing commercial buildings Ewa and mauka of the proposed Chinatown Hotel building are predicted to experience the highest noise levels during construction activities due to their close proximity (within 13 FT to 20 FT) to the Chinatown Hotel building. Predicted construction noise levels may intermittently exceed 90 dBA during earthwork activities and exceed 84 dBA during building erection activities. The closest residential condominium (Marin Tower) is located approximately 130 FT Diamond Head from the Chinatown Hotel building, with construction noise levels as high as 80 dBA possible during the site preparation phase and as high as 70 dBA possible during the building erection phase.

Adverse impacts from construction noise are not expected to be in the "public health and welfare" category due to the temporary nature of the work, and the regulation of construction noise by the State Department of Health (DOH). Instead, these impacts will probably be limited to the temporary degradation of the quality of the acoustic environment in the immediate vicinity of the project site. Mitigation of construction noise to inaudible levels will not be practical in all cases due to the intensity of construction noise sources (80 to 90+ dBA at 50 FT distance), and due to the exterior nature of the work (grading and earth moving, trenching, concrete pouring, hammering, etc.). The use of drilling and cast-in-place piles for the foundation of the project are recommended to minimize risks of potential noise and vibration impacts on the surrounding area during the construction phase. The use of properly muffled construction equipment should be required on the job site.

Severe noise impacts are not expected to occur inside air conditioned structures which are beyond 70 to 450 FT of the project construction site. Inside naturally ventilated structures, interior noise levels (with windows or doors opened) are estimated to range between 73 to 55 dBA at 70 FT to 450 FT distances from the construction site. Closure of all doors and windows facing the construction site would generally reduce interior noise levels by an additional 5 to 10 dBA. With windows and doors closed, the highest construction noise levels of 100 dBA at 13 FT should decrease to approximately 80 to 70 dBA indoors.

The incorporation of State Department of Health construction noise limits and curfew times, which are applicable throughout the State of Hawaii (Reference 4), is a noise mitigation measure which is normally applied to construction activities. Figure VII-3 depicts the normally permitted hours of construction. Noisy construction activities are not allowed on Sundays and holidays, during the early morning, and during the late evening and nighttime periods under the DOH permit procedures.

APPENDIX A. REFERENCES

(1) "Guidelines for Considering Noise in Land Use Planning and Control;" Federal Interagency Committee on Urban Noise; June 1980.

(2) "Environmental Criteria and Standards, Noise Abatement and Control, 24 FR, Part 51, Subpart B;" U.S. Department of Housing and Urban Development; July 12, l979.

(3) "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety;" Environmental Protection Agency (EPA 550/9-74-004); March 1974.

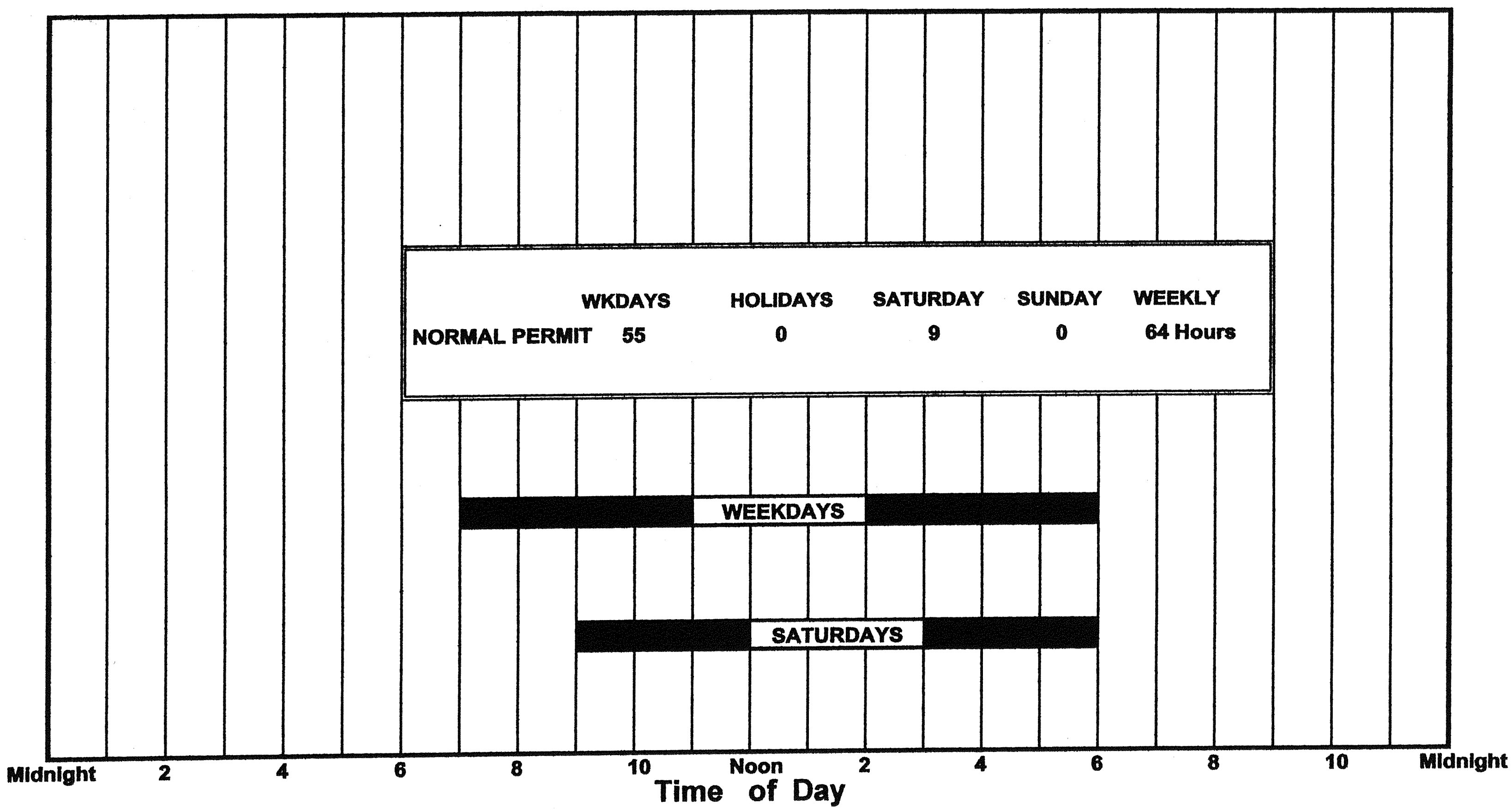
(4) "Title 11, Administrative Rules, Chapter 46, Community Noise Control;" Hawaii State Department of Health; September 23, 1996.

(5) "FHWA Traffic Noise Model User's Guide;" FHWA-PD-96-009, Federal Highway Administration; Washington, D.C.; January 1998 and Version 2.5 Upgrade (April 14, 2004).

(6) "Traffic Impact Analysis Report, Chinatown Hotel Development;" Austin, Tsutsumi & Associates, Inc.; May 4, 2022.

(7) 24-Hour Traffic Counts, Station B72009200586, Nimitz Highway At Nuuanu Stream Bridge; August 1, 2018; Hawaii State Department of Transportation.

(8) "Addendum 01 to the Noise and Vibration Technical Report, Honolulu High-Capacity Transit Corridor Project;" June 1, 2010; City and County of Honolulu;.



AVAILABLE WORK HOURS UNDER DOH PERMIT PROCEDURES FOR CONSTRUCTION NOISE

FIGURE VII-3

APPENDIX A. REFERENCES

(1) "Guidelines for Considering Noise in Land Use Planning and Control;" Federal Interagency Committee on Urban Noise; June 1980.

(2) "Environmental Criteria and Standards, Noise Abatement and Control, 24 FR, Part 51, Subpart B;" U.S. Department of Housing and Urban Development; July 12, l979.

(3) "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety;" Environmental Protection Agency (EPA 550/9-74-004); March 1974.

(4) "Title 11, Administrative Rules, Chapter 46, Community Noise Control;" Hawaii State Department of Health; September 23, 1996.

(5) "FHWA Traffic Noise Model User's Guide;" FHWA-PD-96-009, Federal Highway Administration; Washington, D.C.; January 1998 and Version 2.5 Upgrade (April 14, 2004).

(6) "Traffic Impact Analysis Report, Chinatown Hotel Development;" Austin, Tsutsumi & Associates, Inc.; May 4, 2022.

(7) 24-Hour Traffic Counts, Station B72009200586, Nimitz Highway At Nuuanu Stream Bridge; August 1, 2018; Hawaii State Department of Transportation.

(8) "Addendum 01 to the Noise and Vibration Technical Report, Honolulu High-Capacity Transit Corridor Project;" June 1, 2010; City and County of Honolulu;.

APPENDIX B

EXCERPTS FROM EPA'S ACOUSTIC TERMINOLOGY GUIDE

Descriptor Symbol Usage

The recommended symbols for the commonly used acoustic descriptors based on A-weighting are contained in Table I. As most acoustic criteria and standards used by EPA are derived from the A-weighted sound level, almost all descriptor symbol usage guidance is contained in Table I.

Since acoustic nomenclature includes weighting networks other than "A" and measurements other than pressure, an expansion of Table I was developed (Table II). The group adopted the ANSI descriptor-symbol scheme which is structured into three stages. The first stage indicates that the descriptor is a level (i.e., based upon the logarithm of a ratio), the second stage indicates the type of quantity (power, pressure, or sound exposure), and the third stage indicates the weighting network (A, B, C, D, E.....). If no weighting network is specified, "A" weighting is understood. Exceptions are the A-weighted sound level and the A-weighted peak sound level which require that the "A" be specified. For convenience in those situations in which an A-weighted descriptor is being compared to that of another weighting, the alternative column in Table II permits the inclusion of the "A". For example, a report on blast noise might wish to contrast the LCdn with the LAdn.

Although not included in the tables, it is also recommended that "Lpn" and "LepN" be used as symbols for perceived noise levels and effective perceived noise levels, respectively.

It is recommended that in their initial use within a report, such terms be written in full, rather than abbreviated. An example of preferred usage is as follows:

The A-weighted sound level (LA) was measured before and after the installation of acoustical treatment. The measured LA values were 85 and 75 dB respectively.

Descriptor Nomenclature

With regard to energy averaging over time, the term "average" should be discouraged in favor of the term "equivalent". Hence, Leq, is designated the "equivalent sound level". For Ld, Ln, and Ldn, "equivalent" need not be stated since the concept of day, night, or day-night averaging is by definition understood. Therefore, the designations are "day sound level", "night sound level", and "day-night sound level", respectively.

The peak sound level is the logarithmic ratio of peak sound pressure to a reference pressure and not the maximum root mean square pressure. While the latter is the maximum sound pressure level, it is often incorrectly labelled peak. In that sound level meters have "peak" settings, this distinction is most important.

"Background ambient" should be used in lieu of "background", "ambient", "residual", or "indigenous" to describe the level characteristics of the general background noise due to the contribution of many unidentifiable noise sources near and far.

With regard to units, it is recommended that the unit decibel (abbreviated dB) be used without modification. Hence, DBA, PNdB, and EPNdB are not to be used. Examples of this preferred usage are: the Perceived Noise Level (Lpn was found to be 75 dB. Lpn = 75 dB). This decision was based upon the recommendation of the National Bureau of Standards, and the policies of ANSI and the Acoustical Society of America, all of which disallow any modification of bel except for prefixes indicating its multiples or submultiples (e.g., deci).

Noise Impact

In discussing noise impact, it is recommended that "Level Weighted Population" (LWP) replace "Equivalent Noise Impact" (ENI). The term "Relative Change of Impact" (RCI) shall be used for comparing the relative differences in LWP between two alternatives.

Further, when appropriate, "Noise Impact Index" (NII) and "Population Weighed Loss of Hearing" (PHL) shall be used consistent with CHABA Working Group 69 Report Guidelines for Preparing Environmental Impact Statements (1977).

APPENDIX B (CONTINUED)

TABLE I

A-WEIGHTED RECOMMENDED DESCRIPTOR LIST

TERM	SYMBOL
1. A-Weighted Sound Level	L_A
2. A-Weighted Sound Power Level	L_{WA}
3. Maximum A-Weighted Sound Level	L_{max}
4. Peak A-Weighted Sound Level	L_{Apk}
5. Level Exceeded x% of the Time	L_x
6. Equivalent Sound Level	L_{eq}
7. Equivalent Sound Level Over Time (T) (1)	$L_{eq(T)}$
8. Day Sound Level	L_d
9. Night Sound Level	L_n
10. Day-Night Sound Level	L_{dn}
11. Yearly Day-Night Sound Level	$L_{dn(Y)}$
12. Sound Exposure Level	L_{SE}

(1) Unless otherwise specified, time is in hours (e.g. the hourly equivalent level is $L_{eq(1)}$). Time may be specified in non-quantitative terms (e.g., could be speficied as $L_{eq(WASH)}$ to mean the washing cycle noise for a washing machine).

SOURCE: EPA ACCOUSTIC TERMINOLOGY GUIDE, BNA 8-14-78,

APPENDIX B (CONTINUED)

TABLE II

RECOMMENDED DESCRIPTOR LIST

TERM	A-WEIGHTING	ALTERNATIVE(1) A-WEIGHTING	OTHER(2) WEIGHTING	UNWEIGHTED
1. Sound (Pressure)(3) Level	L_A	L_{pA}	L_B, L_{pB}	L_p
2. Sound Power Level	L_{WA}		L_{WB}	L_W
3. Max. Sound Level	L_{max}	L_{Amax}	L_{Bmax}	L_{pmax}
4. Peak Sound (Pressure) Level	L_{Apk}		L_{Bpk}	L_{pk}
5. Level Exceeded x% of the Time	L_x	L_{Ax}	L_{Bx}	L_{px}
6. Equivalent Sound Level	L_{eq}	L_{Aeq}	L_{Beq}	L_{peq}
7. Equivalent Sound Level (4) Over Time(T)	$L_{eq(T)}$	$L_{Aeq(T)}$	$L_{Beq(T)}$	$L_{peq(T)}$
8. Day Sound Level	L_d	L_{Ad}	L_{Bd}	L_{pd}
9. Night Sound Level	L_n	L_{An}	L_{Bn}	L_{pn}
10. Day-Night Sound Level	L_{dn}	L_{Adn}	L_{Bdn}	L_{pdn}
11. Yearly Day-Night Sound Level	$L_{dn(Y)}$	$L_{Adn(Y)}$	$L_{Bdn(Y)}$	$L_{pdn(Y)}$
12. Sound Exposure Level	L_S	L_{SA}	L_{SB}	L_{Sp}
13. Energy Average Value Over (Non-Time Domain) Set of Observations	$L_{eq(e)}$	$L_{Aeq(e)}$	$L_{Beq(e)}$	$L_{peq(e)}$
14. Level Exceeded x% of the Total Set of (Non-Time Domain) Observations	$L_{x(e)}$	$L_{Ax(e)}$	$L_{Bx(e)}$	$L_{px(e)}$
15. Average L_x Value	L_x	L_{Ax}	L_{Bx}	L_{px}

(1) "Alternative" symbols may be used to assure clarity or consistency.

(2) Only B-weighting shown. Applies also to C,D,E,.....weighting.

(3) The term "pressure" is used only for the unweighted level.

(4) Unless otherwise specified, time is in hours (e.g., the hourly equivalent level is Leq(1). Time may be specified in non-quantitative terms (e.g., could be specified as Leq(WASH) to mean the washing cycle noise for a washing machine.

APPENDIX C

SUMMARY OF BASE YEAR AND FUTURE YEAR TRAFFIC VOLUMES

ROADWAY LANES	**** CY 2022 *****		CY 2025 (NO BUILD)		CY 2025 (BUILD)	
	AM VPH	PM VPH	AM VPH	PM VPH	AM VPH	PM VPH
Nimitz Hwy. E. of Maunakea St. (EB)	3,112	3,126	3,113	3,127	3,113	3,127
Nimitz Hwy. E. of Maunakea St. (WB)	2,033	3,266	2,034	3,267	2,030	3,282
Two-Way	5,145	6,392	5,147	6,394	5,143	6,409
Nimitz Hwy. Between Maunakea & Proj. Rd. 1(EB)	3,112	3,126	3,113	3,127	3,113	3,127
Nimitz Hwy. Between Maunakea & Proj. Rd. 1(WB)	2,161	3,305	2,162	3,306	2,158	3,324
Two-Way	5,272	6,431	5,275	6,433	5,271	6,451
Nimitz Hwy. Between Proj. Rd. 1 & Proj. Rd. 2(EB)					3,113	3,127
Nimitz Hwy. Between Proj. Rd. 1 & Proj. Rd. 2(WB)	N/A	N/A	N/A	N/A	2,139	3,250
Two-Way	N/A	N/A	N/A	N/A	5,252	6,377
Nimitz Hwy. Between Proj. Rd. 2 & Proj. Rd. 3(EB)					3,113	3,127
Nimitz Hwy. Between Proj. Rd. 2 & Proj. Rd. 3(WB)	N/A	N/A	N/A	N/A	2,184	3,278
Two-Way	N/A	N/A	N/A	N/A	5,297	6,405
Nimitz Hwy. W. of Proj. Rd. 3(EB)	3,112	3,126	3,113	3,127	3,113	3,127
Nimitz Hwy. W. of Proj. Rd. 3(WB)	2,146	3,256	2,147	3,257	2,184	3,278
Two-Way	5,258	6,382	5,260	6,384	5,297	6,405
Maunakea St. Between Nimitz and N. King. (SB)	120	87	120	87	119	89
One-Way	120	87	120	87	119	89
Maunakea St. N. of N. King. (SB)	304	235	304	235	304	235
One-Way	304	235	304	235	304	235
N. King St. W. of Maunakea (EB)	1,464	1,502	1,466	1,504	1,477	1,512
One-Way	1,464	1,502	1,466	1,504	1,477	1,512
N. King St. E. of Maunakea (EB)	1,645	1,654	1,647	1,656	1,659	1,662
One-Way	1,645	1,654	1,647	1,656	1,659	1,662

NOTES:

1. HDOT 8/1/18 Ratio of Westbound Traffic Volume from 3:30 to 5:30 PM to Westbound Traffic Volume from 7:00 to 9:00 AM was 1.60.
   TIAR 1/27/22 Ratio of Westbound Traffic Volume from 3:30 to 5:30 PM to Westbound Traffic Volume from 7:00 to 9:00 AM was 1.62.
2. HDOT 8/1/18 Ratio of Eastbound to Westbound Traffic Volume from 7:00 to 9:00 AM was 1.45.
   HDOT 8/1/18 Ratio of Eastbound to Westbound Traffic Volume from 3:30 to 5:30 PM was 0.96.
3. HDOT 8/1/18 Traffic Counts used for noise study because Ratio of PM Westbound to AM Westbound traffic agreed with TIAR 1/27/22 counts.
4. Existing and 2025 Baseline AM peak hour Eastbound traffic volumes were assumed to be 1.45 x TIAR AM peak hour Westbound traffic volumes.
5. Existing and 2025 Baseline PM peak hour Eastbound traffic volumes were assumed to be 0.96 x TIAR PM peak hour Westbound traffic volumes.

FORD & ASSOCIATES, INC.
ENVIRONMENTAL SCIENTISTS & ENGINEERS

Phase II
Environmental Site Assessment

Former Gas Station Investigation
128 North Nimitz Highway
Tax Map Key [TMK]: [1] 1-7-002: Parcel 013, Portions of 023 and 050
Honolulu, Oahu, Hawaii

FAI Project No. 22-1991

April 26, 2022

Prepared for:

C.Q. Yee Hop & Company, Limited and Yee Hop Realty, Limited
c/o Mr. Robert Strand
Carlsmith Ball LLP
1001 Bishop Street, Suite 2100
Honolulu, Hawaii 96813

Prepared by:

Ford & Associates, Inc.
928 Nuuanu Avenue, Suite 505
Honolulu, Hawaii 96817
808.426.6927

TABLE OF CONTENTS

LIST OF ACRONYMS

bgs	below ground surface
C/I EAL	HDOH Tier 1 Commercial/Industrial Environmental Action Level
COPC	Chemicals of potential concern
DRO	Diesel Range Organics
DU	Decision Unit
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
FAI	Ford & Associates, Inc.
Geotek	Geotek Hawaii, Inc.
GPR	Ground Penetrating Radar
GRO	Gasoline Range Organics
HDOH	State of Hawaii Department of Health
HEER	Hazard Evaluation and Emergency Response
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
mL	milliliter
PAH	Polynuclear Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyls
PID	Photoionization detector
ppmv	parts per million by volume
PVC	polyvinyl chloride
QA/QC	Quality Assurance/Quality Control
REC	Recognized Environmental Condition
RRO	Residual Range Organics
SOP	Standard Operating Procedure
TMK	Tax Map Key
TPH	Total Petroleum Hydrocarbons
UIC	Underground Injection Control
Unrestricted EAL	HDOH Tier 1 Unrestricted Environmental Action Level
USGS	United States Geologic Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

Carlsmith Ball LLP, on behalf of C.Q. Yee Hop & Company, Limited and Yee Hop Realty, Limited, retained Ford & Associates, Inc. (FAI) to perform a Phase II Environmental Site Assessment of the former gas station located at 128 North Nimitz Highway (Tax Map Key Numbers [TMKs]: [1] 1-7-002: Parcel 013 and portions of Parcels 023 and 050) in Honolulu, Oahu, Hawaii (herein referred to as the "site"). A Site Location Map showing the location of the site is included as Figure 1, located behind the *Figures* tab.

The site consists of a 1,746 square-foot, rectangular land parcel improved with an approximately 1,650 square-foot, three-story commercial building and associated parking lot. During a Phase I ESA conducted in December of 2021, FAI found that based on the 1955 fire insurance map and interviews with the property owners, the site formerly included a gas station with underground storage tanks (USTs). The former gas station may have also included other subsurface structures of environmental concern such as in-ground hydraulic car lifts or in-ground oil-water separators. Although no past petroleum hydrocarbon releases have been reported at the site, there is no documentation available regarding the past removal and closure of the USTs or other subsurface structures of concern. Therefore, there is a potential that the USTs and/or other subsurface structures were never removed/closed, and a potential for past petroleum hydrocarbon releases to impact the site. Based on these findings, FAI recommended conducting a Phase II ESA to assess subsurface soil and groundwater for the presence of COPC resulting from the former gas station.

FAI mobilized to the site on April 7 and 8, 2022, to perform soil and groundwater sampling activities. During this time, FAI supervised the drilling of 30 borings within a Decision Unit (identified as DU-1) established over the area of the former gas station. Soil samples were collected using the multi-increment sampling approach recommended by the State of Hawaii Department of Health (HDOH, 2017b), at intervals of zero to two feet below ground surface (bgs), two to four feet bgs, four to six feet bgs, and at the capillary fringe. After soil sampling, two borings from the DU were converted into temporary groundwater monitoring wells. Groundwater purging and sampling were performed following the well installations, using a low-flow sampling technique (HDOH, 2017b).

The four multi-increment soil samples (identified as *DU-1A*, *DU-1B*, *DU-1C*, *DU-1D*) and two groundwater samples site (identified as *DU-1-Well 1* and *DU-1-Well 2*) were submitted to Advanced Analytical Laboratory, located in Honolulu, Hawaii, and analyzed for the following:

- Total Petroleum Hydrocarbons as Gasoline Range Organics (TPH-GRO), Total Petroleum Hydrocarbons as Diesel Range Organics (TPH-DRO), and Total Petroleum Hydrocarbons as Residual Range Organics (TPH-RRO) using Environmental Protection Agency (EPA) Methods 8015M/8260D/5030B.

- Volatile Organic Compounds (VOCs) using EPA Methods 8260D/8260C/5030B.

- Polynuclear Aromatic Hydrocarbons (PAHs) using EPA Methods 8270E/8270D/3550C/3010C.

- Cadmium, Chromium, and Lead using EPA Methods 6020B/3050B/3005A.

- Polychlorinated Biphenyls (PCBs) using EPA Methods 8082A/3510C/3550C.

Key findings from the analytical results of the multi-increment soil samples are as follows:

- Lead was detected in soil samples *DU-1A* (0 to 2 feet bgs), *DU-1B* (2 to 3 feet bgs), and *DU-1C* (3 to 4 feet bgs) at concentrations ranging from 290 to 740 milligrams per kilogram (mg/kg), which exceed the Unrestricted Environmental Action Level (EAL) of 200 mg/kg and are below the Commercial/Industrial (C/I) EAL of 800 mg/kg.

- TPH-RRO was detected in soil sample *DU-1A* (0 to 2 feet bgs) at a concentration of 600 mg/kg, which exceeds the Unrestricted EAL of 500 mg/kg and is below the C/I EAL of 1,500 mg/kg.

- No COPC were detected above the laboratory reporting limits in the groundwater samples.

Based on these findings, FAI recommends submitting this investigation report to the HDOH for their review and comment. Additionally, based on the findings and HDOH guidance, further characterization of the site may be warranted to assess the extent of impacted soil at the site. However, in the event no further investigation is required, FAI recommends that a Construction Environmental Hazard Management Plan be developed to provide guidance on proper management of impacted soil and subsurface structures that may be encountered during future redevelopment activities.

1.0 INTRODUCTION AND PURPOSE

Carlsmith Ball LLP, on behalf of C.Q. Yee Hop & Company, Limited and Yee Hop Realty, Limited, retained Ford & Associates, Inc. (FAI) to perform a Phase II Environmental Site Assessment (ESA) of the former gas station located at 128 North Nimitz Highway (Tax Map Key Numbers [TMKs]: [1] 1-7-002: Parcel 013 and portions of Parcels 023 and 050) in Honolulu, Oahu, Hawaii (herein referred to as the "site"). A Site Location Map showing the location of the site is included as Figure 1, located behind the *Figures* tab.

The site consists of a 1,746 square-foot, rectangular land parcel improved with an approximately 1,650 square-foot, three-story commercial building and associated parking lot. In December 2021, FAI conducted a Phase I ESA to assess the site for the presence of recognized environmental conditions (RECs) associated with current and historical use. As part of this investigation, FAI identified the following RECs at the site:

- Based on review of fire insurance maps from 1955, a gas station was formerly located in the northwest corner of the site, which likely included underground storage tanks (USTs). The former gas station may have also included other subsurface structures of environmental concern such as in-ground hydraulic car lifts or in-ground oil-water separators. Although no past petroleum hydrocarbon releases have been reported at the site, there was no documentation available regarding the past removal and closure of the USTs or other subsurface structures of concern. Therefore, there is a potential that the USTs and/or other subsurface structures were never removed/closed, and a potential for past petroleum hydrocarbon releases to impact the site.

- The east adjoining property was identified as a State Hazardous Waste Site (SHWS). Based on review of the State of Hawaii Department of Health (HDOH) files for the property, there was a 1,000-gallon fuel oil UST that was closed in place approximately 50 feet east-southeast and upgradient of the site. A release of fuel was identified during closure, but due to the potential to compromise the adjacent building foundations, no over excavation was conducted. The HDOH recommended the installation of a groundwater well, but this was not completed, and the release has not been issued a No Further Action status. Therefore, there is a potential that the release from this UST has impacted the site.

Based on these findings, FAI recommended conducting a Phase II ESA to assess subsurface soil and groundwater for the presence of COPC resulting from these RECs. The investigation of the former gas station is described herein, with details of the investigation of the potential impact to the site from the east adjoining SHWS provided in a separate report (FAI, 2022).

2.0 BACKGROUND

2.1 SITE DESCRIPTION

The site is located at 128 North Nimitz Highway (additional address listed for Parcel 013 is 112 North Nimitz Highway) in the densely developed Chinatown district of downtown Honolulu, Oahu, Hawaii, in a commercial setting. The City and County of Honolulu Real Property Assessment Division database designates the site as TMKs: (1) 1-7-002: Parcel 013 and portions of Parcels 023 and 050, and lists the Property Class as “Commercial.”

The site consists of a 1,746 square-foot, rectangular land parcel improved with an approximately 1,650 square-foot, three-story commercial building, and associated parking lot. The third floor and more than half of the second floor in the building collapsed in the distant past, so only a portion of the second floor remains. The building is currently used for the storage of equipment and supplies, and includes an area on the second floor where lacquer spraying and other finishing of wooden furniture is sometimes conducted. The parking lot on the site is a commercial parking lot with a manned pay booth. The northwest edge of the site includes a portion of the narrow roadway known as Gravier Lane. The approximate location of the site is shown on Figure 2, located behind the *Figures* tab.

2.2 PHYSICAL SETTING

2.2.1 Soils/Geology

According to the United States Geologic Survey (USGS), Honolulu, Hawaii, 7.5-minute topographic quadrangle map (USGS, 2013), the site lies at an elevation of approximately 8 to 12 feet above mean sea level. The topography of the site and surrounding region is generally level.

According to the Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai (Foote, D.E. et al., 1972), the type of soil underlying the site is classified as the following:

- Ewa silty clay loam, moderately shallow, 0 to 2 percent slopes on the majority of the site. The Ewa series consists of well-drained soils in basins and on alluvial fans. They are nearly level to moderately sloping. On the silty clay loam, runoff is very slow, and the erosion hazard is no more than slight.

- “Fill land, mixed” on the southwest portion of the site. Fill Land, mixed occurs adjacent to the ocean, mostly near Pearl Harbor and in Honolulu. Fill Land, mixed consists of areas filled with material dredged from the ocean or hauled from nearby areas, garbage, and general material from other sources, and was often used for urban development.

2.2.2 Surface Water

The nearest surface water body is Honolulu Harbor, located approximately 190 feet (58 meters) southwest of the site.

2.2.3 Groundwater

The Aquifer Identification and Classification for Oahu: Groundwater Protection Strategy for Hawaii (Mink, J.F. and L.S. Lau, 1990), published by the Water Resources Research Center at the University of Hawaii, was reviewed for information on groundwater conditions below the site. The report describes the upper and lower aquifers below the site as part of the Nuuanu aquifer system of the Honolulu sector, on the Island of Oahu.

The upper aquifer is an unconfined basal aquifer of the sedimentary type, occurring in non-volcanic lithology. Its status is described as a replaceable water supply with moderate salinity (1,000 to 5,000 milligrams per liter [mg/L] Chloride) that is currently used, but it is not used for drinking water purposes and is not considered ecologically important. This aquifer has a high vulnerability to contamination.

The lower aquifer is a confined basal aquifer of the flank type, occurring in horizontally extensive lavas. Its status is described as an irreplaceable, fresh (<250 mg/L Chloride) drinking water supply that is currently used. This aquifer has a low vulnerability to contamination.

The site is located below the HDOH Safe Drinking Water Branch defined Underground Injection Control (UIC) line. Areas above the UIC line denote potential underground drinking water sources. Areas below the UIC line generally denote groundwater that is unsuitable for drinking water purposes. Consequently, the aquifers underlying the site are not considered a potential drinking water source.

Based upon the investigation described herein, the depth to groundwater is approximately 8 to 9 feet below ground surface (bgs).

2.3 HISTORIC AND FUTURE LAND USE

The Department of Planning and Permitting database indicates that the current commercial building on the site was constructed in 1919. Based on interviews with the property owners, the second floor of the building was formerly used as a dormitory for Chinese Immigrants. It was also indicated that the site formerly included a gas station located along North Nimitz Highway, and ammonia refrigeration equipment formerly operated on the site. In addition, the structures formerly located on the site (other than the current building) were demolished and removed in 1998-1999. It is FAI's understanding that the site is intended for redevelopment.

3.0 APPLICABLE ACTION LEVELS

The applicable action levels for this project were established using the HDOH guidance document entitled "Evaluation of Environmental Hazards at Sites with Contaminated Soil and Groundwater" (HDOH, 2017a), which is published by the Hazard Evaluation and Emergency Response (HEER) of the HDOH.

The site lies below the HDOH designated UIC line; therefore, the underlying groundwater would not be considered a potential drinking water source. Additionally, the nearest surface water body Honolulu Harbor, located approximately 190 feet (58 meters) southwest from the site. Therefore, the analytical results were compared the HDOH Tier 1 Unrestricted (residential) and Commercial/Industrial (C/I) Environmental Action Levels (Unrestricted and C/I EALs, respectively) where groundwater is not a current or potential source of drinking water, and the nearest surface water body is within 150 meters of the site (HDOH, 2017a).

4.0 SCOPE OF WORK

4.1 DECISION UNIT LOCATION

FAI established one Decision Unit (DU) over the area of the former gas station (as based on the fire insurance maps) to facilitate the collection of multi-increment subsurface soil samples. A DU is an area where a decision is to be made regarding the extent and magnitude of contaminants identified within the unit, as well as the potential environmental hazards posed by the contaminants (HDOH, 2017b). The DU is actually a volume of soil that is comprised as the area of the DU multiplied by the depth of the sub-increments (i.e., one to two feet in depth).

The DU (identified as DU-1) is located on the northwestern corner of the site, as depicted on Figure 3, located behind the *Figures* tab. DU-1 measures approximately 1,600 square feet. Because of the presence of a heavily trafficked ingress/egress for the commercial parking lot at the site, the DU could not extend south to the presumed edge of the former gas station.

4.2 UTILITY CLEARANCE

In preparation for drilling, FAI submitted a Hawaii One Call locate request, which provides public utility companies with a notification of the intent to drill, and the proposed location of borings. The utility companies then mark any public utilities in proximity of the borings. No utilities were identified as a result of the Hawaii One Call locate request.

FAI also retained Geotek Hawaii, Inc. (Geotek) to perform a geophysical survey at the site on April 7, 2022, to further assess for the potential presence of subsurface utilities and structures that may have been associated with the form gas station (USTs, etc.). The survey consisted of radio detection and ground penetrating radar (GPR) over the area of the DU. Geotek found what appeared to be two abandoned pipelines which ran parallel to Nimitz Highway and through the central portion of the DU (note - several borehole refusals were also encountered in this area). To the southeast of these potentially abandoned pipelines, Geotek noted a possible anomaly at depth which covered the southeast portion of the DU but it was unknown what it might represent. Also, the area identified with the potential abandoned pipelines/anomalies is within the near vicinity of the DU boring with slight PID detection at capillary fringe/ Well 1.

4.3 DRILLING AND SOIL SAMPLING ACTIVITIES

FAI mobilized to the site on April 7, 2022, to perform drilling and soil sampling activities. During this time, FAI supervised Geotek during the drilling of 30 borings within the DU at the site. Drilling and subsurface soil sampling were performed using the direct push drilling method. Geotek drilled the borings using a track-mounted rig equipped with a 5-foot long open-barrel sampler, with an inside diameter of 1.5 inches. The sampler was fitted with a disposable acetate liner. Once the soil was retrieved from the subsurface, the acetate liner was cut open to expose the soil and facilitate the collection of the samples. The borings were drilled to approximately 10 feet bgs, and no difficulties were encountered in reaching this depth.

Soil samples were collected using the multi-increment sampling approach recommended by the HDOH (HDOH, 2017b). Four soil samples were collected from the DU at the following intervals: zero to two feet bgs, two to four feet bgs, four to six feet bgs, and at the capillary fringe. To collect each soil sample for volatile analysis, 2, 5-gram soil subsamples, evenly spaced over the sampling interval, were collected from each boring using a disposable, adjustable T-handle fitted with a core sample collector. The 5-gram soil subsamples were ejected from the sample collector into a glass jar containing 300 milliliters (mL) of methanol preservative. Following collection of soil for volatile analysis, FAI collected two soil increments of equal volume from each sample interval using a stainless steel trowel and transferred them to a 1-gallon-sized Zip-lock™ bag for non-volatile analytical testing, referred to as the bulk sample. The bulk samples were placed into a cooler containing wet ice. Both the volatile and non-volatile samples were logged on a Chain-of Custody form that accompanied the samples to the Advanced Analytical Lab, LLC.

During the sample collection process, a hand-held RAE Systems MiniRAE 2000 organic vapor analyzer photoionization detector (PID) was used to monitor for volatile organic vapors in the soil headspace. The PID was calibrated using 100 parts per million by volume (ppmv) isobutylene span gas and ambient air prior to use. Soil dedicated for headspace analysis was placed into a self-sealing plastic bag. The bag was filled until approximately one third full and the soil was crushed. The sample was allowed to volatilize for approximately 15 minutes at ambient temperature, prior to being analyzed. After the designated time, the tip of the PID was inserted into the plastic bag, and a measurement was taken. Organic vapor readings were detected in the soil samples subjected to field screening by the PID, as listed in the table below. No evidence of petroleum hydrocarbon contamination (i.e., odor, staining, etc.) was noted in the borings drilled at the site, except for one boring where FAI measured VOC concentrations less than 5 ppm and noted some petroleum odors.

A summary of the soil sample collection information is presented in the following table:

Table 4-1: Summary of Soil Sample Collection Information

Sample ID	DU ID	Date/Time	Sample Interval	PID Reading (ppm)
DU-1A	DU-1	4-07-22 / 1040 hrs	0 to 2 feet	0.0
DU-1B	DU-1	4-07-22 / 1041 hrs	2 to 4 feet	0.0
DU-1C	DU-1	4-07-22 / 1042 hrs	4 to 6 feet	0.0
DU-1D	DU-1	4-07-22 / 1043 hrs	6 to 8 feet	0.0

After completion of drilling, each boring was backfilled with bentonite chips to approximately 5 feet bgs (2 to 3 feet above the water table). The remainder of each boring was backfilled with soil cuttings from the drilling process, and capped with concrete.

4.4 GROUNDWATER SAMPLING ACTIVITIES

Following completion of the borings, FAI selected two borings from the DU for conversion to temporary groundwater monitoring wells. The borings selected included the one boring that exhibited evidence of potential petroleum contamination (i.e., low PID readings), and one boring upgradient of this location (at the locations depicted on Figure 3). Geotek installed two temporary groundwater monitoring wells (identified as DU-1-Well-1 and DU-1-Well-2) consisting of 1-inch diameter Schedule 40 polyvinyl chloride (PVC) well casing, with 0.010-inch screen size. Approximately 10 feet of screen and 5 feet of riser were inserted into the borings.

Groundwater purging and sampling were performed following the well installations, using a low-flow sampling technique (HDOH, 2017b). FAI used a down-hole bladder pump with new polyethylene tubing to purge each well and collect the groundwater sample. The depth to water was measured and recorded before well purging. To purge the well and collect the groundwater sample, the bladder pump was positioned approximately two feet below the groundwater table. The flow rate was limited to approximately one liter per minute, or less, during purging and sampling, to minimize drawdown.

FAI purged the wells until the water quality parameters (temperature, pH, conductivity, and dissolved oxygen) reached equilibrium (i.e., plus or minus 10 percent of the previous reading), or at least three casing volumes were removed. Water quality was measured with a Horiba water quality instrument. Relevant information regarding the purging and sampling activities was recorded on the groundwater sampling field data sheet presented in Appendix B. Purge water was temporarily stored onsite in 5-gallon buckets.

Groundwater for VOC-related analyses was collected using the bladder pump and transferred to pre-cleaned laboratory-supplied, 40-mL vials. The vials were filled and sealed, so that there was no headspace present. Groundwater for non-volatile analysis was collected using the bladder pump and transferred into one 1-liter amber jar, two 500-mL amber jars, and one 250-mL polypropylene container. The sample containers were filled nearly to the top and then the cap was screwed on tightly. During collection of the portion of the sample in the polypropylene container, the groundwater was pumped through a 0.45-micron disposable filter. Upon collection, the groundwater samples were immediately labeled and placed on ice to chill the samples and keep the samples at a temperature of 4 degrees ºC or below. The samples were logged on a Chain-of-Custody form that accompanied the samples and delivered to the laboratory.

A summary of the groundwater sample collection information is presented in the following table:

Table 4-2: Summary of Groundwater Sample Collection Information

Sample ID	Well ID	Date/Time	Depth to Groundwater	Petroleum Odor Noted?
DU-1-Well-1	DU-1-Well-1	4-8-22 / 0915 hrs	8.45 feet	No
DU-1-Well-2	DU-1-Well-2	4-8-22 / 1047 hrs	8.87 feet	No

After sampling the groundwater, the PVC well casing was removed from the boring. The boring was subsequently backfilled with bentonite chips to approximately 5 feet bgs. The remainder of each boring was backfilled with soil cuttings from the drilling process, and capped with concrete.

4.5 DECONTAMINATION PROCEDURES

The majority of the equipment used for soil and groundwater sampling was dedicated and disposable to prevent cross contamination between samples. In the field, new disposable gloves were donned prior to the collection of each sample. After the sample was collected, the disposable gloves were removed and discarded. New polyethylene tubing and bladders were used to collect the groundwater sample and discarded after use. Decontamination of field tools (i.e., trowels, water level meter etc.) was conducted prior to, and after, sample collection as follows:

- Removed large clumps of soil or matter attached to sampling equipment
- Washed with Alconox™
- Double rinsed with distilled water
- Air dried

4.6 CHAIN-OF-CUSTODY PROCEDURES

A Chain-of-Custody was used for the tracking of the soil samples from the field to the laboratory until the time they are analyzed. FAI retained one copy of the Chain-of-Custody form, while the original remained with the sample and the laboratory performing the analysis. The samples were hand-delivered to Advanced Analytical Laboratory, located in Honolulu, Hawaii, under standard chain-of-custody procedures.

The Chain-of-Custody form includes:

- Name, address and telephone number of sender
- Project number and name
- Sample identification number and number of containers
- Date sampled and sample matrix
- Requested analytes by Environmental Protection Agency (EPA) method
- Turnaround time information
- Any special instructions or explanation of preservatives
- Sign off on Chain-of-Custody (samplers' name/ initials)
- Authorized signature (samplers' or other signature shipping the samples)

5.0 LABORATORY ANALYTICAL RESULTS

The multi-increment soil samples collected as part of this investigation were submitted to Advanced Analytical Laboratory under Chain-of-Custody procedures. A copy of the analytical reports and Chain-of-Custody documents for the samples are presented in Appendix A. The multi-increment soil samples and groundwater samples collected from the site were analyzed for the following:

- Total Petroleum Hydrocarbons as Gasoline Range Organics (TPH-GRO), Total Petroleum Hydrocarbons as Diesel Range Organics (TPH-DRO), and Total Petroleum Hydrocarbons as Residual Range Organics (TPH-RRO) using EPA Methods 8015M/8260D/5030B.

- Volatile Organic Compounds (VOCs) using EPA Methods 8260D/8260C/5030B.

- Polynuclear Aromatic Hydrocarbons (PAHs) using EPA Methods 8270E/8270D/3550C/3010C.

- Cadmium, Chromium, and Lead using EPA Methods 6020B/3050B/3005A.

- Polychlorinated Biphenyls (PCBs) using EPA Methods 8082A/3510C/3550C.

5.1 SOIL SAMPLE ANALYTICAL RESULTS

A total of four multi-increment soil samples (identified as *DU-1A*, *DU-1B*, *DU-1C*, and *DU-1D*) were collected from the site. The laboratory analytical results for the soil samples are summarized in Table 1, located behind the *Tables* tab. Key findings of the laboratory analyses are as follows:

- Lead was detected in soil samples *DU-1A* (0 to 2 feet bgs), *DU-1B* (2 to 3 feet bgs), and *DU-1C* (3 to 4 feet bgs) at concentrations ranging from 290 to 740 milligrams per kilogram (mg/kg), which exceed the Unrestricted EAL of 200 mg/kg and are below the C/I EAL of 800 mg/kg. In the remaining soil sample, lead was not detected above the Unrestricted EAL.

- TPH-RRO was detected in soil sample *DU-1A* (0 to 2 feet bgs) at a concentration of 600 mg/kg, which exceeds the Unrestricted EAL of 500 mg/kg and is below the C/I EAL of 1,500 mg/kg. In the remaining soil samples, TPH-RRO was either not detected above the laboratory reporting limits, or detected at concentrations below the Unrestricted EAL.

- In the samples collected, TPH-GRO, TPH-DRO, VOCs, PAHs, PCBs, Cadmium, and Chromium were either not detected above the laboratory reporting limits, or detected at concentrations below their respective Unrestricted EALs.

5.2 GROUNDWATER ANALYTICAL RESULTS

A total of two groundwater samples were collected from the site (identified as *DU-1-Well 1* and *DU-1-Well 2*). The laboratory analytical results for the groundwater samples are summarized in Table 2, located behind the *Tables* tab. TPH-GRO, TPH-RRO, TPH-DRO, VOCs, PCBs, metals, and PAHs were not detected above the laboratory reporting limits in the groundwater samples. Consequently, these COPC were not detected above the Unrestricted and C/I EALs.

5.3 SUB-SAMPLING FOR LABORATORY ANALYSIS

The collection of each bulk sample for analysis resulted in approximately two to three pounds of soil, which is then processed for non-volatile testing using the multi-increment sub-sampling procedure, as recommended by the HDOH. For this procedure, the bulk sample is spread out and air dried, after which it is processed through a No. 10 (2-millimeter) sieve. The sample is then spread out in a thin, even layer. Using a small spatula, the lab then collects approximately 30 equal volume sub-samples of the fine fraction of soil from systematic random locations of the dried sample. The analyses are then performed on this representative sub-sample.

5.4 LABORATORY QUALITY ASSESSMENT/QUALITY CONTROL (QA/QC)

The samples were submitted to Advanced Analytical Laboratory for laboratory analysis. Analytical data was generated following EPA methods (SW-846 protocols), and laboratory standard operating procedures (SOP) and QA/QC guidelines for sample analysis. Common laboratory QC checks include the use of Method Blank, Matrix Spike and Matrix Spike Duplicate, and Laboratory Control and Laboratory Control Duplicate samples. The complete laboratory analytical reports and Chain-of-Custody forms are presented in Appendix A. QA/QC notes are attached to the laboratory reports.

6.0 GENERATED WASTE DISPOSAL

As part of this investigation, the following waste was generated:

- Nitrile gloves, acetate liners, and polyethylene tubing. These items were considered non-hazardous waste, and placed in a general refuse dumpster for disposal.

- Two 5-gallon buckets of groundwater well purge water and field decontamination water (a mixture of distilled water and Alconox). The buckets were temporarily stored onsite until receipt of the analytical results. As noted in Section 5.2, COPC were not detected above the laboratory reporting limits or EALs in the groundwater. Additionally, the groundwater did not contain any free product or exhibit a sheen. Therefore, per the HDOH Technical Guidance Manual (HDOH, 2017b), the groundwater can be disposed on the asphalt-paved ground surface and allowed to evaporate, so long as it is not allowed to run off into a surface water body or storm drain.

7.0 SUMMARY AND CONCLUSIONS

The purpose of this investigation was to perform subsurface soil and groundwater sampling with laboratory analysis to assess for the presence or absence of COPC resulting from the former gas station at the site. FAI mobilized to the site on April 7 and 8, 2022, to perform soil and groundwater sampling activities. During this time, FAI supervised the drilling of 30 borings within the DU (identified as DU-1). Soil samples were collected using the multi-increment sampling approach recommended by the State of Hawaii Department of Health (HDOH, 2017b), at intervals of zero to two feet bgs, two to four feet bgs, four to six feet bgs, and at the capillary fringe. After soil sampling, two borings from the DU were converted into temporary groundwater monitoring wells. Groundwater purging and sampling were performed following the well installations, using a low-flow sampling technique (HDOH, 2017b).

The four multi-increment soil samples (identified as *DU-1A*, *DU-1B*, *DU-1C*, *DU-1D*) and two groundwater samples (identified as *DU-1-Well 1* and *DU-1-Well 2*) were submitted to Advanced Analytical Laboratory, located in Honolulu, Hawaii, and analyzed for the following:

- TPH-GRO, TPH-DRO, and TPH-RRO using EPA Methods 8015M/8260D/5030B.
- VOCs using EPA Methods 8260D/8260C/5030B.
- PAHs using EPA Methods 8270E/8270D/3550C/3010C.
- Cadmium, Chromium, and Lead using EPA Methods 6020B/3050B/3005A.
- PCBs using EPA Methods 8082A/3510C/3550C.

Key findings from the analytical results of the multi-increment soil samples are as follows:

- Lead was detected in soil samples *DU-1A* (0 to 2 feet bgs), *DU-1B* (2 to 3 feet bgs), and *DU-1C* (3 to 4 feet bgs) at concentrations ranging from 290 to 740 mg/kg, which exceed the Unrestricted EAL of 200 mg/kg and are below the C/I EAL of 800 mg/kg.
- TPH-RRO was detected in soil sample *DU-1A* (0 to 2 feet bgs) at a concentration of 600 mg/kg, which exceeds the Unrestricted EAL of 500 mg/kg and is below the C/I EAL of 1,500 mg/kg.
- No COPC were detected above the laboratory reporting limits in the groundwater samples.

Based on these findings, FAI recommends submitting this investigation report to the HDOH for their review and comment. Additionally, based on the findings and HDOH guidance, further characterization of the site may be warranted to assess the extent of impacted soil at the site. However, in the event no further investigation is required, FAI recommends that a Construction Environmental Hazard Management Plan be developed to provide guidance on proper management of impacted soil and subsurface structures that may be encountered during future redevelopment activities.

8.0 LIMITATIONS

This report is for the exclusive use of Carlsmith Ball LLP, on behalf of C.Q. Yee Hop & Company, Limited and Yee Hop Realty, Limited and no other party shall have any right to rely on any service provided by FAI without prior written consent. The information and opinions expressed in this report are given in response to a limited assignment and should be considered and implemented only in light of that assignment.

The services provided by FAI in completing this project were consistent with normal standards of the profession. No other warranty, expressed or implied, is made. FAI will not distribute or publish this report without consent except as required by law or court order.

This report prepared by:____
Jeffrey Cruise
Project Engineer

This report reviewed by:____
Daniel P. Ford, P.G.
Principal Geologist

REFERENCES

REFERENCES

Ford and Associates, Inc., 2021. *Phase I Environmental Site Assessment, Commercial Property, 128 North Nimitz Highway, (TMK: [1] 1-7-002: Parcel 013 and portions of Parcels 023 and 050), Honolulu, Oahu, Hawaii*. December 1, 2021. FAI Project Number. 21-1888

Ford and Associates, Inc., 2022. *Phase II Environmental Site Assessment, State Hazardous Waste Site Investigation, 128 North Nimitz Highway, (TMK: [1] 1-7-002: Parcel 013 and portions of Parcels 023 and 050), Honolulu, Oahu, Hawaii*. April 25, 2022. FAI Project Number. 22-1991

Foote, D.E. et al., 1972. *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai and Lanai.* United States Department of Agriculture (USDA), Soil Conservation Service, in cooperation with the University of Hawaii Agricultural Experiment Station, Washington: GPO.

Hawaii Department of Health (HDOH), 1984. Underground Injection Control (UIC) Program, *Underground Injection Control Line Overlay*. Base Map: USGS 7.5 Minute Topographic Map, Honolulu, Hawaii Quadrangle.

HDOH, 2017a. *Evaluation of Environmental Hazards at Sites with Contaminated Soil and Groundwater.* HDOH Environmental Management Division. Summer 2016 (Updated Fall 2017).

HDOH, 2017b. *Technical Guidance Manual for the Implementation of the Hawai'I State Contingency Plan (Interim Final Edition).* HDOH Office of Hazard Evaluation and Emergency Response (HEER). 2017.

Aquifer Identification and Classification for Oahu: Groundwater Protection Strategy for Hawaii. Technical Report No. 179, dated 1990, prepared by Mink, J.F. and L.S. Lau

Honolulu Quadrangle, 7.5-Minute Topographic Map (2013), by US Geological Survey

FIGURES

1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000

Scale in Feet

N

USGS Topographic Map
7.5-Minute Series
Honolulu Quadrangle
1998

FORD & ASSOCIATES, INC. ENVIRONMENTAL SCIENTISTS & ENGINEERS		Site Location Map	Figure 1
Job Number: 22-1991	Created by: JRC	Project: 128 North Nimitz Highway TMK No.: (1) 1-7-002: Parcel 013, Portions of 023/050 Honolulu, Oahu, Hawaii	
Date: 4/12/22	Reviewed By: DPF	Client: C.Q. Yee Hop & Company	

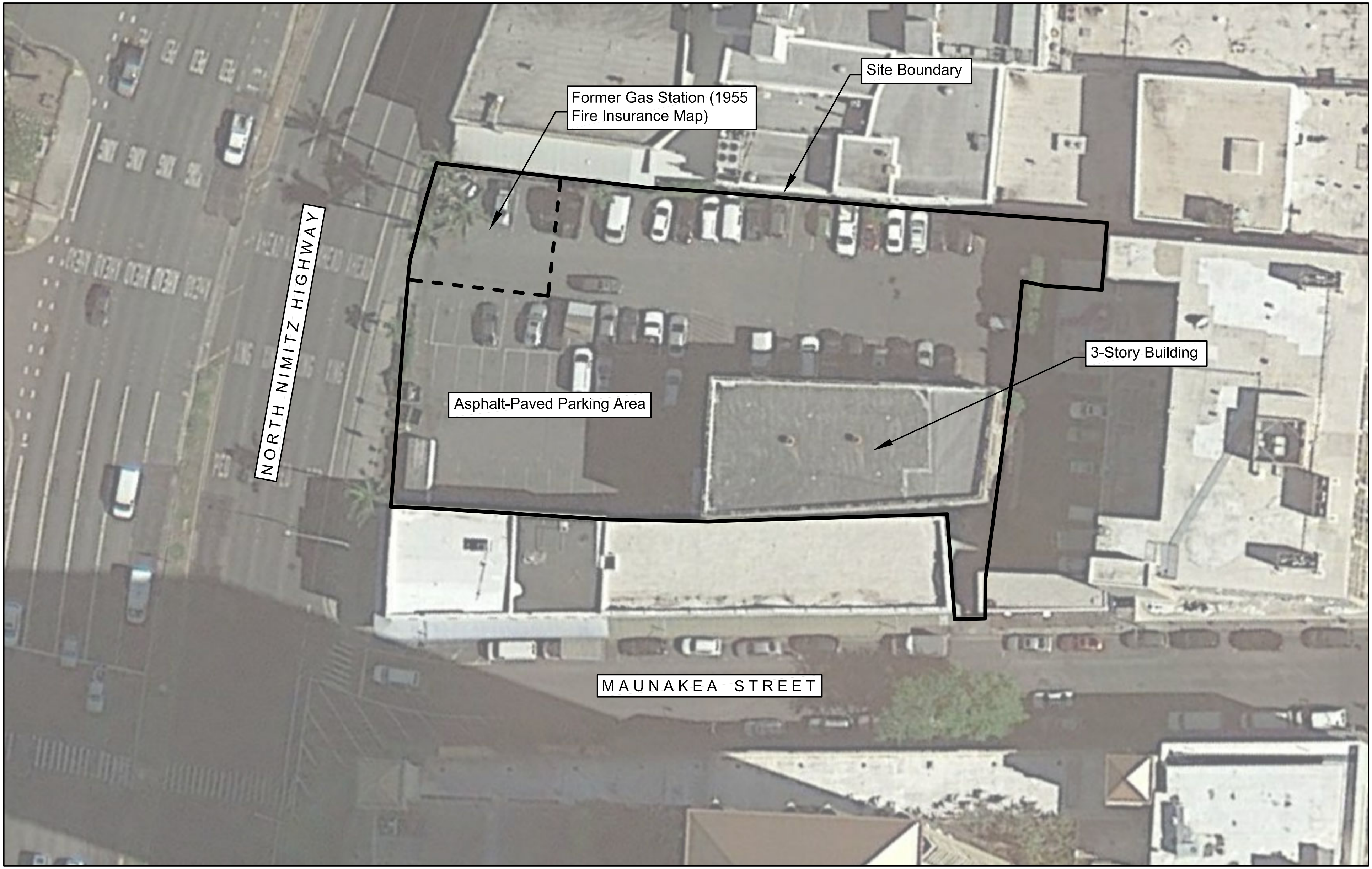


Image Source: Google Earth 2019

0 25 50 100

Scale in Feet

N

FORD & ASSOCIATES, INC.
ENVIRONMENTAL SCIENTISTS & ENGINEERS

Proposal Number: 22-1991	Created by: JRC	Site Layout Map	Figure 2
Date: 4/12/22	Reviewed By: DPF	Project: 128 North Nimitz Highway TMK No.: (1) 1-7-002: Parcel 013, Portions of 023/050 Honolulu, Oahu, Hawaii	
		Client: C.Q. Yee Hop & Company	

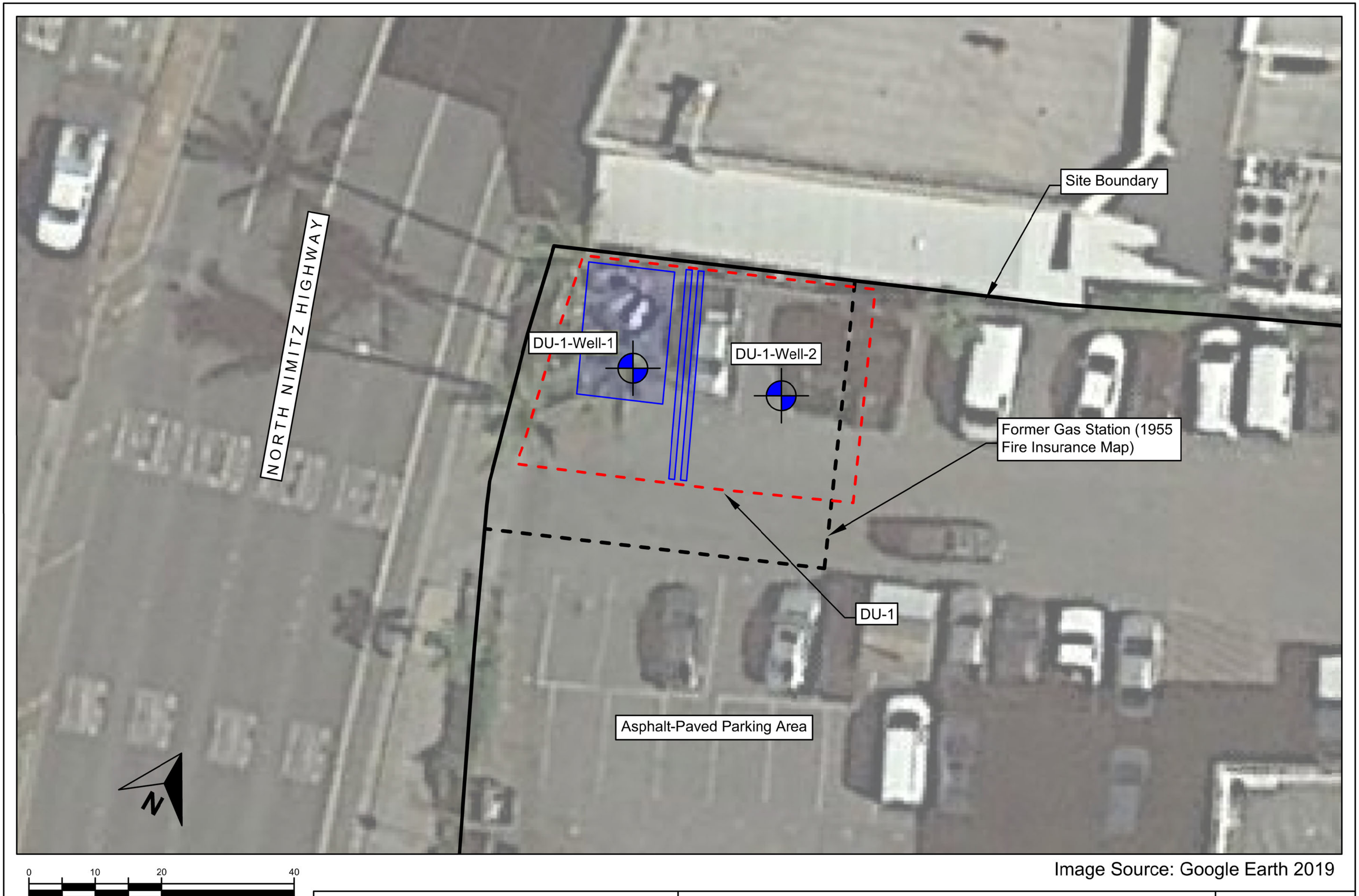
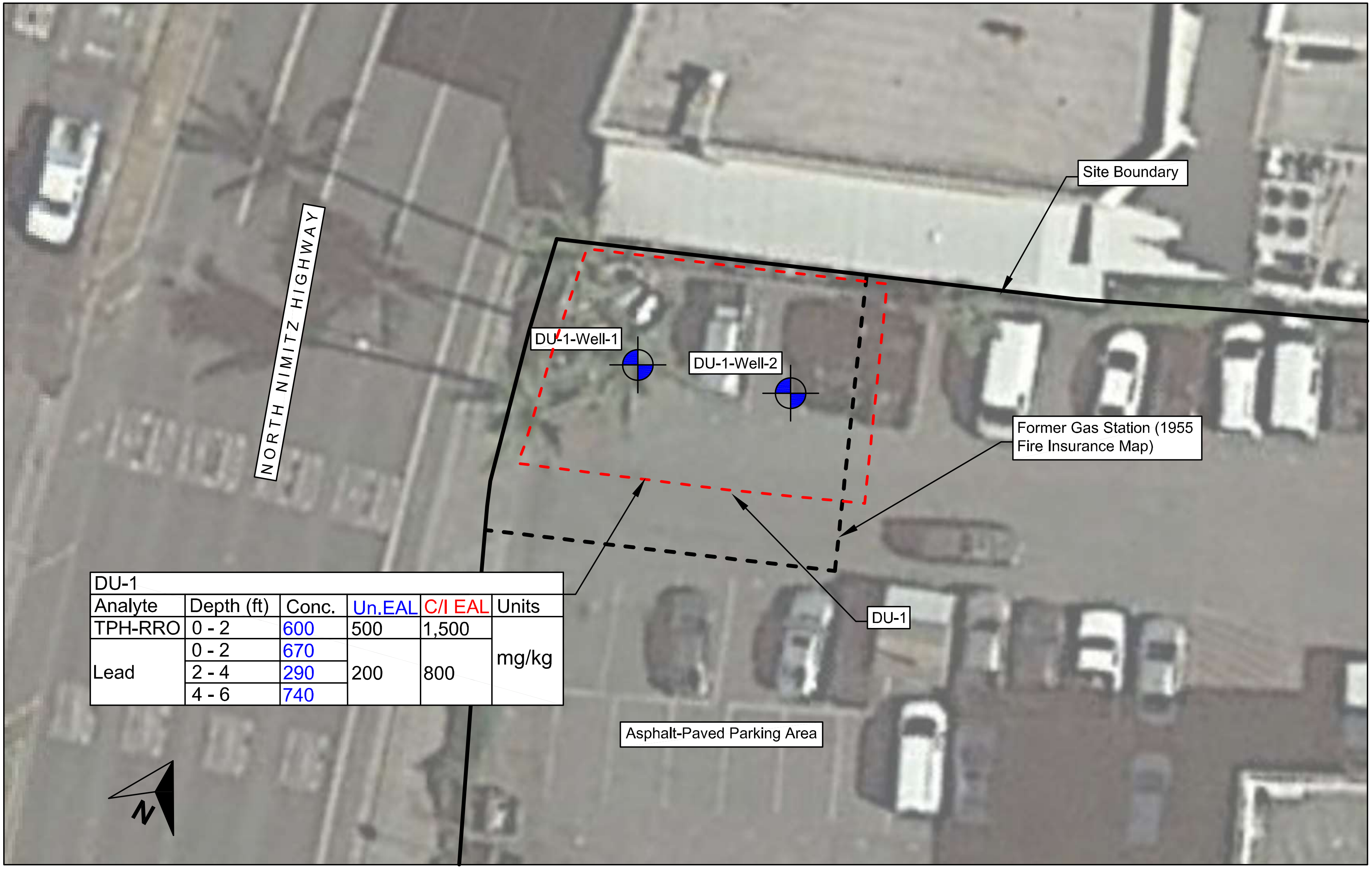


Image Source: Google Earth 2019

Ford & Associates, Inc. Environmental Scientists & Engineers		DU/Temporary Well Location Map	Figure 3
Proposal Number: 22-1991	Created by: JRC	Project: 128 North Nimitz Highway TMK No.: (1) 1-7-002: Parcel 013, Portions of 023/050 Honolulu, Oahu, Hawaii	
Date: 4/12/22	Reviewed By: DPF	Client: C.Q. Yee Hop & Company	



DU-1					
Analyte	Depth (ft)	Conc.	Un.EAL	C/I EAL	Units
TPH-RRO	0 - 2	600	500	1,500	mg/kg
Lead	0 - 2	670	200	800	
	2 - 4	290			
	4 - 6	740			

Image Source: Google Earth 2019

0 10 20 40
Scale in Feet

Decision Unit Boundary

Boring/Temp Well

FORD & ASSOCIATES, INC.
ENVIRONMENTAL SCIENTISTS & ENGINEERS

Proposal Number: 22-1991	Created by: JRC		
Date: 4/25/22	Reviewed By: DPF		

Analytical Results Exceeding EALs

Project: 128 North Nimitz Highway
TMK No.: (1) 1-7-002: Parcel 013, Portions of 023/050
Honolulu, Oahu, Hawaii

Client: C.Q. Yee Hop & Company

Figure 4

TABLES

Table 1
Summary of Soil Analytical Results
Former Gas Sation
128 North Nimitz Highway
Honolulu, Oahu, Hawaii

Project No. 21-1991

Sample ID:	DU-1A	DU-1B	DU-1C	DU-1D	HDOH Tier 1 EALs	
Sample Date:	04/07/22	04/07/22	04/07/22	04/07/22		
Depth (feet):	0.0 to 2.0	2.0 to 4.0	4.0 to 6.0	6.0 to 8.0	Unrest.	C/I
Analyte Units:	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Total Petroleum Hydrocarbons (TPH) / EPA Methods 8015M/8260D/5030B						
Gasoline Range Organics	ND< 12.5	ND< 12.5	ND< 12.5	ND< 12.5	100	500
Diesel Range Organics	ND< 50	ND< 50	ND< 50	ND< 50	220	680
Residual Range Organics	**600***	170	ND< 100	ND< 100	500	1,500
Volatile Organic Compounds (VOCs) / EPA Method 8260D/5030B						
Chloromethane	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	4.0	11
Vinyl chloride	ND< 0.020	ND< 0.020	ND< 0.020	ND< 0.020	0.036	0.99
Bromomethane	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	0.22	0.76
Chloroethane	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	12.0	12.0
Trichlorofluoromethane	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	NS	NS
1,1-Dichloroethene	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	4.2	4.2
Methylene Chloride	ND< 0.100	ND< 0.100	ND< 0.100	ND< 0.100	22	36
Methyl Tert-Butyl Ether	ND< 0.020	ND< 0.020	ND< 0.020	ND< 0.020	2.3	4.1
trans-1,2-Dichloroethene	ND< 0.020	ND< 0.020	ND< 0.020	ND< 0.020	3.6	25
1,1-Dichloroethane	ND< 0.020	ND< 0.020	ND< 0.020	ND< 0.020	0.38	1.9
2,2-Dichloropropane	ND< 0.020	ND< 0.020	ND< 0.020	ND< 0.020	NS	NS
cis-1,2-Dichloroethene	ND< 0.020	ND< 0.020	ND< 0.020	ND< 0.020	0.36	2.5
Methyl Ethyl Ketone (MEK)	ND< 0.500	ND< 0.500	ND< 0.500	ND< 0.500	15	15
Chloroform	*ND< 0.050*	*ND< 0.050*	*ND< 0.050*	*ND< 0.050*	*0.026*	0.19
1,1,1-Trichloroethane	ND< 0.020	ND< 0.020	ND< 0.020	ND< 0.020	1.2	1.2
Carbon tetrachloride	ND< 0.020	ND< 0.020	ND< 0.020	ND< 0.020	0.10	0.73
1,1-Dichloropropene	ND< 0.020	ND< 0.020	ND< 0.020	ND< 0.020	NS	NS
Benzene	ND< 0.020	ND< 0.020	ND< 0.020	ND< 0.020	0.77	4.3
1,2-Dichloroethane (EDC)	ND< 0.020	ND< 0.020	ND< 0.020	ND< 0.020	0.023	0.17
Trichloroethene	ND< 0.020	ND< 0.020	ND< 0.020	ND< 0.020	0.089	0.62
1,2-Dichloropropane	ND< 0.020	ND< 0.020	ND< 0.020	ND< 0.020	0.16	1.2
Dibromomethane	ND< 0.020	ND< 0.020	ND< 0.020	ND< 0.020	NS	NS
Bromodichloromethane	*ND< 0.020*	*ND< 0.020*	*ND< 0.020*	*ND< 0.020*	*0.016*	0.12
Toluene	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	0.78	0.78
1,1,2-Trichloroethane	*ND< 0.020*	*ND< 0.020*	*ND< 0.020*	*ND< 0.020*	*0.0089*	0.062
Tetrachloroethene	ND< 0.020	ND< 0.020	ND< 0.020	ND< 0.020	0.098	0.72
1,3-Dichloropropane	ND< 0.020	ND< 0.020	ND< 0.020	ND< 0.020	NS	NS
Dibromochloromethane	ND< 0.020	ND< 0.020	ND< 0.020	ND< 0.020	0.34	0.34
1,2-Dibromoethane (EDB)	*ND< 0.020*	*ND< 0.020*	*ND< 0.020*	*ND< 0.020*	*0.0010*	*0.0073*
Chlorobenzene	ND< 0.020	ND< 0.020	ND< 0.020	ND< 0.020	1.5	1.5
1,1,1,2-Tetrachloroethane	ND< 0.020	ND< 0.020	ND< 0.020	ND< 0.020	0.32	0.32
Ethylbenzene	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	0.90	0.90

Notes on Page 3

Table 1 (Continued)

Sample ID:	DU-1A	DU-1B	DU-1C	DU-1D	HDOH Tier 1 EALs	
Sample Date:	04/07/22	04/07/22	04/07/22	04/07/22		
Depth (feet):	0.0 to 2.0	2.0 to 4.0	4.0 to 6.0	6.0 to 8.0	Unrest.	C/I
Analyte Units:	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
m,p-xylenes	ND< 0.100	ND< 0.100	ND< 0.100	ND< 0.100	1.4	1.4
o-xylenes	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	1.4	1.4
Styrene	ND< 0.020	ND< 0.020	ND< 0.020	ND< 0.020	2.9	2.9
Bromoform	ND< 0.100	ND< 0.100	ND< 0.100	ND< 0.100	2.0	2.0
Isopropyl benzene	ND< 0.020	ND< 0.020	ND< 0.020	ND< 0.020	NS	NS
1,2,3-Trichloropropane	*ND< 0.020*	*ND< 0.020*	*ND< 0.020*	*ND< 0.020*	*0.0050*	0.095
Bromobenzene	ND< 0.020	ND< 0.020	ND< 0.020	ND< 0.020	NS	NS
1,1,2,2-Tetrachloroethane	*ND< 0.040*	*ND< 0.040*	*ND< 0.040*	*ND< 0.040*	*0.010*	0.075
n-Propylbenzene	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	NS	NS
2-Chlorotoluene	ND< 0.020	ND< 0.020	ND< 0.020	ND< 0.020	NS	NS
4-Chlorotoluene	ND< 0.020	ND< 0.020	ND< 0.020	ND< 0.020	NS	NS
1,3,5-Trimethylbenzene	ND< 0.020	ND< 0.020	ND< 0.020	ND< 0.020	NS	NS
tert-Butylbenzene	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	NS	NS
1,2,4-Trimethylbenzene	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	NS	NS
sec-Butylbenzene	ND< 0.020	ND< 0.020	ND< 0.020	ND< 0.020	NS	NS
1,3-Dichlorobenzene	ND< 0.020	ND< 0.020	ND< 0.020	ND< 0.020	2.5	2.5
p-Isopropyltoluene	ND< 0.020	ND< 0.020	ND< 0.020	ND< 0.020	NS	NS
1,4-Dichlorobenzene	ND< 0.020	ND< 0.020	ND< 0.020	ND< 0.020	0.055	0.40
1,2-Dichlorobenzene	ND< 0.020	ND< 0.020	ND< 0.020	ND< 0.020	1.1	1.1
n-Butylbenzene	ND< 0.040	ND< 0.040	ND< 0.040	ND< 0.040	NS	NS
1,2-Dibromo-3-Chloropropane	*ND< 0.100*	*ND< 0.100*	*ND< 0.100*	*ND< 0.100*	*0.00081*	*0.00081*
1,2,4-Trichlorobenzene	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	0.18	1.4
Hexachlorobutadiene	*ND< 0.100*	*ND< 0.100*	*ND< 0.100*	*ND< 0.100*	*0.061*	*0.061*
Naphthalene	ND< 0.100	ND< 0.100	ND< 0.100	ND< 0.100	3.1	3.1
1,2,3-Trichlorobenzene	ND< 0.100	ND< 0.100	ND< 0.100	ND< 0.100	NS	NS
Polycyclic Aromatic Hydrocarbons (PAHs) by EPA Method 8270E SIM/3550C						
Naphthalene	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	3.1	3.1
2-Methylnaphthalene	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	1.9	1.9
1-Methylnaphthalene	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	0.89	0.89
Acenaphthylene	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	5.5	5.5
Acenaphthene	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	120	120
Fluorene	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	93	93
Phenanthrene	0.11	ND< 0.05	ND< 0.05	ND< 0.05	69	69
Anthracene	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	4.2	4.2
Fluoranthene	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	87	87
Pyrene	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	44	44
Benzo(a)anthracene	0.087	ND< 0.05	0.20	ND< 0.05	10	10
Chrysene	0.11	ND< 0.05	0.19	ND< 0.05	30	30
Benzo(b)fluoranthene	0.12	ND< 0.10	0.18	ND< 0.10	11	68
Benzo(k)fluoranthene	ND< 0.10	ND< 0.10	0.11	ND< 0.10	39	39
Benzo(a)pyrene	ND< 0.10	ND< 0.10	ND< 0.10	ND< 0.10	3.6	5.9
Indeno(1,2,3-cd)pyrene	ND< 0.095	ND< 0.095	ND< 0.095	ND< 0.095	11	31
Dibenzo(a,h)anthracene	ND< 0.10	ND< 0.10	ND< 0.10	ND< 0.10	1.1	18
Benzo(ghi)perylene	0.30	ND< 0.10	0.25	ND< 0.10	35	35
Polychlorinated Biphenyls (PCBs) / EPA Method 8082A/3550C						

Table 1 (Continued)

Sample ID: / Sample Date: / Depth (feet): / Analyte Units:	DU-1A 04/07/22 0.0 to 2.0 (mg/kg)	DU-1B 04/07/22 2.0 to 4.0 (mg/kg)	DU-1C 04/07/22 4.0 to 6.0 (mg/kg)	DU-1D 04/07/22 6.0 to 8.0 (mg/kg)	HDOH Tier 1 EALs Unrest. (mg/kg)	C/I (mg/kg)
Aroclor 1016	ND< 0.10	ND< 0.10	ND< 0.10	ND< 0.10	1.2	8.6
Aroclor 1221	ND< 0.10	ND< 0.10	ND< 0.10	ND< 0.10	1.2	8.6
Aroclor 1232	ND< 0.10	ND< 0.10	ND< 0.10	ND< 0.10	1.2	8.6
Aroclor 1242	ND< 0.10	ND< 0.10	ND< 0.10	ND< 0.10	1.2	8.6
Aroclor 1248	ND< 0.10	ND< 0.10	ND< 0.10	ND< 0.10	1.2	8.6
Aroclor 1254	ND< 0.10	ND< 0.10	ND< 0.10	ND< 0.10	1.2	8.6
Aroclor 1260	ND< 0.10	ND< 0.10	ND< 0.10	ND< 0.10	1.2	8.6
Aroclor 1262	ND< 0.10	ND< 0.10	ND< 0.10	ND< 0.10	1.2	8.6
Metals / EPA Method 6020B/3050B						
Cadmium	2.7	ND< 1.0	2.5	ND< 1.0	14	72
Chromium	71	51	80	26	1,100	1,100
Lead	**670***	**290***	**740***	41	200	800

NOTES:

HDOH Tier 1 EAL	Hawaii State Department of Health (HDOH) Tier 1 Unrestricted Environmental Action Levels (EALs) at sites where drinking water is not threatened and the site is located within 150 meters of a surface water body.
Unrest.	Unrestricted Action Level
C/I	Commercial/Industrial Action Level
mg/kg	Milligrams per kilogram
NS	No Standard
EPA	Environmental Protection Agency
ND<	Analyte not detected. The value after the '<' is the laboratory Reporting Limit (RL).
Italics	The laboratory reporting limit is above the action level.
BOLD*	Analyte detected at a concentration greater than the HDOH Tier 1 Unrestricted EAL.
BOLD**	Analyte detected at a concentration greater than the HDOH Tier 1 C/I EAL.

FORD & ASSOCIATES, INC.
ENVIRONMENTAL SCIENTISTS & ENGINEERS

Table 2
Summary of Groundwater Analytical Results
128 North Nimitz Highway
Honolulu, Oahu, Hawaii

Project No. 21-1991 Former Gas Station

Sample ID:	DU-1-Well-1	DU-1-Well-2	HDOH Tier 1 EAL	
Sample Date:	04/08/22	04/08/22	Unrest.	C/I
Analyte Units:	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Total Petroleum Hydrocarbons / EPA Method 8015M/8260D/5030B				
Gasoline Range Organics	ND< 250	ND< 250	500	500
Diesel Range Organics	ND< 50	ND< 50	640	640
Residual Range Organics	ND< 100	ND< 100	640	640
Volatile Organic Compounds (VOCs) / EPA Method 8260C/5030B				
Chloromethane	ND< 2.0	ND< 2.0	190	190
Vinyl chloride	ND< 2.0	ND< 2.0	18	610
Bromomethane	ND< 2.0	ND< 2.0	16	16
Chloroethane	ND< 2.0	ND< 2.0	160	160
Trichlorofluoromethane	ND< 2.0	ND< 2.0	NS	NS
1,1-Dichloroethene	ND< 2.0	ND< 2.0	25	25
Methylene Chloride	ND< 2.0	ND< 2.0	1,500	1,500
Methyl Tert-Butyl Ether	ND< 0.5	ND< 0.5	730	730
trans-1,2-Dichloroethene	ND< 1.0	ND< 1.0	560	560
1,1-Dichloroethane	ND< 1.0	ND< 1.0	47	47
2,2-Dichloropropane	ND< 1.0	ND< 1.0	NS	NS
cis-1,2-Dichloroethene	ND< 1.0	ND< 1.0	620	620
Methyl Ethyl Ketone (MEK)	ND< 1.0	ND< 1.0	14,000	14,000
Chloroform	ND< 1.0	ND< 1.0	28	28
1,1,1-Trichloroethane	ND< 1.0	ND< 1.0	11	11
Carbon tetrachloride	ND< 1.0	ND< 1.0	9.8	9.8
1,1-Dichloropropene	ND< 1.0	ND< 1.0	NS	NS
Benzene	ND< 0.5	ND< 0.5	71	71
1,2-Dichloroethane (EDC)	ND< 1.0	ND< 1.0	180	910
Trichloroethene	ND< 1.0	ND< 1.0	47	47
1,2-Dichloropropane	ND< 1.0	ND< 1.0	100	100
Dibromomethane	ND< 1.0	ND< 1.0	NS	NS
Bromodichloromethane	ND< 1.0	ND< 1.0	110	340
Toluene	ND< 1.0	ND< 1.0	9.8	9.8
1,1,2-Trichloroethane	ND< 1.0	ND< 1.0	110	730
Tetrachloroethene	ND< 1.0	ND< 1.0	53	53
1,3-Dichloropropane	ND< 1.0	ND< 1.0	NS	NS
Dibromochloromethane	ND< 1.0	ND< 1.0	34	34
1,2-Dibromoethane (EDB)	ND< 1.0	ND< 1.0	19	160
Chlorobenzene	ND< 1.0	ND< 1.0	25	25
1,1,1,2-Tetrachloroethane	ND< 1.0	ND< 1.0	11	11
Ethylbenzene	ND< 0.5	ND< 0.5	7.3	7.3
m,p-xylenes	ND< 2.0	ND< 2.0	13	13
o-xylenes	ND< 1.0	ND< 1.0	13	13

Analyte	Sample ID: / Sample Date: / Units:	DU-1-Well-1 04/08/22 (µg/L)	DU-1-Well-2 04/08/22 (µg/L)	HDOH Tier 1 EAL Unrest. (µg/L)	HDOH Tier 1 EAL C/I (µg/L)
Styrene		ND< 1.0	ND< 1.0	32	32
Bromoform		ND< 2.0	ND< 2.0	230	230
Isopropyl benzene		ND< 0.5	ND< 0.5	NS	NS
1,2,3-Trichloropropane		ND< 1.0	ND< 1.0	14	14
Bromobenzene		ND< 0.5	ND< 0.5	NS	NS
1,1,2,2-Tetrachloroethane		ND< 0.5	ND< 0.5	200	200
n-Propylbenzene		ND< 0.5	ND< 0.5	NS	NS
2-Chlorotoluene		ND< 0.5	ND< 0.5	NS	NS
4-Chlorotoluene		ND< 0.5	ND< 0.5	NS	NS
1,3,5-Trimethylbenzene		ND< 0.5	ND< 0.5	NS	NS
tert-Butylbenzene		ND< 0.5	ND< 0.5	NS	NS
1,2,4-Trimethylbenzene		ND< 0.5	ND< 0.5	NS	NS
sec-Butylbenzene		ND< 0.5	ND< 0.5	NS	NS
1,3-Dichlorobenzene		ND< 0.5	ND< 0.5	22	22
p-Isopropyltoluene		ND< 0.5	ND< 0.5	NS	NS
1,4-Dichlorobenzene		ND< 0.5	ND< 0.5	9.4	9.4
1,2-Dichlorobenzene		ND< 0.5	ND< 0.5	14	14
n-Butylbenzene		ND< 0.5	ND< 0.5	NS	NS
1,2-Dibromo-3-Chloropropane		*ND< 2.0*	*ND< 2.0*	*0.040*	*0.040*
Hexachlorobutadiene		*ND< 2.0*	*ND< 2.0*	*0.30*	*0.30*
1,2,4-Trichlorobenzene		ND< 2.0	ND< 2.0	110	110
Naphthalene		ND< 2.0	ND< 2.0	12	12
1,2,3-Trichlorobenzene		ND< 2.0	ND< 2.0	NS	NS
Polynuclear Aromatic Hydrocarbons / EPA Method 8270D/3010C					
Naphthalene		ND< 0.05	ND< 0.05	12	12
2-Methylnaphthalene		ND< 0.05	ND< 0.05	4.7	4.7
1-Methylnaphthalene		ND< 0.05	ND< 0.05	2.1	2.1
Acenaphthene		ND< 0.05	ND< 0.05	15	15
Acenaphthylene		ND< 0.05	ND< 0.05	13	13
Fluorene		ND< 0.05	ND< 0.05	3.9	3.9
Phenanthrene		ND< 0.05	ND< 0.05	2.3	2.3
Anthracene		*ND< 0.05*	*ND< 0.05*	*0.020*	*0.020*
Fluoranthene		ND< 0.05	ND< 0.05	0.80	0.80
Pyrene		ND< 0.05	ND< 0.05	4.6	4.6
Benzo(a)anthracene		ND< 0.025	ND< 0.025	0.027	0.027
Chrysene		ND< 0.10	ND< 0.10	1.0	1.0
Benzo(b)fluoranthene		ND< 0.10	ND< 0.10	0.68	0.68
Benzo(k)fluoranthene		ND< 0.10	ND< 0.10	0.40	0.40
Benzo(a)pyrene		ND< 0.025	ND< 0.025	*0.060*	*0.060*
Indeno(123-cd)pyrene		*ND< 0.10*	*ND< 0.10*	*0.095*	*0.095*
Dibenzo(a,h)anthracene		ND< 0.10	ND< 0.10	0.80	0.80
Benzo(ghi)perylene		ND< 0.10	ND< 0.10	0.13	0.13

Analyte — Sample ID: / Sample Date: / Units:	DU-1-Well-1 04/08/22 (µg/L)	DU-1-Well-2 04/08/22 (µg/L)	HDOH Tier 1 EAL Unrest. (µg/L)	HDOH Tier 1 EAL C/I (µg/L)
Polychlorinated Biphenyls (PCBS) by EPA Method 8082A/3510C				
Aroclor 1016	*ND< 0.10*	*ND< 0.10*	*0.014*	*0.014*
Aroclor 1221	*ND< 0.10*	*ND< 0.10*	*0.014*	*0.014*
Aroclor 1232	*ND< 0.10*	*ND< 0.10*	*0.014*	*0.014*
Aroclor 1242	*ND< 0.10*	*ND< 0.10*	*0.014*	*0.014*
Aroclor 1248	*ND< 0.10*	*ND< 0.10*	*0.014*	*0.014*
Aroclor 1254	*ND< 0.10*	*ND< 0.10*	*0.014*	*0.014*
Aroclor 1260	*ND< 0.10*	*ND< 0.10*	*0.014*	*0.014*
Aroclor 1262	*ND< 0.10*	*ND< 0.10*	*0.014*	*0.014*
Metals / EPA Method 6020B/3005A				
Cadmium	ND< 1.0	ND< 1.0	3	3
Chromium	ND< 2.0	ND< 2.0	11	11
Lead	ND< 1.0	ND< 1.0	5.6	5.6

NOTES:

HDOH Tier 1 EAL	Hawaii State Department of Health (HDOH) Tier 1 Unrestricted Environmental Action Levels (EALs) at sites where drinking water is not threatened and the site is located within 150 meters of a surface water body.
Unrest.	Unrestricted Action Level
C/I	Commercial/Industrial Action Level
µg/L	Micrograms per liter
EPA	Environmental Protection Agency
ND<	Analyte not detected. The value after the '<' is the laboratory
italic	The EAL is less than the laboratory reporting limit.
BOLD*	Analyte detected at a concentration greater than the HDOH Tier 1 Unrestricted EAL.
BOLD**	Analyte detected at a concentration greater than the HDOH Tier 1 Unrestricted and C/I EALs.

PHOTOGRAPHS

Client: C.Q. Yee Hop & Company, Limited and Yee Hop Realty, Limited | **Project No.:** 22-1991

Site Name: Former Gas Station Investigation
128 North Nimitz Highway, Honolulu, Hawaii | **Date:** April 7, 2022

Prior to drilling, Ford & Associates, Inc. (FAI) measured and marked the Decision Unit (DU) boundary in the parking lot.

PHOTO **1**

FAI retained Geotek Hawaii, Inc. (Geotek) to conduct a geophysical survey at the site to assess for subsurface utilities.

PHOTO **2**

Client: C.Q. Yee Hop & Company, Limited and Yee Hop Realty, Limited	**Project No.:** 22-1991
Site Name: Former Gas Station Investigation 128 North Nimitz Highway, Honolulu, Hawaii	**Date:** April 7/8, 2022

FAI retained Geotek to conduct drilling using a track-mounted, direct push drill rig.	PHOTO **5**

Example of a soil core removed during drilling.	PHOTO **6**

Client: C.Q. Yee Hop & Company, Limited and Yee Hop Realty, Limited

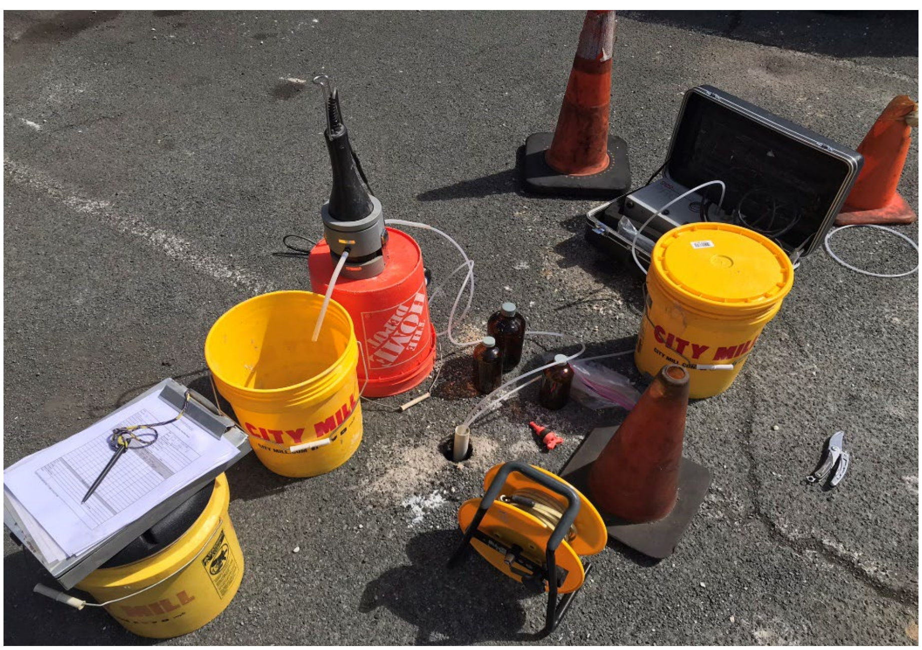
Project No.: 22-1991

Site Name: Former Gas Station Investigation
128 North Nimitz Highway, Honolulu, Hawaii

Date: April 8, 2022

Temporary groundwater wells were installed at two locations within the DU (one upgradient, one downgradient)

PHOTO **7**



Groundwater purging and sampling of temporary wells were performed using a low-flow sampling technique.

PHOTO **8**

APPENDIX A
GROUNDWATER SAMPLING FIELD DATA SHEET

FORD & ASSOCIATES, INC.
ENVIRONMENTAL SCIENTISTS & ENGINEERS

Groundwater Sampling Field Data Sheet

Project:	Former Gas Sation	**Address:**	128 North Nimitz Highway
Project No.:	22-1991	**Well ID:**	DU-1-Well-1
Field Crew:	Noah Kippen	**Sample Date:**	4/8/22
Screened Interval (ft):	5 - 15 ft below ground surface	**Climatic Conditions:**	Overcast
Well Diameter (in.):	1 inch	**Purge Method:**	Bladder
Stickup Length (ft)	0.0 ft	**Pump Placement (ft):**	10.5 ft BTOC
Total Well Depth (ft):	15.00 ft BTOC	**Length of Saturated Zone (ft):**	6.55 ft
Depth to Water (ft):	8.45 ft BTOC		
Depth to LNAPL (ft):	-- ft BTOC	**Casing Volume:**	0.54 Gallons

Field Parameters

Time	Depth to Water (ft)	Purge Rate (L/min) 0.1 to 0.5	Gallons Removed	pH ±0.1	EC (mS/cm) ±3%	Turbidity (NTU) <10	D.O. (mg/L) ±0.3	Temp (deg C) ±1	ORP (mV) ±10	Comments
8:42:00	8.45	0.28	0.00	7.82	2.41	280	0.95	26.94	-231	
8:46:00	8.45	0.28	0.25	7.59	2.41	398	0.55	27.08	-234	
8:50:00	8.45	0.28	0.50	7.45	2.36	237	0.46	27.26	-211	
8:54:00	8.45	0.28	0.75	7.41	2.35	166	0.39	27.45	-203	
8:58:00	8.45	0.28	1.00	7.39	2.35	118	0.33	27.53	-199	
9:02:00	8.45	0.28	1.25	7.36	2.33	67.7	0.29	27.72	-191	
9:06:00	8.45	0.28	1.50	7.35	2.33	45.7	0.26	27.84	-185	
9:10:00	8.45	0.28	1.75	7.35	2.32	31.0	0.27	27.80	-178	
9:14:00	8.45	0.28	2.00	7.33	2.32	25.4	0.25	27.79	-174	

Sample or Purge Information

Color:	Clear		
Odor:	None		
Turbidity:	Low		
Sample ID:	DU-1-Well-1	**Total No. of Bottles:**	8
Sample Date & Time:	4/8/22 @ 0915 hrs		
Notes:			

Capacity of Casing (gal/linear feet): 1"= 0.082; 2" = 0.16; 4" = 0.65

FORD & ASSOCIATES, INC.
ENVIRONMENTAL SCIENTISTS & ENGINEERS

Groundwater Sampling Field Data Sheet

Project:	Former Gas Station	**Address:**	128 North Nimitz Highway
Project No.:	22-1991	**Well ID:**	DU-1-Well-2
Field Crew:	Noah Kippen	**Sample Date:**	4/8/22
Screened Interval (ft):	5 - 15 ft below ground surface	**Climatic Conditions:**	Overcast
Well Diameter (in.):	1 inch	**Purge Method:**	Bladder
Stickup Length (ft)	0.0 ft	**Pump Placement (ft):**	10.9 ft BTOC
Total Well Depth (ft):	15.00 ft BTOC	**Length of Saturated Zone (ft):**	6.13 ft
Depth to Water (ft):	8.87 ft BTOC		
Depth to LNAPL (ft):	-- ft BTOC	**Casing Volume:**	0.50 Gallons

Field Parameters

Time	Depth to Water (ft)	Purge Rate (L/min) 0.1 to 0.5	Gallons Removed	pH ±0.1	EC (mS/cm) ±3%	Turbidity (NTU) <10	D.O. (mg/L) ±0.3	Temp (deg C) ±1	ORP (mV) ±10	Comments
10:14:00	8.87	0.28	0.00	7.57	1.93	122	2.31	30.28	134	
10:18:00	8.87	0.28	0.25	7.38	1.92	102	0.72	29.61	107	
10:22:00	8.87	0.28	0.50	7.36	1.92	93.2	0.55	29.27	76	
10:26:00	8.87	0.28	0.75	7.35	1.92	85.1	0.46	29.23	65	
10:30:00	8.87	0.28	1.00	7.35	1.93	89.9	0.47	28.81	53	
10:34:00	8.87	0.28	1.25	7.35	1.93	79.7	0.43	29.09	46	
10:38:00	8.87	0.28	1.50	7.34	1.92	47.0	0.37	29.09	38	
10:42:00	8.87	0.28	1.75	7.34	1.93	65.9	0.37	29.05	36	
10:46:00	8.87	0.28	2.00	7.34	1.92	49.7	0.35	29.08	32	

Sample or Purge Information

Color:	Clear		
Odor:	None		
Turbidity:	Low		
Sample ID:	DU-1-Well-2	**Total No. of Bottles:**	8
Sample Date & Time:	4/8/22 @ 1047 hrs		
Notes:			

Capacity of Casing (gal/linear feet): 1"= 0.082; 2" = 0.16; 4" = 0.65

APPENDIX B
LABORATORY ANALYTICAL REPORT AND CHAIN-OF-CUSTODY FORM

April 18, 2022

Ford & Associates, Inc.
928 Nuuanu Avenue, Suite 505
Honolulu, HI 96817

Dear Noah Kippen,

Please find enclosed the analytical report for:

Project Name:	128 N. Nimitz (SHWS)
AAL Project #:	X240
Date Received:	04/08/2022
MIS Prep:	Yes

The results, applicable reporting limits, QA/QC data, invoice, and copy of COC are included. If Multi-incremental preparation was needed for this project, it was completed by Advanced Analytical Laboratory, Honolulu, HI.

Advanced Analytical Laboratory appreciates the opportunity to provide analytical services for this project. If you have any questions regarding this project, please don't hesitate to contact AAL.

Thank you for your business and continuing support.

Sincerely,

Uwe Baumgartner, Ph.D
Owner

Elisa M. Young
Owner

AAL Project #X240

Ford & Associates Inc.

Client Project #: 22-1991 Method 8015M

Client Project Name: 128 N. Nimitz (Former Gas Station) Matrix: Soil

CLIENT SAMPLE ID	TPH-DIESEL [mg/kg]	TPH-OIL [mg/kg]	SURROGATE RECOVERY	FLAGS	DATE ANALYZED
Blank	nd	nd	92%		4/11/2022
DU-1A	nd	600	105%		4/11/2022
DU-1B	nd	170	95%		4/11/2022
DU-1C	nd	nd	100%		4/11/2022
DU-1D	nd	nd	96%		4/11/2022
PQL	50	100	Acceptable Range		
MDL	20	35	70%-130%		

QA/QC DATA

QC BATCH # 041122-2	TPH-DIESEL [mg/kg]	TPH-OIL [mg/kg]	Acceptable Range
Lab Control Spike (LCS)	470	491	350-650
Matrix Spike (MS)	459	529	350-650
Matrix Spike Dup (MSD)	481	545	350-650
Recovery LCS	94%	98%	70%-130%
Recovery MS	92%	106%	70%-130%
Recovery MSD	96%	109%	70%-130%
RPD of MS/MSD	4.7%	3.0%	20%

Analyst: U. Baumgartner, Ph.D.
Data review: E. Young

ADVANCED ANALYTICAL LABORATORY INC

AAL Project #X240

Ford & Associates Inc.

Client Project #:	22-1991	Method 8015M
Client Project Name:	128 N. Nimitz (Former Gas Station)	Matrix: Water

CLIENT SAMPLE ID	TPH-DIESEL [mg/L]	TPH-OIL [mg/L]	SURROGATE RECOVERY	FLAGS	DATE ANALYZED
Blank	nd	nd	97%		4/13/2022
DU-1-Well-1	nd	nd	95%		4/13/2022
DU-1-Well-2	nd	nd	92%		4/13/2022
PQL	0.050	0.100	Acceptable Range		
MDL	0.010	0.032	70%-130%		

QA/QC DATA

QC BATCH # 041322	TPH-DIESEL [mg/L]	TPH-OIL [mg/L]	Acceptable Range
Lab Control Spike (LCS)	0.490	0.482	0.350-0.650
Matrix Spike (MS)	0.491	0.556	0.350-0.650
Matrix Spike Dup (MSD)	0.502	0.562	0.350-0.650
Recovery LCS	98%	96%	70%-130%
Recovery MS	98%	111%	70%-130%
Recovery MSD	100%	112%	70%-130%
RPD of MS/MSD	2.2%	1.1%	20%

Analyst: U. Baumgartner, Ph.D.
Data review: E. Young

12524 130th Lane NE
Kirkland WA 98034

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
website: www.accu-lab.com

Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**22-AL0412-2**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/07-08/2022
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/12/2022
Project Name	**128 N Nimitz (Former Gas Station)**	Date Reported	4/18/2022
Client Project#	**22-1991**		
Project#	**X240**		

TPH GRO in Soil by EPA 8260D/5030B

Accu Lab Batch# AL041222-1

Client sample ID					**DU-1A**	**DU-1B**	**DU-1C**	**DU-1B**
Lab ID	**MRL**	**Unit**	**MTH BLK**	**LCS**	22-AL0412-2-1	22-AL0412-2-2	22-AL0412-2-3	22-AL0412-2-4
Matrix			Soil	Soil	Soil	Soil	Soil	Soil
Date Extracted			4/12/2022	4/12/2022	4/07-08/2022	4/07-08/2022	4/07-08/2022	4/07-08/2022
Date Analyzed			4/12/2022	4/12/2022	4/12/2022	4/12/2022	4/12/2022	4/12/2022
Moisture (%)					12%	16%	23%	25%
Gasoline Range Organics (GRO)	12.5	mg/kg	nd	100%	nd	nd	nd	nd
Surrogate Recoveries								
Dibromofluoromethane			115%	118%	89%	89%	88%	88%
4-Bromofluorobenzene			107%	99%	102%	100%	100%	102%

Acceptable Recovery Limits:
Surrogates/LCS *70-130%*
MS/MSD *65-135%*
Acceptable RPD limit: *30%*

12524 130th Lane NE
Kirkland WA 98034

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
website: www.accu-lab.com

Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**22-AL0412-2**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/07-08/2022
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/12/2022
Project Name	**128 N Nimitz (Former Gas Station)**	Date Reported	4/18/2022
Client Project#	**22-1991**		
Project#	**X240**		

TPH GRO in Soil by EPA 8260D/5030B

Accu Lab Batch# AL041222-1

Client sample ID			**MS**	**MSD**	**RPD**
Lab ID	**MRL**	**Unit**	22-AL0412-3-1	22-AL0412-3-1	22-AL0412-3-1
Matrix			Soil	Soil	Soil
Date Extracted			4/8/2022	4/8/2022	4/8/2022
Date Analyzed			4/12/2022	4/12/2022	4/12/2022
Moisture (%)			18%	18%	18%
Gasoline Range Organics (GRO)	12.5	mg/kg	88%	93%	6%
Surrogate Recoveries					
Dibromofluoromethane			102%	99%	
4-Bromofluorobenzene			97%	104%	

Acceptable Recovery Limits:
Surrogates/LCS *70-130%*
MS/MSD *65-135%*
Acceptable RPD limit: *30%*

12524 130th Lane NE
Kirkland WA 98034

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
website: www.accu-lab.com

ACCU LABORATORY

Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**22-AL0412-2**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/07-08/2022
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/12/2022
Project Name	**128 N Nimitz (Former Gas Station)**	Date Reported	4/18/2022
Client Project#	**22-1991**		
Project#	**X240**		

Volatiles in Soil by EPA 8260D/5030B

Accu Lab Batch# AL041222-1

Client sample ID					**DU-1A**	**DU-1B**	**DU-1C**	**DU-1D**
Lab ID	**MRL**	**Unit**	**MTH BLK**	**LCS**	22-AL0412-2-1	22-AL0412-2-2	22-AL0412-2-3	22-AL0412-2-4
Matrix			Soil	Soil	Soil	Soil	Soil	Soil
Date Extracted			4/12/2022	4/12/2022	4/07-08/2022	4/07-08/2022	4/07-08/2022	4/07-08/2022
Date Analyzed			4/12/2022	4/12/2022	4/12/2022	4/12/2022	4/12/2022	4/12/2022
Moisture (%)					12%	16%	23%	25%
Chloromethane	50	ug/kg	nd		nd	nd	nd	nd
Vinyl chloride	20	ug/kg	nd	99%	nd	nd	nd	nd
Bromomethane	50	ug/kg	nd		nd	nd	nd	nd
Chloroethane	50	ug/kg	nd		nd	nd	nd	nd
Trichlorofluoromethane	50	ug/kg	nd		nd	nd	nd	nd
1,1-Dichloroethene	50	ug/kg	nd		nd	nd	nd	nd
Methylene Chloride	100	ug/kg	nd		nd	nd	nd	nd
Methyl T-Butyl Ether (MTBE)	20	ug/kg	nd	124%	nd	nd	nd	nd
trans-1,2-Dichloroethene	20	ug/kg	nd		nd	nd	nd	nd
1,1-Dichloroethane	20	ug/kg	nd	117%	nd	nd	nd	nd
2,2-Dichloropropane	20	ug/kg	nd		nd	nd	nd	nd
cis-1,2-Dichloroethene	20	ug/kg	nd		nd	nd	nd	nd
Methyl Ethyl Ketone (MEK)	500	ug/kg	nd		nd	nd	nd	nd
Chloroform	50	ug/kg	nd		nd	nd	nd	nd
1,1,1-Trichloroethane	20	ug/kg	nd		nd	nd	nd	nd
Carbon tetrachloride	20	ug/kg	nd		nd	nd	nd	nd
1,1-Dichloropropene	20	ug/kg	nd		nd	nd	nd	nd
Benzene	20	ug/kg	nd	108%	nd	nd	nd	nd
1,2-Dichloroethane (EDC)	20	ug/kg	nd		nd	nd	nd	nd
Trichloroethene	20	ug/kg	nd	116%	nd	nd	nd	nd
1,2-Dichloropropane	20	ug/kg	nd		nd	nd	nd	nd
Dibromomethane	20	ug/kg	nd		nd	nd	nd	nd
Bromodichloromethane	20	ug/kg	nd		nd	nd	nd	nd
Toluene	50	ug/kg	nd	96%	nd	nd	nd	nd
1,1,2-Trichloroethane	20	ug/kg	nd		nd	nd	nd	nd
Tetrachloroethene	20	ug/kg	nd	102%	nd	nd	nd	nd
1,3-Dichloropropane	20	ug/kg	nd		nd	nd	nd	nd
Dibromochloromethane	20	ug/kg	nd		nd	nd	nd	nd

12524 130th Lane NE
Kirkland WA 98034

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
website: www.accu-lab.com

Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**22-AL0412-2**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/07-08/2022
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/12/2022
Project Name	**128 N Nimitz (Former Gas Station)**	Date Reported	4/18/2022
Client Project#	**22-1991**		
Project#	**X240**		

Volatiles in Soil by EPA 8260D/5030B

Accu Lab Batch# AL041222-1

Client sample ID					**DU-1A**	**DU-1B**	**DU-1C**	**DU-1D**
Lab ID	**MRL**	**Unit**	**MTH BLK**	**LCS**	22-AL0412-2-1	22-AL0412-2-2	22-AL0412-2-3	22-AL0412-2-4
Matrix			Soil	Soil	Soil	Soil	Soil	Soil
Date Extracted			4/12/2022	4/12/2022	4/07-08/2022	4/07-08/2022	4/07-08/2022	4/07-08/2022
Date Analyzed			4/12/2022	4/12/2022	4/12/2022	4/12/2022	4/12/2022	4/12/2022
Moisture (%)					12%	16%	23%	25%
1,2-Dibromoethane (EDB)	20	ug/kg	nd		nd	nd	nd	nd
Chlorobenzene	20	ug/kg	nd	96%	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	20	ug/kg	nd		nd	nd	nd	nd
Ethyl benzene	50	ug/kg	nd	92%	nd	nd	nd	nd
m,p-Xylenes	100	ug/kg	nd	94%	nd	nd	nd	nd
o-Xylene	50	ug/kg	nd	96%	nd	nd	nd	nd
Styrene	20	ug/kg	nd		nd	nd	nd	nd
Bromoform	100	ug/kg	nd		nd	nd	nd	nd
Isopropyl benzene	20	ug/kg	nd		nd	nd	nd	nd
1,2,3-Trichloropropane	20	ug/kg	nd		nd	nd	nd	nd
Bromobenzene	20	ug/kg	nd		nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	40	ug/kg	nd		nd	nd	nd	nd
n-Propylbenzene	50	ug/kg	nd		nd	nd	nd	nd
2-Chlorotoluene	20	ug/kg	nd		nd	nd	nd	nd
4-Chlorotoluene	20	ug/kg	nd		nd	nd	nd	nd
1,3,5-TrimEthylbenzene	20	ug/kg	nd		nd	nd	nd	nd
tert-Butylbenzene	50	ug/kg	nd		nd	nd	nd	nd
1,2,4-TrimEthylbenzene	50	ug/kg	nd		nd	nd	nd	nd
sec-Butylbenzene	20	ug/kg	nd		nd	nd	nd	nd
1,3-Dichlorobenzene	20	ug/kg	nd		nd	nd	nd	nd
p-Isopropyltoluene	20	ug/kg	nd		nd	nd	nd	nd
1,4-Dichlorobenzene	20	ug/kg	nd		nd	nd	nd	nd
1,2-Dichlorobenzene	20	ug/kg	nd		nd	nd	nd	nd
n-Butylbenzene	40	ug/kg	nd		nd	nd	nd	nd
1,2-Dibromo-3-Chloropropane	100	ug/kg	nd		nd	nd	nd	nd
1,2,4-Trichlorobenzene	50	ug/kg	nd		nd	nd	nd	nd
Hexachlorobutadiene	100	ug/kg	nd		nd	nd	nd	nd
Naphthalene	100	ug/kg	nd	104%	nd	nd	nd	nd
1,2,3-Trichlorobenzene	100	ug/kg	nd		nd	nd	nd	nd

12524 130th Lane NE
Kirkland WA 98034

ACCU LABORATORY

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
website: www.accu-lab.com

Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**22-AL0412-2**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/07-08/2022
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/12/2022
Project Name	**128 N Nimitz (Former Gas Station)**	Date Reported	4/18/2022
Client Project#	**22-1991**		
Project#	**X240**		

Volatiles in Soil by EPA 8260D/5030B

Accu Lab Batch# AL041222-1

Client sample ID					**DU-1A**	**DU-1B**	**DU-1C**	**DU-1D**
Lab ID	**MRL**	**Unit**	**MTH BLK**	**LCS**	22-AL0412-2-1	22-AL0412-2-2	22-AL0412-2-3	22-AL0412-2-4
Matrix			Soil	Soil	Soil	Soil	Soil	Soil
Date Extracted			4/12/2022	4/12/2022	4/07-08/2022	4/07-08/2022	4/07-08/2022	4/07-08/2022
Date Analyzed			4/12/2022	4/12/2022	4/12/2022	4/12/2022	4/12/2022	4/12/2022
Moisture (%)					12%	16%	23%	25%
Surrogate Recoveries								
Dibromofluoromethane			106%	99%	89%	89%	88%	88%
1,2-Dichloroethane-d4			108%	100%	106%	102%	106%	106%
Toluene-d8			100%	97%	102%	102%	101%	103%
4-Bromofluorobenzene			105%	95%	102%	100%	100%	102%

Acceptable Recovery Limits:

Surrogates/LCS	*70-130%*
MS/MSD	*65-135%*
Acceptable RPD limit:	*30%*

12524 130th Lane NE
Kirkland WA 98034

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
website: www.accu-lab.com

ACCU LABORATORY

Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**22-AL0412-2**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/07-08/2022
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/12/2022
Project Name	**128 N Nimitz (Former Gas Station)**	Date Reported	4/18/2022
Client Project#	**22-1991**		
Project#	**X240**		

Volatiles in Soil by EPA 8260D/5030B

Accu Lab Batch# AL041222-1

Client sample ID			**MS**	**MSD**	**RPD**
Lab ID	**MRL**	**Unit**	22-AL0412-3-1	22-AL0312-4-1	22-AL0312-4-1
Matrix			Soil	Soil	Soil
Date Extracted			4/8/2022	4/8/2022	4/8/2022
Date Analyzed			4/12/2022	4/12/2022	4/12/2022
Moisture (%)			18%	18%	18%
Chloromethane	50	ug/kg			
Vinyl chloride	20	ug/kg	82%	85%	3%
Bromomethane	50	ug/kg			
Chloroethane	50	ug/kg			
Trichlorofluoromethane	50	ug/kg			
1,1-Dichloroethene	50	ug/kg			
Methylene Chloride	100	ug/kg			
Methyl T-Butyl Ether (MTBE)	20	ug/kg	112%	122%	8%
trans-1,2-Dichloroethene	20	ug/kg			
1,1-Dichloroethane	20	ug/kg	116%	128%	10%
2,2-Dichloropropane	20	ug/kg			
cis-1,2-Dichloroethene	20	ug/kg			
Methyl Ethyl Ketone (MEK)	500	ug/kg			
Chloroform	50	ug/kg			
1,1,1-Trichloroethane	20	ug/kg			
Carbon tetrachloride	20	ug/kg			
1,1-Dichloropropene	20	ug/kg			
Benzene	20	ug/kg	106%	111%	4%
1,2-Dichloroethane (EDC)	20	ug/kg			
Trichloroethene	20	ug/kg	104%	116%	11%
1,2-Dichloropropane	20	ug/kg			
Dibromomethane	20	ug/kg			
Bromodichloromethane	20	ug/kg			
Toluene	50	ug/kg	99%	107%	8%
1,1,2-Trichloroethane	20	ug/kg			
Tetrachloroethene	20	ug/kg	95%	104%	9%
1,3-Dichloropropane	20	ug/kg			
Dibromochloromethane	20	ug/kg			

12524 130th Lane NE
Kirkland WA 98034

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
website: www.accu-lab.com

ACCU LABORATORY

Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**22-AL0412-2**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/07-08/2022
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/12/2022
Project Name	**128 N Nimitz (Former Gas Station)**	Date Reported	4/18/2022
Client Project#	**22-1991**		
Project#	**X240**		

Volatiles in Soil by EPA 8260D/5030B

Accu Lab Batch# AL041222-1

Client sample ID			**MS**	**MSD**	**RPD**
Lab ID	**MRL**	**Unit**	22-AL0412-3-1	22-AL0312-4-1	22-AL0312-4-1
Matrix			Soil	Soil	Soil
Date Extracted			4/8/2022	4/8/2022	4/8/2022
Date Analyzed			4/12/2022	4/12/2022	4/12/2022
Moisture (%)			18%	18%	18%
1,2-Dibromoethane (EDB)	20	ug/kg			
Chlorobenzene	20	ug/kg	91%	102%	12%
1,1,1,2-Tetrachloroethane	20	ug/kg			
Ethyl benzene	50	ug/kg	96%	106%	10%
m,p-Xylenes	100	ug/kg	94%	101%	7%
o-Xylene	50	ug/kg	92%	100%	8%
Styrene	20	ug/kg			
Bromoform	100	ug/kg			
Isopropyl benzene	20	ug/kg			
1,2,3-Trichloropropane	20	ug/kg			
Bromobenzene	20	ug/kg			
1,1,2,2-Tetrachloroethane	40	ug/kg			
n-Propylbenzene	50	ug/kg			
2-Chlorotoluene	20	ug/kg			
4-Chlorotoluene	20	ug/kg			
1,3,5-TrimEthylbenzene	20	ug/kg			
tert-Butylbenzene	50	ug/kg			
1,2,4-TrimEthylbenzene	50	ug/kg			
sec-Butylbenzene	20	ug/kg			
1,3-Dichlorobenzene	20	ug/kg			
p-Isopropyltoluene	20	ug/kg			
1,4-Dichlorobenzene	20	ug/kg			
1,2-Dichlorobenzene	20	ug/kg			
n-Butylbenzene	40	ug/kg			
1,2-Dibromo-3-Chloropropane	100	ug/kg			
1,2,4-Trichlorobenzene	50	ug/kg			
Hexachlorobutadiene	100	ug/kg			
Naphthalene	100	ug/kg	122%	132%	8%
1,2,3-Trichlorobenzene	100	ug/kg			

12524 130th Lane NE
Kirkland WA 98034

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
website: www.accu-lab.com

Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**22-AL0412-2**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/07-08/2022
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/12/2022
Project Name	**128 N Nimitz (Former Gas Station)**	Date Reported	4/18/2022
Client Project#	**22-1991**		
Project#	**X240**		

Volatiles in Soil by EPA 8260D/5030B

Accu Lab Batch# AL041222-1

Client sample ID			**MS**	**MSD**	**RPD**
Lab ID	**MRL**	**Unit**	22-AL0412-3-1	22-AL0312-4-1	22-AL0312-4-1
Matrix			Soil	Soil	Soil
Date Extracted			4/8/2022	4/8/2022	4/8/2022
Date Analyzed			4/12/2022	4/12/2022	4/12/2022
Moisture (%)			18%	18%	18%
Surrogate Recoveries					
Dibromofluoromethane			102%	99%	
1,2-Dichloroethane-d4			104%	111%	
Toluene-d8			98%	102%	
4-Bromofluorobenzene			97%	104%	

Acceptable Recovery Limits:
Surrogates/LCS *70-130%*
MS/MSD *65-135%*
Acceptable RPD limit: *30%*

12524 130th Lane NE
Kirkland WA 98034

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
website: www.accu-lab.com

Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**22-AL0412-2**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/07-08/2022
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/12/2022
Project Name	**128 N Nimitz (Former Gas Station)**	Date Reported	4/18/2022
Client Project#	**22-1991**		
Project#	**X240**		

PAHs in Soil by EPA 8270E SIM/3550C

Accu Lab Batch# AL041222-2

Client sample ID					**DU-1A**	**DU-1B**	**DU-1C**	**DU-1D**
Lab ID	**MRL**	**Unit**	**MTH BLK**	**LCS**	22-AL0412-2-1	22-AL0412-2-2	22-AL0412-2-3	22-AL0412-2-4
Matrix			Solid	Solid	Soil	Soil	Soil	Soil
Date Extracted			4/12/2022	4/12/2022	4/12/2022	4/12/2022	4/12/2022	4/12/2022
Date Analyzed			4/12/2022	4/12/2022	4/12/2022	4/12/2022	4/12/2022	4/12/2022
Moisture (%)					23%	26%	28%	25%
Naphthalene	0.05	mg/kg	nd	95%	nd	nd	nd	nd
2-Methylnaphthalene	0.05	mg/kg	nd		nd	nd	nd	nd
1-Methylnaphthalene	0.05	mg/kg	nd		nd	nd	nd	nd
Acenaphthylene	0.05	mg/kg	nd		nd	nd	nd	nd
Acenaphthene	0.05	mg/kg	nd	113%	nd	nd	nd	nd
Fluorene	0.05	mg/kg	nd		nd	nd	nd	nd
Phenanthrene	0.05	mg/kg	nd		0.11	nd	nd	nd
Anthracene	0.05	mg/kg	nd		nd	nd	nd	nd
Fluoranthene	0.05	mg/kg	nd	110%	nd	nd	nd	nd
Pyrene	0.05	mg/kg	nd	110%	nd	nd	nd	nd
Benzo(a)anthracene	0.05	mg/kg	nd		0.087	nd	0.20	nd
Chrysene	0.05	mg/kg	nd		0.11	nd	0.19	nd
Benzo(b)fluoranthene	0.10	mg/kg	nd		0.12	nd	0.18	nd
Benzo(k)fluoranthene	0.10	mg/kg	nd		nd	nd	0.11	nd
Benzo(a)pyrene	0.10	mg/kg	nd	120%	nd	nd	nd	nd
Indeno(1,2,3-cd)pyrene	0.095	mg/Kg	nd		nd	nd	nd	nd
Dibenzo(a,h)anthracene	0.10	mg/Kg	nd		nd	nd	nd	nd
Benzo(ghi)perylene	0.10	mg/Kg	nd		0.30	nd	0.25	nd
Surrogate Recoveries								
2-Fluorobyphenyl			78%	105%	85%	70%	80%	70%
Terphenyl-d14			87%	97%	116%	106%	110%	105%

Acceptable Recovery Limits:
Surrogates/LCS *50-150%*
MS/MSD *45-150%*
Acceptable RPD Limit: *30%*

12524 130th Lane NE
Kirkland WA 98034

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
website: www.accu-lab.com

Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**22-AL0412-2**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/07-08/2022
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/12/2022
Project Name	**128 N Nimitz (Former Gas Station)**	Date Reported	4/18/2022
Client Project#	**22-1991**		
Project#	**X240**		

PAHs in Soil by EPA 8270E SIM/3550C

Accu Lab Batch# AL041222-2

Client sample ID			**MS**	**MSD**	**RPD**
Lab ID	**MRL**	**Unit**	22-AL0412-2-7	22-AL0412-2-7	22-AL0412-2-7
Matrix			Soil	Soil	Soil
Date Extracted			4/12/2022	4/12/2022	4/12/2022
Date Analyzed			4/12/2022	4/12/2022	4/12/2022
Moisture (%)			26%	26%	26%
Naphthalene	0.05	mg/kg	101%	104%	3%
2-Methylnaphthalene	0.05	mg/kg			
1-Methylnaphthalene	0.05	mg/kg			
Acenaphthylene	0.05	mg/kg			
Acenaphthene	0.05	mg/kg	126%	147%	15%
Fluorene	0.05	mg/kg			
Phenanthrene	0.05	mg/kg			
Anthracene	0.05	mg/kg			
Fluoranthene	0.05	mg/kg	119%	119%	0.2%
Pyrene	0.05	mg/kg	119%	124%	4%
Benzo(a)anthracene	0.05	mg/kg			
Chrysene	0.05	mg/kg			
Benzo(b)fluoranthene	0.10	mg/kg			
Benzo(k)fluoranthene	0.10	mg/kg			
Benzo(a)pyrene	0.10	mg/kg	127%	131%	3%
Indeno(1,2,3-cd)pyrene	0.095	mg/Kg			
Dibenzo(a,h)anthracene	0.10	mg/Kg			
Benzo(ghi)perylene	0.10	mg/Kg			
Surrogate Recoveries					
2-Fluorobyphenyl			87%	83%	
Terphenyl-d14			86%	89%	

Acceptable Recovery Limits:
Surrogates/LCS *50-150%*
MS/MSD *45-150%*
Acceptable RPD Limit: *30%*

12524 130th Lane NE
Kirkland WA 98034

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
website: www.accu-lab.com

ACCU LABORATORY

Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**22-AL0412-2**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/07-08/2022
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/12/2022
Project Name	**128 N Nimitz (Former Gas Station)**	Date Reported	4/18/2022
Client Project#	**22-1991**		
Project#	**X240**		

Polychlorinated Biphenyls in Soil by EPA 8082A/3550C

Accu Lab Batch# AL041322-3

Client sample ID					**DU-1A**	**DU-1B**	**DU-1C**	**DU-1D**
Lab ID	**MRL**	**Unit**	**MTH BLK**	**LCS**	22-AL0412-2-1	22-AL0412-2-2	22-AL0412-2-3	22-AL0412-2-4
Matrix			Soil	Soil	Soil	Soil	Soil	Soil
Date Extracted			4/13/2022	4/13/2022	4/13/2022	4/13/2022	4/13/2022	4/13/2022
Date Analyzed			4/13/2022	4/13/2022	4/13/2022	4/13/2022	4/13/2022	4/13/2022
A1016	0.10	mg/kg	nd		nd	nd	nd	nd
A1221	0.10	mg/kg	nd		nd	nd	nd	nd
A1232	0.10	mg/kg	nd		nd	nd	nd	nd
A1242	0.10	mg/kg	nd		nd	nd	nd	nd
A1248	0.10	mg/kg	nd		nd	nd	nd	nd
A1254	0.10	mg/kg	nd		nd	nd	nd	nd
A1260	0.10	mg/kg	nd	101%	nd	nd	nd	nd
A1262	0.10	mg/kg	nd		nd	nd	nd	nd
Surrogate Recoveries								
Decachlorobiphenyl			89%	82%	112%	115%	116%	107%
Tetrachloro-m-xylene			116%	105%	101%	105%	106%	121%

Acceptable Recovery Limits:

Surrogates/LCS	*60-150%*
MS/MSD	*50-150%*
Acceptable RPD limit:	*30%*

12524 130th Lane NE
Kirkland WA 98034

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
website: www.accu-lab.com

ACCU LABORATORY

Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**22-AL0412-2**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/07-08/2022
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/12/2022
Project Name	**128 N Nimitz (Former Gas Station)**	Date Reported	4/18/2022
Client Project#	**22-1991**		
Project#	**X240**		

Polychlorinated Biphenyls in Soil by EPA 8082A/3550C

Accu Lab Batch# AL041322-3

Client sample ID			**MS**	**MSD**	**RPD**
Lab ID	**MRL**	**Unit**	22-AL0412-2-4	22-AL0412-2-4	22-AL0412-2-4
Matrix			Soil	Soil	Soil
Date Extracted			4/13/2022	4/13/2022	4/13/2022
Date Analyzed			4/13/2022	4/13/2022	4/13/2022
A1016	0.10	mg/kg			
A1221	0.10	mg/kg			
A1232	0.10	mg/kg			
A1242	0.10	mg/kg			
A1248	0.10	mg/kg			
A1254	0.10	mg/kg			
A1260	0.10	mg/kg	116%	123%	6%
A1262	0.10	mg/kg			
Surrogate Recoveries					
Decachlorobiphenyl			97%	99%	
Tetrachloro-m-xylene			96%	109%	

Acceptable Recovery Limits:
Surrogates/LCS *60-150%*
MS/MSD *50-150%*
Acceptable RPD limit: *30%*

This report is issued solely for the use of the person or company to whom it is addressed.
Any use, copying or disclosure other than by the intended recipient is unauthorized.

12524 130th Lane NE
Kirkland WA 98034

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
website: www.accu-lab.com

Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**22-AL0412-2**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/07-08/2022
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/12/2022
Project Name	**128 N Nimitz (Former Gas Station)**	Date Reported	4/18/2022
Client Project#	**22-1991**		
Project#	**X240**		

Metals in Soil by EPA 6020B/EPA3050B

Accu Lab Batch# AL041322-11

Client sample ID					**DU-1A**	**DU-1B**	**DU-1C**	**DU-1D**
Lab ID	**MRL**	**Unit**	**MTH BLK**	**LCS**	22-AL0412-2-1	22-AL0412-2-2	22-AL0412-2-3	22-AL0412-2-4
Matrix			Soil	Soil	Soil	Soil	Soil	Soil
Date Digested			4/13/2022	4/13/2022	4/13/2022	4/13/2022	4/13/2022	4/13/2022
Date Analyzed			4/13/2022	4/13/2022	4/13/2022	4/13/2022	4/13/2022	4/13/2022
Cadmium (Cd)	1.0	mg/kg	nd	108%	2.7	nd	2.5	nd
Chromium (Cr)	2.0	mg/kg	nd	115%	71	51	80	26
Lead (Pb)	1.0	mg/kg	nd	113%	670	290	740	41

Acceptable Recovery Limits:
LCS *80-120%*
MS/MSD *75-125%*
Acceptable RPD limit: *20%*

12524 130th Lane NE
Kirkland WA 98034

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
website: www.accu-lab.com

ACCU LABORATORY

Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**22-AL0412-2**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/07-08/2022
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/12/2022
Project Name	**128 N Nimitz (Former Gas Station)**	Date Reported	4/18/2022
Client Project#	**22-1991**		
Project#	**X240**		

Metals in Soil by EPA 6020B/EPA3050B

Accu Lab Batch# AL041322-11

Client sample ID			**MS**	**MSD**	**RPD**
Lab ID	**MRL**	**Unit**	22-AL0412-1-1	22-AL0412-1-1	22-AL0412-1-1
Matrix			Soil	Soil	Soil
Date Digested			4/13/2022	4/13/2022	4/13/2022
Date Analyzed			4/13/2022	4/13/2022	4/13/2022
Cadmium (Cd)	1.0	mg/kg	97%	105%	8%
Chromium (Cr)	2.0	mg/kg	80%	95%	17%
Lead (Pb)	1.0	mg/kg	95%	108%	13%

Acceptable Recovery Limits:
LCS *80-120%*
MS/MSD *75-125%*
Acceptable RPD limit: *20%*

12524 130th Lane NE
Kirkland WA 98034

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
website: www.accu-lab.com

Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**22-AL0412-2**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/07-08/2022
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/12/2022
Project Name	**128 N Nimitz (Former Gas Station)**	Date Reported	4/18/2022
Client Project#	**22-1991**		
Project#	**X240**		

TPH-GRO in Water by EPA 8260D/5030B

Accu Lab Batch# AL041222-1

Client sample ID					**DU-1-WELL-1**	**DU-1-WELL-2**	**MS**	**MS**	**RPD**
Lab ID	**MRL**	**Unit**	**MTH BLK**	**LCS**	22-AL0412-2-5	22-AL0412-2-6	22-AL0412-3-1	22-AL0412-3-1	22-AL0412-3-1
Matrix			Water	Water	Water	Water	Water	Water	Water
Date Analyzed			4/12/2022	4/12/2022	4/12/2022	4/12/2022	4/12/2022	4/12/2022	4/12/2022
Gasoline Range Organics (GRO)	0.25	mg/l	nd	88%	nd	nd	88%	93%	6%
Surrogate Recoveries									
Dibromofluoromethane			106%	104%	112%	109%	102%	99%	
4-Bromofluorobenzene			105%	103%	104%	104%	97%	104%	

Acceptable Recovery Limits:
Surrogates/LCS *70-130%*
MS/MSD *65-135%*
Acceptable RPD limit: *30%*

12524 130th Lane NE
Kirkland WA 98034

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
website: www.accu-lab.com

ACCU LABORATORY

Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**22-AL0412-2**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/07-08/2022
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/12/2022
Project Name	**128 N Nimitz (Former Gas Station)**	Date Reported	4/18/2022
Client Project#	**22-1991**		
Project#	**X240**		

Volatiles in Water by EPA 8260C/5030B

Accu Lab Batch# AL041222-1

Client sample ID					**DU-1-WELL-1**	**DU-1-WELL-2**
Lab ID	**MRL**	**Unit**	**MTH BLK**	**LCS**	22-AL0412-2-5	22-AL0412-2-6
Matrix			Water	Water	Water	Water
Date Analyzed			4/12/2022	4/12/2022	4/12/2022	4/12/2022
Chloromethane	2.0	ug/l	nd		nd	nd
Vinyl chloride	2.0	ug/l	nd	99%	nd	nd
Bromomethane	2.0	ug/l	nd		nd	nd
Chloroethane	2.0	ug/l	nd		nd	nd
Trichlorofluoromethane	2.0	ug/l	nd		nd	nd
1,1-Dichloroethene	2.0	ug/l	nd		nd	nd
Methylene Chloride	5.0	ug/l	nd		nd	nd
Methyl T-Butyl Ether (MTBE)	0.5	ug/l	nd	124%	nd	nd
trans-1,2-Dichloroethene	1.0	ug/l	nd		nd	nd
1,1-Dichloroethane	1.0	ug/l	nd	117%	nd	nd
2,2-Dichloropropane	1.0	ug/l	nd		nd	nd
cis-1,2-Dichloroethene	1.0	ug/l	nd		nd	nd
Methyl Ethyl Ketone (MEK)	1.0	ug/l	nd		nd	nd
Chloroform	1.0	ug/l	nd		nd	nd
1,1,1-Trichloroethane	1.0	ug/l	nd		nd	nd
Carbon tetrachloride	1.0	ug/l	nd		nd	nd
1,1-Dichloropropene	1.0	ug/l	nd		nd	nd
Benzene	0.5	ug/l	nd	108%	nd	nd
1,2-Dichloroethane (EDC)	1.0	ug/l	nd		nd	nd
Trichloroethene	1.0	ug/l	nd	116%	nd	nd
1,2-Dichloropropane	1.0	ug/l	nd		nd	nd
Dibromomethane	1.0	ug/l	nd		nd	nd
Bromodichloromethane	1.0	ug/l	nd		nd	nd
Toluene	1.0	ug/l	nd	96%	nd	nd
1,1,2-Trichloroethane	1.0	ug/l	nd		nd	nd
Tetrachloroethene	1.0	ug/l	nd	102%	nd	nd
1,3-Dichloropropane	1.0	ug/l	nd		nd	nd
Dibromochloromethane	1.0	ug/l	nd		nd	nd
1,2-Dibromoethane (EDB)	1.0	ug/l	nd		nd	nd

12524 130th Lane NE
Kirkland WA 98034

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
website: www.accu-lab.com

ACCU LABORATORY

Analytical Report

Client	Advanced Analytical Laboratory	Acculab WO#	22-AL0412-2
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/07-08/2022
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/12/2022
Project Name	128 N Nimitz (Former Gas Station)	Date Reported	4/18/2022
Client Project#	22-1991		
Project#	X240		

Volatiles in Water by EPA 8260C/5030B

Accu Lab Batch# AL041222-1

Client sample ID					DU-1-WELL-1	DU-1-WELL-2
Lab ID	**MRL**	**Unit**	**MTH BLK**	**LCS**	22-AL0412-2-5	22-AL0412-2-6
Matrix			Water	Water	Water	Water
Date Analyzed			4/12/2022	4/12/2022	4/12/2022	4/12/2022
Chlorobenzene	1.0	ug/l	nd	96%	nd	nd
1,1,1,2-Tetrachloroethane	1.0	ug/l	nd		nd	nd
Ethyl benzene	0.5	ug/l	nd	92%	nd	nd
m,p-Xylenes	2.0	ug/l	nd	94%	nd	nd
o-Xylene	1.0	ug/l	nd	96%	nd	nd
Styrene	1.0	ug/l	nd		nd	nd
Bromoform	2.0	ug/l	nd		nd	nd
Isopropyl benzene	0.5	ug/l	nd		nd	nd
1,2,3-Trichloropropane	1.0	ug/l	nd		nd	nd
Bromobenzene	0.5	ug/l	nd		nd	nd
1,1,2,2-Tetrachloroethane	0.5	ug/l	nd		nd	nd
n-Propylbenzene	0.5	ug/l	nd		nd	nd
2-Chlorotoluene	0.5	ug/l	nd		nd	nd
4-Chlorotoluene	0.5	ug/l	nd		nd	nd
1,3,5-TrimEthylbenzene	0.5	ug/l	nd		nd	nd
tert-Butylbenzene	0.5	ug/l	nd		nd	nd
1,2,4-TrimEthylbenzene	0.5	ug/l	nd		nd	nd
sec-Butylbenzene	0.5	ug/l	nd		nd	nd
1,3-Dichlorobenzene	0.5	ug/l	nd		nd	nd
p-Isopropyltoluene	0.5	ug/l	nd		nd	nd
1,4-Dichlorobenzene	0.5	ug/l	nd		nd	nd
1,2-Dichlorobenzene	0.5	ug/l	nd		nd	nd
n-Butylbenzene	0.5	ug/l	nd		nd	nd
1,2-Dibromo-3-Chloropropane	2.0	ug/l	nd		nd	nd
1,2,4-Trichlorobenzene	2.0	ug/l	nd		nd	nd
Hexachlorobutadiene	2.0	ug/l	nd		nd	nd
Naphthalene	2.0	ug/l	nd	104%	nd	nd
1,2,3-Trichlorobenzene	2.0	ug/l	nd		nd	nd

12524 130th Lane NE
Kirkland WA 98034

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
website: www.accu-lab.com

Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**22-AL0412-2**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/07-08/2022
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/12/2022
Project Name	**128 N Nimitz (Former Gas Station)**	Date Reported	4/18/2022
Client Project#	**22-1991**		
Project#	**X240**		

Volatiles in Water by EPA 8260C/5030B

Accu Lab Batch# AL041222-1

Client sample ID					**DU-1-WELL-1**	**DU-1-WELL-2**
Lab ID	**MRL**	**Unit**	**MTH BLK**	**LCS**	22-AL0412-2-5	22-AL0412-2-6
Matrix			Water	Water	Water	Water
Date Analyzed			4/12/2022	4/12/2022	4/12/2022	4/12/2022
Surrogate Recoveries						
Dibromofluoromethane			106%	99%	112%	109%
1,2-Dichloroethane-d4			108%	100%	111%	109%
Toluene-d8			100%	97%	101%	100%
4-Bromofluorobenzene			105%	95%	104%	104%

Acceptable Recovery Limits:

Surrogates/LCS	*70-130%*
MS/MSD	*65-135%*
Acceptable RPD limit:	*30%*

ACCU LABORATORY

12524 130th Lane NE
Kirkland WA 98034

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
website: www.accu-lab.com

Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**22-AL0412-2**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/07-08/2022
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/12/2022
Project Name	**128 N Nimitz (Former Gas Station)**	Date Reported	4/18/2022
Client Project#	**22-1991**		
Project#	**X240**		

Volatiles in Water by EPA 8260C/5030B

Accu Lab Batch# AL041222-1

Client sample ID			**MS**	**MS**	**RPD**
Lab ID	**MRL**	**Unit**	22-AL0412-3-1	22-AL0412-3-1	22-AL0412-3-1
Matrix			Water	Water	Water
Date Analyzed			4/12/2022	4/12/2022	4/12/2022
Chloromethane	2.0	ug/l			
Vinyl chloride	2.0	ug/l	82%	85%	3%
Bromomethane	2.0	ug/l			
Chloroethane	2.0	ug/l			
Trichlorofluoromethane	2.0	ug/l			
1,1-Dichloroethene	2.0	ug/l			
Methylene Chloride	5.0	ug/l			
Methyl T-Butyl Ether (MTBE)	0.5	ug/l	112%	122%	8%
trans-1,2-Dichloroethene	1.0	ug/l			
1,1-Dichloroethane	1.0	ug/l	116%	128%	10%
2,2-Dichloropropane	1.0	ug/l			
cis-1,2-Dichloroethene	1.0	ug/l			
Methyl Ethyl Ketone (MEK)	1.0	ug/l			
Chloroform	1.0	ug/l			
1,1,1-Trichloroethane	1.0	ug/l			
Carbon tetrachloride	1.0	ug/l			
1,1-Dichloropropene	1.0	ug/l			
Benzene	0.5	ug/l	106%	111%	4%
1,2-Dichloroethane (EDC)	1.0	ug/l			
Trichloroethene	1.0	ug/l	104%	116%	11%
1,2-Dichloropropane	1.0	ug/l			
Dibromomethane	1.0	ug/l			
Bromodichloromethane	1.0	ug/l			
Toluene	1.0	ug/l	99%	107%	8%
1,1,2-Trichloroethane	1.0	ug/l			
Tetrachloroethene	1.0	ug/l	95%	104%	9%
1,3-Dichloropropane	1.0	ug/l			
Dibromochloromethane	1.0	ug/l			
1,2-Dibromoethane (EDB)	1.0	ug/l			

12524 130th Lane NE
Kirkland WA 98034

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
website: www.accu-lab.com

ACCU LABORATORY

Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**22-AL0412-2**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/07-08/2022
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/12/2022
Project Name	**128 N Nimitz (Former Gas Station)**	Date Reported	4/18/2022
Client Project#	**22-1991**		
Project#	**X240**		

Volatiles in Water by EPA 8260C/5030B

Accu Lab Batch# AL041222-1

Client sample ID			**MS**	**MS**	**RPD**
Lab ID	**MRL**	**Unit**	22-AL0412-3-1	22-AL0412-3-1	22-AL0412-3-1
Matrix			Water	Water	Water
Date Analyzed			4/12/2022	4/12/2022	4/12/2022
Chlorobenzene	1.0	ug/l	91%	102%	12%
1,1,1,2-Tetrachloroethane	1.0	ug/l			
Ethyl benzene	0.5	ug/l	96%	106%	10%
m,p-Xylenes	2.0	ug/l	94%	101%	7%
o-Xylene	1.0	ug/l	92%	100%	8%
Styrene	1.0	ug/l			
Bromoform	2.0	ug/l			
Isopropyl benzene	0.5	ug/l			
1,2,3-Trichloropropane	1.0	ug/l			
Bromobenzene	0.5	ug/l			
1,1,2,2-Tetrachloroethane	0.5	ug/l			
n-Propylbenzene	0.5	ug/l			
2-Chlorotoluene	0.5	ug/l			
4-Chlorotoluene	0.5	ug/l			
1,3,5-TrimEthylbenzene	0.5	ug/l			
tert-Butylbenzene	0.5	ug/l			
1,2,4-TrimEthylbenzene	0.5	ug/l			
sec-Butylbenzene	0.5	ug/l			
1,3-Dichlorobenzene	0.5	ug/l			
p-Isopropyltoluene	0.5	ug/l			
1,4-Dichlorobenzene	0.5	ug/l			
1,2-Dichlorobenzene	0.5	ug/l			
n-Butylbenzene	0.5	ug/l			
1,2-Dibromo-3-Chloropropane	2.0	ug/l			
1,2,4-Trichlorobenzene	2.0	ug/l			
Hexachlorobutadiene	2.0	ug/l			
Naphthalene	2.0	ug/l	122%	132%	8%
1,2,3-Trichlorobenzene	2.0	ug/l			

12524 130th Lane NE
Kirkland WA 98034

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
website: www.accu-lab.com

ACCU LABORATORY

Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**22-AL0412-2**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/07-08/2022
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/12/2022
Project Name	**128 N Nimitz (Former Gas Station)**	Date Reported	4/18/2022
Client Project#	**22-1991**		
Project#	**X240**		

Volatiles in Water by EPA 8260C/5030B

Accu Lab Batch# AL041222-1

Client sample ID			MS	MS	RPD
Lab ID	**MRL**	**Unit**	22-AL0412-3-1	22-AL0412-3-1	22-AL0412-3-1
Matrix			Water	Water	Water
Date Analyzed			4/12/2022	4/12/2022	4/12/2022
Surrogate Recoveries					
Dibromofluoromethane			102%	99%	
1,2-Dichloroethane-d4			104%	111%	
Toluene-d8			98%	102%	
4-Bromofluorobenzene			97%	104%	

Acceptable Recovery Limits:

Surrogates/LCS	*70-130%*
MS/MSD	*65-135%*
Acceptable RPD limit:	*30%*

12524 130th Lane NE
Kirkland WA 98034

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
website: www.accu-lab.com

Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**22-AL0412-2**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/07-08/2022
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/12/2022
Project Name	**128 N Nimitz (Former Gas Station)**	Date Reported	4/18/2022
Client Project#	**22-1991**		
Project#	**X240**		

PAHs in Water by 8270D/3010C GC/MS-SIM

Accu Lab Batch# AL041622-5

Client sample ID				**DU-1-WELL-1**	**DU-1-WELL-2**
Lab ID	**MRL**	**Unit**	**MTH BLK**	22-AL0412-2-5	22-AL0412-2-6
Matrix			Water	Water	Water
Date Extracted			4/16/2022	4/16/2022	4/16/2022
Date Analyzed			4/18/2022	4/18/2022	4/18/2022
Naphthalene	0.05	ug/l	nd	nd	nd
2-Methylnaphthalene	0.05	ug/l	nd	nd	nd
1-Methylnaphthalene	0.05	ug/l	nd	nd	nd
Acenaphthylene	0.05	ug/l	nd	nd	nd
Acenaphthene	0.05	ug/l	nd	nd	nd
Fluorene	0.05	ug/l	nd	nd	nd
Phenanthrene	0.05	ug/l	nd	nd	nd
Anthracene	0.05	ug/l	nd	nd	nd
Fluoranthene	0.05	ug/l	nd	nd	nd
Pyrene	0.05	ug/l	nd	nd	nd
Benzo(a)anthracene	0.025	ug/l	nd	nd	nd
Chrysene	0.10	ug/l	nd	nd	nd
Benzo(b)fluoranthene	0.10	ug/l	nd	nd	nd
Benzo(k)fluoranthene	0.10	ug/l	nd	nd	nd
Benzo(a)pyrene	0.025	ug/l	nd	nd	nd
Indeno(1,2,3-cd)pyrene	0.10	ug/l	nd	nd	nd
Dibenzo(a,h)anthracene	0.10	ug/l	nd	nd	nd
Benzo(ghi)perylene	0.10	ug/l	nd	nd	nd
Surrogate Recoveries					
Nitrobenzene-d5			80%	99%	94%
Terphenyl-d14			71%	88%	100%

Acceptable Recovery Limits:

Surrogates/LCS	*50-150%*
MS/MSD	*50-150%*
Acceptable RPD Limit:	*30%*

12524 130th Lane NE
Kirkland WA 98034

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
website: www.accu-lab.com

ACCU LABORATORY

Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**22-AL0412-2**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/07-08/2022
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/12/2022
Project Name	**128 N Nimitz (Former Gas Station)**	Date Reported	4/18/2022
Client Project#	**22-1991**		
Project#	**X240**		

PAHs in Water by 8270D/3010C GC/MS-SIM

Accu Lab Batch# AL041622-5

Client sample ID				**DUP**	**RPD**
Lab ID	**MRL**	**Unit**	**LCS/MS**	**LCS/MS**	**LCS/MS**
Matrix			Water	Water	Water
Date Extracted			4/16/2022	4/16/2022	4/16/2022
Date Analyzed			4/18/2022	4/18/2022	4/18/2022
Naphthalene	0.05	ug/l	108%	100%	8%
2-Methylnaphthalene	0.05	ug/l			
1-Methylnaphthalene	0.05	ug/l			
Acenaphthylene	0.05	ug/l			
Acenaphthene	0.05	ug/l	80%	75%	7%
Fluorene	0.05	ug/l			
Phenanthrene	0.05	ug/l			
Anthracene	0.05	ug/l			
Fluoranthene	0.05	ug/l	116%	103%	12%
Pyrene	0.05	ug/l	103%	117%	13%
Benzo(a)anthracene	0.025	ug/l			
Chrysene	0.10	ug/l			
Benzo(b)fluoranthene	0.10	ug/l			
Benzo(k)fluoranthene	0.10	ug/l			
Benzo(a)pyrene	0.025	ug/l	111%	118%	6%
Indeno(1,2,3-cd)pyrene	0.10	ug/l			
Dibenzo(a,h)anthracene	0.10	ug/l			
Benzo(ghi)perylene	0.10	ug/l			
Surrogate Recoveries					
Nitrobenzene-d5			94%	119%	
Terphenyl-d14			92%	60%	

Acceptable Recovery Limits:

Surrogates/LCS	*50-150%*
MS/MSD	*50-150%*
Acceptable RPD Limit:	*30%*

12524 130th Lane NE
Kirkland WA 98034

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
website: www.accu-lab.com

Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**22-AL0412-2**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/07-08/2022
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/12/2022
Project Name	**128 N Nimitz (Former Gas Station)**	Date Reported	4/18/2022
Client Project#	**22-1991**		
Project#	**X240**		

Polychlorinated Biphenyls in Water by EPA 8082A/3510C

Accu Lab Batch# AL041622-4

Client sample ID				**DU-1-WELL-1**	**DU-1-WELL-2**		**DUP**	**RPD**
Lab ID	**MRL**	**Unit**	**MTH BLK**	22-AL0412-2-5	22-AL0412-2-6	**LCS**	**LCS**	**LCS**
Matrix			Water	Water	Water	Water	Water	Water
Date Extracted			4/16/2022	4/16/2022	4/16/2022	4/16/2022	4/16/2022	4/16/2022
Date Analyzed			4/18/2022	4/18/2022	4/18/2022	4/18/2022	4/18/2022	4/18/2022
A1016	0.10	ug/l	nd	nd	nd			
A1221	0.10	ug/l	nd	nd	nd			
A1232	0.10	ug/l	nd	nd	nd			
A1242	0.10	ug/l	nd	nd	nd			
A1248	0.10	ug/l	nd	nd	nd			
A1254	0.10	ug/l	nd	nd	nd			
A1260	0.10	ug/l	nd	nd	nd	91%	95%	4%
A1262	0.10	ug/l	nd	nd	nd			
Surrogate Recoveries								
Decachlorobiphenyl			85%	102%	92%	113%	117%	
Tetrachloro-m-xylene			91%	123%	104%	100%	103%	

Acceptable Recovery Limits:
Surrogates/LCS *60-150%*
MS/MSD *50-150%*
Acceptable RPD limit: *30%*

12524 130th Lane NE
Kirkland WA 98034

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
website: www.accu-lab.com

Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**22-AL0412-2**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/07-08/2022
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/12/2022
Project Name	**128 N Nimitz (Former Gas Station)**	Date Reported	4/18/2022
Client Project#	**22-1991**		
Project#	**X240**		

Dissolved Metals in Water by EPA 6020B/EPA3005A

Accu Lab Batch# AL041322-10

Client sample ID					**DU-1-WELL-1**	**DU-1-WELL-2**	**MS**	**MSD**	**RPD**
Lab ID	**MRL**	**Unit**	**MTH BLK**	**LCS**	22-AL0412-2-5	22-AL0412-2-6	22-AL0412-2-5	22-AL0412-2-5	22-AL0412-2-5
Matrix			Water	Water	Water	Water	Water	Water	Water
Date Prepared			4/13/2022	4/13/2022	4/13/2022	4/13/2022	4/13/2022	4/13/2022	4/13/2022
Date Analyzed			4/13/2022	4/13/2022	4/13/2022	4/13/2022	4/13/2022	4/13/2022	4/13/2022
Cadmium (Cd)	1.0	ug/l	nd	99%	nd	nd	88%	82%	7%
Chromium (Cr)	2.0	ug/l	nd	96%	nd	nd	96%	88%	9%
Lead (Pb)	1.0	ug/l	nd	101%	nd	nd	91%	85%	7%

Acceptable Recovery Limits:

LCS	*80-120%*
MS/MSD	*75-125%*
Acceptable RPD limit:	*20%*

12524 130th Lane NE
Kirkland WA 98034

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
website: www.accu-lab.com

Analytical Report

Client	Advanced Analytical Laboratory	**Acculab WO#**	**22-AL0412-2**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/07-08/2022
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/12/2022
Project Name	**128 N Nimitz (Former Gas Station)**	Date Reported	4/18/2022
Client Project#	**22-1991**		
Project#	**X240**		

Data Qualifiers and Comments:

Results reported on dry-weight basis for soil samples.

MRL- Method Reporting Limit
nd- Indicates the analyte is not detected at the listing reporting limit.
C- Coelution with other compounds.
M- % Recovery of surrogate, MS/MSD is out of the acceptable limit due to matrix effect.
B- Indicates the analyte is detected in the method blank associated with the sample.
J- The analyte is detected at below the reporting limit.
E- The result reported exceeds the calibration range, and is an estimate.
D- Sample required dilution due to matrix. Method Reporting Limits were elevated due to dilutions.
H- Sample was received or analyzed past holding time
Q- Sample was received with head space, improper preserved or above recommended temperature.
I- Due to insufficient sample, LCS/LCS DUP were analyzed in place of MS/MSD.
R- The recovery of this analyte in QC sample failed high, but the analyte was not detected in all related samples. No action was taken.
R-1- The RPD value for the MS/MSD was outside of QC acceptance limits however both recoveries were acceptable. All related samples were "nd". No action was taken.
R-2- The recovery of the surogate in sample failed high, but all related analytes were not detected in the sample. No action was taken.

ADVANCED ANALYTICAL LABORATORY-CHAIN OF CUSTODY RECORD

Phone: (808) 836 2252 Fax:(808) 836 2250 Address: 544 Ohohia St., unit 10 Honolulu, HI 96819

TURNAROUND TIME: STD **AAL PROJECT#:** X240

CLIENT: FORD & ASSOCIATES, INC.	PROJECT NAME: 128 N. NIMITZ (FORMER GAS STATION)
ADDRESS: 928 NUUANU AVE STE 505 HONOLULU	COLLECTOR: N. KIPPEN
PHONE: 8085976624 EMAIL: nkippen@fordassoc.com	DATE OF COLLECTION: 4/7/22 - 4/8/22
CLIENT PROJECT#: 22-1991	PROJECT MANAGER: N. KIPPEN

ANALYSES

Sample Number	Time	Sample type	Container Type	Multi-Incremental Volatile	Multi-Incremental Non Volatile	8015M TPH Fuel Scan	8015M TPH Gasoline	8015M TPH Diesel	8015M TPH Oil	8260B Volatiles	8260 BTEX		8270 PAH DOH 4	8270 PAH 17 analytes	8270 Semi Volatiles		8082 PCB	TCLP 8081 OrganoChlorine Pe	8081 Organochlorine Pesticides	TOTAL CHROMIUM	Total Lead	Total Cadmium	TCLP RCRA 8 Metals	Total RCRA 8 Metals			Field Notes	Number of containers	Number containers received
DU-1A	1040	SOIL	AMBER, ZIPLOCK	X	X	X				X				X			X			X	X	X						2	2
DU-1B	1041	SOIL	AMBER, ZIPLOCK	X	X	X				X				X			X			X	X	X						2	2
DU-1C	1042	SOIL	AMBER, ZIPLOCK	X	X	X				X				X			X			X	X	X						2	2
DU-1D	1043	SOIL	AMBER, ZIPLOCK	X	X	X				X				X			X			X	X	X						2	2
DU-1-WELL-1	0915	WATER	AMBERS, POLY, VOA			X				X				X			X			X	X	X						8	8
DU-1-WELL-2	1047	WATER	AMBERS, POLY, VOA			X				X				X			X			X	X	X						8	8

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
[signature]	4/7/22	[signature]	12:30 4.8.22
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE RECEIPT

TOTAL NUMBER OF CONTAINERS	24
CHAIN OF CUSTODY SEALS INTACT	NA
RECEIVED IN GOOD CONDITION	yes
TEMPERATURE	3.4°C
PAGE 1 OF 2	

LABORATORY NOTES:

TRAFFIC IMPACT ANALYSIS REPORT
CHINATOWN HOTEL DEVELOPMENT
HONOLULU, OAHU, HAWAII

DRAFT FINAL

March 20, 2023

Prepared for:

Ikenakea Development
Hawaiian Community Development Board
1188 Bishop Street, Suite 907
Honolulu, Hawaii 96813

Austin, Tsutsumi & Associates, Inc.
Civil Engineers • Surveyors
501 Sumner Street, Suite 521
Honolulu, Hawaii 96817-5031
Telephone: (808) 533-3646
Facsimile: (808) 526-1267
E-mail: atahnl@atahawaii.com
Honolulu • Wailuku, Hawaii

TRAFFIC IMPACT ANALYSIS REPORT
CHINATOWN HOTEL DEVELOPMENT

Honolulu, Oahu, Hawaii

DRAFT FINAL

Prepared for

Ikenakea Development
1188 Bishop Street, Suite 907
Honolulu, Hawaii 96813

Prepared by
Austin, Tsutsumi & Associates, Inc.
Civil Engineers • Surveyors
Honolulu • Wailuku, Hawaii

March 20, 2023

TABLE OF CONTENTS

TABLE OF CONTENTS
Cont'd

TABLE OF CONTENTS
Cont'd

TABLES

FIGURES

TABLE OF CONTENTS
Cont'd

AUSTIN, TSUTSUMI & ASSOCIATES, INC. CIVIL ENGINEERS • SURVEYORS
CONTINUING THE ENGINEERING PRACTICE FOUNDED BY H. A. R. AUSTIN IN 1934

TERRANCE S. ARASHIRO, P.E.
ADRIENNE W.L.H. WONG, P.E., LEED AP
DEANNA M.R. HAYASHI, P.E.
PAUL K. ARITA, P.E.
ERIK S. KANESHIRO, L.P.L.S., LEED AP
MATT K. NAKAMOTO, P.E.
GARRETT K. TOKUOKA, P.E.

DRAFT FINAL TRAFFIC IMPACT ANALYSIS REPORT

Chinatown Hotel Development

Honolulu, Oahu, Hawaii

1. INTRODUCTION

This report documents the findings of a traffic study conducted by Austin, Tsutsumi, and Associates, Inc. (ATA) to evaluate the traffic impacts resulting from the proposed Chinatown Hotel Development (hereinafter referred to as the "Project") located in Honolulu, Hawaii.

1.1 Project Description

The Project site is located in the Downtown Honolulu area, more specifically in the Chinatown Special District (CSD). The Project proposes to construct a 16-story, 240-room hotel with roughly 2,200 square feet of meeting space and various amenities including a fitness room, rooftop bar, and restaurant with outdoor seating. The Project also plans to include a small historic walkway that is open to the public but not intended to generate vehicle trips.

The Project site is situated near the intersection of Nimitz Highway and Kekaulike Street, which is adjacent to the Holau transit station, the future Honolulu Rail transit stop in Chinatown. The Project includes a valet system using mechanical parking lifts to park up to 126 vehicles on-site. The Project will provide a pick-up/drop-off area accessible via Nimitz Highway with right-in, right-out access only. Construction of the Project is anticipated to be completed by Year 2025 but analysis was completed at Year 2031 to reflect traffic conditions with the anticipated construction of the nearby Holau Transit Station and Kekaulike Street multimodal improvements project.

See Figure 1.1 for Project Location. See Figure 1.2 for the Project site plan.

1.2 Study Methodology

This study will address the following:

- Assess existing traffic operating conditions during the weekday AM and PM peak hours of traffic within the study area.
- Traffic Projections for Base Year 2031 (without the Project).
- Estimate the vehicular trips that will be generated by the Project.

- Traffic projections for the Project for Future Year 2031 (with Project).
- Provide recommendations for roadway improvements or other mitigative measures, as appropriate, to reduce or eliminate the adverse impacts resulting from traffic generated by the Project.

1.2.1 Intersection Analysis Methodology

Level of Service (LOS) is a qualitative measure used to describe the conditions of traffic flow at intersections, with values ranging from free-flow conditions at LOS A to congested conditions at LOS F. The Highway Capacity Manual (HCM), 2000 and The Highway Capacity Manual (HCM), 6th Edition includes methods for calculating volume-to-capacity (v/c) ratios, delays, and corresponding LOS that were used in this study. See Appendix A for LOS Criteria.

Analyses for the study intersections were performed using the traffic analysis software Synchro, which is able to prepare reports based on the methodologies described in the HCM. These reports contain control delay results as based on intersection lane geometry, signal timing, and hourly traffic volumes. Based on the vehicular delay at each intersection, a LOS is assigned to each approach and intersection movement as a qualitative measure of performance. These results, as confirmed or refined by field observations, constitute the technical analysis that will form the basis of the recommendations outlined in this report.

1.2.2 Study Area Intersection Analysis

Intersection analysis was performed at the following study intersections due to their proximity to the Project:

1. Nimitz Highway & Maunakea Street (Unsignalized)
2. Nimitz Highway & Existing 120 Nimitz Driveway (Unsignalized)
3. King Street & Maunakea Street (Signalized)
4. King Street & Kekaulike Street (Signalized)
5. Nimitz Highway & Kekaulike Street (Unsignalized)

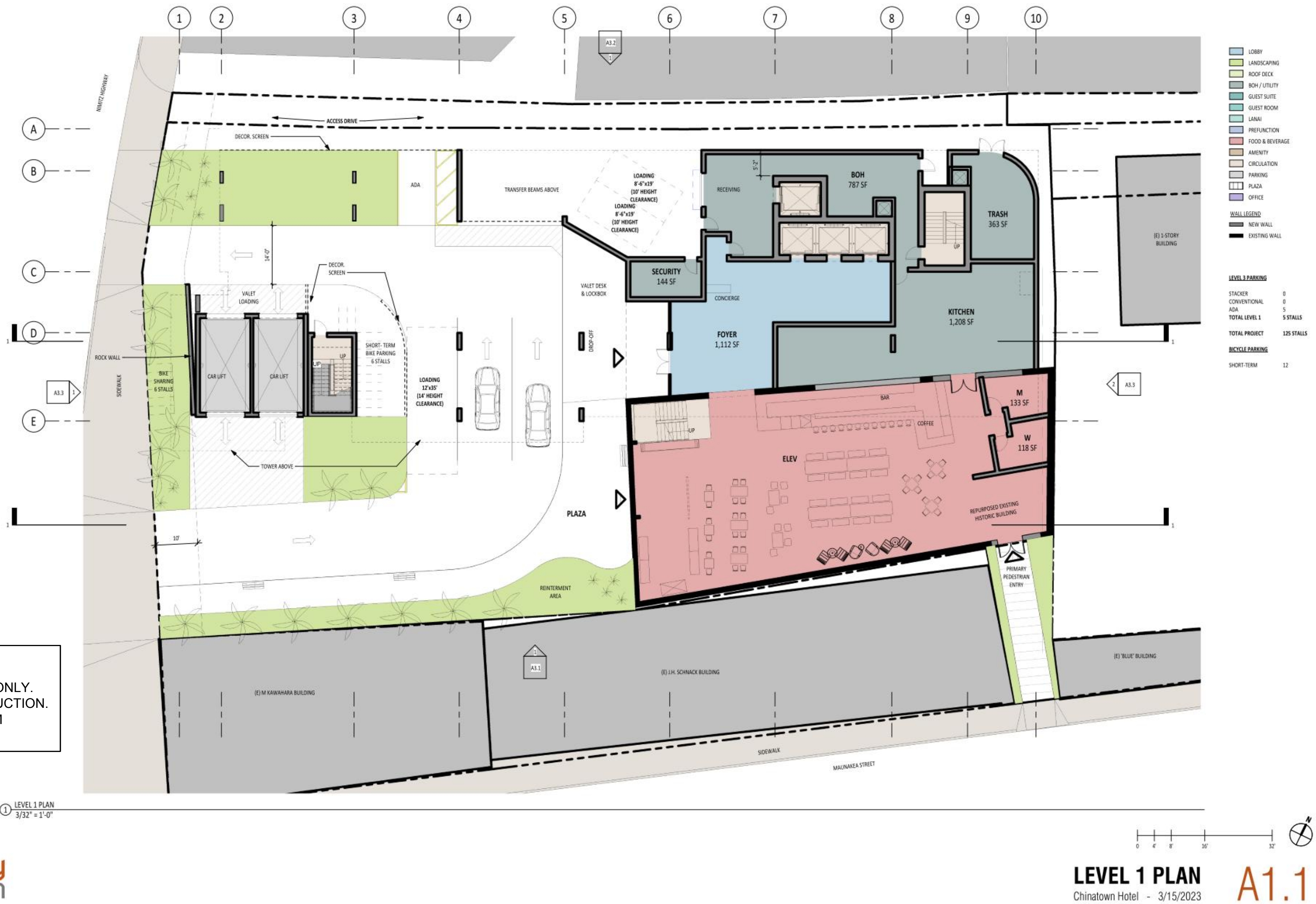
1.2.3 Multimodal Assessment Methodology

An assessment of multimodal operations within the study area was performed using the Transportation Impact Assessment (TIA) resources provided by the City and County of Honolulu (C&C). Multimodal transportation refers to the alternate modes of travel other than vehicles, and includes walking, bicycle, and transit. The specific methodology used for each mode is further discussed within Section 3.3 of this report.

FIGURE 1.1

LOCATION MAP

Austin Tsutsumi & Associates, Inc.
Engineers & Surveyors



NOTE:
THIS DRAWING IS FOR ILLUSTRATIVE PURPOSES ONLY. DO NOT USE FOR CONSTRUCTION. SITE PLAN OBTAINED FROM LOWNEY ARCHITECTURE.

FIGURE 1.2

PROJECT SITE PLAN

2. TRANSPORTATION ENVIRONMENT

2.1 Study Area

Existing Conditions

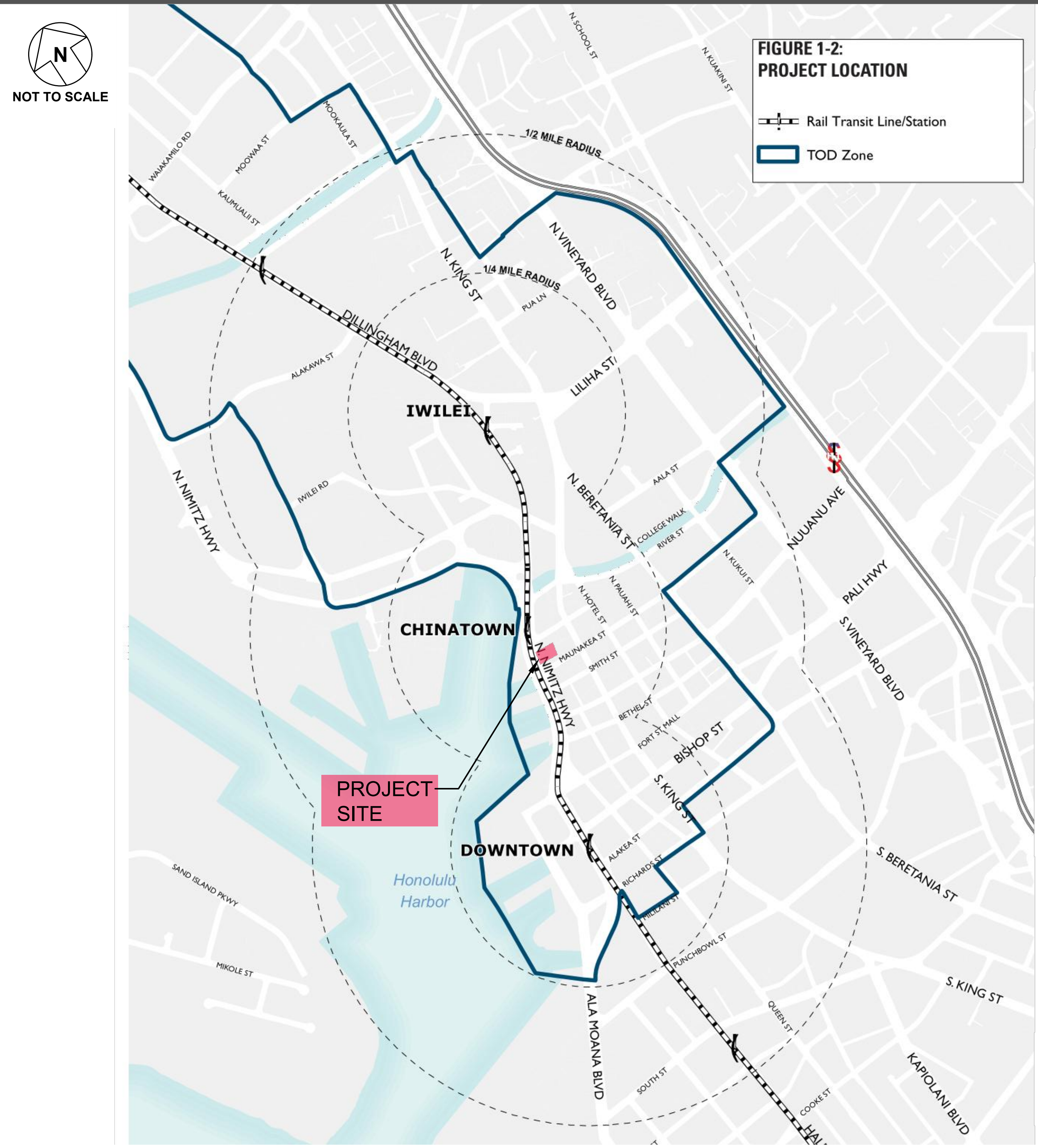
The Project is located within the Downtown Honolulu area, more specifically in the Chinatown Special District (CSD). The CSD is an approximately 522-acre area bounded by Beretania Street, Nuuanu Street, Honolulu Harbor, and Awa Street and is on the National Register of Historic Places. The special district was established to preserve and enhance its unique historic character, while allowing a mixture of commercial, residential, and recreational uses.

The buildings near the Project generally include ground floor shops and restaurants with affordable housing and small offices on the floors above. Nearby businesses are generally open between 7:00 AM and 3:00 PM on weekdays and Saturdays, and close early at 2:00 PM on Sundays.

Future Conditions

As previously mentioned, the Project is located near the future Holau transit station. In anticipation of the Honolulu Rail Transit, the Downtown Neighborhood TOD (transit-oriented development) Plan, dated August 2017, was developed to address the opportunities of growth and new development within the Downtown area near the three (3) proposed rail stations: Iwilei, Chinatown, and Downtown. The plan recommends an integrated transportation network that will improve the road network and facilities for all users, such as pedestrians, bicyclists, and transit riders.

The Downtown TOD zone is shown in Figure 2.1. Figure 2.2 shows the existing and proposed pedestrian, bicycle, transit, and motor vehicle facilities within the study area.



NOTE:
THIS DRAWING IS FOR ILLUSTRATIVE PURPOSES ONLY. DO NOT USE FOR CONSTRUCTION.

SOURCE: DOWNTOWN NEIGHBODHOOD TRANSIT-ORIENTED DEVELOPMENT PLAN, CITY AND COUNTY OF HONOLULU, AUGUST 2017

FIGURE 2.1

DOWNTOWN TOD ZONE

2.2 Pedestrian Facilities

Existing Conditions

Within the immediate vicinity of the Project, sidewalks are continuous along both sides of Maunakea Street, Nimitz Highway, and King Street. Controlled pedestrian crossings are provided for the north, east, and west approaches of the King Street/Maunakea Street intersection. Marked crosswalks are also provided at the south approach of Nimitz Highway and east approach of Maunakea Street.

According to the 2022 Oahu Pedestrian Plan, Kekaulike Street, River Street, King Street, and Maunakea Street are designated as part of the Pedestrian Priority Network, which is the network of C&C streets that provide pedestrian connections to major destinations and serves as the basis for walking in Oahu.

The Honolulu Complete Streets Design Manual provides guidance for sidewalks along various land use contexts. King Street is classified as a Downtown/Core/Main Street "Avenue" with a recommended minimum sidewalk zone width of 14 feet. Kekaulike Street is classified as a Downtown Core/Main Street "Street" with a recommended minimum sidewalk zone width of 14 feet.

Future Conditions

The Downtown TOD Plan includes pedestrian connectivity, streetscape, wayfinding, and lighting improvements to enhance pedestrian comfort and safety within the CSD district. The Downtown TOD Plan has identified the following pedestrian improvements within the study area:

- A shared use path is proposed along:
    - Kekaulike Street between North King Street and Nimitz Highway. This will extend sidewalks between North King Street and Nimitz Highway for pedestrians and bikes. It will have limited truck access for deliveries.
    - River Street, south of Nuuanu Stream, between Nimitz Highway and Beretania Street.
    - Nimitz Highway between Sumner Street and Fort Street Mall (path will continue through Aloha Tower waterfront area and connect to Ala Moana Boulevard)
- Pedestrian crossing improvements are proposed at the Nimitz Highway/Kekaulike Street study intersection.
- A pedestrian/bicycle bridge is proposed along Pauahi Street between River Street and Aala Park.
- Kekaulike Street will be converted into a shared-use street that will restrict most vehicular access. Authorized vehicles will be able to access Kekaulike Street during permitted loading hours.

The existing and proposed pedestrian facilities in the study area are shown in Figure 2.2.

2.3 Bicycle Facilities

Existing Conditions

Within the immediate vicinity of the Project, bike lanes are provided on both sides of Nimitz Highway. Hotel Street between Aala Park and Richards Street is a shared roadway (i.e. a roadway where bicyclists and motor vehicles are expected to share the same travel lane). The nearest Biki Bikeshare Stations near the Project are located along Fort Street Mall.

Future Conditions

The Oahu Bike Plan, dated December 2019, identified the following bicycle improvements within the study area:

- See Section 2.2 above, for the locations of the proposed shared use paths in the study area.
- A shared roadway is proposed along King Street between River Street and Bishop Street, which will connect to the proposed protected bike lane between Bishop Street and South Street – an extension of the existing cycle track along King Street and the proposed protected bike lane north of River Street.
- A shared roadway is proposed along River Street between Nimitz Highway and Beretania Street – the same location as the aforementioned shared use path.

A new Biki Bikeshare Station is proposed for the Kekaulike Mall.

The existing and proposed bicycle facilities in the study area are shown in Figure 2.2.

2.4 Transit

Existing Conditions

Oahu Transit Services (OTS) operates TheBus with a fleet of 540 fixed-route buses and services most populated areas of the island. Bus stops are available along King Street and Hotel Street within the Project area. Hotel Street is designated as a bus transit and bicycle only roadway between River Street and Alakea Street. A bus-only lane was recently constructed in December 2020 in the rightmost travel lane along King Street between Dillingham Boulevard and Alapai Street.

There are four (4) bus stops near the Project located on King Street and Hotel Street. As shown in Table 2.1, there are 35 bus routes that travel through the study area. All routes generally run at least once an hour, with the majority of the routes running two (2) or more times an hour during the AM and PM commuter peaks.

Future Conditions

The Honolulu Rail Transit is a fixed guideway rail system that is projected to span 20 miles between East Kapolei and Honolulu and is anticipated to be fully operational in 2031.[1] At full

[1] According to the Honolulu Authority for Rapid Transit (www.honolulutransit.org). Date Accessed February 22, 2022.

completion, it will provide 21 stations at key commuter and visitor destinations. As noted previously, the Project area is located near the future Holau transit station. The Holau transit station will be located on an elevated structure centered above Nimitz Highway between Kekaulike Street and River Street, and access to the station will be provided on the northwest corner of the Nimitz Highway/ Kekaulike Street intersection.

The existing and proposed transit facilities in the study area are shown in Figure 2.2.

Table 2.1: Bus Route Summary

Bus Route	Bus Stops On (within the study area)	Headways (during the AM and PM commuter peaks)
Route 1 – Kaimuki/Kalihi	Hotel Street	~5-10 min
Route 1L – Kalihi/Hawaii Kai Limited	King Street	~30-35 min
Route 2 – Waikiki/School/Middle	Hotel Street	~5-10 min
Route 2L – Kalihi/Waikiki/Kahala Limited	King Street	30-35 min
Route 3 – Kaimuki/Salt Lake	Hotel Street	~10-15 min
Route 9 – Kaimuki/Pearl Harbor	Hotel Street	~20-40 min
Route 11 – Makalapa/Halawa/Aiea Heights	King Street	~60 min
Route 13 – Liliha/Waikiki/University	Hotel Street	~15-20 min
Route 20 – Waikiki/Airport/Pearlridge	King Street	~ 15-30 min
Route 40 – Honolulu/Makaha	King Street	~25-30 min
Route 42 – Ewa Beach/Waikiki	King Street	~30-40 min
Route 43 – Waipahu/Honolulu/Alapai	King Street	~30 min
Route 51 – Honolulu/Wahiawa	King Street	~20-40 min
Route 52 – Honolulu/Mililani/Haleiwa	King Street	~20-30 min
Route 53 – Honolulu/Pacific Palisades	King Street	~35-65 min
Route 54 – Honolulu/Pearl City	King Street	~30-40 min
Route 81 – Waipahu Express	King Street	~15-25 min
Route 83 – Wahiawa Town Express	King Street	4 AM and 4 PM trips
Route 84 – Mililani Express - North	King Street	2 AM and 2 PM trips
Route 84A – Mililani Express - South	King Street	2 AM and 2 PM trips
Route 88A – North Shore Express	King Street	2 AM and 2 PM trips
Route 90 – Pearl City Express	King Street	1 AM and 1 PM trip
Route 91 – Ewa Beach Express	King Street	5 AM and 4 PM trips
Route 92 – Makakilo City Express	King Street	1 AM and 1 PM trip
Route 93 – Waianae Coast Express	King Street	~10-40 min
Route 94 – Villages of Kapolei Express	King Street	2 AM and 2 PM trips
Route 95 – Kapolei Homesteads Express	King Street	2 AM and 2 PM trips
Route 96 – Waipio Gentry Express	King Street	1 AM and 1 PM trip
Route 97 – Village Park Express	King Street	2 AM and 2 PM trips
Route 98 – Wahiawa/Mililani Park and Ride Express	King Street	2 AM and 2 PM trips
Route 98A – Wahiawa/Mililani Transit Center Express	King Street	2 AM and 2 PM trips
Route 101 – Ewa Gentry Express	King Street	3 AM and 2 PM trips
Route 103 – Paiwa/Waikele Express	King Street	2 AM and 2 PM trips
Route A – City Express (Waipahu to UH)	King Street	~10-30 min
Route C – Country Express (Makaha to Honolulu)	King Street	~30 min

2.5 Roadway System

Existing Conditions

The following are brief descriptions of the existing roadways in the vicinity of the Project:

King Street is generally a one-way, four-lane, north-south arterial[2], C&C roadway within the study area. As mentioned above, the rightmost travel lane has been dedicated as a bus-only lane as of December 2020. It begins at its intersection with H-1 Freeway to the north and terminates to the south at its intersection with Harding Avenue and Kapiolani Boulevard. King Street provides regional connectivity between Kalihi and McCully/Moiliili. The posted speed limit along this roadway is 25 miles per hour (mph) in the vicinity of the Project.

Maunakea Street is a C&C roadway that begins at its intersection with Vineyard Boulevard to the east and terminates to the west at its intersection with Nimitz Highway. Maunakea Street makai of North King Street is generally a one-way, one-lane, east-west local roadway. Although it is wide enough for two lanes, Maunakea Street is not striped as such and is wide enough for a vehicle to bypass a loading or parking vehicle adjacent to the parking lane. This roadway does not have a posted speed limit within the vicinity of the Project.

Kekaulike Street is a short C&C roadway that begins at its intersection with Hotel Street to the east and terminates to the west at its intersection with Nimitz Highway. Kekaulike Street makai of North King Street is generally a one-way, two-lane, east-west local[2] roadway. As mentioned above, Kekaulike Street mauka of North King Street is a pedestrian pathway with limited vehicular access, providing local access to the commercial/retail areas. This roadway has no posted speed limit.

Nimitz Highway is generally a two-way, six to eight-lane, divided principal arterial roadway. This roadway is a State highway. It provides regional connectivity between H-1 Freeway and Ala Moana Boulevard. The posted speed limit along this roadway is 35 mph in the vicinity of the Project.

Future Conditions

The following roadway modifications are anticipated within the study area:

- As previously mentioned, Kekaulike Street will be converted into a shared-use street that will restrict most vehicular access. Authorized vehicles will be able to access Kekaulike Street during permitted loading hours.

2.6 Parking/Loading Facilities

On-street parking is provided along Maunakea Street, with some portions designated as a freight loading zone on Monday through Saturday between 7:00 AM to 4:00 PM. There are several nearby off-street parking areas including Chinatown Marketplace Parking Lot, Harbor Courtyard Garage, and Kekaulike Courtyard Garage.

Within the study area, on-street parking is provided on the mauka side of King Street between River Street and Maunakea Street, designated as a freight loading zone Monday through Friday

---

[2] Based on the Downtown Neighborhood Transit-Oriented Development Plan, City and County of Honolulu, August 2017.

between 8:30 AM and 3:30 PM. On Saturdays, Sundays, and State Holidays on-street parking on King Street is permitted for all users (i.e. a permit is not required). Tow-away hours are 4:00 AM to 8:30 AM and 3:30 PM to 6:30 PM on Monday through Friday, and 4:00 AM to 6:00 AM on Saturdays.

CHINATOWN HOTEL
DEVELOPMENT TIAR

AustinTsutsumi
& ASSOCIATES, INC.
Engineers & Surveyors

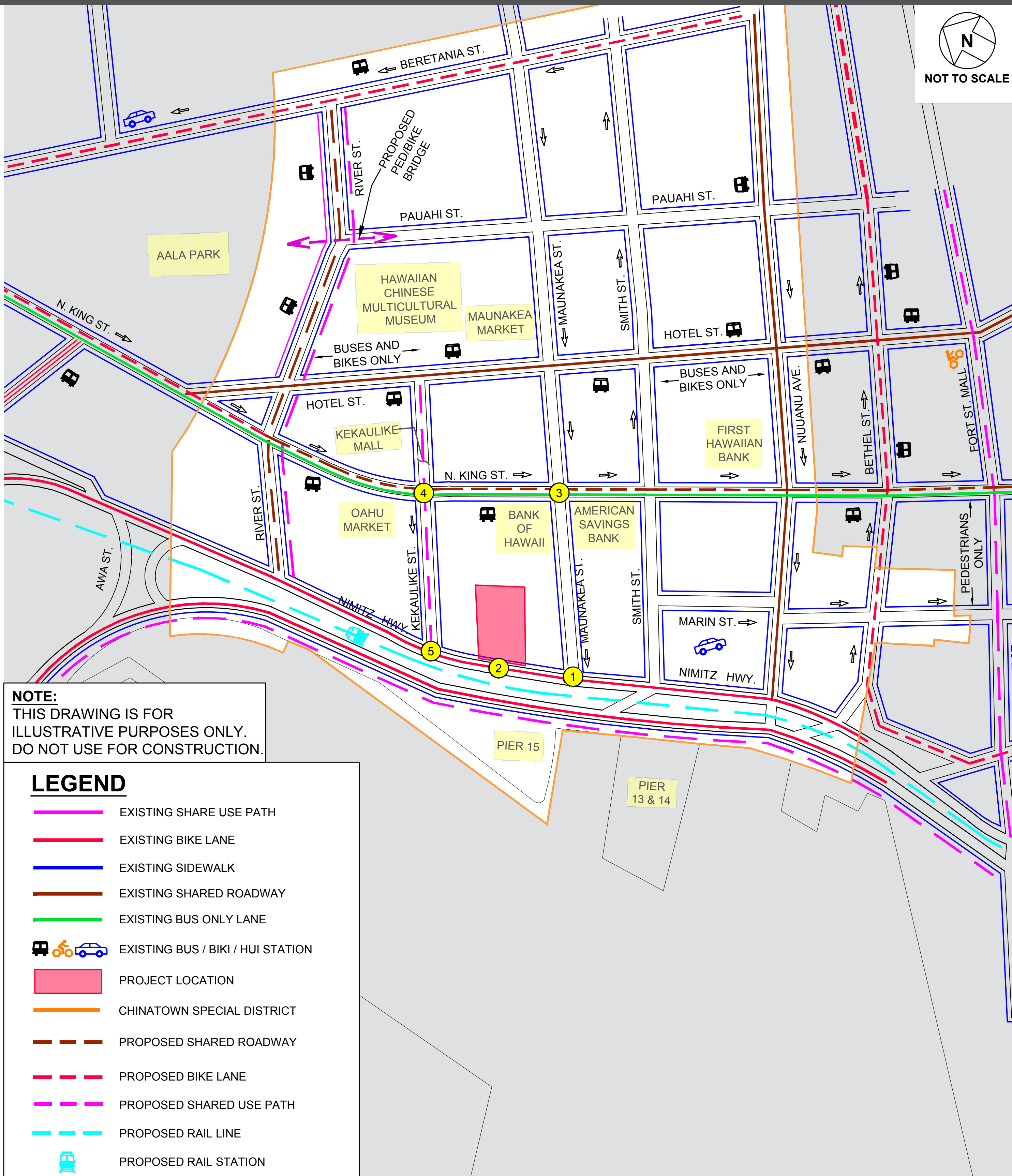


FIGURE 2.2

EXISTING AND PROPOSED PEDESTRIAN,
BICYCLE AND TRANSIT FACILITIES

3. EXISTING TRAFFIC CONDITIONS

Turning movement traffic counts and pedestrian counts were conducted at the study intersections on Thursday, January 27, 2022. Because Nimitz Highway is a divided roadway only the westbound and northbound movements were included in the data collection.

Based on the count data, the weekday AM and PM peak hours of traffic within the study area generally occur between 7:30 AM and 8:30 AM and 4:00 PM and 5:00 PM. Traffic count data is provided in Appendix B.

To account for the potential disruptions to traffic in the Honolulu area as a result of the impacts of COVID-19, previously collected 2019 traffic volume data at the study intersections were used to estimate an appropriate adjustment. An adjustment factor of 40% and 23% was applied to King Street and Nimitz Highway, respectively, to account for potential traffic disruptions related to the COVID-19 pandemic.

Finally, an annual ambient growth rate of 0.23% and 0.04%, which is based on the Oahu Regional Transportation Plan 2040 Travel Demand Forecasting Model described in Section 4.1, was applied to the through movements on King Street and Nimitz Highway, respectively, to conservatively represent traffic growth between year 2019 and 2022.

3.1 Regional Observations

During the AM peak hour of traffic, relatively light vehicular traffic was observed along King Street, northbound Nimitz Highway, Kekaulike Street, and Maunakea Street as commuters head to work. Relatively light pedestrian activity within the study area was observed during the AM peak hour of traffic. The PM peak hour of traffic was observed to experience similarly light traffic as the AM peak hour. Traffic queues were observed along King Street and Nimitz Highway further downstream of the study area, but not through. Pedestrian activity was light during the PM peak hour of traffic as most of the nearby businesses close by/around 3:00 PM.

However, the observed conditions as noted may be a reflection of data collected during COVID-19 pandemic conditions. Previous observations collected in the area from other projects in 2019 reflected heavy southbound traffic along King Street during the commuter peaks, often extending beyond the Maunakea Street intersection. Heavy southbound traffic was also observed along Nimitz Highway in 2019 conditions during the commuter PM peak.

3.2 Existing Vehicle Intersection Analysis

All movements at the study intersections currently operate at LOS D or better during the weekday AM and PM peak hours of traffic.

Table 3.1 shows a summary of the existing delay, v/c ratio, and LOS. Figure 3.1 shows the existing traffic volumes and lane configuration at the study intersections. LOS worksheets are provided in Appendix C.

AustinTsutsumi & ASSOCIATES, INC. Engineers & Surveyors

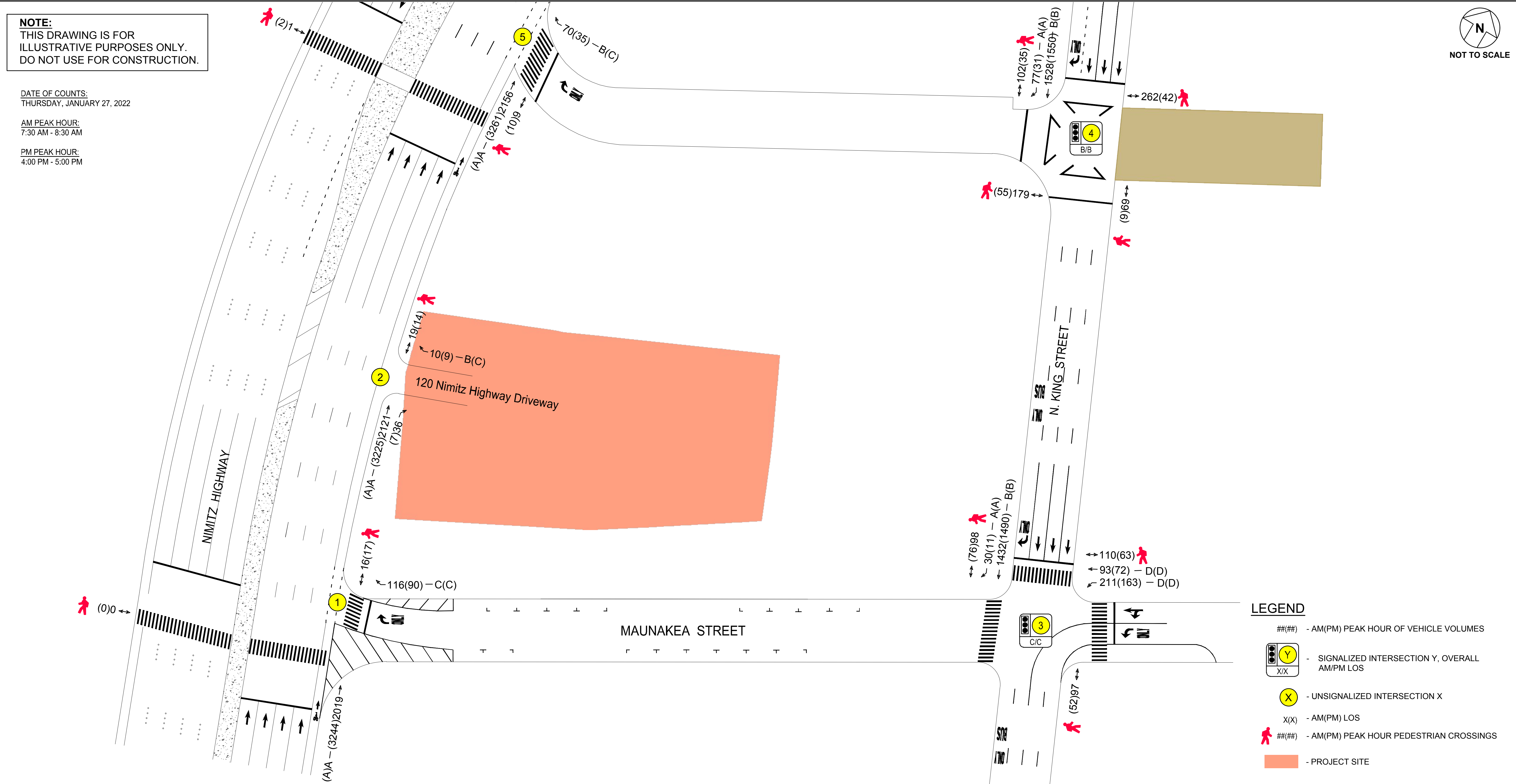


FIGURE 3.1

EXISTING CONDITIONS, LANE CONFIGURATION, TRAFFIC VOLUMES, AND LOS

TABLE 3.1: LOS SUMMARY TABLE
EXISTING CONDITIONS

Intersection	Existing 2022 Conditions					
	AM			PM		
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS
1: Nimitz Highway & Maunakea Street*						
NB TH	0.0	0.32	A	0.0	0.52	A
WB RT	15.8	0.27	C	25.0	0.35	C
OVERALL	0.9	0.48	A	0.7	0.65	C
2: Nimitz Highway & Existing 120 Nimitz Driveway*						
NB TH/RT	0.0	0.22	A	0.0	0.30	A
WB RT	13.7	0.03	B	18.4	0.04	C
OVERALL	0.1	0.48	A	0.1	0.63	B
3: King Street & Maunakea Street						
WB LT	38.3	0.51	D	46.8	0.50	D
WB LT/TH	42.0	0.75	D	51.3	0.75	D
SB TH	17.3	0.41	B	18.2	0.40	B
SB RT	8.8	0.02	A	7.9	0.01	A
OVERALL	21.4	-	C	22.6	-	C
4: King Street & Kekaulike Street*						
SB TH	13.5	0.58	B	11.5	0.53	B
SB RT	9.1	0.09	A	7.5	0.03	A
OVERALL	13.3	-	B	11.5	-	B
5: Nimitz Highway & Kekaulike Street*						
NB TH	0.0	0.34	A	0.0	0.52	A
WB RT	15.0	0.17	B	20.2	0.14	C
OVERALL	0.5	0.49	A	0.2	0.66	C

Notes:
* Due to limitations in the HCM 6th Edition and HCM 2010 methodology, this intersection was analyzed using HCM 2000

3.3 Existing Multimodal Accessibility and Assessment

Sidewalks are present along both sides of Kekaulike Street, Maunakea Street, King Street, and Nimitz Highway. Marked crosswalks are provided at each study intersection. The intersection of King Street and Kekaulike Street provides a pedestrian scramble instead of ladder crosswalks.

3.3.1 Safe Speed Study

The National Association of City Transportation Officials (NACTO) published City Limits: Setting Safe Speed Limits on Urban Streets in September 2020, which recommends speeds based on conflict density and activity level along the corridor. The results of the NACTO Safe Speed Study are shown in Table 3.2 below.

Table 3.2: NACTO Safe Speed Study Speed Limit Determination

Segment	Conflict Density	Activity Level	Resulting Speed Limit
Nimitz Highway – Maunakea St to Kekaulike St	High	Low	25 MPH
King Street – Kekaulike St to Maunakea St	High	High	20 MPH
Maunakea Street – King St to Nimitz Hwy	High	Moderate	20 MPH
Kekaulike Street – King St to Nimitz Hwy	High	Moderate	20 MPH

3.3.2 Existing Pedestrian Analysis

Pedestrian performance was evaluated using the Pedestrian Environmental Quality index (PEQI) spreadsheet tool developed by the University of California, Los Angeles. The PEQI tool generates a score of the pedestrian environment ranging from 0 to 100 for roadway segments and intersections. Pedestrian environment scores are based on intersection safety, vehicle traffic, sidewalks, land use, perceived safety, and perceived walkability. The PEQI score is translated into a score based on Table 3.3 below.

Table 3.3: PEQI 2.0 Output Score Range

Score	Description
100 to 81	Ideal pedestrian conditions exist
61 to 80	Reasonable pedestrian conditions exist
41 to 60	Basic pedestrian conditions exist
21 to 40	Poor pedestrian conditions exist
0 to 20	Environment not suitable for pedestrians

Each study intersection was evaluated, except the intersection with the existing driveway. All evaluated intersections experience “basic pedestrian conditions” as shown in Table 3.4. Pedestrian travel beyond the study intersections was analyzed with the PEQI Segment Analysis.

Table 3.4: Existing PEQI Intersection Summary

Study Intersection ID	Intersection Description	EXISTING PEQI SCORE
1	Nimitz Hwy & Maunakea St	55.8 (basic)
3	King Street & Maunakea St	46.2 (basic)
4	King St & Kekaulike St	66 (basic)
5	Nimitz Hwy & Kekaulike St	55.8 (basic)

PEQI Segment Analysis was conducted on sidewalks along the street segments bordering the Project site. Because continuous sidewalks are present along all segments studied, each side of the street was analyzed except for Nimitz Highway, which only had its eastern side analyzed.

Maunakea Street is a westbound single lane street with parking available on both sides of the roadway. While all sidewalks are in good condition, homeless camps are occasionally present along both sides of Maunakea Street. A combination of litter, strong odors, and illegal graffiti also contribute to the "basic pedestrian conditions" found along Nimitz Highway and Maunakea Street.

King Street is a southbound four-lane street with no street parking available. Sidewalks along both sides of the street are in good condition and are lined with continuous trees. However, the eastern sidewalk was observed to have commercial rubbish obstructing the path, resulting in a lower score compared to the western side.

Kekaulike Street is a westbound single lane street with commercial loading zones on both sides of the roadway. The street has narrow sidewalks along both sides that are in good condition and continuous trees along the southern side. However, homeless camps are typically present on both sides that obstruct movement. Graffiti and odors are also present that contribute to a "basic pedestrian conditions" score for this roadway.

The section of Nimitz Highway fronting the Project site is a four-lane roadway with no street parking available. A bicycle lane is present that serves as a small buffer, and trees are sporadically present along the roadway. Due to the relatively higher vehicle speed along the roadway, the noise levels are noticeable higher than the other studied segments. Although the sidewalks are in good condition graffiti and construction sites contribute to the "basic pedestrian conditions" score for this roadway.

See Table 3.5 for the Existing PEQI Segment analysis.

Table 3.5: Existing PEQI Segment Summary

Segment ID	Segment Description	Existing PEQI Score
1	Nimitz Highway Maunakea St to Kekaulike St (Northbound)	57.1 (basic)
2	Kekaulike Street King St to Nimitz Hwy (Westbound)	44.2 (basic)
3	Kekaulike Street Nimitz Hwy to King St (Eastbound)	58.7 (basic)
4	Maunakea Street King St to Nimitz Hwy (Westbound)	57.1 (basic)
5	Maunakea Street Nimitz Hwy to King St (Eastbound)	58.4 (basic)
6	King Street Maunakea St to Kekaulike St (Northbound)	54.3 (basic)
7	King Street Kekaulike St to Maunakea St (Southbound)	60.6 (reasonable)

3.3.3 Existing Bicycle Analysis

Bicycle comfort level was evaluated using the Level of Traffic Stress (LTS) methodology developed by the Mineta Transportation Institute. This analysis determines the level of comfort or stress bicyclists experience along street segments by considering traffic conditions including vehicular volumes, travel speeds, and number of lanes. The study segment is then scored based on Table 3.6 below.

The Nimitz Highway segment currently operates with a high level of traffic stress, Bicycle LTS 4. While this segment does have bike lanes on both sides of the roadway, the wide cross section and having the bike lanes adjacent to the motor vehicle lanes makes the roadway less comfortable for inexperienced cyclists.

Kekaulike Street and Maunakea Street currently operate with relatively low levels of traffic stress. Although they do not provide bicycle lanes, the lower traffic volumes reduce the stress experienced by cyclists.

King Street currently operates with a Bicycle LTS 4. This is due to high traffic flow in conjunction with a lack of bicycle lanes.

The existing bicycle LTS scores are shown in Table 3.7.

Table 3.6: Bicycle LTS and Scale

Description	Bicycle LTS 1-4
Lowest level of traffic stress. All types of cyclists feel comfortable at this level. Facility types include separated bike lanes.	1
Second lowest level of traffic stress. Families and less experienced cyclists may feel less comfortable on these facilities. Facility types include buffered bike lanes.	2
Higher level of traffic stress. Fewer cyclists are comfortable on this roadway type. Facility examples include narrow bike lanes or a shoulder on a busy street.	3
Highest level of traffic stress. Only the most experienced cyclists are willing to use these roadways. Examples include busy four lane roads with no bike lanes.	4

Table 3.7: Existing Bicycle LTS

Segment ID	Segment Description	Bike LTS
		Existing
1	Nimitz Highway Maunakea Rd to Kekaulike Rd (Northbound)	LTS 4
2	Kekaulike Street King St to Nimitz Hwy (Westbound)	LTS 2
3	King Street Kekaulike St to Maunakea St (Southbound)	LTS 4
4	Maunakea Street King St to Nimitz Hwy (Westbound)	LTS 3

3.3.4 Existing Transit Analysis

Transit performance was evaluated using the Transit capacity and Quality of Service Manual (TCQSM) model developed by the Transportation Research Board. The TCQSM model assigns a Transit LOS between A and F based on transit operations and amenities as well as the pedestrian environment. The Transit LOS is translated into a score based on Table 3.8 below.

The Department of Transportation Services (DTS) provides transit data as part of the C&C's TIA resources. This data was used to evaluate the LOS of bus stops within the study area.

Both King Street study segments operate with a Transit LOS B since the bus stops along this roadway serve a number of local and express routes. Buses along Hotel Street have a much lower average speed due to more frequent stops, resulting in a Transit LOS of B for the southbound segment of Hotel Street. The northbound segment of Hotel Street is rated at a Transit LOS C because it serves less routes than its southbound counterpart. The existing Transit LOS scores are shown in Table 3.9.

Table 3.8: Transit LOS Scoring System

Transit LOS Letter	Transit LOS Score
A	< 2
B	2 to 2.75
C	2.76 to 3.5
D	3.6 to 4.25
E	4.26 to 5
F	>5

Table 3.9: Existing Transit Score Summary

Segment ID	Segment Description	Existing	
		Score	LOS
1	King Street River St to Kekaulike St (Southbound)	2.12	B
2	King Street Kekaulike St to Maunakea St (Southbound)	2.18	B
3	Hotel Street Kekaulike St to Maunakea St (Southound)	2.68	B
4	Hotel Street Maunakea St to Kekaulike St (Northbound)	2.79	C

4. BASE YEAR 2031 TRAFFIC CONDITIONS

Although the Project is anticipated to be constructed by 2025, the Year 2031 was selected as the Base Year to analyze the future conditions with the anticipated completion of the Holau Transit Station and Kekaulike Street multimodal improvements project. The Base Year 2031 scenario represents the traffic conditions within the study area without the Project.

These calculations were conducted using the adjusted existing volumes discussed in Section 3 to provide more accurate projections that are representative of the future traffic environment without the impact of COVID-19.

4.1 De Facto Growth Rate

Background traffic growth in the study area was estimated based on the Oahu Regional Transportation Plan 2040 (ORTP) Travel Demand Forecasting Model (TDFM). The TDFM uses data from 2012 as its baseline before assigning land uses and socioeconomic data to Traffic Analysis Zones (TAZs) to generate and assign traffic across the roadway network. Based on the TDFM, background growth rates of 0.04% and 0.23% were applied along North King Street and Nimitz Highway, respectively, to estimate Base Year 2031 conditions without the Project.

Traffic volumes along Maunakea Street are projected by the model to decrease from 2012 to 2040, so a growth rate of 0% was applied to be conservative.

4.2 Background Developments

In addition to the de facto growth rate, background projects that are anticipated to generate traffic within the Project study area are added to the existing roadway network. The known developments are listed below based on the best information available at the time of this report:

- Honolulu Rail Transit – This project proposes a raised light rail system to serve the island of Oahu between Kapolei and Honolulu. Because the 2040 ORTP TDFM considers this project to completed, no additional vehicle trips were added to the study intersections. The project's Holau transit station is expected to be fully constructed and operational in 2031.

- Kekaulike TOD Improvements – This project proposes to convert the existing Kekaulike Street into a shared-use street primarily for pedestrians. Most vehicular traffic will be restricted to provide an open-shared space for pedestrian and business use. Based on the Traffic Assessment for Kekaulike Mall and Kekaulike Multimodal Improvements Project, conducted by ATA in May 2021, this project is expected to be completed by 2026 but is not anticipated to generate additional vehicle trips. Vehicular traffic will be rerouted from Kekaulike Street onto nearby roadways, primarily King Street and Maunakea Street.

4.3 Planned Roadway Projects

The following roadway projects are planned in the study area and are expected to be completed by Year 2031:

- Honolulu Rail Transit – As mentioned, this project proposes a raised light rail system to serve the island of Oahu between Kapolei and Honolulu. The raised platform is proposed to run above the median on Nimitz Highway. According to renders of the project, the roadway configuration of Nimitz Highway will remain the same as existing, so no changes were assumed in analysis.

- Kekaulike TOD Improvements – As mentioned, Kekaulike Street is eventually planned to be converted into a shared-use path that will restrict access of most vehicles in the future. To account for this, traffic volumes along Kekaulike Street were rerouted onto nearby roadways, primarily King Street and Maunakea Street.

4.4 Base Year 2031 Vehicle Intersection Analysis

Under Base Year 2031 conditions, all study intersections are expected to continue operating similar to existing conditions during the AM and PM peak hours of traffic. The LOS of right turns to and from Maunakea Street slightly worsened because of the rerouted traffic from Kekaulike Street.

Each study intersection is expected to continue operating with all movements at LOS D or better during the AM and PM peak hours of traffic.

Table 4.1 shows a summary of the Base Year 2031 delay, v/c ratio, and LOS. Figure 4.1 shows the Base Year 2031 traffic volumes and lane configuration at the study intersections. LOS worksheets are provided in Appendix C.

CHINATOWN HOTEL
DEVELOPMENT TIAR

AustinTsutsumi & Associates, Inc.
Engineers & Surveyors

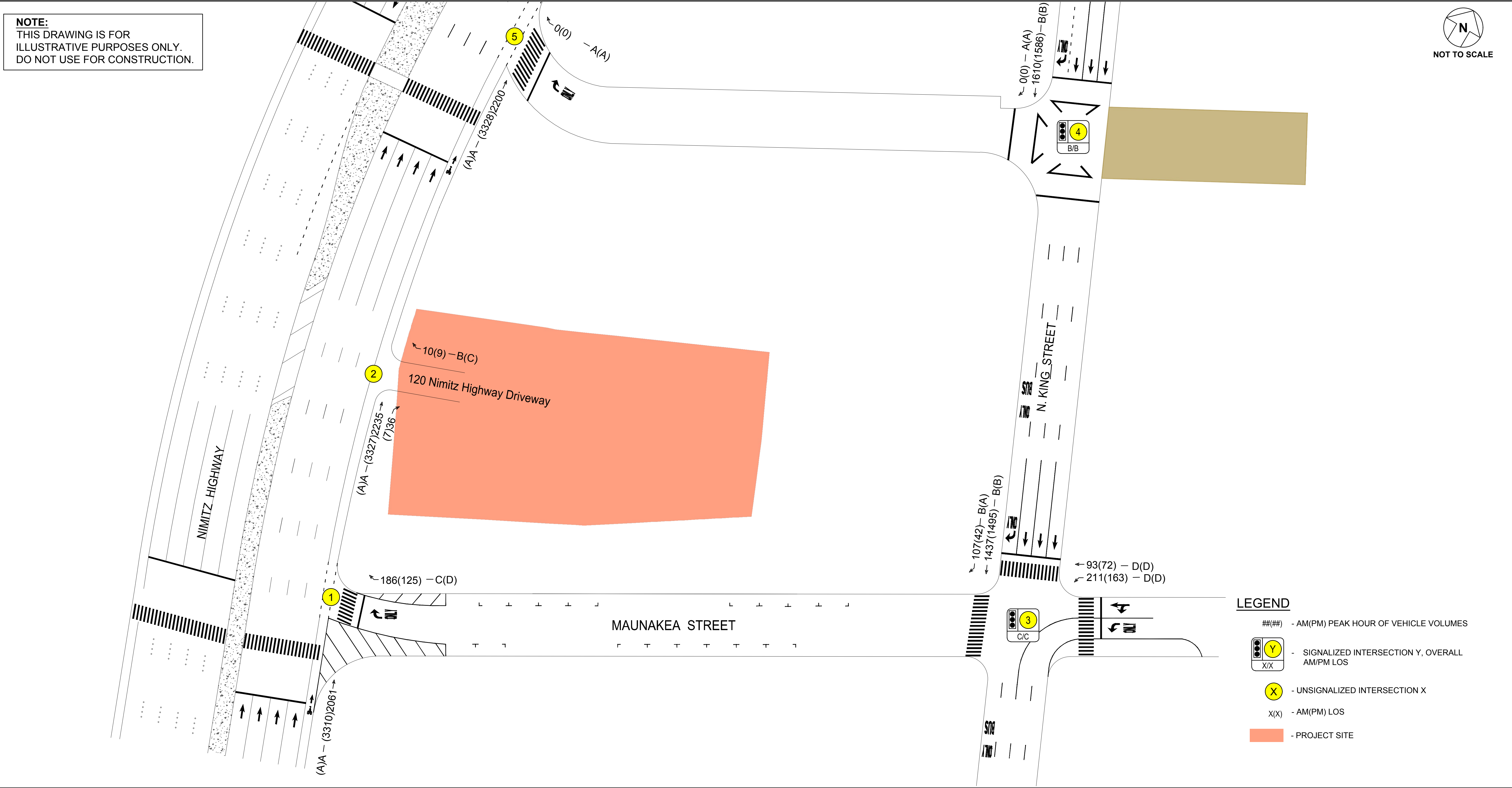


FIGURE 4.1

BASE YEAR 2031 CONDITIONS, LANE CONFIGURATION, TRAFFIC VOLUMES, AND LOS

TABLE 4.1: LOS SUMMARY TABLE
EXISTING CONDITIONS AND BASE YEAR 2031

Intersection	Existing 2022 Conditions						Base Year 2031					
	AM			PM			AM			PM		
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS
1: Nimitz Highway & Maunakea Street*												
NB TH	0.0	0.32	A	0.0	0.52	A	0.0	0.33	A	0.0	0.53	A
WB RT	15.8	0.27	C	25.0	0.35	C	19.2	0.45	C	31.3	0.51	D
OVERALL	0.9	0.48	A	0.7	0.65	C	1.6	0.51	A	1.1	0.67	C
2: Nimitz Highway & Existing 120 Nimitz Driveway*												
NB TH/RT	0.0	0.22	A	0.0	0.30	A	0.0	0.23	A	0.0	0.31	A
WB RT	13.7	0.03	B	18.4	0.04	C	14.1	0.03	B	19.0	0.04	C
OVERALL	0.1	0.48	A	0.1	0.63	B	0.1	0.50	A	0.1	0.64	B
3: King Street & Maunakea Street												
WB LT	38.3	0.51	D	46.8	0.50	D	38.3	0.51	D	46.8	0.50	D
WB LT/TH	42.0	0.75	D	51.3	0.75	D	42.0	0.75	D	51.3	0.75	D
SB TH	17.3	0.41	B	18.2	0.40	B	17.3	0.41	B	18.2	0.40	B
SB RT	8.8	0.02	A	7.9	0.01	A	10.2	0.09	B	8.6	0.03	A
OVERALL	21.4	-	C	22.6	-	C	21.0	-	C	22.4	-	C
4: King Street & Kekaulike Street*												
SB TH	13.5	0.58	B	11.5	0.53	B	13.9	0.61	B	11.7	0.54	B
SB RT	9.1	0.09	A	7.5	0.03	A	0.0	0.00	A	0.0	0.00	A
OVERALL	13.3	-	B	11.5	-	B	13.9	-	B	11.7	-	B
5: Nimitz Highway & Kekaulike Street*												
NB TH	0.0	0.34	A	0.0	0.52	A	0.0	0.35	A	0.0	0.53	A
WB RT	15.0	0.17	B	20.2	0.14	C	0.0	0.00	A	0.0	0.00	A
OVERALL	0.5	0.49	A	0.2	0.66	C	0.0	0.48	A	0.0	0.66	C

Notes:
* Due to limitations in the HCM 6th Edition and HCM 2010 methodology, this intersection was analyzed using HCM 2000 methodology.

5. FUTURE YEAR 2031 TRAFFIC CONDITIONS

The Future Year 2031 scenario represents the traffic conditions within the Project study area with the full build-out of the Project.

These calculations were conducted using the adjusted existing volumes discussed in Section 3 to provide more accurate projections that are representative of the future traffic environment without the impact of COVID-19.

5.1 Project Description

The Project proposes to construct a 16-story, 240-room hotel with roughly 2,200 square feet of meeting space and various amenities including a fitness room, rooftop bar, and restaurant with outdoor seating. The Project also plans to include a small historic walkway that is open to the public but not intended to generate additional vehicle trips.

The Project site is situated near the intersection of Nimitz Highway and Kekaulike Street, which is adjacent to the Holau transit station. The Project includes a valet system using mechanical parking lifts to park up to 126 vehicles on-site. The Project will provide a pick-up/drop-off area accessible via Nimitz Highway with a right-in only entrance driveway near Maunakea Street and a right-out only exit driveway on the northern side of the site.

5.2 Trip Generation

5.2.1 Vehicle Trips

The Institute of Transportation Engineers (ITE) publishes trip rates, Trip Generation Manual, 11th Edition, based upon historical data from similar land uses. These trip rates/formulae and their associated directional distributions were used to estimate the increase in the number of vehicular trips generated by the proposed Project. The rates selected were based on the land use description.

The ITE trip rate for Hotel (Code 310) was chosen to reflect the use of this Project. The rate includes amenities commonly found in hotels such as a full-service restaurant, cocktail lounge, meeting rooms, swimming pool, and fitness room. Because of this, the Project hotel and meeting space, fitness room, rooftop bar, and restaurant amenities were assumed to be encompassed within the ITE trip rate, and no additional trips were generated separately for these uses. However, to account for unexpected additional trips, slightly more conservative rates were selected by using the rates for hotels in Dense Multi-Use Urban settings, as opposed to Center City Core settings, which would ordinarily be the assumed land type for this Project.

The Project proposes to replace the existing land uses on the 120 Nimitz Highway site. Therefore, all trips currently entering and exiting the 120 Nimitz Highway Driveway were subtracted from the proposed Project-generated trips. As shown in Table 5.2, the Project is projected to generate 32(38) new external trips during the AM(PM) peak hours of traffic.

Table 5.1: Vehicle Trip Generation Rates

Land Use (ITE Code)	Units	AM Peak Hour		PM Peak Hour	
		Trip Rate	% Enter	Trip Rate	% Enter
Hotel (310)	240 Rooms	[a]	39%	[b]	44%
[a] T=0.31(X)	[b] T=0.21(X)				

Table 5.2: Project Trip Generation

Land Use	Setting/Location	Independent Variable	Weekday AM Peak Hour			Weekday PM Peak Hour		
			Enter (vph)	Exit (vph)	Total (vph)	Enter (vph)	Exit (vph)	Total (vph)
Hotel (310)	Dense Multi-use Urban	240 Rooms	29	45	74	22	28	50
Loading Activity (Access Drive)			2	2	4	2	2	4
Reduction for Existing Trips			-36	-10	-46	-7	-9	-16
Total Net New Trips			**-5**	**37**	**32**	**17**	**21**	**38**

5.2.2 Multimodal Trips

Multimodal trips were generated using the ITE Trip Generation Manual, 11th Edition rates shown in Table 5.3. As seen in Table 5.4 below, multimodal trips were assigned as pedestrians, bicyclists, or transit users based on the commute mode share in the Downtown Neighborhood TOD Development Plan:

- Pedestrians: 41%
- Bicyclists: 2%
- Transit Users: 57%

Table 5.3: Walk+Bike+Transit Trip Rates

Land Use (ITE Code)	Setting	Variable	AM Peak Hour		PM Peak Hour	
			Trip Rate	% Enter	Trip Rate	% Enter
Hotel (310)	Dense Multi-Use Urban	DU	[a]	46%	[b]	36%
[a] T=0.48(X)	[b] T=0.28(X)					

Table 5.4: Walk+Bike+Transit Trip Generation

			Transit			Walk			Bike		
Land Use	Peak Hour	MM Trips	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
Hotel	AM	115	30	35	65	22	25	47	1	2	3
	PM	67	14	24	38	10	18	28	0	1	1

5.3 Trip Assignment & Distribution

Trips generated by the proposed Project were assigned throughout the study area based on the expected routes, nearby land uses, and the proposed site plan. Pedestrians and bicyclists were distributed based on existing patterns and considering the future modification of Kekaulike Street. Transit users are expected to use either the King Street bus stops or the Hotel Street bus stops.

Vehicles were assumed to be distributed as follows:

- 50% to/from Nimitz Highway south of the site
- 30% to/from Nimitz Highway north of the site
- 20% to/from east of the site

Pedestrians and bicyclists were assumed to be distributed as follows:

- 60% to/from Kekaulike Street
- 20% to/from Maunakea Street
- 10% to/from Nimitz Highway north of the site
- 10% to/from Nimitz Highway south of the site

Figure 5.1 and Figure 5.2 illustrate the Project's overall trip distribution. Figure 5.3 illustrates the Project generated trips.

5.4 Future Year 2031 Vehicle Intersection Analysis

Under Future Year 2031 conditions, all movements at existing study intersections are expected to continue operating similar to Base Year 2031 conditions during the AM and PM peak hours of traffic. Each study intersection is expected to continue operating with all movements at LOS D or better during the AM and PM peak hours of traffic. The Access Drive is expected to operate at LOS A during the peak AM hour of traffic and LOS B during the peak PM hour of traffic.

The traffic generated by the proposed Project is not anticipated to significantly worsen traffic conditions at the study intersections upon completion. Thus, no intersection capacity improvements are recommended.

Table 5.5 shows a summary of the Future Year 2031 delay, v/c ratio, and LOS. Figure 5.3 shows the Future Year 2031 traffic volumes and lane configuration at the study intersections. LOS worksheets are provided in Appendix C.

CHINATOWN HOTEL DEVELOPMENT TIAR

Austin Tsutsumi & ASSOCIATES, INC. Engineers & Surveyors

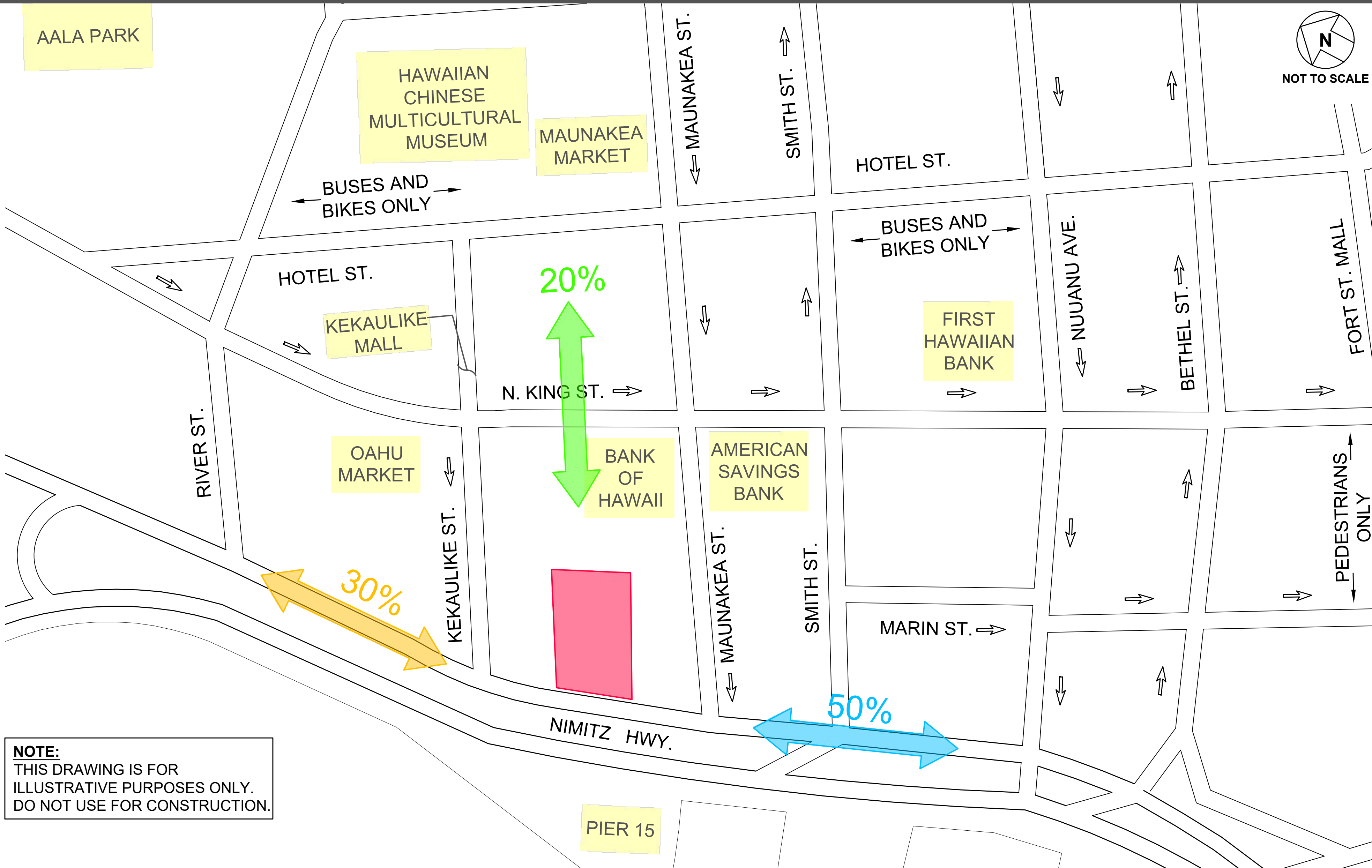
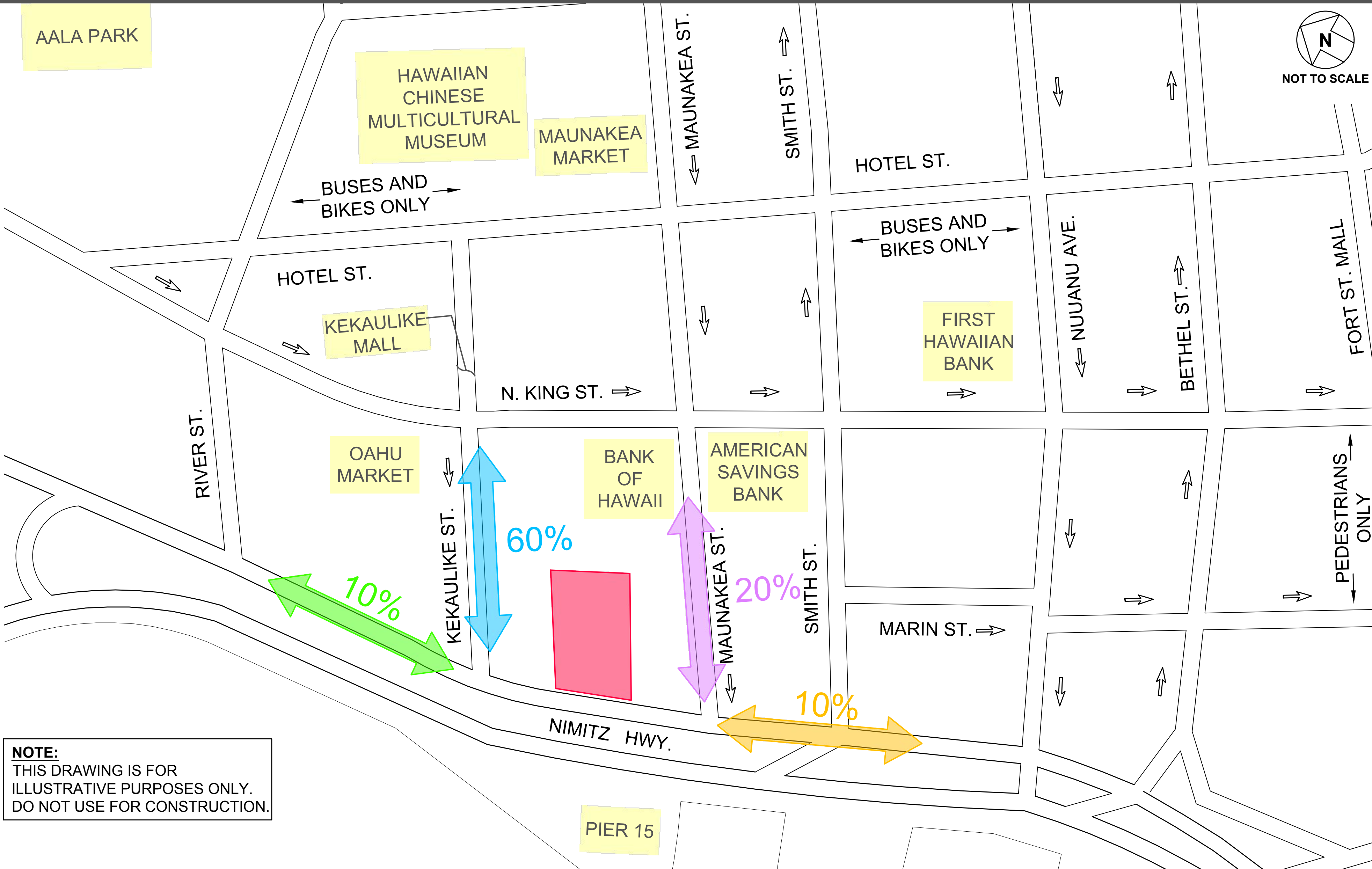


FIGURE 5.1

VEHICLE TRIP DISTRIBUTION

CHINATOWN HOTEL
DEVELOPMENT TIAR

Austin Tsutsumi & ASSOCIATES, INC.
Engineers & Surveyors



NOTE:
THIS DRAWING IS FOR ILLUSTRATIVE PURPOSES ONLY.
DO NOT USE FOR CONSTRUCTION.

FIGURE 5.2

PEDESTRIAN AND BICYCLE TRIP DISTRIBUTION

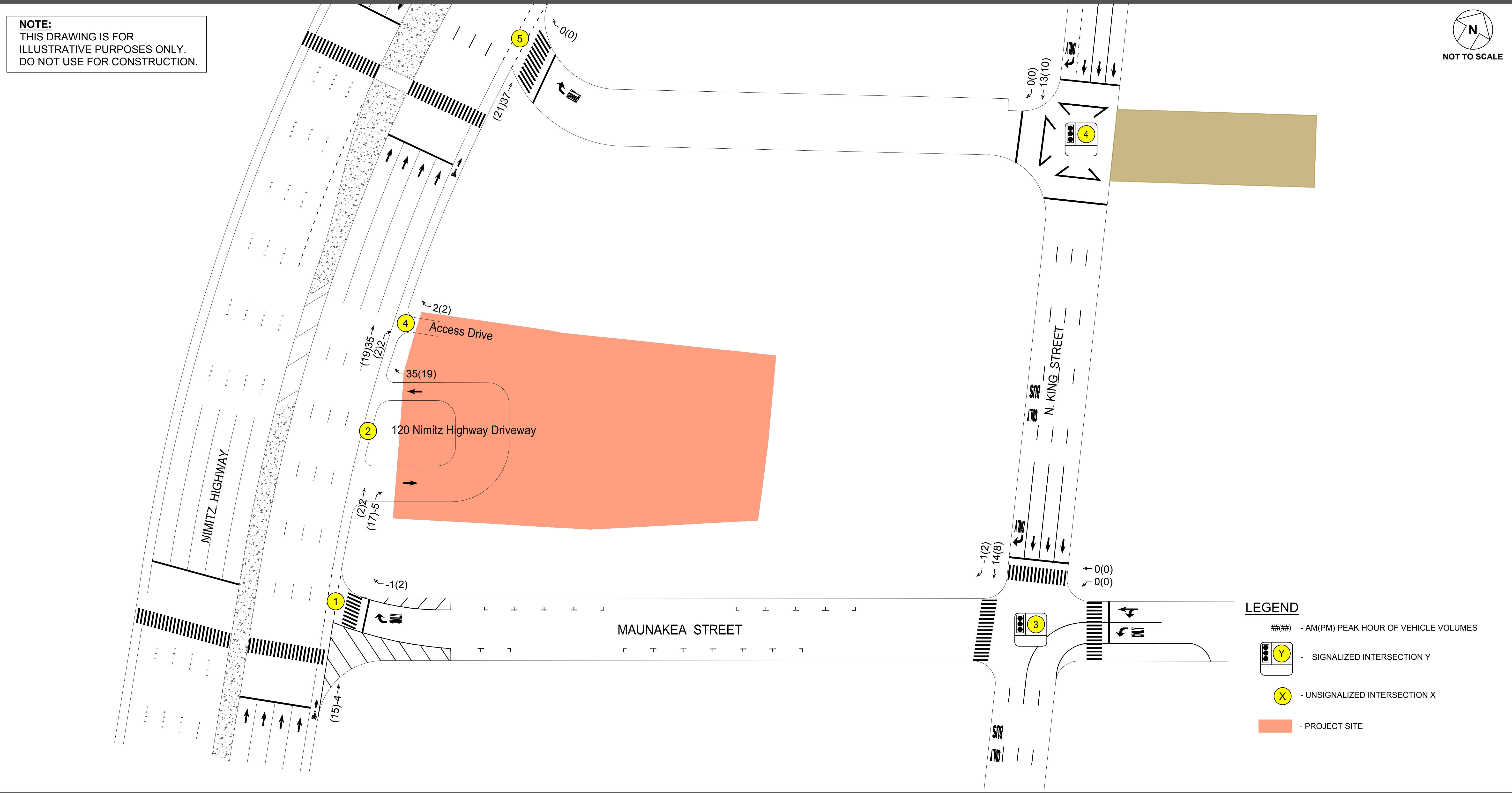


FIGURE 5.3

PROJECT GENERATED TRIPS

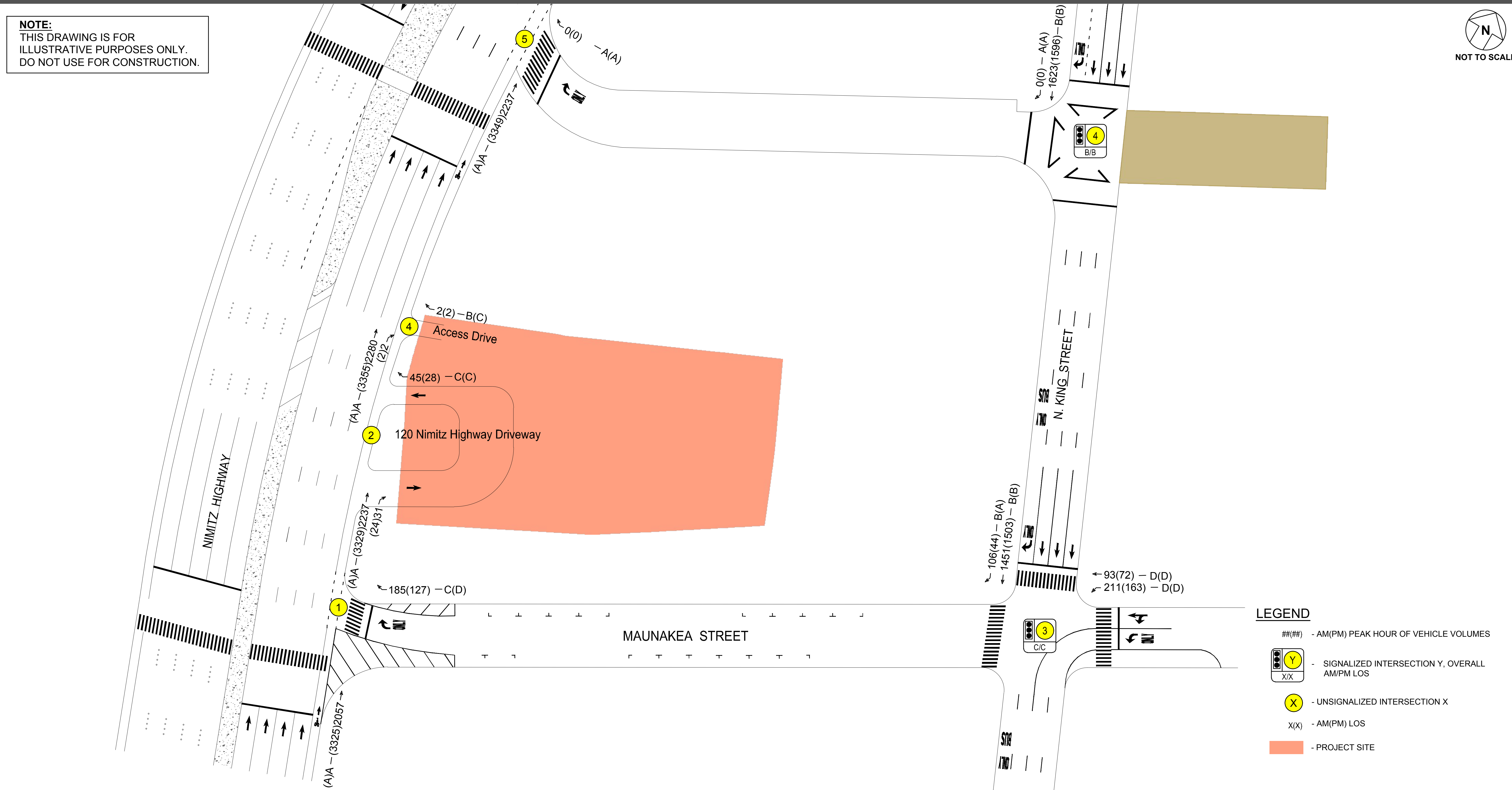


FIGURE 5.4

FUTURE YEAR 2031 CONDITIONS, LANE CONFIGURATION, TRAFFIC VOLUMES, AND LOS

AUSTIN, TSUTSUMI & ASSOCIATES, INC.
CIVIL ENGINEERS • SURVEYORS

TABLE 5.3: LOS SUMMARY TABLE
EXISTING CONDITIONS, BASE YEAR 2031 AND FUTURE YEAR 2031

Intersection	Existing 2022 Conditions						Base Year 2031						Future Year 2031					
	AM			PM			AM			PM			AM			PM		
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS
1: Nimitz Highway & Maunakea Street*																		
NB TH	0.0	0.32	A	0.0	0.52	A	0.0	0.33	A	0.0	0.53	A	0.0	0.33	A	0.0	0.53	A
WB RT	15.8	0.27	C	25.0	0.35	C	19.2	0.45	C	31.3	0.51	D	19.1	0.44	C	32.0	0.52	D
OVERALL	0.9	0.48	A	0.7	0.65	C	1.6	0.51	A	1.1	0.67	C	1.6	0.51	A	1.2	0.67	C
2: Nimitz Highway & Existing 120 Nimitz Driveway*																		
NB TH/RT	0.0	0.22	A	0.0	0.30	A	0.0	0.23	A	0.0	0.31	A	0.0	0.22	A	0.0	0.32	A
WB RT	13.7	0.03	B	18.4	0.04	C	14.1	0.03	B	19.0	0.04	C	15.1	0.12	C	20.4	0.11	C
OVERALL	0.1	0.48	A	0.1	0.63	B	0.1	0.50	A	0.1	0.64	B	0.3	0.50	A	0.2	0.65	C
3: King Street & Maunakea Street																		
WB LT	38.3	0.51	D	46.8	0.50	D	38.3	0.51	D	46.8	0.50	D	38.3	0.51	D	46.8	0.50	D
WB LT/TH	42.0	0.75	D	51.3	0.75	D	42.0	0.75	D	51.3	0.75	D	42.0	0.75	D	51.3	0.75	D
SB TH	17.3	0.41	B	18.2	0.40	B	17.3	0.41	B	18.2	0.40	B	17.4	0.41	B	18.3	0.40	B
SB RT	8.8	0.02	A	7.9	0.01	A	10.2	0.09	B	8.6	0.03	A	10.2	0.09	B	8.6	0.04	A
OVERALL	21.4	-	C	22.6	-	C	21.0	-	C	22.4	-	C	21.0	-	C	22.4	-	C
4: King Street & Kekaulike Street*																		
SB TH	13.5	0.58	B	11.5	0.53	B	13.9	0.61	B	11.7	0.54	B	14.0	0.62	B	11.7	0.55	B
SB RT	9.1	0.09	A	7.5	0.03	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A
OVERALL	13.3	-	B	11.5	-	B	13.9	-	B	11.7	-	B	14.0	-	B	11.7	-	B
5: Nimitz Highway & Kekaulike Street*																		
NB TH	0.0	0.34	A	0.0	0.52	A	0.0	0.35	A	0.0	0.53	A	0.0	0.36	A	0.0	0.54	A
WB RT	15.0	0.17	B	20.2	0.14	C	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A
OVERALL	0.5	0.49	A	0.2	0.66	C	0.0	0.48	A	0.0	0.66	C	0.0	0.49	A	0.0	0.66	C
6: Nimitz Highway & Access Driveway*																		
NB TH/RT													0.0	0.21	A	0.0	0.31	A
WB RT													13.4	0.00	B	18.1	0.01	C
OVERALL													0.0	0.43	A	0.0	0.59	B

Notes:
* Due to limitations in the HCM 6th Edition and HCM 2010 methodology, this intersection was analyzed using HCM 2000 methodology.

5.5 Future Year 2031 Multimodal Accessibility and Assessment

The Future Year 2031 scenario represents anticipated pedestrian conditions upon construction of the Chinatown Hotel.

5.5.1 Future Year 2031 Pedestrian Analysis

As mentioned in Section 2.2, pedestrian crossing improvements are planned at the intersection of Nimitz Highway and Kekaulike Street. However, no specific improvements are mentioned in the Downtown TOD plan, meaning a future PEQI intersection analysis cannot be accurately conducted due to the nature of the assessment. There are no planned changes to the other study intersections, so the future PEQI intersection analysis scores are expected to remain the same as existing.

With the construction of Chinatown Hotel, planters and trees are planned to front the Project along Nimitz Highway. The increased foliage is anticipated to improve the Nimitz Highway PEQI and operate under “reasonable” pedestrian conditions.

Kekaulike Street is anticipated to be converted into a shared-use path by Year 2031. Based on descriptions of the Kekaulike Street Multimodal Improvements Project, the changes are expected to improve the PEQI and operate under “reasonable” pedestrian conditions. Because of the limitations of PEQI, the restricted vehicle access along this street is not represented in the scoring. Therefore, the actual pedestrian conditions may be better than the calculated score.

The rest of the segments are not expected to see any improvement by Future Year 2031.

See Table 5.4 for Future Year 2031 PEQI Segment scores.

5.5.2 Future Year 2031 Bicycle Analysis

According to the Oahu Bike Plan, a shared roadway is proposed along King Street. However, a shared roadway does not include separate lanes for bicyclists and will not affect the LTS Score of the roadway. Because no other bicycle-related improvements are proposed along the studied street segments, bicycle LTS is not expected to change in 2031.

5.5.3 Future Year 2031 Transit Analysis

According to the Bus/Rail Integration Plan for the Dillingham Station Group published in 2014, transit trips during the peak hours are expected to reduce by roughly 30% after the Honolulu Rail Transit is fully operational. This results in the Transit LOS scores of the studied segments slightly reducing but not affecting overall LOS. See Table 5.5 for the Future Year 2031 Transit LOS.

Table 5.4: Future Year 2031 PEQI Segment Summary

Segment ID	Segment Description	Existing PEQI Score	FY 2031 PEQI Score
1	Nimitz Highway Maunakea St to Kekaulike St (Northbound)	57.1 (basic)	64.0 (reasonable)
2	Kekaulike Street King St to Nimitz Hwy (Westbound)	44.2 (basic)	67.2 (reasonable)
3	Kekaulike Street Nimitz Hwy to King St (Eastbound)	58.7 (basic)	70.1 (reasonable)
4	Maunakea Street King St to Nimitz Hwy (Westbound)	57.1 (basic)	57.1 (basic)
5	Maunakea Street Nimitz Hwy to King St (Eastbound)	58.4 (basic)	58.4 (basic)
6	King Street Maunakea St to Kekaulike St (Northbound)	54.3 (basic)	54.3 (basic)
7	King Street Kekaulike St to Maunakea St (Southbound)	60.6 (reasonable)	60.6 (reasonable)

Table 5.5: Future Year 2031 Transit LOS Summary

Segment ID	Segment Description	Existing		FY 2031	
		Score	LOS	Score	LOS
1	King Street River St to Kekaulike St (Southbound)	2.12	B	2.19	B
2	King Street Kekaulike St to Maunakea St (Southbound)	2.18	B	2.23	B
3	Hotel Street Kekaulike St to Maunakea St (Southound)	2.68	B	2.73	B
4	Hotel Street Maunakea St to Kekaulike St (Northbound)	2.79	C	2.87	C

5.6 Transportation Demand Management

Because vehicular access to the site is provided exclusively from Nimitz Highway, measures should be taken to prevent adverse effects on the traffic environment. Since the Project is located within the Downtown Honolulu area, many destinations are within walking and cycling distance or easily accessible via transit. To reduce the vehicular impacts caused by hotel operations, the following Transportation Demand Management (TDM) strategies are proposed with the Project:

Management

- Provide employee(s) responsible for coordinating transportation, parking, and loading services.
- The employee(s) should develop and maintain a schedule for general building deliveries to prevent conflicts from multiple vehicles from using the loading zone.

Employee Transportation

- Subsidize parking for employees that vanpool.
- Subsidize employee transit passes.
- Provide on-site parking for employees that carpool.
- Provide access to car-sharing and bike-sharing services for employees who do not drive to work.

Shuttle Services

- Provide guest shuttle services from the airport and to nearby transit hubs.
- Provide employee shuttle services to nearby transit hubs and ride home for emergencies.

Bicycle and Pedestrian Accommodations

- Provide on-site bike facilities such as lockers and/or secure storage to encourage pedestrian and bicycle transportation.

6. CONCLUSION

The Project proposes to construct a 16-story, 240-room hotel with roughly 2,200 square feet of meeting space and various amenities including a fitness room, rooftop bar, and restaurant with outdoor seating. The Project also plans to include a small historic walkway that is open to the public but not intended to generate vehicle trips. The Project site is situated near the Nimitz Highway & Maunakea Street intersection.

The Project includes a valet system using mechanical parking lifts to park up to 126 vehicles on-site and a pick-up/drop-off area accessible via Nimitz Highway. Construction of the Project is anticipated to be completed by Year 2025 but analysis was completed at Year 2031 to reflect traffic conditions with the anticipated construction of the nearby Holau Transit Station and Kekaulike Street multimodal improvements project.

6.1 Existing Conditions

During the AM peak hour of traffic, relatively light vehicular traffic was observed along King Street, northbound Nimitz Highway, Kekaulike Street, and Maunakea Street as commuters head to work. The PM Peak hour of traffic was observed to experience similarly light traffic, with traffic queues observed along King Street further downstream of the study area, but not through. Relatively light pedestrian activity within the study area was observed during the AM peak hour of traffic. Lighter pedestrian activity was observed during the PM peak hour of traffic as most of the nearby businesses close by/around 3:00 PM.

However, the observed conditions as noted may reflect data collected during COVID-19 pandemic conditions. Previous observations collected in the area from other projects in 2019 reflected heavy southbound traffic along King Street during the commuter peaks, often extending beyond the Maunakea Street intersection. Heavy southbound traffic was also observed along Nimitz Highway in 2019 conditions during the commuter PM peak.

All movements at the study intersections currently operate at LOS D or better during the weekday AM and PM peak hours of traffic.

The study area currently exhibits basic pedestrian conditions at all intersections and most street segments. Depending on the traffic conditions, bicyclists are expected to experience levels of stress ranging from high to moderate. Bus stops in the nearby vicinity currently operate at Transit LOS C or better.

6.2 Base Year 2031 Conditions

Under Base Year 2031 conditions, all study intersections are expected to continue operating similar to existing conditions during the AM and PM peak hours of traffic. The LOS of right turns to and from Maunakea Street slightly worsened because of the rerouted traffic from Kekaulike Street.

Each study intersection is expected to continue operating with all movements at LOS D or better during the AM and PM peak hours of traffic.

6.3 Future Year 2031 Conditions

The Project is anticipated to generate 32(38) new vehicular trips and 115(67) new multimodal trips during the AM(PM) peak hours of traffic. Under Future Year 2031 conditions, all movements at existing study intersections are expected to continue operating similar to Base Year 2031 conditions during the AM and PM peak hours of traffic. Each study intersection is expected to continue operating with all movements at LOS D or better during the AM and PM peak hours of traffic. The Access Drive is expected to operate at LOS A during the peak AM hour of traffic and LOS B during the peak PM hour of traffic.

In 2031, pedestrian conditions along Kekaulike Street and Nimitz Highway fronting the site are expected to improve. Bicycle and transit conditions throughout the study area are expected to remain similar to existing conditions.

The traffic generated by the proposed Project is not anticipated to significantly worsen traffic conditions at the study intersections upon completion. Thus, no intersection capacity improvements are recommended. However, several TDM strategies are proposed with the project, including coordinating loading/parking activity, subsidizing employee transportation, shuttle services, and providing pedestrian and bicycle accommodations.

7. REFERENCES

1. Austin, Tsutsumi & Associates, Traffic Assessment: Kekaulike Mall and Kekaulike Street Multimodal Improvements Project, 2021.

2. City & County of Honolulu, Complete Streets Design Manual, 2016.

3. City & County of Honolulu, Downtown Neighborhood Transit-Oriented Development Plan, August 2017.

4. City & County of Honolulu Department of Transportation Services, Oahu Bike Plan, December 2019.

5. City & County of Honolulu Department of Transportation Services, Oahu Pedestrian Plan, July 2022.

6. Honolulu Authority for Rapid Transportation, Bus/Rail Integration Plan for the Dillingham Station Group, April 2014.

7. Honolulu Authority for Rapid Transportation, https://honolulutransit.org/. Accessed February 22, 2022.

8. Institute of Transportation Engineers, Trip Generation, 11th Edition, 2021

9. National Association of City Transportation Officials, City Limits: Setting Safe Speed Limits on Urban Streets, 2020.

10. Transportation Research Board, Highway Capacity Manual, 2000.

11. Transportation Research Board, Highway Capacity Manual, 6th Edition, 2016.

APPENDICES

APPENDIX A

LEVEL OF SERVICE CRITERIA

LEVEL OF SERVICE (LOS) CRITERIA

VEHICULAR LEVEL OF SERVICE FOR SIGNALIZED INTERSECTIONS (HCM 2000)

Level of service for vehicles at signalized intersections is directly related to delay values and is assigned on that basis. Level of Service is a measure of the acceptability of delay values to motorists at a given intersection. The criteria are given in the table below.

Level-of Service Criteria for Signalized Intersections

Level of Service	Control Delay per Vehicle (sec./veh.)
A	≤ 10.0
B	>10.0 and ≤ 20.0
C	>20.0 and ≤ 35.0
D	>35.0 and ≤ 55.0
E	>55.0 and ≤ 80.0
F	> 80.0

Delay is a complex measure, and is dependent on a number of variables, including the quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group or approach in question.

VEHICULAR LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS (HCM 2000)

The level of service criteria for vehicles at unsignalized intersections is defined as the average control delay, in seconds per vehicle.

LOS delay threshold values are lower for two-way stop-controlled (TWSC) and all-way stop-controlled (AWSC) intersections than those of signalized intersections. This is because more vehicles pass through signalized intersections, and therefore, drivers expect and tolerate greater delays. While the criteria for level of service for TWSC and AWSC intersections are the same, procedures to calculate the average total delay may differ.

Level of Service Criteria for Two-Way Stop-Controlled Intersections

Level of Service	Average Control Delay (sec/veh)
A	≤ 10
B	>10 and ≤15
C	>15 and ≤25
D	>25 and ≤35
E	>35 and ≤50
F	> 50

APPENDIX B

TRAFFIC COUNT DATA

Austin Tsutsumi & Associates

501 Sumner Street, Suite 521
Honolulu, HI 96817-5013
Phone: 533-3646 Fax: 526-1267

File Name : Maunakea St - Nimitz Hwy
Site Code : 22-200 Hale O Kekaulike & Chinatown Hotel TIAR
Start Date : 1/27/2022
Page No : 1

Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

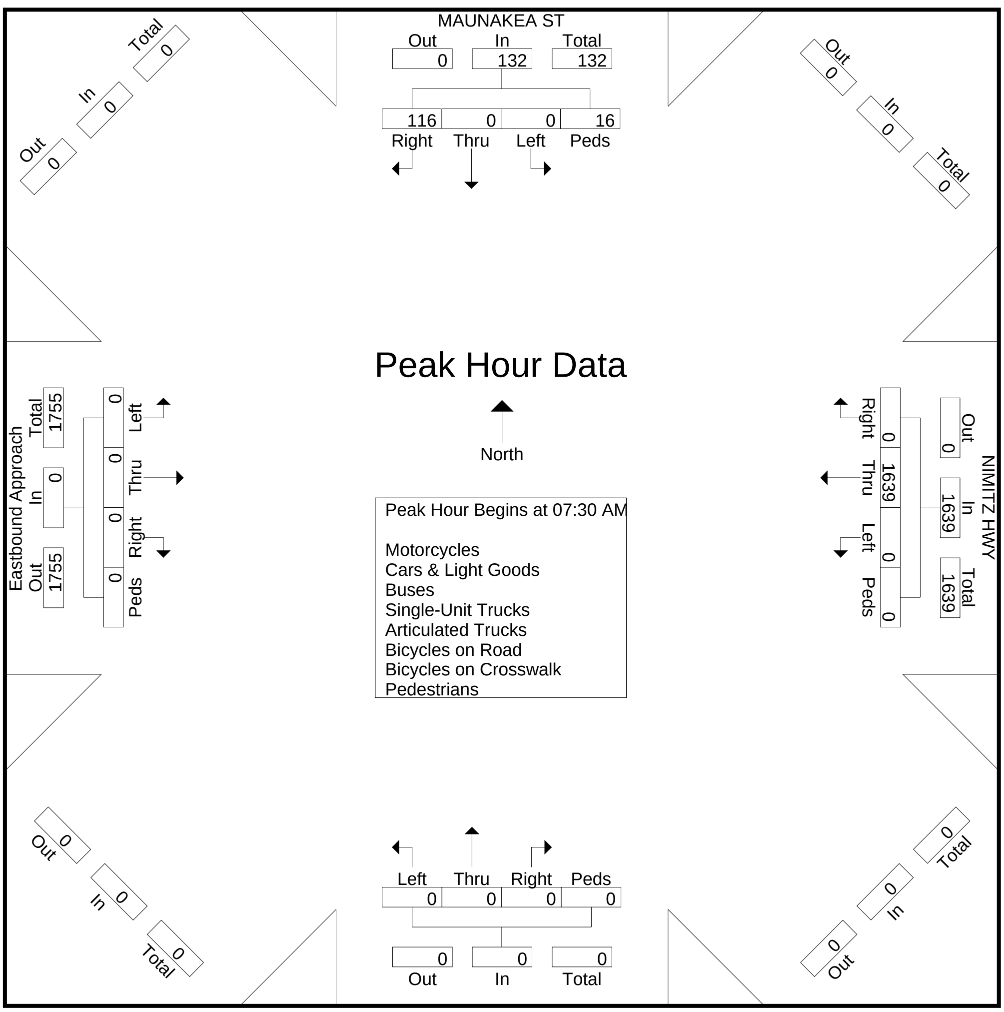
	MAUNAKEA ST Southbound				NIMITZ HWY Westbound				Northbound				Eastbound Approach Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
07:00 AM	0	0	10	4	0	325	0	0	0	0	0	0	0	0	0	0	339
07:15 AM	0	0	20	6	0	408	0	0	0	0	0	0	0	0	0	0	434
07:30 AM	0	0	28	3	0	431	0	0	0	0	0	0	0	0	0	0	462
07:45 AM	0	0	25	5	0	445	0	0	0	0	0	0	0	0	0	0	475
Total	0	0	83	18	0	1609	0	0	0	0	0	0	0	0	0	0	1710
08:00 AM	0	0	20	3	0	352	0	0	0	0	0	0	0	0	0	0	375
08:15 AM	0	0	43	5	0	411	0	0	0	0	0	0	0	0	0	0	459
08:30 AM	0	0	52	2	0	361	0	1	0	0	0	0	0	0	0	0	416
08:45 AM	1	0	41	8	0	328	0	0	0	0	0	0	0	0	0	0	378
Total	1	0	156	18	0	1452	0	1	0	0	0	0	0	0	0	0	1628
Grand Total	1	0	239	36	0	3061	0	1	0	0	0	0	0	0	0	0	3338
Apprch %	0.4	0	86.6	13	0	100	0	0	0	0	0	0	0	0	0	0	
Total %	0	0	7.2	1.1	0	91.7	0	0	0	0	0	0	0	0	0	0	
Motorcycles	0	0	1	0	0	26	0	0	0	0	0	0	0	0	0	0	27
% Motorcycles	0	0	0.4	0	0	0.8	0	0	0	0	0	0	0	0	0	0	0.8
Cars & Light Goods	1	0	234	0	0	2892	0	0	0	0	0	0	0	0	0	0	3127
% Cars & Light Goods	100	0	97.9	0	0	94.5	0	0	0	0	0	0	0	0	0	0	93.7
Buses	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	10
% Buses	0	0	0	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0.3
Single-Unit Trucks	0	0	4	0	0	94	0	0	0	0	0	0	0	0	0	0	98
% Single-Unit Trucks	0	0	1.7	0	0	3.1	0	0	0	0	0	0	0	0	0	0	2.9
Articulated Trucks	0	0	0	0	0	28	0	0	0	0	0	0	0	0	0	0	28
% Articulated Trucks	0	0	0	0	0	0.9	0	0	0	0	0	0	0	0	0	0	0.8
Bicycles on Road	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	11
% Bicycles on Road	0	0	0	0	0	0.4	0	0	0	0	0	0	0	0	0	0	0.3
Bicycles on Crosswalk	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	5
% Bicycles on Crosswalk	0	0	0	13.9	0	0	0	0	0	0	0	0	0	0	0	0	0.1
Pedestrians	0	0	0	31	0	0	0	1	0	0	0	0	0	0	0	0	32
% Pedestrians	0	0	0	86.1	0	0	0	100	0	0	0	0	0	0	0	0	1

Austin Tsutsumi & Associates

501 Sumner Street, Suite 521
Honolulu, HI 96817-5013
Phone: 533-3646 Fax: 526-1267

File Name : Maunakea St - Nimitz Hwy
Site Code : 22-200 Hale O Kekaulike & Chinatown Hotel TIAR
Start Date : 1/27/2022

	MAUNAKEA ST Southbound					NIMITZ HWY Westbound					Northbound					Eastbound Approach Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	0	28	3	31	0	431	0	0	431	0	0	0	0	0	0	0	0	0	0	462
07:45 AM	0	0	25	**5**			**445**			**445**	0	0	0	0	0	0	0	0	0	0	**475**
08:00 AM	0	0	20	3	23	0	352	0	0	352	0	0	0	0	0	0	0	0	0	0	375
08:15 AM	0	0	**43**		**48**	0	411	0	0	411	0	0	0	0	0	0	0	0	0	0	459
Total Volume	0	0	116	16	132	0	1639	0	0	1639	0	0	0	0	0	0	0	0	0	0	1771
% App. Total																					
PHF	.000	.000	.674	.800	.688	.000	.921	.000	.000	.921	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.932



Austin Tsutsumi & Associates

501 Sumner Street Suite 521
Honolulu, Hawaii 96817
Phone: (808) 533-3646   Fax: (808) 533-1267

File Name : Maunakea St - Nimitz Hwy
Site Code : 22-200 Hale O Kekaulike & Chinatown Hotel TIAR
Start Date : 1/27/2022
Page No : 1

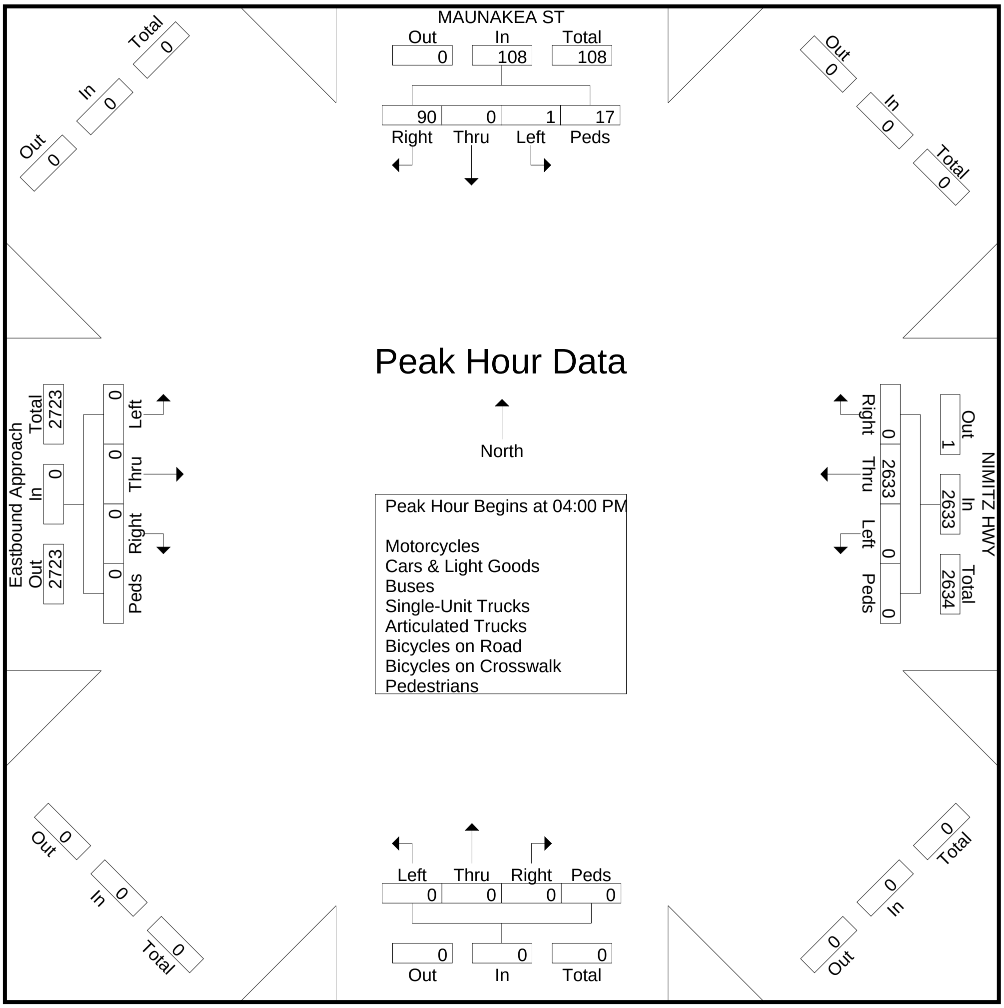
Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	MAUNAKEA ST Southbound				NIMITZ HWY Westbound				Northbound				Eastbound Approach Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
03:30 PM	0	0	23	8	0	613	1	0	0	0	0	0	0	0	0	0	645
03:45 PM	0	0	29	2	0	597	0	0	0	0	0	0	0	0	0	0	628
Total	0	0	52	10	0	1210	1	0	0	0	0	0	0	0	0	0	1273
04:00 PM	0	0	16	2	0	627	0	0	0	0	0	0	0	0	0	0	645
04:15 PM	0	0	19	4	0	630	0	0	0	0	0	0	0	0	0	0	653
04:30 PM	0	0	28	9	0	647	0	0	0	0	0	0	0	0	0	0	684
04:45 PM	1	0	27	2	0	729	0	0	0	0	0	0	0	0	0	0	759
Total	1	0	90	17	0	2633	0	0	0	0	0	0	0	0	0	0	2741
05:00 PM	0	0	29	2	0	678	0	0	0	0	0	0	0	0	0	0	709
05:15 PM	1	0	24	7	0	694	0	0	0	0	0	0	0	0	0	0	726
Grand Total	2	0	195	36	0	5215	1	0	0	0	0	0	0	0	0	0	5449
Apprch %	0.9	0	83.7	15.5	0	100	0	0	0	0	0	0	0	0	0	0	
Total %	0	0	3.6	0.7	0	95.7	0	0	0	0	0	0	0	0	0	0	
Motorcycles	0	0	2	0	0	31	0	0	0	0	0	0	0	0	0	0	33
% Motorcycles	0	0	1	0	0	0.6	0	0	0	0	0	0	0	0	0	0	0.6
Cars & Light Goods	0	0	190	0	0	5112	0	0	0	0	0	0	0	0	0	0	5302
% Cars & Light Goods	0	0	97.4	0	0	98	0	0	0	0	0	0	0	0	0	0	97.3
Buses	0	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0	13
% Buses	0	0	0	0	0	0.2	0	0	0	0	0	0	0	0	0	0	0.2
Single-Unit Trucks	0	0	2	0	0	46	0	0	0	0	0	0	0	0	0	0	48
% Single-Unit Trucks	0	0	1	0	0	0.9	0	0	0	0	0	0	0	0	0	0	0.9
Articulated Trucks	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	5
% Articulated Trucks	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0.1
Bicycles on Road	2	0	1	0	0	8	1	0	0	0	0	0	0	0	0	0	12
% Bicycles on Road	100	0	0.5	0	0	0.2	100	0	0	0	0	0	0	0	0	0	0.2
Bicycles on Crosswalk	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	8
% Bicycles on Crosswalk	0	0	0	22.2	0	0	0	0	0	0	0	0	0	0	0	0	0.1
Pedestrians	0	0	0	28	0	0	0	0	0	0	0	0	0	0	0	0	28
% Pedestrians	0	0	0	77.8	0	0	0	0	0	0	0	0	0	0	0	0	0.5

Austin Tsutsumi & Associates
501 Sumner Street Suite 521
Honolulu, Hawaii 96817
Phone: (808) 533-3646 Fax: (808) 533-1267

File Name : Maunakea St - Nimitz Hwy
Site Code : 22-200 Hale O Kekaulike & Chinatown Hotel TIAR
Start Date : 1/27/2022
Page No : 2

	MAUNAKEA ST					NIMITZ HWY										Eastbound Approach					
	Southbound					Westbound					Northbound					Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	0	16	2	18	0	627	0	0	627	0	0	0	0	0	0	0	0	0	0	645
04:15 PM	0	0	19	4	23	0	630	0	0	630	0	0	0	0	0	0	0	0	0	0	653
04:30 PM	0	0	**28**	**9**	**37**	0	647	0	0	647	0	0	0	0	0	0	0	0	0	0	684
04:45 PM	**1**	0	27	2	30	0	**729**	0	0	**729**	0	0	0	0	0	0	0	0	0	0	**759**
Total Volume	1	0	90	17	108	0	2633	0	0	2633	0	0	0	0	0	0	0	0	0	0	2741
% App. Total	0.9	0	83.3	15.7		0	100	0	0		0	0	0	0		0	0	0	0		
PHF	.250	.000	.804	.472	.730	.000	.903	.000	.000	.903	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.903



Austin Tsutsumi & Associates

501 Sumner Street, Suite 521
Honolulu, HI 96817-5013
Phone: 533-3646 Fax: 526-1267

File Name : Existing 120 Nimitz Hwy Dwy - Nimitz Hwy
Site Code : 22-200 Hale O Kekaulike & Chinatown Hotel TIAR
Start Date : 1/27/2022
Page No : 1

Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

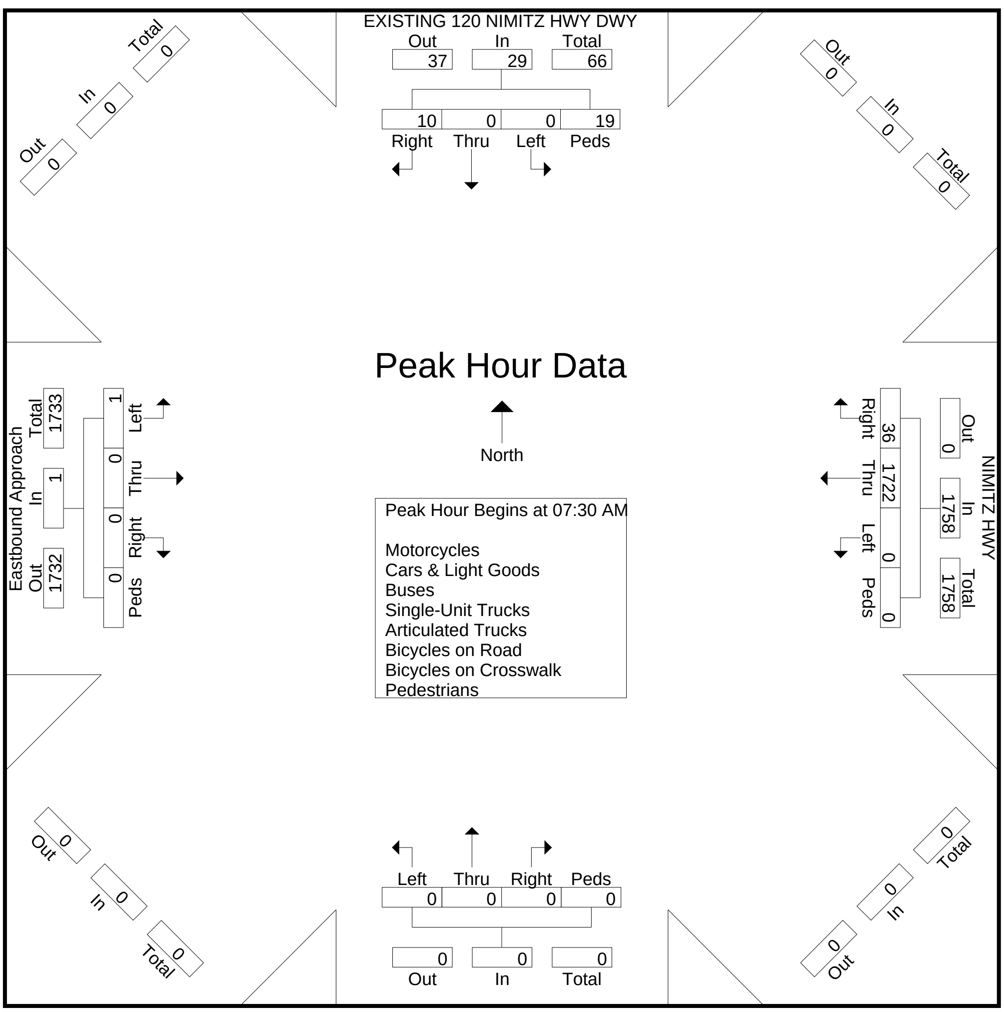
	EXISTING 120 NIMITZ HWY DWY Southbound				NIMITZ HWY Westbound				Northbound				Eastbound Approach Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
07:00 AM	0	0	1	10	0	334	3	0	0	0	0	0	0	0	0	0	348
07:15 AM	0	0	2	3	0	423	2	0	0	0	0	0	0	0	0	0	430
07:30 AM	0	0	4	6	0	450	10	0	0	0	0	0	1	0	0	0	471
07:45 AM	0	0	2	6	0	473	5	0	0	0	0	0	0	0	0	0	486
Total	0	0	9	25	0	1680	20	0	0	0	0	0	1	0	0	0	1735
08:00 AM	0	0	3	3	0	359	9	0	0	0	0	0	0	0	0	0	374
08:15 AM	0	0	1	4	0	440	12	0	0	0	0	0	0	0	0	0	457
08:30 AM	0	0	9	3	0	404	9	0	0	0	0	0	1	0	0	0	426
08:45 AM	0	0	5	5	0	356	12	0	0	0	0	0	0	0	0	0	378
Total	0	0	18	15	0	1559	42	0	0	0	0	0	1	0	0	0	1635
Grand Total	0	0	27	40	0	3239	62	0	0	0	0	0	2	0	0	0	3370
Apprch %	0	0	40.3	59.7	0	98.1	1.9	0	0	0	0	0	100	0	0	0	
Total %	0	0	0.8	1.2	0	96.1	1.8	0	0	0	0	0	0.1	0	0	0	
Motorcycles	0	0	3	0	0	35	2	0	0	0	0	0	0	0	0	0	40
% Motorcycles	0	0	11.1	0	0	1.1	3.2	0	0	0	0	0	0	0	0	0	1.2
Cars & Light Goods	0	0	24	0	0	3057	60	0	0	0	0	0	1	0	0	0	3142
% Cars & Light Goods	0	0	88.9	0	0	94.4	96.8	0	0	0	0	0	50	0	0	0	93.2
Buses	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	10
% Buses	0	0	0	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0.3
Single-Unit Trucks	0	0	0	0	0	102	0	0	0	0	0	0	0	0	0	0	102
% Single-Unit Trucks	0	0	0	0	0	3.1	0	0	0	0	0	0	0	0	0	0	3
Articulated Trucks	0	0	0	0	0	26	0	0	0	0	0	0	0	0	0	0	26
% Articulated Trucks	0	0	0	0	0	0.8	0	0	0	0	0	0	0	0	0	0	0.8
Bicycles on Road	0	0	0	0	0	9	0	0	0	0	0	0	1	0	0	0	10
% Bicycles on Road	0	0	0	0	0	0.3	0	0	0	0	0	0	50	0	0	0	0.3
Bicycles on Crosswalk	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	5
% Bicycles on Crosswalk	0	0	0	12.5	0	0	0	0	0	0	0	0	0	0	0	0	0.1
Pedestrians	0	0	0	35	0	0	0	0	0	0	0	0	0	0	0	0	35
% Pedestrians	0	0	0	87.5	0	0	0	0	0	0	0	0	0	0	0	0	1

Austin Tsutsumi & Associates

501 Sumner Street, Suite 521
Honolulu, HI 96817-5013
Phone: 533-3646 Fax: 526-1267

File Name : Existing 120 Nimitz Hwy Dwy - Nimitz Hwy
Site Code : 22-200 Hale O Kekaulike & Chinatown Hotel TIAR
Start Date : 1/27/2022

	EXISTING 120 NIMITZ HWY DWY Southbound					NIMITZ HWY Westbound					Northbound					Eastbound Approach Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	0	**4**	**6**	**10**	0	450	10	0	460	0	0	0	0	0	**1**				**1**	471
07:45 AM	0	0	2	6	8	0	**473**			**478**	0	0	0	0	0	0	0	0	0	0	**486**
08:00 AM	0	0	3	3	6	0	359	9	0	368	0	0	0	0	0	0	0	0	0	0	374
08:15 AM	0	0	1	4	5	0	440	**12**													
Total Volume	0	0	10	19	29	0	1722	36	0	1758	0	0	0	0	0	1	0	0	0	1	1788
% App. Total																					
PHF	.000	.000	.625	.792	.725	.000	.910	.750	.000	.919	.000	.000	.000	.000	.000	.250	.000	.000	.000	.250	.920



Austin Tsutsumi & Associates

501 Sumner Street Suite 521
Honolulu, Hawaii 96817
Phone: (808) 533-3646   Fax: (808) 533-1267

File Name : Existing 120 Nimitz Hwy Dwy - Nimitz Hwy
Site Code : 22-200 Hale O Kekaulike & Chinatown Hotel TIAR
Start Date : 1/27/2022
Page No : 1

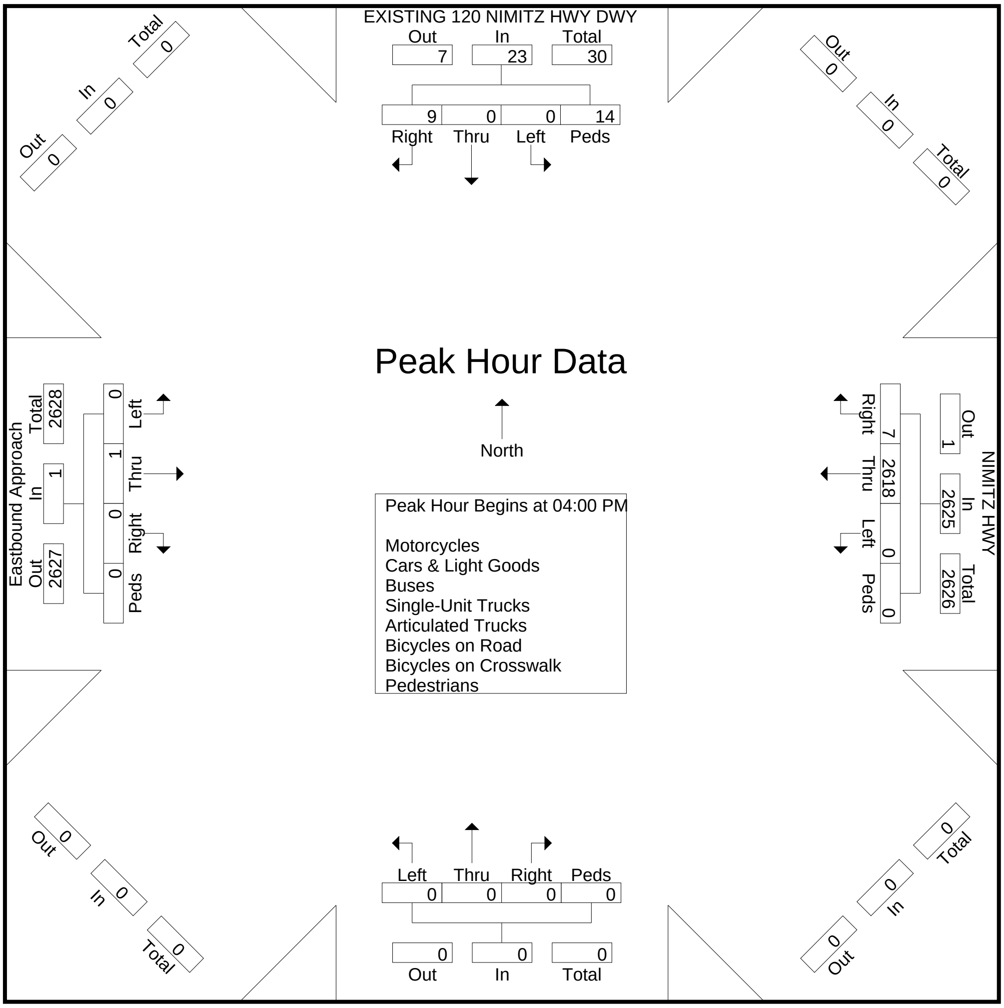
Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	EXISTING 120 NIMITZ HWY DWY Southbound				NIMITZ HWY Westbound				Northbound				Eastbound Approach Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
03:30 PM	0	0	5	6	0	632	3	0	0	0	0	0	0	0	0	0	646
03:45 PM	0	0	2	3	0	632	2	0	0	0	0	0	0	0	0	0	639
Total	0	0	7	9	0	1264	5	0	0	0	0	0	0	0	0	0	1285
04:00 PM	0	0	0	2	0	625	2	0	0	0	0	0	0	0	0	0	629
04:15 PM	0	0	2	3	0	652	3	0	0	0	0	0	0	0	0	0	660
04:30 PM	0	0	3	7	0	629	0	0	0	0	0	0	0	0	0	0	639
04:45 PM	0	0	4	2	0	712	2	0	0	0	0	0	0	1	0	0	721
Total	0	0	9	14	0	2618	7	0	0	0	0	0	0	1	0	0	2649
05:00 PM	0	0	1	2	0	637	2	0	0	0	0	0	0	0	0	0	642
05:15 PM	0	0	2	6	0	660	4	0	0	0	0	0	0	0	0	0	672
Grand Total	0	0	19	31	0	5179	18	0	0	0	0	0	0	1	0	0	5248
Apprch %	0	0	38	62	0	99.7	0.3	0	0	0	0	0	0	100	0	0	
Total %	0	0	0.4	0.6	0	98.7	0.3	0	0	0	0	0	0	0	0	0	
Motorcycles	0	0	1	0	0	37	1	0	0	0	0	0	0	0	0	0	39
% Motorcycles	0	0	5.3	0	0	0.7	5.6	0	0	0	0	0	0	0	0	0	0.7
Cars & Light Goods	0	0	18	0	0	5071	15	0	0	0	0	0	0	0	0	0	5104
% Cars & Light Goods	0	0	94.7	0	0	97.9	83.3	0	0	0	0	0	0	0	0	0	97.3
Buses	0	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0	12
% Buses	0	0	0	0	0	0.2	0	0	0	0	0	0	0	0	0	0	0.2
Single-Unit Trucks	0	0	0	0	0	48	0	0	0	0	0	0	0	0	0	0	48
% Single-Unit Trucks	0	0	0	0	0	0.9	0	0	0	0	0	0	0	0	0	0	0.9
Articulated Trucks	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	4
% Articulated Trucks	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0.1
Bicycles on Road	0	0	0	0	0	7	2	0	0	0	0	0	0	1	0	0	10
% Bicycles on Road	0	0	0	0	0	0.1	11.1	0	0	0	0	0	0	100	0	0	0.2
Bicycles on Crosswalk	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	5
% Bicycles on Crosswalk	0	0	0	16.1	0	0	0	0	0	0	0	0	0	0	0	0	0.1
Pedestrians	0	0	0	26	0	0	0	0	0	0	0	0	0	0	0	0	26
% Pedestrians	0	0	0	83.9	0	0	0	0	0	0	0	0	0	0	0	0	0.5

Austin Tsutsumi & Associates
501 Sumner Street Suite 521
Honolulu, Hawaii 96817
Phone: (808) 533-3646   Fax: (808) 533-1267

File Name : Existing 120 Nimitz Hwy Dwy - Nimitz Hwy
Site Code : 22-200 Hale O Kekaulike & Chinatown Hotel TIAR
Start Date : 1/27/2022
Page No : 2

	EXISTING 120 NIMITZ HWY DWY Southbound					NIMITZ HWY Westbound					Northbound					Eastbound Approach Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	0	0	2	2	0	625	2	0	627	0	0	0	0	0	0	0	0	0	0	629
04:15 PM	0	0	2	3	5	0	652	**3**	0	655	0	0	0	0	0	0	0	0	0	0	660
04:30 PM	0	0	3	**7**	**10**	0	629	0	0	629	0	0	0	0	0	0	0	0	0	0	639
04:45 PM	0	0	**4**	2	6	0	**712**	2	0	**714**	0	0	0	0	0	0	**1**	0	0	**1**	**721**
Total Volume	0	0	9	14	23	0	2618	7	0	2625	0	0	0	0	0	0	1	0	0	1	2649
% App. Total	0	0	39.1	60.9		0	99.7	0.3	0		0	0	0	0		0	100	0	0		
PHF	.000	.000	.563	.500	.575	.000	.919	.583	.000	.919	.000	.000	.000	.000	.000	.000	.250	.000	.000	.250	.919



Austin Tsutsumi & Associates

501 Sumner Street Suite 521
Honolulu, Hawaii 96817
Phone: (808) 533-3646   Fax: (808) 533-1267

File Name : Maunakea St - King St
Site Code : 22-200 Hale O Kekaulike & Chinatown Hotel TIAR
Start Date : 1/27/2022
Page No : 1

Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

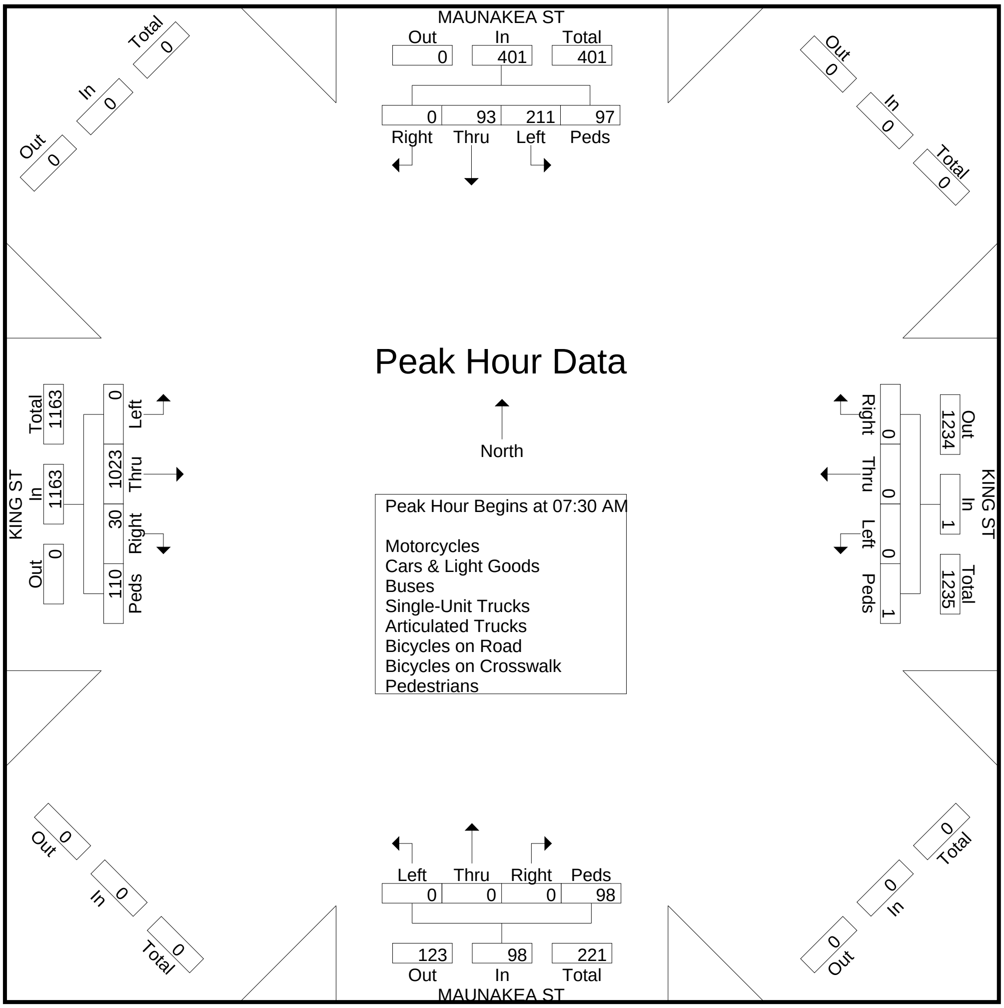
	MAUNAKEA ST Southbound				KING ST Westbound				MAUNAKEA ST Northbound				KING ST Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
07:00 AM	35	11	1	11	0	0	0	0	0	0	0	15	0	194	5	22	294
07:15 AM	35	10	0	11	0	0	0	0	0	0	0	31	0	287	2	26	402
07:30 AM	57	24	0	16	0	0	0	1	0	0	0	20	0	295	8	23	444
07:45 AM	51	16	0	19	0	0	0	0	0	0	0	26	0	296	7	21	436
Total	178	61	1	57	0	0	0	1	0	0	0	92	0	1072	22	92	1576
08:00 AM	46	21	0	30	0	0	0	0	0	0	0	23	0	242	3	31	396
08:15 AM	57	32	0	32	0	0	0	0	0	0	0	29	0	190	12	35	387
08:30 AM	48	41	0	32	0	0	0	2	0	0	0	51	0	162	9	37	382
08:45 AM	57	30	0	51	0	0	0	1	0	0	0	47	0	140	8	44	378
Total	208	124	0	145	0	0	0	3	0	0	0	150	0	734	32	147	1543
Grand Total	386	185	1	202	0	0	0	4	0	0	0	242	0	1806	54	239	3119
Apprch %	49.9	23.9	0.1	26.1	0	0	0	100	0	0	0	100	0	86	2.6	11.4	
Total %	12.4	5.9	0	6.5	0	0	0	0.1	0	0	0	7.8	0	57.9	1.7	7.7	
Motorcycles	4	1	0	0	0	0	0	0	0	0	0	0	0	30	1	0	36
% Motorcycles	1	0.5	0	0	0	0	0	0	0	0	0	0	0	1.7	1.9	0	1.2
Cars & Light Goods	375	181	0	0	0	0	0	0	0	0	0	0	0	1688	51	0	2295
% Cars & Light Goods	97.2	97.8	0	0	0	0	0	0	0	0	0	0	0	93.5	94.4	0	73.6
Buses	3	0	0	0	0	0	0	0	0	0	0	0	0	60	0	0	63
% Buses	0.8	0	0	0	0	0	0	0	0	0	0	0	0	3.3	0	0	2
Single-Unit Trucks	4	3	0	0	0	0	0	0	0	0	0	0	0	24	2	0	33
% Single-Unit Trucks	1	1.6	0	0	0	0	0	0	0	0	0	0	0	1.3	3.7	0	1.1
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0	0	0.1
Bicycles on Road	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	2
% Bicycles on Road	0	0	100	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0.1
Bicycles on Crosswalk	0	0	0	4	0	0	0	0	0	0	0	5	0	0	0	4	13
% Bicycles on Crosswalk	0	0	0	2	0	0	0	0	0	0	0	2.1	0	0	0	1.7	0.4
Pedestrians	0	0	0	198	0	0	0	4	0	0	0	237	0	0	0	235	674
% Pedestrians	0	0	0	98	0	0	0	100	0	0	0	97.9	0	0	0	98.3	21.6

Austin Tsutsumi & Associates

501 Sumner Street Suite 521
Honolulu, Hawaii 96817
Phone: (808) 533-3646   Fax: (808) 533-1267

File Name : Maunakea St - King St
Site Code : 22-200 Hale O Kekaulike & Chinatown Hotel TIAR
Start Date : 1/27/2022

	MAUNAKEA ST Southbound					KING ST Westbound					MAUNAKEA ST Northbound					KING ST Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	**57**	24	0	16	97	0	0	0	**1**	**1**	0	0	0	20	20	0	295	8	23	**326**	**444**
07:45 AM	51	16	0	19	86	0	0	0	0	0	0	0	0	26	26	0	**296**	7	21	324	436
08:00 AM	46	21	0	30	97	0	0	0	0	0	0	0	0	23	23	0	242	3	31	276	396
08:15 AM	57	**32**	0	**32**	**121**	0	0	0	0	0	0	0	0	**29**	**29**	0	190	**12**	**35**	237	387
Total Volume	211	93	0	97	401	0	0	0	1	1	0	0	0	98	98	0	1023	30	110	1163	1663
% App. Total	52.6	23.2	0	24.2		0	0	0	100		0	0	0	100		0	88	2.6	9.5		
PHF	.925	.727	.000	.758	.829	.000	.000	.000	.250	.250	.000	.000	.000	.845	.845	.000	.864	.625	.786	.892	.936



Austin Tsutsumi & Associates

501 Sumner Street Suite 521
Honolulu, Hawaii 96817
Phone: (808) 533-3646 Fax: (808) 533-1267

File Name : Maunakea St - King St
Site Code : 22-200 Hale O Kekaulike & Chinatown Hotel TIAR
Start Date : 1/27/2022
Page No : 1

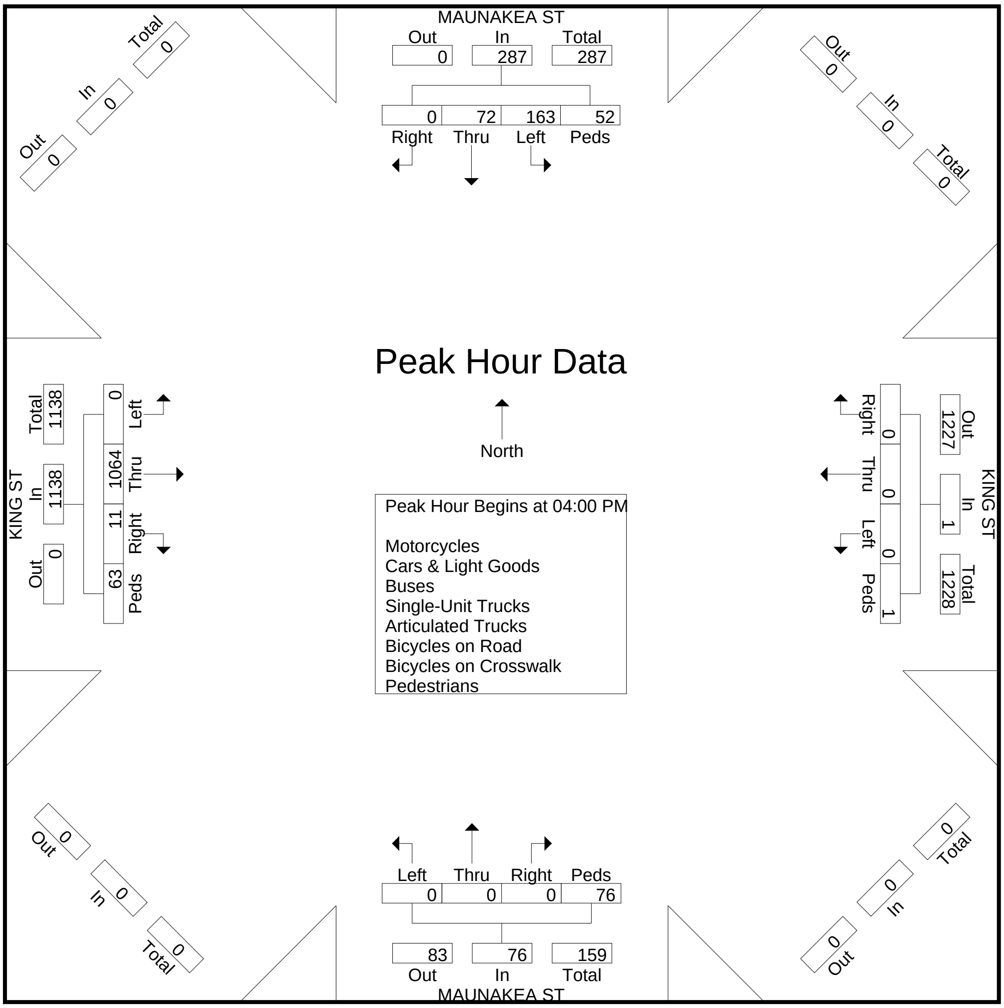
Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	MAUNAKEA ST Southbound				KING ST Westbound				MAUNAKEA ST Northbound				KING ST Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
03:30 PM	53	16	0	23	0	0	0	0	0	0	0	32	0	263	6	25	418
03:45 PM	59	23	0	12	0	0	0	0	0	0	0	25	0	255	9	22	405
Total	112	39	0	35	0	0	0	0	0	0	0	57	0	518	15	47	823
04:00 PM	43	12	0	21	0	0	0	0	0	0	0	17	0	277	4	18	392
04:15 PM	36	22	0	11	0	0	0	0	0	0	0	23	0	250	1	15	358
04:30 PM	40	22	0	11	0	0	0	1	0	0	0	17	0	279	2	12	384
04:45 PM	44	16	0	9	0	0	0	0	0	0	0	19	0	258	4	18	368
Total	163	72	0	52	0	0	0	1	0	0	0	76	0	1064	11	63	1502
05:00 PM	58	21	0	8	0	0	0	0	0	0	0	23	0	224	7	24	365
05:15 PM	36	17	0	6	0	0	0	0	0	0	0	21	0	252	1	15	348
Grand Total	369	149	0	101	0	0	0	1	0	0	0	177	0	2058	34	149	3038
Apprch %	59.6	24.1	0	16.3	0	0	0	100	0	0	0	100	0	91.8	1.5	6.6	
Total %	12.1	4.9	0	3.3	0	0	0	0	0	0	0	5.8	0	67.7	1.1	4.9	
Motorcycles	3	2	0	0	0	0	0	0	0	0	0	0	0	51	1	0	57
% Motorcycles	0.8	1.3	0	0	0	0	0	0	0	0	0	0	0	2.5	2.9	0	1.9
Cars & Light Goods	363	145	0	0	0	0	0	0	0	0	0	0	0	1933	32	0	2473
% Cars & Light Goods	98.4	97.3	0	0	0	0	0	0	0	0	0	0	0	93.9	94.1	0	81.4
Buses	1	0	0	0	0	0	0	0	0	0	0	0	0	65	0	0	66
% Buses	0.3	0	0	0	0	0	0	0	0	0	0	0	0	3.2	0	0	2.2
Single-Unit Trucks	1	2	0	0	0	0	0	0	0	0	0	0	0	3	0	0	6
% Single-Unit Trucks	0.3	1.3	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0.2
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Road	1	0	0	0	0	0	0	0	0	0	0	0	0	6	1	0	8
% Bicycles on Road	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0.3	2.9	0	0.3
Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	1	8
% Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0.7	0.3
Pedestrians	0	0	0	101	0	0	0	1	0	0	0	170	0	0	0	148	420
% Pedestrians	0	0	0	100	0	0	0	100	0	0	0	96	0	0	0	99.3	13.8

Austin Tsutsumi & Associates
501 Sumner Street Suite 521
Honolulu, Hawaii 96817
Phone: (808) 533-3646   Fax: (808) 533-1267

File Name : Maunakea St - King St
Site Code : 22-200 Hale O Kekaulike & Chinatown Hotel TIAR
Start Date : 1/27/2022

	MAUNAKEA ST Southbound					KING ST Westbound					MAUNAKEA ST Northbound					KING ST Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	43	12	0	**21**	**76**	0	0	0	0	0	0	0	0	17	17	0	277	**4**	**18**	**299**	**392**
04:15 PM	36	**22**	0	11	69	0	0	0	0	0	0	0	0	**23**	**23**	0	250	1	15	266	358
04:30 PM	40	22	0	11	73	0	0	0	**1**	**1**	0	0	0	17	17	0	**279**	2	12	293	384
04:45 PM	**44**	16	0	9	69	0	0	0	0	0	0	0	0	19	19	0	258	4	18	280	368
Total Volume	163	72	0	52	287	0	0	0	1	1	0	0	0	76	76	0	1064	11	63	1138	1502
% App. Total	56.8	25.1	0	18.1		0	0	0	100		0	0	0	100		0	93.5	1	5.5		
PHF	.926	.818	.000	.619	.944	.000	.000	.000	.250	.250	.000	.000	.000	.826	.826	.000	.953	.688	.875	.952	.958



Austin Tsutsumi & Associates

501 Sumner Street Suite 521
Honolulu, Hawaii 96817
Phone: (808) 533-3646   Fax: (808) 533-1267

File Name : Kekaulike St - King St
Site Code : 22-200 Hale O Kekaulike & Chinatown Hotel TIAR
Start Date : 1/27/2022
Page No : 1

Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

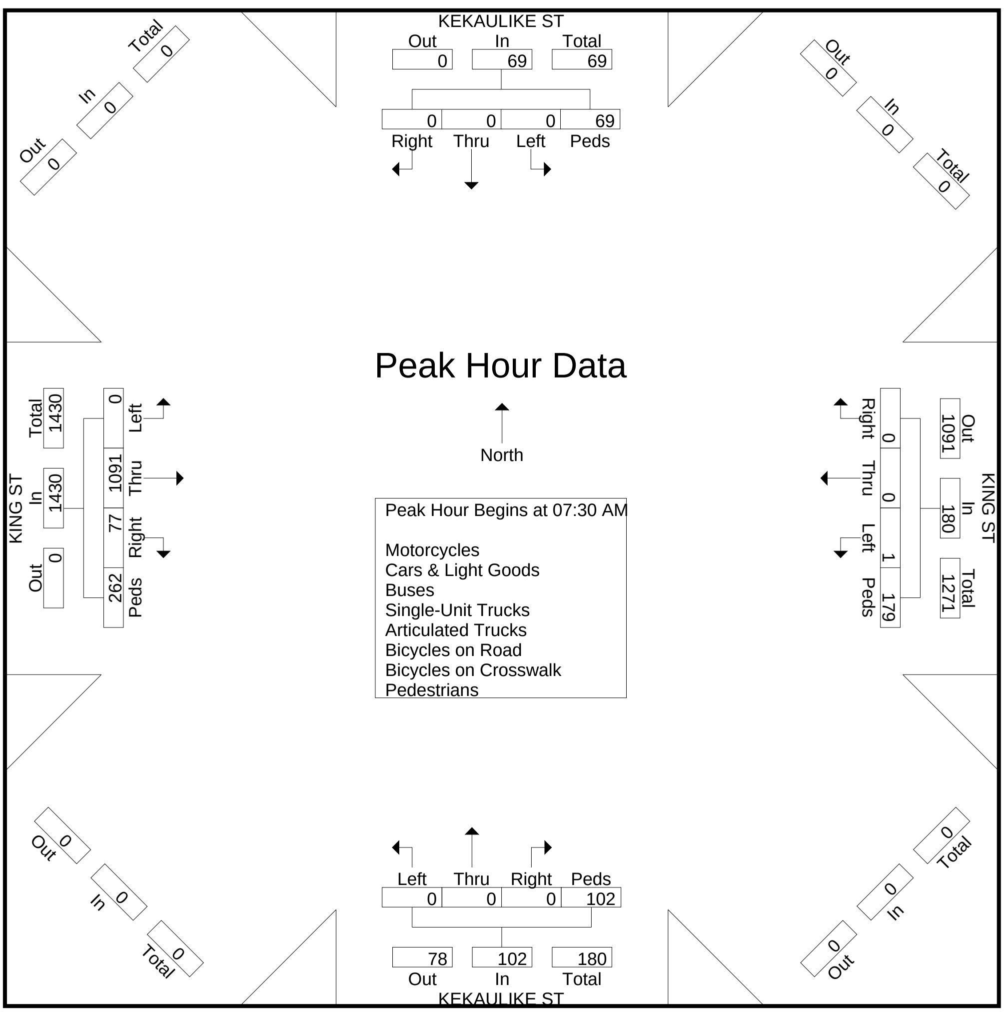
	KEKAULIKE ST Southbound				KING ST Westbound				KEKAULIKE ST Northbound				KING ST Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
07:00 AM	0	0	0	7	0	0	0	14	0	0	0	9	0	212	10	32	284
07:15 AM	0	0	0	3	0	0	0	0	0	0	0	11	0	297	11	39	361
07:30 AM	0	0	0	17	0	0	0	19	0	0	0	12	0	314	11	36	409
07:45 AM	0	0	0	10	1	0	0	45	0	0	0	20	0	310	14	47	447
Total	0	0	0	37	1	0	0	78	0	0	0	52	0	1133	46	154	1501
08:00 AM	0	0	0	21	0	0	0	63	0	0	0	35	0	258	29	64	470
08:15 AM	0	0	0	21	0	0	0	52	0	0	0	35	0	209	23	115	455
08:30 AM	0	0	0	24	0	0	0	105	0	0	0	65	0	181	13	123	511
08:45 AM	0	0	0	22	0	0	0	75	0	0	0	64	0	157	17	156	491
Total	0	0	0	88	0	0	0	295	0	0	0	199	0	805	82	458	1927
Grand Total	0	0	0	125	1	0	0	373	0	0	0	251	0	1938	128	612	3428
Apprch %	0	0	0	100	0.3	0	0	99.7	0	0	0	100	0	72.4	4.8	22.9	
Total %	0	0	0	3.6	0	0	0	10.9	0	0	0	7.3	0	56.5	3.7	17.9	
Motorcycles	0	0	0	0	0	0	0	0	0	0	0	0	0	35	2	0	37
% Motorcycles	0	0	0	0	0	0	0	0	0	0	0	0	0	1.8	1.6	0	1.1
Cars & Light Goods	0	0	0	0	0	0	0	0	0	0	0	0	0	1806	124	0	1930
% Cars & Light Goods	0	0	0	0	0	0	0	0	0	0	0	0	0	93.2	96.9	0	56.3
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	64	0	0	64
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	3.3	0	0	1.9
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	26	2	0	28
% Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	1.3	1.6	0	0.8
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0.1
Bicycles on Road	0	0	0	0	1	0	0	0	0	0	0	0	0	5	0	0	6
% Bicycles on Road	0	0	0	0	100	0	0	0	0	0	0	0	0	0.3	0	0	0.2
Bicycles on Crosswalk	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	2
% Bicycles on Crosswalk	0	0	0	0	0	0	0	0.3	0	0	0	0.4	0	0	0	0	0.1
Pedestrians	0	0	0	125	0	0	0	372	0	0	0	250	0	0	0	612	1359
% Pedestrians	0	0	0	100	0	0	0	99.7	0	0	0	99.6	0	0	0	100	39.6

Austin Tsutsumi & Associates

501 Sumner Street Suite 521
Honolulu, Hawaii 96817
Phone: (808) 533-3646   Fax: (808) 533-1267

File Name : Kekaulike St - King St
Site Code : 22-200 Hale O Kekaulike & Chinatown Hotel TIAR
Start Date : 1/27/2022

	KEKAULIKE ST Southbound					KING ST Westbound					KEKAULIKE ST Northbound					KING ST Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	0	0	17	17	0	0	0	19	19	0	0	0	12	12	0	**314**	11	36	361	409
07:45 AM	0	0	0	10	10	**1**	0	0	45	46	0	0	0	20	20	0	310	14	47	**371**	447
08:00 AM	0	0	0	**21**	**21**	0	0	0	**63**	**63**	0	0	0	**35**	**35**	0	258	**29**	64	351	**470**
08:15 AM	0	0	0	21	21	0	0	0	52	52	0	0	0	35	35	0	209	23	**115**	347	455
Total Volume	0	0	0	69	69	1	0	0	179	180	0	0	0	102	102	0	1091	77	262	1430	1781
% App. Total	0	0	0	100		0.6	0	0	99.4		0	0	0	100		0	76.3	5.4	18.3		
PHF	.000	.000	.000	.821	.821	.250	.000	.000	.710	.714	.000	.000	.000	.729	.729	.000	.869	.664	.570	.964	.947



Austin Tsutsumi & Associates

501 Sumner Street Suite 521
Honolulu, Hawaii 96817
Phone: (808) 533-3646   Fax: (808) 533-1267

File Name : Kekaulike St - King St
Site Code : 22-200 Hale O Kekaulike & Chinatown Hotel TIAR
Start Date : 1/27/2022
Page No : 1

Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

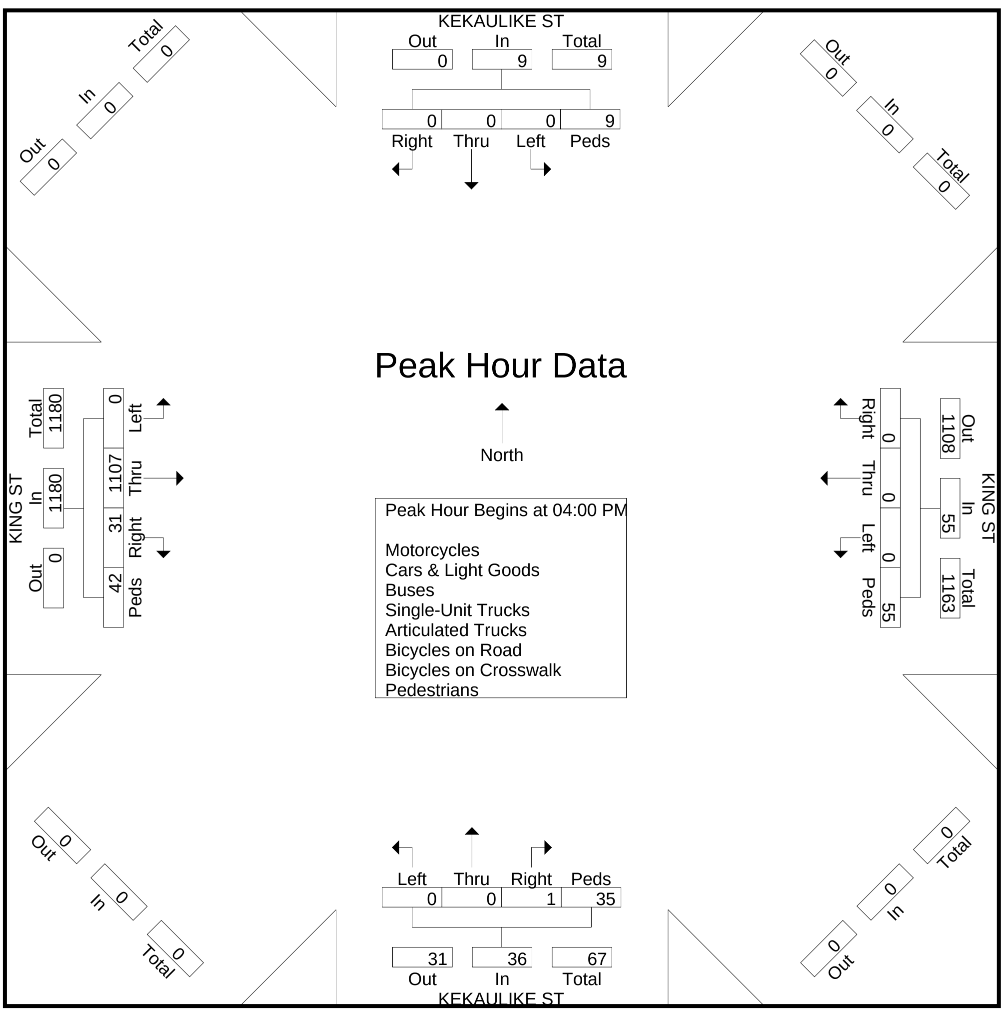
	KEKAULIKE ST Southbound				KING ST Westbound				KEKAULIKE ST Northbound				KING ST Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
03:30 PM	0	0	0	8	0	0	0	18	0	0	0	19	0	272	11	24	352
03:45 PM	0	0	0	4	0	0	0	20	0	0	0	10	0	268	12	31	345
Total	0	0	0	12	0	0	0	38	0	0	0	29	0	540	23	55	697
04:00 PM	0	0	0	6	0	0	0	14	0	0	0	9	0	287	7	14	337
04:15 PM	0	0	0	0	0	0	0	16	0	0	0	11	0	257	10	6	300
04:30 PM	0	0	0	1	0	0	0	14	0	0	1	4	0	295	8	12	335
04:45 PM	0	0	0	2	0	0	0	11	0	0	0	11	0	268	6	10	308
Total	0	0	0	9	0	0	0	55	0	0	1	35	0	1107	31	42	1280
05:00 PM	0	0	0	0	0	0	0	8	0	0	0	11	0	237	3	1	260
05:15 PM	0	1	0	0	0	0	0	3	0	0	0	10	0	259	8	6	287
Grand Total	0	1	0	21	0	0	0	104	0	0	1	85	0	2143	65	104	2524
Apprch %	0	4.5	0	95.5	0	0	0	100	0	0	1.2	98.8	0	92.7	2.8	4.5	
Total %	0	0	0	0.8	0	0	0	4.1	0	0	0	3.4	0	84.9	2.6	4.1	
Motorcycles	0	0	0	0	0	0	0	0	0	0	0	0	0	56	0	0	56
% Motorcycles	0	0	0	0	0	0	0	0	0	0	0	0	0	2.6	0	0	2.2
Cars & Light Goods	0	0	0	0	0	0	0	0	0	0	1	0	0	2009	64	0	2074
% Cars & Light Goods	0	0	0	0	0	0	0	0	0	0	100	0	0	93.7	98.5	0	82.2
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	67	0	0	67
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	3.1	0	0	2.7
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4
% Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0	0	0.2
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Road	0	1	0	0	0	0	0	0	0	0	0	0	0	7	1	0	9
% Bicycles on Road	0	100	0	0	0	0	0	0	0	0	0	0	0	0.3	1.5	0	0.4
Bicycles on Crosswalk	0	0	0	0	0	0	0	3	0	0	0	4	0	0	0	2	9
% Bicycles on Crosswalk	0	0	0	0	0	0	0	2.9	0	0	0	4.7	0	0	0	1.9	0.4
Pedestrians	0	0	0	21	0	0	0	101	0	0	0	81	0	0	0	102	305
% Pedestrians	0	0	0	100	0	0	0	97.1	0	0	0	95.3	0	0	0	98.1	12.1

Austin Tsutsumi & Associates

501 Sumner Street Suite 521
Honolulu, Hawaii 96817
Phone: (808) 533-3646 Fax: (808) 533-1267

File Name : Kekaulike St - King St
Site Code : 22-200 Hale O Kekaulike & Chinatown Hotel TIAR
Start Date : 1/27/2022
Page No : 2

	KEKAULIKE ST Southbound					KING ST Westbound					KEKAULIKE ST Northbound					KING ST Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	0	0	**6**	**6**	0	0	0	14	14	0	0	0	9	9	0	287	7	**14**	308	**337**
04:15 PM	0	0	0	0	0	0	0	0	**16**	**16**	0	0	0	**11**	**11**	0	257	**10**	6	273	300
04:30 PM	0	0	0	1	1	0	0	0	14	14	0	0	**1**	4	5	0	**295**	8	12	**315**	335
04:45 PM	0	0	0	2	2	0	0	0	11	11	0	0	0	11	11	0	268	6	10	284	308
Total Volume	0	0	0	9	9	0	0	0	55	55	0	0	1	35	36	0	1107	31	42	1180	1280
% App. Total	0	0	0	100		0	0	0	100		0	0	2.8	97.2		0	93.8	2.6	3.6		
PHF	.000	.000	.000	.375	.375	.000	.000	.000	.859	.859	.000	.000	.250	.795	.818	.000	.938	.775	.750	.937	.950



Austin Tsutsumi & Associates

501 Sumner Street, Suite 521
Honolulu, HI 96817-5013
Phone: 533-3646 Fax: 526-1267

File Name : Kekaulike St - Nimitz Hwy
Site Code : 22-200 Hale O Kekaulike & Chinatown Hotel TIAR
Start Date : 1/27/2022
Page No : 1

Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

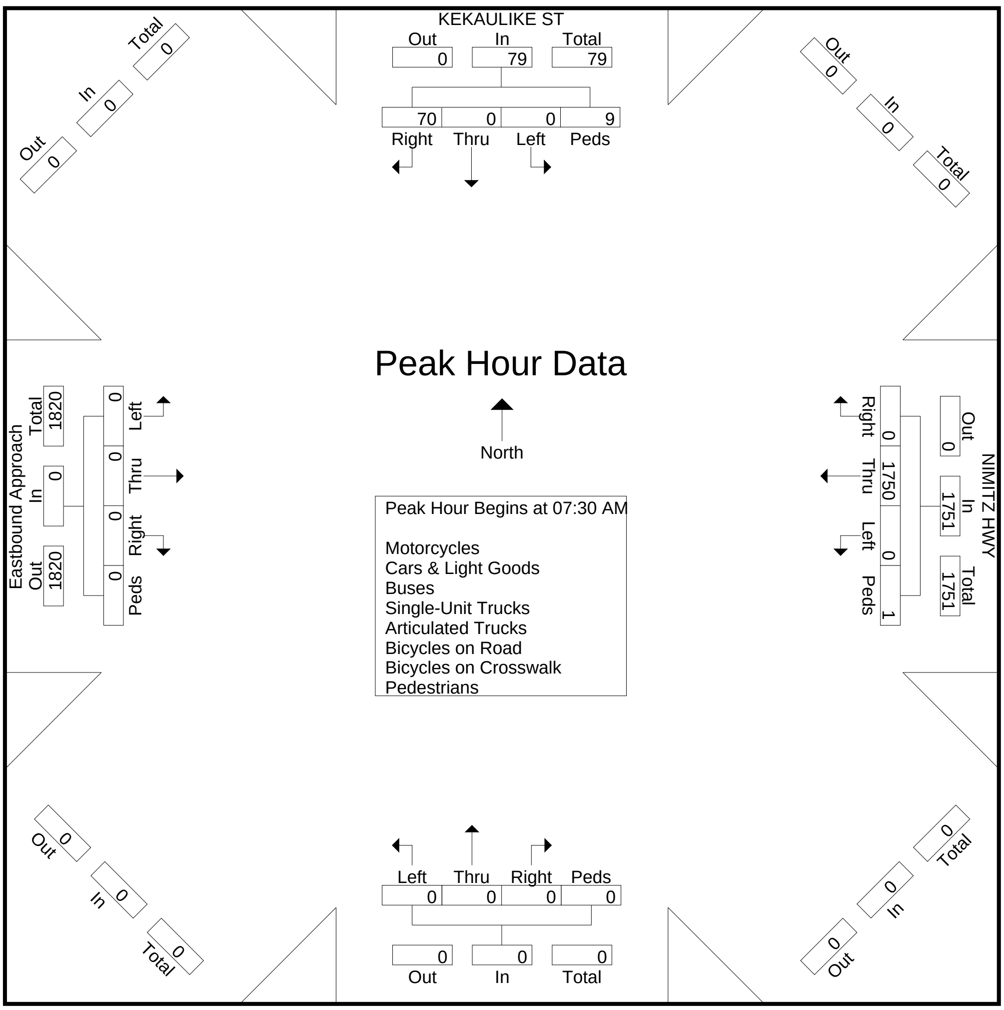
	KEKAULIKE ST Southbound				NIMITZ HWY Westbound				Northbound				Eastbound Approach Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
07:00 AM	0	0	9	11	0	338	0	1	0	0	0	0	0	0	0	0	359
07:15 AM	0	0	9	5	0	428	0	0	0	0	0	0	0	0	0	0	442
07:30 AM	0	0	15	4	0	466	0	0	0	0	0	0	0	0	0	0	485
07:45 AM	0	0	7	4	0	461	0	0	0	0	0	0	0	0	0	0	472
Total	0	0	40	24	0	1693	0	1	0	0	0	0	0	0	0	0	1758
08:00 AM	0	0	28	1	0	380	0	0	0	0	0	0	0	0	0	0	409
08:15 AM	0	0	20	0	0	443	0	1	0	0	0	0	0	0	0	0	464
08:30 AM	0	0	14	0	0	414	0	1	0	0	0	0	0	0	0	0	429
08:45 AM	0	0	18	0	0	356	1	0	0	0	0	0	0	0	0	0	375
Total	0	0	80	1	0	1593	1	2	0	0	0	0	0	0	0	0	1677
Grand Total	0	0	120	25	0	3286	1	3	0	0	0	0	0	0	0	0	3435
Apprch %	0	0	82.8	17.2	0	99.9	0	0.1	0	0	0	0	0	0	0	0	
Total %	0	0	3.5	0.7	0	95.7	0	0.1	0	0	0	0	0	0	0	0	
Motorcycles	0	0	2	0	0	40	0	0	0	0	0	0	0	0	0	0	42
% Motorcycles	0	0	1.7	0	0	1.2	0	0	0	0	0	0	0	0	0	0	1.2
Cars & Light Goods	0	0	115	0	0	3110	0	0	0	0	0	0	0	0	0	0	3225
% Cars & Light Goods	0	0	95.8	0	0	94.6	0	0	0	0	0	0	0	0	0	0	93.9
Buses	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	10
% Buses	0	0	0	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0.3
Single-Unit Trucks	0	0	2	0	0	95	0	0	0	0	0	0	0	0	0	0	97
% Single-Unit Trucks	0	0	1.7	0	0	2.9	0	0	0	0	0	0	0	0	0	0	2.8
Articulated Trucks	0	0	0	0	0	25	0	0	0	0	0	0	0	0	0	0	25
% Articulated Trucks	0	0	0	0	0	0.8	0	0	0	0	0	0	0	0	0	0	0.7
Bicycles on Road	0	0	1	0	0	6	1	0	0	0	0	0	0	0	0	0	8
% Bicycles on Road	0	0	0.8	0	0	0.2	100	0	0	0	0	0	0	0	0	0	0.2
Bicycles on Crosswalk	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	5
% Bicycles on Crosswalk	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0.1
Pedestrians	0	0	0	20	0	0	0	3	0	0	0	0	0	0	0	0	23
% Pedestrians	0	0	0	80	0	0	0	100	0	0	0	0	0	0	0	0	0.7

Austin Tsutsumi & Associates

501 Sumner Street, Suite 521
Honolulu, HI 96817-5013
Phone: 533-3646 Fax: 526-1267

File Name : Kekaulike St - Nimitz Hwy
Site Code : 22-200 Hale O Kekaulike & Chinatown Hotel TIAR
Start Date : 1/27/2022

	KEKAULIKE ST Southbound					NIMITZ HWY Westbound					Northbound					Eastbound Approach Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	0	15	**4**			**466**			**466**	0	0	0	0	0	0	0	0	0	0	**485**
07:45 AM	0	0	7	4	11	0	461	0	0	461	0	0	0	0	0	0	0	0	0	0	472
08:00 AM	0	0	**28**		**29**	0	380	0	0	380	0	0	0	0	0	0	0	0	0	0	409
08:15 AM	0	0	20	0	20	0	443	0	**1**	444	0	0	0	0	0	0	0	0	0	0	464
Total Volume	0	0	70	9	79	0	1750	0	1	1751	0	0	0	0	0	0	0	0	0	0	1830
% App. Total																					
PHF	.000	.000	.625	.563	.681	.000	.939	.000	.250	.939	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.943



Austin Tsutsumi & Associates
501 Sumner Street Suite 521
Honolulu, Hawaii 96817
Phone: (808) 533-3646 Fax: (808) 533-1267

File Name : Kekaulike St - Nimitz Hwy
Site Code : 22-200 Hale O Kekaulike & Chinatown Hotel TIAR
Start Date : 1/27/2022
Page No : 1

Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

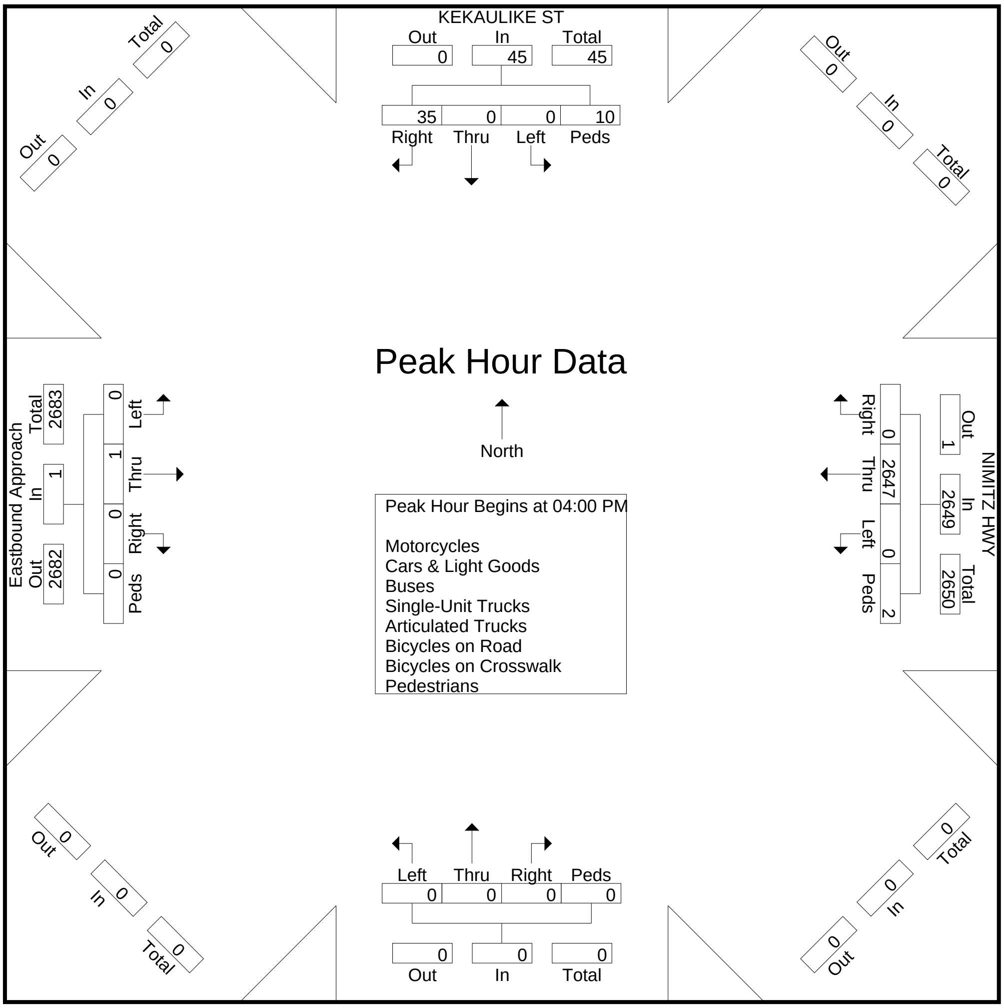
	KEKAULIKE ST Southbound				NIMITZ HWY Westbound				Northbound				Eastbound Approach Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
03:30 PM	0	0	12	3	0	640	0	1	0	0	0	0	0	0	0	0	656
03:45 PM	0	0	12	3	0	631	0	0	0	0	0	0	0	0	0	0	646
Total	0	0	24	6	0	1271	0	1	0	0	0	0	0	0	0	0	1302
04:00 PM	0	0	13	2	0	638	0	0	0	0	0	0	0	0	0	0	653
04:15 PM	0	0	8	2	0	645	0	1	0	0	0	0	0	0	0	0	656
04:30 PM	0	0	8	4	0	635	0	0	0	0	0	0	0	0	0	0	647
04:45 PM	0	0	6	2	0	729	0	1	0	0	0	0	0	1	0	0	739
Total	0	0	35	10	0	2647	0	2	0	0	0	0	0	1	0	0	2695
05:00 PM	0	0	5	4	0	639	0	1	0	0	0	0	0	0	0	0	649
05:15 PM	0	0	6	5	0	669	0	0	0	0	0	0	0	0	0	0	680
Grand Total	0	0	70	25	0	5226	0	4	0	0	0	0	0	1	0	0	5326
Apprch %	0	0	73.7	26.3	0	99.9	0	0.1	0	0	0	0	0	100	0	0	
Total %	0	0	1.3	0.5	0	98.1	0	0.1	0	0	0	0	0	0	0	0	
Motorcycles	0	0	1	0	0	40	0	0	0	0	0	0	0	0	0	0	41
% Motorcycles	0	0	1.4	0	0	0.8	0	0	0	0	0	0	0	0	0	0	0.8
Cars & Light Goods	0	0	68	0	0	5113	0	0	0	0	0	0	0	0	0	0	5181
% Cars & Light Goods	0	0	97.1	0	0	97.8	0	0	0	0	0	0	0	0	0	0	97.3
Buses	0	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0	13
% Buses	0	0	0	0	0	0.2	0	0	0	0	0	0	0	0	0	0	0.2
Single-Unit Trucks	0	0	0	0	0	51	0	0	0	0	0	0	0	0	0	0	51
% Single-Unit Trucks	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Articulated Trucks	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	4
% Articulated Trucks	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0.1
Bicycles on Road	0	0	1	0	0	5	0	0	0	0	0	0	0	1	0	0	7
% Bicycles on Road	0	0	1.4	0	0	0.1	0	0	0	0	0	0	0	100	0	0	0.1
Bicycles on Crosswalk	0	0	0	8	0	0	0	2	0	0	0	0	0	0	0	0	10
% Bicycles on Crosswalk	0	0	0	32	0	0	0	50	0	0	0	0	0	0	0	0	0.2
Pedestrians	0	0	0	17	0	0	0	2	0	0	0	0	0	0	0	0	19
% Pedestrians	0	0	0	68	0	0	0	50	0	0	0	0	0	0	0	0	0.4

Austin Tsutsumi & Associates

501 Sumner Street Suite 521
Honolulu, Hawaii 96817
Phone: (808) 533-3646   Fax: (808) 533-1267

File Name : Kekaulike St - Nimitz Hwy
Site Code : 22-200 Hale O Kekaulike & Chinatown Hotel TIAR
Start Date : 1/27/2022
Page No : 2

	KEKAULIKE ST Southbound					NIMITZ HWY Westbound					Northbound					Eastbound Approach Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	0	**13**	2	**15**	0	638	0	0	638	0	0	0	0	0	0	0	0	0	0	653
04:15 PM	0	0	8	2	10	0	645	0	**1**	646	0	0	0	0	0	0	0	0	0	0	656
04:30 PM	0	0	8	**4**	12	0	635	0	0	635	0	0	0	0	0	0	0	0	0	0	647
04:45 PM	0	0	6	2	8	0	**729**	0	1	**730**	0	0	0	0	0	0	**1**	0	0	**1**	**739**
Total Volume	0	0	35	10	45	0	2647	0	2	2649	0	0	0	0	0	0	1	0	0	1	2695
% App. Total	0	0	77.8	22.2		0	99.9	0	0.1		0	0	0	0		0	100	0	0		
PHF	.000	.000	.673	.625	.750	.000	.908	.000	.500	.907	.000	.000	.000	.000	.000	.000	.250	.000	.000	.250	.912



APPENDIX C

LOS WORKSHEETS

APPENDIX C

LOS WORKSHEETS

Existing Conditions

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	116	2019	0	0	0
Future Volume (Veh/h)	0	116	2019	0	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	126	2195	0	0	0
Pedestrians						28
Lane Width (ft)						0.0
Walking Speed (ft/s)						3.5
Percent Blockage						0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2195	577			2195	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2195	577			2195	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	73			100	
cM capacity (veh/h)	38	460			237	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4
Volume Total	126	549	549	549	549
Volume Left	0	0	0	0	0
Volume Right	126	0	0	0	0
cSH	460	1700	1700	1700	1700
Volume to Capacity	0.27	0.32	0.32	0.32	0.32
Queue Length 95th (ft)	28	0	0	0	0
Control Delay (s)	15.8	0.0	0.0	0.0	0.0
Lane LOS	C				
Approach Delay (s)	15.8	0.0			
Approach LOS	C				

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	47.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	10	2121	36	0	0
Future Volume (Veh/h)	0	10	2121	36	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	11	2305	39	0	0
Pedestrians						33
Lane Width (ft)						0.0
Walking Speed (ft/s)						3.5
Percent Blockage						0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2324	629			2344	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2324	629			2344	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			100	
cM capacity (veh/h)	31	425			207	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4
Volume Total	11	659	659	659	368
Volume Left	0	0	0	0	0
Volume Right	11	0	0	0	39
cSH	425	1700	1700	1700	1700
Volume to Capacity	0.03	0.39	0.39	0.39	0.22
Queue Length 95th (ft)	2	0	0	0	0
Control Delay (s)	13.7	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	13.7	0.0			
Approach LOS	B				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	48.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	211	93	0	0	0	0	0	1432	30
Future Volume (veh/h)	0	0	0	211	93	0	0	0	0	0	1432	30
Initial Q (Qb), veh				0	0	0				0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00				1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach					No						No	
Adj Sat Flow, veh/h/ln				1870	1870	0				0	1856	1856
Adj Flow Rate, veh/h				165	191	0				0	1557	24
Peak Hour Factor				0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %				2	2	0				0	3	3
Cap, veh/h				321	253	0				0	3817	1185
Arrive On Green				0.14	0.14	0.00				0.00	0.25	0.25
Sat Flow, veh/h				1781	1870	0				0	5233	1572
Grp Volume(v), veh/h				165	191	0				0	1557	24
Grp Sat Flow(s),veh/h/ln				1781	1870	0				0	1689	1572
Q Serve(g_s), s				7.9	8.8	0.0				0.0	23.1	1.0
Cycle Q Clear(g_c), s				7.9	8.8	0.0				0.0	23.1	1.0
Prop In Lane				1.00		0.00				0.00		1.00
Lane Grp Cap(c), veh/h				321	253	0				0	3817	1185
V/C Ratio(X)				0.51	0.75	0.00				0.00	0.41	0.02
Avail Cap(c_a), veh/h				575	520	0				0	3817	1185
HCM Platoon Ratio				1.00	1.00	1.00				1.00	0.33	0.33
Upstream Filter(I)				1.00	1.00	0.00				0.00	0.79	0.79
Uniform Delay (d), s/veh				37.1	37.5	0.0				0.0	17.0	8.7
Incr Delay (d2), s/veh				1.3	4.5	0.0				0.0	0.3	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.6	4.4	0.0				0.0	10.4	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				38.3	42.0	0.0				0.0	17.3	8.8
LnGrp LOS				D	D	A				A	B	A
Approach Vol, veh/h					356						1581	
Approach Delay, s/veh					40.3						17.2	
Approach LOS					D						B	
Timer - Assigned Phs						6		8				
Phs Duration (G+Y+Rc), s						72.8		17.2				
Change Period (Y+Rc), s						5.0		5.0				
Max Green Setting (Gmax), s						55.0		25.0				
Max Q Clear Time (g_c+I1), s						25.1		10.8				
Green Ext Time (p_c), s						15.4		1.3				
Intersection Summary												
HCM 6th Ctrl Delay			21.4									
HCM 6th LOS			C									
Notes												

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	0	1528	77
Future Volume (vph)	0	0	0	0	1528	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.0	5.0
Lane Util. Factor					0.91	1.00
Frt					1.00	0.85
Flt Protected					1.00	1.00
Satd. Flow (prot)					5036	1568
Flt Permitted					1.00	1.00
Satd. Flow (perm)					5036	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	1661	84
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1661	84
Heavy Vehicles (%)	2%	2%	2%	2%	3%	3%
Turn Type					NA	Perm
Protected Phases					2	
Permitted Phases						2
Actuated Green, G (s)					51.0	51.0
Effective Green, g (s)					51.0	51.0
Actuated g/C Ratio					0.57	0.57
Clearance Time (s)					5.0	5.0
Vehicle Extension (s)					5.0	5.0
Lane Grp Cap (vph)					2853	888
v/s Ratio Prot					c0.33	
v/s Ratio Perm						0.05
v/c Ratio					0.58	0.09
Uniform Delay, d1					12.6	8.9
Progression Factor					1.00	1.00
Incremental Delay, d2					0.9	0.2
Delay (s)					13.5	9.1
Level of Service					B	A
Approach Delay (s)	0.0			0.0	13.3	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	33.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	70	2156	0	0	0
Future Volume (Veh/h)	0	70	2156	0	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	76	2343	0	0	0
Pedestrians						18
Lane Width (ft)						0.0
Walking Speed (ft/s)						3.5
Percent Blockage						0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2343	604			2343	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2343	604			2343	
tC, single (s)	6.9	7.0			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	83			100	
cM capacity (veh/h)	30	437			207	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4
Volume Total	76	586	586	586	586
Volume Left	0	0	0	0	0
Volume Right	76	0	0	0	0
cSH	437	1700	1700	1700	1700
Volume to Capacity	0.17	0.34	0.34	0.34	0.34
Queue Length 95th (ft)	16	0	0	0	0
Control Delay (s)	15.0	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	15.0	0.0			
Approach LOS	B				

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	49.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	90	3244	0	0	0
Future Volume (Veh/h)	0	90	3244	0	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	98	3526	0	0	0
Pedestrians						30
Lane Width (ft)						0.0
Walking Speed (ft/s)						3.5
Percent Blockage						0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	3526	912			3526	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3526	912			3526	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	65			100	
cM capacity (veh/h)	4	277			69	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4
Volume Total	98	882	882	882	882
Volume Left	0	0	0	0	0
Volume Right	98	0	0	0	0
cSH	277	1700	1700	1700	1700
Volume to Capacity	0.35	0.52	0.52	0.52	0.52
Queue Length 95th (ft)	38	0	0	0	0
Control Delay (s)	25.0	0.0	0.0	0.0	0.0
Lane LOS	C				
Approach Delay (s)	25.0	0.0			
Approach LOS	C				

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	9	3225	7	0	0
Future Volume (Veh/h)	0	9	3225	7	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	10	3505	8	0	0
Pedestrians						25
Lane Width (ft)						0.0
Walking Speed (ft/s)						3.5
Percent Blockage						0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	3509	905			3513	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3509	905			3513	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	96			100	
cM capacity (veh/h)	5	279			70	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4
Volume Total	10	1001	1001	1001	509
Volume Left	0	0	0	0	0
Volume Right	10	0	0	0	8
cSH	279	1700	1700	1700	1700
Volume to Capacity	0.04	0.59	0.59	0.59	0.30
Queue Length 95th (ft)	3	0	0	0	0
Control Delay (s)	18.4	0.0	0.0	0.0	0.0
Lane LOS	C				
Approach Delay (s)	18.4	0.0			
Approach LOS	C				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		

HCM 6th Signalized Intersection Summary
3: King Street & Maunakea Street 01/30/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	163	72	0	0	0	0	0	1490	11
Future Volume (veh/h)	0	0	0	163	72	0	0	0	0	0	1490	11
Initial Q (Qb), veh				0	0	0				0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00				1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach					No						No	
Adj Sat Flow, veh/h/ln				1870	1870	0				0	1856	1856
Adj Flow Rate, veh/h				128	147	0				0	1620	9
Peak Hour Factor				0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %				2	2	0				0	3	3
Cap, veh/h				256	196	0				0	4051	1258
Arrive On Green				0.10	0.10	0.00				0.00	0.26	0.26
Sat Flow, veh/h				1781	1870	0				0	5233	1572
Grp Volume(v), veh/h				128	147	0				0	1620	9
Grp Sat Flow(s),veh/h/ln				1781	1870	0				0	1689	1572
Q Serve(g_s), s				7.3	8.0	0.0				0.0	27.6	0.4
Cycle Q Clear(g_c), s				7.3	8.0	0.0				0.0	27.6	0.4
Prop In Lane				1.00		0.00				0.00		1.00
Lane Grp Cap(c), veh/h				256	196	0				0	4051	1258
V/C Ratio(X)				0.50	0.75	0.00				0.00	0.40	0.01
Avail Cap(c_a), veh/h				493	445	0				0	4051	1258
HCM Platoon Ratio				1.00	1.00	1.00				1.00	0.33	0.33
Upstream Filter(I)				1.00	1.00	0.00				0.00	0.83	0.83
Uniform Delay (d), s/veh				45.3	45.6	0.0				0.0	17.9	7.9
Incr Delay (d2), s/veh				1.5	5.6	0.0				0.0	0.2	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.3	4.0	0.0				0.0	12.6	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				46.8	51.3	0.0				0.0	18.2	7.9
LnGrp LOS				D	D	A				A	B	A
Approach Vol, veh/h					275						1629	
Approach Delay, s/veh					49.2						18.1	
Approach LOS					D						B	

Timer - Assigned Phs						6		8				
Phs Duration (G+Y+Rc), s						89.0		16.0				
Change Period (Y+Rc), s						5.0		5.0				
Max Green Setting (Gmax), s						70.0		25.0				
Max Q Clear Time (g_c+I1), s						29.6		10.0				
Green Ext Time (p_c), s						18.7		1.0				

Intersection Summary	
HCM 6th Ctrl Delay	22.6
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	0	1550	31
Future Volume (vph)	0	0	0	0	1550	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.0	5.0
Lane Util. Factor					0.91	1.00
Frt					1.00	0.85
Flt Protected					1.00	1.00
Satd. Flow (prot)					5036	1568
Flt Permitted					1.00	1.00
Satd. Flow (perm)					5036	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	1685	34
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1685	34
Heavy Vehicles (%)	2%	2%	2%	2%	3%	3%
Turn Type					NA	Perm
Protected Phases					2	
Permitted Phases						2
Actuated Green, G (s)					66.0	66.0
Effective Green, g (s)					66.0	66.0
Actuated g/C Ratio					0.63	0.63
Clearance Time (s)					5.0	5.0
Vehicle Extension (s)					5.0	5.0
Lane Grp Cap (vph)					3165	985
v/s Ratio Prot					c0.33	
v/s Ratio Perm						0.02
v/c Ratio					0.53	0.03
Uniform Delay, d1					10.9	7.4
Progression Factor					1.00	1.00
Incremental Delay, d2					0.6	0.1
Delay (s)					11.5	7.5
Level of Service					B	A
Approach Delay (s)	0.0			0.0	11.5	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	11.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	34.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	35	3261	0	0	0
Future Volume (Veh/h)	0	35	3261	0	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	38	3545	0	0	0
Pedestrians						22
Lane Width (ft)						0.0
Walking Speed (ft/s)						3.5
Percent Blockage						0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	3545	908			3545	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3545	908			3545	
tC, single (s)	6.9	7.0			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	86			100	
cM capacity (veh/h)	4	274			68	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4
Volume Total	38	886	886	886	886
Volume Left	0	0	0	0	0
Volume Right	38	0	0	0	0
cSH	274	1700	1700	1700	1700
Volume to Capacity	0.14	0.52	0.52	0.52	0.52
Queue Length 95th (ft)	12	0	0	0	0
Control Delay (s)	20.2	0.0	0.0	0.0	0.0
Lane LOS	C				
Approach Delay (s)	20.2	0.0			
Approach LOS	C				

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		

APPENDIX C

LOS WORKSHEETS

Base Year 2031 Conditions

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	186	2061	0	0	0
Future Volume (Veh/h)	0	186	2061	0	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	202	2240	0	0	0
Pedestrians						28
Lane Width (ft)						0.0
Walking Speed (ft/s)						3.5
Percent Blockage						0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2240	588			2240	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2240	588			2240	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	55			100	
cM capacity (veh/h)	36	452			228	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4
Volume Total	202	560	560	560	560
Volume Left	0	0	0	0	0
Volume Right	202	0	0	0	0
cSH	452	1700	1700	1700	1700
Volume to Capacity	0.45	0.33	0.33	0.33	0.33
Queue Length 95th (ft)	56	0	0	0	0
Control Delay (s)	19.2	0.0	0.0	0.0	0.0
Lane LOS	C				
Approach Delay (s)	19.2	0.0			
Approach LOS	C				

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	10	2235	36	0	0
Future Volume (Veh/h)	0	10	2235	36	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	11	2429	39	0	0
Pedestrians						33
Lane Width (ft)						0.0
Walking Speed (ft/s)						3.5
Percent Blockage						0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2448	660			2468	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2448	660			2468	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			100	
cM capacity (veh/h)	26	406			185	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4
Volume Total	11	694	694	694	386
Volume Left	0	0	0	0	0
Volume Right	11	0	0	0	39
cSH	406	1700	1700	1700	1700
Volume to Capacity	0.03	0.41	0.41	0.41	0.23
Queue Length 95th (ft)	2	0	0	0	0
Control Delay (s)	14.1	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	14.1	0.0			
Approach LOS	B				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	211	93	0	0	0	0	0	1437	107
Future Volume (veh/h)	0	0	0	211	93	0	0	0	0	0	1437	107
Initial Q (Qb), veh				0	0	0				0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00				1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach					No						No	
Adj Sat Flow, veh/h/ln				1870	1870	0				0	1856	1856
Adj Flow Rate, veh/h				165	191	0				0	1562	107
Peak Hour Factor				0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %				2	2	0				0	3	3
Cap, veh/h				321	253	0				0	3817	1185
Arrive On Green				0.14	0.14	0.00				0.00	0.25	0.25
Sat Flow, veh/h				1781	1870	0				0	5233	1572
Grp Volume(v), veh/h				165	191	0				0	1562	107
Grp Sat Flow(s),veh/h/ln				1781	1870	0				0	1689	1572
Q Serve(g_s), s				7.9	8.8	0.0				0.0	23.2	4.7
Cycle Q Clear(g_c), s				7.9	8.8	0.0				0.0	23.2	4.7
Prop In Lane				1.00		0.00				0.00		1.00
Lane Grp Cap(c), veh/h				321	253	0				0	3817	1185
V/C Ratio(X)				0.51	0.75	0.00				0.00	0.41	0.09
Avail Cap(c_a), veh/h				575	520	0				0	3817	1185
HCM Platoon Ratio				1.00	1.00	1.00				1.00	0.33	0.33
Upstream Filter(I)				1.00	1.00	0.00				0.00	0.75	0.75
Uniform Delay (d), s/veh				37.1	37.5	0.0				0.0	17.1	10.1
Incr Delay (d2), s/veh				1.3	4.5	0.0				0.0	0.2	0.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.6	4.4	0.0				0.0	10.5	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				38.3	42.0	0.0				0.0	17.3	10.2
LnGrp LOS				D	D	A				A	B	B
Approach Vol, veh/h					356						1669	
Approach Delay, s/veh					40.3						16.8	
Approach LOS					D						B	
Timer - Assigned Phs						6		8				
Phs Duration (G+Y+Rc), s						72.8		17.2				
Change Period (Y+Rc), s						5.0		5.0				
Max Green Setting (Gmax), s						55.0		25.0				
Max Q Clear Time (g_c+I1), s						25.2		10.8				
Green Ext Time (p_c), s						15.9		1.3				
Intersection Summary												
HCM 6th Ctrl Delay			21.0									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations					↑↑↑	↱
Traffic Volume (vph)	0	0	0	0	1610	0
Future Volume (vph)	0	0	0	0	1610	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.0	
Lane Util. Factor					0.91	
Frt					1.00	
Flt Protected					1.00	
Satd. Flow (prot)					5036	
Flt Permitted					1.00	
Satd. Flow (perm)					5036	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	1750	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1750	0
Heavy Vehicles (%)	2%	2%	2%	2%	3%	3%
Turn Type					NA	Perm
Protected Phases					2	
Permitted Phases						2
Actuated Green, G (s)					51.0	
Effective Green, g (s)					51.0	
Actuated g/C Ratio					0.57	
Clearance Time (s)					5.0	
Vehicle Extension (s)					5.0	
Lane Grp Cap (vph)					2853	
v/s Ratio Prot					c0.35	
v/s Ratio Perm						
v/c Ratio					0.61	
Uniform Delay, d1					13.0	
Progression Factor					1.00	
Incremental Delay, d2					1.0	
Delay (s)					13.9	
Level of Service					B	
Approach Delay (s)	0.0			0.0	13.9	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	13.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	35.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	2200	0	0	0
Future Volume (Veh/h)	0	0	2200	0	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	2391	0	0	0
Pedestrians						18
Lane Width (ft)						0.0
Walking Speed (ft/s)						3.5
Percent Blockage						0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2391	616			2391	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2391	616			2391	
tC, single (s)	6.9	7.0			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	27	429			198	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4
Volume Total	0	598	598	598	598
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.35	0.35	0.35	0.35
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS	A				
Approach Delay (s)	0.0	0.0			
Approach LOS	A				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	48.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	125	3310	0	0	0
Future Volume (Veh/h)	0	125	3310	0	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	136	3598	0	0	0
Pedestrians						30
Lane Width (ft)						0.0
Walking Speed (ft/s)						3.5
Percent Blockage						0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	3598	930			3598	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3598	930			3598	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	49			100	
cM capacity (veh/h)	4	269			64	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4
Volume Total	136	900	900	900	900
Volume Left	0	0	0	0	0
Volume Right	136	0	0	0	0
cSH	269	1700	1700	1700	1700
Volume to Capacity	0.51	0.53	0.53	0.53	0.53
Queue Length 95th (ft)	66	0	0	0	0
Control Delay (s)	31.3	0.0	0.0	0.0	0.0
Lane LOS	D				
Approach Delay (s)	31.3	0.0			
Approach LOS	D				

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	66.9%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	9	3327	7	0	0
Future Volume (Veh/h)	0	9	3327	7	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	10	3616	8	0	0
Pedestrians						25
Lane Width (ft)						0.0
Walking Speed (ft/s)						3.5
Percent Blockage						0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	3620	933			3624	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3620	933			3624	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	96			100	
cM capacity (veh/h)	4	268			63	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4
Volume Total	10	1033	1033	1033	525
Volume Left	0	0	0	0	0
Volume Right	10	0	0	0	8
cSH	268	1700	1700	1700	1700
Volume to Capacity	0.04	0.61	0.61	0.61	0.31
Queue Length 95th (ft)	3	0	0	0	0
Control Delay (s)	19.0	0.0	0.0	0.0	0.0
Lane LOS	C				
Approach Delay (s)	19.0	0.0			
Approach LOS	C				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	64.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	163	72	0	0	0	0	0	1495	42
Future Volume (veh/h)	0	0	0	163	72	0	0	0	0	0	1495	42
Initial Q (Qb), veh				0	0	0				0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00				1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach					No						No	
Adj Sat Flow, veh/h/ln				1870	1870	0				0	1856	1856
Adj Flow Rate, veh/h				128	147	0				0	1625	43
Peak Hour Factor				0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %				2	2	0				0	3	3
Cap, veh/h				256	196	0				0	4051	1258
Arrive On Green				0.10	0.10	0.00				0.00	0.26	0.26
Sat Flow, veh/h				1781	1870	0				0	5233	1572
Grp Volume(v), veh/h				128	147	0				0	1625	43
Grp Sat Flow(s),veh/h/ln				1781	1870	0				0	1689	1572
Q Serve(g_s), s				7.3	8.0	0.0				0.0	27.7	2.1
Cycle Q Clear(g_c), s				7.3	8.0	0.0				0.0	27.7	2.1
Prop In Lane				1.00		0.00				0.00		1.00
Lane Grp Cap(c), veh/h				256	196	0				0	4051	1258
V/C Ratio(X)				0.50	0.75	0.00				0.00	0.40	0.03
Avail Cap(c_a), veh/h				493	445	0				0	4051	1258
HCM Platoon Ratio				1.00	1.00	1.00				1.00	0.33	0.33
Upstream Filter(I)				1.00	1.00	0.00				0.00	0.82	0.82
Uniform Delay (d), s/veh				45.3	45.6	0.0				0.0	17.9	8.5
Incr Delay (d2), s/veh				1.5	5.6	0.0				0.0	0.2	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.3	4.0	0.0				0.0	12.6	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				46.8	51.3	0.0				0.0	18.2	8.6
LnGrp LOS				D	D	A				A	B	A
Approach Vol, veh/h					275						1668	
Approach Delay, s/veh					49.2						17.9	
Approach LOS					D						B	

Timer - Assigned Phs						6		8				
Phs Duration (G+Y+Rc), s						89.0		16.0				
Change Period (Y+Rc), s						5.0		5.0				
Max Green Setting (Gmax), s						70.0		25.0				
Max Q Clear Time (g_c+I1), s						29.7		10.0				
Green Ext Time (p_c), s						19.0		1.0				

Intersection Summary	
HCM 6th Ctrl Delay	22.4
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	0	1586	0
Future Volume (vph)	0	0	0	0	1586	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.0	
Lane Util. Factor					0.91	
Frt					1.00	
Flt Protected					1.00	
Satd. Flow (prot)					5036	
Flt Permitted					1.00	
Satd. Flow (perm)					5036	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	1724	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1724	0
Heavy Vehicles (%)	2%	2%	2%	2%	3%	3%
Turn Type					NA	Perm
Protected Phases					2	
Permitted Phases						2
Actuated Green, G (s)					66.0	
Effective Green, g (s)					66.0	
Actuated g/C Ratio					0.63	
Clearance Time (s)					5.0	
Vehicle Extension (s)					5.0	
Lane Grp Cap (vph)					3165	
v/s Ratio Prot					c0.34	
v/s Ratio Perm						
v/c Ratio					0.54	
Uniform Delay, d1					11.0	
Progression Factor					1.00	
Incremental Delay, d2					0.7	
Delay (s)					11.7	
Level of Service					B	
Approach Delay (s)	0.0			0.0	11.7	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	11.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	3328	0	0	0
Future Volume (Veh/h)	0	0	3328	0	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	3617	0	0	0
Pedestrians						22
Lane Width (ft)						0.0
Walking Speed (ft/s)						3.5
Percent Blockage						0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	3617	926			3617	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3617	926			3617	
tC, single (s)	6.9	7.0			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	4	267			63	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4
Volume Total	0	904	904	904	904
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.53	0.53	0.53	0.53
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS	A				
Approach Delay (s)	0.0	0.0			
Approach LOS	A				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		

APPENDIX C

LOS WORKSHEETS

Future Year 2031 Conditions

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	185	2057	0	0	0
Future Volume (Veh/h)	0	185	2057	0	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	201	2236	0	0	0
Pedestrians						28
Lane Width (ft)						0.0
Walking Speed (ft/s)						3.5
Percent Blockage						0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2236	587			2236	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2236	587			2236	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	56			100	
cM capacity (veh/h)	36	453			228	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4
Volume Total	201	559	559	559	559
Volume Left	0	0	0	0	0
Volume Right	201	0	0	0	0
cSH	453	1700	1700	1700	1700
Volume to Capacity	0.44	0.33	0.33	0.33	0.33
Queue Length 95th (ft)	56	0	0	0	0
Control Delay (s)	19.1	0.0	0.0	0.0	0.0
Lane LOS	C				
Approach Delay (s)	19.1	0.0			
Approach LOS	C				

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
2: Nimitz Highway & Existing 120 Nimitz Driveway

02/06/2023

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	45	2237	31	0	0
Future Volume (Veh/h)	0	45	2237	31	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	49	2432	34	0	0
Pedestrians						33
Lane Width (ft)						0.0
Walking Speed (ft/s)						3.5
Percent Blockage						0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2449	658			2466	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2449	658			2466	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	88			100	
cM capacity (veh/h)	26	407			185	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4
Volume Total	49	695	695	695	381
Volume Left	0	0	0	0	0
Volume Right	49	0	0	0	34
cSH	407	1700	1700	1700	1700
Volume to Capacity	0.12	0.41	0.41	0.41	0.22
Queue Length 95th (ft)	10	0	0	0	0
Control Delay (s)	15.1	0.0	0.0	0.0	0.0
Lane LOS	C				
Approach Delay (s)	15.1	0.0			
Approach LOS	C				

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	211	93	0	0	0	0	0	1451	106
Future Volume (veh/h)	0	0	0	211	93	0	0	0	0	0	1451	106
Initial Q (Qb), veh				0	0	0				0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00				1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach					No						No	
Adj Sat Flow, veh/h/ln				1870	1870	0				0	1856	1856
Adj Flow Rate, veh/h				165	191	0				0	1577	106
Peak Hour Factor				0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %				2	2	0				0	3	3
Cap, veh/h				321	253	0				0	3817	1185
Arrive On Green				0.14	0.14	0.00				0.00	0.25	0.25
Sat Flow, veh/h				1781	1870	0				0	5233	1572
Grp Volume(v), veh/h				165	191	0				0	1577	106
Grp Sat Flow(s),veh/h/ln				1781	1870	0				0	1689	1572
Q Serve(g_s), s				7.9	8.8	0.0				0.0	23.5	4.7
Cycle Q Clear(g_c), s				7.9	8.8	0.0				0.0	23.5	4.7
Prop In Lane				1.00		0.00				0.00		1.00
Lane Grp Cap(c), veh/h				321	253	0				0	3817	1185
V/C Ratio(X)				0.51	0.75	0.00				0.00	0.41	0.09
Avail Cap(c_a), veh/h				575	520	0				0	3817	1185
HCM Platoon Ratio				1.00	1.00	1.00				1.00	0.33	0.33
Upstream Filter(I)				1.00	1.00	0.00				0.00	0.75	0.75
Uniform Delay (d), s/veh				37.1	37.5	0.0				0.0	17.2	10.1
Incr Delay (d2), s/veh				1.3	4.5	0.0				0.0	0.2	0.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.6	4.4	0.0				0.0	10.6	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				38.3	42.0	0.0				0.0	17.4	10.2
LnGrp LOS				D	D	A				A	B	B
Approach Vol, veh/h					356						1683	
Approach Delay, s/veh					40.3						16.9	
Approach LOS					D						B	
Timer - Assigned Phs						6		8				
Phs Duration (G+Y+Rc), s						72.8		17.2				
Change Period (Y+Rc), s						5.0		5.0				
Max Green Setting (Gmax), s						55.0		25.0				
Max Q Clear Time (g_c+I1), s						25.5		10.8				
Green Ext Time (p_c), s						16.0		1.3				
Intersection Summary												
HCM 6th Ctrl Delay			21.0									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations					↑↑↑	↱
Traffic Volume (vph)	0	0	0	0	1623	0
Future Volume (vph)	0	0	0	0	1623	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.0	
Lane Util. Factor					0.91	
Frt					1.00	
Flt Protected					1.00	
Satd. Flow (prot)					5036	
Flt Permitted					1.00	
Satd. Flow (perm)					5036	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	1764	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1764	0
Heavy Vehicles (%)	2%	2%	2%	2%	3%	3%
Turn Type					NA	Perm
Protected Phases					2	
Permitted Phases						2
Actuated Green, G (s)					51.0	
Effective Green, g (s)					51.0	
Actuated g/C Ratio					0.57	
Clearance Time (s)					5.0	
Vehicle Extension (s)					5.0	
Lane Grp Cap (vph)					2853	
v/s Ratio Prot					c0.35	
v/s Ratio Perm						
v/c Ratio					0.62	
Uniform Delay, d1					13.0	
Progression Factor					1.00	
Incremental Delay, d2					1.0	
Delay (s)					14.0	
Level of Service					B	
Approach Delay (s)	0.0			0.0	14.0	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	35.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	2237	0	0	0
Future Volume (Veh/h)	0	0	2237	0	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	2432	0	0	0
Pedestrians						18
Lane Width (ft)						0.0
Walking Speed (ft/s)						3.5
Percent Blockage						0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2432	626			2432	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2432	626			2432	
tC, single (s)	6.9	7.0			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	26	422			191	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4
Volume Total	0	608	608	608	608
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.36	0.36	0.36	0.36
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS	A				
Approach Delay (s)	0.0	0.0			
Approach LOS	A				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	48.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	2	2280	2	0	0
Future Volume (Veh/h)	0	2	2280	2	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2	2478	2	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2479	620			2480	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2479	620			2480	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	24	431			183	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4
Volume Total	2	708	708	708	356
Volume Left	0	0	0	0	0
Volume Right	2	0	0	0	2
cSH	431	1700	1700	1700	1700
Volume to Capacity	0.00	0.42	0.42	0.42	0.21
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	13.4	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	13.4	0.0			
Approach LOS	B				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	43.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	127	3325	0	0	0
Future Volume (Veh/h)	0	127	3325	0	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	138	3614	0	0	0
Pedestrians						30
Lane Width (ft)						0.0
Walking Speed (ft/s)						3.5
Percent Blockage						0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	3614	934			3614	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3614	934			3614	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	48			100	
cM capacity (veh/h)	4	267			63	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4
Volume Total	138	904	904	904	904
Volume Left	0	0	0	0	0
Volume Right	138	0	0	0	0
cSH	267	1700	1700	1700	1700
Volume to Capacity	0.52	0.53	0.53	0.53	0.53
Queue Length 95th (ft)	68	0	0	0	0
Control Delay (s)	32.0	0.0	0.0	0.0	0.0
Lane LOS	D				
Approach Delay (s)	32.0	0.0			
Approach LOS	D				

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	67.2%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	28	3329	24	0	0
Future Volume (Veh/h)	0	28	3329	24	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	30	3618	26	0	0
Pedestrians						25
Lane Width (ft)						0.0
Walking Speed (ft/s)						3.5
Percent Blockage						0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	3631	942			3644	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3631	942			3644	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	89			100	
cM capacity (veh/h)	4	264			62	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4
Volume Total	30	1034	1034	1034	543
Volume Left	0	0	0	0	0
Volume Right	30	0	0	0	26
cSH	264	1700	1700	1700	1700
Volume to Capacity	0.11	0.61	0.61	0.61	0.32
Queue Length 95th (ft)	10	0	0	0	0
Control Delay (s)	20.4	0.0	0.0	0.0	0.0
Lane LOS	C				
Approach Delay (s)	20.4	0.0			
Approach LOS	C				

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	64.6%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	163	72	0	0	0	0	0	1503	44
Future Volume (veh/h)	0	0	0	163	72	0	0	0	0	0	1503	44
Initial Q (Qb), veh				0	0	0				0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00				1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach					No						No	
Adj Sat Flow, veh/h/ln				1870	1870	0				0	1856	1856
Adj Flow Rate, veh/h				128	147	0				0	1634	45
Peak Hour Factor				0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %				2	2	0				0	3	3
Cap, veh/h				256	196	0				0	4051	1258
Arrive On Green				0.10	0.10	0.00				0.00	0.26	0.26
Sat Flow, veh/h				1781	1870	0				0	5233	1572
Grp Volume(v), veh/h				128	147	0				0	1634	45
Grp Sat Flow(s),veh/h/ln				1781	1870	0				0	1689	1572
Q Serve(g_s), s				7.3	8.0	0.0				0.0	27.9	2.2
Cycle Q Clear(g_c), s				7.3	8.0	0.0				0.0	27.9	2.2
Prop In Lane				1.00		0.00				0.00		1.00
Lane Grp Cap(c), veh/h				256	196	0				0	4051	1258
V/C Ratio(X)				0.50	0.75	0.00				0.00	0.40	0.04
Avail Cap(c_a), veh/h				493	445	0				0	4051	1258
HCM Platoon Ratio				1.00	1.00	1.00				1.00	0.33	0.33
Upstream Filter(I)				1.00	1.00	0.00				0.00	0.82	0.82
Uniform Delay (d), s/veh				45.3	45.6	0.0				0.0	18.0	8.6
Incr Delay (d2), s/veh				1.5	5.6	0.0				0.0	0.2	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.3	4.0	0.0				0.0	12.7	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				46.8	51.3	0.0				0.0	18.3	8.6
LnGrp LOS				D	D	A				A	B	A
Approach Vol, veh/h					275						1679	
Approach Delay, s/veh					49.2						18.0	
Approach LOS					D						B	

Timer - Assigned Phs						6		8				
Phs Duration (G+Y+Rc), s						89.0		16.0				
Change Period (Y+Rc), s						5.0		5.0				
Max Green Setting (Gmax), s						70.0		25.0				
Max Q Clear Time (g_c+I1), s						29.9		10.0				
Green Ext Time (p_c), s						19.1		1.0				

Intersection Summary			
HCM 6th Ctrl Delay			22.4
HCM 6th LOS			C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	0	1596	0
Future Volume (vph)	0	0	0	0	1596	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.0	
Lane Util. Factor					0.91	
Frt					1.00	
Flt Protected					1.00	
Satd. Flow (prot)					5036	
Flt Permitted					1.00	
Satd. Flow (perm)					5036	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	1735	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1735	0
Heavy Vehicles (%)	2%	2%	2%	2%	3%	3%
Turn Type					NA	Perm
Protected Phases					2	
Permitted Phases						2
Actuated Green, G (s)					66.0	
Effective Green, g (s)					66.0	
Actuated g/C Ratio					0.63	
Clearance Time (s)					5.0	
Vehicle Extension (s)					5.0	
Lane Grp Cap (vph)					3165	
v/s Ratio Prot					c0.34	
v/s Ratio Perm						
v/c Ratio					0.55	
Uniform Delay, d1					11.1	
Progression Factor					1.00	
Incremental Delay, d2					0.7	
Delay (s)					11.7	
Level of Service					B	
Approach Delay (s)	0.0			0.0	11.7	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	11.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	35.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	3349	0	0	0
Future Volume (Veh/h)	0	0	3349	0	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	3640	0	0	0
Pedestrians						22
Lane Width (ft)						0.0
Walking Speed (ft/s)						3.5
Percent Blockage						0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	3640	932			3640	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3640	932			3640	
tC, single (s)	6.9	7.0			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	4	264			62	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4
Volume Total	0	910	910	910	910
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.54	0.54	0.54	0.54
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS	A				
Approach Delay (s)	0.0	0.0			
Approach LOS	A				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	66.4%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	2	3355	2	0	0
Future Volume (Veh/h)	0	2	3355	2	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2	3647	2	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	3648	913			3649	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3648	913			3649	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			100	
cM capacity (veh/h)	4	276			61	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4
Volume Total	2	1042	1042	1042	523
Volume Left	0	0	0	0	0
Volume Right	2	0	0	0	2
cSH	276	1700	1700	1700	1700
Volume to Capacity	0.01	0.61	0.61	0.61	0.31
Queue Length 95th (ft)	1	0	0	0	0
Control Delay (s)	18.1	0.0	0.0	0.0	0.0
Lane LOS	C				
Approach Delay (s)	18.1	0.0			
Approach LOS	C				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	58.7%	ICU Level of Service	B
Analysis Period (min)	15		

VIEW ANALYSIS
PHOTO SIMULATIONS

CHINATOWN HOTEL
128 NIMITZ HIGHWAY
HONOLULU, HI

APRIL 15, 2022

VIEW
1,2

NU'UANU AVE /
N BERETANIA ST
PAUAHI ST

VIEW 01 - NU'UANU AVENUE / N BERETANIA ST

VIEW 02 - NU'UANU AVENUE / PAUAHI ST

lowney arch

VIEW ANALYSIS
CHINATOWN HOTEL - 4/15/2022

VIEW
03

DOWNTOWN ART CENTER
DOWNTOWN SATELLITE CITY HALL
STRODE MONTESSORI

N U'UANU AVE / N HOTEL ST

EXISTING

PROPOSED

lowney arch

VIEW ANALYSIS
CHINATOWN HOTEL - 4/15/2022

VIEW
04

N U'UANU AVE / N KING ST

EXISTING

PROPOSED

lowney arch

VIEW ANALYSIS
CHINATOWN HOTEL - 4/15/2022

VIEW
05

N U'UANU AVE / MARIN ST

EXISTING

PROPOSED

lowney arch

VIEW ANALYSIS
CHINATOWN HOTEL - 4/15/2022

VIEW
06

MAUNAKEA ST/
N NIMITZ HWY

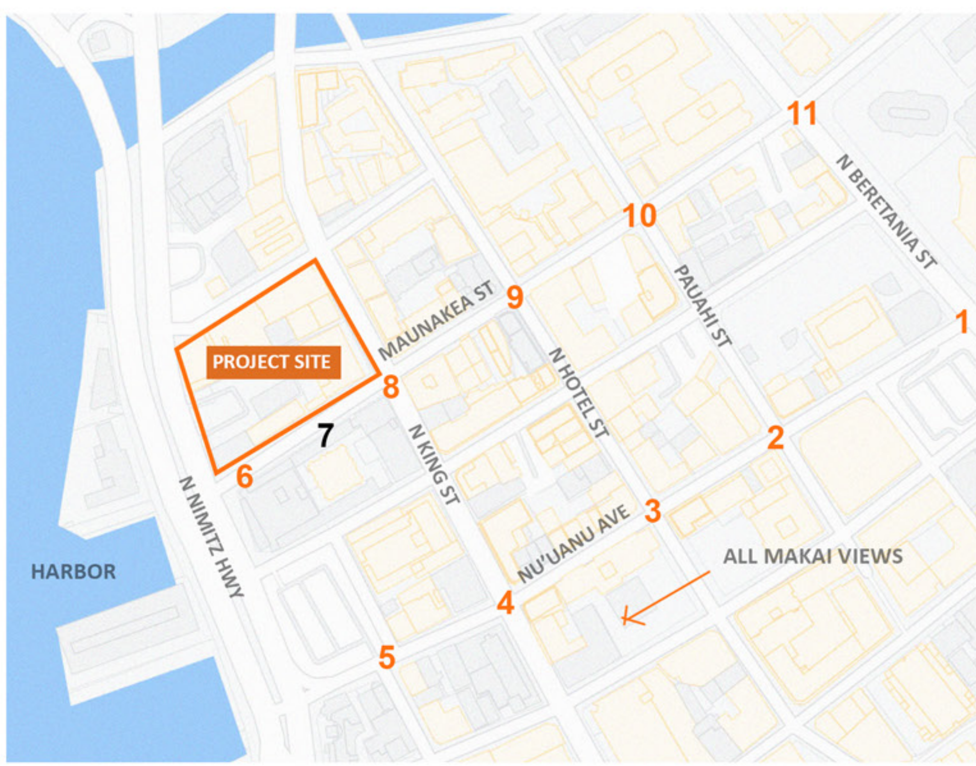
VIEW 06

VIEW
07

MAUNAKEA ST

EXISTING

PROPOSED



lowney arch

VIEW ANALYSIS
CHINATOWN HOTEL - 4/15/2022

VIEW
08

MAUNAKEA ST/
N KING ST

lowney arch

VIEW 08

VIEW
09

MAUNAKEA ST / N HOTEL ST

EXISTING

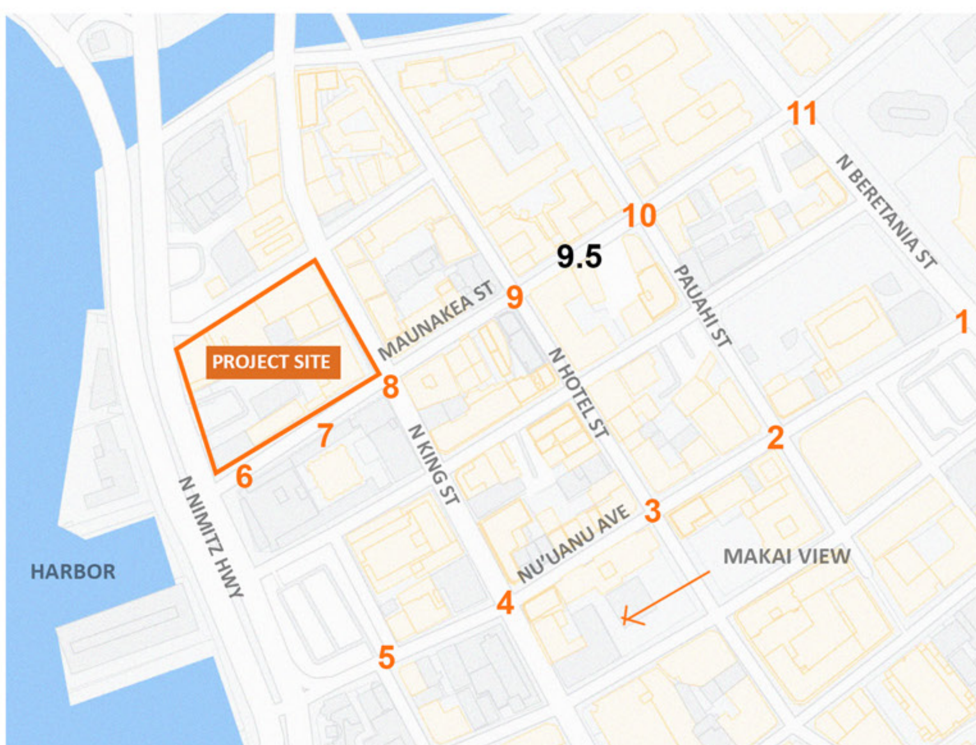
PROPOSED

lowney arch

VIEW ANALYSIS
CHINATOWN HOTEL - 4/15/2022

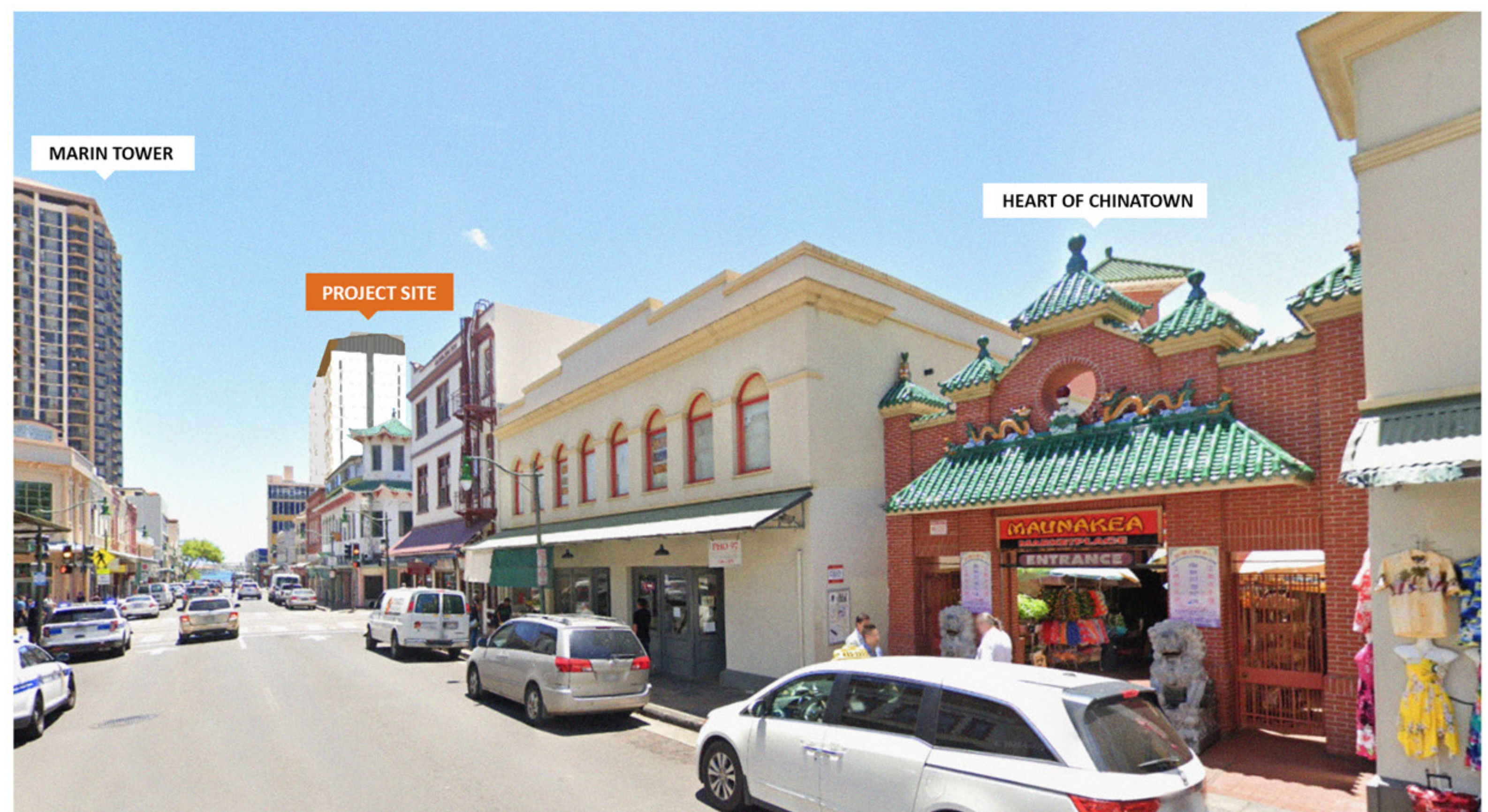
VIEW
9.5

MAUNAKEA ST /
BETWEEN N HOTEL ST AND N PAUAHI ST



EXISTING [MAKAI]

PROPOSED [MAKAI]



lowney arch

VIEW
10

MAUNAKEA ST / N PAUAHI ST

EXISTING ['A'ALA PARK VIEW]

EXISTING [MAKAI]

PROPOSED [MAKAI]

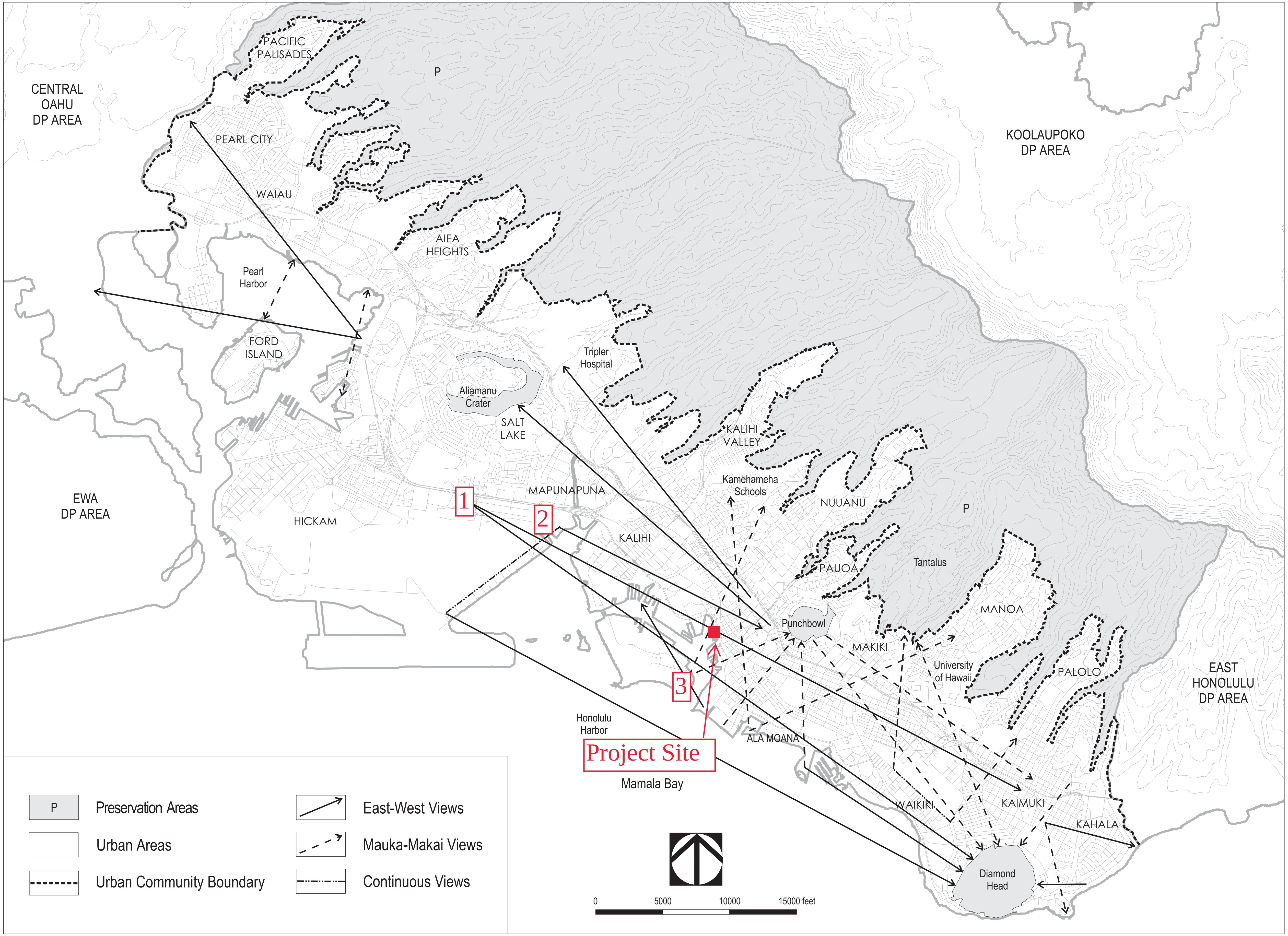
lowney arch

VIEW ANALYSIS
CHINATOWN HOTEL - 4/15/2022

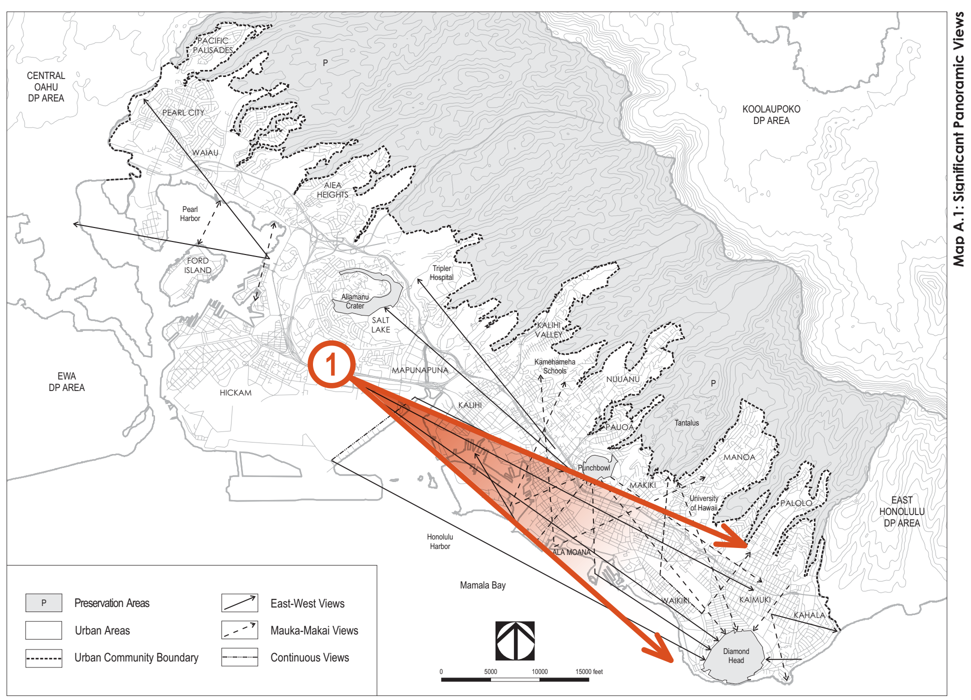
VIEW
11

MAUNAKEA ST /
N BERETANIA ST

VIEW 11

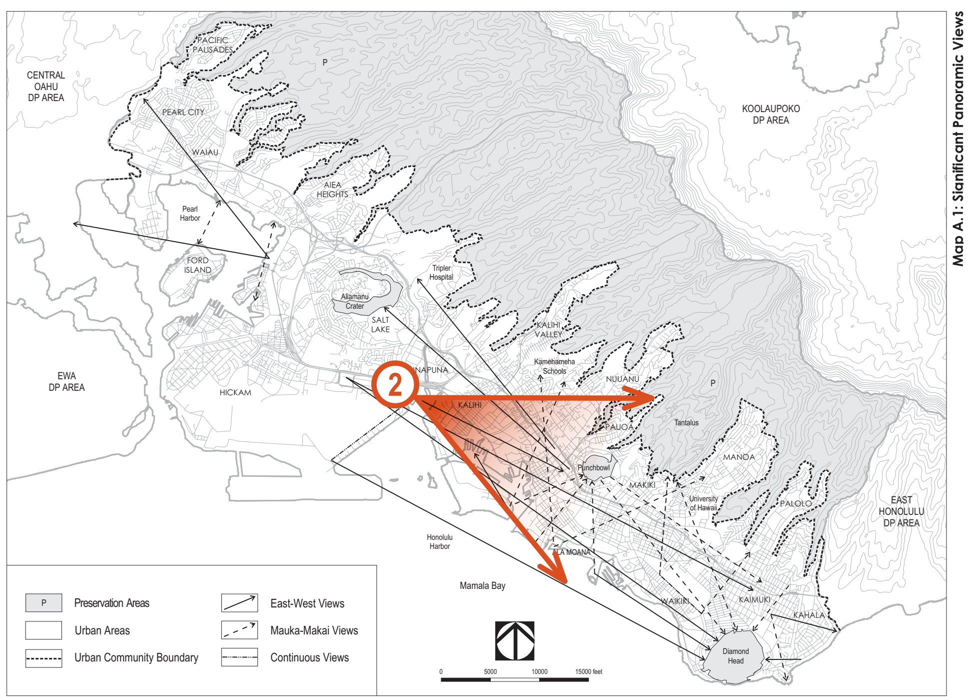


Map A.1: Significant Panoramic Views



VIEW ANALYSIS

CHINATOWN HOTEL - 03/15/2023



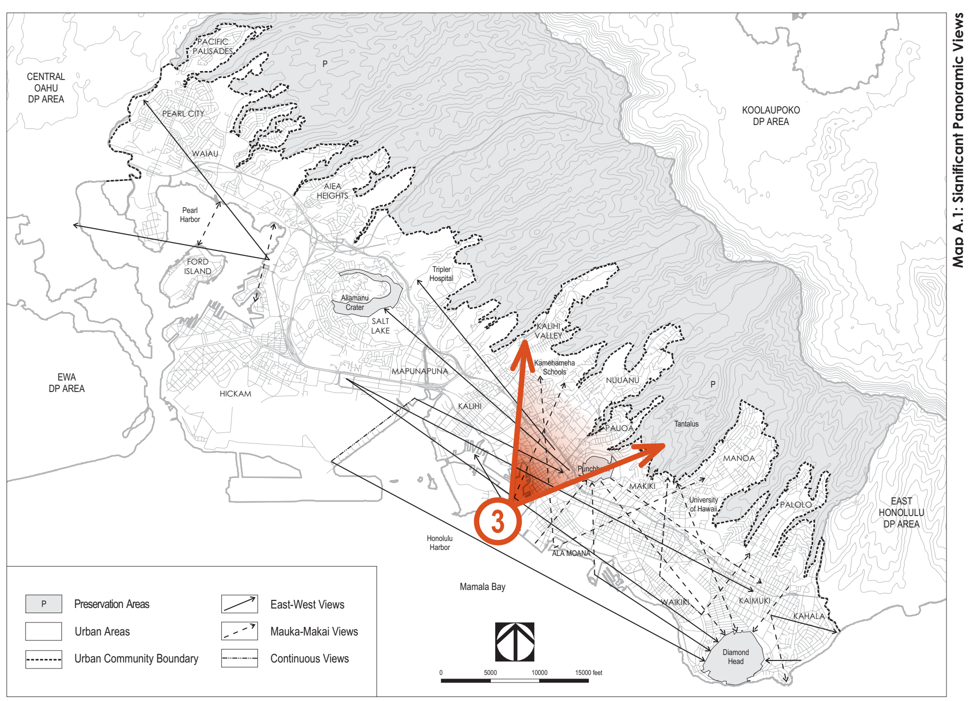
2

lowney arch

VIEW ANALYSIS

CHINATOWN HOTEL - 03/15/2023

3



lowney arch

VIEW ANALYSIS

CHINATOWN HOTEL - 03/15/2023

ECONOMIC AND FISCAL IMPACT STUDY

Proposed Chinatown Hotel

HONOLULU, HAWAI’I

SUBMITTED TO:

Patti Tancayo Barbee
‘Ikenakea Development
Hawaiian Community Development Board
1188 Bishop Street, Suite 907
Honolulu, Hawaii 96813
pattibarbee@gmail.com
+1 (808) 466-4684

PREPARED BY:

HVS Convention, Sports & Entertainment
Facilities Consulting
205 West Randolph
Suite 1650
Chicago, Illinois 60606
+1 (312) 587-9900

Convention, Sports & Entertainment
Facilities Consulting
Chicago, Illinois

205 West Randolph
Suite 1650
Chicago, Illinois 60606
+1 312-587-9900
+1 312-488-3631 FAX
www.hvs.com

June 22, 2022

Patti Tancayo Barbee
'Ikenakea Development
Hawaiian Community Development Board
1188 Bishop Street, Suite 907
Honolulu, Hawaii 96813
pattibarbee@gmail.com
+1 (808) 466-4684

Re: Proposed Chinatown Hotel
Honolulu, Hawai'i

Dear Ms. Barbee:

Attached you will find our Economic and Fiscal Impact Study of a Proposed Hotel in the Chinatown Historic District in Honolulu, Hawai'i.

We certify that we have no undisclosed interest in the property, and our employment and compensation are not contingent upon our findings. This study is subject to the comments made throughout this report and to all assumptions and limiting conditions set forth herein.

It has been a pleasure working with you. Please let us know if we can provide any additional services.

Sincerely,
HVS Convention, Sports & Entertainment
Facilities Consulting

Thomas Hazinski

Thomas A Hazinski
Managing Director

Jorge Cotte

Jorge Cotte
Project Manager

Table of Contents

1. Economic and Fiscal Impact Study for a Proposed Chinatown Hotel

Nature of the Assignment

‘Ikenakea Development engaged HVS Convention, Sports & Entertainment Facilities Consulting (“HVS”) to conduct an economic impact analysis of a proposed hotel in Honolulu, Hawai’i (“Proposed Hotel”). The site is located in the historic Chinatown district at 128 Nimitz Highway, adjacent to the Arts District.

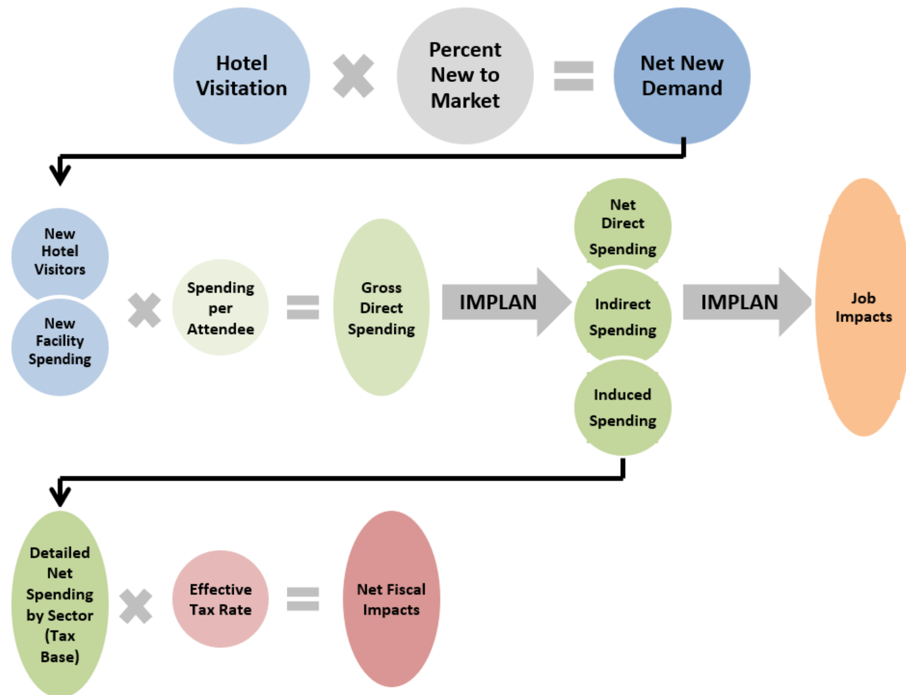
HVS Consulting & Valuation conducted a feasibility study for the Proposed Hotel dated October 4, 2021. The forecasts of occupancy, average daily rate, and financial performance within the aforementioned feasibility study are the basis from which we estimated the new activity in Chinatown caused by the development of the hotel. HVS estimated the economic impacts of the proposed development on the zip code 96817, in which Chinatown is located (“Chinatown zip code”). The fiscal impacts were assessed on the City of Honolulu and the State of Hawai’i.

HVS uses the HVS CSE Impact Model© (the “Impact Model”). The Impact Model allows the user to input spending estimates that reflect the levels of spending that are unique to the local community. HVS will measure the new visitation and spending to the community and the resulting new economic impacts.

Economic Impact Methodology

To estimate the economic impact of the proposed expansion, HVS followed the methodology outlined in the figure below.

FIGURE 1-1



Based on the feasibility and visitor characteristics from the Research & Economic Analysis Division, State of Hawai'i Department of Business, Economic Development and Tourism ("DBEDT"), HVS estimated the total visitation that would be captured by the Proposed Hotel. The Proposed Hotel would be a unique offering within the Chinatown zip code, and any spending that occurs in the zip code from hotel visitors would be new to the zip code. However, some spending, such as shopping or scenic tours, may occur in areas outside of the zip code. Additionally, spending that is new to the zip code should not necessarily be considered new to the State of Hawai'i or Honolulu County.

HVS uses estimates of the amounts of spending per visitor or attendee to estimate gross direct spending by visitors to the Proposed Hotel. HVS then estimated the net direct spending, or the percentage of that spending by visitors that occurs within the market (the Chinatown zip code). Net direct spending provides the inputs into the IMPLAN model of the local area economics. Spending falls into three categories: net direct spending, indirect spending, and induced spending. Many refer to indirect and induced impacts as multiplier effects. The sum of direct, indirect, and induced spending estimates makes up the total estimated spending impact of the Proposed Hotel's operations on the market. HVS used the IMPLAN model to estimate the increase in employment associated with the total net spending.

To estimate fiscal impacts, HVS identified the sources of spending that would correspond to tax revenues for the City of Honolulu. The detailed outputs of the IMPLAN model quantify the tax base for each tax. We applied the appropriate effective tax rate to the estimate of spending to generate fiscal impact estimates.

HVS Convention, Sports & Entertainment staff collected and analyzed all information contained in this report. HVS sought out reliable sources and deemed information obtained from third parties to be accurate.

HVS Hotel Feasibility Study

The subject of the feasibility study of the Proposed Chinatown Hotel, dated October 4, 2021, is a 25,617-square-foot (0.59-acre) site to be improved with a lifestyle/boutique full-service hotel. The Proposed Hotel is planned to open on January 1, 2025, and will feature 240 rooms, a speakeasy, a lobby café/bar, a rooftop restaurant, and a rooftop bar & lounge, 7,172 square feet of flexible meeting space, an outdoor pool, an outdoor whirlpool, a fitness center, a market pantry, a lobby workstation, and a concierge desk. The hotel will also contain the appropriate parking capacity and all necessary back-of-the-house space. The feasibility study assumes that the proposed subject hotel will operate as an upscale- or upper-upscale hotel under a brand not currently represented in the market.

The site for the Proposed Hotel is located in the Chinatown Historic District within the greater Downtown Honolulu neighborhood. Situated along O'ahu's southern coast, Honolulu is the state capital of Hawai'i. As the most populous city with the largest airport in the Hawai'ian Islands, Honolulu acts as a natural gateway to the islands' major tourism industry. The Honolulu area is part of the greater O'ahu economic base, which is fueled by the tourism, government/military, and manufacturing industries.

The following figure shows the projected occupied room nights by market segment for the Proposed Chinatown Hotel.

FIGURE 1-2
FORECAST OF OCCUPIED ROOM NIGHTS BY MARKET SEGMENT

	2025	2026	2027	2028
FIT	52,583	54,423	55,270	55,854
Wholesale	2,728	3,465	3,978	4,409
Meeting and Group	6,003	7,805	9,080	9,815
	61,314	65,693	68,328	70,078

Source: HVS

Free Independent Traveler (FIT) demand consists of individuals and families spending time in an area or passing through as a tourist. Wholesale demand reflects accommodations purchased in room blocks and subsequently sold by wholesale tour brokers directly to independent travelers or to retail tour brokers. The meeting-and-group market includes meetings, seminars, conventions, trade association shows, and similar gatherings of ten or more people.

The following figure shows the forecast of the average daily rate ("ADR") for the Proposed Hotel in inflated dollars and in 2019 dollars, the base year for the feasibility study.

FIGURE 1-3
FORECAST OF ADR

Proposed Hotel ADR	2025	2026	2027	2028
Inflated $	$243.63	$258.87	$272.08	$280.24
2019 $	$216.36	$223.19	$227.75	$227.75

Source: HVS

The following figure shows a forecast of income and expense for the first five years of operation for the Proposed Hotel.

FIGURE 1-4
FIVE-YEAR PRO FORMA STATEMENT (INFLATED $)

	2025	2026	2027	2028	2029
Operating Revenue					
Rooms	14,940	17,008	18,590	19,639	20,228
Food	3,540	4,048	4,518	4,743	4,885
Beverage	2,448	2,870	3,302	3,449	3,553
Other Operated Departments	152	160	166	172	178
Parking	888	945	992	1,035	1,066
Resort Fee	1,058	1,222	1,374	1,440	1,483
Miscellaneous Income	304	319	332	345	355
Total Operating Revenue	23,330	26,571	29,275	30,823	31,747
Expenses					
Department Expenses	9,692	10,351	10,968	11,392	11,734
Undistributed Operating Expenses	4,810	5,071	5,312	5,503	5,668
Franchise Fee	1,270	1,446	1,580	1,669	1,719
Management Fee	700	797	878	925	952
Non-Operating Expenses	1,374	1,415	1,458	1,501	1,546
Total Expenses	17,846	19,080	20,196	20,990	21,619
EBITDA	5,484	7,490	9,079	9,833	10,128
Reserve for Replacement	467	797	1,171	1,233	1,270
EBITDA Less Reserve	5,017	6,693	7,908	8,600	8,858

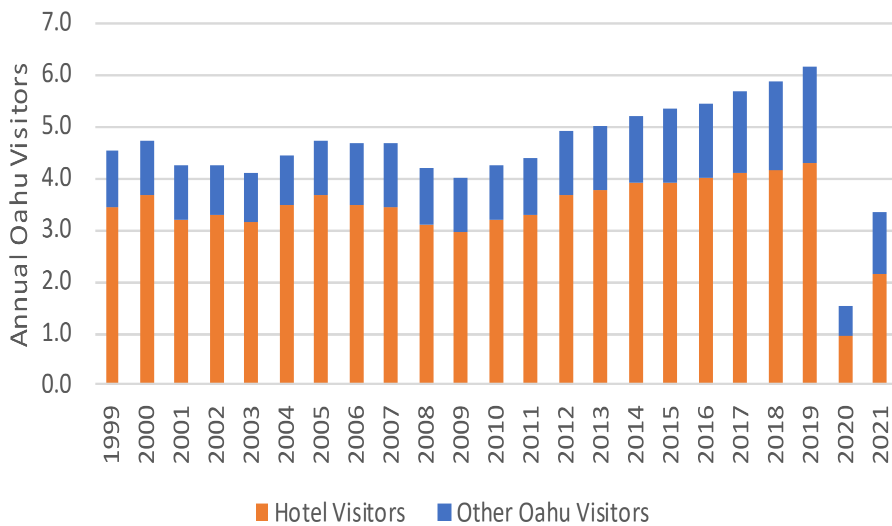
Source: HVS

Hotel Visitors Analysis

In 1999 the DBEDT assumed responsibility for collecting and publishing official state tourism-related statistics. Since the vast majority of tourists arrive by way of air travel, visitation data is relatively easy to obtain, as passengers are asked to fill out a questionnaire during their flight. In order to evaluate Hawai'i's status as an international tourist destination, we have analyzed historical visitation statistics as compiled by the DBEDT.

The following figure shows the total visitation to Oʻahu from 1999 to 2021, split into visitors that stayed in hotels and all others.

FIGURE 1-5
VISITORS TO O'AHU



Source: DBEDT, HVS

The percentage of visitors to O'ahu that stay in hotels has slightly declined in this period, while gross visitation has grown from 2009 through 2019. While visitation decreased sharply from previous years in 2020 and 2021, there are signs of recovery in late 2021 and 2022.

To estimate gross direct spending, HVS converts occupied room nights into total visitors using statistics from the DBEDT. The following figure shows the average party size and length of stay on O'ahu by all O'ahu visitors and all hotel-only visitors.

FIGURE 1-6
VISITOR CHARACTERISTICS

	Oahu Visitors	Statewide
	All Visitors	Hotel-Only Visitors
Party Size	2.2	2.3
Length of Stay	6.8	6.0

Source: DBEDT

On average, hotel-only visitors have slightly larger parties than other visitors but have a shorter length of stay.

The following figure shows the estimates of total visitors and visitor days derived from occupied room nights.

FIGURE 1-7
ESTIMATED VISITORS AND VISITOR DAYS

Year	Room Nights	Average Party Size	Total Visitor Days	Length of Stay	Total Visitors
2025	61,320	2.3	141,036	6.0	23,506
2026	65,700	2.3	151,110	6.0	25,185
2027	68,328	2.3	157,154	6.0	26,192
2028	70,080	2.3	161,184	6.0	26,864
2029	70,080	2.3	161,184	6.0	26,864

Source: DBEDT, HVS

In a stabilized year, HVS estimates that the Proposed Hotel will import 161,184 visitor days to the Chinatown zip code.

Estimated Spending

All spending parameters are stated as the daily spending per person, in 2019 dollars. The following figures present the direct spending estimates for each spending category.

FIGURE 1-8
PER PERSON PER DAY SPENDING ($ 2019)

Spending Category	Daily Spending
Food and beverage	
Restaurant food	$26.94
Dinner shows and cruises	5.63
Groceries and snacks	8.71
Entertainment & Recreation	
Attractions/entertainment	6.09
Recreation	6.47
Other activities & tours	6.75
Transportation	
Interisland airfare	1.53
Ground transportation	2.04
Rental vehicles	12.21
Gasoline, parking, etc.	1.33
Shopping	
Fashion and clothing	8.14
Jewelry and watches	3.26
Cosmetics, perfume	0.49
Leather goods	2.01
Hawaii food products	3.35
Souvenirs	5.22
All other expenses	7.20
Total	**$107.37**

Sources: DBEDT, HVS

In addition to the spending above, HVS added a Supplemental Business Expense to meeting and group visitors, defined by DBEDT as "[a]dditional business expenditures spent in Hawai'i on conventions and corporate meetings by out-of-state visitors."

Annual Net Direct Spending

Not all of the gross direct spending counts as an economic impact because some of the spending does not generate income within the Chinatown zip code. As a result, the realized direct spending ("net direct spending") is lower than the gross direct spending in the market area.

To accurately measure spending impacts, HVS counts spending on products and services located in the market area. Some of the direct spending generated by hotel visitors will occur elsewhere in Honolulu or other islands. For example, a hotel guest may want to snorkel in Hanauma Bay or shop in the Ala Moana Center. This effect occurs for direct, indirect, and induced spending.

For indirect and induced spending, IMPLAN accounts for income that leaks out of the local economy by estimating retail margins and local purchase parentages. For direct spending, HVS used data from the location analytics platform Placer.ai and Esri Business Analyst Online ("Esri") to estimate the percentage of visitor spending that occurs within the Chinatown zip code.

Food & beverage is the largest spending category that may occur within the hotel, outside the hotel but within the Chinatown zip code, and outside the zip code. To estimate the percentage of food & beverage spending occurring from hotel guests within the hotel, HVS depended on a study published by Boston Hospitality Review in 2019 titled "A Detailed Study of the Expected and Actual Use of Hotel Amenities"[1]. This study reports the percentage of hotel guests that make use of a hotel's amenities, including spending on in-room dining and in the hotel's restaurant outlets. HVS used the results for hotel guests staying in hotels for five or more nights to estimate the percentage of food & beverage revenue accounted for by guests is approximately 20%. The remaining hotel food & beverage revenue was compared to the total existing food service sales in Chinatown as estimated by Esri to estimate the percentage that would be new to Chinatown (an additional 20%). The remaining food & beverage spending was estimated using historical foot traffic data.

To estimate the percentage of spending occurring outside of the Proposed Chinatown Hotel but still occurring within the Chinatown zip code, HVS depended on Placer.ai. Placer.ai provides mobility and foot traffic data through partnerships with over 500 mobile apps and access to over 30 million devices. HVS used Placer.ai to track visitation trends to Chinatown, including seasonality, length of stay, hourly trends, and visitor journey (where visitors went before and after). Matching visitor spending to aggregate visitor journeys, HVS calculated the percentage of visitors who traveled more than one mile from Chinatown and counted these as outside of the zip code. For categories where visitor journeys were not available, HVS looked at the consumer spending trends and car rental businesses on Esri, comparing 96817 to the rest of Honolulu County.

The following figure shows the amount of spending per visitor that is new to Chinatown.

[1] Dev, Chekitan S., Kumar, Prateek. A Detailed Study of the Expected and Actual Use of Hotel Amenities. *Boston Hospitality Review, School of Hospitality Administration.* https://www.bu.edu/bhr/2019/03/20/a-detailed-study-of-the-expected-and-actual-use-of-hotel-amenities

FIGURE 1-9
PER PERSON PER DAY SPENDING

Spending Category	Percentage of Gross Direct Spending		References	Source
	Zipcode 96817	Rest of Honolulu County		
Hotel	100%	0%	N/A	HVS
Food & Beverage	51%	49%	Restaurants, Dining, Groceries	Placer.ai, Esri, HVS
Entertainment & Recreation	15%	85%	Leisure	Placer.ai, HVS
Transportation	19%	81%	Transportation, car rental, interisland visitation	DBEDT, Esri, HVS
Shopping	10%	90%	Shops & Services, Shopping Center, Apparel	Placer.ai
Other	21%	79%	Other	Placer.ai

Net Direct Spending

HVS applied the previous sources of spending impacts and spending parameters to estimate net direct spending for a stabilized year. See the figure below.

FIGURE 1-10
NET DIRECT SPENDING – STABILIZED YEAR

Spending Category	Total Spending ($ 000's)	
	Zip Code 96817	Rest of Honolulu County
Lodging	$16,381	
Food & Beverage	4,069	3,942
Entertainment & Recreation	481	2,777
Transportation	586	2,441
Shopping	378	3,228
All Other	272	1,019
Total	$22,166	$13,406

IMPLAN Impact Modeling

HVS uses the IMPLAN input-output model to estimate indirect and induced spending and employment impacts. IMPLAN is a nationally recognized model developed at the University of Minnesota and commonly used to estimate economic impacts. An input-output model generally describes the commodities and income that normally flow through the various sectors of a given economy. The indirect and induced spending and employment effects represent the estimated changes in the flow of income, goods, and services caused by the estimated direct spending. The IMPLAN model accounts for the specific characteristics of the local area economy and estimates the share of indirect and induced spending that it would retain.

HVS categorized new direct expenditures into spending categories that we provide inputs into the IMPLAN model. Specifically, the IMPLAN model relies on spending categories defined by the U.S. Census according to the North American Industry Classification System ("NAICS"). Because the spending data used by HVS do not always match the NAICS spending categories, HVS translates the spending categories into the NAICS spending categories that most closely match.

Indirect and Induced Spending

The relationship between direct spending and the multiplier effects can vary based on the specific size and characteristics of a local area's economy. HVS enters the gross direct spending estimate into the IMPLAN input output model of the local economy to estimate the net direct, indirect, and induced spending. HVS obtained the most recent available data from IMPLAN for Honolulu County.

The following figures present the output of the IMPLAN model–the net new direct, indirect, and induced economic impacts in the Chinatown zip code that are attributable to the Proposed Hotel. HVS also used IMPLAN to estimate the jobs created based on the direct, indirect, and induced spending estimates.

Annual Net Spending Impacts

The figure below shows the annual net direct, indirect, and induced spending generated for the market in 2022 dollars.

FIGURE 1-11
ANNUAL ECONOMIC IMPACT ESTIMATES (2022 $)

Impact ($ 000's)	Stabilized Year
Spending Estimates	
Net Direct	$22,738
Indirect	618
Induced	188
Total	$23,544

HVS calculated the full-time equivalent jobs supported by the spending in each economic sector. In a stabilized year of operation, the project would support approximately 145 permanent full-time equivalent jobs, primarily in the hospitality and service industries.

Fiscal Impacts

To estimate Fiscal Impacts, HVS used the total spending by hotel visitors in the Chinatown zip code and the rest of Honolulu County. Since estimation of fiscal impacts cannot be calculated for the Chinatown zip code, HVS offers no opinion on the amount of tax revenue that would be new to Hawai'i and Honolulu.

Net direct, induced, and indirect spending serves as the basis for estimating fiscal impacts. HVS identified applicable taxes in Honolulu and Hawai'i. For local sales and use tax, lodging tax, and rental car surcharge, HVS applied nominal tax rates to a detailed breakdown of spending and income categories and estimated the potential annual revenue that can be from each tax source. For Motor Vehicle Licensing Fees, Corporate Profits Tax, and Property Tax, HVS relied on IMPLAN's tax report.

The figure below summarizes the estimated fiscal impact for a stabilized year.

FIGURE 1-12
FISCAL IMPACT – HONOLULU

Tax Category	Tax Base (000's)	Effective Tax Rate	Estimated Tax Revenue (000's)
General Excise Tax	$30,848	0.50%	$154
Transient Accomodations Tax	14,236	3.00%	427
Motor Vehicle Licensing Fee	n/a	n/a	61
Property Tax	n/a	n/a	1,199
		Total	$1,841

Sources: HVS, IMPLAN, State of Hawaii Department of Taxation

In a stabilized year, HVS estimates that four tax sources would account for $1.8 million in tax revenue for Honolulu.

FIGURE 1-13
FISCAL IMPACT – HAWAI'I

Tax Category	Tax Base (000's)	Estimated Tax Rate	Estimated Tax Revenue (000's)
General Excise Tax	$30,848	4.00%	$1,234
Transient Accomodations Tax	14,236	10.25%	1,459
Rental Car Surcharge	1,500	8.48%	127
Motor Vehicle Licensing Fee	n/a	n/a	55
Corporate Profits Tax	n/a	n/a	88
		Total	$2,963

Sources: HVS, IMPLAN, State of Hawaii Department of Taxation

In a stabilized year, HVS estimates that four tax sources would account for $3.0 million in tax revenue for Hawai'i.

Construction Impacts

The Chinatown economy will also benefit from the construction of the Proposed Hotel. Unlike the economic impact discussed above, the impact of construction will be limited to the years in which the construction occurs. The impacts from construction do not recur annually.

Construction impacts are based on cost estimates from Moss and Associates and construction schedules for the Proposed Chinatown Hotel. The cost estimate includes hard costs for the hotel, parking lot, and roof deck and excludes land acquisition and FF&E. The construction timeline is subject to the limitations and delays of the development process, and the actual construction timeline may vary, but for purposes of this analysis, we assume construction occurs over twelve months. The table below shows the estimated construction costs.

FIGURE 1-14
ESTIMATED CONSTRUCTION COSTS

Project Area	Area GSF	Total Project Cost ($ M)
Hotel	147,210	$77.3
Parking	40,372	8.4
Roof Deck	12,124	3.7
Sitework	-	2.2
Historic Building	13,644	1.6
Total	66,140	$93.2

Source: Moss & Associates

The construction of a hotel will generate significant direct spending, but the amount captured within the Chinatown zip code is variable because much of the spending will occur outside of its bounds. However, most of the employment associated with construction will occur within the zip code.

HVS used IMPLAN to estimate the indirect and induced spending that would be generated in Chinatown.

FIGURE 1-15
ONE-TIME ECONOMIC IMPACTS OF CONSTRUCTION

Impact ($ 000's)	Stabilized Year
Spending Estimates	
Indirect	$2,056
Induced	$879
Total	$2,935

In the construction period, $93.2 million in construction will generate $2.9 million in additional activity in the Chinatown economy. During this period, the project will employ almost 480 workers, and though some of these employees reflect architectural and other professional services, the vast majority will work directly in Chinatown. Additionally, the project will generate one-time tax revenues through the General Excise Tax from the land acquisition and other building materials.

Impact on Chinatown

The Proposed Hotel would reside in the Chinatown Historic District, generally defined by Nu'uanu Stream to the north, Beretania Street to the east, Nu'uanu Avenue to the south, and North Nimitz Highway to the west. Chinatown was first founded in the 19th century by Chinese laborers, but tragic fires in 1886 and 1900 left little of the original development. However, Chinatown was soon rebuilt, and many buildings date back to the early 20th century. The Chinatown Historic District is situated on the north side of Downtown Honolulu and is primarily characterized by historic, low-rise buildings featuring residences above ground-floor commercial uses. Some specific businesses and entities in Downtown Honolulu include the Chinatown Cultural Plaza, 'Iolani Palace, and Hawai'i Pacific University. Restaurants located near the subject site include The Pig and The Lady, Senia, and Maguro Brothers.

In 2016, the City of Honolulu compiled the Chinatown Action Plan based on public outreach that determined some important goals for the neighborhood. The city's vision includes the "preservation of the historic district, upgrades to the public realm (both streets and parks), connection to the waterfront, and the addition of uses that strengthen its economic vitality.[2]" The City has made progress on its goals and has improved pedestrian walkways, hosted activities on River Street, enhanced Aala Park, and established a business improvement district.

[2] "Chinatown Action Plan" https://www.honolulu.gov/tod/projects/planning-initiatives/chinatown-action-plan.html

According to Placer.ai, Chinatown has historically been busiest around noon, with less activity in the evenings. Compared to other areas of Honolulu, such as Waikīkī Beach, Chinatown has been more of a local destination in recent years. From 2017 through 2019, almost 85% of Chinatown's visits came visitors living less than 30 miles away, whereas, for Waikīkī Beach, that number is closer to 40%. Besides its direct impacts on providing jobs and spending in local business, the Proposed Hotel would add to the growing vitality of Chinatown. The Proposed Hotel would increase foot traffic at all hours and boost demand for amenities such as restaurants, retail, and cultural experiences in the neighborhood.

Summary of Findings

The development of the Proposed Hotel will generate annual economic and employment impacts in Chinatown from guest spending and temporary construction impacts from construction spending.

The following figure summarizes the recurring annual economic impacts of the Proposed Hotel in a stabilized year.

FIGURE 1-16
SUMMARY OF ECONOMIC IMPACTS ($ 2022)

Summary of Impacts*	Stabilized Year
Economic Impact (millions)	$23.5
Full-time Equivalent Jobs	145

*In a stabilized year.

In a stabilized year, we estimate that hotel visitors would spend approximately $35.5 million in Honolulu, which would generate $23.5 million of new spending in the Chinatown zip code. This spending would support 145 full-time jobs annually.

HVS also estimated the revenue to governments that would be reflected in the annual spending impacts from guests of the Proposed Hotel. In a stabilized year, the fiscal revenues from this spending would be $1.8 million and $3.0 million per year in Honolulu and Hawai'i, respectively, including $1.4 from the General Excise Tax, $1.9 from the Transient Accommodations Tax, and $1.2 in Property Tax.

Lastly, HVS estimates that the one-time impacts of this $93.2 construction project will generate $2.9 million in indirect and induced spending in the Chinatown zip code and employ nearly 480 full-time equivalent employees for the construction period.

These economic and fiscal impact estimates are subject to the assumptions and limiting conditions described throughout the report. Numerous assumptions about future events and circumstances form the basis for these estimates. Although we consider these assumptions reasonable, we cannot provide assurances that the project will achieve the forecasted results. Actual events and circumstances are likely to differ from the assumptions in this report, and some of those differences may be material. The readers should consider these estimates as a mid-point in a range of potential outcomes.

2. Statement of Assumptions and Limiting Conditions

1. This report is to be used in whole and not in part.
2. No responsibility is assumed for matters of a legal nature.
3. All information, financial operating statements, estimates, and opinions obtained from parties not employed by HVS are assumed to be true and correct. We can assume no liability resulting from misinformation.
4. Unless noted, we assume that there are no encroachments, zoning violations, or building violations encumbering the proposed subject property.
5. The proposed facility is assumed to be in full compliance with all applicable federal, state, local, and private codes, laws, consents, licenses, and regulations (including a liquor license where appropriate), and that all licenses, permits, certificates, franchises, and so forth can be freely renewed or transferred to a purchaser.
6. We are not required to give testimony or attendance in court by reason of this analysis without previous arrangements, and only when our standard per-diem fees and travel costs are paid prior to the appearance.
7. If the reader is making a fiduciary or individual investment decision and has any questions concerning the material presented in this report, it is recommended that the reader contact us.
8. We take no responsibility for any events or circumstances that take place after the date of our report.
9. The quality of a facility's on-site management has a direct effect on a property's economic performance. The demand and financial forecasts presented in this analysis assume responsible ownership and competent management. Any departure from this assumption may have a significant impact on the projected operating results.
10. The impact analysis presented in this report is based upon assumptions, estimates, and evaluations of the market conditions in the local and national economy, which may be subject to sharp rises and declines. Over the projection period considered in our analysis, wages and other operating expenses may increase or decrease due to market volatility and economic forces outside the control of the facility's management.

11. We do not warrant that our estimates will be attained, but they have been developed based on information obtained during our market research and are intended to reflect reasonable expectations.

12. Many of the figures presented in this report were generated using sophisticated computer models that make calculations based on numbers carried out to three or more decimal places. In the interest of simplicity, most numbers have been rounded. Thus, these figures may be subject to small rounding errors.

13. It is agreed that our liability to the client is limited to the amount of the fee paid as liquidated damages. Our responsibility is limited to the client and use of this report by third parties shall be solely at the risk of the client and/or third parties. The use of this report is also subject to the terms and conditions set forth in our engagement letter with the client.

14. Although this analysis employs various mathematical calculations, the final estimates are subjective and may be influenced by our experience and other factors not specifically set forth in this report.

15. HVS, is not a municipal advisor and HVS is not subject to the fiduciary duty set forth in section 15B(c)(1) of the Act (15 U.S.C. 78o-4(c)(1)) with respect to the municipal financial product or issuance of municipal securities. The reader is advised that any actual issuance of debt would be done under the advice of its bond counsel and financial advisors. Financial advisor would provide advice concerning the specific structure, timing, expected interest cost, and risk associated with any government loan or bond issue. Potential investors should not rely on representations made in this report with respect to the issuance of municipal debt.

16. This report was prepared by HVS Convention, Sports & Entertainment Facilities Consulting. All opinions, recommendations, and conclusions expressed during this assignment are rendered by the staff of this organization, as employees, rather than as individuals.

    This report is set forth as an impact study of the proposed subject project; this is not an appraisal report.

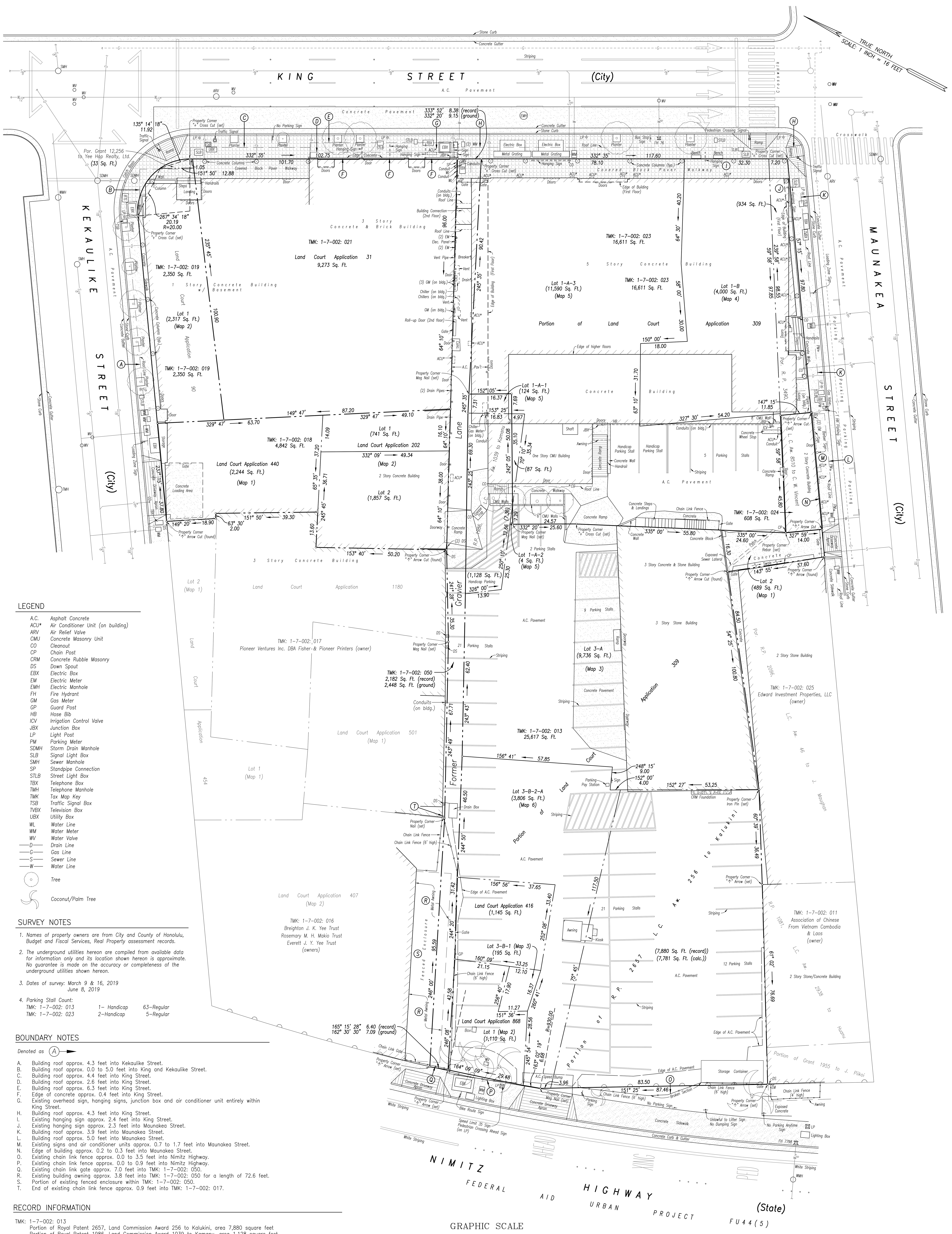
3. Certification

The undersigned hereby certify that, to the best of our knowledge and belief:

1. the statements of fact presented in this report are true and correct;
2. the reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and are our personal, impartial, and unbiased professional analyses, opinions, and conclusions;
3. we have no present or prospective financial or personal interest with respect to the parties involved;
4. HVS is not a municipal advisor and is not subject to the fiduciary duty set forth in section 15B(c)(1) of the Act (15 U.S.C. 78o-4(c)(1)) with respect to the municipal financial product or issuance of municipal securities;
5. we have no bias with respect to the subject of this report or to the parties involved with this assignment;
6. our engagement in this assignment was not contingent upon developing or reporting predetermined results;
7. our compensation for completing this assignment is not contingent upon the development or reporting of a predetermined result that favors the cause of the client, the amount of the value opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of this document.

Thomas Hazinski
Managing Director

Jorge Cotte
Senior Director



LEGEND

A.C.	Asphalt Concrete
ACU*	Air Conditioner Unit (on building)
ARV	Air Relief Valve
CMU	Concrete Masonry Unit
CO	Cleanout
CP	Chain Post
CRM	Concrete Rubble Masonry
DS	Down Spout
EBX	Electric Box
EM	Electric Meter
EMH	Electric Manhole
FH	Fire Hydrant
GM	Gas Meter
GP	Guard Post
HB	Hose Bib
ICV	Irrigation Control Valve
JBX	Junction Box
LP	Light Post
PM	Parking Meter
SDMH	Storm Drain Manhole
SLB	Signal Light Box
SMH	Sewer Manhole
SP	Standpipe Connection
STLB	Street Light Box
TBX	Telephone Box
TMH	Telephone Manhole
TMK	Tax Map Key
TSB	Traffic Signal Box
TVBX	Television Box
UBX	Utility Box
WL	Water Line
WM	Water Meter
WV	Water Valve
—D—	Drain Line
—G—	Gas Line
—S—	Sewer Line
—W—	Water Line
	Tree
	Coconut/Palm Tree

SURVEY NOTES

1. Names of property owners are from City and County of Honolulu, Budget and Fiscal Services, Real Property assessment records.
2. The underground utilities hereon are compiled from available data for information only and its location shown hereon is approximate. No guarantee is made on the accuracy or completeness of the underground utilities shown hereon.
3. Dates of survey: March 9 & 16, 2019
   June 8, 2019
4. Parking Stall Count:

TMK: 1–7–002: 013	1– Handicap	63–Regular
TMK: 1–7–002: 023	2–Handicap	5–Regular

BOUNDARY NOTES

Denoted as (A)

A. Building roof approx. 4.3 feet into Kekaulike Street.
B. Building roof approx. 0.0 to 5.0 feet into King and Kekaulike Street.
C. Building roof approx. 4.4 feet into King Street.
D. Building roof approx. 2.6 feet into King Street.
E. Building roof approx. 6.3 feet into King Street.
F. Edge of concrete approx. 0.4 feet into King Street.
G. Existing overhead sign, hanging signs, junction box and air conditioner unit entirely within King Street.
H. Building roof approx. 4.3 feet into King Street.
I. Existing hanging sign approx. 2.4 feet into King Street.
J. Existing hanging sign approx. 2.3 feet into Maunakea Street.
K. Building roof approx. 3.9 feet into Maunakea Street.
L. Building roof approx. 5.0 feet into Maunakea Street.
M. Existing signs and air conditioner units approx. 0.7 to 1.7 feet into Maunakea Street.
N. Edge of building approx. 0.2 to 0.3 feet into Maunakea Street.
O. Existing chain link fence approx. 0.0 to 3.5 feet into Nimitz Highway.
P. Existing chain link fence approx. 0.0 to 0.9 feet into Nimitz Highway.
Q. Existing chain link gate approx. 7.0 feet into TMK: 1–7–002: 050.
R. Existing building awning approx. 3.8 feet into TMK: 1–7–002: 050 for a length of 72.6 feet.
S. Portion of existing fenced enclosure within TMK: 1–7–002: 050.
T. End of existing chain link fence approx. 0.9 feet into TMK: 1–7–002: 017.

RECORD INFORMATION

TMK: 1–7–002: 013
Portion of Royal Patent 2657, Land Commission Award 256 to Kalukini, area 7,880 square feet
Portion of Royal Patent 1986, Land Commission Award 1039 to Kamanu, area 1,128 square feet
Lot 3–B–2–A, area 3,806 square feet, as shown on Map 6 of Land Court Application 309
Lot 3–A, area 9,736 square feet, as shown on Map 2 of Land Court Application 309
Lot 1–A–1, area 124 square feet, Lot 1–A–2, area 4 square feet, as shown on Map 5 of Land Court Application 309
Lot Original, area 1,145 square feet, as shown on Map 1 of Land Court Application 416
Lot 2, area 489 square feet, as shown on Map 1 of Land Court Application 309
Lot 1, area 1,110 square feet, as shown on Map 2 of Land Court Application 868
Lot 3–B–1, area 195 square feet, as shown on Map 3 of Land Court Application 309

TMK: 1–7–002: 018
Lot 1, area 741 square feet as shown on Map 2 of Land Court Application 202
Lot 2, area 1,857 square feet as shown on Map 2 of Land Court Application 202
Lot Original, area 2,244 square feet as shown on Map 1 of Land Court Application 440

TMK: 1–7–002: 019
Lot 1, area 2,317 square feet as shown on Map 2 of Land Court Application 90
Land described by Land Patent Grant 12,256 issued to Yee Hop Realty, Limited
84 square feet. Excepting and reserving to the City and County of Honolulu, 51 square feet.

TMK: 1–7–002: 021
Lot original, area 9,273 square feet as shown on Map 1 of Land court Application 31

TMK: 1–7–002: 023
Lot 1–B, area 4,000 square feet as shown on Map 4 of Land Court Application 309
Lot 1–A–3, area 11,590 square feet as shown on Map 5 of Land Court Application 309
Portion of Royal Patent 1986, Land Commission Award 1039 to Kamanu, area 87 square feet
Portion of Royal Patent 3490, Land Commission Award 8510 to C. W. Vincent, area 934 square feet

TMK: 1–7–002: 024
Portion of Royal Patent 3490, Land Commission Award 8510 to Charles W. Vincent, area 608 square feet

TMK: 1–7–002–050
Land Patent Grant S–14,841 (Gravier Lane), area 2,182 square feet

GRAPHIC SCALE

16 0 8 16 32 64

(IN FEET)
1 inch = 16 ft.

ALTA/NSPS LAND TITLE SURVEY

Tax Map Keys: 1–7–002: 013, 018, 019, 021, 023, 024 and 050

Being Portion(s) of R.P. 2657, L.C. Aw. 256 to Kalukini, R.P. 1986, L.C. Aw. 1039 to Kamanu, L.P. Grant 12,256 to Yee Hop Realty, Limited, R.P. 3490, L.C. Aw. 8510 to C. W. Vincent, L.P. Grant S–14,841,
Land Court Applications 31, 90, 202, 309, 416, 440 and 868
At Honolulu, Oahu, Hawaii

NATALIE K. IMATA
LICENSED PROFESSIONAL LAND SURVEYOR
No. 5816
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

To: Yee Hop Realty, Limited

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2016 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Survey, jointly established and adopted by ALTA and NSPS and includes Items 1, 4, 8, 9, 11 and 13 of Table A thereof.
The fieldwork was completed on March 16 and June 8, 2019

Date of Plat or Map: July 3, 2019

Natalie K. Imata

Natalie K. Imata Exp. 04–30–2020
Licensed Professional Land Surveyor No, 5816