Draft Environmental Impact Statement

Hoʻonani Village
Mixed-Use Development

Volume III of III

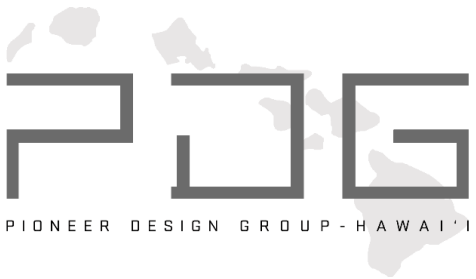
Appendices Q-Z

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APPENDIX ‘Q’ – ENVIRONMENTAL NOISE ASSESSMENT

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Environmental Assessment: Aircraft Noise

Hoʻonani Village Development

Kahului, Maui, Hawaii

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DLAA Project No. 24-093

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ACOUSTIC TERMINOLOGY GLOSSARY

dB: A decibel, commonly abbreviated as dB, represents the ratio between 2 sound pressure levels. The scale used is logarithmic which is a close approximation to the response of the human ear. For reference, a difference of 3 dB is considered just perceptible to the average person, while 10 dB is considered to be twice as loud (or half as loud).

dBA: The human ear has been shown to be significantly more sensitive to some frequencies than others. The dBA weighting is a “filter” which, under typical noise levels, can be used to convert absolute noise levels at all frequencies into an approximation for human hearing. It is widely used throughout the world as the standard weighting for assessing noise complaints, hearing loss, sleep disturbance, and other issues. Typical noise levels include:

0 dBA – Threshold of human hearing
25 dBA – Soft Whisper at 3 feet
50 dBA – Typical office
70 dBA – Downtown city ambient noise
90 dBA – OSHA mandated hearing protection for 8 hour exposure
115 dBA – Loud rock concert

DNL: The Day-Night Equivalent Sound Level, DNL, is the Equivalent Sound Level, Leq, measured over a 24-hour period. However, a 10 dB penalty is added to the noise levels recorded between 10 p.m. and 7 a.m. to account for people’s higher sensitivity to noise at night when the background noise level is typically lower. The DNL is a commonly used noise descriptor in assessing land use compatibility, and is widely used by federal and local agencies and standards organizations.

Leq: The Equivalent Sound Level (Leq) is a type of average which represents the steady level that, integrated over a time period, would produce the same energy as the actual signal. The actual instantaneous noise levels typically fluctuate above and below the measured Leq during the measurement period. The A-weighted Leq is a common index for measuring environmental noise.

L90, L10: Statistical sound levels are the sound levels of long-term noise producing activities such as traffic movement, aircraft operations, etc., can vary considerably with time. In order to obtain a single number rating of such a noise source, a statistically-based method of expressing sound or noise levels has been developed. It is known as the Exceedance Level, Ln. The Ln represents the sound level that is exceeded for 90/10 percent of the measurement time period. For example, L10 = 60 dBA indicates that for the duration of the measurement period, the sound level exceeded 60 dBA 10 percent of the time. Typically, in noise regulations and standards, the specified time period is one hour. Commonly used Exceedance Levels include L01, L10, L50, and L90, which are widely used to assess community and environmental noise.

LMax: The maximum, instantaneous noise level recorded during a measurement period.

STC: The Sound Transmission Class (STC) represents the lab measured level airborne sound attenuation provided between one space and another by an individual building element, such as a wall construction, door, or window assembly. Frequencies between 125Hz and 5000Hz are used, however the reference

curve used to evaluate the STC rating is based on speech privacy and is typically not a good indicator of low frequency music or mechanical noise attenuation.

IIC: Apparent Impact Insulation Class (AIIC), formerly referred to as FIIC, refers to the field measurement of IIC. Field AIIC ratings are typically 5 points lower than lab IIC ratings. AIIC is measured by setting up a standardized tapping machine on a upper level floor which repeatedly drops small hammers onto the ground and noise levels are measured in the space directly below and normalized based on room absorption.

OITC: Outdoor-Indoor Transmission Class is similar to STC however the reference curved is based on typical outdoor noise sources such as traffic, aircraft, and trains so is a significantly better indicator of low frequency attenuation. Typically used to rate the sound isolation properties of building shell elements such as curtain walls.

EXECUTIVE SUMMARY

The proposed action is the development of Ho‘onani Village, envisioned as a high-density, master-planned, mixed-use community in the Pu‘unene-Kahului area of Central Maui on approximately 166.512 acres of land that are currently vacant but were previously used for plantation agriculture. Ho‘onani Village is proposed to include approximately 1,608 multi-family residential housing units, along with a blend of commercial, office, retail, restaurant, entertainment, light industrial, and hospitality uses. The site is currently zoned “AG-Agriculture” by the County of Maui. A change in zoning is being pursued to rezone the project site to “M-1 Light Industrial” to achieve land use compatibility with the proposed mixed-uses.

Ambient Leq noise levels measured in the community surrounding the Ho‘onani Village project site ranged from 53 dBA during nighttime hours to 59 dBA during the day, with measured DNL levels as high as 65.4 dB.[1] It is noted that Hawaii Administrative Rules, Title 11, Chapter 46 (the Community Noise Rule) governs stationary noise sources and equipment associated with agricultural, construction, and industrial activities; it does not apply to aircraft operations, which are governed by FAA Part 150 and the Kahului Airport Noise Compatibility Program. The following zoning classification is provided for context regarding non-aircraft noise sources at the site. The site is currently zoned AG, indicating Agricultural land. AG zoning districts are classified as Class C under the Hawaii Department of Health, Hawaii Administrative Rules, Title 11, Chapter 46, Community Noise Rule[2], requiring a maximum property line noise level of 70 dBA during daytime hours (7am to 10pm) and 60 dBA at night (10pm to 7am). The proposed project would include multi-family residential, commercial, and hotel uses likely to be zoned Class B, which has a maximum property line noise level of 60 dBA during daytime hours and 50 dBA at night.

Seven-day continuous noise monitoring at three locations across the project site measured Day-Night Average Sound Levels (DNL) ranging from 60.8 to 63.7 dB, confirming that aircraft operations on Kahului Airport’s Runway 2-20 are the dominant source of noise exposure. The measured values place the project site within the 60–65 DNL range, above the Hawaii Department of Transportation threshold of 60 DNL but below the federal residential compatibility threshold of 65 DNL established under 14 CFR Part 150[1][4].

These field measurements reveal significantly lower noise exposure than predicted by Kahului Airport’s 1993 Noise Exposure Maps, which were accepted by the FAA in 1996. The difference stems from fundamental changes in aircraft fleet composition: the 1993 contours were based on operations including Stage 2 aircraft (older Boeing 727, 737, 747, and McDonnell-Douglas DC-9, DC-10), which were completely phased out nationwide by December 31, 1999, and replaced by substantially quieter Stage 3 aircraft.

The project site’s current noise exposure meets federal residential compatibility standards under 14 CFR Part 150 Appendix A without mitigation. However, the State DOT’s Kahului Airport Noise Compatibility Program, approved by the FAA in 1996[4], sets the residential compatibility threshold (without any Noise Level Reduction measures) at 60 DNL—5 dB more restrictive than the federal standard. Between 60 and 65 DNL, all residential land uses are identified as incompatible; however, the Noise Compatibility Program includes recommended Noise Level Reduction (NLR) measures if such residential uses are developed.

[1] The 65.4 dB DNL value was recorded at Location L2, which is adjacent to Pulehu Road and influenced by heavy vehicle traffic from the nearby landfill. The aircraft-dominated measurement at Location L1 (central project site, isolated from roadway noise) yielded a DNL of 63.7 dB; this is the more representative value for assessing aircraft noise impacts on the proposed residential uses.

Within the 65–70 DNL range, high-density apartments with limited outdoor uses—similar to what is contemplated for Ho‘onani Village—while identified as not compatible, are also identified for NLR measures in the event such communities are built. Recommended NLR measures to achieve the Hawaii DOT's recommended interior level of 45 DNL are provided in Section 4. Additionally, under Hawaii Revised Statutes Section 508D-15, all residential sales require disclosure to buyers if the property is within the boundaries of the noise exposure area shown on maps prepared by the State DOT in accordance with FAA Part 150, Airport Noise Compatibility Planning, for any public airport[3].

1 PROJECT DESCRIPTION

The proposed action is the construction of a high-density, master-planned, mixed-use community in the Pu‘unēnē-Kahului area of Central Maui on currently vacant, fallow agricultural lands. As proposed, Ho‘onani Village will have approximately 1,608 multi-family residential housing units along with a blend of commercial (office, retail, restaurant, entertainment), light industrial, and hospitality uses on an approximately 166.512-acre site in Kahului (the project site).

The site of the proposed action is currently zoned as AG zoning, indicating Agricultural land. Note that the Hawaii Administrative Rules, Title 11, Chapter 46 Community Noise Rule[2] governs stationary and equipment-related noise sources (including construction activity) but does not apply to aircraft operations, which are regulated under FAA Part 150. For the purpose of characterizing non-aircraft noise sources at the site, AG zoning districts are considered Class C under the Community Noise Rule, requiring a maximum property line noise level of 70 dBA during daytime hours (7AM to 10PM) and 60 dBA at night (10PM to 7AM). The proposed project would include multi-family uses, likely to be zoned Class B, which has a maximum property line noise level of 60 dBA during daytime hours and 50 dBA at night.

1.1 Hawaii Department of Transportation (HDOT), Noise Standards

The State of Hawaii Department of Transportation, Airports Division has adopted aircraft noise compatibility standards that are more restrictive than FAA Part 150 guidelines, as embodied in the Kahului Airport Noise Compatibility Program accepted by the FAA in 1996[4]. This program establishes 60 DNL as the maximum noise level for residential land use compatibility without mitigation measures—5 dB lower than the 14 CFR Part 150 residential threshold of 65 DNL[1].

1.1.1 Residential Land Use Compatibility Thresholds

- **Below 60 DNL:** All residential land use categories are compatible without restriction or mitigation, including low-density residential, low-density residential with outdoor facilities, high-density apartments with limited outdoor use, and transient lodging with limited outdoor use.
- **60–65 DNL:** All manner of residential use is incompatible; however, all residential categories may be developed with Noise Level Reduction measures designed to achieve interior noise levels of 45 DNL or less.
- **65–70 DNL:** Low-density residential land uses are not compatible. High-density apartments with limited outdoor use and transient lodging with limited outdoor use, if permitted, should employ Noise Level Reduction measures to achieve interior noise levels of 45 DNL or less.
- **70 DNL and above:** Neither low-density nor high-density residential land uses are compatible, even with Noise Level Reduction measures.

1.1.2 Noise Level Reduction (NLR) Requirements

For residential development in the 60–70 DNL range, the Kahului Airport Noise Compatibility Program requires building design measures to achieve interior noise levels of 45 DNL or less[4]. Standard construction with natural ventilation provides approximately 9 dB outdoor-to-indoor noise reduction, while enhanced construction utilizing air conditioning and sound-rated windows achieves substantially greater noise reduction. These measures address interior noise only and do not eliminate outdoor noise exposure.

1.1.3 Hawaii Revised Statutes Chapter 508D - Disclosure Requirements

Hawaii Revised Statutes Chapter 508D, Section 15 requires disclosure to buyers for all real estate within “the boundaries of the noise exposure area shown on maps prepared by the department of transportation in accordance with Federal Aviation Regulation Part 150.”[3] The noise exposure area boundary is defined as the 55 DNL contour.

All measurement locations exceed 55 DNL, requiring disclosure under HRS Chapter 508D for residential unit sales. This requirement applies regardless of whether mitigation measures are implemented.

2 EXISTING ACOUSTICAL ENVIRONMENT

2.1 Site Context

The project site is located approximately 1 mile from Kahului Airport (OGG), directly beneath the approach and departure flight path for Runway 2-20. Runway 2-20 is the airport's primary commercial runway, handling the majority of large commercial aircraft operations.

2.1.1 Primary Noise Sources

- **Aircraft operations:** Dominant source - arrivals and departures from Runway 2-20
- **Vehicular traffic:** Secondary source - Pulehu Road and Hansen Road
- **Industrial activities:** Tertiary source - nearby recycling facility

2.1.2 Runway Usage Patterns

Runway 2-20 is the preferred runway for commercial operations due to prevailing trade wind patterns. Standard operating procedures result in the majority of commercial takeoffs and landings occurring over the project site area.

Long-term continuous noise monitoring was conducted to characterize the existing aircraft noise environment at the project site and to provide measured data for comparison with Noise Exposure Map noise contours.

2.2 Measurement Methodology

2.2.1 Measurement Period

- **Duration:** 7 consecutive days
- **Dates:** April 23–30, 2025
- **Monitoring:** Continuous 24-hour monitoring

2.2.2 Instrumentation

- **Sound Level Meters:** Larson-Davis Model 831, Type 1 precision
- **Calibrator:** Larson-Davis Model CAL200 acoustic calibrator
- **Certification:** All equipment calibrated by manufacturer within 2-year certification period
- **Field Calibration:** Checked before and after measurement period; drift $<$0.5 dB

2.2.3 Data Acquisition Parameters

- **Integration time:** 1-hour Leq
- **Frequency weighting:** A-weighting
- **Time weighting:** Slow (1 second)

- **Statistical parameters:** Leq, L90, Lmax recorded hourly

2.2.4 Microphone Setup

- **Mounting height:** 5 feet above grade ($\pm$0.5 ft) per ANSI recommendations
- **Orientation:** Vertical, free-field configuration
- **Protection:** All-weather windscreen, weather-resistant enclosure

2.2.5 Meteorological Conditions

Weather conditions during the measurement period were favorable for aircraft noise propagation with minimal atmospheric absorption effects.

- **Wind speed:** 6–9 mph average (Kahului Airport Weather Station)
- **Precipitation:** None recorded during measurement period

Continuous long-term ambient noise level measurements were conducted to assess the existing acoustical environment in the vicinity of the project. Long-term measurements (taken continuously over the course of multiple days) offer a baseline for establishing existing ambient noise levels in the area and are used for estimating future noise levels by adding the ambient levels to other noise levels generated from the project site. These ambient levels were used to determine a baseline for probable noise impacts due to aircraft noise from the nearby Kahului Airport.

2.3 Long-Term Noise Measurement Locations

Figure 1 provides a site map overview annotated with labels corresponding to the long term monitoring locations. These measurement locations were selected to evaluate the current aircraft noise environment from Kahului Airport, as well as the vehicular traffic noise from the surrounding area.

2.3.1 Location 1 (L1): Central Project Site - Worst-Case Aircraft Noise

The sound level meter was located at the rough center of the planned project site, at the closest location to the flight line of Kahului airport.

2.3.2 Location 2 (L2): Eastern Project Boundary

The sound level meter was located on the east side of the intersection of Pulehu Road and Hansen Road.

2.3.3 Location 3 (L3): Northern Boundary

The sound level meter was located along the North side of Hansen Road.

2.4 Long-Term Noise Measurement Results

The measured Leq, L90 and Lmax, in dBA are graphically presented in Figures 3 through 5 for each location. The Leq during the day (7:00 AM to 10:00 PM) and during the night (10:00 PM to 7:00 AM) and average calculated day-night level, DNL, are summarized for each location in Table 1.

The seven-day continuous noise monitoring at three locations around the proposed project site provides a comprehensive characterization of the existing acoustic environment. The measured noise metrics—Leq (equivalent continuous sound level), L90 (background noise level), and Lmax (maximum sound level)—each describe different aspects of the noise exposure:

Leq represents the average sound energy over the measurement period and is the primary metric for assessing long-term noise exposure. During daytime hours (7:00 AM to 10:00 PM), measured Leq values ranged from 55–58 dBA across the three locations. Nighttime Leq values (10:00 PM to 7:00 AM) ranged from 46–58 dBA, with the higher nighttime values occurring during aircraft events.

L90 indicates the background noise level—the sound level exceeded 90% of the time, essentially representing the quietest conditions when transient noise events (aircraft, traffic) are absent. These measurements provide insight into the baseline acoustic environment between discrete noise events.

Lmax captures the peak sound levels during individual noise events, particularly aircraft overflights. The highest recorded Lmax values of approximately 60 dBA correspond to commercial aircraft operations on Runway 2-20, confirming that aircraft flyovers are the dominant source of transient noise at the project site.

Table 1: Summary of Noise Measurement Results (dBA)

Measurement Location	Average Daytime Leq	Average Nighttime Leq	Average DNL	Dominant Source
L1	59.3	53.1	63.7	Aircraft
L2	57.7	53.7	65.4	Mixed (aircraft/trucks)
L3	58.0	51.5	60.8	Mixed (aircraft/vehicles)

Note: Values represent averages over a 7-day measurement period

Location L1 is particularly significant as it represents the most isolated measurement point from roadway traffic noise. The 63.7 DNL value at this location provides the best direct measurement of aircraft noise contribution to the project site, with daytime levels of 55–58 dBA and nighttime levels of 46–58 dBA.

2.5 Comparison with 1993 FAA-Accepted Noise Contours

2.5.1 Regulatory Compliance Assessment

The field measurements confirm the project site’s position relative to Kahului Airport’s noise exposure, but reveal important differences from the airport’s 1993 base year Noise Exposure Maps accepted by the FAA in 1996[4], shown overlaid with the project site plan and long-term field measurement locations in Figure 2.

It is important to note that FAA Part 150 Noise Exposure Maps are generated through aviation-specific

Table 2: Regulatory Compliance Status

Regulatory Standard	Threshold	Project Site Status
FAA Part 150	65 DNL (residential compatibility)	Below threshold (60.8–63.7 DNL measured)
OGG NCP (HDOT)	60 DNL (residential without mitigation)	Exceeds threshold; NLR measures appropriate
HRS 508D	55 DNL (disclosure requirement)	Exceeds threshold; disclosure required

simulation methodology using aircraft schedule data, individual aircraft engine noise signatures, flight track geometry, and acoustic propagation modeling provided by or coordinated with the FAA. These contours represent aircraft noise contributions exclusively. The field measurements reported herein serve a different and complementary purpose: to characterize the total ambient noise environment at the project site, including both aircraft and ground transportation noise contributions. Locations L2 and L3, positioned adjacent to roadways, include mixed-source noise that is not directly comparable to aircraft-only contour levels. Location L1, positioned to isolate aircraft noise contributions, provides the most relevant field context, but should not be construed as a substitute for or equivalent to a formal Part 150 noise contour analysis[6].

The 1993 contours predicted higher noise exposure than currently measured. This disparity stems from a fundamental change in the aircraft fleet operating at Kahului Airport: the 1993 noise contours were modeled based on aircraft operations that included Stage 2 aircraft, which were subsequently phased out nationwide by December 31, 1999, as mandated by the Airport Noise and Capacity Act of 1990[5].

2.5.2 Stage 2 vs. Stage 3 Aircraft

Stage 2 aircraft (such as older Boeing 727, 737, and 747 models, and McDonnell-Douglas DC-9 and DC-10) produce substantially more noise than Stage 3 aircraft (newer Boeing 737, 747, 757, and 767 models, MD-80 and MD-11, and Airbus aircraft). The complete transition to Stage 3 aircraft by 2000 resulted in a quieter fleet than the one operating when the 1993 contours were created.

This issue was documented nationally in a 2000 U.S. Department of Transportation Inspector General audit (AV-2001-012) [7], which found that airports nationwide were using noise exposure maps predating the Stage 2 to Stage 3 transition, resulting in contours showing 25–62% larger noise-impacted areas than actual conditions warranted.

2.6 Location-Specific Analysis

Location L1 was positioned at the central project site to capture the worst-case aircraft noise exposure for the development as a whole, at the location of closest proximity to the Runway 2-20 flight path. Of the mixed uses proposed for Ho‘onani Village, residential uses represent the most noise-sensitive occupancy category and form the primary basis for acoustic design criteria. It is significant to note that even with the separation of this site from the nearby road noise, the measured levels are quite similar to locations in close proximity with the roadway, indicating that the aircraft flyover events are the dominant contributors to the

site’s noise environment.

Location L2 represents areas on the project in proximity to the nearby road noise of Pulehu and Hansen road. This location also represents the commercial/heavy industrial-zoned areas nearby the project site likely to be affected by construction noise and increased traffic due to the project activity. Daytime levels measured here were slightly higher than other locations, likely due to large vehicle traffic observed entering and exiting the nearby landfill area.

Location L3 is positioned outside the project boundary, along the north side of Hansen Road, and was selected specifically to characterize the road traffic noise environment adjacent to the project. This location also captures aircraft overflight impacts from the Runway 2-20 flight path and represents the noise environment that will affect light industrial receptors proposed along the southern perimeter of the project site. The highest noise levels recorded here are approximately 60 dBA.

2.7 Noise Level Reduction (NLR) Application to Project Site

Measured 2025 DNL values at project site were 60.8–63.7 DNL, confirming that the project site falls within the 60–65 DNL range. Accordingly, noise level reduction measures are appropriate for residential uses to achieve an interior noise level of 45 DNL or less, consistent with the Kahului Airport Noise Compatibility Program[4].

2.8 Acoustic Environment Characterization

The measurement data reveals that aircraft operations on Runway 2-20 are the primary contributor to the noise environment at the project site. The similarity of noise levels at Location L1 (isolated from roadway noise) to locations near roads confirms that aircraft flyover events dominate the acoustic character of the area, rather than ground-based transportation sources.

The variable nature of aircraft noise—dependent on takeoff and landing directions, weather conditions, and aircraft type—means the acoustic environment fluctuates based on operational patterns at Kahului Airport. However, the seven-day continuous monitoring captures a representative sample of typical operations and provides reliable baseline data for the existing noise exposure.

The project site meets FAA Part 150 residential compatibility standards but exceeds the Kahului Airport Noise Compatibility Program’s more restrictive 60 DNL threshold[4]. Accordingly, implementation of noise level reduction measures to achieve 45 DNL interior levels is appropriate for residential uses at this site.

3 PROJECT SITE NOISE IMPACTS

3.1 Aircraft Noise

The proposed project site is located within the noise contours of Kahului Airport, as documented in the airport's Master Plan[6] and the 1996 FAA-accepted Kahului Airport Noise Compatibility Program (NCP)[4]. These contours delineate areas of similar Day-Night Average Sound Level (DNL) exposure resulting from civil airport operations. The configuration of these noise contours reflects the predominant operational patterns at Kahului Airport, including use of primary runways for commercial and private aircraft, as well as heliport operations.

3.2 Operational Patterns and Noise Exposure

Aircraft noise at the project site is driven primarily by operations on Runway 2-20, Kahului Airport's primary runway for large commercial aircraft. The runway's approach and departure flight paths cross directly over the project site, making it the dominant source of aircraft noise exposure. The seven-day monitoring captured noise from both takeoff and landing events, providing a comprehensive characterization of typical operational impacts. Weather conditions, particularly wind direction and velocity, influence daily runway selection and therefore the intensity and frequency of aircraft noise events at the site.

3.3 Measured Noise Levels and Site Characterization

The monitoring results demonstrate that aircraft operations are the primary contributor to the acoustic environment across the project site. Location L1, positioned at the project site location of greatest proximity to the Runway 2-20 flight path (refer to site plan), provides the most direct measurement of aircraft noise contribution for the development. This location was intentionally isolated from roadway traffic noise, making it the best indicator of aircraft-specific impacts and the basis for worst-case acoustic design criteria. Of the range of uses proposed within Ho‘onani Village, residential occupancy represents the most noise-sensitive use category and is therefore the governing consideration for exterior acoustic performance requirements.

At Location L1, daytime sound levels (7:00 AM to 10:00 PM) ranged from 55 to 58 dBA Leq, while nighttime levels (10:00 PM to 7:00 AM) ranged from 46 to 58 dBA, yielding a composite DNL of 63.7 dB. The higher nighttime maximum values correspond to evening cargo and passenger operations, which receive a 10 dB penalty in the DNL calculation to account for increased sensitivity during sleeping hours. The measurement data show that even with significant separation from roadway noise sources, Location L1 recorded noise levels similar to monitoring points adjacent to roads, confirming that aircraft flyover events—rather than ground transportation—dominate the site's noise environment.

Location L2, representing commercial/civic boundary areas near the project, measured 65.4 DNL. This location experienced elevated daytime levels due to heavy vehicle traffic associated with the nearby landfill facility, and reflects a mixed aircraft and roadway noise environment.

Location L3, positioned along the north side of Hansen Road outside the project boundary, was selected to characterize the road traffic noise environment adjacent to the project site. This location also captures

aircraft overflight impacts from the Runway 2-20 flight path. The measured 60.8 DNL at this location reflects the combined contribution of road traffic and aircraft operations.

3.4 Comparison with 1993 FAA-Accepted Noise Contours

The field measurements confirm the project site's location within aircraft noise impact areas but reveal substantially lower noise exposure than predicted by Kahului Airport's 1993 base year Noise Exposure Maps. The measured DNL values of 60.8–63.7 dB place the site in the 60–65 DNL range, whereas the 1993 contours suggested higher exposure levels for equivalent locations.

This disparity reflects a fundamental change in commercial aviation that occurred after the 1993 noise contours were created. The 1993 Noise Exposure Maps were measured and modeled based on aircraft operations that included Stage 2 aircraft—older generation jets such as the Boeing 727, 737 (early models), 747 (early models), McDonnell-Douglas DC-9, and DC-10. These aircraft produced substantially greater noise than modern equivalents. The Airport Noise and Capacity Act of 1990 mandated the phase-out of all Stage 2 aircraft weighing 75,000 pounds or more from U.S. operations, with the transition completed nationwide by December 31, 1999[5].

By 2000, the U.S. commercial aviation fleet had transitioned entirely to Stage 3 aircraft—quieter models including newer Boeing 737, 747, 757, and 767 variants, McDonnell-Douglas MD-80 and MD-11, and Airbus aircraft. Stage 3 aircraft incorporate advanced engine designs, improved aerodynamics, and noise-reduction technologies that produce significantly lower noise levels during all phases of flight. The result is that current operations at Kahului Airport generate considerably less noise than the fleet composition used to create the 1993 contours.

This issue was not unique to Kahului Airport. A 2000 U.S. Department of Transportation Inspector General audit [7] documented that airports nationwide were continuing to use noise exposure maps that predated the Stage 2 to Stage 3 transition, resulting in contours depicting noise-impacted areas 25–62% larger than actual conditions warranted. Kahului Airport's 1993 base year Noise Exposure Maps, accepted by the FAA in 1996[4], were similarly based on pre-transition fleet assumptions and therefore overestimate current noise exposure.

It is further noted that a preliminary noise study for Kahului Airport was subsequently prepared that incorporated assumptions regarding a planned southward extension of Runway 2/20. As that study was not submitted to the FAA for acceptance, the 1993 Noise Exposure Maps remain the current regulatory baseline. The existence of this subsequent analysis nevertheless provides further context supporting the view that the accepted 1993 contours may not reflect current airport conditions.

The agreement between 2025 field measurements and the relative spatial patterns shown in historical contours demonstrates that the orientation and general shape of noise exposure zones remain accurately represented. However, the absolute magnitude of noise exposure and the precise location of specific DNL contour lines have shifted inward toward the airport as the fleet became quieter.

3.5 Implications for Project Development

Based on the comprehensive field measurement program, aircraft noise from Kahului Airport will be the primary contributor to the acoustic environment for the proposed development. The noise exposure will vary based on several operational factors:

Flight Path Selection: Takeoff and landing directions change based on prevailing winds and weather conditions, affecting the intensity and frequency of overflights. However, the predominant use of Runway 2-20 for commercial operations creates consistent noise exposure patterns along the primary flight path crossing the project site.

Operational Tempo: Daily and seasonal variations in flight schedules create fluctuations in noise exposure, with peak activity during morning and evening hours corresponding to commercial airline hub operations and connecting flights.

The measured DNL values of 60.8–63.7 dB place the project site above the Kahului Airport Noise Compatibility Program's 60 DNL residential compatibility threshold[4]. Accordingly, implementation of noise level reduction measures to achieve 45 DNL interior noise levels is appropriate for residential and hospitality uses at this site. While outdoor noise exposure will remain present and variable based on aircraft operations, properly designed building envelope treatments can effectively reduce interior noise to compatible levels for residential use. The project site's noise environment is well-characterized by the field measurement program and falls within the range where noise mitigation through building design is both feasible and effective.

4 MITIGATION FOR AIRCRAFT NOISE

The noise level reduction measures described in this section are applicable to residential and transient lodging (hotel) uses throughout the Ho‘onani Village development. Commercial uses are subject to less stringent interior noise criteria and are not addressed here. Light industrial uses do not require the acoustic treatment levels described below.

Due to the presence of consistent aircraft noise exposure throughout the project site, exterior glazing, wall, and floor/ceiling construction will be particularly important to isolate residential and hospitality occupants. The L1 monitoring location was chosen to represent the worst-case aircraft noise scenario for the development, so L1's measured DNL of 63.7 dB is used to establish target acoustic design criteria for exterior building assemblies.

The interior noise target level for residential structures and buildings open to the public is 45 dB DNL, consistent with the Kahului Airport Noise Compatibility Program[4]. The L1 site recorded 63.7 dB DNL over the 7-day measurement period, accounting for both daytime and nighttime aircraft noise. Accordingly, exterior building construction should target a minimum of 20 dB noise reduction through glazing, wall, and partition assemblies.

Given these levels, the minimum specification for window glazing is STC 32/OITC 25 rated windows, glazed with standard 1" IGU (consisting of two layers of 1/4" glazing separated by a 1/4" air space, STC 35/OITC 28). This construction is estimated to provide 18–20 dB of noise reduction and would reduce exterior aircraft noise to levels at or below the background noise criteria for residential units.

Where sliding glass lanai doors are incorporated into residential units, select assemblies for which acoustic performance testing has been provided by the manufacturer for the complete door assembly; do not make selections based on the expected acoustic performance of the glazing configuration alone.

Exterior partition ratings are critical to ensuring proper isolation from the exterior noise environment. Rooftop and ceiling construction of IIC/STC 45–50 as well as insulated exterior framing utilizing concrete masonry and furred gypsum will properly reduce the low-frequency content of aircraft noise. Control penetrations in rooftop areas to prevent noise leakage and ensure any necessary penetrations and ductwork are properly silenced or baffled before entering living and bedroom areas.

References

[1] Federal Aviation Administration. *Airport Noise Compatibility Planning, 14 CFR Part 150*. U.S. Department of Transportation, Washington, D.C., 2024. Federal Aviation Regulations (current codification).

[2] Hawaii Department of Health. Community noise control. Hawaii Administrative Rules, Title 11, Chapter 46, September 1996. HAR §11-46. Governs stationary noise sources and agricultural/construction/industrial equipment. Does not apply to aircraft operations.

[3] State of Hawaii. *Disclosure Requirements for Real Estate Transactions, HRS Chapter 508D*. Hawaii State Legislature, Honolulu, Hawaii, 2024. Hawaii Revised Statutes. Section 508D-15 requires disclosure for properties within FAA Part 150 noise exposure areas (55 DNL boundary).

[4] State of Hawaii, Department of Transportation, Airports Division. Kahului airport noise compatibility program. Technical report, State of Hawaii, Department of Transportation, Airports Division, Honolulu, Hawaii, August 1996. FAA-approved Part 150 Study. FAA Record of Approval effective August 30, 1996. Federal Register notice October 7, 1996, Vol. 61, No. 196.

[5] U.S. Congress. Airport noise and capacity act of 1990. Public Law 101-508, Title IX, Subtitle D, 104 Stat. 1388-353, 1990. Codified at 49 U.S.C. §§ 47521–47533.

[6] U.S. Department of Transportation, Federal Aviation Administration and State of Hawaii, Department of Transportation, Airports Division. Kahului airport improvements, kahului, maui, Hawaii: Final environmental impact statement, volume II of V. Final Environmental Impact Statement State Project No. AM1011-07, U.S. Department of Transportation, Federal Aviation Administration and State of Hawaii, Department of Transportation, Airports Division, Honolulu, Hawaii, September 1997.

[7] U.S. Department of Transportation, Office of Inspector General. Airport noise compatibility planning can be improved. Audit Report AV-2001-012, U.S. Department of Transportation, Washington, D.C., 2000.

APPENDIX A

FIGURES

Project Site and Noise Measurement Locations



Legend

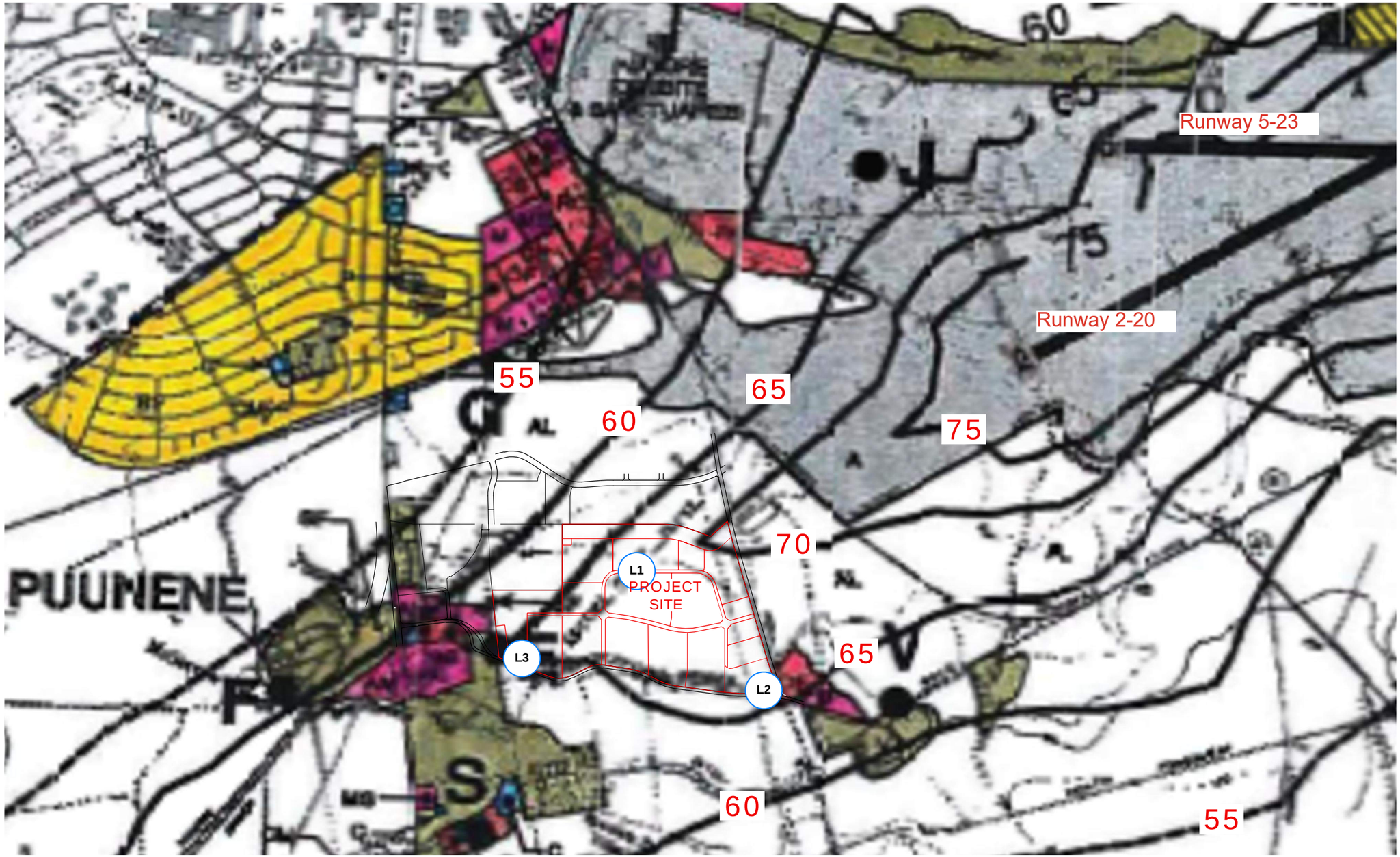
L1 - **Long Term Noise Measurement Location**

C1 - **CadnaA Calculated Noise Receptor**

D. L. ADAMS ASSOCIATES acoustics | performing arts | technology	PROJECT: Ho'onani Village Development		
	PROJECT NO: 24-093	DATE: April 2025	Figure 1

FIGURE 22 – NOISE CONTOUR SITE PLAN OVERLAY

HO'ONANI VILLAGE



NOTE: NOISE CONTOURS ARE 1993 LDN CONTOURS FROM THE BASE YEAR (1993) NOISE EXPOSURE MAP: KAHULUI AIRPORT, FAR PART 150 AIRPORT, NOISE COMPATIBILITY PROGRAM. THE OVERLAY IS A BEST APPROXIMATION FOR THE PROJECT SITE LOCATION.

SCALE
1500 0 750 1500
1 INCH = 1500 FEET

PIONEER DESIGN GROUP – HAWAII LLC
CIVIL ENGINEERING · LAND USE PLANNING
CONSTRUCTION MANAGEMENT
HONOLULU, HAWAII PH: 808.4005959
WWW.PD-GRP.COM

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Drawn by TCC
Reviewed by TCC
Project No. H109-001
Horiz. Scale: 1"=1500'
Vert. Scale:
Date
Date 01/2026
Date 01/2026
REF.

Project
HO'ONANI VILLAGE

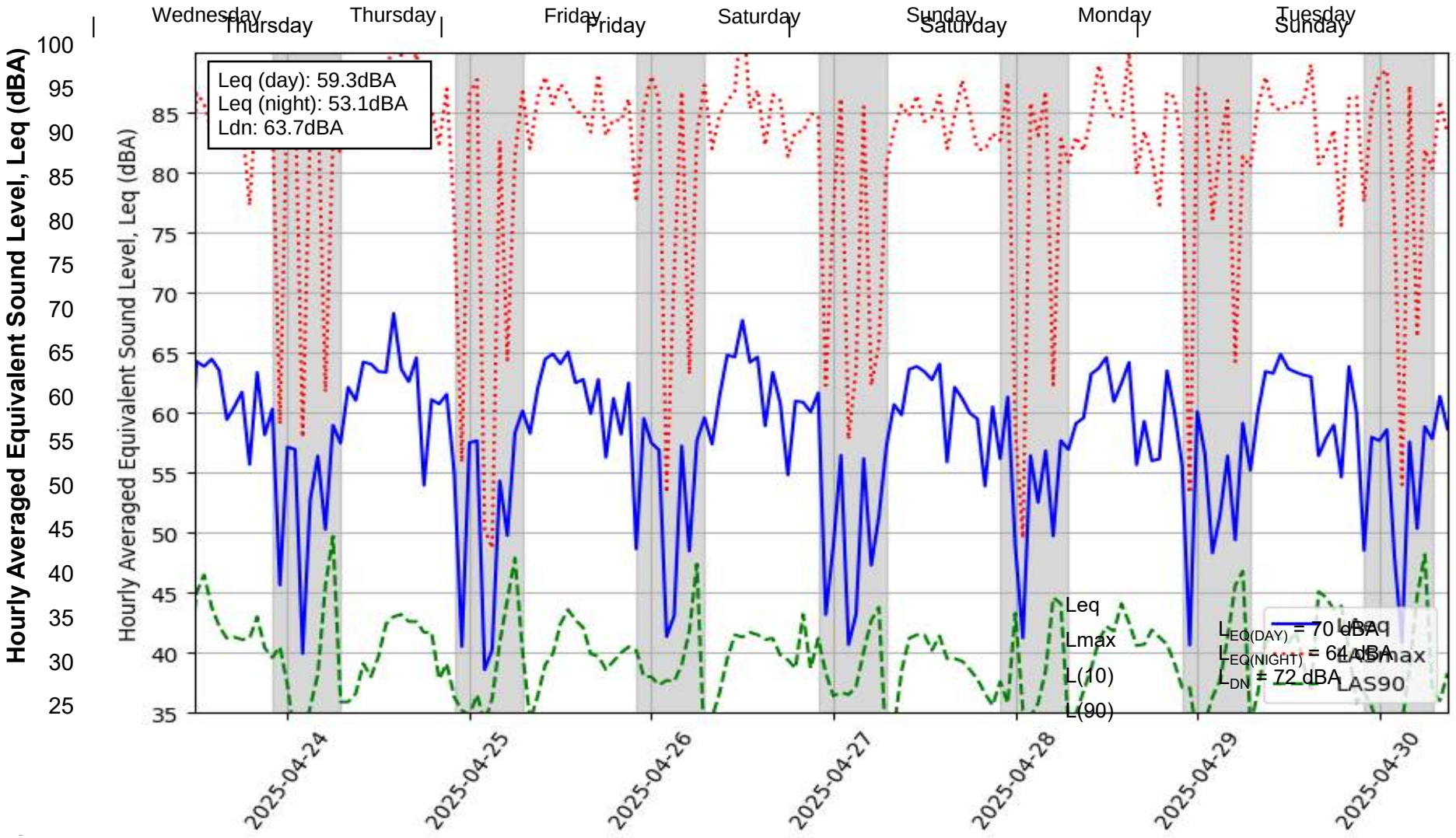
No.
H109-001

Type
PLANNING

Figure 2

B:\Projects\PDGHAWAII\H109-001\Planning\EIS\Exhibits\CAD Files\FIG 20 NOISE CONTOUR.dwg 1/28/2026 6:32:11 PM

L1 - Long Term Measurement Location
L4 - Salt Lake Boulevard & Bougainville Drive



Date & Time of Measurement

Date & Time of Measurement

L_{eq}: Equivalent Sound Level - Logrithmic average of sound levels of time.
L_{max}: Maximum Noise Level - Highest noise level reached during each hourly measurement
L_{90}: Ambient Noise Level: Highest noise level exceeded 90% of each hourly recording.

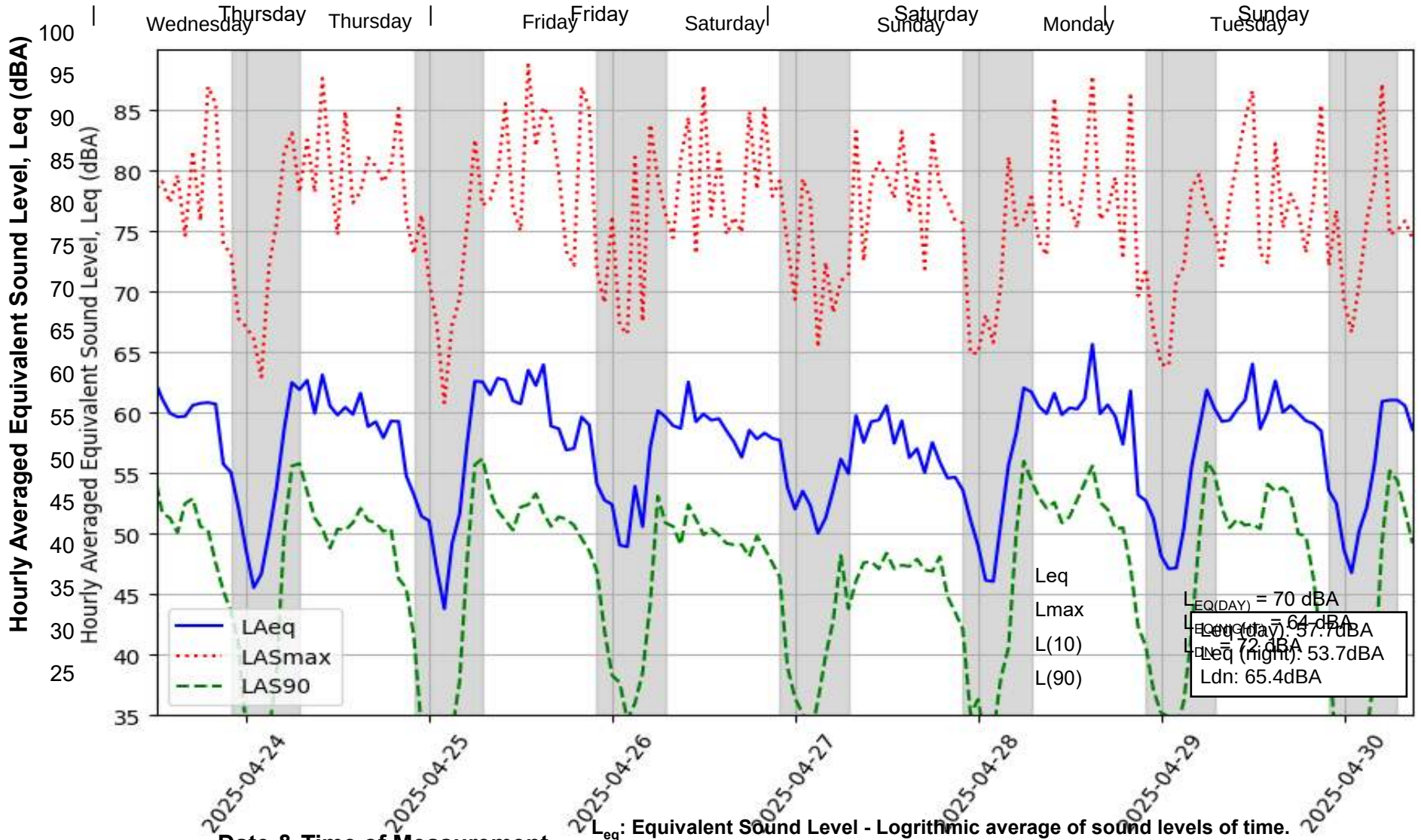
L_{eq}: Equivalent Sound Level - Logrithmic average of sound levels of time.
L_{max}: Maximum Noise Level - Highest noise level reached during each hourly measurement
L_{90}: Ambient Noise Level: Highest noise level exceeded 90% of each hourly recording.

PROJECT:

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PROJECT:	Halawa Pipeline EA		
PROJECT NO:	Ho'onani Village Development Project	DATE:	FIGURE:
PROJECT NO: 21-050		DATE: July 2022	FIGURE: 6
24-093		April, 2025	3

L2 - Long Term Measurement Location
L4 - Salt Lake Boulevard & Bougainville Drive



Date & Time of Measurement

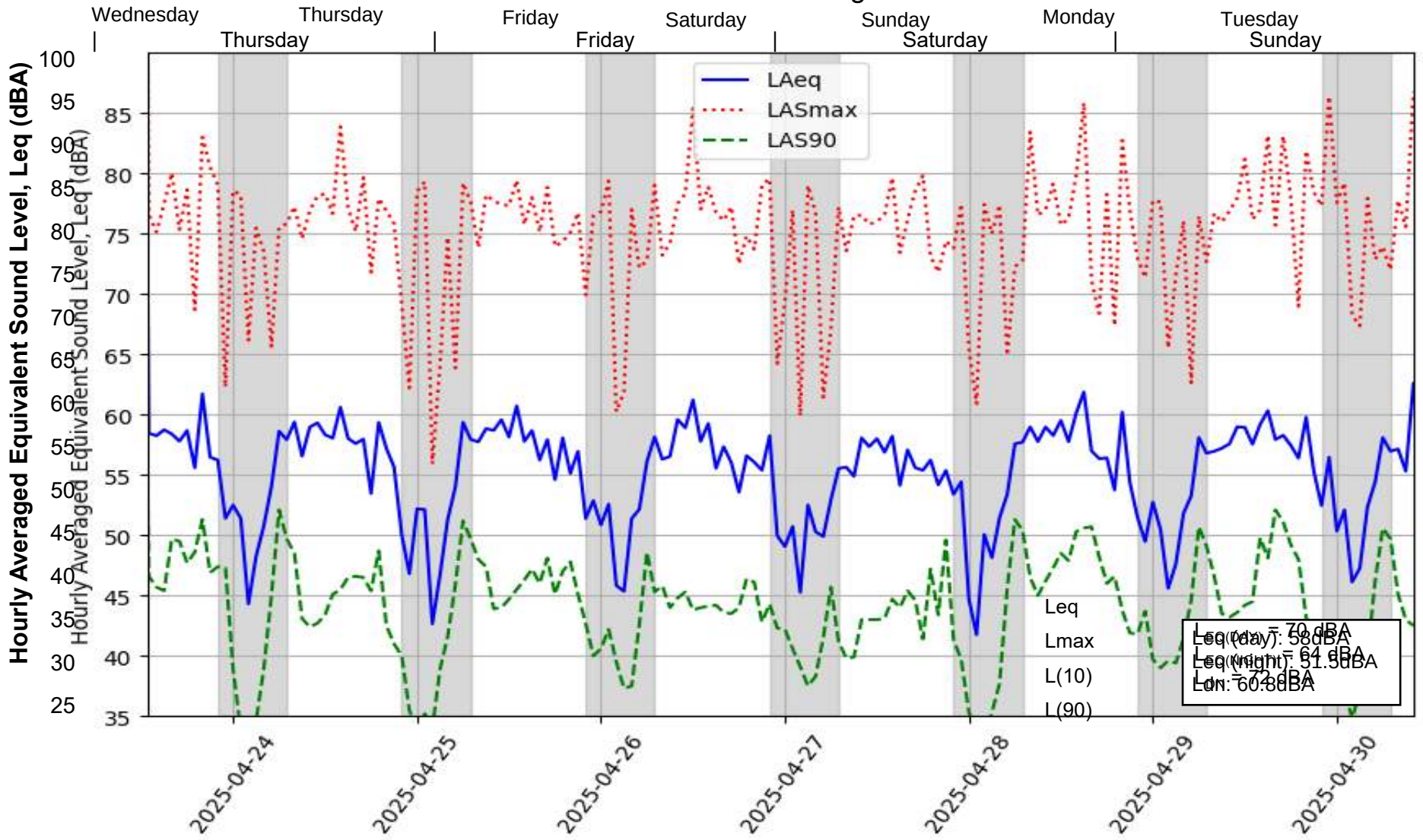
L_{eq}: Equivalent Sound Level - Logrithmic average of sound levels of time.
L_{max}: Maximum Noise Level - Highest noise level reached during each hourly measurement
L_{eq}: Equivalent Sound Level - Logrithmic average of sound levels of time.
L_{90}: Ambient Noise Level: Highest noise level exceeded 90% of each hourly recording.
L_{max}: Maximum Noise Level - Highest noise level reached during each hourly measurement
L_{90}: Ambient Noise Level: Highest noise level exceeded 90% of each hourly recording.

PROJECT: Halawa Pipeline EA

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PROJECT:	Ho'onani Village Development Project		
PROJECT NO:	DATE:	FIGURE:	
PROJECT NO: 21-050	DATE: July 2022	FIGURE: 6	
24-093	April, 2025	4	

L3 - Long Term Measurement Location
L4 - Salt Lake Boulevard & Bougainville Drive



Date & Time of Measurement

Date & Time of Measurement

L_{eq}: Equivalent Sound Level - Logrithmic average of sound levels of time.

L_{max}: Maximum Noise Level - Highest noise level reached during each hourly measurement

L_{eq}: Equivalent Sound Level - Logrithmic average of sound levels of time.

L_{90}: Ambient Noise Level: Highest noise level exceeded 90% of each hourly recording.

L_{max}: Maximum Noise Level - Highest noise level reached during each hourly measurement

L_{90}: Ambient Noise Level: Highest noise level exceeded 90% of each hourly recording.

PROJECT: Halawa Pipeline EA

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PROJECT:	Ho'onani Village Development Project		
PROJECT NO: 21-050 24-093	DATE: July 2022 April, 2025	FIGURE: 6 5	

Table 4-2 State Department of Transportation Recommendations for Local Land Use Compatibility Expressed in Yearly Day-Night Average Sound Levels (Ldn).

RECEIVED
01/12/2026
10:29 am
STATE OF HAWAII
LAND USE COMMISSION

TYPE OF LAND USE	Yearly Day-Night Average Sound Level < 60	60-65	65-70	70-75	75-80	80-85
RESIDENTIAL:						
Low density residential, resorts, & hotels (w/ outdoor facil).	Y(a)	N(b)	N	N	N	N
Low density apartment w/ moderate outdoor use	Y	N(b)	N	N	N	N
High density apartment with limited outdoor use	Y	N(b)	N(b)	N	N	N
Transient lodgings (w/ limited outdoor use)	Y	N(b)	N(b)	N	N	N
PUBLIC USE:						
Schools, day care centers, libraries, and churches	Y	N(c)	N(c)	N(c)	N	N
Hospitals, nursing homes, clinics, and health facilities	Y	Y(d)	Y(d)	Y(d)	N	N
Indoor auditoriums and concert halls	Y(c)	Y(c)	N	N	N	N
Government services and office bldgs.serving the public	Y	Y	Y(d)	Y(d)	N	N
Transportation and parking	Y	Y	Y(d)	Y(d)	Y(d)	Y(d)
COMMERCIAL AND GOVERNMENT USE:						
Offices—government, business, and professional	Y	Y	Y(d)	Y(d)	N	N
Wholesale & Retail: bldg.mater.,hardware, & heavy equip..	Y	Y	Y(d)	Y(d)	Y(d)	Y(d)
Airport businesses—car rental, ticketing, lei stands, etc..	Y	Y	Y(d)	Y(d)	N	N
Retail trade,restaurants,shp.centers,financial institute.etc.	Y	Y	Y(d)	Y(d)	N	N
Power plants, sewage treatment plants, & base yards.	Y	Y	Y(d)	Y(d)	Y(d)	N
Studios w/o outdoor sets, broadcasting & Production facil.	Y(c)	Y(c)	N	N	N	N
MANUFACTURING, PRODUCTION AND STORAGE:						
Manufacturing, general	Y	Y	Y(d)	Y(d)	Y(d)	N
Photographic and optical	Y	Y	Y(d)	Y(d)	N	N
Agriculture (except livestock) and forestry	Y	Y(e)	Y(e)	Y(e)	Y(e)	Y(e)
Livestock farming and breeding	Y	Y(e)	Y(e)	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
RECREATIONAL USE:						
Outdoor sports arenas and spectator sports	Y	Y(f)	Y(f)	N	N	N
Outdoor music shells, amphitheaters	Y(f)	N	N	N	N	N
Nature exhibits and zoos, neighborhood parks	Y	Y	Y	N	N	N
Amusements, beach parks, active playgrounds, etc.	Y	Y	Y	Y	N	N
Public golf courses, riding stables, cemeteries, gardens, etc.	Y	Y	N	N	N	N
Professional/resort sports facil., media event facil., etc.	Y(f)	N	N	N	N	N
Extensive natural wildlife and recreation areas	Y(f)	N	N	N	N	N

Note: Letters in parentheses refer to following notes.

(a) A noise level of 60 Ldn does not eliminate all risks of adverse noise impacts from aircraft noise. However, the 60 Ldn planning level has been selected by the State Airports Division as an appropriate compromise between the minimal risk level of 55 Ldn and the significant risk level of 65 Ldn.

(b) Where the community determines that these uses should be allowed, Noise Level Reduction (NLR) measures to achieve interior levels of 45 Ldn or less should be incorporated into building codes and be considered in individual approvals. Normal local construction employing natural ventilation can be expected to provide an average NLR of approximately 9 dB. Total closure plus air conditioning may be required to provide additional outdoor to indoor NLR, but will not eliminate outdoor noise problems.

(c) Because the Ldn noise descriptor system represents a 24-hour average of individual aircraft noise events, each of which can be unique in respect to amplitude, duration, and tonal content, the NLR requirements should be evaluated for the specific land use, interior acoustical requirements, and properties of the aircraft noise events. NLR requirements should not be based solely upon the exterior Ldn exposure level.

(d) Measures to achieve required NLR must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.

(e) Residential buildings require NLR. Residential buildings should not be located where exterior noise is greater than 65 Ldn.

(f) Impact of amplitude, duration, frequency, and tonal content of aircraft noise events should be evaluated.

Abbreviations:
Y(Yes) = Land Use and related structures compatible without restrictions.
N(No) = Land Use and related structures are not compatible and should be prohibited.

Source: Airports Division, Department of Transportation, State of Hawaii

FIGURE 7

APPENDIX B

Photographs of Sound Level Meter Locations

Noise Measurement Location L1





Image Description: Sound level meter with windscreen in an open field.

Noise Measurement Location L2





Image Description: Sound level meter with windscreen in a field next to a roadway.

Noise Measurement Location L3





Image Description: Sound level meter with windscreen in a field under a tree.

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Environmental Assessment: Construction and Traffic Noise

Ho‘onani Village Development

Kahului, Maui, Hawaii

April 2025
Revised February 2026

DLAA Project No. 24-093

Prepared for:

Ho‘onani Development, LLC.
P.O. Box 330449
Kahului, HI 96733

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ACOUSTIC TERMINOLOGY GLOSSARY

dB: A decibel, commonly abbreviated as dB, represents the ratio between 2 sound pressure levels. The scale used is logarithmic which is a close approximation to the response of the human ear. For reference, a difference of 3 dB is considered just perceptible to the average person, while 10 dB is considered to be twice as loud (or half as loud).

dBA: The human ear has been shown to be significantly more sensitive to some frequencies than others. The dBA weighting is a “filter” which, under typical noise levels, can be used to convert absolute noise levels at all frequencies into an approximation for human hearing. It is widely used throughout the world as the standard weighting for assessing noise complaints, hearing loss, sleep disturbance, and other issues. Typical noise levels include:

0 dBA – Threshold of human hearing
25 dBA – Soft Whisper at 3 feet
50 dBA – Typical office
70 dBA – Downtown city ambient noise
90 dBA – OSHA mandated hearing protection for 8-hour exposure
115 dBA – Loud rock concert

DNL: The Day-Night Equivalent Sound Level, DNL, is the Equivalent Sound Level, Leq, measured over a 24-hour period. However, a 10 dB penalty is added to the noise levels recorded between 10 p.m. and 7 a.m. to account for people’s higher sensitivity to noise at night when the background noise level is typically lower. The DNL is a commonly used noise descriptor in assessing land use compatibility, and is widely used by federal and local agencies and standards organizations.

Leq: The Equivalent Sound Level (Leq) is a type of average which represents the steady level that, integrated over a time period, would produce the same energy as the actual signal. The actual instantaneous noise levels typically fluctuate above and below the measured Leq during the measurement period. The A-weighted Leq is a common index for measuring environmental noise.

L90, L10: Statistical sound levels of long-term noise producing activities such as traffic movement, aircraft operations, etc., can vary considerably with time. In order to obtain a single number rating of such a noise source, a statistically-based method of expressing sound or noise levels has been developed. It is known as the Exceedance Level, Ln. The Ln represents the sound level that is exceeded for 90/10 percent of the measurement time period. For example, L10 = 60 dBA indicates that for the duration of the measurement period, the sound level exceeded 60 dBA 10 percent of the time. Commonly used Exceedance Levels include L01, L10, L50, and L90, which are widely used to assess community and environmental noise.

LMax: The maximum, instantaneous noise level recorded during a measurement period.

STC: The Sound Transmission Class (STC) represents the lab-measured level of airborne sound attenuation provided between one space and another by an individual building element, such as a wall construction, door, or window assembly. Frequencies between 125 Hz and 5000 Hz are used; however, the reference curve used to evaluate the STC rating is based on speech privacy and is typically not a good indicator of

low-frequency music or mechanical noise attenuation.

IIC: Apparent Impact Insulation Class (AIIC), formerly referred to as FIIC, refers to the field measurement of IIC. Field AIIC ratings are typically 5 points lower than lab IIC ratings. AIIC is measured by setting up a standardized tapping machine on an upper-level floor which repeatedly drops small hammers onto the ground and noise levels are measured in the space directly below and normalized based on room absorption.

OITC: Outdoor-Indoor Transmission Class is similar to STC; however, the reference curve is based on typical outdoor noise sources such as traffic, aircraft, and trains, making it a significantly better indicator of low-frequency attenuation. Typically used to rate the sound isolation properties of building shell elements such as curtain walls.

EXECUTIVE SUMMARY

The proposed action is the development of Ho‘onani Village, envisioned as a high-density, master-planned, mixed-use community in the Pu‘unene-Kahului area of Central Maui on teh current vacant, fallow agricultural lands. Ho‘onani Village proposed will consist of a mixed-use development with approximately 1,608 multi-family residential housing units, along with a blend of commercial, office, retail, restaurant, entertainment, light industrial, and hospitality uses on an approximately 166.512-acre site in Kahului. The site is currently zoned "AG-Agriculture" by the County of Maui. A change in zoning is being pursued to rezone the project site to "M-1 Light Industrial" to achieve land use compatibility with the proposed mixed-uses.

Ambient Leq noise levels measured in the community surrounding the Ho‘onani Village Development project site ranged from 53 dBA for nighttime hours to 59 dBA during the day, with measured DNL levels as high as 65.4 dBA. The site of the proposed action is currently zoned as AG Zoning, indicating agricultural land. AG Zoning districts are considered Class C, according to the Hawaii Department of Health, Hawaii Administrative Rules, Title 11, Chapter 46, Community Noise Rule, requiring a maximum property line noise level of 70 dBA during daytime hours (7am to 10pm) and 60 dBA at night (10pm to 7am). The proposed project would include multi-family businesses, commercial and hotel uses likely to be zoned Class B, which has a maximum property line noise level of 60 dBA during daytime hours and 50 dBA at night[5].

Seven-day continuous noise monitoring at three locations across the project site measured Day-Night Average Sound Levels (DNL) ranging from 60.1 to 63.7 dB, confirming that aircraft operations on Kahului Airport’s Runway 2-20 are the dominant source of noise exposure. The measured values place the project site within the 60–65 DNL range, below the FAA Part 150 residential compatibility threshold of 65 DNL but above the more restrictive Hawaii Department of Transportation threshold of 60 DNL[3].

Note: Aircraft noise characterization, field measurement methodology, and building envelope mitigation recommendations are addressed in the companion ***Environmental Assessment: Aircraft Noise*** *report.*

Construction noise levels were predicted using the CadnaA noise modeling software at residential and preservation noise receptor locations adjacent to the locations of the proposed action, and must comply with the HDOH Community Noise Control Rule [5], which stipulates maximum permissible noise limits at the property line. Construction noise levels at the nearest receiver locations are expected to increase but not exceed the Federal Transit Authority’s (FTA) noise impact thresholds of 80 dBA for residential land uses [4]. Noise levels may increase by up to 4 decibels (dB) over existing daytime noise levels in areas adjacent to construction activities occurring within the project site.

Traffic noise and its predicted effects with and without the project generally was seen to increase predicted road noise, but not above levels deemed to be impactful to the surrounding residential areas or the future residents of the Development.

1 PROJECT DESCRIPTION

The proposed action is the construction of a high-density, master-planned, mixed-use community in the Pu‘unēnē-Kahului area of Central Maui on currently vacant, fallow agricultural lands. As proposed, Ho‘onani Village will have approximately 1,608 multi-family residential housing units along with a blend of commercial (office, retail, restaurant, entertainment), light industrial, and hospitality uses on an on an approximately 166.512-acre site in Kahului (the project site). The site of the proposed action is in a rural area that is zoned as AG zoning, indicating Agricultural land. Nearby zoning districts are classified as Commercial Mixed Use and M-2 Heavy Industrial. AG zoning districts are considered Class C according to The Hawaii Department of Health Hawaii Administrative Rules Title 11 Chapter 46 Community Noise Rule, requiring a maximum property line noise level of 70 dBA during daytime hours (7AM to 10PM) and 50 dBA at night (10PM to 7AM). The proposed project would be a multi-family area, likely to be zoned Class B, which has a maximum property line noise level of 60 dBA during daytime hours and 50 dBA at night [5].

Compliance with the HDOH Community Noise rule is a regulatory requirement. The values and criteria stated in the community response tables herein should not be considered regulatory requirements because they are not associated with a specific governing document for the proposed action. However, these tables are useful in assessing the human perception of overall construction noise levels and general changes in sound levels, and they are considered supplemental information to the governing State of Hawaii Community Noise Control Rule, which does not discuss community response to changes in noise levels or overall noise levels from construction activities.

1.1 State of Hawaii, Community Noise Control (HDOH)

The State of Hawaii Community Noise Control Rule [5] defines three classes of zoning districts and specifies corresponding maximum permissible sound levels due to stationary noise sources such as air-conditioning units, exhaust systems, generators, compressors, pumps, etc. The Community Noise Control Rule does not address most moving sources, such as vehicular traffic noise, aircraft noise, or rail transit noise. However, the Community Noise Control Rule does regulate noise related to agricultural, construction, and industrial activities, which may not be stationary. In general, the HDOH Community Noise Rule only assesses the impact of a construction project as it relates to nuisance and hours of allowed activity and therefore does not state a maximum allowable noise level for the activities after a noise permit and/or variance has been granted.

The maximum permissible noise levels for stationary mechanical equipment and construction noise are enforced by the State HDOH for any location at or beyond the property line and shall not be exceeded for more than 10 percent (%) of the time during any 20-minute period. The specified noise limits which apply are a function of the zoning and time of day as shown in Figure 1. In determining the maximum permissible sound level, the background noise level is taken into account by HDOH; in cases where the existing ambient level is already higher than the HDOH maximum permissible noise levels, the noise generated by the activities is normally allowed to be equal in level to the existing ambient environment.

1.2 Hawaii Department of Transportation (HDOT), Airports Division

The State of Hawaii, Department of Transportation, Airports Division has adopted noise restrictions similar to the FAA's, but more strict [8]. Similar to the FAA, HDOT expresses land use compatibility guidelines based on yearly day-night average sound levels, Ldn, due to aircraft operations. In most cases, the HDOT states maximum noise limits that are 5 dB lower than the FAA. For example, the HDOT states that residences outside of the 60 Ldn noise contour are compatible. Residences between 60 and 70 Ldn contours are only compatible if noise mitigation treatments are implemented. However, HDOT states:

> "Where the community determines that these uses must be allowed, Noise Level Reduction (NLR) measures to achieve interior levels of 45 Ldn, or less should be incorporated into building codes and be considered in individual approvals. Normal local construction employing natural ventilation can be expected to provide an average NLR of approximately 9 dB. Total closure, plus air conditioning, may be required to provide additional outdoor to indoor NLR, and will not eliminate outdoor noise problems."

The HDOT guidelines also specify 60 dBA as the maximum allowable Ldn level for school, day care center, and church uses without any mitigation measures. Commercial uses such as retail shops, restaurants, shopping centers, etc. are compatible with Ldn levels up to 65 dBA without any mitigation measures. With noise mitigation measures implemented, such commercial uses are allowed in areas exposed to an Ldn as high as 75 dBA.

In addition to the HDOT compatibility guidelines, The Hawaii Revised Statutes, Chapter 508D, Section 15 states a notification is required to the buyer for real estate property that lies within the boundaries of the noise exposure area shown on maps prepared by the department of transportation in accordance with Federal Aviation Regulation Part 150–Airport Noise Compatibility Planning (14 Code of Federal Regulations Part 150) for any public airport. The FAR Part 150 noise exposure area boundary is defined as the 55 Ldn noise contour. Therefore, a notification to the buyer is required for all real estate transactions within the 55 Ldn noise contour.

Note: A full analysis of aircraft noise impacts relative to HDOT standards, including field measurement results and building envelope mitigation requirements, is presented in the companion ***Environmental Assessment: Aircraft Noise*** *report.*

1.3 Community Response to Change in Noise Level

Human sensitivity to changes in sound pressure level is highly individualized. Sensitivity to sound depends on frequency content, time of occurrence, duration, and psychological factors such as emotions and expectations. However, the average ability of an individual to perceive changes in noise levels is well documented and has been summarized in previous studies [9, 2]. These guidelines permit direct estimation of an individual's probable perception of changes in noise levels.

A commonly applied criterion for estimating a community's response to changes in noise level is the "community response scale" proposed by the International Standards Organization (ISO) [6]. This scale

relates changes in noise level to the degree of community response and allows for direct estimation of the probable response of a community to a predicted change in noise level. The values are based on statistical analysis of previous projects that increased ambient noise levels in the surrounding community, and therefore are only a rule of thumb for estimating community response and not a prediction of this specific proposed action's expected community response.

2 EXISTING ACOUSTICAL ENVIRONMENT

Continuous long-term ambient noise level measurements were conducted to assess the existing acoustical environment in the vicinity of the proposed action. Long-term measurements (taken continuously over the course of multiple days) offer a baseline for establishing existing ambient noise levels in the area and are used for estimating future noise levels by adding the ambient levels to other noise levels generated from the proposed action.

*Note: Full measurement methodology, instrumentation details, location descriptions, and graphical results (Figures 3–5) are presented in the companion **Environmental Assessment: Aircraft Noise** report. The summary results below are reproduced here to provide context for the construction and traffic noise analyses.*

2.1 Long-Term Noise Measurement

Ambient noise level measurements were conducted at each location from April 23 to April 30, 2025 to assess the existing acoustical environment on or near the proposed action. Continuous, hourly equivalent sound levels, Leq, were recorded at each location. The measurements were taken using Larson-Davis, Model 831 Type 1 Sound Level Meters. Calibration was checked before and after the measurements with a Larson-Davis Model CAL200 calibrator. The sound level meters and the calibrators have been certified by the manufacturer within the recommended 2-year calibration period. A windscreen covered the microphone during the entire measurement period and the sound level meter was secured in a weather-resistant case.

2.1.1 Long-Term Noise Measurement Locations

Figure 2 provides a site map overview annotated with labels corresponding to the long-term monitoring locations. These measurement locations were selected to evaluate the current aircraft noise environment from Kahului Airport, as well as the vehicular traffic noise from the surrounding area.

Location 1 (L1): The sound level meter was located at the rough center of the planned project site, at the closest location to the flight line of Kahului Airport. The microphone was mounted approximately 5.5 feet above grade.

Location 2 (L2): The sound level meter was located on the east side of the intersection of Pulehu Road and Hansen Road. This location is outside of the 55 DNL contour of Kahului Airport. The microphone was mounted approximately 5 feet above grade.

Location 3 (L3): The sound level meter was located along the north side of Hansen Road. The microphone was mounted approximately 5 feet above grade.

2.1.2 Long-Term Noise Measurement Results

The measured Leq, L90 and Lmax, in dBA are graphically presented in Figures 3 through 5 for each location. The Leq during the day (7:00 AM to 10:00 PM) and during the night (10:00 PM to 7:00 AM) and average calculated day-night level, Ldn, are summarized for each location in Table 1.

Table 1: Summary of Long-Term Noise Measurement Results (dBA)

Measurement Location	Average Daytime Leq	Average Nighttime Leq	Average DNL	Dominant Source
L1	59.3	53.1	63.7	Aircraft
L2	57.7	53.7	65.4	Mixed (aircraft/trucks)
L3	58.0	51.5	60.8	Mixed (aircraft/vehicles)

Note: Values represent averages over the 7-day measurement period.

Average existing daytime and nighttime noise levels are quite similar across the site, with the highest Leq recorded at L1, central to the project site. However, the highest Ldn of 65.4 dBA was recorded at L2, indicating that the traffic noise of large trucks coming to and from the nearby recycling facility are also a significant noise source in this area.

According to historical weather data, average wind speeds were between 9 and 6 mph, with no precipitation recorded during the measurement period. Traffic noise from aircraft, cars, trucks, and motorcycles was recorded at locations L2 and L3.

Location L2 represents areas on the project in proximity to nearby road noise. This location also represents the commercial/heavy industrial-zoned areas nearby the project site likely to be affected by construction noise and increased traffic due to the project activity. Daytime levels measured here were slightly higher than other locations, likely due to large vehicle traffic observed entering and exiting the nearby landfill area.

Location L3 represents receptors along the south perimeter of the project likely to be affected by increases in traffic based on project activity. The highest noise levels recorded here are approximately 60 dBA, which is slightly higher than daytime Leq limits for its zoning.

3 PROJECT SITE NOISE IMPACTS

*Note: Aircraft noise impacts, noise contour analysis, and exterior glazing and building envelope mitigation recommendations are addressed in the companion **Environmental Assessment: Aircraft Noise** report.*

3.1 Construction Noise

The proposed action will involve mass grading, excavation, and pouring concrete foundations, which utilize various types of construction equipment, as described in Table 2 below. Although specific equipment that will be used has not been finalized, the equipment described below represents a reasonable approximation of the type of equipment that will be used.

Table 2: General Construction Operations and Equipment

Equipment	Usage Factor	Lmax at 50 ft (dBA)
Excavator	0.40	85
Motor Grader	0.40	85
Dozer	0.40	82
Compactor	0.20	80
Concrete Pump	0.20	82
Concrete Mixer	0.55	79
Generator	0.50	76
Paver	0.50	77

Notes:

The acoustical usage factor is an estimate of the fraction of time each piece of construction equipment is operating at full power (i.e., the equipment will be operating in its loudest condition). The usage factor values are based on the Federal Highway Administration Roadway Construction Noise Model (RCNM) [1] database. Where exact matches were not available in the RCNM, DLAA approximated noise levels based on equipment with similar functions.

The A-weighted maximum sound level (Lmax) values are based on the RCNM construction equipment noise database.

The noise levels listed in Table 2 represent the A-weighted maximum sound level (Lmax), measured 50 feet from the construction equipment. Noise levels are presented as worst-case noise levels that are expected from individual equipment and construction operations and not representative of the overall continuous noise levels. The projected worst-case noise levels are expected to be short-term in their nature when compared to the project overall schedule.

The construction operations currently proposed for the project include: mass grading, excavation for foundations, utility installation, site improvements for concrete work, concrete foundation work for slab-on-grade construction, framing, and vertical construction. The earthwork accomplished by Excavators and Motor Graders, as well as concrete pouring equipment, are expected to be the loudest pieces of equipment during their respective phases. However, the actual noise levels produced during construction will be a

function of the methods employed during each stage of the construction process, the duration of construction activities, and the number of pieces of equipment used.

3.2 CadnaA Modeled Noise Receptors – Construction Noise Impact

The Datakustik CadnaA noise prediction software [1] model was used to estimate the construction noise level and impacts at residences within the community adjacent to the project site. These receptors are expected to experience the loudest noise levels during construction operations and are identified as C1 and C2 in this report.

3.2.1 Modeled Noise Receptor Locations

Commercial Receptor – 100 Ho‘okele St (C1): C1 is a modeled analysis receptor at the beginning of the parking lot area of the commercial uses, closest to the project site. Existing noise levels at C1 are calculated using the CadnaA model and represent commercial uses west of the project site most likely to be affected by construction operations.

Commercial Receptor – 1090 Ho‘okele St (C2): C2 is a modeled analysis receptor at the northernmost edge of the project site. Existing noise levels at C2 are calculated using the CadnaA model and represent commercial uses in proximity to the project site most likely to be affected by construction operations.

Table 3 below summarizes the results of the construction noise analysis for receptors located at the CadnaA Modeled Receptors C1 and C2. Detailed noise contours for existing and projected conditions can be provided as needed.

Table 3: Construction Noise Analysis Results

Receptor	Distance to Activity	Existing Leq (dBA)	Predicted Increase (dB)	FTA Threshold (dBA)
C1 – 100 Ho‘okele St	∼600 ft	∼57	+4.1	80
C2 – 1090 Ho‘okele St	∼900 ft	∼57	∼+1	80

Notes:

The distance noted is the approximate distance from the noise receptor to the location of the nearest proposed construction activities.

The predicted construction noise levels are represented as Leq and take into account the usage factor of each piece of equipment, as defined by the RCNM construction equipment database. The construction noise levels were modeled for all construction phases.

Locations C1 and C2 existing ambient noise levels are calculated using CadnaA.

3.2.2 Modeled Construction Noise Results

At all the modeled receivers, the maximum predicted construction noise increase is 4.1 dBA at C1, with the other locations only increasing in noise by approximately 1 dBA. These increases will result in increased

ambient noise levels that will be perceptibly louder during construction operations but will not be overly impactful to the surrounding community. This level of noise increase is not expected to require extensive mitigations, and proper scheduling of equipment usage is the best way to reduce any impact it may have.

4 TRAFFIC NOISE PREDICTION

The existing road conditions were modeled for peak hour AM (10:00 AM) and PM (4:00 PM) traffic and a vehicular traffic noise analysis was completed at the C1 and C2 modeled receiver locations using the CadnaA noise prediction software [1]. Noise projections were calculated for the same receiver locations during the peak-hour AM and PM traffic for the “2025 With Project” and “2035 Without Project” analysis scenarios, with the results shown in Table 4 below.

Table 4: Modeled Vehicular Traffic Noise – Community Receptors

Receptor	Scenario	Day Change (dB)	Night Change (dB)
C1	2025 With Project	+4.0	+4.0
C1	2035 Without Project	+4.0	+4.0
C2	2025 With Project	+3.0	+1.6
C2	2035 Without Project	Minimal	Minimal

4.1 Vehicular Traffic Noise Projection: Future With Project

At Location C1, which represents receptors along Ho‘okele Street, the highest noise levels are predicted to increase approximately 4 dBA at night and during the day. While this would be an incremental increase and noticeable, it will not be overly impactful to the surrounding community.

At Location C2, which represents receptors at the corner of Pulehu and Ho‘okele Street, the highest noise level increase is approximately 3 dBA during the daytime and 1.6 dBA at night. Noise level increases of this magnitude would be perceived as incrementally louder than ambient conditions. Increases of up to 3 dBA are generally considered imperceptible.

4.2 Vehicular Traffic Noise Projection: Future Without Project

In general, the vehicle traffic increase in the Future Without Project conditions were much lower across the modeled community receptors. The largest increases of approximately 4 dBA at C1 and C2 are in line with standard vehicle traffic increases along Ho‘okele Street [9]. These increases are noticeable, but not impactful to the community.

4.3 Vehicular Traffic Noise Projection: 2042 Build out versus 2035 prediction

Table 5: Intersection Traffic Volume Comparison

	Hansen (West of Project Site)			**Pulehu** (North of Project Site)		
	Old 2035 Analysis	New 2042 Analysis	Change	Old 2035 Analysis	New 2042 Analysis	Change
AM Background Traffic	1110	1190	80	410	l440	30
PM Background Traffic	1070	1130	60	450	l460	10
AM Project Traffic	343	490	147	224	l333	109
PM Project Traffic	460	746	286	303	l509	206

Table 6: Project Trip Generation Comparison

	Daily	AM	PM
Old 2035 Trip Gen	20314	1042	1403
New 2042 Trip Gen	19277	1059	1625
Change	-1037	17	222

These projections for the project’s anticipated 2042 build-out year were submitted post-DLAA-simulation of noise impacts, and are shown in table 5 and 6. According to the traffic consultant Fehr and Peers, they constitute an increase in roughly 6 percent of background volumes and no substantial trip generation change versus the original TIAR report traffic analysis from the 2035 projection[7].

References

[1] DataKustik GmbH. CadnaA noise prediction software, 2021.

[2] M. David Egan. *Architectural Acoustics*. McGraw-Hill Book Company, New York, 1988.

[3] Federal Aviation Administration. *Airport Noise Compatibility Planning, 14 CFR Part 150*. U.S. Department of Transportation, Washington, D.C., 2024. Federal Aviation Regulations.

[4] Federal Transit Administration. Transit noise and vibration impact assessment manual. Technical report, U.S. Department of Transportation, Federal Transit Administration, Washington, D.C., September 2018. FTA Report No. 0123.

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[6] International Standards Organization ISO/TC 43. Noise assessment with respect to community responses. Technical report, United Nations, New York, November 1969.

[7] Andrew James Scher. Ho‘onani village transportation impact analysis report. Transportation impact analysis report, Fehr & Peers, Honolulu, Hawaii, March 2026. Prepared for Ho‘onani Development, LLC. Licensed Professional Engineer No. 21822, State of Hawaii.

[8] State of Hawaii Department of Transportation, Airports Division. Honolulu international airport master plan update and noise compatibility program. Technical report, State of Hawaii Department of Transportation, Airports Division, Honolulu, Hawaii, December 1989.

[9] State of Hawaii Department of Transportation, Highways Division. Highway noise policy and abatement guidelines. Technical report, State of Hawaii Department of Transportation, Honolulu, Hawaii, April 2011.

APPENDIX A

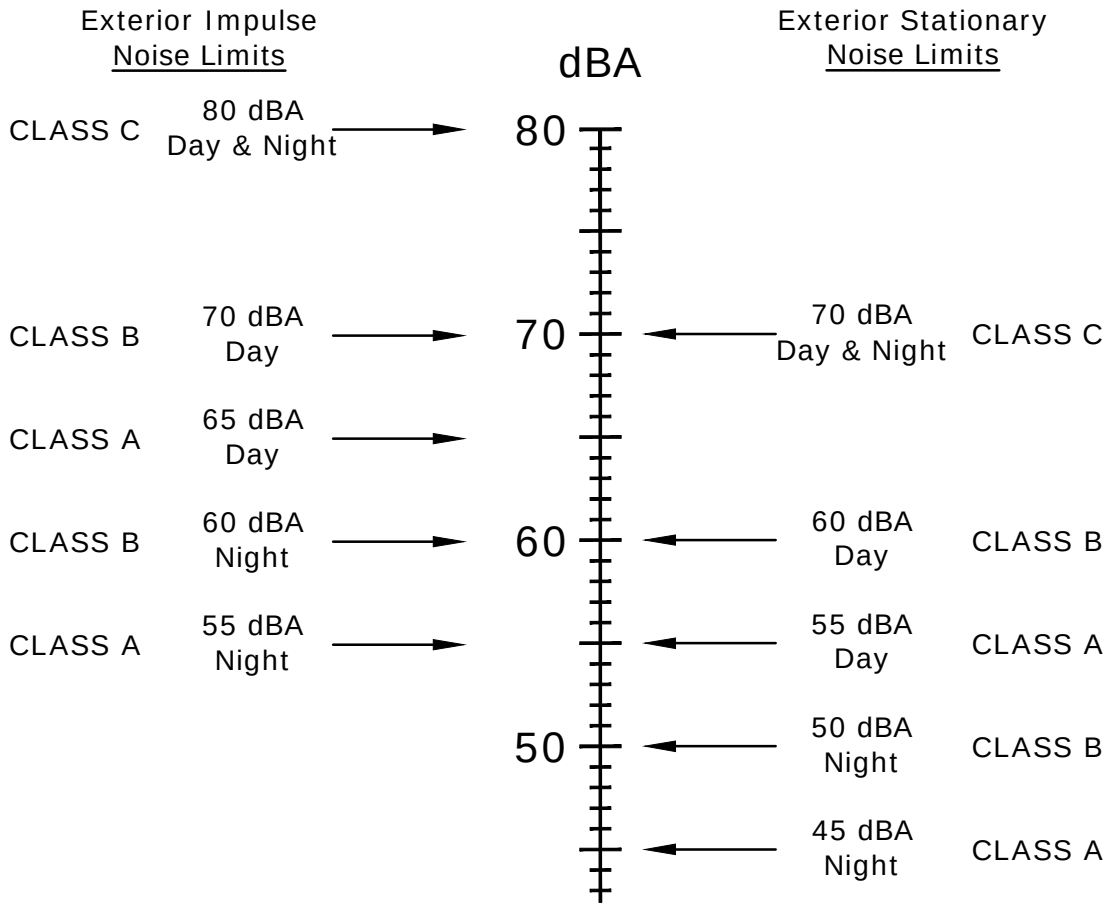
FIGURES

HAWAII DEPARTMENT OF HEALTH MAXIMUM PERMISSIBLE SOUND LEVELS FOR VARIOUS ZONING DISTRICTS

Zoning District	Day Hours (7 AM to 10 PM)	Night Hours (10 PM to 7 AM)
CLASS A Residential, Conservation, Preservation, Public Space, Open Space	55 dBA (Exterior)	45 dBA (Exterior)
CLASS B Multi-Family Dwellings, Apartments, Business, Commercial, Hotel, Resort	60 dBA (Exterior)	50 dBA (Exterior)
CLASS C Agriculture, Country, Industrial	70 dBA (Exterior)	70 dBA (Exterior)

IMPULSE NOISE:

The maximum permissible noise limit for impulse noise is 10 dBA above the stationary noise limits.



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PROJECT: Ho'onani Village Development

PROJECT NO:	DATE:	FIGURE:
24-093	April 2025	1

Project Site and Noise Measurement Locations



Legend

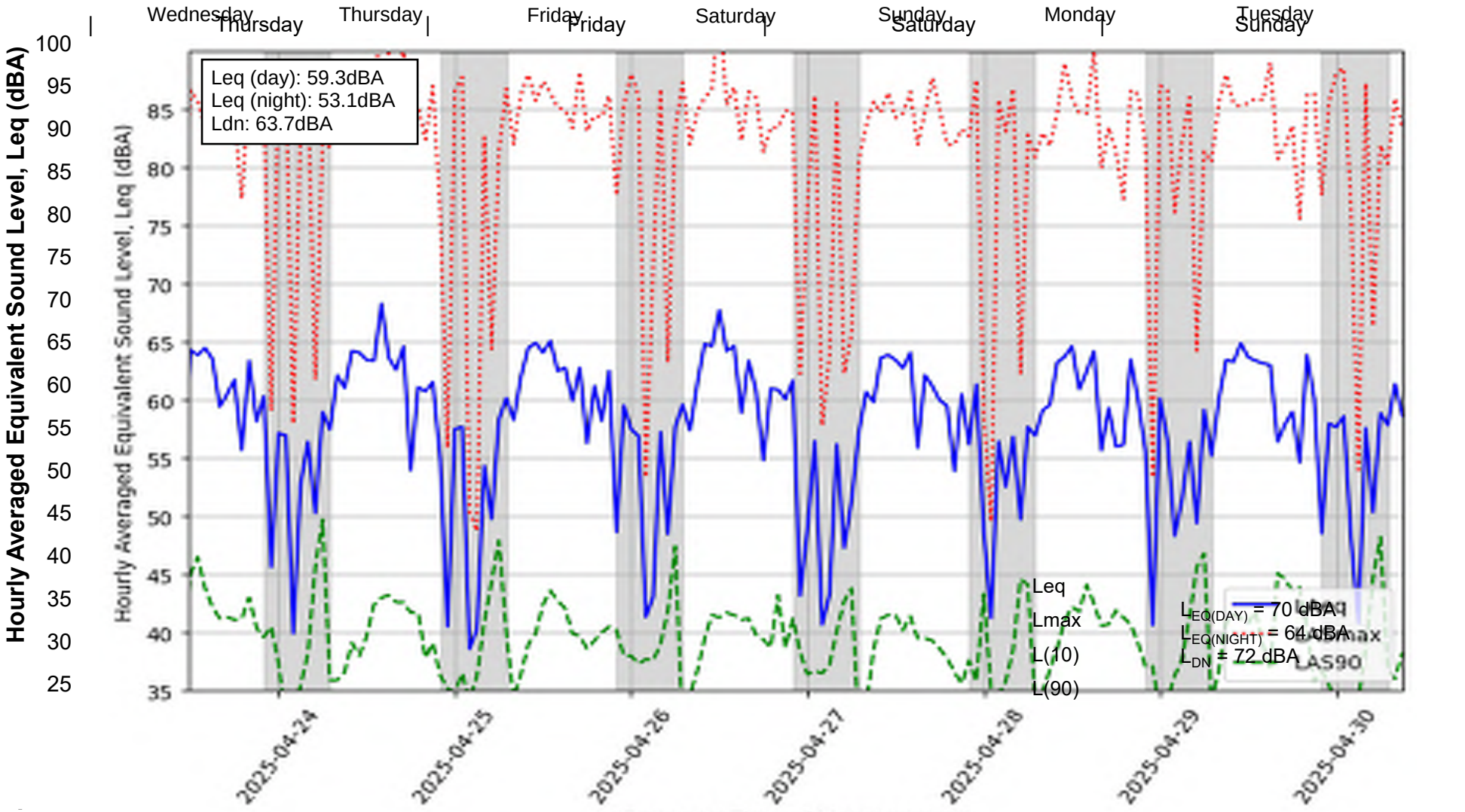
L1 - **Long Term Noise Measurement Location**

C1 - **CadnaA Calculated Noise Receptor**

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PROJECT:		
Ho'onani Village Development		
PROJECT NO: 24-093	DATE: April 2025	Figure 2

L1 - Long Term Measurement Location
L4 - Salt Lake Boulevard & Bougainville Drive



Date & Time of Measurement

Date & Time of Measurement

L_{eq}: Equivalent Sound Level - Logrithmic average of sound levels of time.

L_{max}: Maximum Noise Level - Highest noise level reached during each hourly measurement

L_{90}: Ambient Noise Level: Highest noise level exceeded 90% of each hourly recording.

L_{eq}: Equivalent Sound Level - Logrithmic average of sound levels of time.

L_{max}: Maximum Noise Level - Highest noise level reached during each hourly measurement

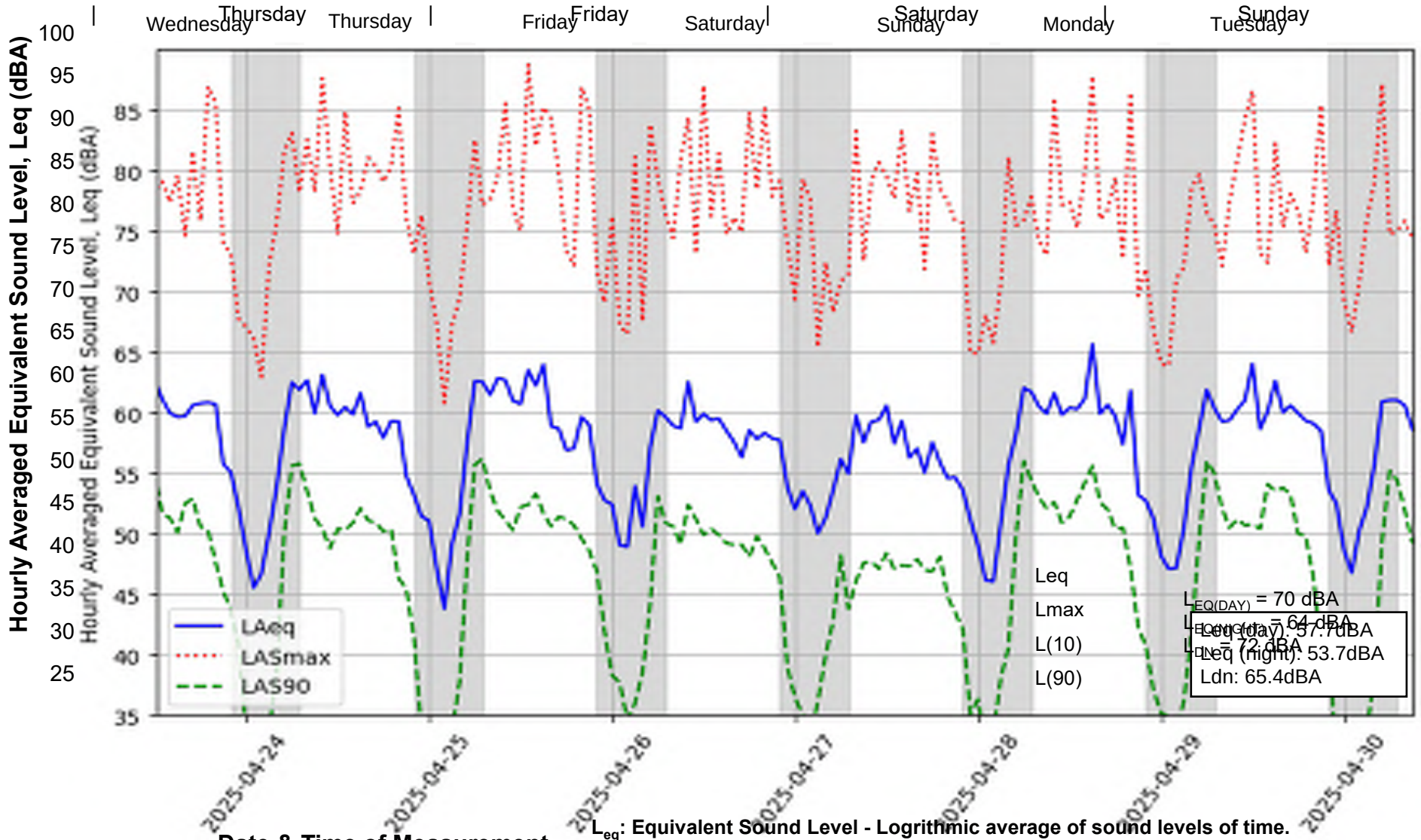
L_{90}: Ambient Noise Level: Highest noise level exceeded 90% of each hourly recording.

PROJECT: Halawa Pipeline EA

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PROJECT: Ho'onani Village Development Project		
PROJECT NO: 21-050 24-093	DATE: July 2022 April, 2025	FIGURE: 6 3

L2 - Long Term Measurement Location
L4 - Salt Lake Boulevard & Bougainville Drive



Date & Time of Measurement

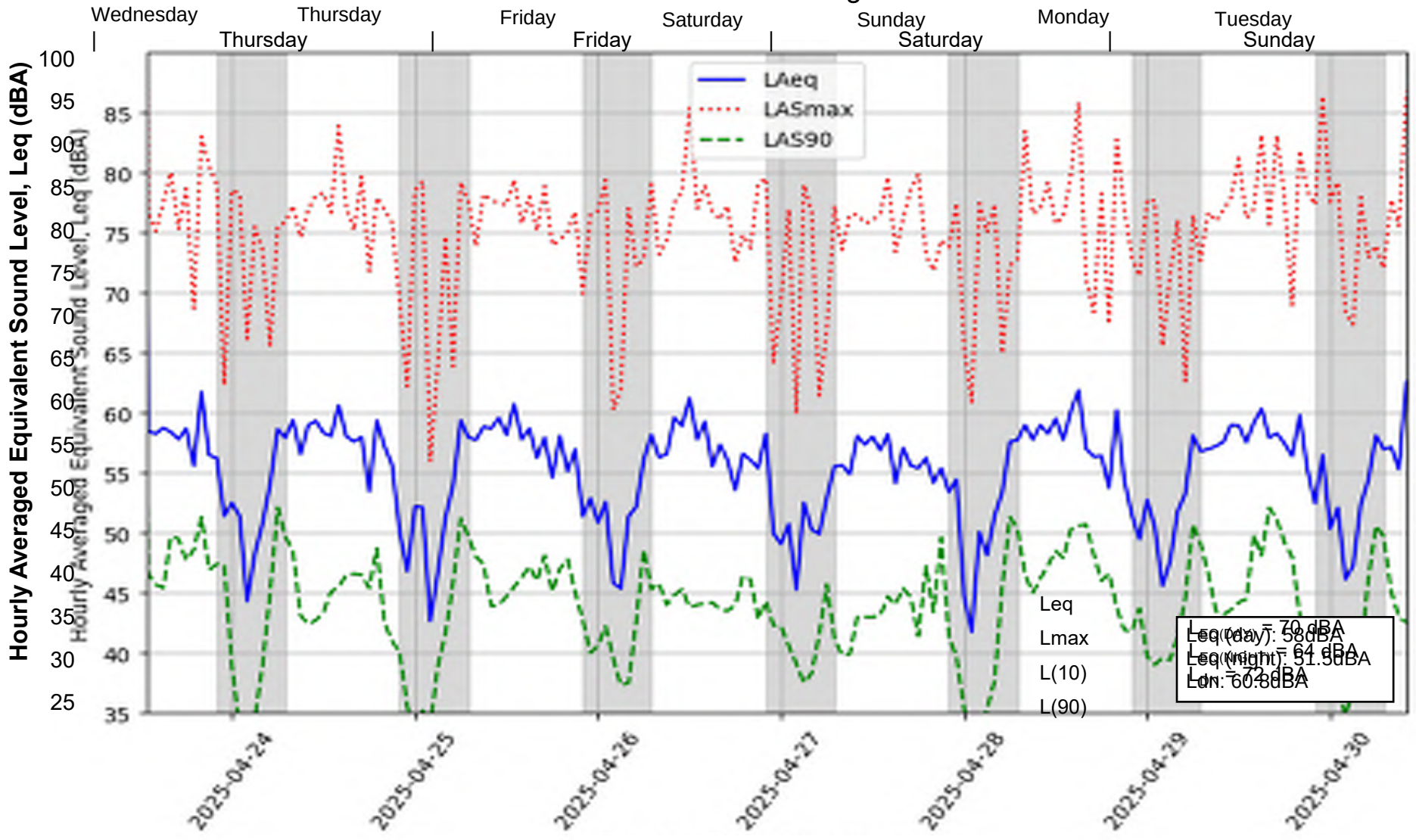
L_{eq}: Equivalent Sound Level - Logrithmic average of sound levels of time.
L_{max}: Maximum Noise Level - Highest noise level reached during each hourly measurement
L_{eq}: Equivalent Sound Level - Logrithmic average of sound levels of time.
L_{90}: Ambient Noise Level: Highest noise level exceeded 90% of each hourly recording.
L_{max}: Maximum Noise Level - Highest noise level reached during each hourly measurement
L_{90}: Ambient Noise Level: Highest noise level exceeded 90% of each hourly recording.

PROJECT: Halawa Pipeline EA

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PROJECT: Ho'onani Village Development Project		
PROJECT NO: 21-050	DATE: July 2022	FIGURE: 6
PROJECT NO: 24-093	DATE: April, 2025	FIGURE: 4

L3 - Long Term Measurement Location
L4 - Salt Lake Boulevard & Bougainville Drive



Date & Time of Measurement

Date & Time of Measurement

L_{eq}: Equivalent Sound Level - Logrithmic average of sound levels of time.

L_{max}: Maximum Noise Level - Highest noise level reached during each hourly measurement

L_{90}: Ambient Noise Level: Highest noise level exceeded 90% of each hourly recording.

L_{eq}: Equivalent Sound Level - Logrithmic average of sound levels of time.

L_{max}: Maximum Noise Level - Highest noise level reached during each hourly measurement

L_{90}: Ambient Noise Level: Highest noise level exceeded 90% of each hourly recording.

PROJECT: Halawa Pipeline EA

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PROJECT:	Ho'onani Village Development Project		
PROJECT NO: 21-050 24-093	DATE: July 2022 April, 2025	FIGURE: 6 5	

APPENDIX B

Photographs of Sound Level Meter Locations

Noise Measurement Location L1





Image Description: Sound level meter with windscreen in an open field.

Noise Measurement Location L2





Image Description: Sound level meter with windscreen in a field next to a roadway.

Noise Measurement Location L3

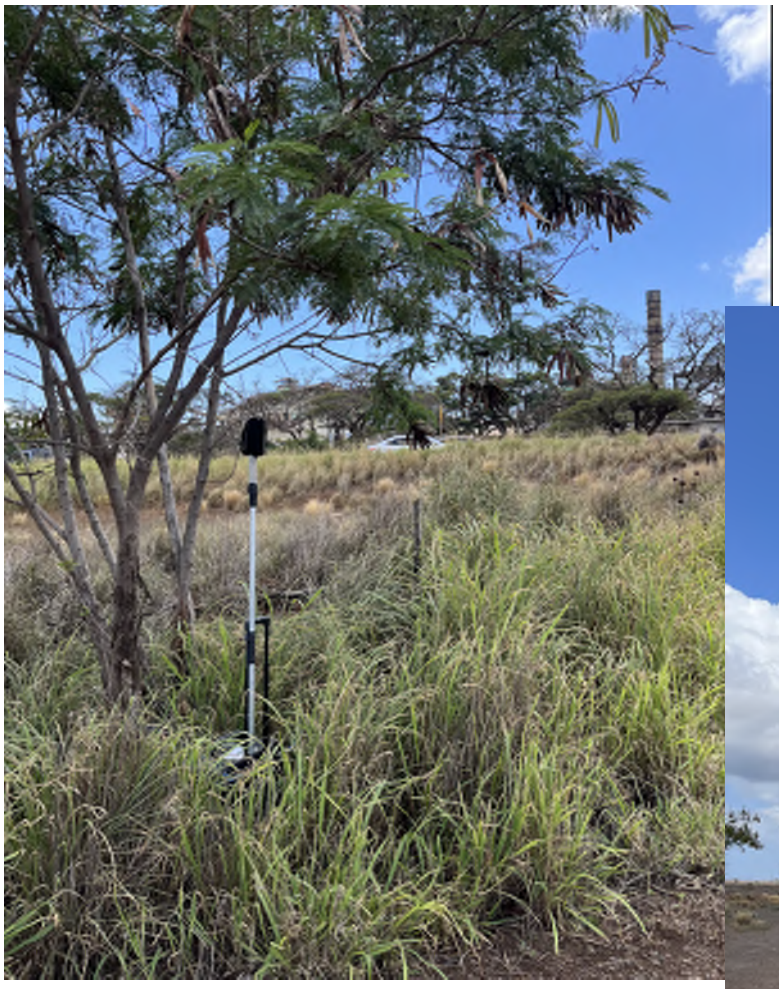
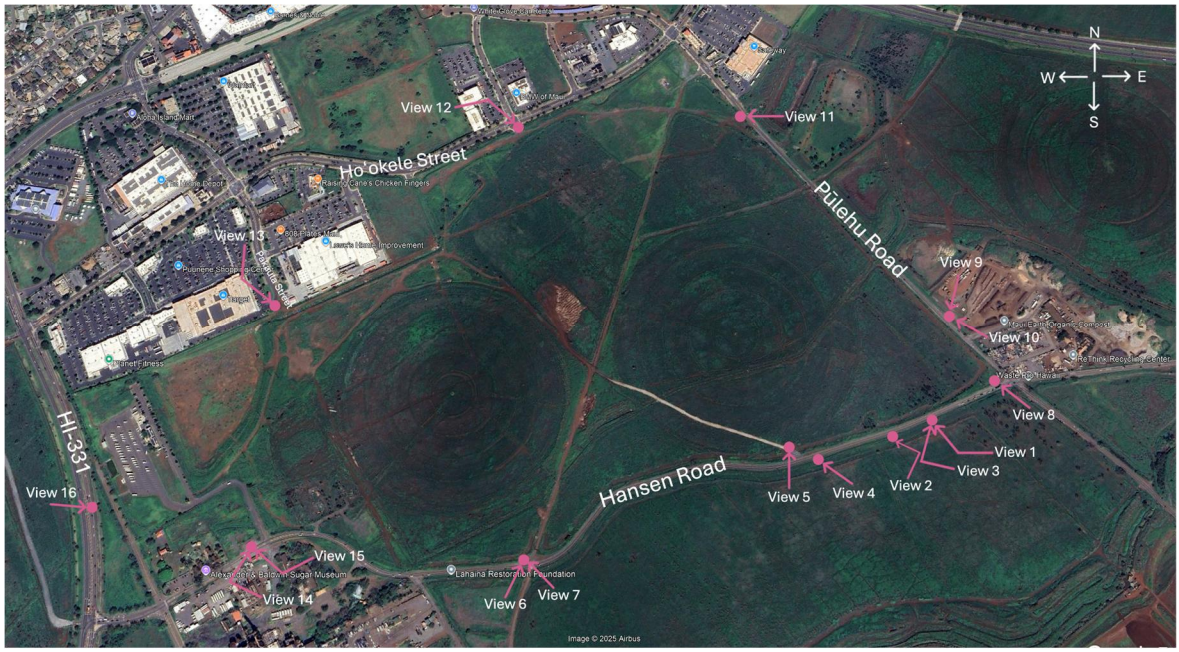




Image Description: Sound level meter with windscreen in a field under a tree.

APPENDIX ‘R’ – VIEW ANALYSIS IMAGES



An aerial view of the site, with pinpoints of the view images and their surroundings.



View 1: Drone image taken along Pūlehu Road with existing views of Kahului Harbor and Kahului Airport, just before the Hansen Road and Pūlehu Road intersection to the east.



View 2: Drone image taken from the south side of the Hansen Road, approximately 850 feet west of the Hansen Road and Pūlehu Road intersection, looking to the northwest with the existing views of Kahului & Wailuku and the West Maui Mountains.



View 3: Drone image taken from the south side of Hansen Road, approximately 650 feet west of the Hansen Road and Pūlehu Road intersection, looking to the northeast with the existing views of Kanahā Pond State Wildlife Sanctuary and Kahului Airport.



View 4: Drone image taken from the south side of Hansen Road, approximately 1,410 feet west from the Hansen Road and Pūlehu Road intersection, looking to the northwest with views of Puʻunēnē Shopping Center and the West Maui Mountains.



View 5: Image taken along Hansen Road on the gravel pathway, approximately 1,500 feet west of the Hansen Road and Pūlehu Road intersection, looking north toward Kahului Harbor and Kahului Airport, with views of Kahului town and the West Maui Mountains.



View 6: Image taken from the south side of Hansen Road, approximately 3,360 feet west from the Hansen Road and Pūlehu Road intersection, looking to the northeast toward Kahului Airport, with open views across the vacant land.



View 7: Image taken from the south side of Hansen Road, approximately 3,360 feet west from the Hansen Road and Pūlehu Road intersection, looking to the northwest toward Wailuku town with views of the West Maui Mountains.



View 8: Image taken along Hansen Road, approximately 65 feet west from the stop sign of the Hansen Road and Pūlehu Road intersection, facing northwest and looking down Pulehu Road, with views of the West Maui Mountains.



View 9: Image taken from the east side of Pūlehu Road, approximately 565 feet north from the Hansen Road and Pūlehu Road intersection and 180 feet north from ReThink Recycle Center looking southwest. The view includes existing sights of Pu‘unēnē school to the southwest and Haleakalā to the southeast.



View 10: Image taken from the east side of Pūlehu Road, facing northwest, approximately 565 feet north from the Hansen Road and Pūlehu Road intersection and 180 feet north from ReThink Recycle Center. The view includes existing sights of the West Maui Mountains to the northwest.



View 11: Image taken from the east side of Pūlehu Road, approximately 960 feet south from the Pūlehu Road and Ho‘okele Street intersection, looking west toward the Alexander & Baldwin Sugar Museum, with views across the vacant lot of the West Maui Mountains.



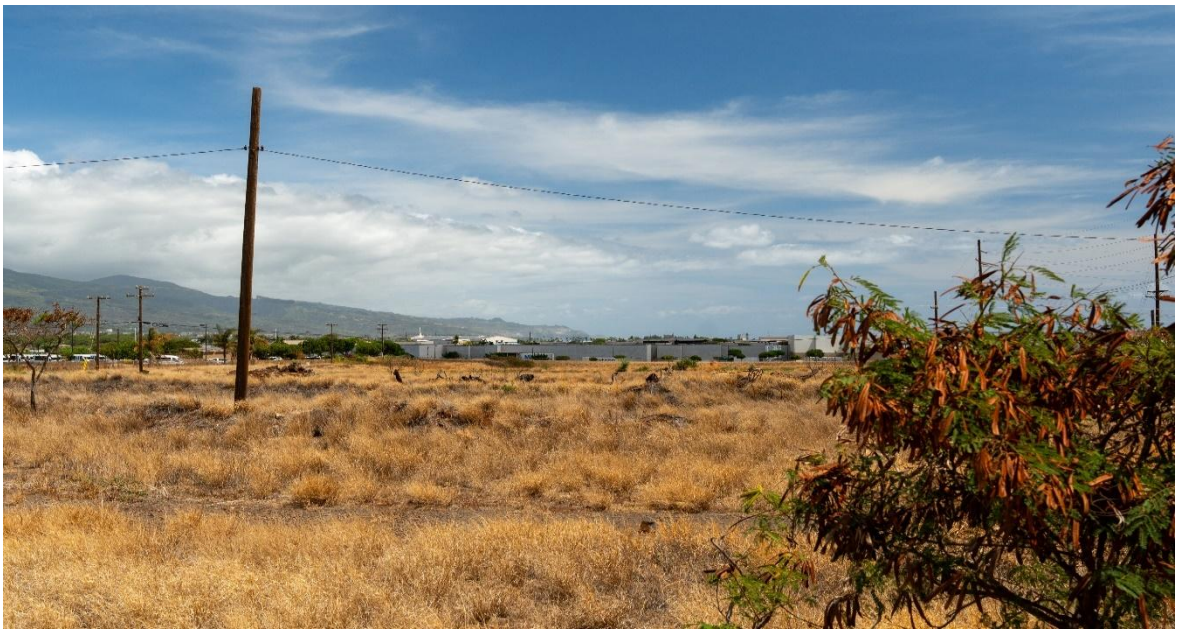
View 12: Image taken from the north side along Ho‘okele Street, approximately 1,320 feet west from the Pūlehu Road and Ho‘okele Street intersection, looking southeast with views of Haleakalā.



View 13: Image taken from the southern terminus of Pakaula Street, approximately 115 feet south past the Pakaula Street stop sign, looking southeast with views of Haleakalā and the Alexander & Baldwin Sugar Museum.



View 14: Image taken from the south side of Hansen Road, approximately 300 feet east from the Alexander & Baldwin Sugar Museum, looking northeast toward Kahului Airport with views of the vacant lot and Puʻunēnē Shopping Center.



View 15: Image taken from the south side of Hansen Road, approximately 300 feet east of the Alexander & Baldwin Sugar Museum, looking northwest with views of the West Maui Mountains and the Pu‘unēnē Shopping Center.



View 16: Image taken from Maui Veterans Highway, approximately 630 feet north from Hansen Road and Maui Veterans Highway intersection, looking east with views across the vacant lot of the Alexander & Baldwin Sugar Museum.

APPENDIX ‘S’ – ARCHAEOLOGICAL LITERATURE REVIEW AND ASSESSMENT

Archaeological Literature Review and Assessment Hoʻonani Village Mixed-Use Development Project Wailuku Ahupuaʻa, Pūʻali Komohana District (Moku), Maui Island TMK: [2] 3-8-006:001 (por.), 3-8-006:004 (por.) & Pulehu Road ROW

Prepared for
Pioneer Design Group Hawaiʻi
Honolulu, Hawaiʻi

Prepared by
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Trisha K. Watson, Ph.D.
HONUA CONSULTING
Honolulu, Hawaiʻi

March 2026 (Revised)

Management Summary

This archaeological literature review and assessment (ALRA) report was completed in support of environmental review and subdivision approval for the Hoʻonani Village Mixed-Use Development project at a 166.5-acre portion of TMK (2) 3-8-006:004 21 Hansen Road, Wailuku Ahupuaʻa, Maui. An off-site well located in a portion of TMK (2) 3-8-006:001, which is planned to be repurposed to serve the proposed development project, is to the south along the Pulehu Road right-of-way (ROW). Other than the Pulehu Road ROW, the project area parcels are privately owned, and consist of undeveloped land previously used for commercial agriculture; the proposed mixed-use development parcel is bounded by Pulehu Road (east), Hansen Road (south) and undeveloped land (west and north). Central Power Plant Road runs through the parcel. The off-site well parcel, which includes an existing well, is bounded by Pulehu Road to the east and undeveloped land on its other sides. The Pulehu Road ROW connects these two project parcels. The proposed project is described in the Introduction (see p.1). The objectives of this study include: (1) documentation and description of the parcel's land-use history in the context of both its traditional Hawaiian character as well as its historic-period changes; (2) identification of any potential above-ground historic properties or component features; and (3) providing information relevant to the likelihood of encountering historically-significant cultural deposits in subsurface context during construction. This ALRA is not an archaeological inventory survey (AIS) and did not include a field inspection. The document may be used, however, to consult with the State Historic Preservation Division (SHPD) in compliance with Hawaiʻi Revised Statutes (HRS) Chapter 6E-42 and Hawaiʻi Administrative Rules (HAR) Chapter 13-284; and to satisfy environmental review under HRS Chapter 343.

Results are as follows: (1) The project area is part of a once-extensive commercial sugar cane operation originally founded by Claus Spreckels in the late 1800s, eventually incorporated into the Hawaiian Commercial and Sugar Co. (HC&S), which lasted well into modern times; (2) Historic maps depict a thoroughly altered landscape dedicated to extensive commercial sugar cane operations with numerous related features in and adjacent to the current project area, including roads, ditches, fence lines, railroads and reservoirs; (3) Aerial photographs dated to 1950 clearly show the current project area as completely under intensive, commercial agriculture; (4) Archaeological surveys of the current project area have only identified historic-period sites related to commercial (plantation) agriculture, although most of these have not been formally assessed or assigned State Inventory of Historic Places (SIHP) #s because such sites, in the past, were not generally considered significant by archaeologists more interested in documented traditional Hawaiian sites; (5) Due to over a century of sugar cane cultivation and the installation and use of related infrastructure (e.g., roads, ditches, fence lines, railroads and reservoirs), no traditional (pre-Contact) Hawaiian site-features has been identified in or near the current project area; (6) The current project area most likely contains above-ground historic properties related to commercial agriculture in the historic period; and (7) It is unlikely that intact historic properties will be encountered in subsurface excavation; however, the discovery of isolated artifacts associated with the plantation era cannot be ruled out. Given the documented extent of past ground disturbance, it is likely that a determination of "no historic properties affected," per HAR § 13-284-5, is appropriate. Honua recommends consultation with the SHPD-Archaeology Branch to obtain its concurrence with this assertion; and to determine if any specific identification or mitigation measures are needed for the proposed project (e.g., archaeological inventory survey (AIS) or archaeological monitoring).

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Section 1 Introduction

1.1 Project Background

This archaeological literature review and assessment (ALRA) report was completed in support of environmental review and subdivision approval for the Hoʻonani Village Mixed-Use Development project at a 166.5-acre portion of TMK (2) 3-8-006:004 21 Hansen Road, Wailuku Ahupuaʻa, Maui (Figure 1 to Figure 3). An off-site well located in a portion of TMK (2) 3-8-006:001, which is planned to be repurposed to serve the proposed development project, is to the south along the Pulehu Road right-of-way (ROW). Kahului Harbor is about 1.75 miles (mi.) northwest of the project area; Kahului Airport is about 1.0 mi. to the northeast.

The proposed mixed-use development parcel is adjacent to a commercial development known as Puʻunēnē Shopping Center. Other than the Pulehu Road ROW, the project area parcels are privately owned, and consist of undeveloped land previously used for commercial agriculture; the proposed mixed-use development parcel is bounded by Pulehu Road (east), Hansen Road (south) and undeveloped land (west and north). Central Power Plant Road runs through the parcel. The off-site well parcel, which includes an existing well, is bounded by Pulehu Road to the east and undeveloped land on its other sides. The Pulehu Road ROW connects these two project parcels.

Figure 4 and Figure 5 depict proposed construction phases and work in the mixed-use development parcel.

1.1.1 Project Description

According to the EISPN (EIS Preparation Notice), the proposed project is as follows:

> The Applicant proposes the development of Hoʻonani Village, envisioned as a high-density, master-planned, mixed-use community in the Kahului area of Central Maui. Hoʻonani Village (also referred to as "the Project") will consist of a mixed-use development consisting of approximately 1,608 multi-family residential housing units along with a blend of commercial, office, retail, restaurant, entertainment, industrial, and hospitality uses on an approximately 166 acre site in Kahului.
>
> All housing units are expected to be made available for rent and/or sale for income ranges at 140% Area Median Income (AMI) or below. To expedite the development of housing, the Applicant may pursue a 201H application with the Hawaiʻi Housing and Finance Development Corporation (HHFDC), which requires at least 50% plus one additional unit affordable to households with incomes at or below 140% AMI. Should approvals pursuant to HRS Section 201H-38 be sought from the County, they too would be presented to the Council.
>
> Access to the project area will be provided from Pūlehu Road and Hansen Road. An internal roadway network will connect the individual uses within the Project. Additional infrastructure improvements, including drainage, an onsite wastewater treatment plant (WWTP) and offsite water system are also proposed. The County Council initiated an amendment to the Maui Island Plan Urban Growth Boundary (UGB), and amendment to the Wailuku Kahului Community Plan, and a change in

zoning to allow for the development of Hoʻonani Village via Bills 163, 164 and 165 (2025). These amendments, if approved, would be enacted through ordinances. It is noted that an additional CIZ would be needed at a later time to implement the hospitality component.

1.1.2 Regulatory Context and Document Purpose

The objectives of this study include: (1) documentation and description of the parcel's land-use history in the context of both its traditional Hawaiian character as well as its historic-period changes; (2) identification of any potential above-ground historic properties or component features; and (3) providing information relevant to the likelihood of encountering historically-significant cultural deposits in subsurface context during construction.

This ALRA is not an archaeological inventory survey (AIS) and did not include a field inspection. The document may be used, however, to consult with the State Historic Preservation Division (SHPD) in compliance with Hawaiʻi Revised Statutes (HRS) Chapter 6E-42 and Hawaiʻi Administrative Rules (HAR) Chapter 13-284; and to satisfy environmental review under HRS Chapter 343.

1.2 Environmental Setting

1.2.1 Natural Environment

This section describes the environmental and physiographic conditions in the project area. The hard-rock geology in and around the project area consists of Pleistocene volcanic flows originating (Kula Volcanics) from Haleakalā (Qkul) (Macdonald et al. 1983; Sherrod et al. 2007). Elevation in the project area is approximately 60 ft. (152.4 meters [m]) above mean sea level (amsl).

U.S. Department of Agriculture (USDA-NRCS n.d.) soil survey data show a wide variety of soil types in the project area (see also Foote et al. 1972) (Figure 6). The project area consists entirely of Ewa silty clay loam 0 to 3 percent slopes (EaA); these well drained soil with very low runoff potential are described by the USDA-NRCS (n.d.) as "prime farmland if irrigated," and occur on alluvial fans, stream terraces and mountain slopes.

Other than humanly-altered water courses such as irrigation and drainage ditches, there are no through-flowing (natural) streams in the project area.

The project area is in a relatively dry part of Maui; mean annual rainfall is about 20 inches (508 millimeters) (Giambelluca et al. 2013), giving this part of the island a semi-arid climate. Prior to the historic period, vegetation in the project area would have consisted of dryland forest and shrubs near the transition to the coastal vegetation zone (Ziegler 2002:173). Today, however, due to historic effects of commercial agriculture (most notably sugar cane) and modern human alteration of the landscape, the project area and immediate environs are dominated by cultivated crops, invasive grasses and weeds where not under active cultivation.

1.2.2 Built Environment

Except for an existing road (Central Power Plant Road) and some irrigation features and possible subsurface utilities, the proposed mixed-use development parcel is undeveloped. The off-

site well location contains an existing well that may be repurposed to support the proposed development project. The rest of the project area consists of the Pulehu Road ROW.

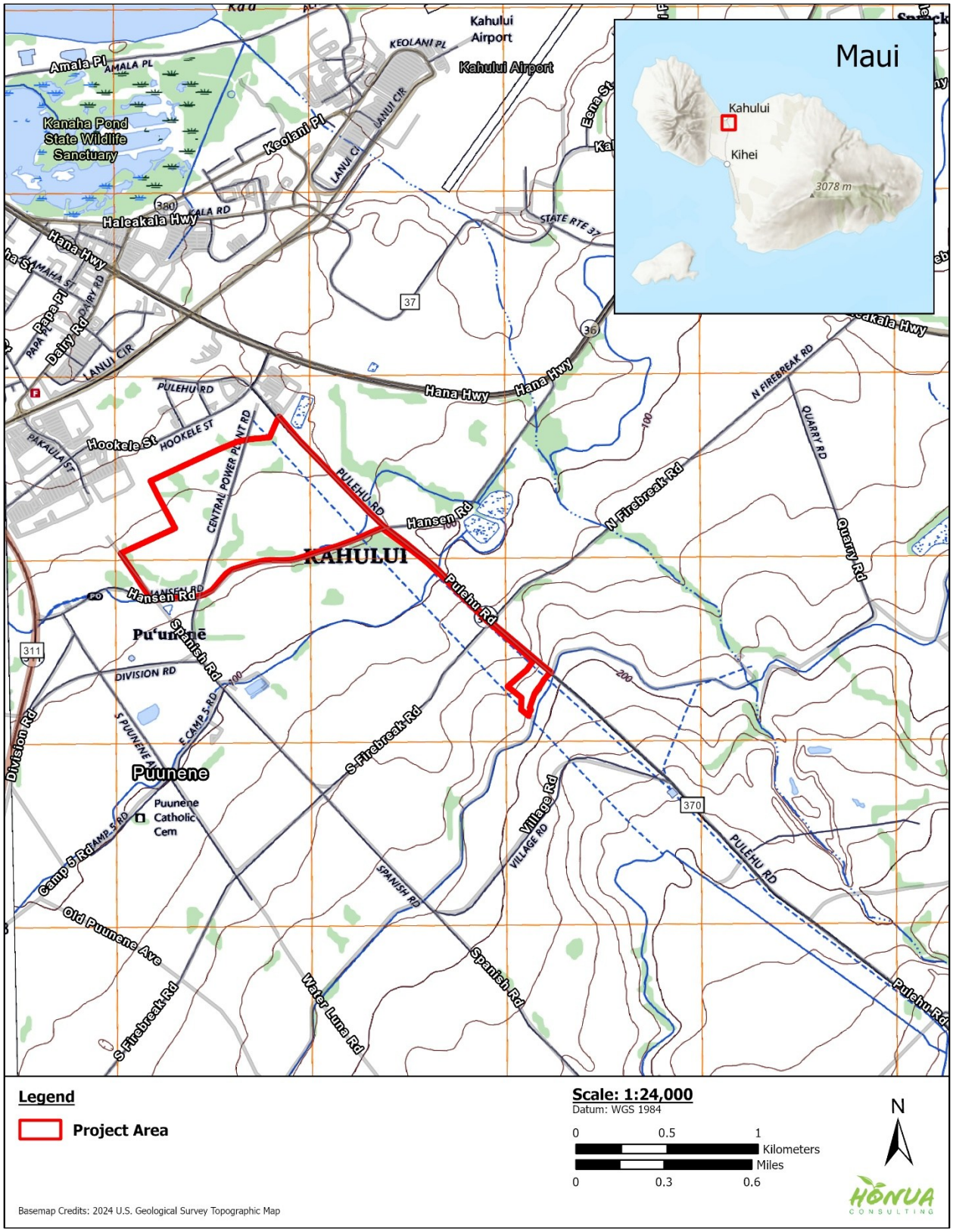


Figure 1. Portion of 2013 USGS topographic map (Wailuku quadrangle) with project area (base map source: ESRI's ArcMap 10.8.2)



Figure 2. Aerial image showing location of project area (base image source: ESRI's ArcMap 10.8.2)

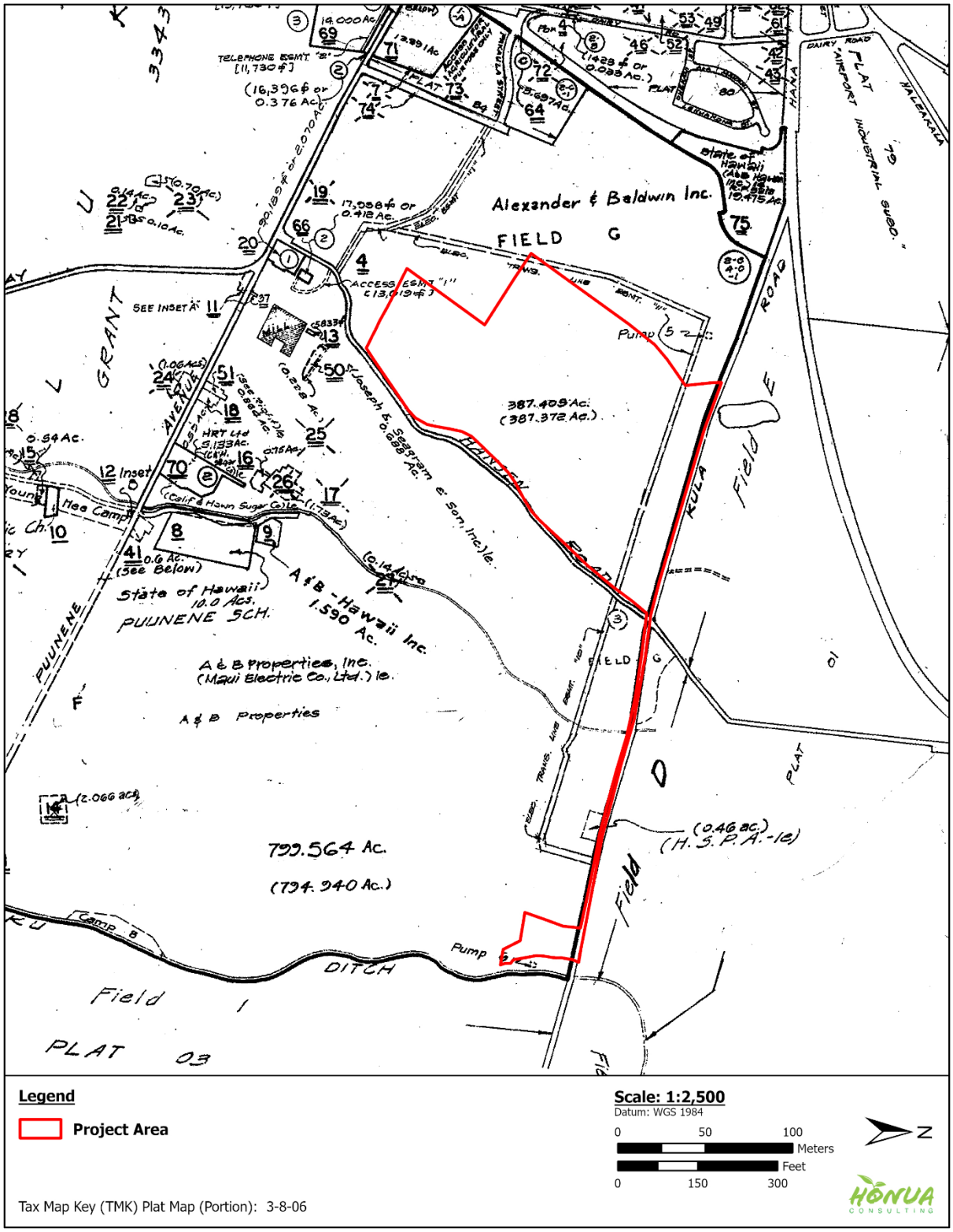


Figure 3. Portion of Tax Map Key (TMK) [2] 3-8-006 showing location of project area (base image source: Maui County website, http://www.mauicounty.gov/757/Tax-Map-Information, accessed April 2025)

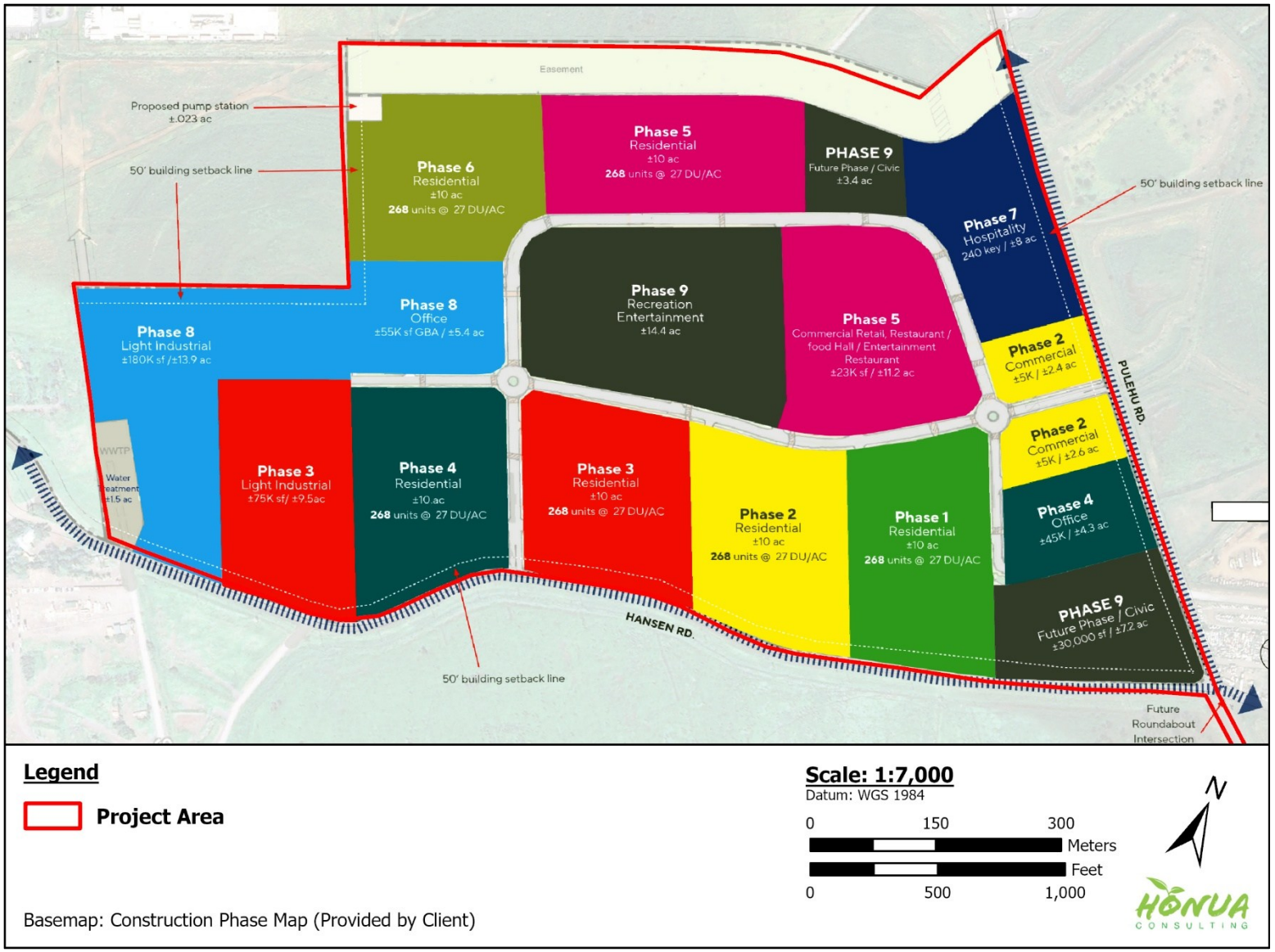


Figure 4. Client-provided construction phases

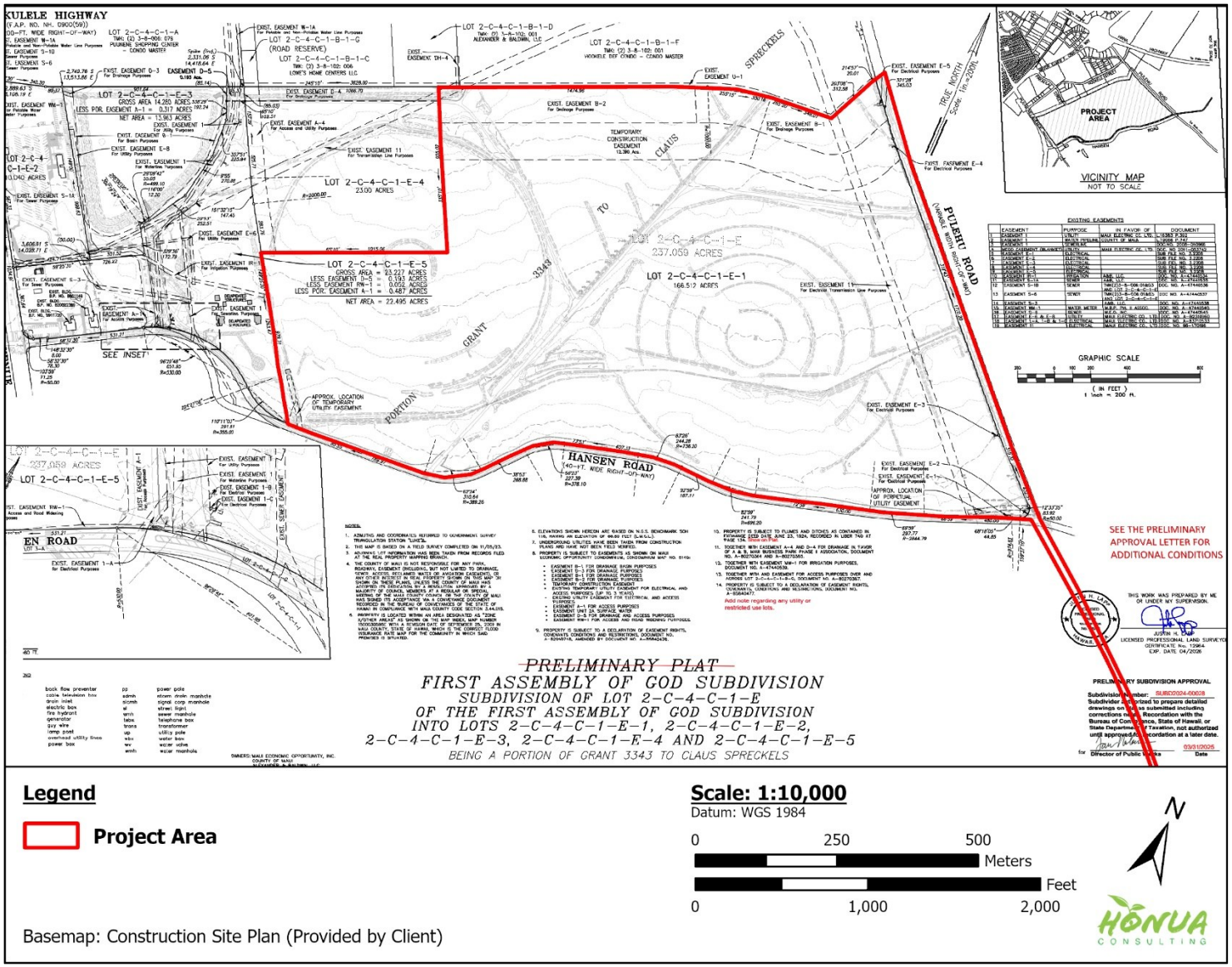


Figure 5. Client-provided construction plan

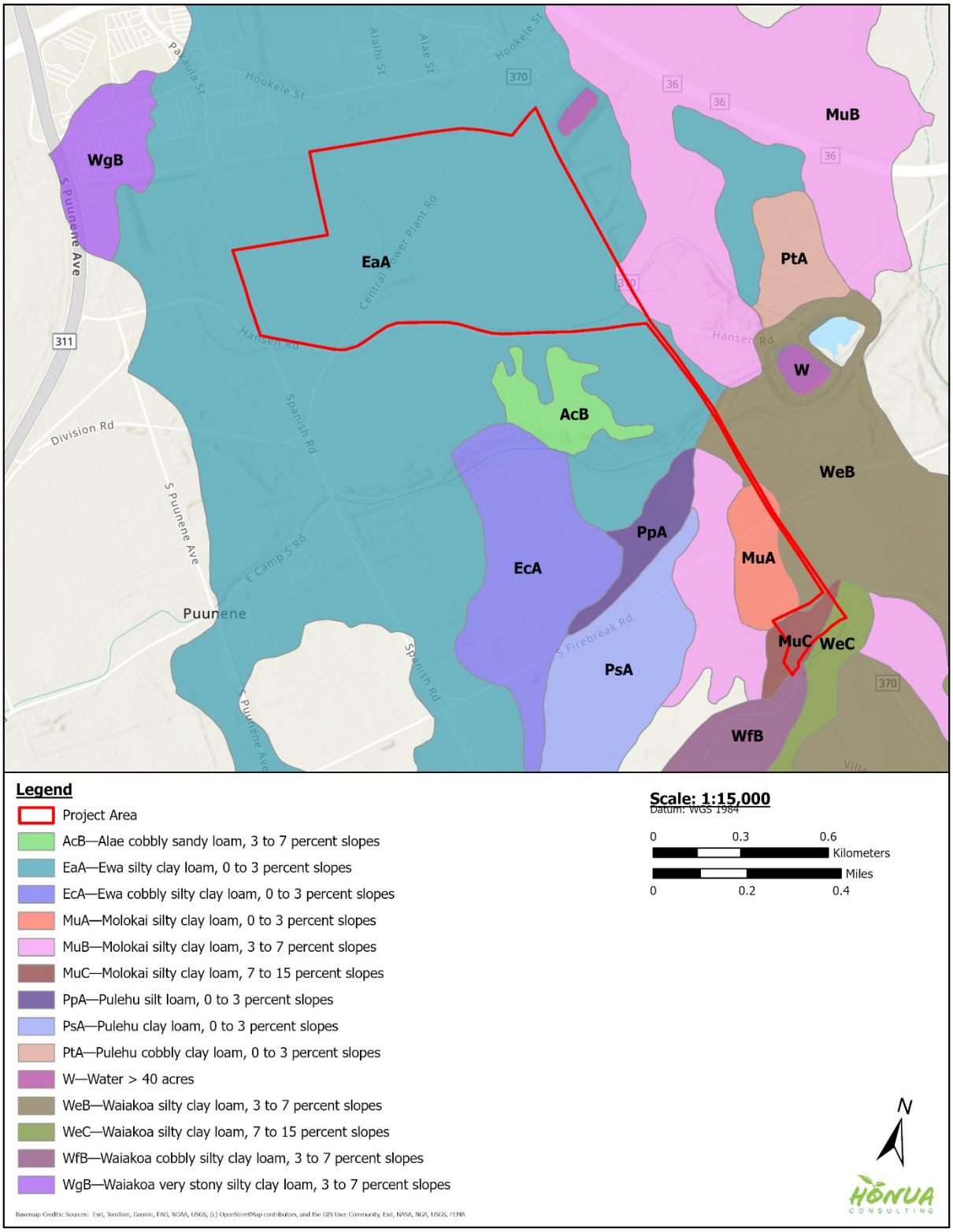


Figure 6. Soil series overlay showing soils in the project area (see text) (data source: Foote et al. 1972)

Section 2 Cultural and Historical Context

This section includes a synthesis of relevant cultural and historical information related to the types and character of land uses in and around the project area from pre-Contact times into the historic period and modern times. The main objective of this section, primarily through the analysis of historical documents, maps and aerial images, is to provide a project area-specific picture of land use and modification over time. If additional archaeological work is needed for this project, such as an archaeological inventory survey (AIS) or archaeological monitoring, this section may be expanded.

In addition to referencing a sample of previous studies from Central Maui, we also conducted a records search of the SHPD's digital library, as well as the on-line database (State of Hawai'i n.d.) of the Environmental Review Program, within the Office of Planning and Sustainable Development (that is administratively attached to the Department of Business, Economic Development and Tourism), which publishes EIS and EA documents; we also reviewed Honua's proprietary database of reports, and utilized the following on-line sources to obtain cultural, historical and archaeological data:

- OHA's Papakilo database (http://papakilodatabase.com/main/main.php)
- OHA's Kipuka database (http://kipukadatabase.com/kipuka/)
- Bernice P. Bishop Museum archaeological site database (http://has.bishopmuseum.org/index.asp)
- Bishop's Hawaii Ethnological Notes (http://data.bishopmuseum.org/HEN/browse.php?stype=3)
- University of Hawai'i-Mānoa's digital maps (http://magis.manoa.hawaii.edu/maps/index.html)
- DAGS' State Land Survey (http://ags.hawaii.gov/survey/map-search/)
- Waihona 'Aina website (www.waihona.com)
- Digital newspaper archive "Chronicling America, Historic American Newspapers" (http://chroniclingamerica.loc.gov/lccn/sn82014681/)
- Hawai'i State Archives digital collections (http://archives1.dags.hawaii.gov/)
- U.S. Library of Congress digital map collections (https://www.loc.gov/maps/)
- USGS Information Service, including digital map collections (https://nationalmap.gov/historical/index.html)
- AVA Konohiki's website (http://www.avakonohiki.org/)

2.1 Hawaiian Cultural Landscape

On Maui, as with the other inhabited islands of the archipelago, determining a project area's traditional district (moku) and ahupua'a can be difficult because varied configurations and names commonly appear in different historical and modern sources. Reasons for this include political changes (both traditional and historic), conquest of one island by another, economic factors, and so on. For example, despite how the ahupua'a concept is explained in some sources as "ancient," some knowledgeable cultural historians argue that the so-called ahupua'a system was introduced to O'ahu in the late or terminal pre-Contact period (i.e., at or around the time of Kahekili [circa 1783] or Kamehameha [circa 1795]) and, thus, it is not necessarily ancient nor endemic to O'ahu Island.[1]

[1] On O'ahu, a possibly older concept than the ahupua'a was known as ka'ānani'au, defined by Pukui and Elbert (186:108) as "Same as *ahupua'a*, the altar marking the land division. *O'ahu. Rare."* See Genz (2011) for a perspective on this topic.

Figure 7 and Figure 8 illustrate the research problem of differing land divisions for Maui. The former configuration (see Figure 7), which places the project area in the moku of "Hamakuapoko" and the ahupua'a of "Poniau," is based on research conducted by the Aha Moku Advisory Committee (see website in figure caption). In contrast, the latter map (see Figure 8) is the result of research by Maui Nui Ahupua'a Project (see website in figure caption), the SHPD GIS program and the Office of Hawaiian Affairs (OHA). This moku/ahupua'a configuration seems to be the most widely accepted model at the current time. According to this, the project area is in the moku of Pū'ali Komohana and the ahupua'a of Wailuku. Names aside, from a traditional Hawaiian perspective, the importance of these two sets of land-division names accurately reflects the fact that the project area is associated with the coastal and near-coastal settlement and growing area around Kahului Harbor in the central, "saddle" region between Maui's two volcanoes (West Maui, or Pu'u Kukui and Haleakalā).

Ruberti et al. (2021:13-14) discuss the challenge of understanding the many meanings and definitions of Wailuku:

> The general area of [their] study is located in the *ahupua'a* of Wailuku [. . .]. An independent ahupua'a that was once able to sustain hundreds of families, Wailuku is often mistakenly referred to as a small part of one large ahupua'a that includes three other ahupua'a: Waikapū, Waiehu, and Waihe'e. Traditionally, these four districts have been collectively referred to as Nā Wai 'Ehā, or The Four Waters. In the Māhele Book, which recorded the names of all the ahupua'a on each of the islands, these four ahupua'a are identified as being in the kalana (a land division smaller than a moku) of Pū'ali Komohana (West Isthmus). After the establishment of the Office of Hawaiian Government Survey (OHGS) in 1870, Maui was surveyed and mapped. This resulted in Wailuku being used as the primary name for the ahupua'a and the larger district of Wailuku, of which the four ahupua'a are now a part of. A reason for this name choice was given by Curtis J. Lyons, an OHGS surveyor, who wrote, "Wailuku, Waikapu, Waiehu, and Waihee were independent, belonging to no Moku. On the map it was necessary to form a new district and call it Wailuku, Nawaieha, the four waters, being too cumbursome and ill understood" [. . .]

Pukui et al. (1974) do not include Pū'ali Komohana in their place name compendium, but they do translate Pū'ali, a place on Moloka'i, as "groove." Pukui and Elbert's (1986:165.) *Hawaiian Dictionary* defines komohana as "west, or western, so-called because the sun 'enters' *(komo)* the sea in the west." They (ibid.:346) also define pū'ali as isthmus (among other definitions). Thus, this moku name may be translated as something like the isthmus (i.e., saddle between Maui's two volcanoes) where the sun sets.

Pukui et al. (1974:225), citing Kuykendall's (1938:Vol.1:31) *The Hawaiian Kingdom,* Vol. 1, Kamakau's (1961:148) *Ruling Chiefs of Hawaii* and Nathaniel Emerson's (1915:57) *Pele and Hiiaka*, provide the following under the entry for Maui's Wailuku:

> Land division, elementary school, quadrangle, heights, city, point, sugar company, and stream, West Maui; site of the battle in the late eighteenth century in which the army of Ka-lani-'ōpu'u was nearly annihilated by Ka-hekili of Maui.

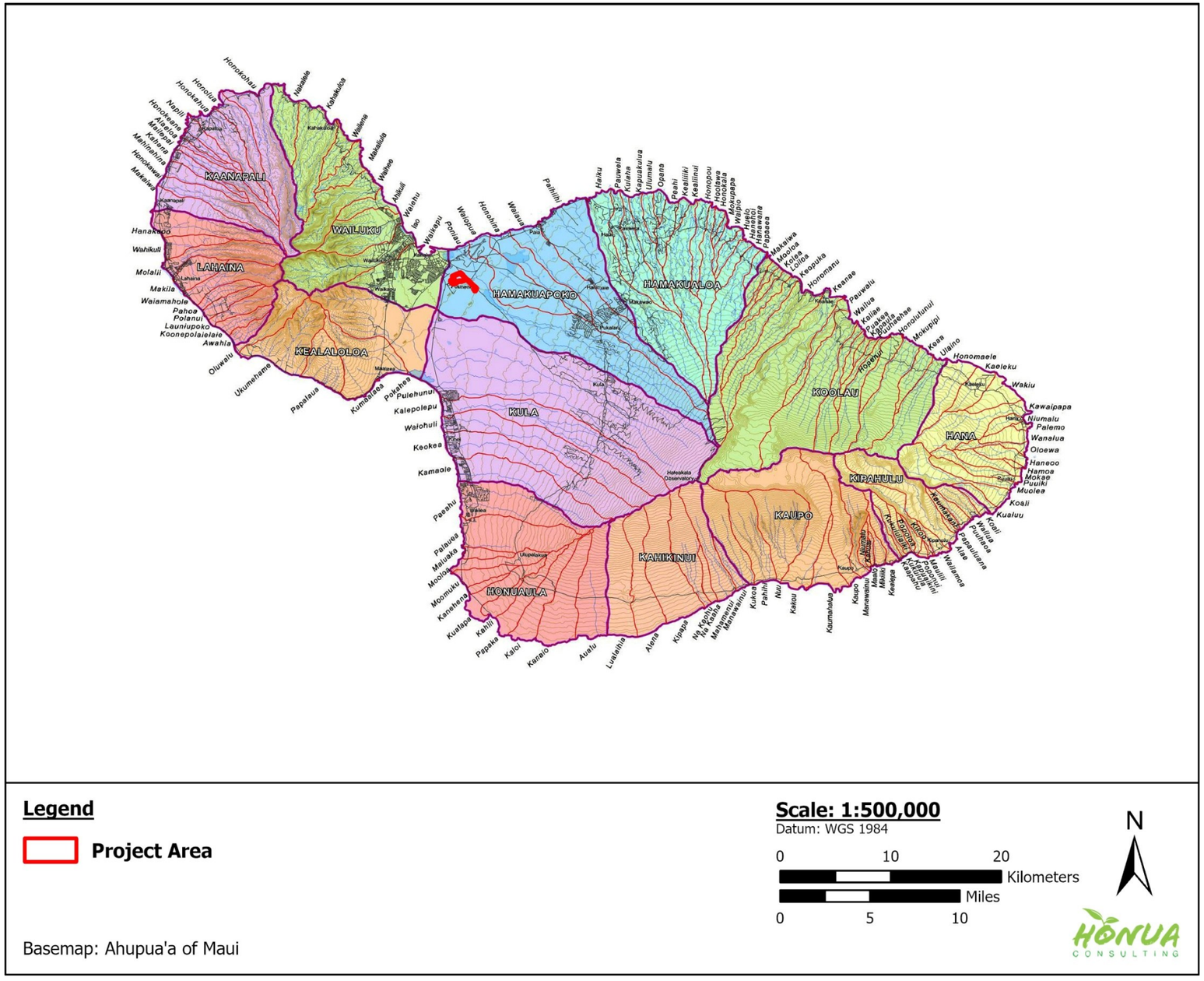


Figure 7. Traditional moku (districts) and ahupua‘a of Maui according to the Aha Moku Advisory Committee (base map source: http://www.ahamoku.org)

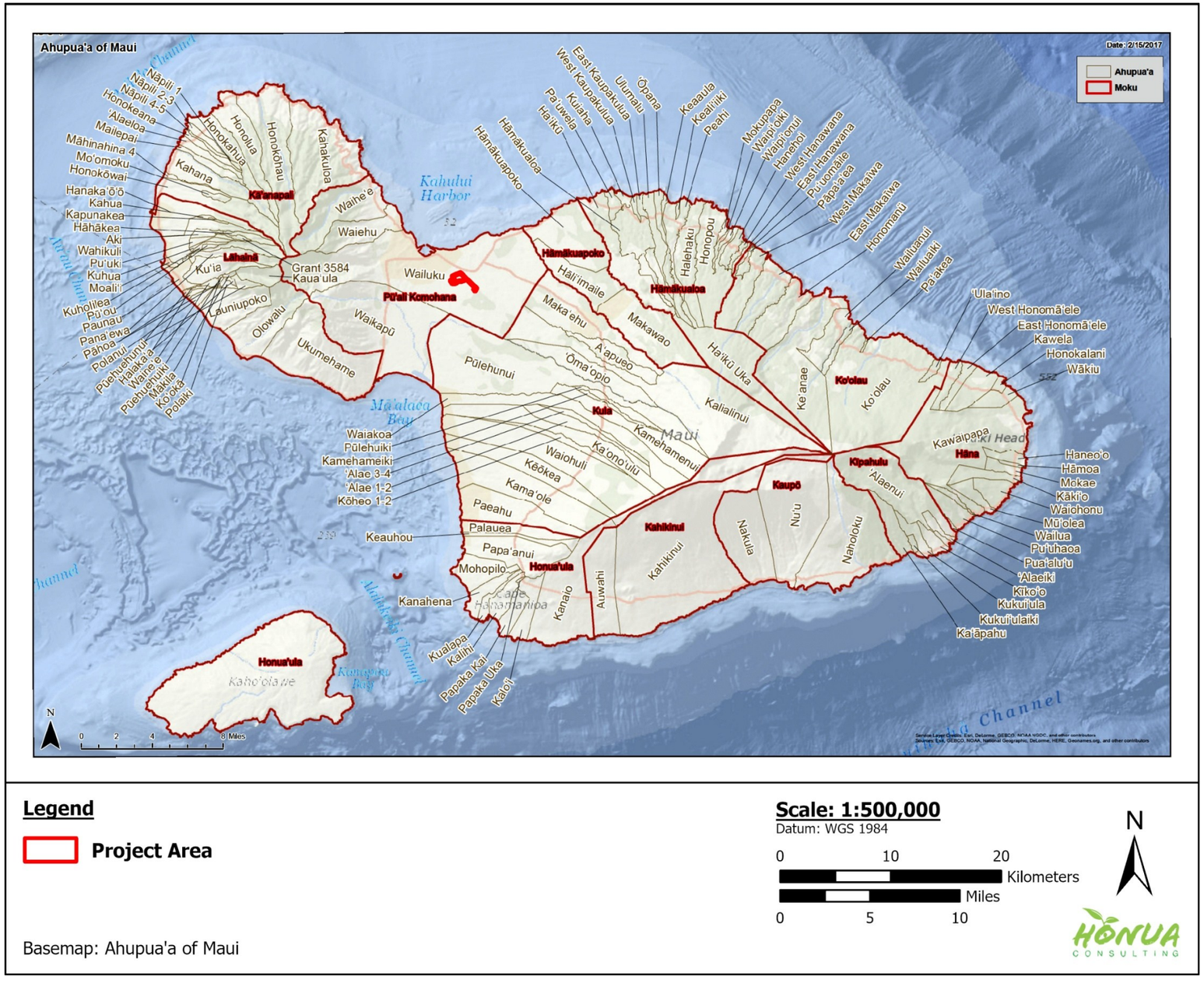


Figure 8. Traditional moku (districts) and ahupua‘a of Maui according to the Maui Nui Ahupua‘a Project (base map source: http:// www.mauinuiahupuaaproject.com)

Because of this moʻolelo (oral-historical account), Wailuku is translated literally as "water [of] destruction" (Pukui et al. 1974:225).

E.S. Craighill Handy's (Handy 1940; Handy and Handy 1972) seminal work in the 1930s was focused on identifying and describing the primary traditional growing and settlement areas of the Hawaiian Islands, and his cultural-landscape approach to the work remains a useful resource to this day. Although his direct observations of the landscape in the 1930s were long after the widespread breakdown of the traditional Hawaiian subsistence economy, his insights on how the lands were utilized in pre-Contact and early historic-period times were valid.

A close reading of Handy's presentation makes clear that the project area did not represent a prime location for Hawaiian settlement but, rather, was between two more fertile settlement regions: (1) to the west, the famous "Four Streams," or Nā Wai ʻEhā, draining the slopes of West Maui into Kahului Bay at and north of the historic town of Wailuku—northwest of the current project area; and (2) the coastal and near-coastal area northeast of the current project area known as Hāmākua Poko (or Hāmākuapoko). These two areas are described as follows (Handy and Handy 1972:496):

> The old *ʻokana* (land division) named Na Wai Eha (*Na Wai Eha* means "The Four Streams") comprised the four great valleys which cut far back into the slopes of West Maui and drain the eastward watershed of Puʻu Kukui and the ridges radiating northeastward, eastward, and southeastward from it. Two of the great valleys, Waiheʻe and Waiehu, open towards the ocean and their streams empty into it. Wailuku is partly landbound, but its stream flows into Kahului Bay, which has been eroded by the ocean out of what was formerly the stream mouth. Waikapu is landbound. The waters of its great stream, now [in the 1930s] utilized for irrigating a great acreage of sugar cane, formerly was diverted into *loʻi* and its overflow was dissipated on the dry plains of the broad isthmus between West and East Maui. (brackets added)

And, referring to the Hāmākua area (ibid.:498):

> Hamakua Poko (Short Hamakua) and Hamakua Loa (Long Hamakua) are two coastal regions where gently sloping *kula* lands intersected by small gulches come down to the sea along the northern coast line of East Maui. Maliko Stream, flowing in a gulch that widens and has a flat bottom to seaward, in pre-sugar-plantation days had a considerable number of *loʻi.* East of Maliko the number of named *ahupuaʻa* is evidence of habitation along this coast [. . .] The number of very narrow *ahupuaʻa* thus utilized along the whole of the Hamakua coast indicates that there must have been a very considerable population. This would be despite the fact that it is an area of only moderate precipitation because of being too low to draw rain out of trade winds flowing down the coast from the rugged and wet northeast Koʻolau area that lies beyond. (brackets added).

The famous loko (pond) of Kanahā, today a wetland with brackish water designated a State wildlife sanctuary and home to endangered birds, is north-northwest of the current project area between Kahului Harbor and the airport. According to Pukui et al (1974:83), Kanahā can be translated literally to "the shattered [thing]." It was " . . . said to have been built by Chief Kiha-a-Piʻilani, brother-in-law of ʻUmi [. . .] who lived about A.D. 1500" (ibid.). In Hawaiian traditions,

Kanahā is often paired with another loko named Mauʻoni, which was likely a distinct pond that is now included in the larger wetland of Kanahā.

Puʻunēnē (literally, "goose hill," ibid.:202) is the name of a small cinder cone east-northeast of the project area between the airport and Pāʻia; and, also the name of a plantation settlement area adjacent to proposed mixed-use development portion of the project area.

2.1.1 Moʻolelo (Oral-historical Accounts)

Hawaiians were fond of naming natural phenomena such as winds and rains of the many named places on the traditional cultural landscape. The name for the wind of Wailuku, according to an oli (chant) on the topic of Maui and Molokaʻi's winds, is Iʻaiki (Nakuina 1990:55), which can be translated as "little fish" (Pukui and Elbert 1986:93). Two rains associated with Wailuku were called Kiliʻoʻopu—which is a variety of native grass used to string small fish—and ʻUlalena, which can be translated as "yellowish-red" (ibid.:367). Both of these rains are described in mele ʻāina (songs about the land and resources of Hawaiʻi) compiled by Akana and Gonzalez (2015:83, 267), and with associations to place names in and around the current project area such as Puʻukoaʻe and Pūlehu.

Pukui's (1983) *ʻŌlelo Noʻeau, Hawaiian Proverbs & Poetical Sayings* includes several entries about both Wailuku and Kahului and also Kanahā. The Wailuku entries include associations with battles that took place on the open expanse of the isthmus of Maui, the famous Nā Wai ʻEhā area and the character of the Wailuku landscape. Referring to famous battles including Wailuku, Pukui (ibid.:5) recounts:

> Ahulau ka Piʻipiʻi i Kakanilua.
>
> A slaughter of the Piʻipiʻi at Kakanilua.
>
> In the battle between Kahekili of Maui and Kalaniʻopuʻu of Hawaiʻi, on the sand dunes of Wailuku, Maui, there was a great slaughter of Hawaiʻi warriors who were called the Piʻipiʻi. Any great slaughter might be compared to the slaughter of the Piʻipiʻi.

And also (ibid.:184)

> Ke inu aku la paha aʻu ʻĀlapa i ka wai o Wailuku.
>
> My ʻĀlapa warriors must now be drinking the water of Wailuku.
>
> Said when an expected success has turned into a failure. This was a remark made by Kalaniōpuʻu to his wife Kalola and son Kiwalaʻō, in the belief that his selected warriors, the ʻĀlapa, were winning in their battle against Kahekili. Instead they were utterly destroyed.

The references to Kahului stress the qualities of the ocean in the bay as well as the loko of Kanahā and Mauʻoni (Pukui 1983:284):

> Pākāhi ka nehu a Kapiʻioho.
>
> *The* nehu *of Kapiʻioho are divided, one to a person*.
>
> Kapiʻioho, ruler of Molokaʻi, had two ponds, Mauʻoni and Kanahā, built on his land at Kahului, Maui. The men who were brought from Molokaʻi and Oʻahu to

> build the ponds were fed on food brought over from Moloka‘i. The drain on that island was often so great that the men were reduced to eating *nehu* fish, freshwater *‘opae* and *poi*. The saying is used when *poi* is plentiful but fish is scarce and has to be carefully rationed.

Various mo‘olelo, whose full discussion is beyond the scope and purpose of this document, concern the origins and construction of the ponds at Kanakā and Mau‘oni as well as their relationship to important chiefs of Maui (see, e.g., Kamakau 1961:36-46; Manu 1884).[2] The life and times of Kahekili, Maui’s last warrior-king who ruled from circa 1766 until 1782, also figure prominently in mo‘olelo about this part of the island. In addition to Lahaina (or Lāhaina) and Hāna, Wailuku was another seat of political power in traditional times, and Kahekili and his people were said to frequent the Wailuku area for its surf and ocean activities (see, e.g., Kamakau 1961:83). Other battles, such as the famous one in 1790 between Kamehameha and Kahekili’s son, Kalanikūpule, were also centered on Wailuku and Wailuku Stream; known as the battle of Kepaniwai, literally the “water dam,” (Pukui et al. 1974:109) in reference to the great number of dead bodies filling the stream and blocking its course.

2.2 Historic Period

2.2.1 Proto-Historic Accounts

Early accounts of Maui by European explorers have been summarized and retold many times in many reports over the years. The following excerpts are from various secondary literature sources, as cited below. Yucha et al. (2020:21) discuss Captain James Cook’s observations upon entering Kahului Bay:

> Kahekili was at Wailuku when Captain James Cook and his ships *Resolution* and *Discovery* encountered Maui. Cook first sighted the island on 26 November 1778 with his ship *Resolution* positioned three miles off the Wailuku shore. Cook recorded the encounter in his logbook:
>
> > In the country was an elevated saddle hill, whose summit appeared above the clouds. From this hill, the land fell in a gentle slope, and terminated in a steep rocky coast, against which the sea broke in a dreadful surf. Finding that we could not weather the island, I bore up, and ranged along the coast to the Westward. It was not long before we saw people on several parts of the shore, and some houses and plantations. The country seemed to be both well wooded and watered; and running streams were seen falling into the sea in various places. (Speakman 1978)
>
> Cook records that the Hawaiians who came out in canoes to trade for supplies appeared “to be of the same nation with the inhabitants of the islands more to leeward [i.e., O‘ahu and Kaua‘i] which we had already visited [ten months earlier in January 1778]; and… they knew of our having been there” (in Speakman 1978:23-24).

[2] Hawaiian historian Moses Manu published a serialized account of a high chief of Maui known as Kiha-a-Pi‘ilani in the Hawaiian language newspaper *Ku Okoa* between January 12, 1884 to August 23, 1884; and included details on these ponds.

Ruberti et al. (2021:27-28) briefly summarize the earliest English (Cook) and French (La Pérouse) explorers who documented their observations about Maui:

> In 1778, Captain James Cook of the British Navy made contact with Hawai‘i as he led two ships, *Resolution* and *Discovery*, north from the Society Islands en route to North America. On this first encounter, the ships spent two weeks in the islands and visited O‘ahu, Kaua‘i, and Ni‘ihau while engaging in trade, principally of iron in exchange for food and water. The Hawaiian people treated the principal officers of these foreign ships as they would their *ali‘i* of the highest rank.
>
> Eight months later, in the fall of 1778, Captain Cook returned to Hawai‘i with the intent of spending the winter here. His ships arrived off the northern coast of Maui on the morning of November 26, and the next day, Kahekili, Maui’s *mō‘ī* at the time, paid a visit to the Discovery and gifted Captain Charles Clerke, in command of that ship, with an *‘ahu ‘ula* (feather cloak). The ships remained off the coast of Maui until early-January before heading to Hawai‘i Island, where a dispute between the foreigners and the Hawaiians famously resulted in Cook’s death at Kealakekua.
>
> Eight years passed before any foreigners returned to Hawai‘i. In 1786, and from that point on, one or more ships visited the islands every year. In May of 1786, the French explorer Jean-François de La Pérouse sailed past Maui and landed briefly on the island’s south side, at Keone‘o‘io in the *moku* of Honua‘ula, anchoring in the bay that now bears his name (La Pérouse Bay). He was the first European to set foot on Maui and spent one day ashore engaging in trade and exploring the area (Dunmore 1985:227). Accounts from this expedition suggest a relatively large and well-established community with ready access to resources:
>
> > More than one hundred and twenty of them, men, women, and children had been out in their canoes since the crack of dawn and immediately offered to begin trading. Two of them, who seemed to be the men of authority, approached. They made a long, serious speech to La Pérouse, who did not understand a single word, and presented him with a pig, which he accepted. In return he gave them some medals, hatchets, and pieces of iron, which they valued very highly. By this generosity, the French succeeded in winning the friendship of the islanders.
> >
> > During his reconnaissance, La Pérouse saw four small villages of ten or twelve houses. These are made of grass and are covered with the same material. They have the same shape as the thatched cottages found in certain parts of France. The roofs are pitched on two sides, and the door, which is located on the gable end, is only three feet high, so that it is necessary to stoop when entering. The furnishings consist of mats, which like our carpets make a very neat flooring on which the islanders sleep. The only cooking utensils they have are gourds painted in various colors. Their cloth is made from the paper mulberry tree, but, although painted in a great variety of colors, it appears less skillfully made than the cloth of other South Sea islanders.
> >
> > When he returned aboard, the commander learned that Captain Clonard, his executive officer, had received a chief and had bought a cape and a fine red

> helmet from him; he had also acquired more than one hundred pigs, some bananas, yams, taro, mats, and various small objects made of feathers and shells. (Jean-François de Galaup 1969:24-25)

2.2.2 Early 1800s

Hawai‘i’s introduction to the “world system” economy starting during the time of Kamehameha (in general terms, circa 1800) began with the archipelago being used by maritime travelers as a provisioning stop on the way to other places and then for the extraction of ‘iliahi (sandalwood, *Santalum* sp.) to trade in eastern Asia. This latter development in the first couple decades of the nineteenth century had a devastating adverse impact on the maka‘āinana (commoners) and environment of the islands. These economic changes, in the context of the end of the traditional kapu system of ancient religious protocols and beliefs in 1819 and the arrival of Christianity in 1820, have been recounted many times in numerous resources.

Yucha et al. (2020:21-22) discuss demographic trends and population estimates on Maui during the early to middle 1800s:

> Estimates of the early nineteenth century population of Kahului are difficult to find. In regions where Protestant missionaries had been stationed, statistical records were updated often, but the missionary out-station region of Kahului appeared to have received scant attention during the early years of the Protestant missions. In 1830, Protestant missionaries recorded school attendance figures for the out-stations of Wailuku as: Waihu [Waihe‘e] at 612 students, Waikepu [Waikapū] at 329 students, and Waiehu at 103 students, with no mention of Kahului [. . .] In 1831, the missionaries stationed on Maui began to advocate for the conversion of the Wailuku branch-station of the Lahaina Mission to be a standalone mission station [. . .] In 1832, 12 years after the arrival of the first missionaries in Hawai‘i [. . .] and nine years following the establishment of the Lahaina Mission Station [. . .] the official Wailuku Mission Station was formed by the Reverend Jonathan Smith Green [. . .] A larger meeting house with a thatched roof was erected by the congregation in 1834, and [. . .] the construction of a stone meeting house designed by Reverend Edward Baily was started and subsequently brought to completion in 1840 [. . .]
>
> The initial documentation of life in Wailuku during the first half of the nineteenth century was recorded by the Protestant missionaries from their station at Wailuku in 1832. The missionary census of 1831-1832 recorded a total population of 2,256 in Wailuku Ahupua‘a, comprising 918 adult males, 860 adult females, and 478 children [. . .] By 1840, the Wailuku population had dropped to 1,364, representing a diminution of 892 in just four years [. . .] (brackets added)

A well-known map produced by University of Hawai‘i demographer John Welsey Coulter (1931) (Figure 9) shows the current project area as east of the main population center of Wailuku and southwest of the coastal and near-coastal settlement areas of Hāmākuapoko.

2.2.3 Middle 1800s – Māhele ‘Āina

Beginning in the 1840s, private property was introduced via formation of the Board of Commissioners to Quiet Land Titles, and the adoption of the Māhele (i.e., the division of Hawaiian lands). In 1845, King Kamehameha III waived his right to full authority over all lands; he portioned

out some for his personal use (crown lands), and divided the rest into government land, land for the ali‘i (chiefs) and konohiki (land overseers), and land for commoners (kuleana land) (Alexander 1891; Board of Commissioners 1929; Moffat and Fitzpatrick 1995). After this time, Land Commission Awards (LCAs) were granted to commoners as kuleana parcels for fee ownership. LCAs record who resided on the land and how the land was used. There are no kuleana (commoner) parcels, nor claims, in or near the project area. Another type of land ownership introduced in the middle nineteenth century was Land Grants (LG), which were not actually “grants” but purchases of private land from the Hawaiian government. The current project area was once part of such a purchase (LG 3343) to Claus Spreckels, who founded a vast commercial sugar cane operation that included the current project area.

Yucha et al. (2020:24) discuss Wailuku’s place in the Māhele ‘Āina:

> Wailuku was declared as “Crown Land” to be used to support the Kingdom of Hawai‘i (Zambucka 1977:48).
>
> Ruth Ke‘elikolani, half-sister of Kamehameha V (Lot Kapuāiwa), inherited the *ahupua‘a* of Wailuku from Lot Kapuāiwa on his death in 1872. Ruth Ke‘elikolani then sold a portion of her Wailuku land holdings to the sugar-industrialist Claus Spreckels in 1882. Spreckels subsequently received Land Grant 3343 from King Kalakaua, that consisted of 24,000 acres of the southeastern portion of the Wailuku Ahupua‘a (Zambucka 1977:48). Spreckels’ acquisition of the 24,000-acre parcel in fee simple occurred when he agreed to purchase a part-interest in Crown Lands of the Kingdom of Hawai‘i from Princess Ruth Ke‘elikolani. This agreement allowed the Commission of Crown Lands to exchange Spreckels’ part-interest for the fee-simple title to central Maui lands he had previously leased from the Kingdom in 1877 (Daws 1968) [. . .]
>
> Although almost 300 subsequent awards to individuals were awarded by the Land Commission for kuleana lands within the *ahupua‘a* of Wailuku, a majority of these claims represented lands located in the upland portion of the *ahupua‘a* focused along the flood plain of the ‘Īao Valley Stream, as well as mauka of the area identified as the “Sand Hills” [. . .] The disposition of these awards may reflect a continuation into the post-Contact era of the traditional Hawaiian settlement of Wailuku and avoidance of the Sand Hills area [referring to an area west of the current project area known for containing unmarked Hawaiian burials] (brackets added)

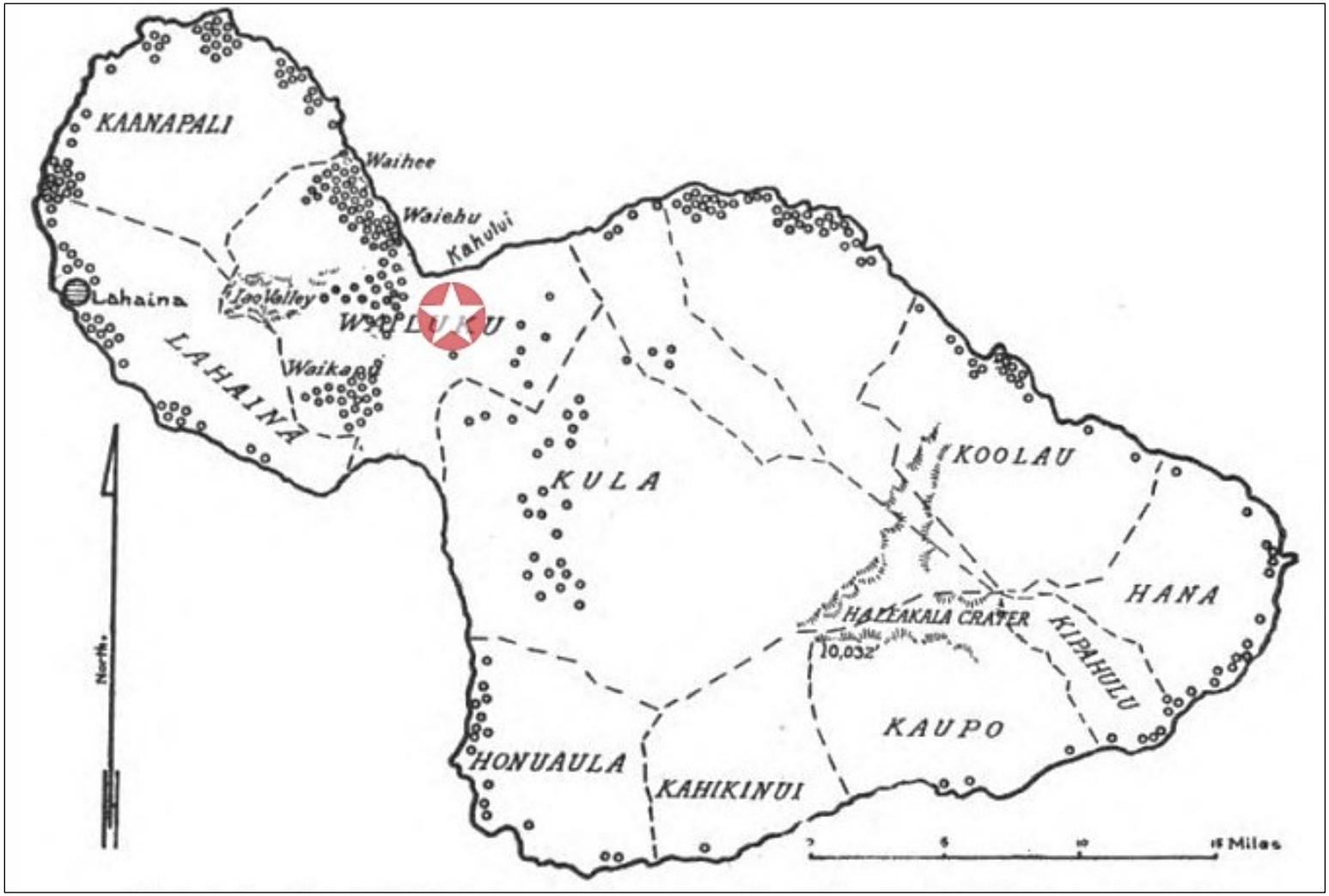


Figure 9. Main population centers on Maui circa 1853 according to demographer Coulter (1931:22); each circle represents 50 people; approximate location of current project area indicated by star symbol

2.3 Historical Maps and Aerial Images

Figure 10, a portion of 1885 map (Registered Map 1268AWIDEcolor) by F.S. Dodge, shows the entire project is within the limits (denoted by red line boundary) of commercial sugar cane operations of the Hawaiian Commercial and Sugar Co. (HC&S). This map does not explain the meaning of the red and dark blue points—including two just west of the project area. At this time, the entire area was referred to as Wailuku and the name C. Spreckles as the major landowner is also shown. Puʻu Koae (spelled Koahe on other historic maps) is shown south of the project area.

Figure 11, a portion of 1893 map by Lyons, depicts the extent and features of the original Sprecklesville Plantation within which the proposed mixed-use development project area was located. This map shows several railroad lines crossing through and near the proposed mixed-use development project area. In addition to the main line ("Main R.R."), numerous named laterals (including "Sam Sing R.R." traversing the parcel) and branch lines are also depicted. These lines would have moved harvested cane from the fields to processing mills at Pāʻie and Puʻunēnē. A series of workers' camps are depicted along the "Waihee Ditch," which cuts across the project area along Pulehu Road, including one just east of the current project area along Pulehu Road. Another major irrigation ditch labeled "Haiku Ditch" also cut across (presumably under via a culvert) Pulehu Road. A fence line labeled "H. C. & S." cuts across the middle of the project area along Pulehu Road.

Figure 12, a portion of 1924 topographic map, shows many site-features and details on the landscape in and around the current project area, showing the area was completely dedicated to the commercial sugar cane industry at this time. The "Sam Sing" railway line runs from the Sam Sing Camp to a narrow gauge line to the north. A pipeline traversed the eastern portion of the proposed mixed-use development project area. Many other ditches, pipelines and rail lines are depicted in or adjacent to the project area along its length with numerous workers' camp on either side of Kula (now Pulehu) Road.

Figure 13, a portion of 1929 map, shows similar features in less detail than the previous (1924) map.

Figure 14, a portion of 1950 aerial photograph, shows the proposed mixed-use development project area completely under commercial sugar cane agriculture with several linear resources depicted consisting of roads, an irrigation ditch along the southern boundary of the proposed mixed-use development project area and a pipeline in its eastern portion. Other than these features, there are no structures or developments in the proposed mixed-use development project area.

Figure 15, a 1955 USGS topographic map, shows similar commercial sugar-cane features along its entire length as the two aerial photographs from 1950.

Figure 16, a portion of 1965 aerial photograph,

Figure 17, a portion of 1976 aerial photograph,

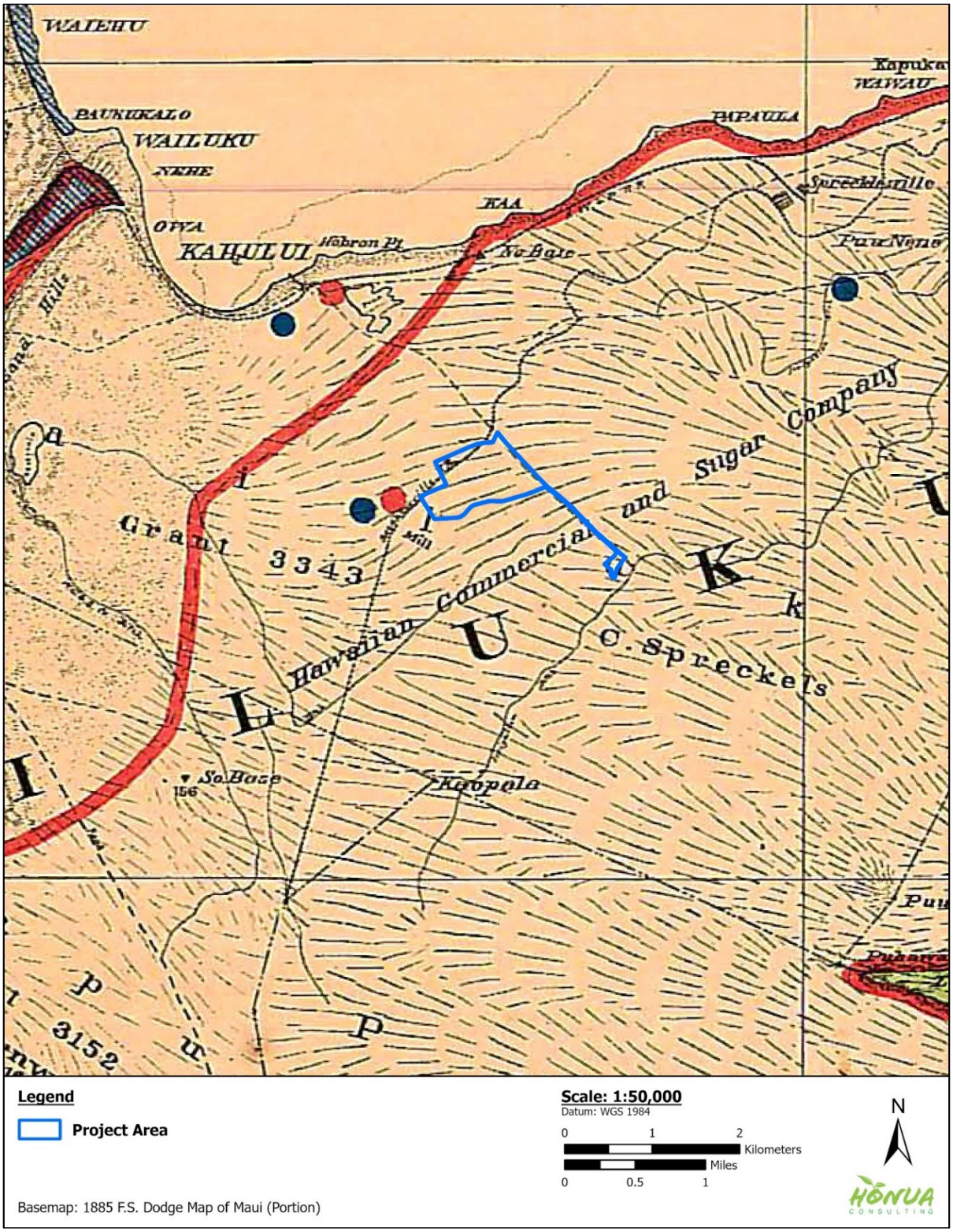


Figure 10. Portion of 1885 map showing project-area location (Registered Map 1268AWIDEcolor) (base map source: DAGS Land Survey Map Search, http://ags.hawaii.gov/survey/map-search/)

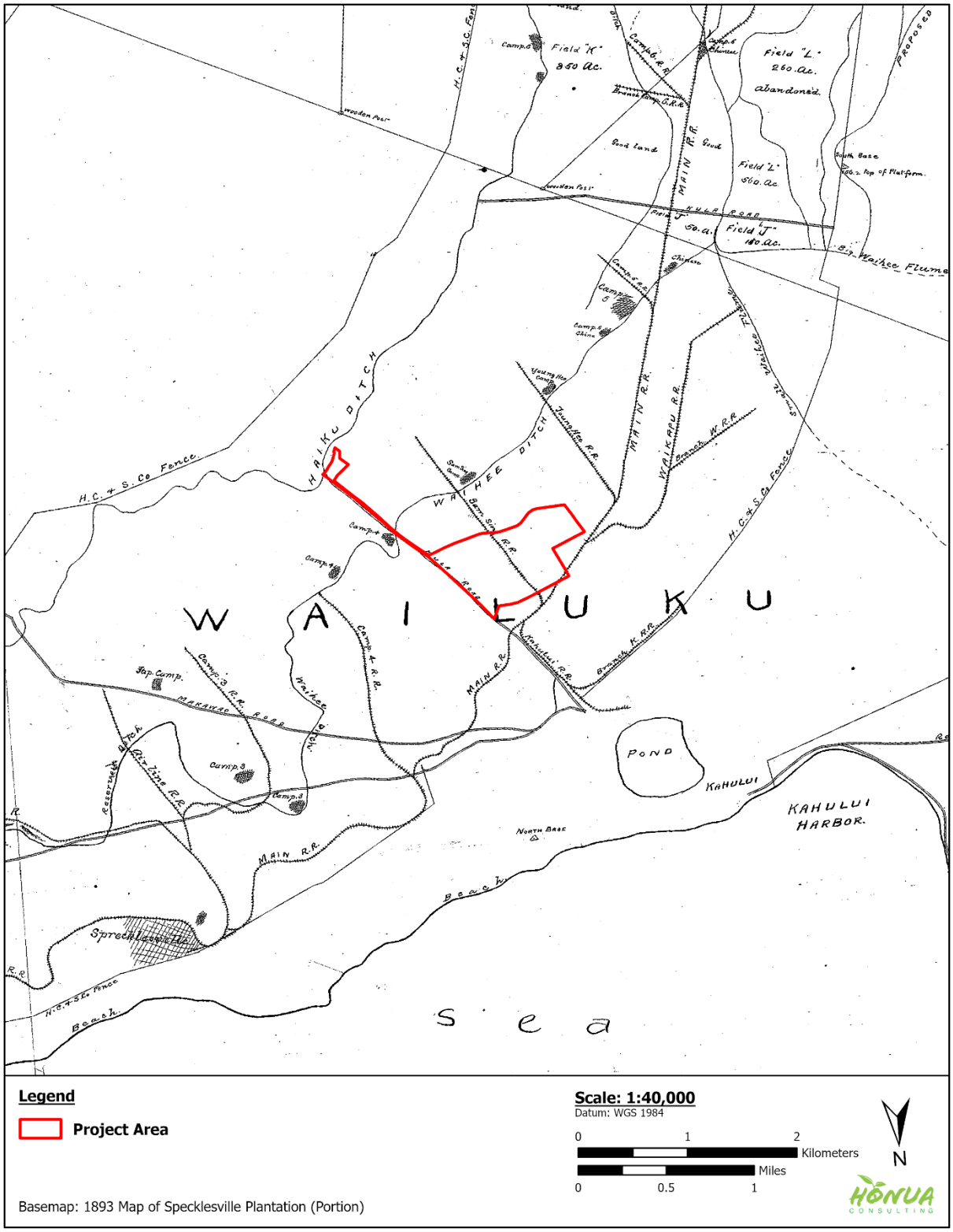


Figure 11. Portion of 1893 map of Specklesville Plantation (Registered Map 1786); note, map was produced "upside down" (i.e., north arrow facing down) (base map source: DAGS Land Survey Map Search, http://ags.hawaii.gov/survey/ map-search/)

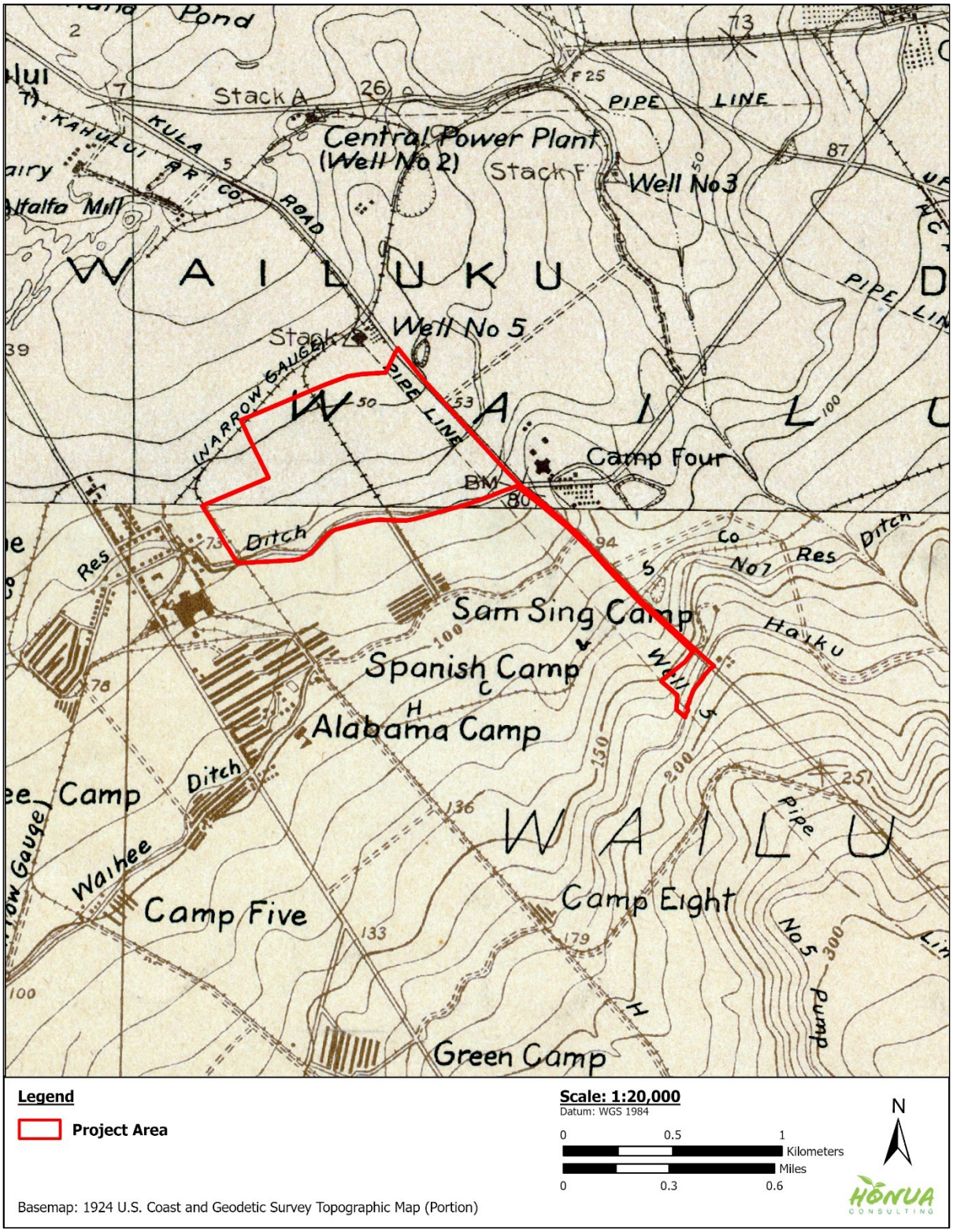


Figure 12. Portion of 1924 topographic map showing project-area location (base map source: University of Hawai‘i-Mānoa’s digital maps, http://magis.manoa.hawaii.edu/maps/index.html)

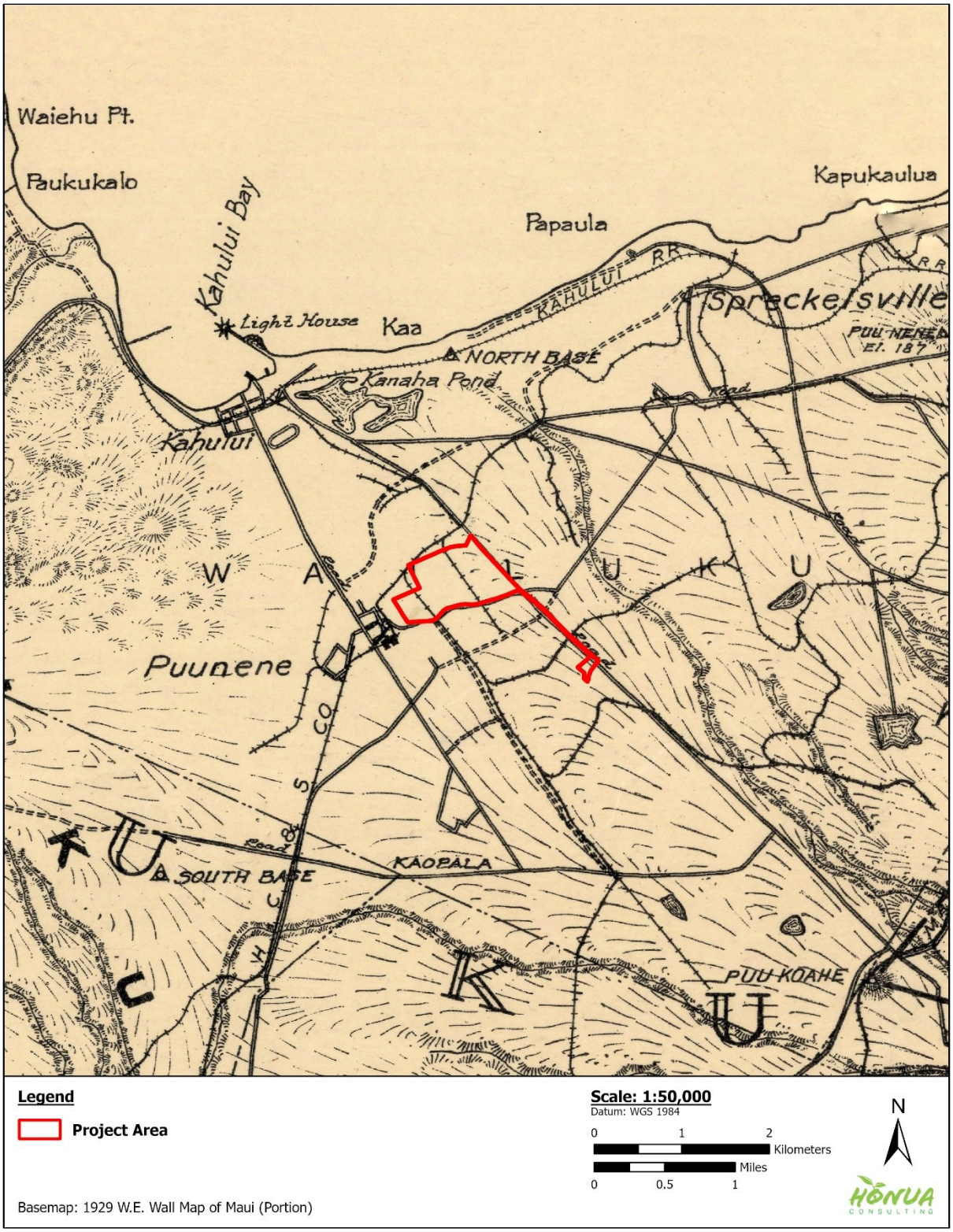


Figure 13. Portion of 1929 topographic map with project area location (base map source: University of Hawai‘i-Mānoa’s digital maps, http://magis.manoa.hawaii.edu/maps/index.html)

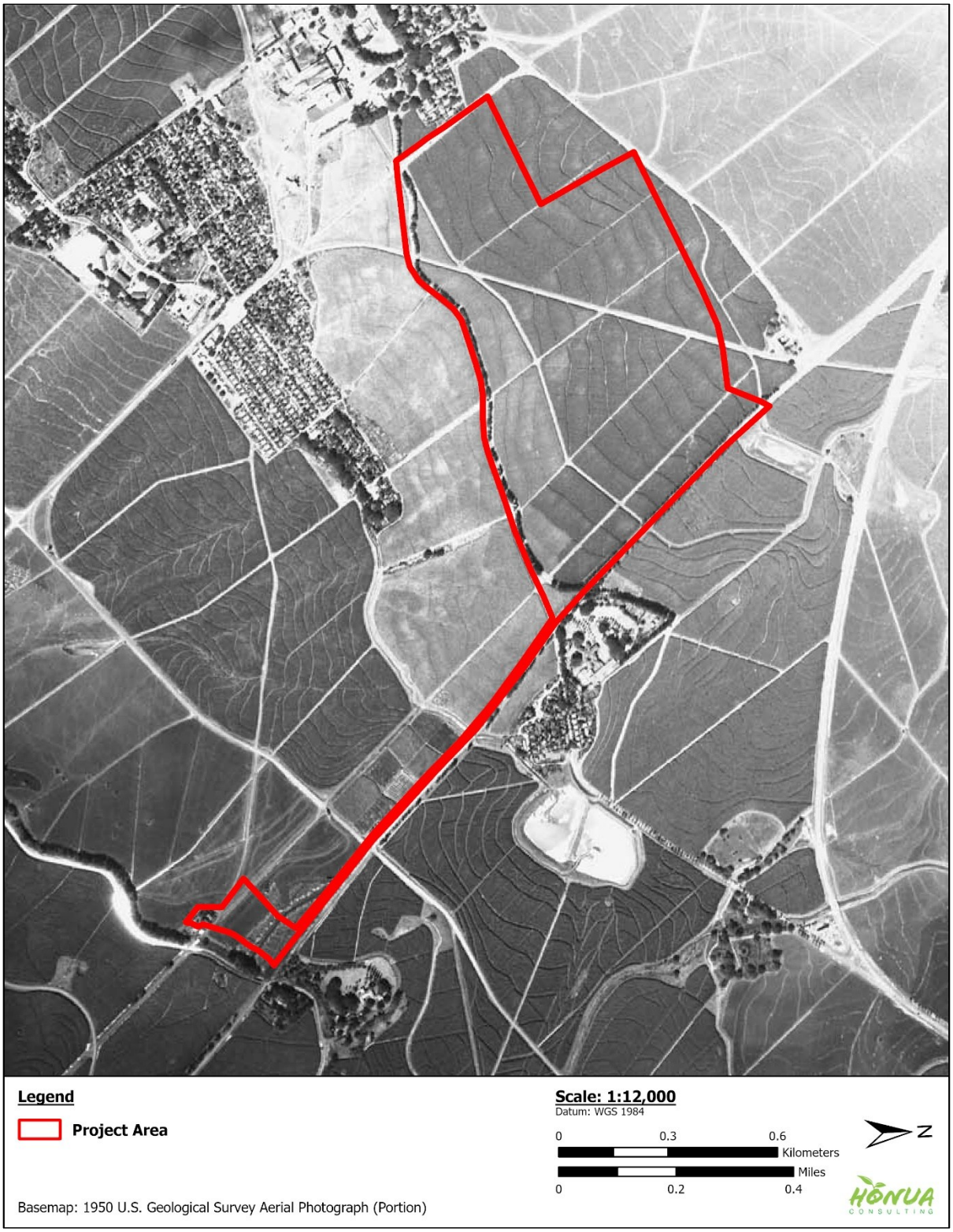


Figure 14. Portion of 1950 aerial photograph with project area location (base map source: University of Hawai‘i-Mānoa’s digital maps, http://magis.manoa.hawaii.edu/maps/index.html)

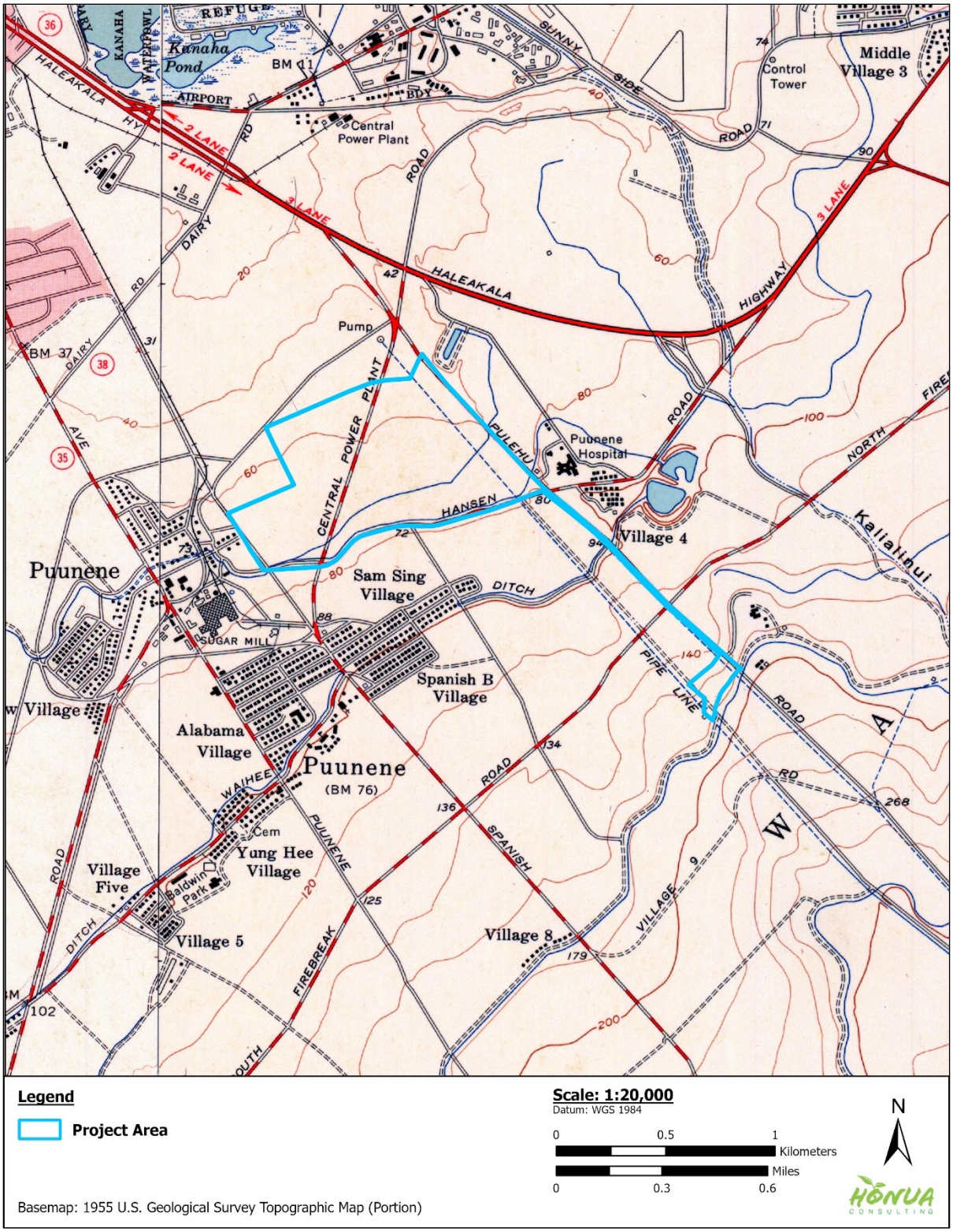


Figure 15. Portion of 1955 USGS topographic map with project-area location (base map source: University of Hawai‘i-Mānoa’s digital maps, http://magis.manoa.hawaii.edu/maps/index.html)

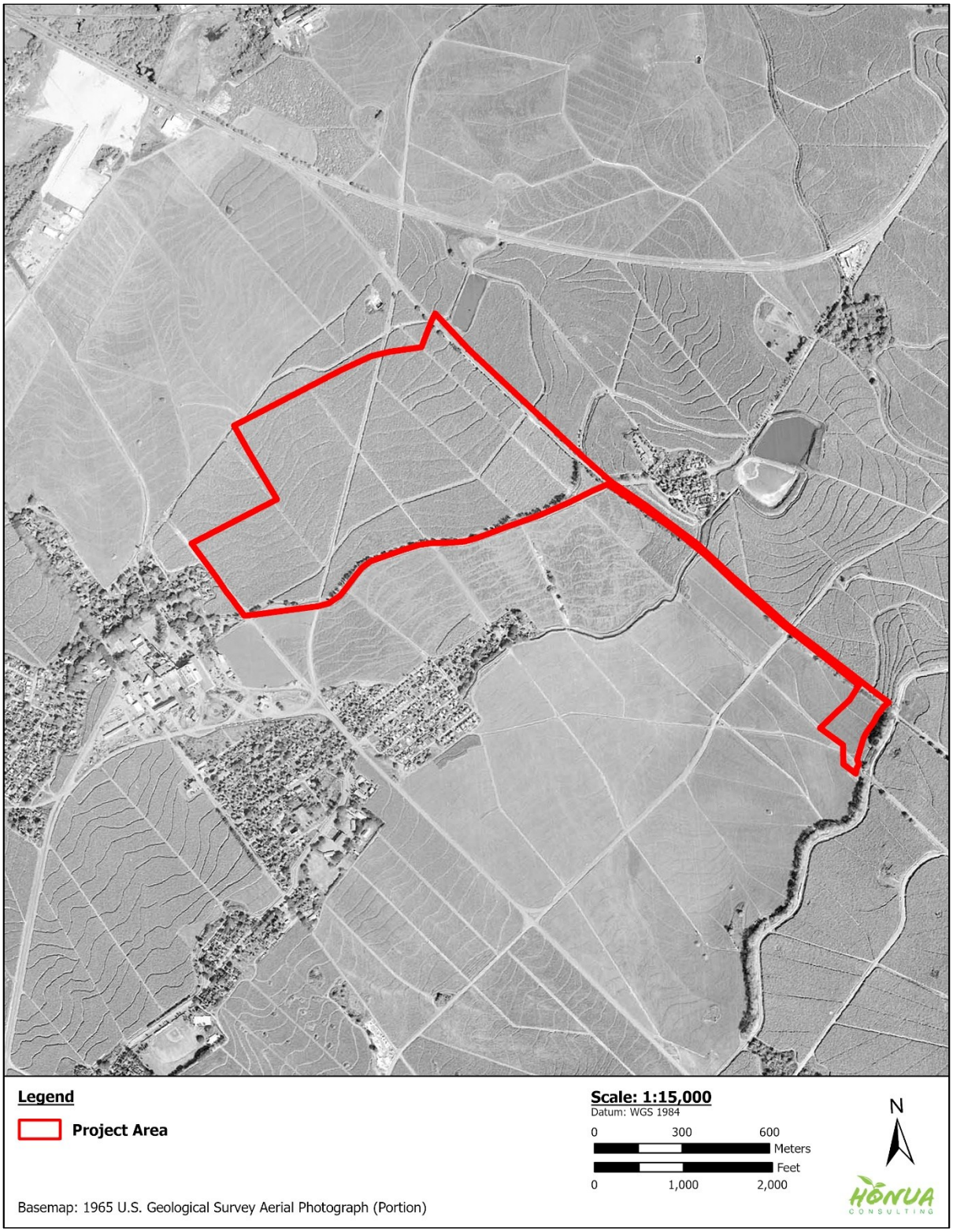


Figure 16. Portion of 1965 aerial photograph with project area location (base map source: University of Hawai‘i-Mānoa’s digital maps, http://magis.manoa.hawaii.edu/maps/index.html)



Figure 17. Portion of 1976 aerial photograph with project area location (base map source: University of Hawai‘i-Mānoa’s digital maps, http://magis.manoa.hawaii.edu/maps/index.html)

Section 3 Previous Archaeological Studies

In this section, we summarize relevant previous archaeological studies in and near the project area to reconstruct human use and modification of the land in both pre-Contact and historic-period times. The main purpose of presenting this information is to develop predictive data about the types and distribution of archaeological historic properties and their component features we expected to encounter; and to assist interpretation of any new findings. If this project requires additional archaeological investigation, such as an archaeological inventory survey (AIS) or archaeological monitoring, this section may be expanded.

Table 1, Figure 18 and Figure 19 summarize and depict previous archaeological and other cultural-resource management studies in and near the project area.

3.1 Previous Studies in and near Current Project Area

Prior to the advent of modern, professional archaeological research on Maui, several early studies that included compilations and surveys of heiau (traditional Hawaiian temples) and other prominent structures such as fishponds and settlement/cultivation areas were completed (e.g., Stokes 1916; Walker 1931; Thrum 1938). Starting in the 1970s, with the advent of Federal and State historic preservation laws, updated island-wide survey and compilation projects (i.e., Emory and Hommon 1972; Sterling 1998) were also completed. These studies, which focused on above-ground sites, identified one site (SIHP # 50-50-05-00056) within 0.5 miles of current project area (i.e., just west of the proposed mixed-use development project area), described by Walker (1931) as a platform-terrace heiau that had been destroyed by the time of his survey work.

Other studies are summarized below.

3.1.1 Connolly 1981

On behalf of the State Department of Transportation, Airports Division, Connolly (1981) conducted a brief (two-day) archaeological reconnaissance survey at and around the (then) extent of Kahului Airport to support a master plan for the facility. Two traditional Hawaiian sites were identified more than one mile northeast of the proposed mixed-use development project area: State Inventory of Historic Places (SIHP) # 50-50-05-01798, described as a burial site with an unknown number of individuals that had been partially disturbed in the past. Connolly (ibid.) summarized this site as follows:

> Site 1 [SIHP # 01798] consists of an uncertain number of burials located within the boundaries of the airport proper. These burials were pointed out by Mr. Hanchett. He stated that several burials were discovered some years ago during bulldozing to clear a section of the airport for development. Upon finding the burials, work was stopped. Mr. Charles Maxwell was brought in to bless and rebury the bones off to the side of the construction areas [. . .]. Other, undisturbed burials were left in place, and to prevent any further disturbance of them large boulders were pushed around the site by the contractor [. . .]. (brackets added)

The second site identified by Connolly (ibid.), SIHP # 50-50-05-01798, consisted of " . . . a possible prehistoric house site located approximately 200 meters northeast of the burials, in the sand dunes just to seaward of the airport proper."

3.1.2 Watanabe 1987

Watanabe (1987) conducted archaeological reconnaissance survey of three, discrete parcels on Maui in advance of the (then) proposed Relay Mirror Experiment, a project that involved using a mirror to reflect sunlight and create a mirror-based solar collector. The project area was located east of, and adjacent to, the proposed mixed-use development project area, east of Pulehu Road. No historic properties were identified at this location, which had been severely impacted by commercial sugar cane agriculture in the historic period.

3.1.3 Welch 1988, Tomonari-Tuggle and Welch 1995

International Archaeological Research Institute, Inc. (IARII) (Welch 1988) conducted additional archaeological reconnaissance survey in and around Kahului Airport following up on previous work by Connolly (1981). Welch (1988) provided further documentation of two sites identified by Connolly (1981) (see above) and surveyed an area west of the previously identified sites. Heavy modern disturbance was noted; no new historically significant or culturally sensitive finds were made of above-ground sites. Sand was noted in the project area, which was the rationale for a recommendation for archaeological monitoring of future ground disturbance.

IARII (Tomonari-Tuggle and Welch 1995) conducted additional archaeological reconnaissance survey in and around Kahului Airport with an emphasis on the identification of World War II military structures and structural remnants; documentary research also indicated the possibility of encountering plantation village remnants inland of the eastern end of the runways, as well as railroad remnants.

3.1.4 Riford and Cleghorn 1989

Bishop Museum archaeologists (Riford and Cleghorn 1989) conducted an archival assessment (i.e., an archaeological literature review) of proposed power plant sites across Maui. The Puʻunēnē HC&S Mill Site, just southwest of the current project area, was determined to have low potential for above-ground archaeological features given its severe impact by commercial sugar cane agriculture in the historic period (ibid.:13). The potential for encountering subsurface archaeological resources was deemed moderate in places where above-ground modification to the landscape was minimal (ibid.).

3.1.5 Sinoto and Pantaleo 1992

Aki Sinoto Consulting conducted an AIS for the proposed East Maui Waterline Project consisting of a linear corridor measuring more than 20 miles from East Maui to an existing pipeline facility in Central Maui near Kuihelani Highway (Sinoto and Pantaleo 1992). Much of the waterline project area consisted of paved roads or areas of sugar cane production. No subsurface testing was conducted. No historic properties were identified.

3.1.6 Hammatt 1995

Cultural Surveys Hawaiʻi (CSH) conducted archaeological survey (with no subsurface excavation) at three discrete parcels adjacent to Pulehu Road (Hammatt 1995). One of the parcels partially overlaps with part of Burgett and Spear (1997) and Monahan (2023) project areas. No historic properties were identified.

3.1.7 Burgett and Spear 1997

Scientific Consultant Services (SCS) conducted archaeological survey (with no subsurface excavation) of an approximately 65-acre rectangular parcel along the west side of Pulehu Road (adjacent to the ROW portion of the current project area) and approximately 10 miles of proposed utility corridors from Puʻunēnē Mill to Pāʻia Mill. The 65-acre parcel was found to be entirely in active sugar cane agriculture. In the utility corridor portion of the project area, no traditional Hawaiian archaeological features were observed but some irrigation ditches and other potential agricultural sites from the historic period were noted.

3.1.8 Tomonari-Tuggle et al. 2001

An AIS of the former Naval Air Station (NAS) Puunene was conducted by Tomonari-Tuggle et al. (2001). The approximately 1,875-acre project area yielded numerous sites and features. These include all existing features of NAS Puunene; remains of a cattle ranch dating from the late 1940s; the area of pre-war Camp 6; abandoned features of the HC&S sugar plantation; and remains of the Kihei railroad line (Tomonari-Tuggle et al. 2000: iii). None of these sites are within 0.5 miles of the current project area.

3.1.9 Hill et al. 2008

CSH conducted archaeological monitoring in support of a cesspool conversion project at Puʻunēnē School southwest of the proposed mixed-use development project area. No historic properties were identified; fragments of historic-period and modern glass, ceramics and nails, including a historic-period medicine bottle, were collected from excavated material. No SIHP #s were generated for these artifact finds.

3.1.10 Madeus and Fredericksen 2008

Xamanek Researches (Xamanek) conducted a AIS of an approximately 12.8-acre parcel along the east side of Pulehu Road (Madeus and Fredericksen 2008) identified one historic property, designated SIHP # 50-50-05-06360, representing structural remnants of the old Puʻunēnē Hospital.

3.1.11 McCurdy et al. 2009

CSH conducted an archaeological literature review and field inspection (ALRFI) of a 13-acre project area on the east side of Pulehu Road (McCurdy et al. 2009). No historic properties identified. The authors state (ibid.ii):

> The historic use of the project area for agriculture and modern developments therein likely caused the destruction of any above-ground historic properties within the current project corridor. Background research and prior archaeological investigations in the general vicinity of the project corridor indicate a limited potential for encountering subsurface cultural layers and human burials. However, subsurface deposits and features related to the historic use of the project area by commercial plantation activities is more likely.

3.1.12 Fuentes et al. 2014

Archaeological Services Hawai‘i (ASH) conducted burial treatment of SIHP # 50-50-05-07622 along the western boundary of the proposed mixed-use development project area (Fuentes et al. 2014). The find was described as “secondarily deposited human remains in imported pipe bedding during the Target construction.” Maui County Oiwi Resources, in response to the proposed project, asserts that “Several iwi kupuna were encountered in the immediate area during the constructions of Target and American Savings Bank. Additionally, the presence of a sacred site, indicates the cultural significance of this area in the past and that much of the surrounding infrastructure, like the heiau, was destroyed by plantation activities in the past.”

3.1.13 Andricci and Dega 2018

SCS conducted an AIS along the east side of Pulehu Road at the current Central Maui Landfill Facilities (Andricci and Dega 2018). Their work included extensive subsurface testing (30 trenches) but no above-ground or subsurface sites were identified.

3.1.14 Pantaleo 2018

ASH (Pantaleo 2018) conducted burial treatment of SIHP # 50-50-05-08506 just northwest of the current project area. The find was described as “single skeletal element in secondary context recovered in fill material excavated during construction.” The site was identified on the property of American Savings Bank on Ho‘okele Street.

3.1.15 Monahan 2023

Honua (Monahan 2023) completed a cultural resources assessment (CRA) including a field inspection in support of the Waena Contingency Plan project at 8001 Pulehu Road; the project area of 65.7 acres was found to have been severely impacted by more than 100 years of commercial sugar cane and other, mechanized agriculture. Two potential historic properties were identified at the ground surface in the project area: both are plantation-era irrigation ditches that initially appear on maps dating to 1922 and 1954. These two ditches are still in use. These potential historic properties do not currently have SIHP #s. No traditional Hawaiian sites are located at the ground surface in the project area.

3.1.16 Yucha et al. 2023

CSH conducted an AIS on HC&S property adjacent to, and east of, Pulehu Road (Yucha et al. 2023). The report is in draft form only (i.e., currently unavailable to the public) because it is still in review with the SHPD. Basic details (findings, site type, GIS location of project area and results) were provided to Honua by Yucha as a professional courtesy. The AIS documented a historic-period Japanese cemetery designated SIHP # 50-50-05-09013 from which the burials had been removed and reinterred elsewhere in the past. An abandoned “cane haul” (sugar cane) road designated SIHP # 50-50-05-04092 was also documented.

Table 1. Summary of Previous Archaeological and other Historic-Preservation Studies in and near Current Project Area

Previous Study	Formal Type	Location	Results & Comments
Stokes 1916 Walker 1931 Thrum 1938 Sterling 1998	Earliest surveys / compilations of heiau (temples), other sites and wahi pana (legendary places)	Maui Island-wide	These studies focused on above-ground sites and identified 1 site (SIHP # 50-50-05-00056) within 0.5 miles of current project area; Walker (1931) described it as a destroyed platform-terrace heiau
Connolly 1981	Archaeological reconnaissance survey	Kahului Airport Master Plan project area	Identified 2 traditional Hawaiian historic properties, both of which are more than 0.5 mile from current project area: SIHP #s 50-50-05-01798 (human burial site w. undetermined number of individuals) & 01700 (possible pre-Contact house site remnants)
Watanabe 1987	Archaeological reconnaissance survey	Parcel directly east of, and adjacent to, proposed mixed-use development project area, east of Pulehu Road	No historic properties identified
Welch 1988	Archaeological reconnaissance survey	Kahului Airport	Other than 2 sites identified by Connolly (see above), no new sites identified
Tomonari-Tuggle & Welch 1995	Archaeological reconnaissance survey		Study focused on World War II-era military structures and structural remnants in airport area
Riford & Cleghorn 1989	Archaeological literature review and assessment	Multiple locations on Maui – closest to current project area just west of proposed mixed-use development project area	Pu‘unēnē HC&S Mill site assessed as mostly low potential for subsurface archaeological deposits w. some areas of moderate potential
Sinoto & Pantaleo 1992	Archaeological inventory survey (no excavation)	20-mile corridor across Central to Eastern Maui	No historic properties identified
Hammatt 1995	Archaeological survey (no subsurface excavation)	3 discrete parcels adjacent to Pulehu Road (see comments)	No historic properties identified (1 parcel partially overlaps w. part of Burgett & Spear 1997 and Monahan 2023)
Burgett & Spear 1997	Archaeological survey (no subsurface excavation)	Circa 65-acre parcel along west side of Pulehu Road and utility corridors	No historic properties identified
Tomonari-Tuggle et al. 2001	Archaeological inventory survey	Former Naval Air Station (NAS) Puunene (1,875-acre project area)	Identified numerous site/features including all existing features of NAS Puunene; remains of a cattle ranch dating from late 1940s; area of pre-war Camp 6; abandoned features of HC&S sugar plantation; and remains of Kihei railroad line; none

Previous Study	Formal Type	Location	Results & Comments
			of these sites are within 0.5 miles of current project area
Hill et al. 2008	Archaeological monitoring	Cesspool Conversion Project at Pu‘unēnē School southwest of proposed mixed-use development project area	No historic properties identified; fragments of historic-period and modern glass, ceramics and nails, including a historic-period medicine bottle, were collected from excavated material
Madeus & Fredericksen 2008	Archaeological inventory survey	12.8 acres east side of Pulehu Road	Identified 1 historic property: SIHP # 50-50-05-06360, remnants of old Pu‘unene Hospital
McCurdy et al. 2009	Archaeological literature review and field inspection	13-acre project area on east side of Pulehu Road	No historic properties identified
Fuentes et al. 2014	Burial treatment	Along western boundary of proposed mixed-use development project area	Documented burial site SIHP # 50-50-05-07622
Andricci & Dega 2018	Archaeological inventory survey	East side of Pulehu Road at current Central Maui Landfill Facilities	Included subsurface testing (30 trenches); no historic properties identified
Pantaleo 2018	Burial treatment	Just northwest of proposed mixed-use development project area	Documented burial site SIHP # 50-50-05-08506
Monahan 2023	Archaeological literature review and field inspection	Circa 65-acre parcel along west side of Pulehu Road	Same project area as Hammatt 1995 and rectangular parcel studied by Burgett & Spear 1997; 2 irrigation ditches that may qualify as historic properties were identified but have not received SIHP #s
Yucha et al. 2023	Archaeological inventory survey (report is currently in draft form, in review with SHPD, and details were provided to Honua by Yucha as a courtesy)	HC&S Quarry east of Pulehu Road	Documented historic-period Japanese cemetery designated SIHP # 50-50-05-09013 and an abandoned “cane haul” (sugar cane) road designated SIHP # 50-50-05-04092

Abbreviations: SIHP = State Inventory of Historic Places

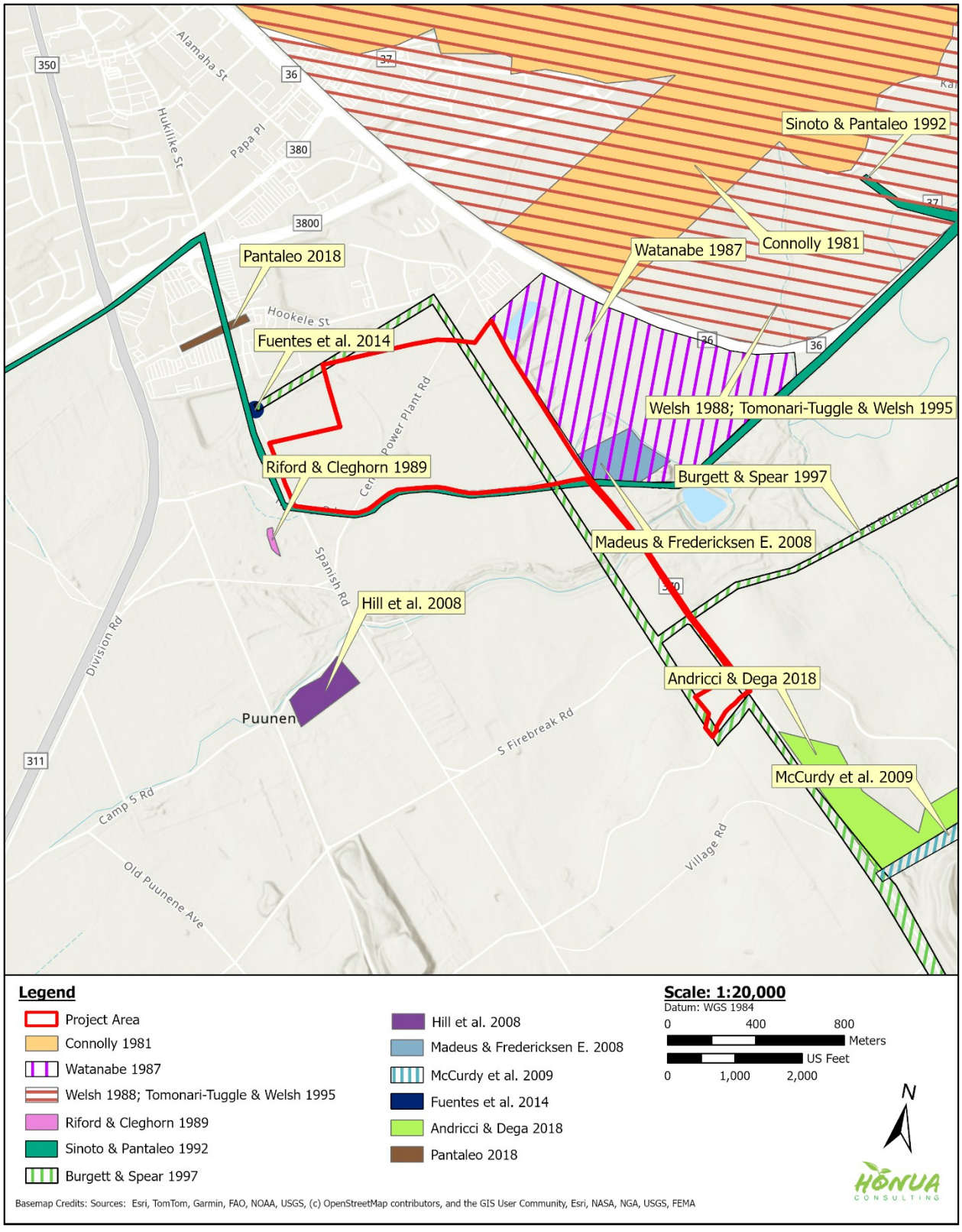


Figure 18. Previous archaeological studies in and near the project area (see table and text above for details)

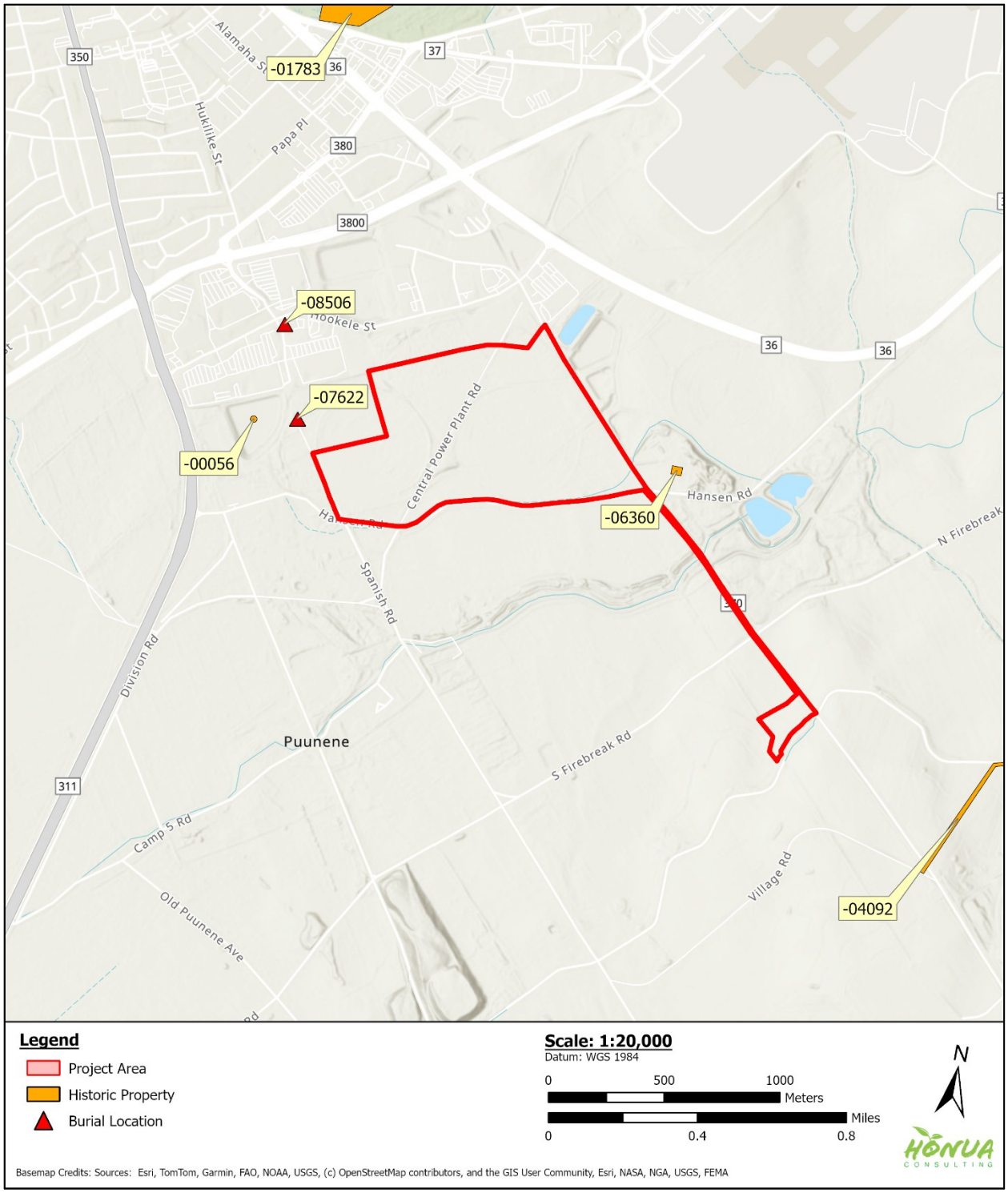


Figure 19. Previous historic properties documented in and near the project area (see table and text above for details

Section 4 Conclusion

This archaeological literature review and assessment (ALRA) report was completed in support of environmental review and subdivision approval for the Hoʻonani Village Mixed-Use Development project at a 166.5-acre portion of TMK (2) 3-8-006:004 21 Hansen Road, Wailuku Ahupuaʻa, Maui. An off-site well located in a portion of TMK (2) 3-8-006:001, which is planned to be repurposed to serve the proposed development project, is to the south along the Pulehu Road right-of-way (ROW).

The proposed mixed-use development parcel is adjacent to a commercial development known as Puʻunēnē Shopping Center. Other than the Pulehu Road ROW, the project area parcels are privately owned, and consist of undeveloped land previously used for commercial agriculture; the proposed mixed-use development parcel is bounded by Pulehu Road (east), Hansen Road (south) and undeveloped land (west and north). Central Power Plant Road runs through the parcel. The off-site well parcel, which includes an existing well, is bounded by Pulehu Road to the east and undeveloped land on its other sides. The Pulehu Road ROW connects these two project parcels.

The proposed project is described in the Introduction (see p.1).

The objectives of this study include: (1) documentation and description of the parcel's land-use history in the context of both its traditional Hawaiian character as well as its historic-period changes; (2) identification of any potential above-ground historic properties or component features; and (3) providing information relevant to the likelihood of encountering historically-significant cultural deposits in subsurface context during construction.

This ALRA is not an archaeological inventory survey (AIS) and did not include a field inspection. The document may be used, however, to consult with the State Historic Preservation Division (SHPD) in compliance with Hawaiʻi Revised Statutes (HRS) Chapter 6E-42 and Hawaiʻi Administrative Rules (HAR) Chapter 13-284; and to satisfy environmental review under HRS Chapter 343.

Results of this ALRA include the following:

1. The project area is part of a once-extensive commercial sugar cane operation originally founded by Claus Spreckels in the late 1800s, eventually incorporated into the Hawaiian Commercial and Sugar Co. (HC&S) (see Figure 10), which lasted well into modern times in this part of Maui;
2. Historical maps clearly depict a thoroughly altered historic-period landscape dedicated to extensive commercial sugar cane operations with numerous related features in and adjacent to the current project area, including roads, ditches, fence lines, railroads and reservoirs (see Figure 11 [dated 1893], Figure 12 [dated 1924] and Figure 15 [dated 1955]);
3. Likewise, aerial photographs dated to 1950 (see Figure 14) clearly show the current project area as completely under intensive, commercial agriculture;
4. Archaeological surveys that have included portions of the current project area have only identified historic-period sites related to commercial (plantation) agriculture, although most of these have not been formally assessed or assigned State Inventory of Historic Places (SIHP) #s because such sites, in the past, were not generally

considered significant by archaeologists more interested in documented traditional Hawaiian sites;

5. Due to over a century of sugar cane cultivation and the installation and use of related infrastructure (e.g., roads, ditches, fence lines, railroads and reservoirs), no traditional (pre-Contact) Hawaiian site-features has been identified in or near the current project area;
6. The current project area most likely contains some above-ground historic properties related to commercial agriculture in the historic period; and,
7. It is unlikely that any intact historic properties or component features will be encountered in subsurface excavation; however, the discovery of isolated artifacts associated with the plantation-era usage of the project area, in particular, cannot be ruled out.

4.1 Recommendations

Given the documented extent of past ground disturbance, it is likely that a determination of "no historic properties affected," per HAR § 13-284-5, is appropriate. Honua recommends consultation with the SHPD-Archaeology Branch to obtain its concurrence with this assertion; and to determine if any specific identification or mitigation measures are needed for the proposed project (e.g., archaeological inventory survey (AIS) or archaeological monitoring).

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APPENDIX ‘T’ – SOIL SAMPLING REPORT

MALAMA Environmental

April 2, 2025

Mr. Bob Young
Senior Project Manager, Civil Division
Alpha Inc.
427 Ala Makani Rd., Suite 100
Kahului, Hawaii 96732

RE: Limited Soil Investigation
MEO Condominium Unit 2C
21 Hansen Road
Kahului, Hawaii, TMK (2) 3-8-006:004 (portion)
MEV Project No. T24-020

Dear Mr. Young,

Malama Environmental (MEV) was initially retained by Ax Holdings LLC to perform a Limited Soil Investigation on the subject property. The investigation was performed to assess potential residual pesticide impact resulting from previous agricultural operations on the subject site. This report summarizes the findings of our investigation.

BACKGROUND INFORMATION

The State of Hawaii Department of Health (HDOH) Hazard Evaluation and Emergency Response (HEER) Office recommends that sites with known pesticide-related contamination, as well as sites where pesticides were regularly applied, be evaluated for residual contamination prior to re-development (HDOH, 2014). The term "pesticides" includes any type of chemical mixture specifically formulated to kill "pests." The pesticides most commonly used in agricultural fields in Hawaii include herbicides, fungicides, and insecticides (insecticides include termiticides and nematicides). Most agricultural fields formerly used in sugar cane and pineapple cultivation received regular pesticide applications.

According to Hawaii Revised Statutes (HRS) Chapter 128D Environmental Response Law, the presence of agricultural chemicals resulting from the legal application of a pesticide product registered under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) does not constitute a “release” of a hazardous substance. However, as a precaution when agricultural lands are converted, soil sampling and laboratory testing are commonly performed to determine if any potential for residual exposure hazards exists at concentrations greater than the applicable environmental action levels (EALs).

SITE DESCRIPTION

The subject property consists of an approximately 166.511 acre irregularly shaped area of land within the central and eastern portions of the identified parcel. The site is currently vacant, undeveloped fallow agricultural land that was previously used for sugarcane cultivation. The site slopes slightly downward to the northwest and contains a network of unpaved access road and man-made berms throughout. The asphalt paved remnants of Central Power Plant Road are present on the central

portion of the site from the northeast to the southwest. Ground cover consists primarily of medium to tall dry grass with some trees. The site and surrounding area are shown on Figure 1 in Attachment 1.

SOIL SAMPLING AND ANALYSIS

The HDOH identifies target pesticide categories for investigation of former sugar cane and pineapple operations in Hawaii. The target pesticide categories for former sugar cane and pineapple fields include Organo-Chlorine Pesticides and Arsenic (HDOH, 2014). Per HDOH guidance, MEV recommended that Multi-Increment Decision Unit (MIS DU) soil samples from the subject property be analyzed for Organo-Chlorine Pesticides and Arsenic. Eight (8) Decision Unit (DU) locations were selected in accessible topographic low, medium, and high areas for general site characterization purposes. Two (2) additional DU sample sets were also collected as part of the quality assurance/quality control (QAQC) requirements for a total of ten (10) Multi-Increment Sample sets (MIS). Each DU area is about 0.5 acres in size. The decision unit sample locations are shown on Figure 1 in Attachment 1.

On January 29, 2025, MEV personnel performed the field sampling. Thirty soil increments were collected and combined into one multi-increment sample for each of the DU areas at the subject site. Soil increments were collected from random accessible locations across each DU. Using a stainless-steel soil core sampler, core-shaped soil increments were collected from a depth of 0 to 6 inches below ground surface (bgs). All soil increments collected within each DU were placed into a new clean gallon Ziploc bag.

Subsequent to sampling in the field, the samples were preserved in a cooler with ice packs. The cooler with the chilled samples, ice packs, and chain of custody form was relinquished by MEV to Hawaiian Airlines Air Cargo at Kahului Airport on the day of sampling for chilled shipment and storage to Honolulu International Airport. On the following day, the samples were picked up by Hawaii Analytical Laboratory in Honolulu. After performing multi increment sample preparation, the samples were analyzed for Chlordane (Technical Grade) and other Organo-Chlorine Pesticides using EPA Method 8081B, and Total Arsenic using EPA Method 3051m/7061Am.

ANALYTICAL RESULTS

As defined by the HDOH *Technical Guidance Manual For The Implementation Of The Hawaii State Contingency Plan*, Tier 1 Environmental Action Levels (EALs) are concentrations of contaminants in the environment below which the contaminants are assumed to not pose a significant threat to human health or the environment (HDOH, 2017). The presence of trace concentrations of contaminants may, however, indicate that additional evaluation is warranted to determine if the level of risk at the site is acceptable or unacceptable, and if cleanup actions are appropriate (HDOH, 2017).

The results of the laboratory analyses performed on the soil samples were compared with HDOH Tier 1 EALs and are presented in Table 1 below. The EALs referenced in this report are from the State of Hawaii's *Evaluation of Environmental Hazards at Sites with Contaminated Soil and Groundwater, Volume 2*, Appendix 1 (HDOH, 2024). The laboratory report and chain of custody form are found in Attachment 2.

Table 1 - SOIL SAMPLE ANALYTICAL RESULTS					
Sample Number	**Analysis**	**Compound(s) Detected**	**Concentration (mg/kg)***	**DOH EAL** (mg/kg)**	**Exceeds EAL**
DU-1A	Chlordane (Technical Grade)	None	<0.4	N/A	No
	Other Organo-Chlorine Pesticides	None	<0.02	N/A	No
	Total Arsenic	Arsenic	4.5	24 (Soil Background)	No
DU-1B	Chlordane (Technical Grade)	None	<0.4	N/A	No
	Other Organo-Chlorine Pesticides	None	<0.02	N/A	No
	Total Arsenic	Arsenic	4	24 (Soil Background)	No
DU-1C	Chlordane (Technical Grade)	None	<0.4	N/A	No
	Other Organo-Chlorine Pesticides	None	<0.02	N/A	No
	Total Arsenic	Arsenic	4.5	24 (Soil Background)	No
DU-2	Chlordane (Technical Grade)	None	<0.4	N/A	No
	Other Organo-Chlorine Pesticides	None	<0.02	N/A	No
	Total Arsenic	Arsenic	5.5	24 (Soil Background)	No
DU-3	Chlordane (Technical Grade)	None	<0.4	N/A	No
	Other Organo-Chlorine Pesticides	None	<0.02	N/A	No
	Total Arsenic	Arsenic	4.4	24 (Soil Background)	No
DU-4	Chlordane (Technical Grade)	None	<0.4	N/A	No
	Other Organo-Chlorine Pesticides	None	<0.02	N/A	No
	Total Arsenic	Arsenic	5.6	24 (Soil Background)	No
DU-5	Chlordane (Technical Grade)	None	<0.4	N/A	No
	Other Organo-Chlorine Pesticides	None	<0.02	N/A	No
	Total Arsenic	Arsenic	5.8	24 (Soil Background)	No
DU-6	Chlordane (Technical Grade)	None	<0.4	N/A	No
	Other Organo-Chlorine Pesticides	None	<0.02	N/A	No
	Total Arsenic	Arsenic	8.2	24 (Soil Background)	No

Table 1 - SOIL SAMPLE ANALYTICAL RESULTS					
Sample Number	**Analysis**	**Compound(s) Detected**	**Concentration (mg/kg)***	**DOH EAL** (mg/kg)**	**Exceeds EAL**
DU-7	Chlordane (Technical Grade)	None	<0.4	N/A	No
	Other Organo-Chlorine Pesticides	None	<0.02	N/A	No
	Total Arsenic	Arsenic	5.3	24 (Soil Background)	No
DU-8	Chlordane (Technical Grade)	None	<0.4	N/A	No
	Other Organo-Chlorine Pesticides	None	<0.02	N/A	No
	Total Arsenic	Arsenic	4.6	24 (Soil Background)	No

NOTES

*mg/kg = milligrams per kilogram, or parts per million (ppm)

**DOH EALs – HDOH Tier 1 Environmental Action Levels (EALs) for Unrestricted Current or Future Land Use (considered adequate for residential housing, schools, medical facilities, day-care centers, parks, and other sensitive uses).

Laboratory Reporting Limit for Chlordane (Technical Grade) was 0.4 mg/kg.

Laboratory Reporting Limit for Other Organo-Chlorine Pesticides was 0.02 mg/kg.

N/A – Not applicable.

No Organo-Chlorine Pesticide chemicals were detected in the soil samples analyzed. Arsenic was detected in the soil samples at concentrations less than the HDOH EAL of 24 mg/kg.

CONCLUSIONS AND RECOMMENDATIONS

The soil sampling data generated during this investigation indicates that the subject site is suitable for unrestricted use of the property.

LIMITATIONS

The inspection methods used in this investigation were used to provide the Client with information regarding potential health and safety issues for the site. The investigation was performed in accordance with generally accepted practices and principles current at the time the work was performed. The reported observations and data are necessarily limited to the conditions observed at the time of the investigation. The conclusions and recommendations presented herein represent the best judgment of MEV based on the data obtained from the work. Due to the nature and limited scope of the investigation, MEV cannot warrant undiscovered environmental liabilities. The conclusions and recommendations presented in this report should not be construed as legal advice.

This report was prepared on behalf of and exclusively for the use of the Client. This report and the findings contained herein shall not, in whole or in part, be disseminated or conveyed to any other party, be used or relied upon by any other party, nor shall any other party discuss the report with MEV personnel without the written consent from the Client, or their designee(s).

ACKNOWLEDGMENT

MEV appreciates the opportunity to be of service. If you have any questions or need additional information, please contact our office at (808) 876-0500.

Sincerely,
Malama Environmental



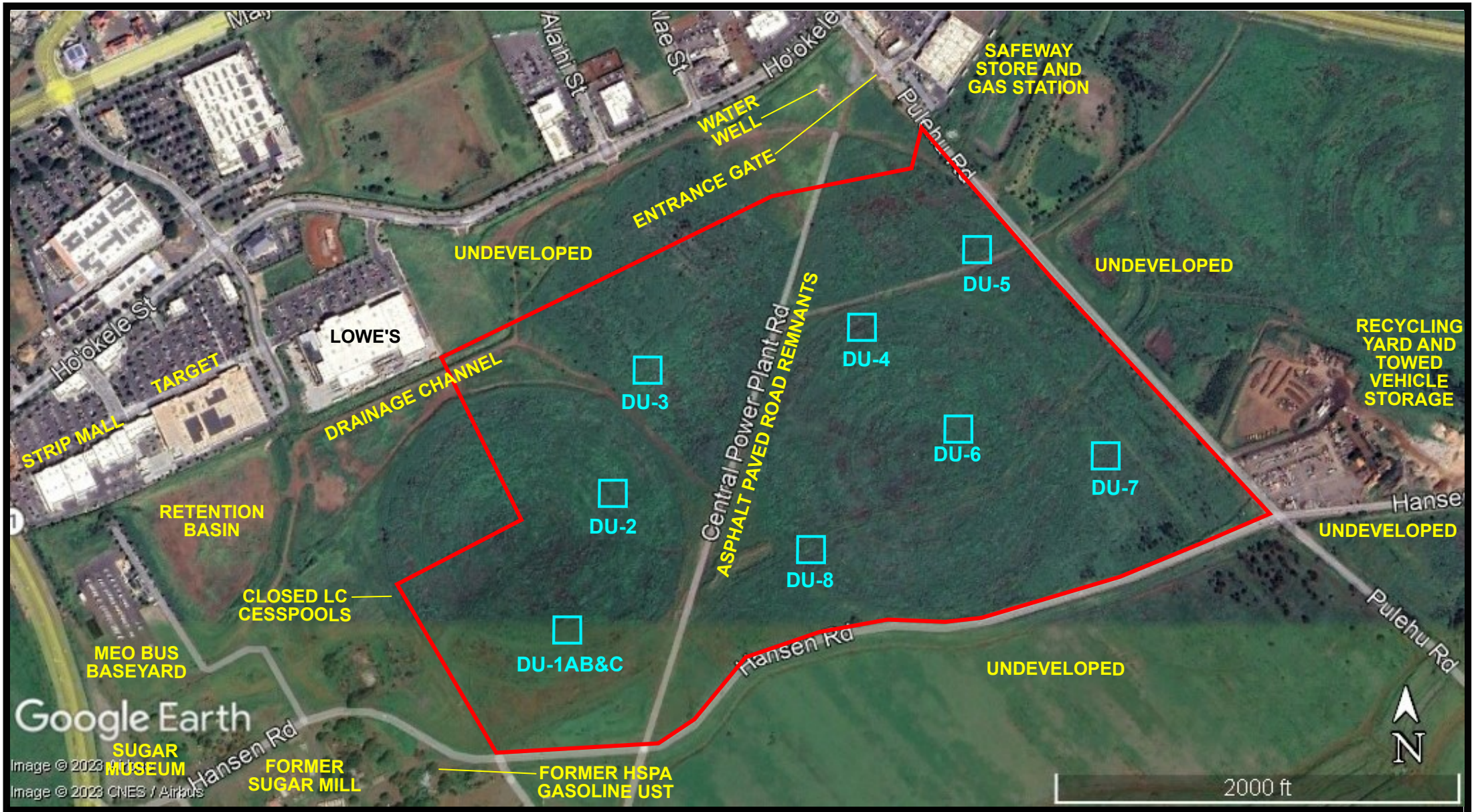
Jeffrey R. King, CPG
Project Manager – Technical Services

Attachments:
Attachment 1 – Figures
Attachment 2 – Laboratory Reports and Chain of Custody

MALAMA Environmental

Attachment 1:

Figures



LEGEND

APPROX. SUBJECT PROPERTY BOUNDARY

APPROX. DECISION UNIT BOUNDARY

SOIL SAMPLE MAP

MEO Condominium Unit 2C
21 Hansen Road
Kahului, Maui, Hawaii
TMK: (2) 3-8-006:004 Portion

Limited Soil Investigation
March 2025
MEV Project No. T24-020

FIGURE 1

MALAMA Environmental

MALAMA Environmental

Attachment 2:

Laboratory Reports and Chain of Custody

Hawaii Analytical Laboratory
ANALYTICAL REPORT

Tuesday, February 11, 2025

Malama Environmental
P.O. Box 880487
Pukalani HI 96788

Phone Number: (808)876-0500
Email: mev.llc.jeff@gmail.com; rogerclay7@gmail.com

Lab Job No: 202500826
Total Analyzed: 10
Date Collected:
Date Submitted: 1/30/2025
Project Name: T24-020, MEO Condominium Unit 2C

Chlordane (Technical Grade)

EPA Method: 8081B -m [Gas Chromatography - ECD]

Lab Sple No.	Sample ID / Description	Results	Units	Date Analyzed
202505865	**DU1A** Multi-incremental sampling was performed on the sample	< 0.4	mg/kg	2/4/2025
202505866	**DU1B** Multi-incremental sampling was performed on the sample	< 0.4	mg/kg	2/4/2025
202505867	**DU1C** Multi-incremental sampling was performed on the sample	< 0.4	mg/kg	2/4/2025
202505868	**DU2** Multi-incremental sampling was performed on the sample	< 0.4	mg/kg	2/5/2025
202505869	**DU3** Multi-incremental sampling was performed on the sample	< 0.4	mg/kg	2/5/2025
202505870	**DU4** Multi-incremental sampling was performed on the sample	< 0.4	mg/kg	2/5/2025
202505871	**DU5** Multi-incremental sampling was performed on the sample	< 0.4	mg/kg	2/5/2025
202505872	**DU6** Multi-incremental sampling was performed on the sample	< 0.4	mg/kg	2/5/2025
202505873	**DU7** Multi-incremental sampling was performed on the sample	< 0.4	mg/kg	2/5/2025

Malama Environmental
P.O. Box 880487
Pukalani HI 96788

Phone Number: (808)876-0500
Email: mev.llc.jeff@gmail.com; rogerclay7@gmail.com

Lab Job No: 202500826
Total Analyzed: 10
Date Collected:
Date Submitted: 1/30/2025
Project Name: T24-020, MEO Condominium Unit 2C

Chlordane (Technical Grade)

EPA Method: 8081B -m [Gas Chromatography - ECD]

Lab Sple No.	Sample ID / Description	Results	Units	Date Analyzed
202505874	**DU8** Multi-incremental sampling was performed on the sample	0.4		2/5/2025

All Quality Control data are acceptable unless otherwise noted.

Malama Environmental
P.O. Box 880487
Pukalani HI 96788

Phone Number: (808)876-0500
Email: mev.llc.jeff@gmail.com; rogerclay7@gmail.com

Lab Job No: 202500826
Total Analyzed: 10
Date Collected:
Date Submitted: 1/30/2025
Project Name: T24-020, MEO Condominium Unit 2C

Organochlorinated Pesticides

EPA Method: 8081B -m [Gas Chromatography - ECD]

Lab Sple No.	Sample ID / Description	Results	Units	Date Analyzed
202505865	**DU1A**			2/4/2025
	4,4'-DDD	< 0.02	mg/kg	
	4,4'-DDE	< 0.02	mg/kg	
	4,4'-DDT	< 0.02	mg/kg	
	Aldrin	< 0.02	mg/kg	
	alpha-BHC	< 0.02	mg/kg	
	beta-BHC	< 0.02	mg/kg	
	delta-BHC	< 0.02	mg/kg	
	Dieldrin	< 0.02	mg/kg	
	Endosulfan I	< 0.02	mg/kg	
	Endosulfan II	< 0.02	mg/kg	
	Endosulfan Sulfate	< 0.02	mg/kg	
	Endrin	< 0.02	mg/kg	
	Endrin Aldehyde	< 0.02	mg/kg	
	Endrin Ketone	< 0.02	mg/kg	
	gamma-BHC	< 0.02	mg/kg	
	Heptachlor	< 0.02	mg/kg	
	Heptachlor Epoxide	< 0.02	mg/kg	
	Methoxychlor	< 0.02	mg/kg	
	Multi-incremental sampling was performed on the sample.			
202505866	**DU1B**			2/4/2025
	4,4'-DDD	< 0.02	mg/kg	
	4,4'-DDE	< 0.02	mg/kg	
	4,4'-DDT	< 0.02	mg/kg	
	Aldrin	< 0.02	mg/kg	
	alpha-BHC	< 0.02	mg/kg	
	beta-BHC	< 0.02	mg/kg	
	delta-BHC	< 0.02	mg/kg	
	Dieldrin	< 0.02	mg/kg	
	Endosulfan I	< 0.02	mg/kg	
	Endosulfan II	< 0.02	mg/kg	
	Endosulfan Sulfate	< 0.02	mg/kg	
	Endrin	< 0.02	mg/kg	
	Endrin Aldehyde	< 0.02	mg/kg	
	Endrin Ketone	< 0.02	mg/kg	
	gamma-BHC	< 0.02	mg/kg	
	Heptachlor	< 0.02	mg/kg	
	Heptachlor Epoxide	< 0.02	mg/kg	
	Methoxychlor	< 0.02	mg/kg	
	Multi-incremental sampling was performed on the sample.			

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Lab Job No: 202500826
Total Analyzed: 10
Date Collected:
Date Submitted: 1/30/2025
Project Name: T24-020, MEO Condominium Unit 2C

Organochlorinated Pesticides

EPA Method: 8081B -m [Gas Chromatography - ECD]

Lab Sple No.	Sample ID / Description	Results	Units	Date Analyzed
202505867	**DU1C**			2/4/2025
	4,4'-DDD	< 0.02	mg/kg	
	4,4'-DDE	< 0.02	mg/kg	
	4,4'-DDT	< 0.02	mg/kg	
	Aldrin	< 0.02	mg/kg	
	alpha-BHC	< 0.02	mg/kg	
	beta-BHC	< 0.02	mg/kg	
	delta-BHC	< 0.02	mg/kg	
	Dieldrin	< 0.02	mg/kg	
	Endosulfan I	< 0.02	mg/kg	
	Endosulfan II	< 0.02	mg/kg	
	Endosulfan Sulfate	< 0.02	mg/kg	
	Endrin	< 0.02	mg/kg	
	Endrin Aldehyde	< 0.02	mg/kg	
	Endrin Ketone	< 0.02	mg/kg	
	gamma-BHC	< 0.02	mg/kg	
	Heptachlor	< 0.02	mg/kg	
	Heptachlor Epoxide	< 0.02	mg/kg	
	Methoxychlor	< 0.02	mg/kg	
	Multi-incremental sampling was performed on the sample.			
202505868	**DU2**			2/5/2025
	4,4'-DDD	< 0.02	mg/kg	
	4,4'-DDE	< 0.02	mg/kg	
	4,4'-DDT	< 0.02	mg/kg	
	Aldrin	< 0.02	mg/kg	
	alpha-BHC	< 0.02	mg/kg	
	beta-BHC	< 0.02	mg/kg	
	delta-BHC	< 0.02	mg/kg	
	Dieldrin	< 0.02	mg/kg	
	Endosulfan I	< 0.02	mg/kg	
	Endosulfan II	< 0.02	mg/kg	
	Endosulfan Sulfate	< 0.02	mg/kg	
	Endrin	< 0.02	mg/kg	
	Endrin Aldehyde	< 0.02	mg/kg	
	Endrin Ketone	< 0.02	mg/kg	
	gamma-BHC	< 0.02	mg/kg	
	Heptachlor	< 0.02	mg/kg	
	Heptachlor Epoxide	< 0.02	mg/kg	
	Methoxychlor	< 0.02	mg/kg	
	Multi-incremental sampling was performed on the sample.			

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Lab Job No: 202500826
Total Analyzed: 10
Date Collected:
Date Submitted: 1/30/2025
Project Name: T24-020, MEO Condominium Unit 2C

Organochlorinated Pesticides

EPA Method: 8081B -m [Gas Chromatography - ECD]

Lab Sple No.	Sample ID / Description	Results	Units	Date Analyzed
202505869	**DU3**			2/5/2025
	4,4'-DDD	< 0.02	mg/kg	
	4,4'-DDE	< 0.02	mg/kg	
	4,4'-DDT	< 0.02	mg/kg	
	Aldrin	< 0.02	mg/kg	
	alpha-BHC	< 0.02	mg/kg	
	beta-BHC	< 0.02	mg/kg	
	delta-BHC	< 0.02	mg/kg	
	Dieldrin	< 0.02	mg/kg	
	Endosulfan I	< 0.02	mg/kg	
	Endosulfan II	< 0.02	mg/kg	
	Endosulfan Sulfate	< 0.02	mg/kg	
	Endrin	< 0.02	mg/kg	
	Endrin Aldehyde	< 0.02	mg/kg	
	Endrin Ketone	< 0.02	mg/kg	
	gamma-BHC	< 0.02	mg/kg	
	Heptachlor	< 0.02	mg/kg	
	Heptachlor Epoxide	< 0.02	mg/kg	
	Methoxychlor	< 0.02	mg/kg	
	Multi-incremental sampling was performed on the sample.			
202505870	**DU4**			2/5/2025
	4,4'-DDD	< 0.02	mg/kg	
	4,4'-DDE	< 0.02	mg/kg	
	4,4'-DDT	< 0.02	mg/kg	
	Aldrin	< 0.02	mg/kg	
	alpha-BHC	< 0.02	mg/kg	
	beta-BHC	< 0.02	mg/kg	
	delta-BHC	< 0.02	mg/kg	
	Dieldrin	< 0.02	mg/kg	
	Endosulfan I	< 0.02	mg/kg	
	Endosulfan II	< 0.02	mg/kg	
	Endosulfan Sulfate	< 0.02	mg/kg	
	Endrin	< 0.02	mg/kg	
	Endrin Aldehyde	< 0.02	mg/kg	
	Endrin Ketone	< 0.02	mg/kg	
	gamma-BHC	< 0.02	mg/kg	
	Heptachlor	< 0.02	mg/kg	
	Heptachlor Epoxide	< 0.02	mg/kg	
	Methoxychlor	< 0.02	mg/kg	
	Multi-incremental sampling was performed on the sample.			

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Lab Job No: 202500826
Total Analyzed: 10
Date Collected:
Date Submitted: 1/30/2025
Project Name: T24-020, MEO Condominium Unit 2C

Organochlorinated Pesticides

EPA Method: 8081B -m [Gas Chromatography - ECD]

Lab Sple No.	Sample ID / Description	Results	Units	Date Analyzed
202505871	**DU5**			2/5/2025
	4,4'-DDD	< 0.02	mg/kg	
	4,4'-DDE	< 0.02	mg/kg	
	4,4'-DDT	< 0.02	mg/kg	
	Aldrin	< 0.02	mg/kg	
	alpha-BHC	< 0.02	mg/kg	
	beta-BHC	< 0.02	mg/kg	
	delta-BHC	< 0.02	mg/kg	
	Dieldrin	< 0.02	mg/kg	
	Endosulfan I	< 0.02	mg/kg	
	Endosulfan II	< 0.02	mg/kg	
	Endosulfan Sulfate	< 0.02	mg/kg	
	Endrin	< 0.02	mg/kg	
	Endrin Aldehyde	< 0.02	mg/kg	
	Endrin Ketone	< 0.02	mg/kg	
	gamma-BHC	< 0.02	mg/kg	
	Heptachlor	< 0.02	mg/kg	
	Heptachlor Epoxide	< 0.02	mg/kg	
	Methoxychlor	< 0.02	mg/kg	
	Multi-incremental sampling was performed on the sample.			
202505872	**DU6**			2/5/2025
	4,4'-DDD	< 0.02	mg/kg	
	4,4'-DDE	< 0.02	mg/kg	
	4,4'-DDT	< 0.02	mg/kg	
	Aldrin	< 0.02	mg/kg	
	alpha-BHC	< 0.02	mg/kg	
	beta-BHC	< 0.02	mg/kg	
	delta-BHC	< 0.02	mg/kg	
	Dieldrin	< 0.02	mg/kg	
	Endosulfan I	< 0.02	mg/kg	
	Endosulfan II	< 0.02	mg/kg	
	Endosulfan Sulfate	< 0.02	mg/kg	
	Endrin	< 0.02	mg/kg	
	Endrin Aldehyde	< 0.02	mg/kg	
	Endrin Ketone	< 0.02	mg/kg	
	gamma-BHC	< 0.02	mg/kg	
	Heptachlor	< 0.02	mg/kg	
	Heptachlor Epoxide	< 0.02	mg/kg	
	Methoxychlor	< 0.02	mg/kg	
	Multi-incremental sampling was performed on the sample.			

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Lab Job No: 202500826
Total Analyzed: 10
Date Collected:
Date Submitted: 1/30/2025
Project Name: T24-020, MEO Condominium Unit 2C

Organochlorinated Pesticides

EPA Method: 8081B -m [Gas Chromatography - ECD]

Lab Sple No.	Sample ID / Description	Results	Units	Date Analyzed
202505873	**DU7**			2/5/2025
	4,4'-DDD	< 0.02	mg/kg	
	4,4'-DDE	< 0.02	mg/kg	
	4,4'-DDT	< 0.02	mg/kg	
	Aldrin	< 0.02	mg/kg	
	alpha-BHC	< 0.02	mg/kg	
	beta-BHC	< 0.02	mg/kg	
	delta-BHC	< 0.02	mg/kg	
	Dieldrin	< 0.02	mg/kg	
	Endosulfan I	< 0.02	mg/kg	
	Endosulfan II	< 0.02	mg/kg	
	Endosulfan Sulfate	< 0.02	mg/kg	
	Endrin	< 0.02	mg/kg	
	Endrin Aldehyde	< 0.02	mg/kg	
	Endrin Ketone	< 0.02	mg/kg	
	gamma-BHC	< 0.02	mg/kg	
	Heptachlor	< 0.02	mg/kg	
	Heptachlor Epoxide	< 0.02	mg/kg	
	Methoxychlor	< 0.02	mg/kg	
	Multi-incremental sampling was performed on the sample.			
202505874	**DU8**			2/5/2025
	4,4'-DDD	< 0.02	mg/kg	
	4,4'-DDE	< 0.02	mg/kg	
	4,4'-DDT	< 0.02	mg/kg	
	Aldrin	< 0.02	mg/kg	
	alpha-BHC	< 0.02	mg/kg	
	beta-BHC	< 0.02	mg/kg	
	delta-BHC	< 0.02	mg/kg	
	Dieldrin	< 0.02	mg/kg	
	Endosulfan I	< 0.02	mg/kg	
	Endosulfan II	< 0.02	mg/kg	
	Endosulfan Sulfate	< 0.02	mg/kg	
	Endrin	< 0.02	mg/kg	
	Endrin Aldehyde	< 0.02	mg/kg	
	Endrin Ketone	< 0.02	mg/kg	
	gamma-BHC	< 0.02	mg/kg	
	Heptachlor	< 0.02	mg/kg	
	Heptachlor Epoxide	< 0.02	mg/kg	
	Methoxychlor	< 0.02	mg/kg	
	Multi-incremental sampling was performed on the sample.			

All Quality Control data are acceptable unless otherwise noted.

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Lab Job No: 202500826
Total Analyzed: 10
Date Collected:
Date Submitted: 1/30/2025
Project Name: T24-020, MEO Condominium Unit 2C

Total Recoverable Arsenic (Gaseous Hydride)

EPA Method: 3051m / 7061Am

Lab Sple No.	Sample ID / Description	Results	Units	Date Analyzed
202505865	**DU1A** Multi-incremental sampling was performed on the sample.	4.5	mg/kg	2/11/2025
202505866	**DU1B** Multi-incremental sampling was performed on the sample.	4	mg/kg	2/11/2025
202505867	**DU1C** Multi-incremental sampling was performed on the sample.	4.5	mg/kg	2/11/2025
202505868	**DU2** Multi-incremental sampling was performed on the sample.	5.5	mg/kg	2/11/2025
202505869	**DU3** Multi-incremental sampling was performed on the sample.	4.4	mg/kg	2/11/2025
202505870	**DU4** Multi-incremental sampling was performed on the sample.	5.6	mg/kg	2/11/2025
202505871	**DU5** Multi-incremental sampling was performed on the sample.	5.8	mg/kg	2/11/2025
202505872	**DU6** Multi-incremental sampling was performed on the sample.	8.2	mg/kg	2/11/2025
202505873	**DU7** Multi-incremental sampling was performed on the sample.	5.3	mg/kg	2/11/2025
202505874	**DU8** Multi-incremental sampling was performed on the sample.	4.6	mg/kg	2/11/2025

All Quality Control data are acceptable unless otherwise noted.

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Lab Job No: 202500826
Total Analyzed: 10
Date Collected:
Date Submitted: 1/30/2025
Project Name: T24-020, MEO Condominium Unit 2C

General Comments
The sample[s] analysis subject of this analytical report were conducted in general accordance with the procedures associated with the "analytical method" referenced above. The analysis of sample relates only to the sample analyzed, and may or may not be representative of the original source of the material submitted for our analysis. All analysts participate in interlaboratory quality control testing to continuously document profiency. This report is not to be duplicated except in full without the expressed written permission of Hawaii Analytical Laboratory. This report should not be construed as an endorsement for a product or a service by the AIHA LAP, LLC or any affiliated organizations. Sample and associated sampling / collection data (e.g. air volume or surface area) is reported as provided by client. TWA values have been calculated based on information supplied by the client that the laboratory has not independently verified. Results have not been corrected for blank determinations unless noted in remarks. Unless otherwise indicated the sample condition at the time of receipt was acceptable. MRL for lead air is 5ug; MRL for lead wipe is 5ug; MRL for lead paint or soil is 40 mg/kg for a 0.25g

Results and Symbols Definitions
> This testing result is greater than the numerical value listed.
< This testing result is less than the numerical value listed.
# = Analytical methods marked with an "#" are not within our AIHA LAP, LLC Scope of Accreditation.
MRL = Method Reporting Limit



Eva Skogsberg
Laboratory Manager

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3615 Harding Avenue, Suite 308
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☐ New Client?

Report To*	Jeffrey R. King
Company	MEV, LLC dba Malama Environmental
Address*	P.O. Box 880487
	Pukalani, Hi 96788-0487
Phone / Cell No.*	(808) 344-2871 (M) (808) 876-0500 (O)
Report results to	mev.llc.jeff@gmail.com
Email / Fax	

Invoice To*	mev.llc.jeff@gmail.com
Company	Same
Address*	
Phone / Cell No.*	
Purchase Order No.	
Email Invoice To	mev.llc.melina@gmail.com

Need Results By*:
- ☒ ~~5~~ Working Days (WD)
- ☐ 4 WD
- ☐ 3 WD
- ☐ 2 WD
- ☐ 24 hours
- ☐ 6 hours or less
- ☐ 4 hours or less
- ☐ 1-2 hours

Site/Project Name: MEO Condominium Unit 2C

Client Project No.: T24-020

Verbal results? ☐

Sampled By & Certif. # :

Special Instructions: Multi Increment Prep Non Volatiles for each sample (30 increments per Jeff 1/30/25 10:20 HL) Sample Time

PLM POSITIVE STOP Instructions:
- ☐ + stop / SAMPLE
- ☐ + stop / LAYER

Lab Report No.: 202500826

	Sample ID	Sample Description*	Date Sampled* (mm/dd/yy)	Collection Medium	~~Sample Area~~ / Volume	Analysis Requested*	Method Reference	Lab Sample(s) No.:
1	DU1A	Multi Increment Soil				Organochlorine Pesticides + Arsenic		202505865
2	DU1B	" " "						202505866
3	DU1C	" " "						202505867
4	DU2	" " "						202505868
5	DU3	" " "						202505869
6	DU4	" " "						202505870
7	DU5	" " "						202505871
8	DU6	" " "						202505872
9	DU7	" " "						202505873
10	DU8	" " "						202505874
11								
12								

Relinquished By (Print and Sign)	Date/Time	Received By (Print and Sign)	Date/Time
	1/29/25 1253	~~Savannah Newman~~ Savannah Newman	01-30-25A10:11 RCVD

*Sample description can be paint chips, concrete, specific sample collection location, etc...
If matrix is 'soil', please specify if it is a FOREIGN SOIL SAMPLE (outside Hawaii) in the comment section.
All samples submitted are subject to Hawaii Analytical Laboratory terms and conditions.
*Required fields, failure to complete these fields may result in a delay in your samples being processed.

☒ via HAC ☐ via USPS ☐ via drop box ☐ via FedEx ☐ via pick up
awb#: 173-31807163

Page: 1 of 1

RECEIPT& ACKNOWLEDGEMENT FORM

Hawaii Analytical Laboratory
3615 Harding Avenue, Suite 308, Honolulu, Hawaii, 96816

RECEIPT & ACKNOWLEDGEMENT FORM

202500826

Our Receiving Records show the following information about your sample(s).

Basic project information can be found on the COC for job number :

TAT: 5 day after MIS 30

Due Date: /

Client: MEV

Project name: T24-020, MED condominium Unit 2C

Applies only to valid conditions *(Answer: Yes - No - NA)*

Cooler Temp °C 3.8 Tracking Number: 173-3:807963

Containers Intact: yes Preservation Confirmed: yes COC Present: yes

COC / Labels Agree: yes Received On Ice: yes COC Signed when relisd / recd: yes

Samples intact / proper cont: yes

1	**Samples were received via?**	***USPS***	***FedEx***	***UPS***	***DHL***	***Other*** HAC
2	**Samples were received in? (circle)**		***Cooler***	***Box***	***Envelope***	***Other***
3	**Packing material used:**	***Bubble Wrap***	***Gel Packs***		***Paper***	***Other***

4	Were custody papers properly filled out (ink, signed, etc)?	(Y)	N	N/A
5	Did samples / bottles arrive in good condition (unbroken)?	(Y)	N	N/A
6	Were all sample labels complete?	(Y)	N	N/A
7	Did all sample labels and tags agree with custody papers?	(Y)	N	N/A
8	Were appropriate bottles / containers and volumes received for the tests indicated?	(Y)	N	N/A
9	Were the pH-preserved bottles received at the appropriate pH?	Y	N	(N/A)
10	Were VOA vials received without headspace?	Y	N	(N/A)

Note, Discrepancies, and Resolutions:

Form Completed By: HL, SN

APPENDIX ‘U’ – TRAFFIC IMPACT ANALYSIS REPORT

Fehr & Peers

Hoʻonani Village

Transportation Impact Analysis Report

Prepared for:
Hoʻonani Development, LLC

Submitted on:
March 10, 2026



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2. Project Description and Study Area

The Applicant, Hoʻonani Development LLC, proposes the development of Hoʻonani Village, envisioned as a high-density, master-planned, mixed-use community in the Puʻunēnē-Kahului area of Central Maui on currently vacant, fallow agricultural lands. Hoʻonani Village will consist of a mixed-use development with approximately 1,608 multi-family residential housing units along with a blend of commercial, office, retail, restaurant, entertainment, light industrial, and hospitality uses on an approximately 166.512-acre site in Kahului (the Project Site). All the housing units are intended to be affordable rental units offered to households earning 140 percent of area median income (AMI) or below for a minimum of 10 years. As defined by the State Hawaiʻi and the Hawaiʻi Housing and Finance Development Corporation (HHFDC), 140% AMI is the threshold for affordable housing. The Applicant is proposing to have one third of the units reserved for renters at 60% AMI or below. The Applicant intends to work with HHFDC to pursue a HRS 201H-38 Affordable Housing Approval and Low Impact Housing Tax Credit (LIHTC) funds for project cost savings. The specific breakdown of AMI levels may be adjusted based on demand and need at the time of development and potential for-sale units may be considered in the future. The 201H application process is being utilized by the applicant to reduce costs through exemptions such as entitlement application fees, expedite the entitlement process to begin construction as soon as possible, and to pursue uses such as hospitality spaces that are not allowed uses in the current and proposed County zoning designation for the project site.

The project's development will be phased over 17 years. An overview of the project's mixed uses and phasing can be seen in the Preliminary Site Plan, shown on **Figure 1**.

Access to the project site is planned to be provided from Pūlehu Road and Hansen Road, both of which are County roadways. Improvements to these County roads will be completed to meet the requirements of the County of Maui's Street Design Manual. Infrastructure to support the project will be installed within portions of these County rights-of-way. Within the project, an internal roadway network will connect individual uses within the Project. Pedestrian and bicycle circulation will be created within the project with on-street sidewalks and a system of multi-use paths to connect the various uses and to emphasize multi-modal transportation within the development. Additional infrastructure improvements, including drainage management in an onsite detention basin, the potential construction of an onsite wastewater treatment plant (WWTP), and an offsite water system are also proposed.

The following objectives guide the vision for Hoʻonani Village:

- Provision of housing opportunities for Maui residents across a range of income levels near existing services and job opportunities
- Provision of commercial business and light industrial spaces for local businesses to operate and expand.
- Creation of an authentic community and gathering place for Maui.

Development of Hoʻonani Village is proposed to occur in multiple phases, each introducing specific residential, commercial, industrial, and hospitality uses in a coordinated manner. The phasing plan allows infrastructure, circulation, and utilities to be extended systematically across the site while delivering severely needed residential units early in the project's buildout. The bicycle and pedestrian circulation elements will be installed within each phase.

The analysis determined that the project will have a significant cumulative impact at Hāna Highway and Hansen Road. This intersection already operates undesirably under Existing (2024) Conditions and meets signal warrants. The installation of a signal at this intersection would improve operations to acceptable levels. For the entire intersection, project traffic accounts for 25% of the growth in volumes for the AM peak hour and 28% of the growth in volumes for the PM peak hour between 2024 and 2042. The project accounts for 5% of the total forecast traffic at the intersection in 2042 in the AM peak hour and 7% in the PM peak hour. HDOT will make the final determination on the need for a signal at this location. While the project would be developed in phases, an analysis of interim phases was not determined to be necessary for this intersection since the disclosed impact will be exacerbated with the first phases of development. Additionally, analysis of other land use alternatives was not conducted since the impact is expected to occur regardless of the land use alternative, with the exception of the agricultural land use alternative.

The project is expected to have a significant cumulative impact at Kūihelani Highway/Maui Veterans Highway (i.e., poor operations would occur even without the project, but the proposed development would exacerbate undesirable operations). An additional eastbound left-turn lane can be installed to mitigate impacts, and the entire intersection would operate at LOS E with an average delay of 70.0 seconds, 7.8 seconds better than under No Project conditions. For the entire intersection, project traffic accounts for 27% of the growth in volumes for the AM peak hour and 32% of the growth in volumes for the PM peak hour between 2024 and 2042. The project accounts for 6% of the total forecast traffic at the intersection in 2042 in the AM peak hour and 7% in the PM peak hour. HDOT will make the final determination on the need for improvements at this location. The impact at this intersection is triggered when approximately half of total project trips have been added to the study area roadway network.

The project is expected to have a significant cumulative impact at Maui Veterans Highway/Hoʻokele Street (i.e., poor operations would occur even without the project, but the proposed development would exacerbate undesirable operations). The eastbound approach can be converted to a shared through-left-turn and shared through-right-turn lane to mitigate the impact. This would also entail having east-west split phasing and converting the northbound right-turn from a channelized free right-turn lane to a standard, signal-controlled lane. The entire intersection would operate at LOS E with an average delay of 62.3 seconds, 8.7 seconds better than under No Project conditions. For the entire intersection, project traffic accounts for 32% of the growth in volumes for the AM peak hour and 21% of the growth in volumes for the PM peak hour between 2024 and 2042. The project accounts for 9% of the total forecast traffic at the intersection in 2042 in the AM peak hour and 10% in the PM peak hour. HDOT will make the final determination on the need for any improvements at this location. The impact at this intersection is triggered when approximately 85% of total project trips have been added to the study area roadway network.

An evaluation of the level and quality of service of all multi-modal transportation facilities was conducted for the roadways bordering the site. The project will not conflict with any planned pedestrian, bicycle, and transit facilities in the study area, and it will include active transportation improvements to enhance multimodal travel and access to the site. As such, no active transportation or transit impacts are anticipated as part of project implementation.

The following summarizes each phase and its planned program of uses:

Phase 1 – Residential (January 2028–June 2029)

Phase 1 consists of approximately 268 multifamily rental units built at a density of 27 dwelling units per acre. This phase initiates the residential neighborhood framework and establishes key internal roadways and utility extensions needed to support subsequent phases. Additionally, the proposed off-site water system will have to be constructed and in place to serve this initial phase. The sewer system and drainage improvements will also have to be installed to manage the drainage, and sewage flows for Phase 1.

Phase 2 – Residential & Commercial (July 3020–December 2031)

Phase 2 includes an additional 268 residential units at the same density as Phase 1, along with 5.1 acres of commercial space. These commercial pads are positioned along Pūlehu Road to serve both early residents and surrounding neighborhoods.

Phase 3 – Residential & Light Industrial (January 2033–June 2034)

This phase introduces another 268 residential units and approximately 9.5 acres of light industrial space. The industrial component is located along the western edge of the property, aligning with existing industrial uses near Hansen Road and the former sugar mill.

Phase 4 – Residential & Office (July 2035–December 2036)

Phase 4 adds 268 more residential units and develops 4.6 acres of office space, responding to demand for employment space in Central Maui. This phase strengthens the "live-work" balance by placing jobs within walking proximity to housing.

Phase 5 – Residential & Commercial / Entertainment (July 2035–December 2036)

Phase 5 includes 268 additional residential units and a significant mixed commercial area incorporating retail, restaurant, food hall, and entertainment uses totaling approximately 11.2 acres. These facilities help establish the project's commercial identity and serve both on-site residents and the wider island community.

Phase 6 – Residential (January 2037–June 2038)

Phase 6 completes the primary residential buildout with 268 additional units, supporting the project's intended role in addressing Maui's regional housing demand.

Phase 7 – Hospitality (January 2037–June 2038)

Phase 7 introduces a proposed 240-key hospitality development, designed as a dual-brand hotel with shared amenities. This phase supports visitor needs near the airport and commercial centers while generating local employment opportunities.

Phase 8 – Light Industrial & Office (July 2039–December 2040)

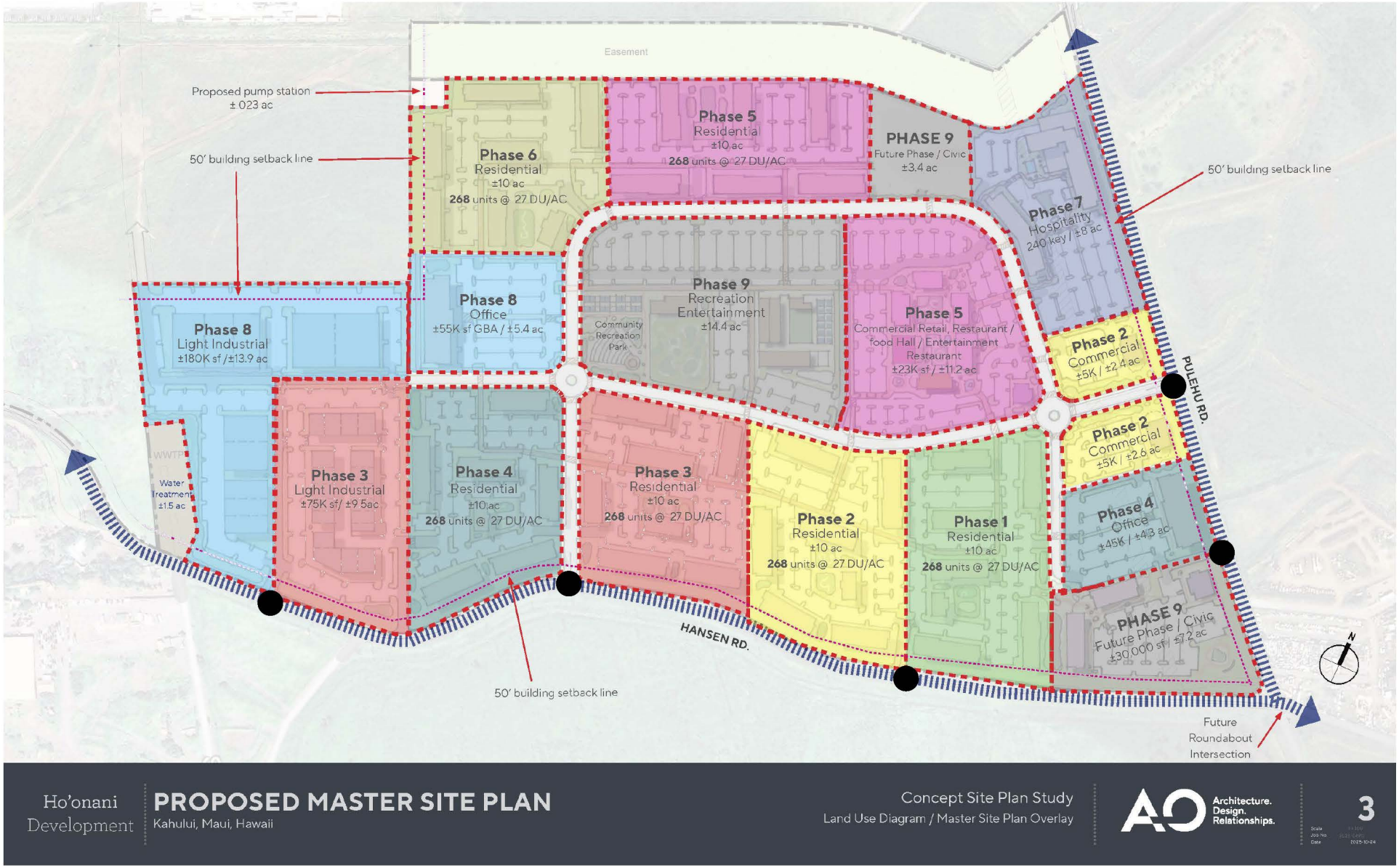
Phase 8 includes approximately 13.9 acres of light industrial space and 5.4 acres of office space, expanding economic and employment opportunities and complementing the adjacent Maui Business Park corridor.

Phase 9 – Recreation/Entertainment, Civic, and Community Uses (January 2041–June 2042)

Phase 9 incorporates major recreation and entertainment uses. Additional parcels are designated for future civic or commercial uses totaling roughly 17.8 acres, allowing flexibility to serve long-term community needs.

The total number of parking spaces provided will be consistent with County code and requirements. Vehicular access to the project site with entrances on Hansen Road and Pūlehu Road is proposed as follows: three (3) full access driveway on Hansen Road, one (1) full access driveway on Pūlehu Road, and one (1) right-in right-out (RIRO) driveway along Pūlehu Road. The project site plan is shown on **Figure 1**, which also shows the locations of the driveways serving the site. Also shown on the site plan is the County's proposed future roundabout at the Hansen Road/ Pūlehu Road, which is an planned improvement separate from the Hoʻonani Village project and was assumed in all analysis scenarios.

This study identifies the potential impacts of the project on the surrounding roadways and transportation network. The impacts of the proposed project on mobility and access surrounding the project site were evaluated following the guidelines and standards of the affected government agencies.



Site Access Points

FIGURE 1

Project Site Plan

Fehr & Peers

2.1 Project Study Locations

The impact analysis focused on evaluating the potential project-related transportation effects at eight (8) existing intersections in the vicinity of the proposed project and the five (5) future project access driveways. The 13 intersections analyzed include:

1. Kūihelani Highway/Maui Veterans Highway/Mayor Elmer F. Cravalho Way/ Puʻunēnē Avenue
2. Maui Veterans Highway/Hoʻokele Street
3. Hoʻokele Street/Pākaula Street
4. Hoʻokele Street/Pūlehu Road
5. Hāna Highway/Hoʻokele Street
6. Pūlehu Road/Project Driveway 1
7. Pūlehu Road/Project Driveway 2
8. Maui Veterans Highway/Hansen Road
9. Hansen Road/Project Driveway 3
10. Hansen Road/Project Driveway 4
11. Hansen Road/Project Driveway 5
12. Hansen Road/Pūlehu Road
13. Hāna Highway/Hansen Road

The study area is shown on **Figure 2**. Project Driveways 1, 3, 4, and 5 are assumed to be full-access intersections and this study assumes that they are configured as two-way stop-controlled (TWSC) intersections with a single inbound and outbound lane on the driveways as well as a dedicated inbound left-turn lane and outbound receiving lane for left-turns on either Hansen Road or Pūlehu Road. Project Driveway 2 is a right-in right-out (RIRO) TWSC driveway.

The wastewater treatment plant on the southwest corner of the project site will have its own entrance but was not studied. The effects of employee/other trips generated by this land use under typical operations are considered negligible and would not affect operations on Hansen Road.

This study analyzes the potential project-related traffic impacts under typical weekday AM and PM peak hour traffic conditions. The peak hours for each intersection are identified as the highest one-hour totals of traffic at each intersection during the typical peak commute periods from 6:00 AM to 9:00 AM and from 3:00 to 6:00 PM on a mid-weekday (i.e., Tuesday, Wednesday, or Thursday). Intersections are the focus of the transportation analysis because they represent the constraints of the roadway system. Roadway segment analysis is not typically indicative of congestion experienced by drivers.

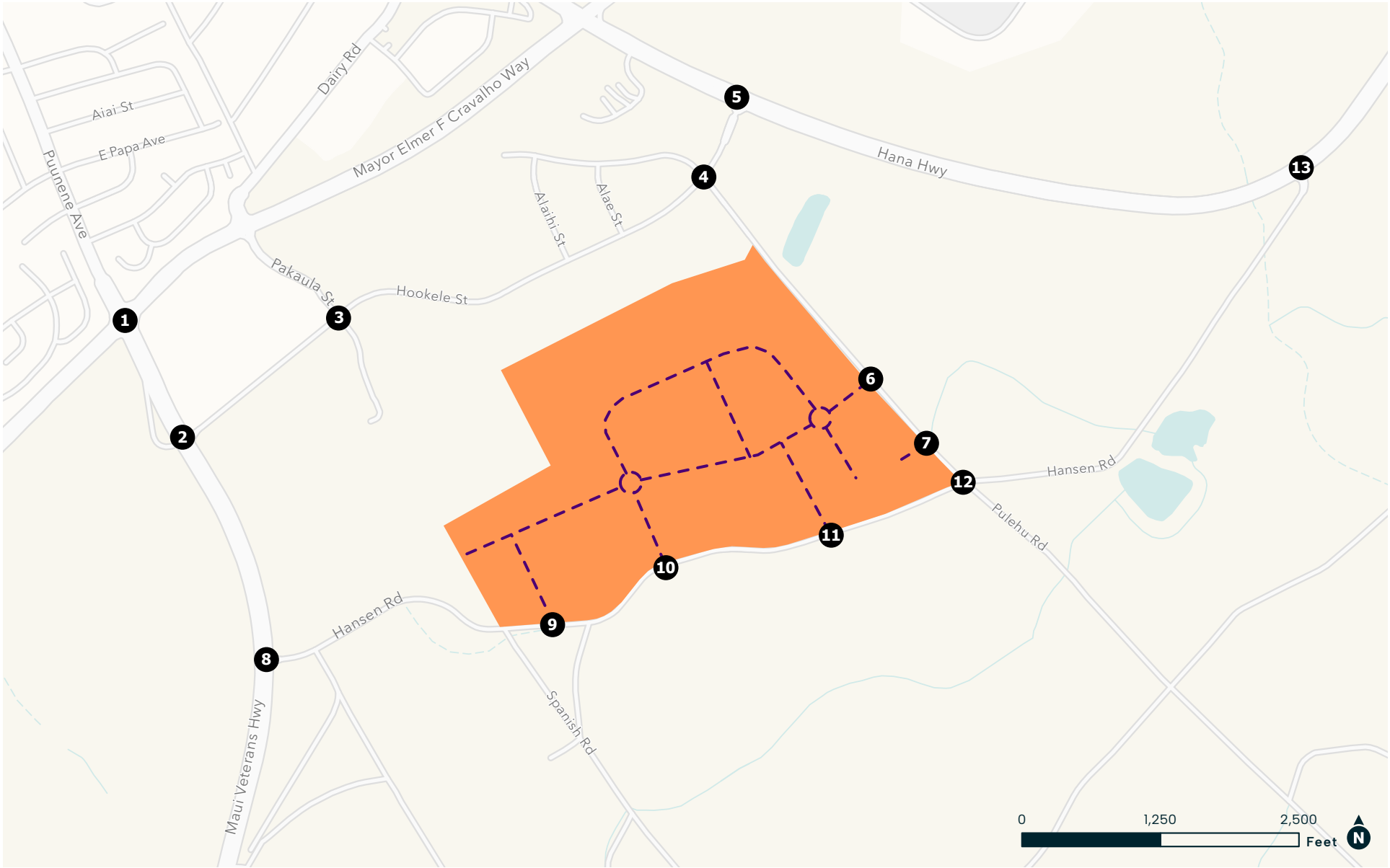


FIGURE 2

Project Study Area

Fehr & Peers

2.2 Study Scenarios

The operations of the study intersections were evaluated during the weekday AM and PM peak hours for the following scenarios:

- Existing (2024) Conditions – Traffic counts at study intersections were collected in May 2024 on a typical mid-weekday while schools were in session except for intersections 1 and 2, which were collected in February 2026. The analysis of peak hour traffic operations under this scenario was conducted using existing intersection lane configurations, signal timings, etc. The existing conditions analysis also includes a description of key roadways and a review of existing transit, bicycle, and pedestrian facilities and services near the site.
- Year 2042 No Project Conditions – Future traffic volumes in the anticipated completion year of the project were projected by increasing the existing volumes using an annual growth factor of 1% per year to account for ambient growth except for along Hoʻokele Street, where a 2% per year growth rate was used. These growth rates were calculated based on planned development in the study area and long-term growth projections in the Maui Metropolitan Planning Organization (MPO) Travel Demand Model. This scenario does not include any project traffic and forms the baseline against which project impacts are evaluated.
- Year 2042 Plus Project Conditions – Traffic volumes estimated from the completion and full occupancy of the entire project were added to traffic projections from Year 2042 No Project Conditions. The impact of the project under this scenario was also assessed for potential impacts on bicycles, pedestrian, and transit facilities and services.

Analysis of study intersections for the weekday AM and PM peak hours is considered the most conservative for this project. Spring 2025 travel data from Replica, a big data source, shows average daily traffic on roadways in the study area is 5 to 10% lower on weekends than weekdays. Replica is a nationwide activity-based travel demand model which combines multiple datasets to represent activities and travel behavior. Additionally, project trip generation is expected to be higher on weekdays compared to weekends, so the effects of project traffic are expected to be more pronounced on weekdays.

3. Analysis Methodology

The analysis of roadway operations performed for this study is based on procedures presented in the *Highway Capacity Manual 7th Edition* (HCM 7), published by the Transportation Research Board in 2022. The operations of roadway facilities are described with the term "level of service" (LOS). LOS is a qualitative description of traffic flow based on factors such as speed, travel time, delay, and freedom to maneuver. Six levels are defined, from LOS A, with the least congested operating conditions, to LOS F, with the most congested operating conditions. LOS E represents "at-capacity" operations. Operations are designated as LOS F when volumes exceed capacity, resulting in stop-and-go conditions.

3.1 Signalized Intersections

The methodology described in "Chapter 19: Signalized Intersections" of the *HCM 7* was used to prepare the LOS calculations for the signalized study intersections. This LOS method analyzes a signalized intersection's operation based on the average control delay per vehicle. Control delay alone is used to characterize LOS for the entire intersection or for an approach. Control delay includes the initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The average control delay for signalized intersections was calculated using Synchro 12.0 analysis software and is correlated to a LOS designation, as shown in **Table 1**.

Table 1. Signalized Intersection LOS Definitions

Level of Service	Description	Delay in Seconds
A	Progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.	≤ 10.0
B	Progression is good, cycle lengths are short, or both. More vehicles stop than with LOS A, causing higher levels of average delay.	> 10.0 to 20.0
C	Higher congestion may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level, though many still pass through the intersection without stopping.	> 20.0 to 35.0
D	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	> 35.0 to 55.0
E	This level is considered by many agencies to be the limit of desirable delay. These high-delay values generally indicate poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.	> 55.0 to 80.0
F	This level is considered undesirable with oversaturation, which is when arrival flow rates exceed the capacity of the intersection. This level may also occur at high V/C ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be contributing factors to such delay levels.	> 80.0

Source: Highway Capacity Manual 7th Edition, Transportation Research Board, 2022.

3.2 Stop-Controlled Intersections

The operations of the unsignalized intersections were evaluated using the methodology contained in "Chapter 20: Two-Way Stop-Controlled Intersections", "Chapter 21: All-Way Stop-Controlled Intersections", and "Chapter 22: Roundabouts" of the *HCM 7*. LOS ratings for stop-sign-controlled and roundabout intersections are based on the average control delay expressed in seconds per vehicle. At a two-way- or side-street-stop-controlled (SSSC) intersection, the average control delay is calculated for the minor-street stopped movement and the major-street left turns, not for the overall intersection. For approaches composed of a single lane, the control delay is computed as the average of all movements in that lane. At a roundabout or all-way stop-controlled intersection (AWSC) intersection, the average control delay is calculated for the entire intersection. The average control delay for intersections is calculated using Synchro 12.0 analysis software and is correlated to the LOS designations shown in **Table 2**.

Table 2. Unsignalized Intersection Level of Service Criteria

Level of Service	Description	Signalized Delay (Seconds)	Unsignalized Delay (Seconds)
A	Progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.	≤ 10.0	≤ 10.0
B	Progression is good, cycle lengths are short, or both. More vehicles stop than with LOS A, causing higher levels of average delay.	> 10.0 to 20.0	> 10.0 to 15.0
C	Higher congestion may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level, though many still pass through the intersection without stopping.	> 20.0 to 35.0	> 15.0 to 25.0
D	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	> 35.0 to 55.0	> 25.0 to 35.0
E	This level is often considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.	> 55.0 to 80.0	> 35.0 to 50.0
F	This level is often considered undesirable with oversaturation, which is when arrival flow rates exceed the capacity of the intersection. This level may also occur at high V/C ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be contributing factors to such delay levels.	> 80.0	> 50.0

Source: Highway Capacity Manual (Transportation Research Board, 2022).

3.3 Significant Impact Criteria

The analysis of Year 2042 Conditions compares No Project operations and conditions when the project is fully built out to determine whether project implementation is expected to result in a significant impact on the surrounding roadways and transportation systems. Based on previous studies conducted for both the County of Maui and the State of Hawaii Department of Transportation (HDOT), the minimum desired operating standard for a signalized intersection is LOS D. If the addition of project traffic is expected to degrade desirable service levels (LOS D or better) to lower than desirable service levels (LOS E or F) then the project is considered to have a project-specific impact. Impacts are also defined to occur when the addition of project traffic exacerbates locations already operating or projected to operate at LOS E or F under No Project conditions by more than five (5) seconds. Impacts resulting from the exacerbation of already undesirable operations are referred to as cumulative impacts.

When evaluating intersection operations at any location, other factors are considered in the analysis, such as vehicle queues, and potential secondary impacts to pedestrians, bicycle, and transit travel.

For unsignalized intersections, the criterion for a project-specific impact is the same as for signalized intersections regarding LOS as described above, but one or more signal warrants must also be met. The signal warrants used for this evaluation are those described in Chapter 4C of the Manual of Uniform Control Devices (MUTCD, 2009) published by the U.S. Department of Transportation Federal Highways Administration (FHWA). However, the project is determined to have a potentially significant cumulative impact when it adds traffic to a study location which includes a controlled approach operating at an undesirable level (i.e., LOS E or F), and one or more volume-based signal warrants are met.

County of Maui and HDOT do not publish formal impact analysis criteria for pedestrian, bicycle, and transit. For this analysis, pedestrian, bicycle, and transit modes were evaluated based on whether the project would: 1) conflict with the existing or planned pedestrian, bicycle, or transit facilities and services, or 2) create substantive walking, bicycling, or transit use demand without providing adequate and appropriate facilities for non-motorized mobility. Existing facilities for pedestrians, bicycles, and transit users were inventoried to evaluate the quality and scope of facilities/services currently in place. The assessments of planned pedestrian, bicycle, and transit facilities were conducted using the information in planning documents. For these modes, if the proposed project is expected to conflict with existing or planned improvements to pedestrian and bicycle facilities, or if the project is expected to generate a substantial demand which could warrant additional transit service, then the project would be determined to have a project-specific impact to non-motorized modes of transportation.

4. Existing Conditions

4.1 Existing Local Roadway Network

The following is a description of the existing street network in the study area, including road designations per the State of Hawaii Office of Planning.

- Ho'okele Street is a four (4) lane Major Urban Collector that is aligned east/west from Maui Veterans Highway to Hāna Highway. The posted speed limit is 35 mph in the study area, on-street parking is prohibited on either side of the street, and pedestrian facilities are provided along both sides of the street. Transit stops are located on the side streets of Pākaula Street, Pūlehu Place, and Alaihi Street.
- Pūlehu Road is a two (2) lane Major Rural Collector that extends in the north/south direction from Ho'okele Street towards Kula Highway (Highway 37). The posted speed limit is 30 mph in the study area, on-street parking is prohibited on either side of the street, and no formal pedestrian facilities are provided near the project area except for a small segment near the Safeway grocery store which includes a sidewalk and bike lanes. A transit stop is located on Pūlehu Road just north of Ho'okele Street.
- Hāna Highway is a four (4) lane Major Urban Arterial within the project area and extends in the east/west direction from E Ka'ahumanu Ave to Pīʻilani Highway (Southern Maui). The posted speed limit is 45 mph within the study area, on-street parking is prohibited on either side of the roadway, and no formal pedestrian facilities along the segment in the project area.
- Hansen Road is a two (2) lane Major Rural Collector that is aligned east/west from Maui Veterans Highway to Hāna Highway. The posted speed limit is 20 mph, on-street parking is prohibited along both sides of the street, and no formal pedestrian facilities are provided along either side of the street.
- Maui Veterans Highway is a four (4) lane Major Urban Arterial that is aligned in the north/south direction from Mayor Elmer F. Cravalho Way (Highway 380) to N Kihei Road/ Pīʻilani Highway to the south. The posted speed limit is 30 mph within the project area, on-street parking is prohibited on either side of the street, a "Bike Path" runs along the eastern side of the street from Ho'okele Street south past Hansen Road to Kihei, and no formal pedestrian facilities are provided on either side of the street. North of Highway 380, Maui Veterans Highway becomes Puʻunēnē Avenue and narrows to two (2) lanes.
- Kūihelani Highway is a north-south, four-lane divided arterial with a posted speed limit of 45 mph south of Puʻunēnē Avenue. The roadway begins at an intersection with Honoapiʻilani Highway north of Ma'alaea Harbor and continues north to its intersection with Puʻunēnē Avenue and Maui Veterans Highway, beyond which it turns into Mayor Elmer F. Cravalho Way and connects to Hāna Highway and Kahului Airport.
- Pākaula Street is a two (2) lane Minor Urban Collector that extends in the north/south direction from Mayor Elmer F. Cravalho Way (Highway 380) to Ho'okele Street. The posted speed limit is 20 mph, it serves as an access point for several shopping centers in the area, on-street parking is prohibited on either side of the street, and sidewalks exist on both sides of the street along the full extent of the roadway. Transit stops are located near the intersection of Pākaula Street and Ho'okele Street.

Table 3 summarizes characteristics of these roadway facilities for their extents in the study area, including ownership, number of lanes, speed limits, and presence and condition of bike and pedestrian facilities.

Table 3. Existing Study Area Roadway Facilities

Name	Owner	Number of Lanes	Direction	From	To	Posted Speed	On-Street Parking Area	Sidewalk	Designated Bicycle Facilities
Ho'okele Street	County	4	East-West	Maui Veterans Highway	Hāna Highway	35	No	South side between Maui Veterans Highway and Hāna Highway. North side between Maui Veterans Highway and Hāna Highway.	None
Pūlehu Road	County	2	North-South	Ho'okele Street	Hansen Road	30	No	South side & North Side between Ho'okele Street and Safeway Shopping Center	Bike lanes between Ho'okele Street and eastern Safeway Shopping Center driveway
Hāna Highway	State	4	East-West	Ho'okele Street	Hansen Road	45	No	No	None
Hansen Road	County	2	East-West	Maui Veterans Highway	Hāna Highway	20	No	No	None
Maui Veterans Highway	State	4	North-South	Kūihelani Highway	Hansen Road	30	No	No	Bike Path on the east side from Ho'okele Street south past Hansen Road to Kihei
Pākaula Street	County	2	North-South	Ho'okele Street	Airport Access Road	20	No	East side between Airport Access Road & Ho'okele Road. West Side between Airport Access Road & Ho'okele Road.	None
Kūihelani Highway	State	4	North-South	Pu'unēnē Avenue	Pākaula Street	45	No	East side from 600 feet south of Pākaula Street.	None

Source: Fehr & Peers, 2024AAA

Some of the adjacent lots along Ho'okele Street have submitted requests for projects whose construction could coincide with the project. Existing roadway segments should not be affected.

Field observation of existing conditions was conducted in the study area at the eight (8) existing intersections. At the intersection of Ho'okele and Pākaula Streets, queueing occasionally exceeded the storage capacity on the eastbound approach for the left turn towards Pākaula Street during the PM peak hour. At the Ho'okele Street/Hāna Highway intersection, queuing was observed during the PM peak hour on the northbound and eastbound approaches, with the northbound queue nearing the signal at Ho'okele Street & Pūlehu Road and the eastbound queue occasionally reaching Mayor Elmer F. Cravalho Way. However, this queueing was not present for most of the peak hour and was not considered excessive.

Further south, the intersection at Hansen Road and Pūlehu Road included lengthy queues on the eastbound approach during the PM peak hour. The stop sign was treated more as a yield when other approaches had no traffic. Hansen Road has a higher volume than Pūlehu Road, and it is used as a cut-through route between Maui Veterans Highway and Hāna Highway. On Hāna Highway, lengthy delays were observed on the westbound left turn to Hansen Road; however, queues never exceeded the available storage during either peak hour.

Long northbound queues were observed along Maui Veterans Highway approaching Kūihelani Highway due to the lane drop on Puʻunēnē Avenue north of the intersection. These conditions are expected to improve with the completion of the Puʻunēnē Avenue roadway improvements project.

4.2 Existing Pedestrian Facilities and Activity

Pedestrian facilities consist of sidewalks, crosswalks, and pedestrian signals at signalized intersections. Numerous gaps exist in the sidewalk network within the study area. Many roadways only have sidewalks on one side or no sidewalks at all.

While sidewalks are provided along Ho'okele Street, the other segments along the project site don't have any pedestrian facilities except for a small segment on Pūlehu Road where the Safeway Supermarket was constructed.

The intersections at Hansen Road/Hāna Highway and Hansen Road/Pūlehu Road lack marked crosswalks across one or more intersection legs. However, the existing land uses adjacent to these intersections generate a negligible number of pedestrians, and that level of pedestrian demand is not expected to change in the near term without the project. Signal controlled crossings and marked crosswalks (where pedestrian demand exists) are provided at all other existing study intersections.

Pedestrian activity is limited in the study area due to the low-density or lack of active land uses. The limited number of pedestrian access points, lack of connections to existing residential areas to the north, and distance between retail centers discourages walking trips by increasing walking distances. Existing sidewalk facilities are shown on **Figure 3**.

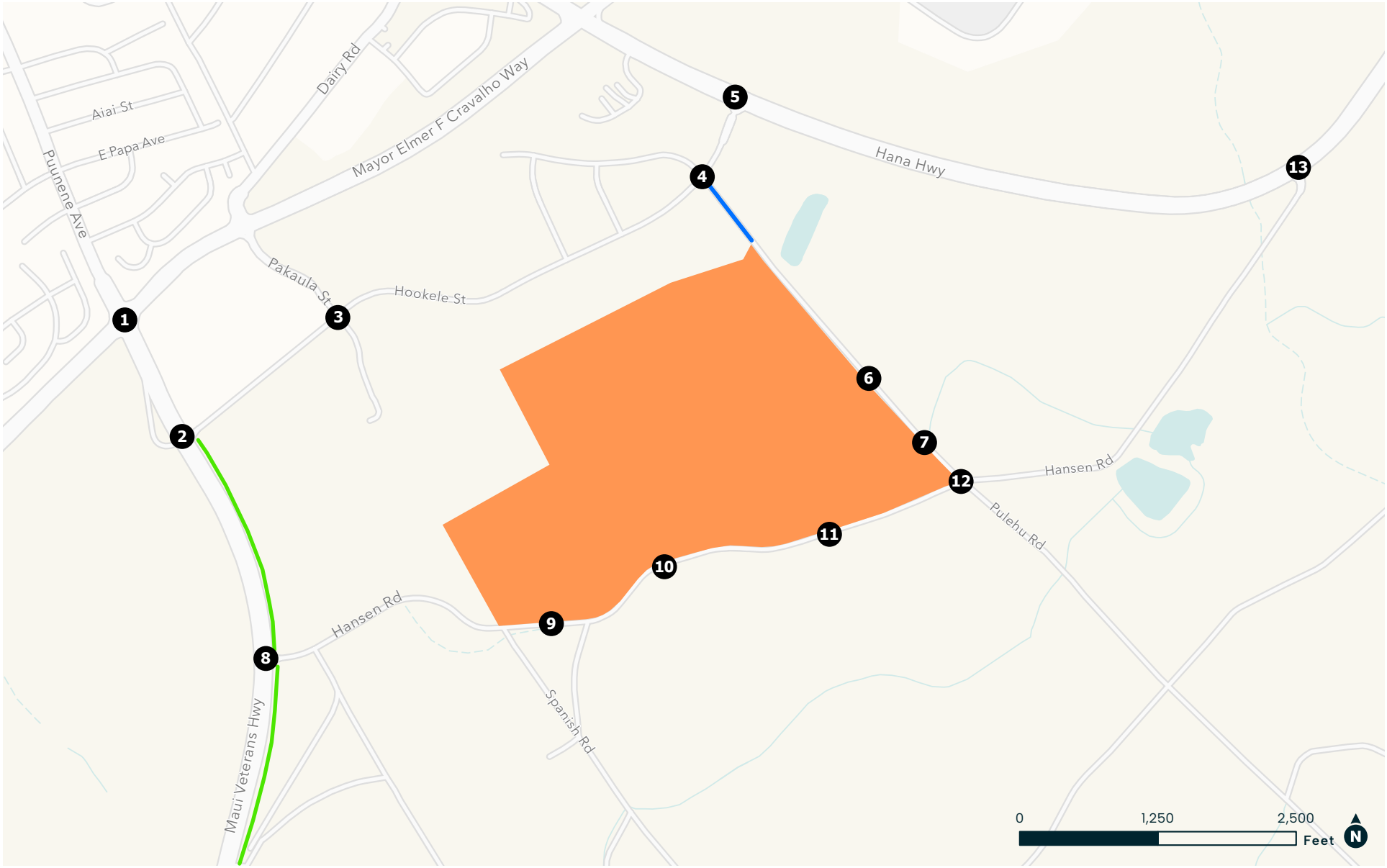


FIGURE 4

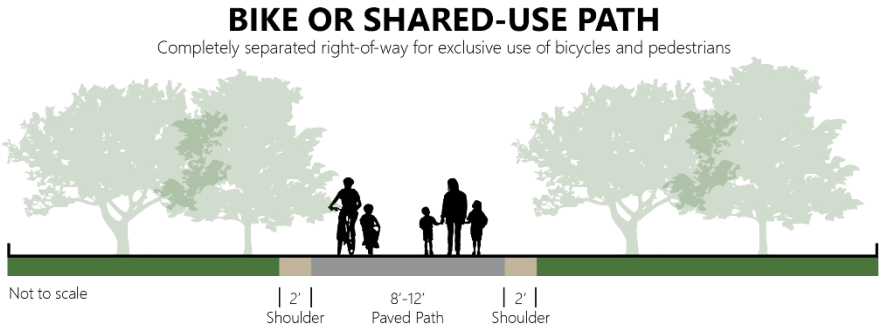
Existing Bicycle Facilities

Fehr & Peers

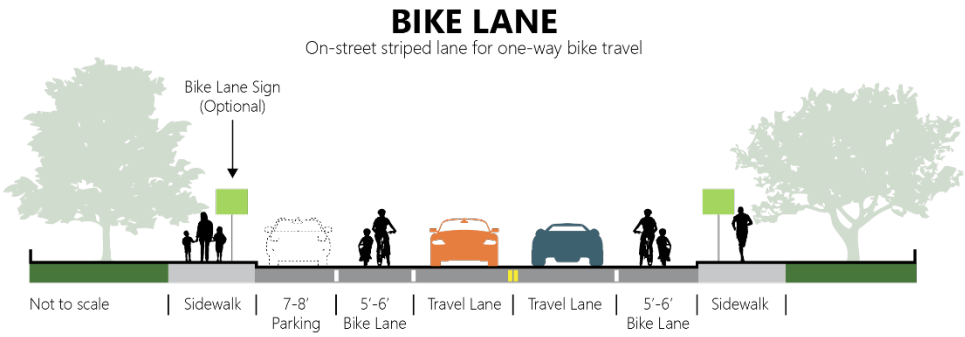
4.3 Existing Bicycle Facilities and Activity

Bicycle facilities generally consist of four types of facilities, which are outlined below:

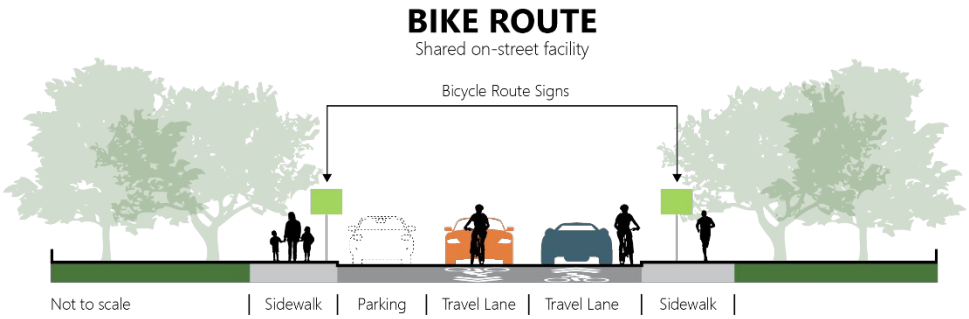
- *Bike or Shared Use Paths* provide a separate right-of-way and are designated for the exclusive use of bicycles and pedestrians (or exclusively bicycles) with vehicle and pedestrian cross-flow minimized. Generally, the minimum pavement width for a two-directional bike or multi-use path is eight (8) feet plus graded shoulders, but a ten (10) foot or wider path is desirable.



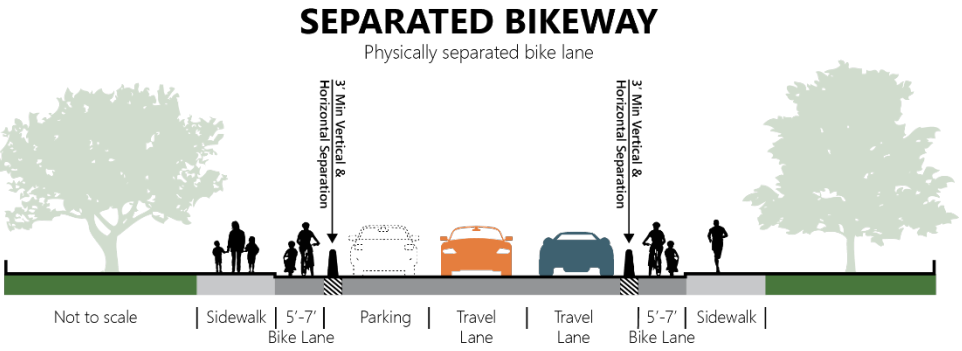
- *Bike Lanes* provide a restricted right-of-way and are designated for the use of bicycles with a striped lane on a street or highway. Bicycle lanes are generally five (5) feet wide. Adjacent vehicle parking and vehicle/pedestrian cross-flow are permitted.



- *Bike Route or Signed Shared Roadways* provide for a right-of-way designated by signs or shared lane pavement markings, or "sharrows," for shared use with pedestrians or motor vehicles.



- *Separated Bikeways or Cycle Tracks* provide a restricted right-of-way with physical separation and are designated for the use of bicycles in or directly adjacent to a roadway with a raised barrier, such as curbs or bollards. Separated bikeways are typically at least five (5) feet wide with a minimum three (3) foot minimum horizontal separation from an adjacent vehicle parking or travel lane [although a two (2) foot median could be used next to a travel lane with lower vehicle speeds]. Adjacent vehicle parking is permitted and vehicle/pedestrian cross-flow is restricted to selected locations (e.g., driveways) indicated by breaks in the barrier and buffer.



In the project study area, existing bicycle facilities are limited. Bicycle lanes are provided along Pūlehu Road between Ho'okele Street and the mauka Safeway driveway. A shared-use path is located on the east side of Maui Veterans Highway from Ho'okele Street to Hansen Road and extends further south towards the community of Kihei. Roadway shoulders along Hansen Road are wide enough on some segments to act as de facto bicycle lanes but are not officially designated as such. Existing bicycle facilities in the study area are shown on **Figure 4**. According to the I Mua Central Maui Transportation Study, bike lanes are proposed along Hansen Road between Maui Veterans Highway and Hāna Highway.

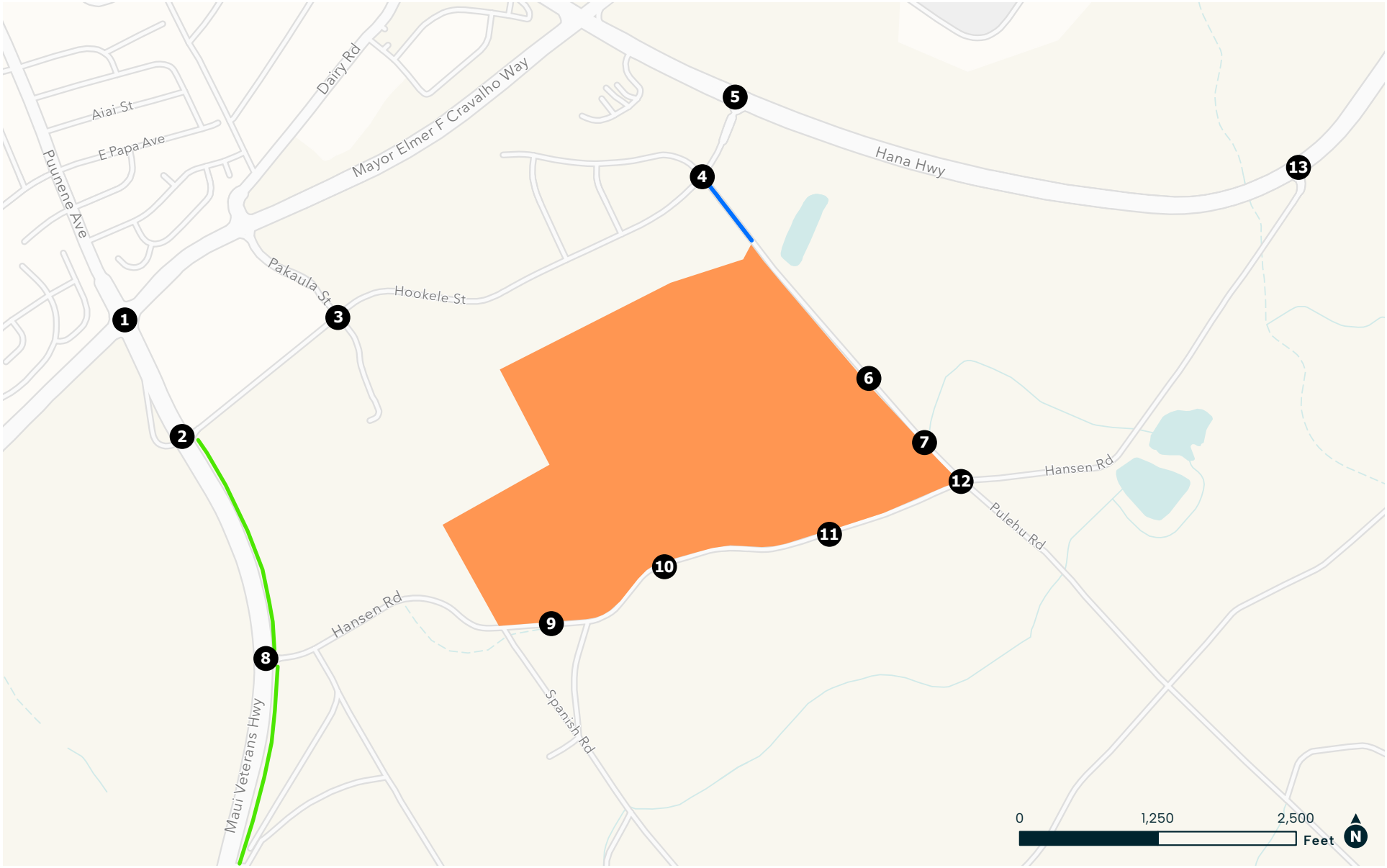


FIGURE 4

Existing Bicycle Facilities

Fehr & Peers

4.4 Existing Transit Facilities and Services

Maui Bus, operated by the Maui Bus Public Transit System, provides three bus routes in the study area: Route 5, Route 6, and Route 39. Routes 5 & 6 operate in a loop from Queen Ka'ahumanu Center and run in opposing directions. Service on these routes is provided every 60 minutes on weekdays and on weekends. The closest stops in the study area are located at the Ho'okele Street/Pākaula Street, Ho'okele Street/'Ala'ihi Street, and Ho'okele Street/Pūlehu Place intersections. These are just beyond a ½-mile walking distance from the project.

Route 39 operates in a loop out of Queen Ka'ahumanu Center, travelling from Kahului to Keokea with stops in between at Kula and Pukalani. Service on this route is provided every 90 minutes on weekdays and weekends. The closest stops in the study area are located at the Ho'okele Street/Pākaula Street intersection. This is an approximately ½-mile walking distance from the northern edge of the project site. Existing transit service is shown on **Figure 5**.

Because of this distance, no substantial increase in transit demand is anticipated with the implementation of the proposed project that could not be accommodated by existing service. According to the General Plan, a Conceptual Transit Corridor is proposed near the project site. Implementation of this corridor is not expected to be affected by the project.

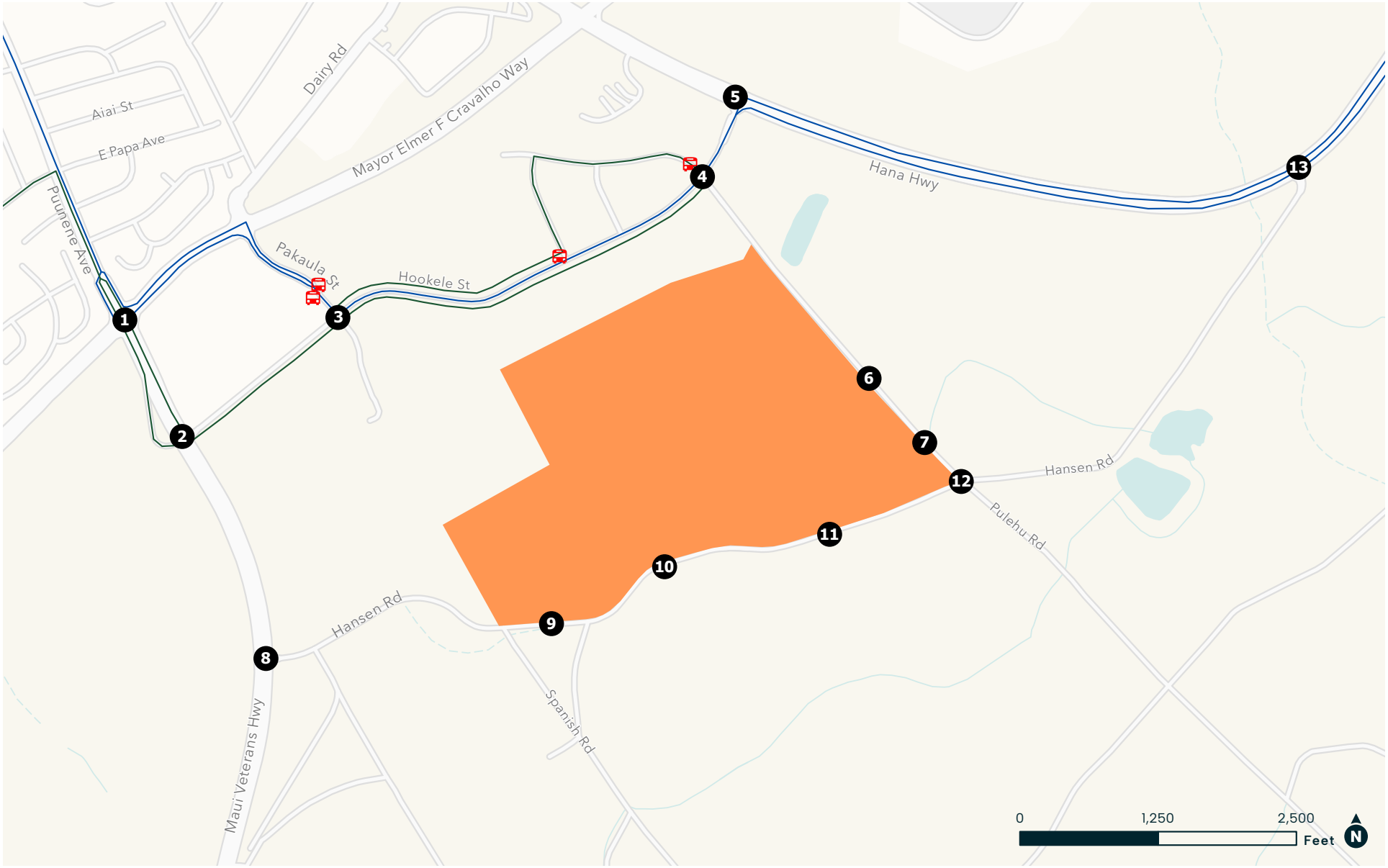


FIGURE 5

Existing Transit Network

Fehr & Peers

4.5 Existing Volumes and Operations

Intersection-turning movement traffic counts were obtained on Tuesday May 21st, 2024 and Wednesday February 4th, 2026, from 6:00 AM to 9:00 AM and from 3:00 PM to 6:00 PM. Existing peak hour volumes, lane configurations, and level of service for all study intersections are provided on **Figure 6**. Detailed count sheets are provided in **Appendix A**.

Table 4 contains LOS and delay results for existing conditions. The corresponding LOS calculation sheets are included in **Appendix B**. These results align with conditions observed in the field. Congestion was mainly observed along Hansen Road, specifically at Pūlehu Road/Hansen Road and Hāna Highway/Hansen Road intersections during the AM and PM peak hour. The Pūlehu Road/Hansen Road is an all-way stop control intersection, and large queues and delays were observed during the peak hours.

The Maui Veterans Highway/Kūihelani Highway intersection operates at LOS E during the PM peak hour. This result aligns with observed conditions in the field, where substantial queuing was observed, particularly on the northbound approach along Maui Veterans Highway.

At Hāna Highway/Hansen Road, observed delays on the westbound left turn from Hāna Highway and Hansen were highly variable depending on arrival of the vehicle platoon from the Hāna Highway/ Ho'okele Street intersection. Wait times to turn left varied from only a few seconds to around 40 seconds. Note that the Synchro 12 analysis software is limited in its ability to capture heavy platooning due to upstream signals. Observed delays are therefore lower than the average delays reported below, though still support the conclusion that vehicles making the westbound left turn can experience higher delays at select times.

Significant project impacts are defined to occur at an unsignalized intersection if operations change from LOS D or better to LOS E or F (or LOS E or F operations are exacerbated), and one or more signal warrants are met. Accordingly, MUTCD volume warrants were evaluated for the intersection of Hāna Highway at Hansen Road, which was calculated to operate at an undesirable LOS (E or F) under Existing (2024) Conditions. Counts were collected in 2024 as a part of this study and represent the most recently available traffic counts. This intersection meets the peak hour, 4-hour, and 8-hour signal warrants under Existing (2024) Conditions. Since all other analysis scenarios assume higher volumes at Hāna Highway/ Hansen Road, the signal will be warranted under both future analysis scenarios. Signal warrants are provided in **Appendix C**.

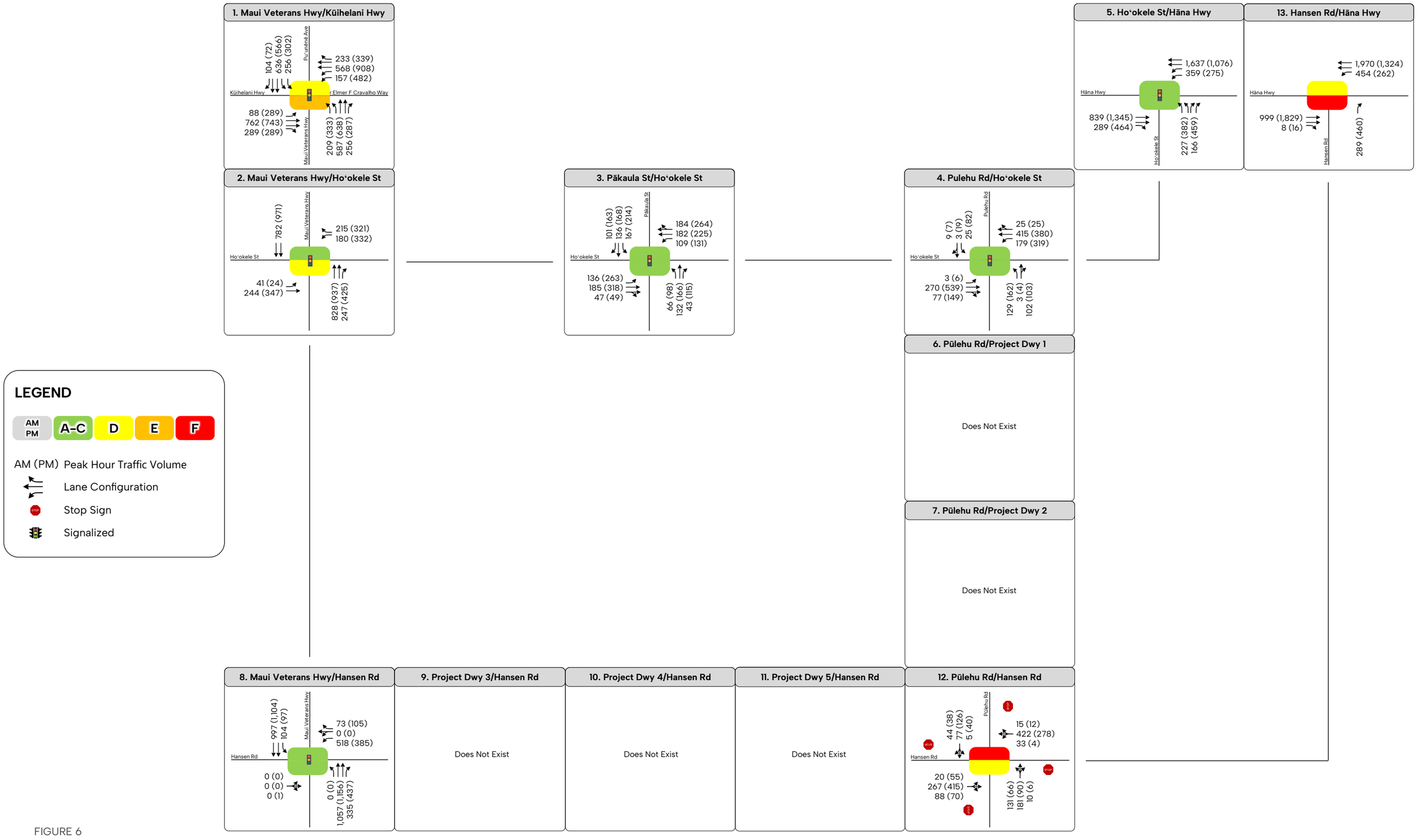


FIGURE 6

Peak Hour Traffic Volumes, Lane Configurations, and Level of Service – Existing (2024) Conditions

Table 4. Existing (2024) Conditions Level of Service Results

Intersection	Control[1]	Peak Hour	Delay[2]	LOS[3]
1. Kūihelani Highway/Maui Veterans Highway	Signal	AM	45.3	D
		PM	**58.5**	**E**
2. Maui Veterans Highway/Hoʻokele Street	Signal	AM	30.6	C
		PM	42.1	D
3. Hoʻokele Street/Pākaula Street	Signal	AM	14.2	B
		PM	16.6	B
4. Hoʻokele Street/Pūlehu Road	Signal	AM	13.5	B
		PM	17	B
5. Hāna Highway/Hoʻokele Street	Signal	AM	10.4	B
		PM	17.2	B
6. Pūlehu Road/Project Driveway 1	-	AM	-	-
		PM	-	-
7. Pūlehu Road/Project Driveway 2	-	AM	-	-
		PM	-	-
8. Maui Veterans Highway/Hansen Road	Signal	AM	12.8	B
		PM	10.8	B
9. Hansen Road/Project Driveway 3	-	AM	-	-
		PM	-	-
10. Hansen Road/Project Driveway 4	-	AM	-	-
		PM	-	-
11. Hansen Road/Project Driveway 5	-	AM	-	-
		PM	-	-
12. Hansen Road/Pūlehu Road	AWSC	AM	**54.9**	**F**
		PM	30.2	D
13. Hāna Highway/Hansen Road	Yield	AM	26.5	D (WB LT)
		PM	**56.6**	**F (WB LT)**

Source: Fehr & Peers, 2026 using Synchro 12.
Notes:
[1] AWSC = All Way Stop Control, SSSC = Side Street Stop Control
[2] The average stopped delay and LOS for the worst movement is reported for side-street stop-controlled intersections. The weighted average stopped delay and LOS for the whole intersection is reported all other intersections.
[3] LOS = Level of Service
Bold text indicates undesirable levels of service

4.6 Collision History

HDOT provides a summary of fatal crashes across the state for 2012 through 2023 on their online Fatal Crash Dashboard and web map. For the last five years of data (2019–2023), a total of six fatal crashes were reported. Five of the crashes had drugs or alcohol as the primary contributing factor. The location of these crashes and the mode of travel are shown in **Table 5**.

Table 5. Collision History

Approximate Location	Motorcycle/ Moped	Pedestrian	Bicycle	Car/Truck
Hoʻokele Street (Pākaula Street to Pūlehu Road)	1	0	0	0
Hāna Highway (Hoʻokele Street to Hansen Road)	0	1	0	0
Hāna Highway/Hoʻokele Street Intersection	0	0	0	1
Hansen Road (Pūlehu Road to Hāna Highway)	0	0	0	1
Maui Veterans Highway/ Kūihelani Highway Intersection	1	0	0	0
Pākaula Street/Mayor Elmer F Cravalho Way Intersection	1	0	0	0

Source: Oʻahu Motor Vehicle Crashes 2012–2023
https://histategis.maps.arcgis.com/apps/MapSeries/index.html?appid=39e4d804242740a89d3fd0bc76d8d7de

Overall, no major safety issues were identified immediately fronting the project site. However, the lack of designated and quality bicycle and pedestrian facilities in the study area increases the potential of crashes involving active transportation users.

5. Project Traffic Estimates

Future traffic added to the roadway system by the project is estimated using a three-step process: (1) project trip generation, (2) trip distribution, and (3) trip assignment. The first step estimates the amount of project-generated traffic that would be added to the roadway network. The second step estimates the direction of travel to and from the project site. The new trips are assigned to specific street segments and intersection turning movements during the third step.

Buildout land use data and trip generation information for the Ho'onani Village Master Plan update was provided by Hoʻonani Development, LLC. Square footage for each land use is based on the expected gross floor area per acre by land use and was also provided by Hoʻonani Development, LLC. The vehicle trip generation for the proposed project was estimated using standard trip rates from the *Trip Generation Manual* (12th Edition, August 2025) published by the Institute of Transportation Engineers (ITE) and buildout land use data for the Ho'onani Village Project provided by the project team. The resulting trip totals were then adjusted using the Mixed-Use (MXD) Trip Generation Model developed by Fehr & Peers and the Environmental Protection Agency (EPA), which is based on statistically superior data compared to the mixed-use methodology used by ITE alone. This model accounts for the site context and other factors to estimate potential internalization and multimodal trip reductions, including employment within one mile, employment within 30 minutes by transit, vehicle ownership, household size, intersection density, population density, employment density, activity density, trip lengths, and average vehicle occupancy, among others.

Table 6 shows the expected trip generation by phase based on ITE trip rates and inclusive of multimodal trip reductions. More details on trip generation rates, inbound and outbound splits, and reductions taken in the MXD+ model are provided in **Appendix D**.

New vehicle trips were distributed across the roadway network based on existing travel patterns inferred from the turning movement counts, roadway segment counts, and 2019 ADT volume outputs from the Maui MPO Travel Demand Model. The trip distribution for the project is shown on **Figure 7**.

Trips were then assigned to the individual turning movements at each of the study intersections and used to analyze future conditions with the project. The trip assignments are shown on **Figure 8**.

Trip generation shown in **Table 6** is the most conservative trip generation for the land use alternatives proposed for the site. Other alternatives considered include use of the land for an agricultural farm or a mixed-use site with lower square footages for all proposed uses compared to what is quantitatively analyzed in this report. Since these land use alternatives would generate less peak hour and daily trips, the effect of these alternatives on the surrounding transportation network would be less than the preferred alternative analyzed in this report. The smaller mixed-use alternative would generate 8,509 daily project trips, 524 project trips in the AM peak hour, and 743 project trips in the PM peak hour. These are 40% to 44% of the calculated project trip generation for the analyzed alternative.

Table 6. Project Trip Generation

Project Land Use	ITE Land Use	ITE Code	Units	Quantity	Daily Total	AM In	AM Out	AM Total	PM In	PM Out	PM Total
Phase 2 and 5 Commercial, Retail, Restaurant, Food Hall, and Entertainment Space	Shopping Plaza (40–150k) –Supermarket – No	821	1000 Sq. Ft. GLA	45	2,942	45	27	72	105	109	214
Office – All Phases	General Office Building	710	1000 Sq. Ft. GFA	100	826	116	16	132	21	109	130
Phase 7 Hospitality (Building 1)	Hotel	310	Rooms	100	584	18	16	34	15	15	30
Phase 7 Hospitality (Building 2)	Hotel	310	Rooms	140	818	25	23	48	33	31	64
Phase 9 Commercial/Civic	Shopping Plaza (40–150k) –Supermarket – No	821	1000 Sq. Ft. GLA	30	1,961	30	18	48	70	73	143
Phase 9 Civic	Library	590	1000 Sq. Ft. GFA	14	1,023	11	4	15	59	63	122
Phase 9 Recreation/ Entertainment/ Park (Half)	Custom		Custom	12	1,493	51	4	55	95	45	140
Phase 9 Recreation/ Entertainment/ Park (Half)	Custom		Custom	12	1,493	51	4	55	95	45	140
Residential – All Phases	Multifamily Housing (Low-Rise) Not Close to Rail Transit	220	Dwelling Units	1,608	9,173	138	438	576	483	296	779
Light Industrial – All Phases	Industrial Park	130	1000 Sq. Ft. GFA	255	1,329	125	37	162	43	112	155
Total Before Reduction					*21,642*	*610*	*587*	*1,197*	*1,019*	*898*	*1,917*
Internal Capture[1]					-758	-42	-40	-82	-79	-69	-148
External Walk, Bike, and Transit Reduction[2]					-572	-20	-20	-40	-26	-22	-48
Net New Driveway Trips					*20,312*	*548*	*527*	*1,075*	*914*	*807*	*1,721*

Project Land Use	ITE Land Use	ITE Code	Units	Quantity	Daily Total	AM In	AM Out	AM Total	PM In	PM Out	PM Total
Retail Pass-By (Percentage)					23%	15%	15%	15%	30%	30%	30%
Retail Pass-By Reduction					-1,035	-10	-6	-16	-47	-49	-96
Final Project Trips					**19,277**	**538**	**521**	**1,059**	**867**	**758**	**1,625**

Source: Fehr & Peers, 2026
[1]Internal trips: Daily = 3.5%, AM Peak Hour = 6.8%, PM Peak Hour = 7.7%
[2]External trips made by a combination of walking, bicycling, and transit: Daily = 2.6%, AM Peak Hour = 3.3%, PM Peak Hour = 2.5%

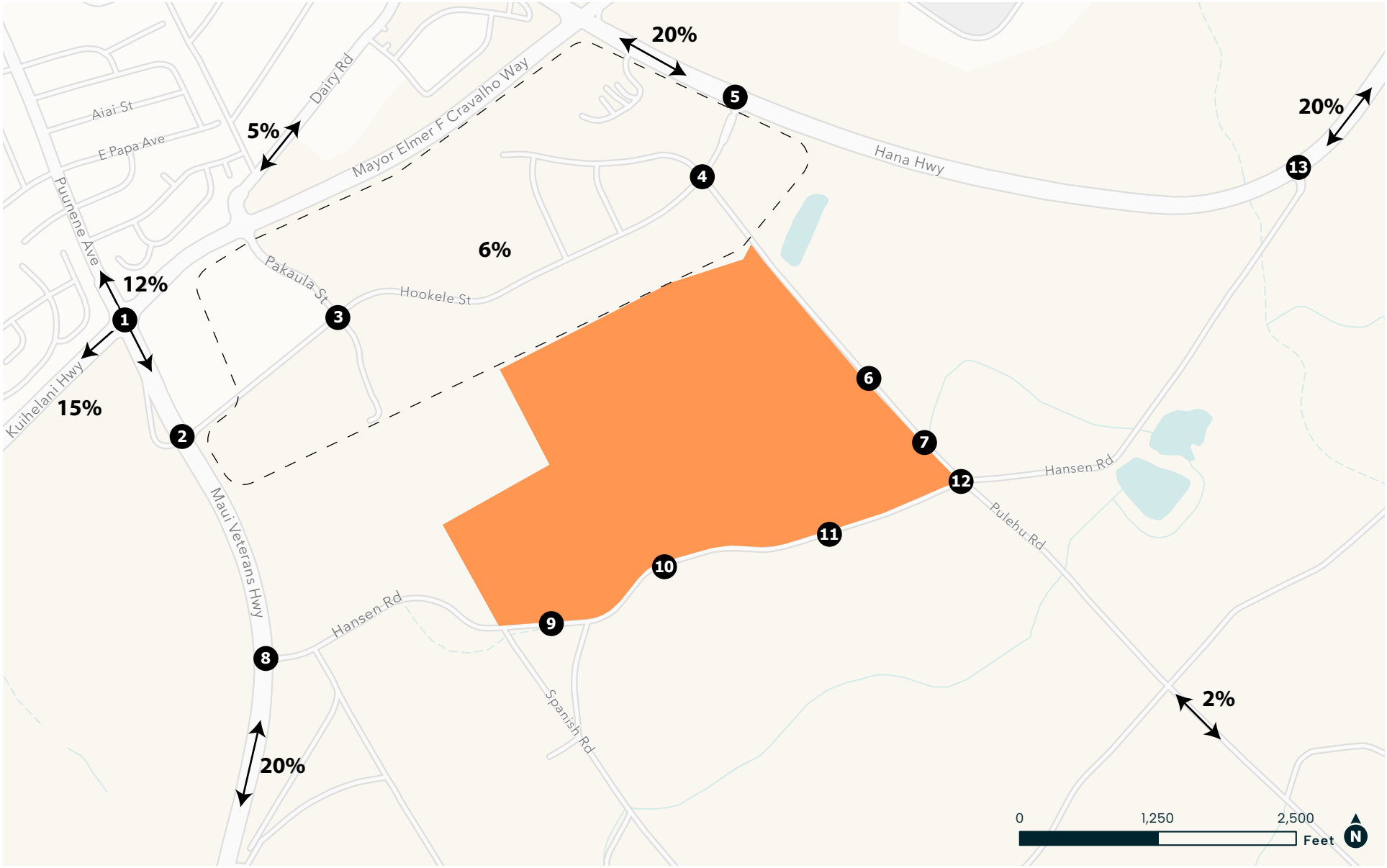


FIGURE 7

Trip Distribution

Fehr & Peers

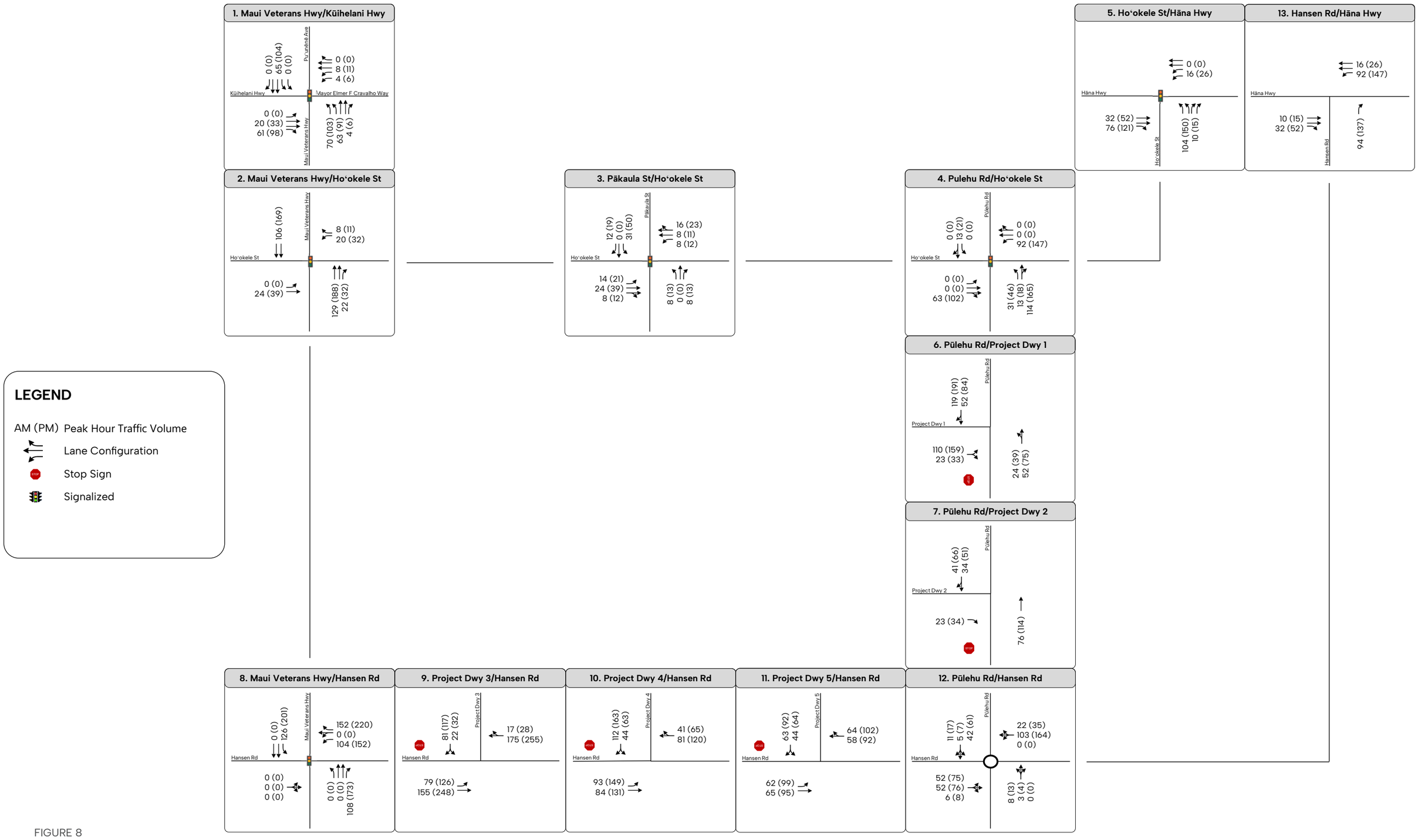


FIGURE 8

Project Trip Assignment

6. Year 2042 Analysis

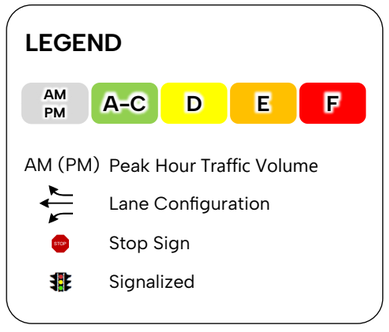
Annual growth rates for volumes on study facilities were calculated based on planned development in the study area and long-term growth projections in the Maui Travel Demand Model. To estimate growth in traffic volumes by buildout in 2042, an annual growth rate in traffic of 1% through 2042 was calculated for the study area except for Hoʻokele Street. Given the regional nature of the study facilities and trip attractions in the study area, this growth (18% total over 18 years) accounts for both island-wide growth as well as local growth (i.e. any planned development to the south along Maui Veterans Highway). Along Hoʻokele Street, a 2% per year growth rate was used to account for the additional planned development along the corridor. This 2% growth rate adequately accounts for remaining development in Maui Business Park Phase II. Growth rates were applied to Existing (2024) volumes to yield Year 2042 No Project volumes. Project trip generation forecasts from **Section 5** were added to these volumes to yield Year 2042 Plus Project volumes.

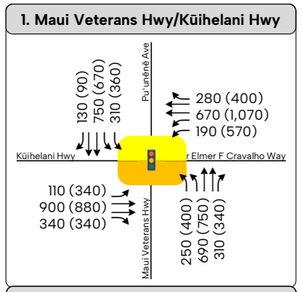
All signalized intersections were optimized for Year 2042 analysis. Additionally, the Pūlehu Road/Hansen Road intersection was assumed to have been changed from AWSC (All Way Stop Controlled) to a single-lane roundabout for Year 2042 analysis based on information provided by Maui County and the identification of the intersection in the I Mua Central Maui Transportation Study as needing intersection improvements.

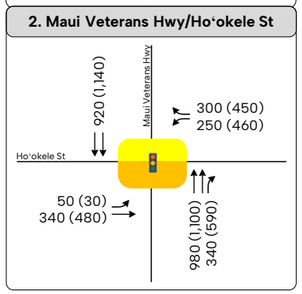
Additional planned and under construction improvements were also assumed. HDOT began widening Puʻunēnē Avenue to four lanes between Kūihelani Highway and Wakea Avenue in 2024 with an expected completion date in April 2026. New or improved sidewalks will be installed along both sides of Puʻunēnē Avenue with this project and were assumed for Year 2042 analysis.

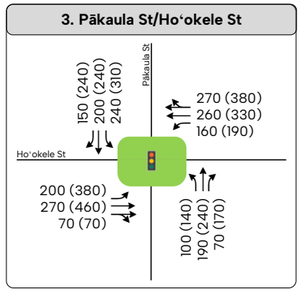
6.1 Year 2042 Intersection Analysis

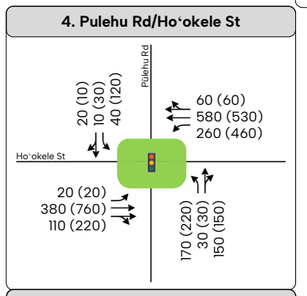
Year 2042 peak hour volumes, lane configurations, and level of service for all study intersections are provided on **Figure 9** and **Figure 10** for No Project and Plus Project Conditions, respectively. **Table 7** contains LOS and delay results for the two future 2042 scenarios. The corresponding LOS calculation sheets are included in **Appendix B**.

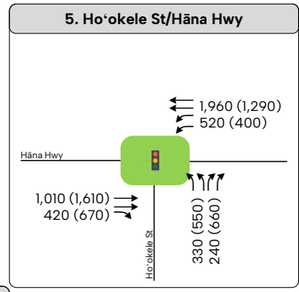


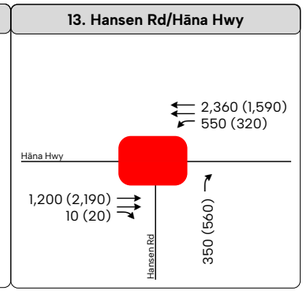










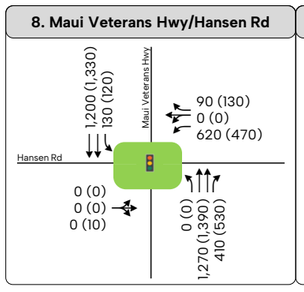


6. Pūlehu Rd/Project Dwy 1

Does Not Exist

7. Pūlehu Rd/Project Dwy 2

Does Not Exist



9. Project Dwy 3/Hansen Rd

Does Not Exist

10. Project Dwy 4/Hansen Rd

Does Not Exist

11. Project Dwy 5/Hansen Rd

Does Not Exist

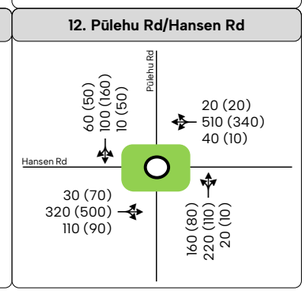


FIGURE 9

Peak Hour Traffic Volumes, Lane Configurations, and Level of Service – Year 2042 No Project

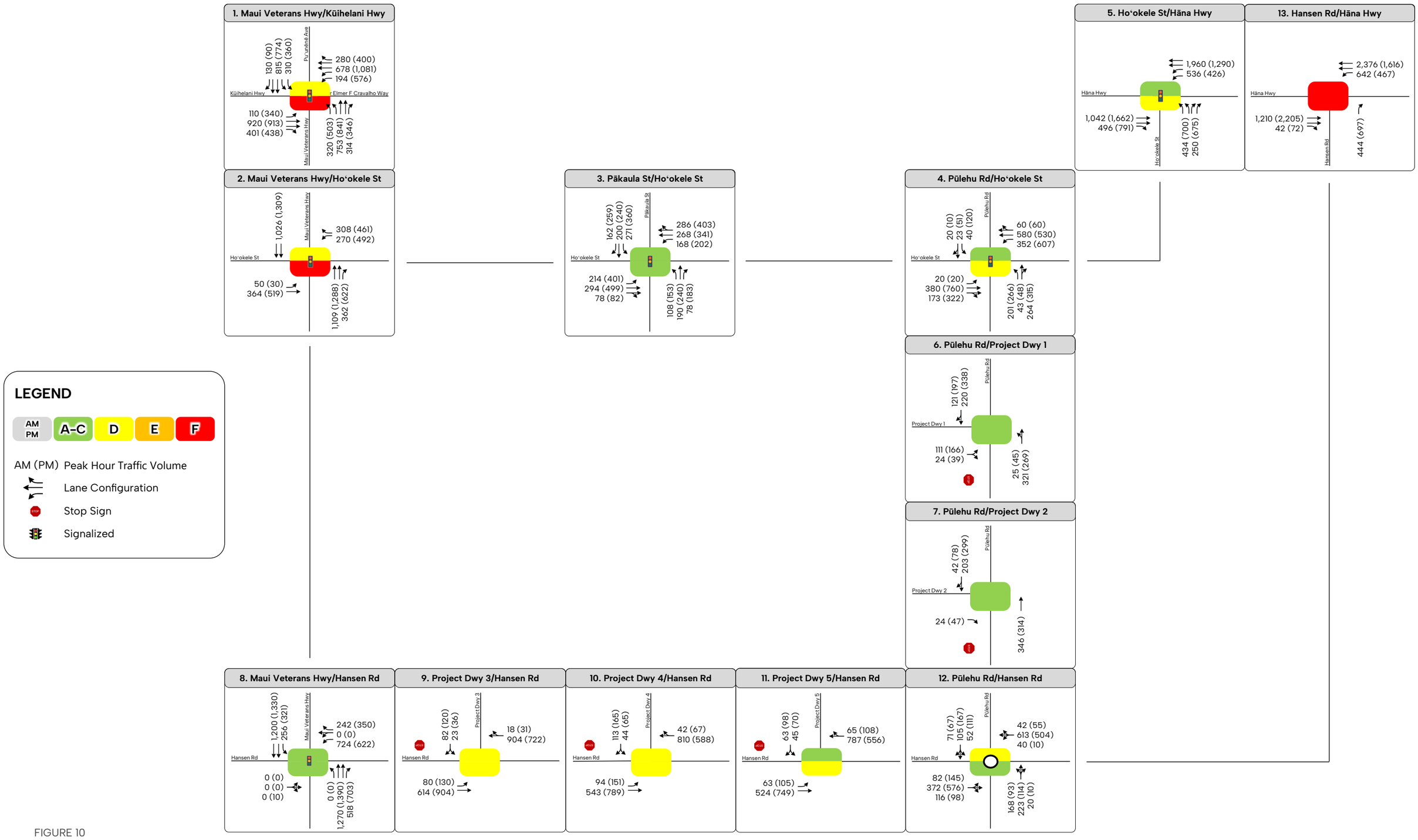


FIGURE 10

Peak Hour Traffic Volumes, Lane Configurations, and Level of Service – Year 2042 Plus Project

Table 7. Year 2042 No Project and Plus Project Level of Service Results

Intersection	Control[1]	Peak Hour	No Project Delay[2]	No Project LOS[3]	Plus Project Delay[2]	Plus Project LOS[3]	Change in Delay
1. Kūihelani Highway/Maui Veterans	Signal	AM	51.3	D	54.1	D	2.8
Highway		PM	**77.8**	**E**	**89.4**	**F**	**11.6**
2. Maui Veterans Highway/Hoʻokele	Signal	AM	41.9	D	42.5	D	0.6
Street		PM	**71**	**E**	**80.4**	**F**	**9.4**
3. Hoʻokele Street/Pākaula Street	Signal	AM	16.2	B	16.5	B	0.3
		PM	24.4	C	27.4	C	3
4. Hoʻokele Street/Pūlehu Road	Signal	AM	15.2	B	17.2	B	2
		PM	25.8	C	53.5	D	27.7
5. Hāna Highway/Hoʻokele Street	Signal	AM	14.3	B	17.3	B	3
		PM	26.4	C	41.2	D	14.8
6. Pūlehu Road/Project Driveway 1	TWSC	AM	–	–	12.9	B	–
		PM	–	–	16.6	C	–
7. Pūlehu Road/Project Driveway 2	TWSC	AM	–	–	9.7	A	–
		PM	–	–	10.7	B	–
8. Maui Veterans Highway/Hansen	Signal	AM	17.4	B	29.6	C	12.2
Road		PM	14.2	B	32.5	C	18.3
9. Hansen Road/Project Driveway 3	TWSC	AM	–	–	25.8	D	–
		PM	–	–	28.12	D	–
10. Hansen Road/Project Driveway 4	TWSC	AM	–	–	26.8	D	–
		PM	–	–	31.4	D	–
11. Hansen Road/Project Driveway 5	TWSC	AM	–	–	22.7	C	–
		PM	–	–	25.4	D	–
12. Hansen Road/Pūlehu Road	Round-	AM	13.4	C	27.2	D	13.8
	about	PM	10.5	B	20.5	C	10
13. Hāna Highway/Hansen Road	Yield	AM	**93.9**	**F**	**>120.0**	**F**	**72.8**
		PM	**>120.0**	**F**	**>120.0**	**F**	**>120.0**

Source: Fehr & Peers, 2026 using Synchro 12.
Notes:
[1] AWSC = All Way Stop Control, SSSC = Side Street Stop Control
[2] The average stopped delay and LOS for the worst movement is reported for side-street stop-controlled intersections. The weighted average stopped delay and LOS for the whole intersection is reported all other intersections.
[3] LOS = Level of Service
Bold text indicates undesirable levels of service

All study intersections are forecast to operate at desirable levels of service under both No Project and Plus Project conditions in 2042 with the exception of the following three intersections, which are forecast to have cumulative impacts resulting from the exacerbation of already undesirable operations under No Project conditions:

- Kūihelani Highway/Maui Veterans Highway
- Maui Veterans Highway/Hoʻokele Street
- Hāna Highway/Hansen Road

The Pūlehu Road/Hansen Road intersection is forecast to operate at LOS A/B/C under both No Project and Plus Project conditions with the planned construction of a single lane roundabout. A single lane roundabout with single lane approaches is sufficient for acceptable operations and no widening along Pūlehu Road or Hansen Road is needed.

While impacts at signalized intersections are primarily considered based on average delay for the entire intersection, examining delay and level of service for individual turning movements can help in understanding if a major issue might need to be addressed. For signalized intersections with overall desirable operations, there are some turning movements which operate at an undesirable level, as shown in **Table 8**.

Table 8. Year 2042 No Project and Plus Project Undesirable Turning Movement Level of Service Results at Intersections with Acceptable Operations

Intersection	Movement	Peak Hour	No Project Delay	No Project LOS[1]	Plus Project Delay	Plus Project LOS[1]	Change in Delay
4. Hoʻokele Street/Pūlehu Road	WBL	PM	31.7	C	113.6	F	81.9
5. Hāna Highway/Hoʻokele Street	WBL	PM	53.0	D	65.2	E	12.2
	NBL	PM	50.1	D	126.8	F	76.7
8. Maui Veterans Highway/	WBL	PM	30.6	C	57.0	E	26.4
Hansen Road	SBL	PM	40.2	D	71.3	E	31.1

Source: Fehr & Peers, 2026 using Synchro 12.
Notes:
[1] LOS = Level of Service
Bold text indicates undesirable levels of service

At these intersections, timings can be adjusted from what is most optimal for the intersection as a whole to ensure individual turning movements operate more desirably. In the case of Hoʻokele Street/Pūlehu, it is anticipated that additional project trips and background traffic would continue on Hāna Highway to Hansen Street if the westbound left-turn to Pulehu Road queues back to Hāna Highway. At the Hoʻokele Street/Pūlehu Road intersection, signal timing can be changed to prioritize the westbound left-turn to ensure queues do not spill back to Hāna Highway.

At Hāna Highway/Hoʻokele Street, the 95th percentile queues for the turning movements are not expected to exceed the provided storage. At Maui Veterans Highway/Hansen Road, the westbound left-turn is just above the LOS E threshold, and 95th percentile queues from the southbound left-turn are not expected to exceed the turn-pocket storage length.

6.2 Intersection Mitigation and Recommendations

Hāna Highway/Hansen Road

The project is expected to have a significant impact at Hāna Highway/Hansen Road. The westbound left-turn movement from Hāna Highway to Hansen Road is projected to operate at LOS F under both No Project and Plus Project conditions during the AM and PM peak hours. This movement also operates at LOS F during the PM peak hour under existing conditions and meets the 4-hour and 8-hour signal warrants under existing conditions. Based on the impact criteria, the project implementation would result in a significant *cumulative* impact at this location (i.e., poor operations would occur even without the project, but the proposed development would exacerbate undesirable operations).

If this intersection is not signalized in the future, vehicle queues would exceed the 350-foot turn-pocket storage. Under those conditions, vehicles heading towards the project from Hāna Highway would likely continue past Hansen Road and use Ho'okele Street, Pākaula Street, and Pūlehu Road to access the site rather than Hansen Road.

With a signal installed to mitigate impacts at the Hāna Highway/Hansen Road intersection with the existing lane configurations, the entire intersection would operate at LOS A in the AM peak hour with an average delay of 7.9 seconds and LOS B in the PM peak hour with an average delay of 21.3 seconds. The westbound left turn would operate with an average delay of 25.5 seconds in the AM peak hour and 57.0 seconds in the PM peak hour. The projected 95th percentile westbound left turn queue lengths would be 300 feet in the AM peak hour and 400 feet in the PM peak hour, both of which would fit within the available storage.

Because the traffic signal is already warranted at this location under Existing (2024) Conditions, the project should be responsible for its contribution to traffic at this location based on Year 2042 peak hour traffic volumes with the project in place. For the entire intersection, project traffic accounts for 25% of the growth in volumes for the AM peak hour and 28% of the growth in volumes for the PM peak hour between 2024 and 2042. The project accounts for 5% of the total forecast traffic at the intersection in 2042 in the AM peak hour and 7% in the PM peak hour. HDOT will make the final determination on the need for a signal at this location.

Kūihelani Highway/Maui Veterans Highway

The project is expected to have a significant impact at Kūihelani Highway/Maui Veterans Highway. The intersection is projected to operate at LOS E under No Project conditions and LOS F under Plus Project conditions during the PM peak hour, with an increase in delay of 11.6 seconds. Based on the impact criteria, the project implementation would result in a significant cumulative impact at this location (i.e., poor operations would occur even without the project, but the proposed development would exacerbate undesirable operations).

An additional eastbound left-turn lane could be installed to mitigate impacts, the entire intersection would operate at LOS E with an average delay of 70.0 seconds, 7.8 seconds better than under No Project conditions. For the entire intersection, project traffic accounts for 27% of the growth in volumes for the AM peak hour and 32% of the growth in volumes for the PM peak hour between 2024 and 2042. The project accounts for 6% of the total forecast traffic at the intersection in 2042 in the AM peak hour and 7% in the PM peak hour. HDOT will make the final determination on the need for improvements at this location.

The impact at this intersection is triggered when approximately half of total project trips have been added to the study area roadway network.

Maui Veterans Highway/Hoʻokele Street

The project is expected to have a significant impact at Maui Veterans Highway/Hoʻokele Street. The intersection is projected to operate at LOS E under both No Project conditions and LOS F under Plus Project conditions during the PM peak hour, with a change in delay of 9.4 seconds. Based on the impact criteria, the project implementation would result in a significant cumulative impact at this location (i.e., poor operations would occur even without the project, but the proposed development would exacerbate undesirable operations).

The eastbound approach can be converted to a shared through-left-turn lane and shared through-right-turn lane to mitigate the impact. This would also entail having east-west split phasing and converting the northbound right-turn from a channelized free right-turn lane to a standard, signal-controlled lane. The entire intersection would operate at LOS E with an average delay of 62.3 seconds, 8.7 seconds better than under No Project conditions. For the entire intersection, project traffic accounts for 32% of the growth in volumes for the AM peak hour and 21% of the growth in volumes for the PM peak hour between 2024 and 2042. The project accounts for 9% of the total forecast traffic at the intersection in 2042 in the AM peak hour and 10% in the PM peak hour. HDOT will make the final determination on the need for any improvements at this location.

The impact at this intersection is triggered when approximately 85% of total project trips have been added to the study area roadway network.

6.3 Active Transportation and Transit Impacts

Implementation of the proposed project is not expected to conflict with any existing transit, pedestrian, or bicycle facilities, and it will not preclude the implementation of any other planned enhancements to walking biking, or transit activity (e.g., a path or sidewalk along with a facility where it does not currently exist, such as Hansen Road). Accordingly, no significant active transportation or transit impacts are anticipated.

Pedestrian improvements within the Ho'onani project site include marked crosswalks, street trees, and improved/wider sidewalks. All interior streets including those connecting to Hansen Road and Pūlehu Road will include sidewalks. The project will additionally construct new sidewalks with landscaping along Pūlehu Road and Hansen Road along the project site frontage. Along Pūlehu Road, the sidewalk along the project frontage will connect to the existing sidewalk on the west side of Pūlehu Road, facilitating pedestrian trips between the project site and existing commercial uses along the Hoʻokele Street corridor.

Along Hansen Street and Pūlehu Road, the project is proposing to widen both streets to meet or exceed County design standards per the requirements of the County of Maui's Street Design Manual. The project will be able to accommodate sidewalks and bike lanes or a shared-use path(s) within the provided right-of-way, consistent with the improvements proposed in the I Mua Central Maui Transportation Study. The project does not preclude the implementation or installation of additional bike facilities on existing roadway segments in the study area.

The new project driveways on Pūlehu Road and Hansen Road should be designed such that there is adequate sight distance for drivers exiting and entering the project site to observe pedestrians and

bicyclists and approaching traffic. Additionally, the site facilities should be ADA-compliant, ensuring equal access for individuals with disabilities by implementing necessary modifications to buildings, pathways, and streets/driveways. This will make the site inclusive and accommodating for everyone, regardless of their physical abilities, to actively participate in and benefit from the various transportation options available.

Transportation demand management (TDM) refers to a set of strategies and policies aimed at managing and optimizing transportation systems by reducing travel demand or redistributing it by mode and time. The goal of TDM is to improve transportation efficiency, reduce congestion, enhance mobility, and promote sustainable transportation options. At a minimum, the project developer should provide information on available transit options, as well as micro-mobility (e.g., bike and e-bikes). The developer should also work with the County of Maui to accommodate future transit expansion, including facilitating the development of bus stops adjacent to the project site. This would serve to encourage people to choose these transportation options, thereby reducing the reliance on private vehicles and alleviating congestion on the roads. By facilitating convenient access to car-sharing services, this measure promotes sustainability, enhances efficiency, and contributes to a more streamlined and eco-friendly transportation system within the area.

6.4 Collision Assessment

As noted in the Existing Conditions section of this report, a review of available State of Hawai‘i Department of Health motor vehicle crash data showed a total of six fatal crashes were reported. Five of the crashes had drugs or alcohol as the primary contributing factor. While the project will add a small amount of traffic to these facilities, this additional volume is not anticipated to change the crash rate or substantially affect safety. It is assumed that the frontage roadway improvements will be designed consistent with applicable agency standards and the requirements of the County of Maui's Street Design Manual to minimize safety issues.

Given that it is not possible to perfectly predict human behavior and random fluctuations in crash locations or frequency, additional factors and influences may obfuscate the effects of the proposed project. This high-level assessment does not constitute, and is not meant to be, a comprehensive review of safety in the study or surrounding area, which could be much broader in scope (e.g., including a review of individual collision records, human factors considerations, and comparisons of the collision rates and frequencies with similar localities).

7. Site Access, Circulation, and Parking

This section includes a review of the site access and on-site circulation for vehicles, bicyclists, and pedestrians.

7.1 Site Access

Five (5) vehicular access points to the site are proposed. Three full access driveways on Hansen Road, one full access driveway on Pūlehu Road, and one right-in right-out driveway on Pūlehu Road. Full access driveways were analyzed assuming a single ingress and egress lane, a dedicated inbound left-turn lane, and a dedicated receiving lane for outbound left-turns. The project is proposing to widen both streets to meet or exceed County design standards. The following will be accommodated within the proposed cross-sections and pavement widths:

- Two travel lanes
- Bike Lanes and Sidewalks or a Shared-Use Path(s)
- Raised medians or a striped two-way left-turn lane in between intersections

A preliminary review of sight distances along Pūlehu Road and Hansen Road at the access points was conducted and no existing issues were identified; drivers can clearly see the length of the road and no visual impediments are proposed on the project site plan. However, future design plans should be reviewed in detail to ensure that adequate sight distance is provided, in particular for the driveways along Hansen Road where sight distance may be impeded due to roadway curves, building setbacks, and other potential visual impediments (e.g., landscaping, monument signage, etc.) near street/driveway intersections.

Pedestrian access and bicycle access will be provided via the project driveways along Hansen Road and Pūlehu Road, as well as Pākaula Street.

Overall, site access is considered adequate, and no additional modifications are recommended.

7.2 On-Site Circulation and Parking

On-site vehicular circulation will be provided via two-lane roads and two-way parking isles within the parking lots on-site. Sidewalks and pedestrian walkways are provided throughout the project site, providing access and multi-modal connectivity to/from/ between residential units, commercial areas, and site amenities. It is assumed that all new roadways, sidewalks, and intersections will be designed consistent with applicable agency standards and the requirements of the County of Maui's Street Design Manual.

The site plan proposes roadway and intersection design elements, such as roundabouts, which reduce vehicle speeds and would improve on-site safety.

Marked crosswalks are proposed at all on-site intersections and some mid-block locations to facilitate pedestrian movement throughout the site. If desired, raised crosswalks could be installed to elevate the presence of pedestrians to drivers, and to slow vehicles at mid-block locations. Pedestrian and vehicle conflicts could potentially occur at project driveways, particularly at unsignalized driveways when a car is exiting and pedestrians using the sidewalk that crosses the

driveway. To enhance safety for pedestrians, we recommend that signage be installed at all the unsignalized driveways to alert motorists of potential pedestrian conflicts. Signs would typically include a “STOP”sign on each driveway approach, as well as a sign indicating the presence of pedestrians.

For bicyclists, volumes and speeds are expected to be relatively low creating a “bicycle boulevard” environment within the site. Secure bike parking should be provided at various locations throughout the site for both residents and visitors. At a minimum, this would include bike racks at several key locations to encourage the use of non-automobile travel. Ideally, for convenience, each building should provide a proportional number of bike parking spaces to units either in their garage on the ground floor or close to building entrances.

The total number of parking spaces provided will be consistent with County code and requirements. All spaces provided in surface-level parking lots are perpendicular with two-way circulation. All proposed parking will be located within the project; Hansen Road and Pūlehu Road do not provide designated street parking and no parking is proposed along those facilities.

Overall, on-site circulation and parking are considered adequate, and no modifications are recommended.

Appendix A. Existing Counts

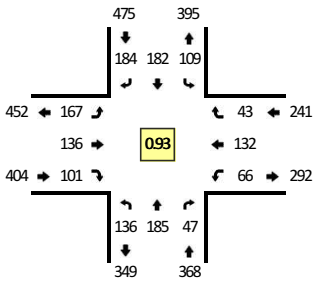
Type of peak hour being reported: Intersection Peak

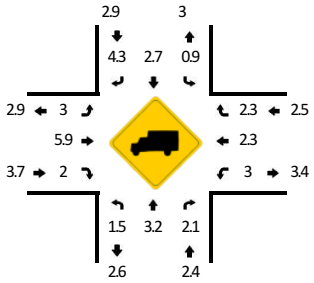
Method for determining peak hour: Total Entering Volume

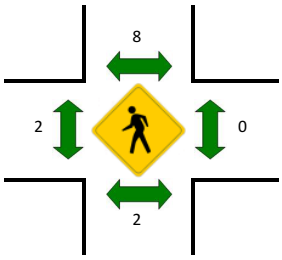
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CITY/STATE: Kahului, HI

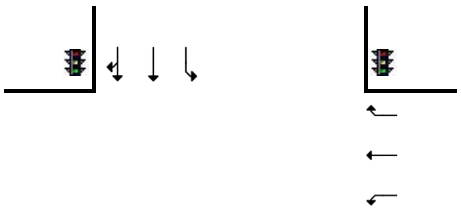
QC JOB #: 16589604
DATE: Tue, May 21 2024

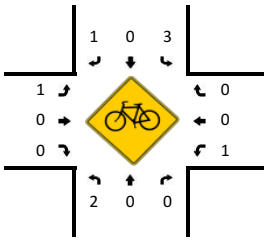
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:45 AM -- 9:00 AM

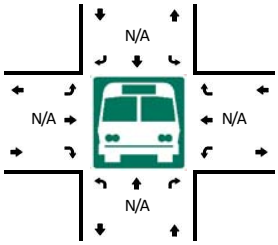


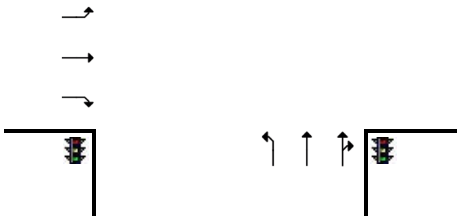


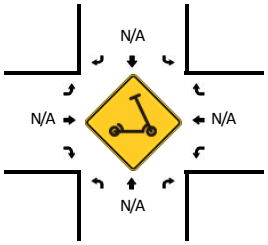












5-Min Count Period Beginning At	Ho'okele St (Northbound)				Ho'okele St (Southbound)				Pakaula St (Eastbound)				Pakaula St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	6	5	2	0	2	3	5	0	4	1	4	0	0	2	1	0	35	
6:05 AM	9	6	2	0	3	9	8	0	6	2	0	0	0	1	2	0	48	
6:10 AM	6	4	1	0	1	8	6	0	12	4	1	0	2	2	0	0	47	
6:15 AM	2	5	1	0	5	10	13	0	4	3	7	0	0	0	0	0	50	
6:20 AM	8	8	2	0	4	9	4	0	5	3	4	0	3	2	2	0	54	
6:25 AM	6	1	0	0	4	5	14	0	7	3	7	0	2	4	1	0	54	
6:30 AM	11	5	0	0	5	10	6	0	12	3	1	0	1	3	1	0	58	
6:35 AM	5	7	6	0	1	9	6	0	8	4	5	0	1	1	2	0	55	
6:40 AM	5	9	2	0	4	5	14	0	11	6	6	0	1	1	1	0	65	
6:45 AM	3	9	1	0	2	5	4	0	9	7	4	0	2	0	1	0	47	
6:50 AM	9	10	1	0	2	9	10	0	9	7	3	0	0	5	1	0	66	
6:55 AM	4	11	1	0	3	15	13	0	14	5	2	0	0	2	1	0	71	650
7:00 AM	7	21	5	0	4	6	16	0	4	10	2	0	4	4	2	0	85	700
7:05 AM	10	11	3	0	6	11	11	0	12	7	2	0	1	3	2	0	79	731
7:10 AM	10	14	3	0	6	11	10	0	8	2	1	0	1	5	4	0	75	759
7:15 AM	5	12	1	0	4	15	16	0	16	3	8	0	1	4	1	0	86	795
7:20 AM	9	13	2	0	2	8	7	0	13	6	7	0	3	0	3	0	73	814
7:25 AM	13	26	3	0	14	19	13	0	8	7	3	0	1	4	5	0	116	876
7:30 AM	9	10	1	0	7	17	8	0	15	13	3	0	4	9	3	0	99	917
7:35 AM	13	18	5	0	12	11	11	0	17	10	7	0	3	6	3	0	116	978
7:40 AM	5	17	8	0	4	17	8	0	10	7	9	0	3	6	1	0	95	1008
7:45 AM	7	8	2	0	16	25	12	0	14	8	4	0	3	6	2	0	107	1068
7:50 AM	11	16	2	0	7	23	14	0	14	10	10	0	0	5	3	0	115	1117
7:55 AM	12	11	6	0	12	14	17	0	12	10	8	0	3	4	2	0	111	1157
8:00 AM	11	13	4	0	9	14	10	0	16	9	6	0	6	7	2	0	107	1179
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8:15 AM	5	18	2	0	11	18	28	0	13	7	8	0	8	9	1	0	128	1301
8:20 AM	12	18	2	0	7	15	17	0	3	15	10	0	4	10	8	0	121	1349
8:25 AM	10	16	5	0	3	17	19	0	15	12	4	0	5	11	5	0	122	1355
8:30 AM	15	17	4	0	4	7	10	0	20	17	9	0	3	8	0	0	114	1370
8:35 AM	12	14	2	0	11	20	18	0	13	9	9	0	7	14	4	0	133	1387
8:40 AM	15	11	2	0	10	12	18	0	12	15	7	0	8	11	8	0	129	1421
8:45 AM	9	19	8	0	9	16	14	0	14	6	9	0	5	15	2	0	126	1440
8:50 AM	7	6	5	0	12	13	9	0	17	12	13	0	9	12	3	0	118	1443
8:55 AM	15	21	6	0	7	16	23	0	18	18	10	0	7	13	2	0	156	1488

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	124	184	76	0	112	180	184	0	196	144	128	0	84	160	28	0	1600
Heavy Trucks	0	4	0		0	4	0		4	4	4		0	4	0		24
Buses																	
Pedestrians		0				12				4				0			16
Bicycles	0	0	0		0	0	4		0	0	0		0	0	0		4
Scooters																	
Comments:																	

Report generated on 7/9/2024 10:53 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	284	372	40	0	136	244	276	0	240	164	160	0	84	184	112	0	2296
Heavy Trucks	0	12	0		4	12	8		4	4	0		0	0	0		44
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 7/9/2024 10:53 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

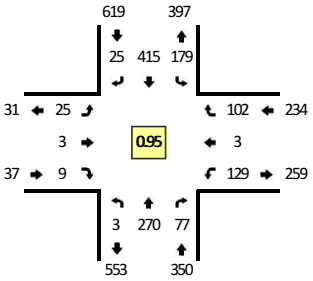
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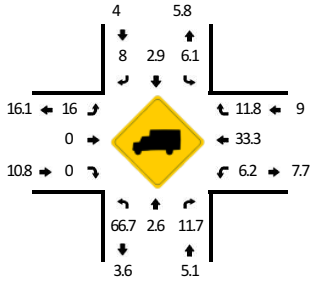
Method for determining peak hour: Total Entering Volume

LOCATION: Ho'okele St -- Pulehu Pl/Pulehu Rd
CITY/STATE: Kahului, HI

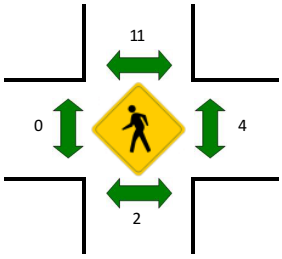
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DATE: Tue, May 21 2024

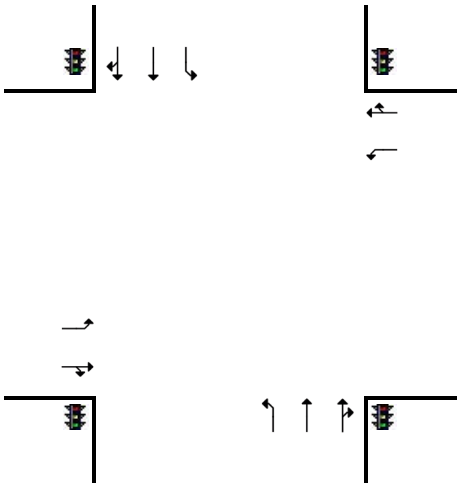
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:00 AM -- 8:15 AM

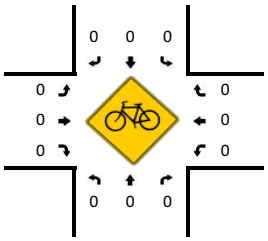


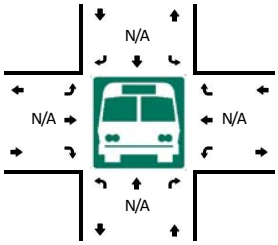


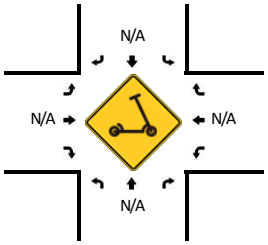
TRUE DATA TO IMPROVE MOBILITY











5-Min Count Period Beginning At	Ho'okele St (Northbound)				Ho'okele St (Southbound)				Pulehu Pl/Pulehu Rd (Eastbound)				Pulehu Pl/Pulehu Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	10	5	0	9	4	1	0	0	0	0	0	7	0	0	0	36	
6:05 AM	0	9	2	0	16	17	1	0	0	1	0	0	7	0	2	0	55	
6:10 AM	0	9	6	0	5	12	1	0	0	0	0	0	6	1	2	0	42	
6:15 AM	0	4	5	0	6	15	3	0	2	0	0	0	17	0	7	0	59	
6:20 AM	0	9	3	0	9	14	2	0	0	0	0	0	6	0	4	0	47	
6:25 AM	0	3	6	0	12	14	4	0	0	0	0	0	9	0	3	0	51	
6:30 AM	0	13	4	0	17	13	1	0	0	0	0	0	8	0	5	0	61	
6:35 AM	0	5	5	0	10	15	1	0	1	0	0	0	10	1	5	0	53	
6:40 AM	0	13	4	0	14	11	2	1	0	0	0	0	10	0	6	0	61	
6:45 AM	0	10	6	0	18	11	3	0	1	0	0	0	4	0	5	0	58	
6:50 AM	0	11	5	0	6	17	1	0	0	0	0	0	11	1	9	0	61	
6:55 AM	0	9	5	0	9	21	3	0	3	0	0	0	16	0	11	0	77	661
7:00 AM	1	10	4	0	11	21	4	0	0	0	0	0	11	1	3	0	66	691
7:05 AM	0	16	5	0	18	24	4	0	4	0	0	0	7	2	6	0	86	722
7:10 AM	0	8	6	0	14	23	6	0	4	0	0	0	11	0	9	0	81	761
7:15 AM	0	13	12	0	17	26	2	0	1	0	0	0	12	0	7	0	90	792
7:20 AM	1	12	6	0	12	16	2	0	0	0	0	0	8	1	8	0	66	811
7:25 AM	0	20	7	0	14	44	5	0	0	0	1	0	12	2	11	0	116	876
7:30 AM	0	22	8	0	19	42	3	0	0	0	0	0	9	0	7	0	110	925
7:35 AM	0	14	4	0	21	22	2	0	0	2	1	0	14	0	17	0	97	969
7:40 AM	0	10	10	0	13	31	4	0	0	0	0	0	12	1	8	0	89	997
7:45 AM	0	11	5	0	21	31	3	0	3	0	1	0	16	1	11	0	103	1042
7:50 AM	0	13	7	0	19	38	1	0	0	0	0	0	14	1	8	0	101	1082
7:55 AM	0	17	2	0	20	33	6	0	1	1	1	0	13	0	8	0	102	1107
8:00 AM	1	14	3	0	19	29	4	0	1	0	1	0	9	0	11	0	92	1133
8:05 AM	0	25	4	0	19	49	1	0	3	0	0	0	9	0	5	0	115	1162
8:10 AM	0	20	9	0	15	44	3	0	5	0	1	0	9	0	12	0	118	1199
8:15 AM	0	19	11	0	9	27	1	0	2	2	2	0	10	0	6	0	89	1198
8:20 AM	1	19	5	0	18	22	1	0	0	0	1	0	11	1	12	0	91	1223
8:25 AM	0	30	6	0	15	38	2	0	3	0	1	0	15	0	12	0	122	1229
8:30 AM	0	23	5	0	15	28	2	0	1	0	0	0	8	1	6	0	89	1208
8:35 AM	0	20	10	0	18	32	1	0	5	0	0	0	12	0	6	0	104	1215
8:40 AM	1	23	7	0	11	41	2	0	2	0	1	0	7	1	8	0	104	1230
8:45 AM	0	33	5	0	13	33	1	0	2	1	1	0	13	0	8	0	110	1237
8:50 AM	0	15	6	0	11	39	2	0	1	0	0	0	14	0	7	0	95	1231
8:55 AM	0	29	6	0	16	33	5	0	0	0	1	0	12	0	9	0	111	1240

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	236	64	0	212	488	32	0	36	0	8	0	108	0	112	0	1300
Heavy Trucks	4	8	8		20	8	4		4	0	0		8	0	4		68
Buses																	
Pedestrians		0				4				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 7/9/2024 10:53 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Ho'okele St -- Pulehu Pl/Pulehu Rd

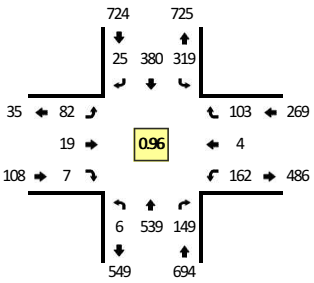
CITY/STATE: Kahului, HI

QC JOB #: 16589607

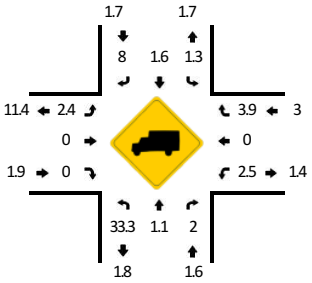
DATE: Tue, May 21 2024

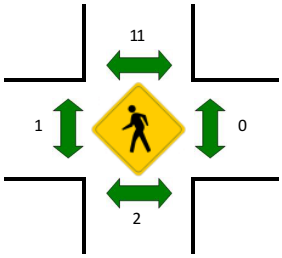
Peak-Hour: 3:50 PM -- 4:50 PM

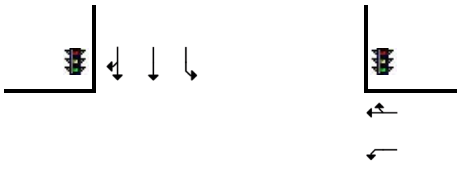
Peak 15-Min: 4:05 PM -- 4:20 PM

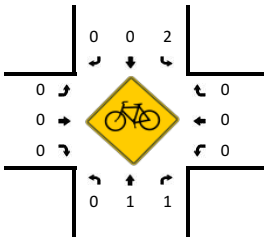


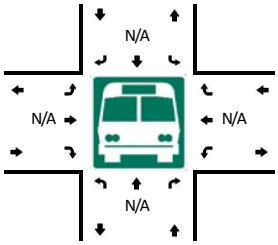
TRUE DATA TO IMPROVE MOBILITY

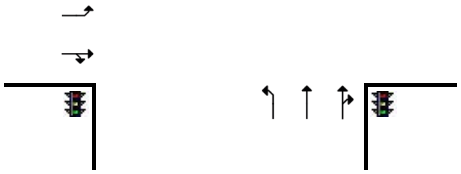


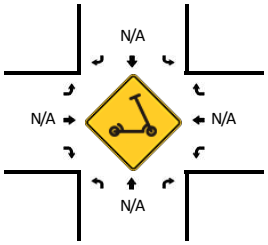












5-Min Count Period Beginning At	Ho'okele St (Northbound)				Ho'okele St (Southbound)				Pulehu Pl/Pulehu Rd (Eastbound)				Pulehu Pl/Pulehu Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	1	48	10	0	24	39	2	0	0	0	1	0	15	1	11	0	152	
3:05 PM	0	39	18	0	28	37	0	0	3	0	0	0	10	0	14	0	149	
3:10 PM	0	40	11	0	21	44	0	0	3	0	1	0	11	0	10	0	141	
3:15 PM	1	38	9	0	37	47	1	0	1	1	2	0	10	0	5	0	152	
3:20 PM	0	31	10	0	19	35	1	0	2	0	2	0	9	0	6	0	115	
3:25 PM	0	42	14	0	25	38	0	0	2	0	1	0	7	0	10	0	139	
3:30 PM	1	38	8	0	31	48	3	0	4	0	0	0	11	0	16	0	160	
3:35 PM	1	26	8	0	21	39	2	0	6	0	1	0	13	0	6	0	123	
3:40 PM	2	46	11	0	23	45	2	0	4	0	1	0	13	0	14	0	161	
3:45 PM	0	36	9	0	25	27	2	0	2	2	1	0	17	0	8	0	129	
3:50 PM	0	42	10	0	37	51	3	0	2	0	1	0	13	0	7	0	166	
3:55 PM	0	36	16	0	22	33	1	0	5	2	0	0	17	0	11	0	143	1730
4:00 PM	2	53	9	0	22	27	2	0	10	1	3	0	10	0	9	0	148	1726
4:05 PM	1	47	16	0	26	41	1	0	6	1	1	0	7	0	10	0	157	1734
4:10 PM	0	43	10	0	30	32	4	0	5	3	0	0	20	1	10	0	158	1751
4:15 PM	0	45	16	0	22	39	2	1	6	0	0	0	11	0	10	0	152	1751
4:20 PM	0	37	14	0	29	29	3	0	4	2	0	0	19	1	4	0	142	1778
4:25 PM	2	58	11	0	27	25	0	0	4	0	0	0	13	0	8	0	148	1787
4:30 PM	1	37	7	0	25	25	3	0	14	4	0	0	14	0	6	0	136	1763
4:35 PM	0	44	16	0	27	26	1	0	13	5	0	0	10	0	12	0	154	1794
4:40 PM	0	41	14	0	25	28	3	0	7	0	2	0	14	0	3	0	137	1770
4:45 PM	0	56	10	0	26	24	2	0	6	1	0	0	14	2	13	0	154	1795
4:50 PM	0	49	10	0	25	32	0	0	0	0	0	0	15	0	4	0	135	1764
4:55 PM	0	38	13	0	31	43	2	0	2	3	0	0	9	0	8	0	149	1770
5:00 PM	0	59	14	0	23	8	1	0	6	0	1	0	9	0	7	0	128	1750
5:05 PM	0	41	22	0	24	33	4	0	6	1	0	0	8	0	7	0	146	1739
5:10 PM	1	43	18	0	28	34	3	0	1	2	0	0	9	0	3	0	142	1723
5:15 PM	0	45	11	0	33	21	2	0	1	0	0	0	19	0	10	0	142	1713
5:20 PM	1	53	17	0	35	23	0	0	1	1	1	0	6	0	8	0	146	1717
5:25 PM	0	41	20	0	27	39	0	0	1	0	0	0	14	0	7	0	149	1718
5:30 PM	0	37	8	0	21	14	0	0	1	1	0	0	11	0	9	0	102	1684
5:35 PM	0	36	13	0	32	36	0	0	3	0	0	0	16	0	5	0	141	1671
5:40 PM	0	35	16	0	22	20	0	0	1	0	0	0	6	0	7	0	107	1641
5:45 PM	1	30	14	0	14	29	0	0	1	0	1	0	15	0	4	0	109	1596
5:50 PM	0	44	4	0	23	34	1	1	3	0	1	0	6	0	4	0	121	1582
5:55 PM	0	33	18	0	23	12	1	0	0	0	0	0	23	0	7	0	117	1550

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	540	168	0	312	448	28	4	68	16	4	0	152	4	120	0	1868
Heavy Trucks	0	4	4		0	0	0		0	0	0		4	0	12		24
Buses																	
Pedestrians		0				12				0				0			12
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 7/9/2024 10:53 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

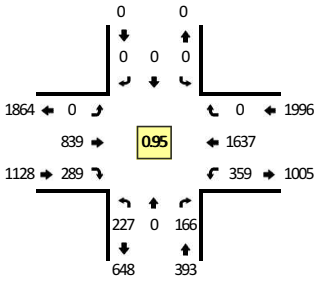
Type of peak hour being reported: Intersection Peak

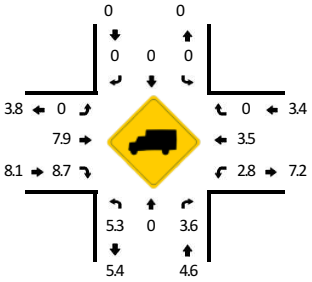
Method for determining peak hour: Total Entering Volume

LOCATION: Ho'okele St -- Hana Hwy
CITY/STATE: Kahului, HI

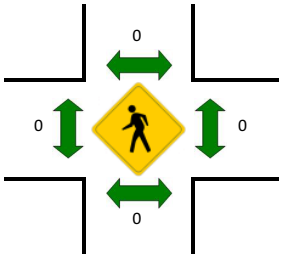
QC JOB #: 16589608
DATE: Tue, May 21 2024

Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:30 AM -- 7:45 AM

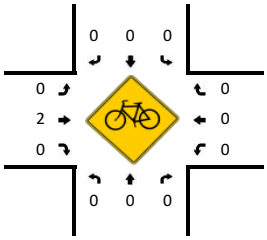


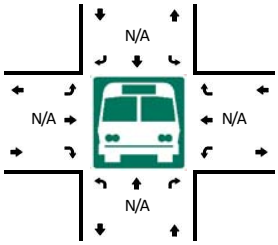


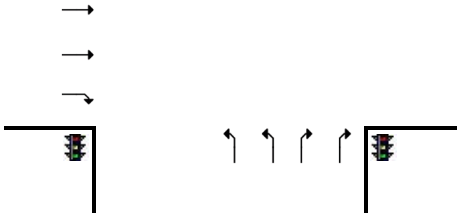
TRUE DATA TO IMPROVE MOBILITY

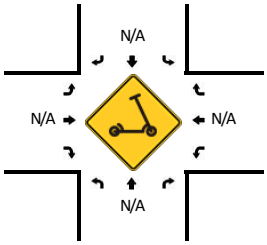












5-Min Count Period Beginning At	Ho'okele St (Northbound)				Ho'okele St (Southbound)				Hana Hwy (Eastbound)				Hana Hwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	8	0	6	0	0	0	0	0	0	14	9	0	8	63	0	0	108	
6:05 AM	12	0	4	0	0	0	0	0	0	28	14	0	20	74	0	0	152	
6:10 AM	10	0	6	0	0	0	0	0	0	27	6	0	13	79	0	0	141	
6:15 AM	12	0	6	0	0	0	0	0	0	22	9	0	10	85	0	0	144	
6:20 AM	9	0	6	0	0	0	0	0	0	22	10	0	18	121	0	0	186	
6:25 AM	12	0	2	0	0	0	0	0	0	29	12	0	19	101	0	0	175	
6:30 AM	12	0	2	0	0	0	0	0	0	32	14	0	13	128	0	0	201	
6:35 AM	20	0	6	0	0	0	0	0	0	38	11	0	17	112	0	0	204	
6:40 AM	8	0	9	0	0	0	0	0	0	42	15	0	14	114	0	0	202	
6:45 AM	14	0	4	0	0	0	0	0	0	49	15	0	14	160	0	0	256	
6:50 AM	24	0	11	0	0	0	0	0	0	44	7	0	17	78	0	0	181	
6:55 AM	17	0	14	0	0	0	0	0	0	55	16	0	18	127	0	0	247	2197
7:00 AM	6	0	8	0	0	0	0	0	0	59	15	0	20	126	0	0	234	2323
7:05 AM	18	0	15	0	0	0	0	0	0	67	19	0	30	105	0	0	254	2425
7:10 AM	15	0	8	0	0	0	0	0	0	76	13	0	26	140	0	0	278	2562
7:15 AM	11	0	13	0	0	0	0	0	0	103	25	0	20	127	0	0	299	2717
7:20 AM	19	0	15	0	0	0	0	0	0	49	11	0	31	143	0	0	268	2799
7:25 AM	23	0	12	0	0	0	0	0	0	98	33	0	18	122	0	0	306	2930
7:30 AM	17	0	23	0	0	0	0	0	0	100	30	0	40	136	0	0	346	3075
7:35 AM	26	0	12	0	0	0	0	0	0	42	22	0	17	142	0	0	261	3132
7:40 AM	12	0	9	0	0	0	0	0	0	89	25	0	33	149	0	0	317	3247
7:45 AM	27	0	9	0	0	0	0	0	0	62	19	0	27	136	0	0	280	3271
7:50 AM	13	0	10	0	0	0	0	0	0	67	28	0	29	157	0	0	304	3394
7:55 AM	24	0	15	0	0	0	0	0	0	56	22	0	37	124	0	0	278	3425
8:00 AM	17	0	13	0	0	0	0	0	0	61	21	0	29	120	0	0	261	3452
8:05 AM	18	0	16	0	0	0	0	0	0	58	24	0	45	144	0	0	305	3503
8:10 AM	20	0	19	0	0	0	0	0	0	54	29	0	33	137	0	0	292	3517
8:15 AM	28	0	16	0	0	0	0	0	0	67	17	0	21	92	0	0	241	3459
8:20 AM	26	0	18	0	0	0	0	0	0	53	29	0	19	108	0	0	253	3444
8:25 AM	29	0	23	0	0	0	0	0	0	79	19	0	31	75	0	0	256	3394
8:30 AM	24	0	9	0	0	0	0	0	0	54	16	0	35	127	0	0	265	3313
8:35 AM	14	0	17	0	0	0	0	0	0	64	21	0	24	107	0	0	247	3299
8:40 AM	28	0	13	0	0	0	0	0	0	50	21	0	35	106	0	0	253	3235
8:45 AM	22	0	24	0	0	0	0	0	0	60	22	0	29	97	0	0	254	3209
8:50 AM	18	0	11	0	0	0	0	0	0	74	22	0	19	105	0	0	249	3154
8:55 AM	31	0	18	0	0	0	0	0	0	35	19	0	34	65	0	0	202	3078

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	220	0	176	0	0	0	0	0	0	924	308	0	360	1708	0	0	3696
Heavy Trucks	16	0	4		0	0	0		0	60	36		12	60	0		188
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 7/9/2024 10:53 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

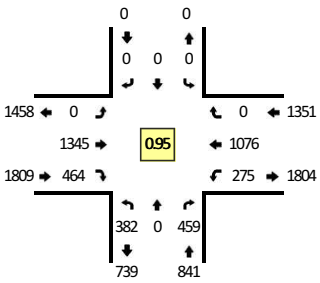
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

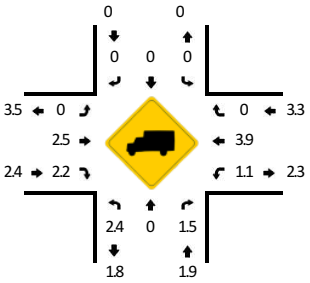
LOCATION: Ho'okele St -- Hana Hwy
CITY/STATE: Kahului, HI

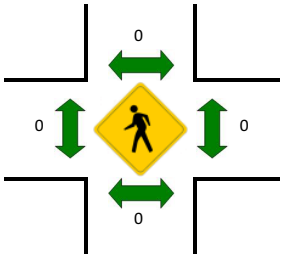
QC JOB #: 16589609
DATE: Tue, May 21 2024

Peak-Hour: 3:40 PM -- 4:40 PM
Peak 15-Min: 3:40 PM -- 3:55 PM

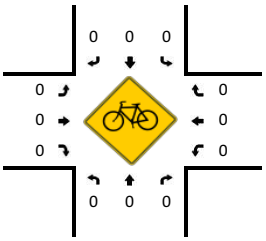


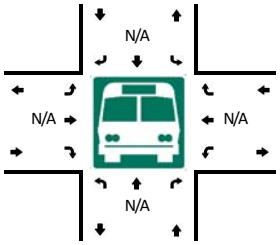
TRUE DATA TO IMPROVE MOBILITY

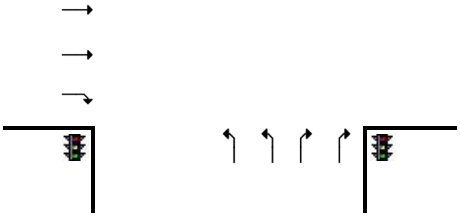


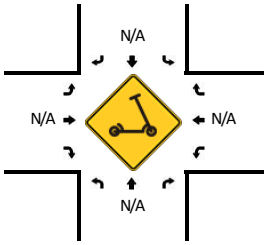












5-Min Count Period Beginning At	Ho'okele St (Northbound)				Ho'okele St (Southbound)				Hana Hwy (Eastbound)				Hana Hwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	37	0	37	0	0	0	0	0	0	90	32	0	28	96	0	0	320	
3:05 PM	27	0	36	0	0	0	0	0	0	60	35	0	32	88	0	0	278	
3:10 PM	36	0	29	0	0	0	0	0	0	93	47	0	19	113	0	0	337	
3:15 PM	21	0	35	0	0	0	0	0	0	103	60	0	27	97	0	0	343	
3:20 PM	21	0	36	0	0	0	0	0	0	84	34	0	19	112	0	0	306	
3:25 PM	25	0	31	0	0	0	0	0	0	76	23	0	34	105	0	0	294	
3:30 PM	26	0	44	0	0	0	0	0	0	102	49	0	37	108	0	0	366	
3:35 PM	37	0	28	0	0	0	0	0	0	74	37	0	33	87	0	0	296	
3:40 PM	25	0	33	0	0	0	0	0	0	125	43	0	19	108	0	0	353	
3:45 PM	41	0	37	0	0	0	0	0	0	125	38	0	12	69	0	0	322	
3:50 PM	18	0	31	0	0	0	0	0	0	130	60	0	34	109	0	0	382	
3:55 PM	28	0	41	0	0	0	0	0	0	111	37	0	25	91	0	0	333	3930
4:00 PM	35	0	43	0	0	0	0	0	0	103	28	0	24	85	0	0	318	3928
4:05 PM	30	0	36	0	0	0	0	0	0	88	43	0	25	92	0	0	314	3964
4:10 PM	38	0	41	0	0	0	0	0	0	136	36	0	18	86	0	0	355	3982
4:15 PM	34	0	37	0	0	0	0	0	0	98	39	0	37	103	0	0	348	3987
4:20 PM	31	0	32	0	0	0	0	0	0	87	38	0	21	72	0	0	281	3962
4:25 PM	25	0	45	0	0	0	0	0	0	125	38	0	9	87	0	0	329	3997
4:30 PM	34	0	45	0	0	0	0	0	0	117	38	0	29	92	0	0	355	3986
4:35 PM	43	0	38	0	0	0	0	0	0	100	26	0	22	82	0	0	311	4001
4:40 PM	17	0	42	0	0	0	0	0	0	145	41	0	9	81	0	0	335	3983
4:45 PM	47	0	50	0	0	0	0	0	0	113	38	0	19	70	0	0	337	3998
4:50 PM	21	0	30	0	0	0	0	0	0	138	41	0	20	80	0	0	330	3946
4:55 PM	29	0	52	0	0	0	0	0	0	85	31	0	37	85	0	0	319	3932
5:00 PM	35	0	46	0	0	0	0	0	0	127	27	0	0	59	0	0	294	3908
5:05 PM	27	0	48	0	0	0	0	0	0	96	33	0	37	78	0	0	319	3913
5:10 PM	18	0	45	0	0	0	0	0	0	151	38	0	29	58	0	0	339	3897
5:15 PM	22	0	39	0	0	0	0	0	0	118	32	0	19	61	0	0	291	3840
5:20 PM	38	0	44	0	0	0	0	0	0	84	40	0	10	69	0	0	285	3844
5:25 PM	14	0	46	0	0	0	0	0	0	102	37	0	40	65	0	0	304	3819
5:30 PM	27	0	41	0	0	0	0	0	0	107	22	0	2	52	0	0	251	3715
5:35 PM	11	0	38	0	0	0	0	0	0	105	35	0	33	59	0	0	281	3685
5:40 PM	25	0	33	0	0	0	0	0	0	118	25	0	18	59	0	0	278	3628
5:45 PM	14	0	46	0	0	0	0	0	0	104	26	0	20	35	0	0	245	3536
5:50 PM	24	0	39	0	0	0	0	0	0	79	32	0	24	58	0	0	256	3462
5:55 PM	15	0	35	0	0	0	0	0	0	130	21	0	11	58	0	0	270	3413

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	336	0	404	0	0	0	0	0	0	1520	564	0	260	1144	0	0	4228
Heavy Trucks	4	0	8		0	0	0		0	44	16		0	52	0		124
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 7/9/2024 10:53 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

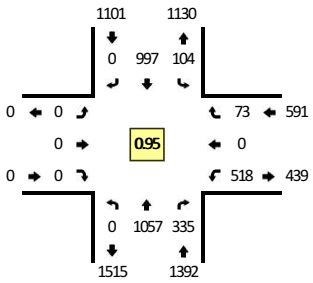
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

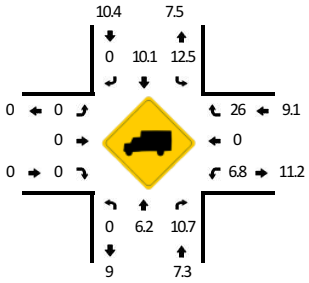
LOCATION: Maui Veterans Hwy -- Hansen Rd
CITY/STATE: Kahului, HI

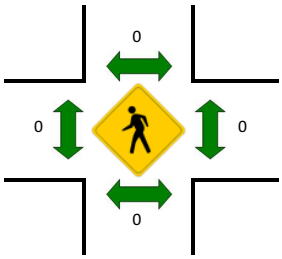
QC JOB #: 16589610
DATE: Tue, May 21 2024

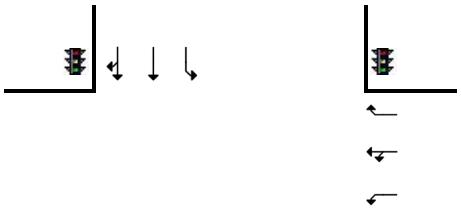
Peak-Hour: 7:10 AM -- 8:10 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

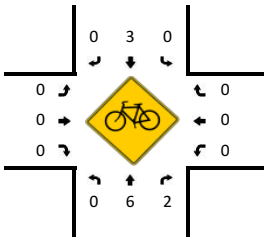


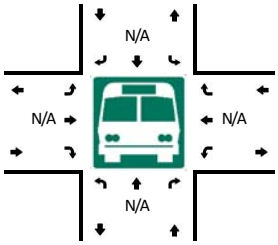




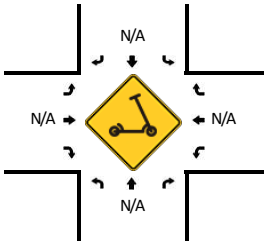












5-Min Count Period Beginning At	Maui Veterans Hwy (Northbound)				Maui Veterans Hwy (Southbound)				Hansen Rd (Eastbound)				Hansen Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	43	9	0	12	46	0	0	0	0	0	0	21	0	8	0	139	
6:05 AM	0	43	7	0	7	51	0	0	0	0	0	0	19	0	1	0	128	
6:10 AM	0	38	7	0	6	64	0	0	0	0	0	0	27	0	5	0	147	
6:15 AM	0	47	11	0	7	69	0	0	0	0	0	0	32	0	7	0	173	
6:20 AM	0	70	15	0	10	69	0	0	0	0	0	0	32	0	10	0	206	
6:25 AM	0	45	14	0	10	71	0	0	0	0	0	0	34	0	8	0	182	
6:30 AM	0	63	21	0	11	79	0	0	0	0	0	0	20	0	10	0	204	
6:35 AM	0	55	14	0	11	66	0	0	0	0	0	0	42	0	4	0	192	
6:40 AM	0	55	15	0	9	74	0	0	0	0	0	0	49	0	6	0	208	
6:45 AM	0	63	19	0	11	68	0	1	0	0	0	0	40	0	5	0	207	
6:50 AM	0	97	19	0	6	67	0	0	0	0	0	0	35	0	15	0	239	
6:55 AM	0	73	19	0	9	73	0	0	0	0	0	0	41	0	4	0	219	2244
7:00 AM	0	73	24	0	5	62	0	0	0	0	0	0	47	0	9	0	220	2325
7:05 AM	0	50	18	0	4	80	0	0	0	0	0	0	39	0	0	0	191	2388
7:10 AM	0	75	21	0	11	84	0	0	0	0	0	0	31	0	3	0	225	2466
7:15 AM	0	90	38	0	7	89	0	0	0	0	0	0	38	0	6	0	268	2561
7:20 AM	0	82	38	0	9	82	0	0	0	0	0	0	34	0	7	0	252	2607
7:25 AM	0	69	21	0	8	67	0	0	0	0	0	0	45	0	8	0	218	2643
7:30 AM	0	93	30	0	7	96	0	0	0	0	0	0	57	0	6	0	289	2728
7:35 AM	0	99	30	0	12	80	0	0	0	0	0	0	33	0	6	0	260	2796
7:40 AM	0	72	31	0	8	70	0	0	0	0	0	0	59	0	5	0	245	2833
7:45 AM	0	126	31	0	7	100	0	0	0	0	0	0	33	0	6	0	303	2929
7:50 AM	0	87	26	0	9	73	0	0	0	0	0	0	56	0	5	0	256	2946
7:55 AM	0	74	29	0	9	85	0	0	0	0	0	0	55	0	4	0	256	2983
8:00 AM	0	112	23	0	11	88	0	0	0	0	0	0	32	0	11	0	277	3040
8:05 AM	0	78	17	0	6	83	0	0	0	0	0	0	45	0	6	0	235	3084
8:10 AM	0	71	19	0	5	73	0	0	0	0	0	0	40	0	1	0	209	3068
8:15 AM	0	81	30	0	11	79	0	1	0	0	0	0	32	0	5	0	239	3039
8:20 AM	0	74	23	0	9	72	0	1	0	0	0	0	30	0	4	0	213	3000
8:25 AM	0	71	20	0	7	85	0	1	0	0	0	0	36	0	8	0	228	3010
8:30 AM	0	61	33	0	10	72	0	0	0	0	0	0	41	0	5	0	222	2943
8:35 AM	0	102	24	0	5	89	0	0	0	0	0	0	40	0	6	0	266	2949
8:40 AM	0	75	20	0	5	78	0	0	0	0	0	0	35	0	2	0	215	2919
8:45 AM	0	56	32	0	6	51	0	0	0	0	0	0	37	0	12	0	194	2810
8:50 AM	0	70	29	0	4	76	0	0	0	0	0	0	22	0	12	0	213	2767
8:55 AM	0	81	34	0	8	58	0	1	0	0	0	0	29	0	4	0	215	2726

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1148	344	0	100	1032	0	0	0	0	0	0	576	0	60	0	3260
Heavy Trucks	0	72	44		8	108	0		0	0	0		36	0	16		284
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	16	4		0	4	0		0	0	0		0	0	0		24
Scooters																	

Comments:

Report generated on 7/9/2024 10:53 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

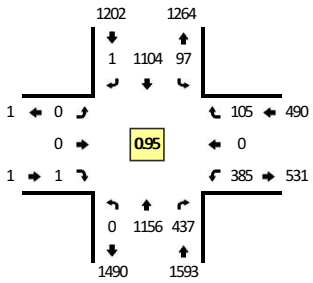
Type of peak hour being reported: Intersection Peak

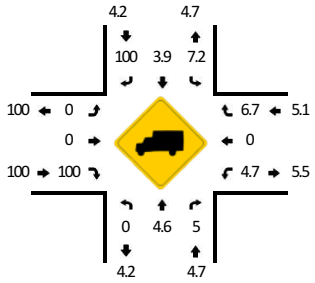
Method for determining peak hour: Total Entering Volume

LOCATION: Maui Veterans Hwy -- Hansen Rd
CITY/STATE: Kahului, HI

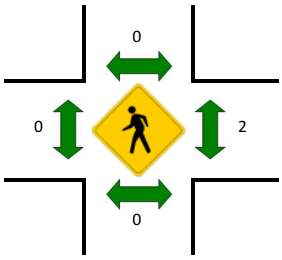
QC JOB #: 16589611
DATE: Tue, May 21 2024

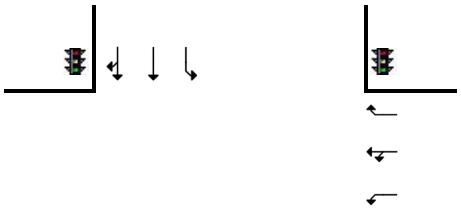
Peak-Hour: 3:25 PM -- 4:25 PM
Peak 15-Min: 3:35 PM -- 3:50 PM

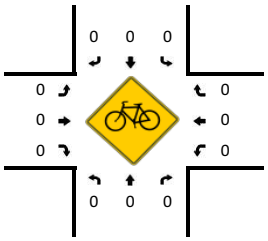


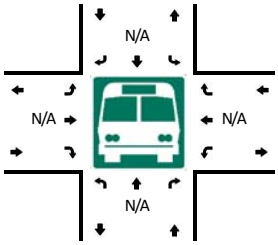


TRUE DATA TO IMPROVE MOBILITY

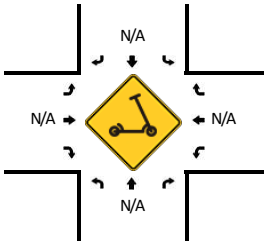












5-Min Count Period Beginning At	Maui Veterans Hwy (Northbound)				Maui Veterans Hwy (Southbound)				Hansen Rd (Eastbound)				Hansen Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	0	73	22	0	7	81	0	0	0	0	0	0	30	0	8	0	221	
3:05 PM	0	104	21	0	6	73	0	0	0	0	0	0	38	0	15	0	257	
3:10 PM	0	91	28	0	10	71	0	0	0	0	0	0	22	0	4	0	226	
3:15 PM	0	83	25	0	9	109	0	1	0	0	0	0	30	0	4	0	261	
3:20 PM	0	85	20	0	7	90	0	0	0	0	0	0	32	0	9	0	243	
3:25 PM	0	105	25	0	11	104	1	0	0	0	0	0	28	0	7	0	281	
3:30 PM	0	83	34	0	7	85	0	0	0	0	0	0	39	0	12	0	260	
3:35 PM	0	111	40	0	5	79	0	0	0	0	0	0	38	0	12	0	285	
3:40 PM	0	129	21	0	11	110	0	0	0	0	0	0	27	0	16	0	314	
3:45 PM	0	85	28	0	7	94	0	0	0	0	0	0	41	0	12	0	267	
3:50 PM	0	87	40	0	2	81	0	0	0	0	0	0	31	0	3	0	244	
3:55 PM	0	107	39	0	13	119	0	0	0	0	0	0	25	0	6	0	309	3168
4:00 PM	0	68	38	0	8	82	0	1	0	0	1	0	34	0	10	0	242	3189
4:05 PM	0	92	37	0	7	106	0	0	0	0	0	0	28	0	2	0	272	3204
4:10 PM	0	77	40	0	9	80	0	1	0	0	0	0	31	0	11	0	249	3227
4:15 PM	0	127	50	0	10	91	0	0	0	0	0	0	25	0	5	0	308	3274
4:20 PM	0	85	45	0	4	73	0	1	0	0	0	0	38	0	9	0	255	3286
4:25 PM	0	107	30	0	15	76	0	1	0	0	0	0	22	0	3	0	254	3259
4:30 PM	0	73	28	0	9	82	0	0	0	0	0	0	32	0	6	0	230	3229
4:35 PM	0	101	43	0	16	90	0	0	0	0	0	0	25	0	8	0	283	3227
4:40 PM	0	106	36	0	1	84	0	0	0	0	0	0	31	0	8	0	266	3179
4:45 PM	0	94	33	0	7	80	0	1	0	0	0	0	19	0	1	0	235	3147
4:50 PM	0	112	51	0	10	79	0	1	0	0	0	0	29	0	3	0	285	3188
4:55 PM	0	107	31	1	7	80	0	0	0	0	0	0	26	0	3	0	255	3134
5:00 PM	0	87	41	0	11	89	0	0	0	0	0	0	31	0	9	0	268	3160
5:05 PM	0	77	30	0	8	47	0	0	0	0	0	0	28	0	6	0	196	3084
5:10 PM	0	87	46	0	4	115	0	0	0	0	0	0	17	0	2	0	271	3106
5:15 PM	0	112	40	0	12	69	0	0	0	0	0	0	23	0	7	0	263	3061
5:20 PM	0	86	30	0	10	83	1	0	0	0	0	0	23	0	2	0	235	3041
5:25 PM	0	96	47	0	5	85	0	1	0	0	0	0	31	0	3	0	268	3055
5:30 PM	0	71	24	0	5	98	0	2	0	0	0	0	26	0	2	0	228	3053
5:35 PM	0	78	28	0	5	73	0	1	0	0	0	0	34	0	1	0	220	2990
5:40 PM	0	78	40	0	5	81	0	0	0	0	0	0	9	0	3	0	216	2940
5:45 PM	0	82	21	0	3	69	0	0	0	0	0	0	23	0	2	0	200	2905
5:50 PM	0	54	32	0	9	74	0	1	0	0	0	0	18	0	6	0	194	2814
5:55 PM	0	59	22	0	10	68	0	1	0	0	0	0	28	0	2	0	190	2749

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1300	356	0	92	1132	0	0	0	0	0	0	424	0	160	0	3464
Heavy Trucks	0	72	28		8	56	0		0	0	0		28	0	12		204
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 7/9/2024 10:53 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

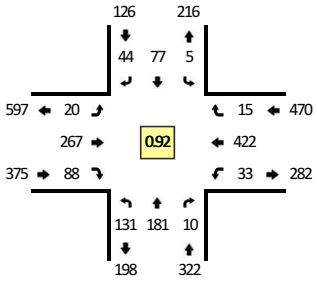
Type of peak hour being reported: Intersection Peak

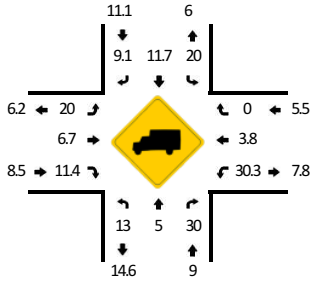
Method for determining peak hour: Total Entering Volume

LOCATION: Pulehu Rd -- Hansen Rd
CITY/STATE: Kahului, HI

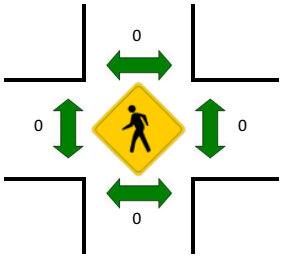
QC JOB #: 16589612
DATE: Tue, May 21 2024

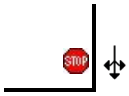
Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:35 AM -- 7:50 AM

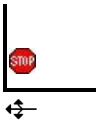


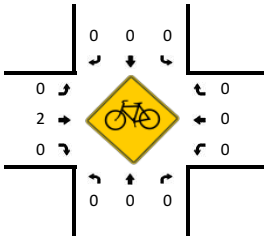


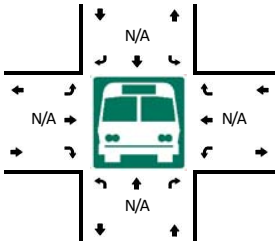
TRUE DATA TO IMPROVE MOBILITY

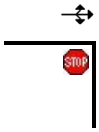


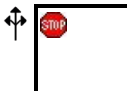


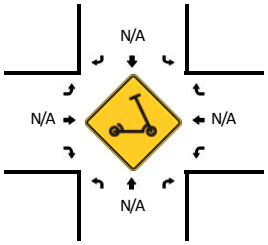












5-Min Count Period Beginning At	Pulehu Rd (Northbound)				Pulehu Rd (Southbound)				Hansen Rd (Eastbound)				Hansen Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	3	2	0	0	0	7	2	0	1	6	4	0	1	20	3	0	49	
6:05 AM	4	9	1	0	0	5	1	0	0	4	11	0	2	15	0	0	52	
6:10 AM	10	9	0	0	0	3	3	0	3	6	7	0	3	17	2	0	63	
6:15 AM	7	10	0	0	0	5	1	0	1	4	4	0	2	24	1	0	59	
6:20 AM	18	13	0	0	0	4	0	0	1	7	8	0	0	27	1	0	79	
6:25 AM	11	9	1	0	0	6	2	0	2	9	8	0	1	23	1	0	73	
6:30 AM	7	6	0	0	0	3	2	0	0	13	9	0	3	31	3	0	77	
6:35 AM	10	11	1	0	0	4	0	0	0	14	9	0	1	34	0	0	84	
6:40 AM	6	14	1	0	0	5	4	0	2	10	6	0	1	40	4	0	93	
6:45 AM	10	10	2	0	2	3	6	0	3	12	9	0	1	33	1	0	92	
6:50 AM	14	17	0	0	1	5	4	0	3	15	8	0	1	27	1	0	96	
6:55 AM	8	15	1	0	1	2	1	0	2	10	3	0	2	38	1	0	84	901
7:00 AM	8	14	0	0	0	8	2	0	1	16	5	0	0	33	0	0	87	939
7:05 AM	10	9	1	0	0	4	5	0	0	14	6	0	3	28	1	0	81	968
7:10 AM	7	9	2	0	2	4	2	0	3	17	8	0	4	21	1	0	80	985
7:15 AM	7	12	0	0	2	8	2	0	0	25	8	0	4	35	3	0	106	1032
7:20 AM	13	15	1	0	0	7	1	0	2	29	11	0	3	30	0	0	112	1065
7:25 AM	12	20	1	0	0	5	1	0	1	28	6	0	4	39	1	0	118	1110
7:30 AM	17	11	1	0	1	6	12	0	0	23	7	0	1	31	1	0	111	1144
7:35 AM	12	19	1	0	0	7	0	0	3	21	7	0	1	37	2	0	110	1170
7:40 AM	16	14	0	0	0	9	8	0	2	21	14	0	3	33	1	0	121	1198
7:45 AM	10	21	4	0	0	6	3	0	0	31	6	0	2	36	1	0	120	1226
7:50 AM	9	12	0	0	0	7	3	0	4	22	4	0	1	44	1	0	107	1237
7:55 AM	6	17	1	0	1	8	4	0	1	17	7	0	2	40	3	0	107	1260
8:00 AM	11	18	0	0	0	3	4	0	3	21	11	0	5	35	0	0	111	1284
8:05 AM	9	8	0	0	0	7	3	0	1	16	5	0	4	27	2	0	82	1285
8:10 AM	9	14	1	0	1	4	3	0	3	13	2	0	3	35	0	0	88	1293
8:15 AM	4	14	2	0	0	7	4	0	5	15	6	0	0	23	1	0	81	1268
8:20 AM	9	16	2	0	0	9	4	0	6	23	9	0	0	31	1	0	110	1266
8:25 AM	13	16	2	0	0	6	5	0	2	15	8	0	6	22	3	0	98	1246
8:30 AM	6	10	1	0	2	9	3	0	4	20	4	0	2	36	1	0	98	1233
8:35 AM	6	11	0	0	2	5	1	0	2	27	11	0	3	35	2	0	105	1228
8:40 AM	13	10	1	0	3	4	2	0	2	10	3	0	3	28	1	0	80	1187
8:45 AM	5	10	1	0	1	5	2	0	1	24	4	0	6	27	0	0	86	1153
8:50 AM	7	9	0	0	0	5	3	0	2	27	2	0	3	29	3	0	90	1136
8:55 AM	10	17	2	0	1	2	3	0	2	28	7	0	3	12	2	0	89	1118

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	152	216	20	0	0	88	44	0	20	292	108	0	24	424	16	0	1404
Heavy Trucks	20	12	8		0	20	8		0	12	16		8	12	0		116
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	4	0		0	0	0		4
Scooters																	

Comments:

Report generated on 7/9/2024 10:53 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

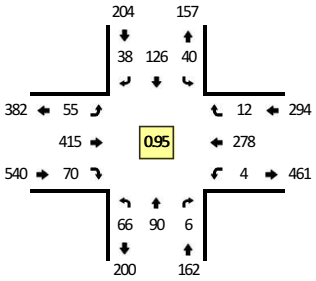
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

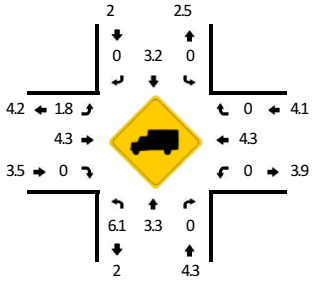
LOCATION: Pulehu Rd -- Hansen Rd
CITY/STATE: Kahului, HI

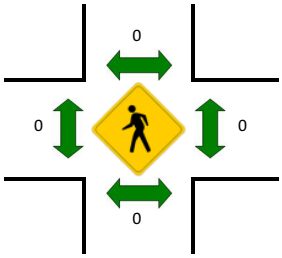
QC JOB #: 16589613
DATE: Tue, May 21 2024

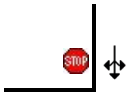
Peak-Hour: 3:45 PM -- 4:45 PM
Peak 15-Min: 4:00 PM -- 4:15 PM

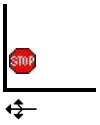


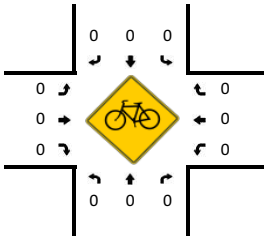
TRUE DATA TO IMPROVE MOBILITY

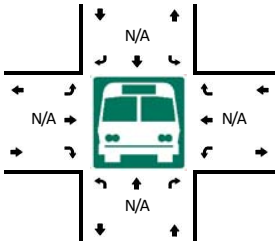


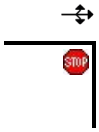


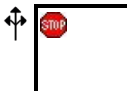


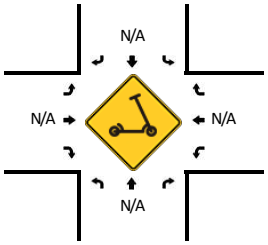












5-Min Count Period Beginning At	Pulehu Rd (Northbound)				Pulehu Rd (Southbound)				Hansen Rd (Eastbound)				Hansen Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	6	9	2	0	1	9	1	0	1	17	10	0	3	22	0	0	81	
3:05 PM	13	14	1	0	5	7	4	0	1	22	4	0	1	19	2	0	93	
3:10 PM	4	8	1	0	2	8	7	0	1	29	4	0	0	19	1	0	84	
3:15 PM	6	9	1	0	0	10	7	0	2	24	4	0	2	23	0	0	88	
3:20 PM	10	9	1	0	2	9	3	0	6	20	6	0	1	30	0	0	97	
3:25 PM	4	11	1	0	1	8	3	0	5	21	4	0	0	24	1	0	83	
3:30 PM	4	9	0	0	2	12	2	0	4	24	6	0	1	31	1	0	96	
3:35 PM	6	9	0	0	0	10	3	0	7	34	5	0	2	27	1	0	104	
3:40 PM	11	9	0	0	2	8	3	0	5	34	3	0	0	19	0	0	94	
3:45 PM	9	6	0	0	3	8	6	0	4	24	1	0	0	23	3	0	87	
3:50 PM	8	9	3	0	2	10	2	0	4	32	6	0	0	21	2	0	99	
3:55 PM	8	8	0	0	5	15	2	0	4	29	3	0	1	20	2	0	97	1103
4:00 PM	2	11	1	0	5	8	4	0	1	41	4	0	0	31	0	0	108	1130
4:05 PM	5	10	0	0	3	10	0	0	5	33	8	0	0	26	1	0	101	1138
4:10 PM	6	7	0	0	0	17	3	0	8	33	10	0	1	21	1	0	107	1161
4:15 PM	5	7	1	0	2	10	3	0	4	41	6	0	0	26	0	0	105	1178
4:20 PM	5	6	0	0	5	4	2	0	4	40	6	0	0	28	1	0	101	1182
4:25 PM	9	8	0	0	1	12	3	0	5	36	7	0	0	19	0	0	100	1199
4:30 PM	4	7	1	0	1	10	4	0	3	40	5	0	1	14	1	0	91	1194
4:35 PM	1	7	0	0	7	16	6	0	6	28	3	0	1	28	0	0	103	1193
4:40 PM	4	4	0	0	6	6	3	0	7	38	11	0	0	21	1	0	101	1200
4:45 PM	1	9	1	0	6	12	2	0	4	29	5	0	1	13	1	0	84	1197
4:50 PM	4	5	1	0	4	8	4	0	1	34	6	0	2	20	2	0	91	1189
4:55 PM	3	3	0	0	2	6	7	0	8	41	5	0	0	25	0	0	100	1192
5:00 PM	6	3	0	0	3	10	5	0	2	40	7	0	3	15	4	0	98	1182
5:05 PM	3	5	0	0	3	15	3	0	3	34	10	0	2	28	1	0	107	1188
5:10 PM	4	2	0	0	8	9	0	0	6	33	4	0	0	13	0	0	79	1160
5:15 PM	2	7	1	0	1	10	6	0	2	36	5	0	0	9	1	0	80	1135
5:20 PM	4	4	0	0	4	10	4	0	4	37	10	0	2	27	1	0	107	1141
5:25 PM	3	1	0	0	1	8	4	0	5	34	1	0	1	17	1	0	76	1117
5:30 PM	1	2	1	0	5	8	4	0	0	42	4	0	0	24	3	0	94	1120
5:35 PM	5	4	0	0	2	13	3	0	1	16	5	0	1	20	1	0	71	1088
5:40 PM	4	4	0	0	2	3	2	0	2	32	9	0	1	18	0	0	77	1064
5:45 PM	3	3	2	0	2	11	3	0	4	25	8	0	0	10	1	0	72	1052
5:50 PM	2	4	0	0	3	6	3	0	4	27	8	0	2	24	2	0	85	1046
5:55 PM	2	9	0	0	4	7	7	0	1	20	4	0	1	17	1	0	73	1019

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	52	112	4	0	32	140	28	0	56	428	88	0	4	312	8	0	1264
Heavy Trucks	4	8	0		0	8	0		0	28	0		0	16	0		64
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 7/9/2024 10:53 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

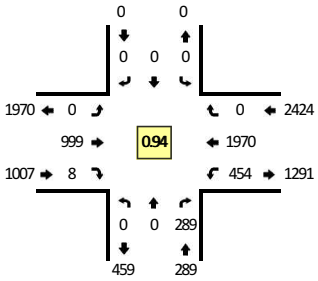
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

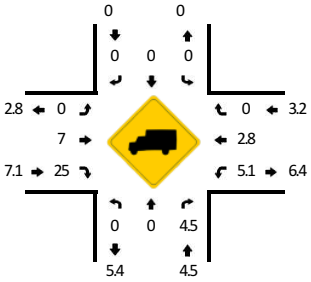
LOCATION: Hansen Rd -- Hana Hwy
CITY/STATE: Kahului, HI

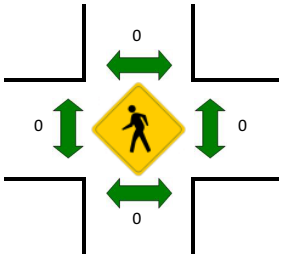
QC JOB #: 16589614
DATE: Tue, May 21 2024

Peak-Hour: 7:10 AM -- 8:10 AM
Peak 15-Min: 7:20 AM -- 7:35 AM

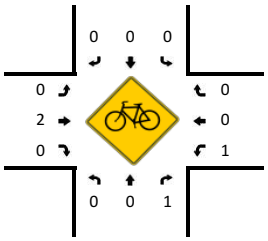


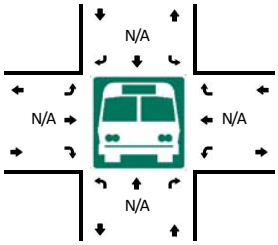




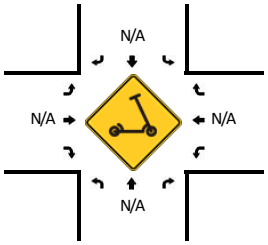












5-Min Count Period Beginning At	Hansen Rd (Northbound)				Hansen Rd (Southbound)				Hana Hwy (Eastbound)				Hana Hwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	0	8	0	0	0	0	0	0	21	0	0	22	86	0	0	137	
6:05 AM	0	0	6	0	0	0	0	0	0	35	0	0	16	89	0	0	146	
6:10 AM	0	0	3	0	0	0	0	0	0	25	0	0	30	108	0	0	166	
6:15 AM	0	0	7	0	0	0	0	0	0	36	0	0	31	90	0	0	164	
6:20 AM	0	0	3	0	0	0	0	0	0	31	1	0	20	142	0	0	197	
6:25 AM	0	0	13	0	0	0	0	0	0	28	0	0	27	117	0	0	185	
6:30 AM	0	0	12	0	0	0	0	0	0	32	0	0	39	143	0	0	226	
6:35 AM	0	0	15	0	0	0	0	0	0	42	1	0	40	130	0	1	229	
6:40 AM	0	0	12	0	0	0	0	0	0	43	0	0	39	117	0	0	211	
6:45 AM	0	0	15	0	0	0	0	0	0	55	0	0	30	177	0	0	277	
6:50 AM	0	0	13	0	0	0	0	0	0	56	0	0	39	120	0	0	228	
6:55 AM	0	0	16	0	0	0	0	0	0	75	0	0	38	154	0	0	283	2449
7:00 AM	0	0	14	0	0	0	0	0	0	57	0	0	28	116	0	0	215	2527
7:05 AM	0	0	18	0	0	0	0	0	0	74	0	0	32	154	0	0	278	2659
7:10 AM	0	0	15	0	0	0	0	0	0	94	1	0	33	153	0	0	296	2789
7:15 AM	0	0	22	0	0	0	0	0	0	93	0	0	36	146	0	1	298	2923
7:20 AM	0	0	33	0	0	0	0	0	0	92	0	0	41	169	0	0	335	3061
7:25 AM	0	0	30	0	0	0	0	0	0	110	0	0	33	157	0	0	330	3206
7:30 AM	0	0	22	0	0	0	0	0	0	97	1	0	42	164	0	0	326	3306
7:35 AM	0	0	25	0	0	0	0	0	0	81	2	0	42	169	0	0	319	3396
7:40 AM	0	0	24	0	0	0	0	0	0	88	0	0	45	167	0	0	324	3509
7:45 AM	0	0	30	0	0	0	0	0	0	88	0	0	27	181	0	0	326	3558
7:50 AM	0	0	28	0	0	0	0	0	0	71	2	0	39	181	0	0	321	3651
7:55 AM	0	0	19	0	0	0	0	0	0	66	1	0	39	143	0	1	269	3637
8:00 AM	0	0	22	0	0	0	0	0	0	66	0	0	35	169	0	0	292	3714
8:05 AM	0	0	19	0	0	0	0	0	0	53	1	0	39	171	0	1	284	3720
8:10 AM	0	0	11	0	0	0	0	0	0	83	0	0	26	149	0	0	269	3693
8:15 AM	0	0	19	0	0	0	0	0	0	92	0	0	27	134	0	0	272	3667
8:20 AM	0	0	20	0	0	0	0	0	0	84	0	0	35	135	0	0	274	3606
8:25 AM	0	0	18	0	0	0	0	0	0	82	3	0	30	130	0	0	263	3539
8:30 AM	0	0	23	0	0	0	0	0	0	62	1	0	40	138	0	0	264	3477
8:35 AM	0	0	32	0	0	0	0	0	0	78	0	0	34	149	0	0	293	3451
8:40 AM	0	0	10	0	0	0	0	0	0	75	0	0	36	104	0	0	225	3352
8:45 AM	0	0	27	0	0	0	0	0	0	85	2	0	27	150	0	0	291	3317
8:50 AM	0	0	28	0	0	0	0	0	0	60	0	0	28	107	0	0	223	3219
8:55 AM	0	0	27	0	0	0	0	0	0	74	0	0	22	106	0	0	229	3179

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	340	0	0	0	0	0	0	1196	4	0	464	1960	0	0	3964
Heavy Trucks	0	0	12		0	0	0		0	44	0		20	60	0		136
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	4	0		0	0	0		4
Scooters																	

Comments:

Report generated on 7/9/2024 10:54 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

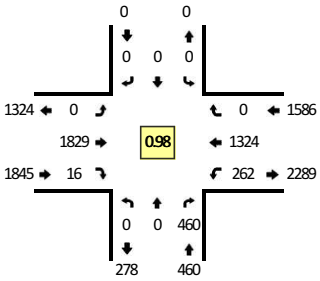
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

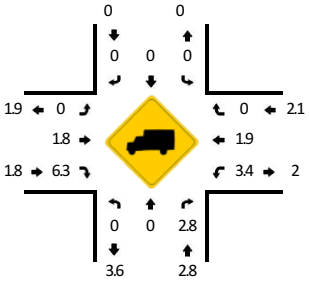
LOCATION: Hansen Rd -- Hana Hwy
CITY/STATE: Kahului, HI

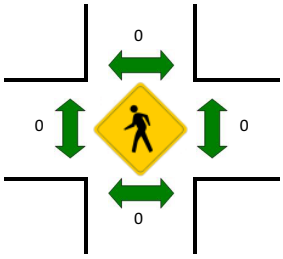
QC JOB #: 16589615
DATE: Tue, May 21 2024

Peak-Hour: 3:45 PM -- 4:45 PM
Peak 15-Min: 3:55 PM -- 4:10 PM

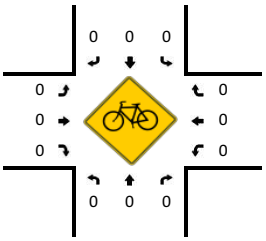


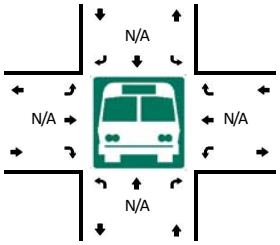


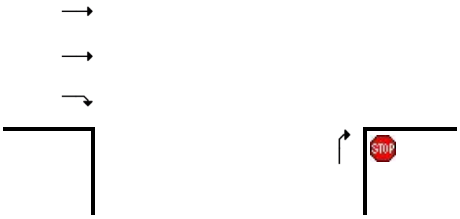


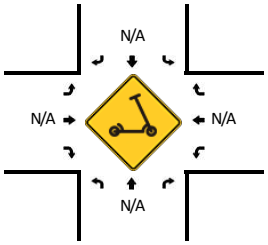












5-Min Count Period Beginning At	Hansen Rd (Northbound)				Hansen Rd (Southbound)				Hana Hwy (Eastbound)				Hana Hwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	0	0	26	0	0	0	0	0	0	125	0	0	30	90	0	0	271	
3:05 PM	0	0	24	0	0	0	0	0	0	102	1	0	20	122	0	0	269	
3:10 PM	0	0	30	0	0	0	0	0	0	124	1	0	18	119	0	1	293	
3:15 PM	0	0	25	0	0	0	0	0	0	105	2	0	28	129	0	0	289	
3:20 PM	0	0	29	0	0	0	0	0	0	113	2	0	31	158	0	0	333	
3:25 PM	0	0	19	0	0	0	0	0	0	111	0	0	26	121	0	0	277	
3:30 PM	0	0	28	0	0	0	0	0	0	142	2	0	29	132	0	0	333	
3:35 PM	0	0	34	0	0	0	0	0	0	130	1	0	29	127	0	0	321	
3:40 PM	0	0	30	0	0	0	0	0	0	120	1	0	25	99	0	0	275	
3:45 PM	0	0	33	0	0	0	0	0	0	206	3	0	13	110	0	0	365	
3:50 PM	0	0	34	0	0	0	0	0	0	106	0	0	26	114	0	0	280	
3:55 PM	0	0	37	0	0	0	0	0	0	158	5	0	28	106	0	0	334	3640
4:00 PM	0	0	44	0	0	0	0	0	0	180	0	0	19	128	0	0	371	3740
4:05 PM	0	0	36	0	0	0	0	0	0	114	1	0	30	108	0	0	289	3760
4:10 PM	0	0	35	0	0	0	0	0	0	169	0	0	20	105	0	0	329	3796
4:15 PM	0	0	38	0	0	0	0	0	0	135	1	0	27	134	0	0	335	3842
4:20 PM	0	0	43	0	0	0	0	0	0	151	0	0	20	93	0	0	307	3816
4:25 PM	0	0	45	0	0	0	0	0	0	124	2	0	17	124	0	0	312	3851
4:30 PM	0	0	36	0	0	0	0	0	0	202	3	0	14	80	0	0	335	3853
4:35 PM	0	0	38	0	0	0	0	0	0	140	0	0	31	113	0	0	322	3854
4:40 PM	0	0	41	0	0	0	0	0	0	144	1	0	17	109	0	0	312	3891
4:45 PM	0	0	37	0	0	0	0	0	0	182	2	0	21	99	0	2	343	3869
4:50 PM	0	0	32	0	0	0	0	0	0	158	0	0	23	86	0	1	300	3889
4:55 PM	0	0	48	0	0	0	0	0	0	147	2	0	19	120	0	0	336	3891
5:00 PM	0	0	42	0	0	0	0	0	0	195	0	0	19	83	0	0	339	3859
5:05 PM	0	0	38	0	0	0	0	0	0	132	2	0	20	98	0	0	290	3860
5:10 PM	0	0	43	0	0	0	0	0	0	145	1	0	18	54	0	0	261	3792
5:15 PM	0	0	44	0	0	0	0	0	0	185	1	0	14	86	0	0	330	3787
5:20 PM	0	0	36	0	0	0	0	0	0	155	1	0	24	90	0	0	306	3786
5:25 PM	0	0	34	0	0	0	0	0	0	138	0	0	25	80	0	0	277	3751
5:30 PM	0	0	48	0	0	0	0	0	0	153	0	0	20	83	0	0	304	3720
5:35 PM	0	0	24	0	0	0	0	0	0	117	0	0	23	73	0	0	237	3635
5:40 PM	0	0	32	0	0	0	0	0	0	138	1	0	14	80	0	0	265	3588
5:45 PM	0	0	29	0	0	0	0	0	0	167	1	0	15	67	0	2	281	3526
5:50 PM	0	0	31	0	0	0	0	0	0	139	0	0	24	69	0	1	264	3490
5:55 PM	0	0	24	0	0	0	0	0	0	155	2	0	15	62	0	1	259	3413

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	468	0	0	0	0	0	0	1808	24	0	308	1368	0	0	3976
Heavy Trucks	0	0	20		0	0	0		0	36	4		12	32	0		104
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 7/9/2024 10:54 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

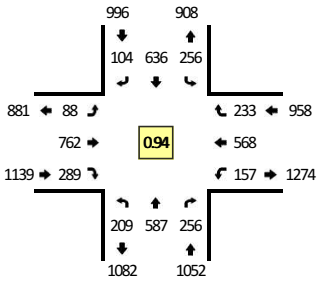
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

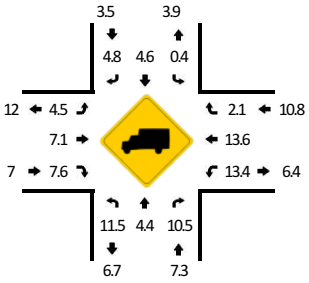
LOCATION: S Puunene Ave -- Mayor Elmer F Cravalho Way
CITY/STATE: Kahului, HI

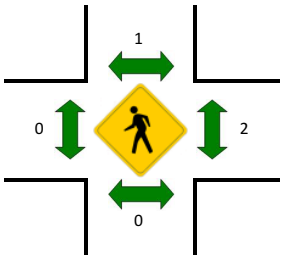
QC JOB #: 17429801
DATE: Wed, Feb 4 2026

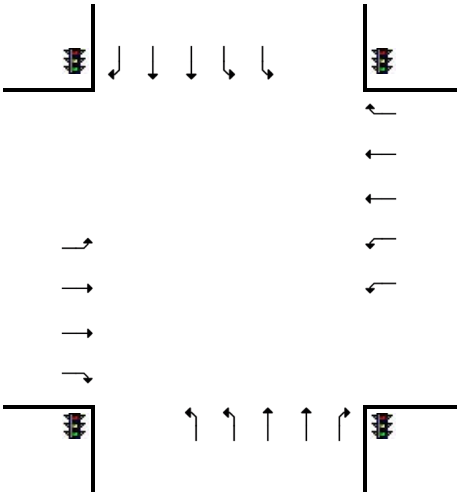
Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

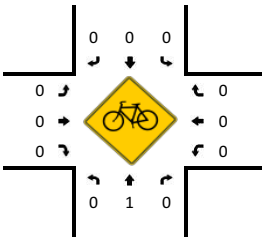


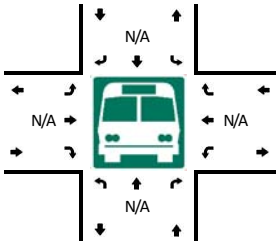


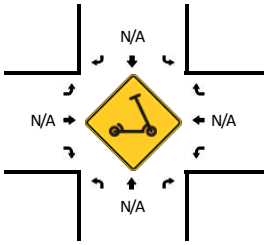












5-Min Count Period Beginning At	S Puunene Ave (Northbound)				S Puunene Ave (Southbound)				Mayor Elmer F Cravalho Way (Eastbound)				Mayor Elmer F Cravalho Way (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	15	15	5	0	20	59	17	0	4	20	21	0	1	29	5	0	211	
6:05 AM	5	21	5	0	16	47	10	0	6	24	16	0	9	27	3	0	189	
6:10 AM	7	20	13	0	16	74	8	0	2	12	13	0	9	38	5	0	217	
6:15 AM	13	18	12	0	6	59	9	0	4	29	21	0	15	45	9	0	240	
6:20 AM	12	23	19	0	17	50	12	0	1	24	19	0	6	41	6	0	230	
6:25 AM	13	28	21	0	20	64	10	0	2	20	16	0	8	33	10	0	245	
6:30 AM	19	27	13	0	20	46	12	0	5	30	28	0	5	44	12	0	261	
6:35 AM	22	48	21	0	14	66	10	0	1	31	14	0	14	36	9	0	286	
6:40 AM	8	33	22	0	14	51	7	0	3	40	32	0	12	33	12	0	267	
6:45 AM	18	28	17	0	16	48	12	0	2	50	18	0	5	45	6	0	265	
6:50 AM	18	50	20	0	19	54	8	0	3	29	21	0	15	44	12	0	293	
6:55 AM	23	36	21	0	35	54	3	0	0	66	18	0	9	38	16	0	319	3023
7:00 AM	20	18	25	0	24	25	16	0	7	68	25	0	22	48	18	0	316	3128
7:05 AM	10	38	17	0	15	58	8	0	4	65	32	0	11	60	26	0	344	3283
7:10 AM	10	50	20	0	29	69	9	0	5	35	23	0	12	31	19	0	312	3378
7:15 AM	15	34	7	0	21	55	2	0	5	87	15	0	8	33	27	0	309	3447
7:20 AM	23	38	26	0	21	48	8	0	4	67	26	0	15	47	19	0	342	3559
7:25 AM	20	63	24	0	10	65	8	0	10	82	18	0	13	46	23	0	382	3696
7:30 AM	20	62	15	0	21	62	11	0	8	44	32	0	13	39	17	0	344	3779
7:35 AM	26	43	26	0	20	31	6	0	4	69	23	0	10	63	13	0	334	3827
7:40 AM	9	71	15	0	19	64	13	0	11	50	20	0	17	51	21	0	361	3921
7:45 AM	22	72	15	0	33	70	10	0	11	56	23	0	8	27	9	0	356	4012
7:50 AM	22	30	30	0	31	34	3	0	11	64	25	0	14	63	22	0	349	4068
7:55 AM	12	68	36	0	12	55	10	0	8	75	27	0	14	60	19	0	396	4145
8:00 AM	16	54	30	0	28	47	9	0	8	35	30	0	13	28	10	0	308	4137
8:05 AM	27	18	19	0	24	47	4	0	3	75	24	0	15	35	19	0	310	4103
8:10 AM	12	36	24	0	10	39	6	0	11	55	13	0	19	47	18	0	290	4081
8:15 AM	18	43	21	0	40	60	10	0	5	31	19	0	23	37	21	0	328	4100
8:20 AM	20	50	29	0	18	59	6	0	3	59	30	0	10	29	9	0	322	4080
8:25 AM	23	30	26	0	24	36	6	0	2	38	24	0	12	32	19	0	272	3970
8:30 AM	24	37	27	0	22	39	4	0	7	53	27	0	18	52	19	0	329	3955
8:35 AM	18	40	18	0	13	35	4	0	6	67	16	0	24	35	25	0	301	3922
8:40 AM	10	41	21	0	22	43	6	0	4	46	14	0	21	34	13	0	275	3836
8:45 AM	27	49	28	0	32	55	4	0	6	45	13	0	13	25	29	0	326	3806
8:50 AM	17	39	23	0	31	37	7	0	1	51	22	0	17	46	16	0	307	3764
8:55 AM	11	36	30	0	19	23	2	0	5	79	20	0	16	33	15	0	289	3657

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	224	680	324	0	304	636	92	0	120	780	300	0	144	600	200	0	4404
Heavy Trucks	16	24	28		4	40	8		0	64	16		32	92	4		328
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 2/11/2026 1:58 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

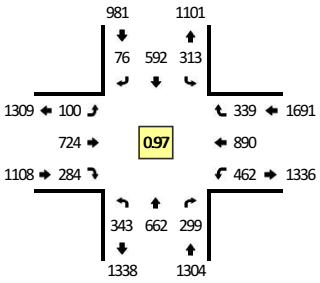
Type of peak hour being reported: Intersection Peak

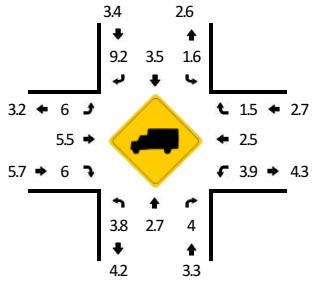
Method for determining peak hour: Total Entering Volume

LOCATION: S Puunene Ave -- Mayor Elmer F Cravalho Way
CITY/STATE: Kahului, HI

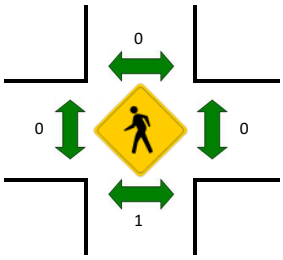
QC JOB #: 17429802
DATE: Wed, Feb 4 2026

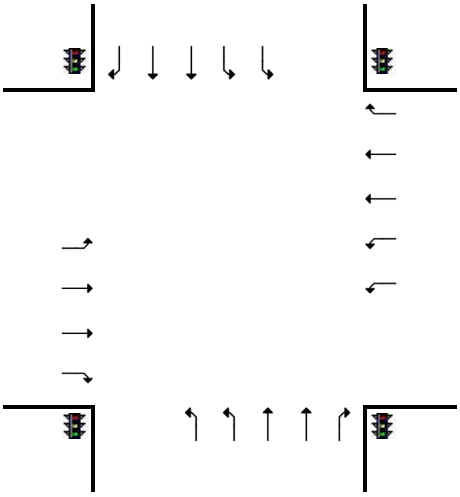
Peak-Hour: 3:25 PM -- 4:25 PM
Peak 15-Min: 3:30 PM -- 3:45 PM

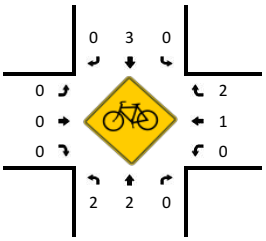


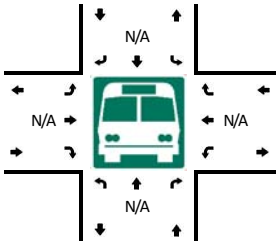


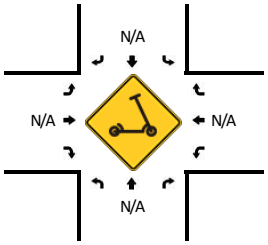
TRUE DATA TO IMPROVE MOBILITY











5-Min Count Period Beginning At	S Puunene Ave (Northbound)				S Puunene Ave (Southbound)				Mayor Elmer F Cravalho Way (Eastbound)				Mayor Elmer F Cravalho Way (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	25	71	30	0	33	70	6	0	6	50	21	0	20	46	16	0	394	
3:05 PM	34	32	28	0	26	30	2	0	3	66	15	0	44	104	37	0	421	
3:10 PM	30	64	31	0	30	62	6	0	3	34	21	0	41	79	19	0	420	
3:15 PM	31	44	23	0	36	53	7	0	9	67	13	0	18	66	30	0	397	
3:20 PM	11	58	20	0	19	34	3	0	12	52	23	0	55	84	26	0	397	
3:25 PM	36	58	33	0	31	60	7	0	5	53	12	0	26	78	28	0	427	
3:30 PM	25	39	27	0	14	38	8	0	8	67	30	0	66	92	31	0	445	
3:35 PM	44	63	25	0	30	59	9	0	7	63	23	0	28	63	19	0	433	
3:40 PM	20	47	17	0	20	36	0	0	10	70	19	0	59	101	32	0	431	
3:45 PM	45	70	22	0	24	70	8	0	7	66	33	0	15	52	22	0	434	
3:50 PM	12	34	27	0	21	24	5	0	14	75	27	0	52	97	38	0	426	
3:55 PM	42	72	28	0	36	61	7	0	4	31	25	0	22	55	18	0	401	5026
4:00 PM	22	35	20	0	20	33	7	0	17	64	27	0	56	78	33	0	412	5044
4:05 PM	30	71	25	0	27	54	7	0	7	27	30	0	46	47	28	0	399	5022
4:10 PM	34	46	25	0	34	47	7	0	9	83	22	0	15	81	36	0	439	5041
4:15 PM	9	59	21	0	10	45	3	0	9	72	17	0	53	94	27	0	419	5063
4:20 PM	24	68	29	0	46	65	8	0	3	53	19	0	24	52	27	0	418	5084
4:25 PM	26	34	21	0	20	34	3	0	10	72	17	0	46	96	28	0	407	5064
4:30 PM	35	62	27	0	33	67	10	0	8	41	16	0	44	45	21	0	409	5028
4:35 PM	28	35	19	0	30	41	8	0	4	72	28	0	39	101	29	0	434	5029
4:40 PM	27	61	31	0	30	56	9	0	7	29	20	0	45	55	30	0	400	4998
4:45 PM	37	34	28	0	37	33	4	0	9	78	23	0	21	94	37	0	435	4999
4:50 PM	16	53	18	0	11	71	7	0	13	57	28	0	51	85	19	0	429	5002
4:55 PM	31	52	22	0	37	64	8	0	7	51	23	0	17	65	28	0	405	5006
5:00 PM	14	14	23	0	15	33	4	0	12	75	30	0	51	82	32	0	385	4979
5:05 PM	29	66	22	0	26	46	10	0	9	45	22	0	40	44	23	0	382	4962
5:10 PM	27	41	27	0	26	25	9	0	6	58	25	0	35	92	24	0	395	4918
5:15 PM	13	60	10	0	12	67	8	0	13	48	24	0	41	72	26	0	394	4893
5:20 PM	27	45	25	0	27	51	10	0	12	47	25	0	21	55	31	1	377	4852
5:25 PM	22	29	23	0	28	38	6	0	11	85	30	0	34	81	21	0	408	4853
5:30 PM	15	54	15	0	24	61	4	0	9	47	26	0	42	62	36	0	395	4839
5:35 PM	32	40	16	0	33	39	4	0	4	69	24	0	17	36	25	0	339	4744
5:40 PM	14	52	31	0	23	43	2	0	5	41	17	0	26	55	34	0	343	4687
5:45 PM	13	58	16	0	21	50	5	0	10	43	11	0	26	55	29	0	337	4589
5:50 PM	22	44	18	0	22	49	6	0	5	39	23	0	13	43	38	0	322	4482
5:55 PM	26	50	21	0	10	35	4	0	3	32	20	0	28	70	26	0	325	4402

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	356	596	276	0	256	532	68	0	100	800	288	0	612	1024	328	0	5236
Heavy Trucks	16	4	8		4	24	0		8	40	16		28	32	4		184
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	4	0	0		0	0	0		0	0	0		0	0	4		8
Scooters																	

Comments:

Report generated on 2/11/2026 1:58 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Maui Veterans Hwy -- Hookele St

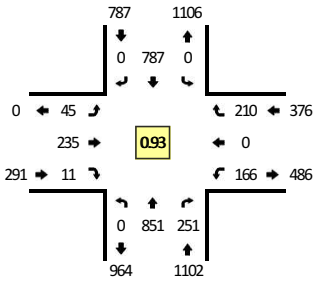
CITY/STATE: Kahului, HI

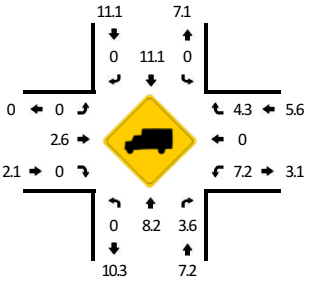
QC JOB #: 17429803

DATE: Wed, Feb 4 2026

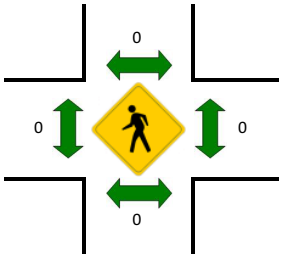
Peak-Hour: 7:25 AM -- 8:25 AM

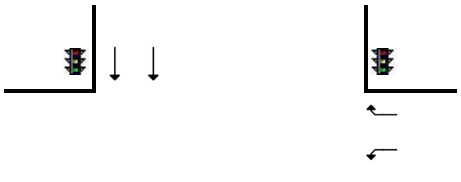
Peak 15-Min: 7:30 AM -- 7:45 AM

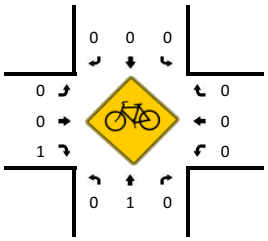


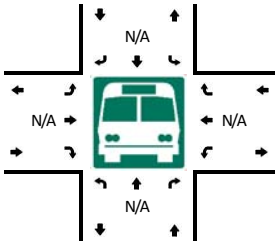


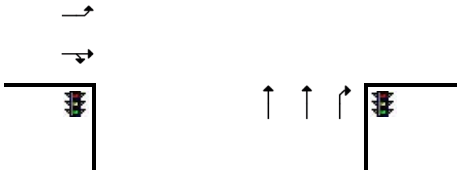
TRUE DATA TO IMPROVE MOBILITY

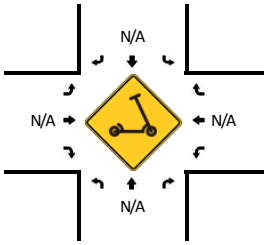












5-Min Count Period Beginning At	Maui Veterans Hwy (Northbound)				Maui Veterans Hwy (Southbound)				Hookele St (Eastbound)				Hookele St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	19	6	0	0	52	0	0	7	11	0	0	4	0	9	0	108	
6:05 AM	0	28	7	0	0	60	0	0	5	9	1	0	8	0	10	0	128	
6:10 AM	0	28	8	0	0	87	0	0	5	5	0	0	10	0	6	0	149	
6:15 AM	0	33	5	0	0	83	0	0	2	11	1	0	8	0	15	0	158	
6:20 AM	0	51	15	0	0	73	0	0	1	11	1	0	5	0	6	0	163	
6:25 AM	0	42	12	0	0	63	0	0	4	8	1	0	11	0	9	0	150	
6:30 AM	0	30	11	0	0	69	0	0	3	9	1	0	7	0	7	0	137	
6:35 AM	0	61	8	0	0	83	0	0	3	10	0	0	4	0	13	0	182	
6:40 AM	0	40	8	0	0	68	0	0	4	10	0	0	12	0	8	0	150	
6:45 AM	0	36	10	0	0	67	0	0	2	14	2	0	7	0	16	0	154	
6:50 AM	0	89	13	0	0	89	0	0	1	11	0	0	7	0	12	0	222	
6:55 AM	0	45	15	0	0	40	0	0	4	18	0	0	9	0	19	0	150	1851
7:00 AM	0	71	12	0	0	82	0	0	3	14	0	0	8	0	11	0	201	1944
7:05 AM	0	46	26	0	0	79	0	0	2	13	1	0	14	0	10	0	191	2007
7:10 AM	0	66	15	0	1	89	0	0	2	13	2	0	11	0	11	0	210	2068
7:15 AM	0	36	13	0	0	59	0	0	3	10	0	0	14	0	17	0	152	2062
7:20 AM	0	75	14	0	0	74	0	0	5	21	2	0	11	0	13	0	215	2114
7:25 AM	0	87	17	0	0	78	0	0	6	13	2	0	9	0	12	0	224	2188
7:30 AM	0	95	20	0	0	82	0	0	2	10	2	0	12	0	13	0	236	2287
7:35 AM	0	87	15	0	0	48	0	0	6	23	1	0	10	0	22	0	212	2317
7:40 AM	0	76	31	0	0	76	0	0	7	16	2	0	12	0	18	0	238	2405
7:45 AM	0	75	20	0	0	74	0	0	1	12	0	0	9	0	12	0	203	2454
7:50 AM	0	78	25	0	0	55	0	0	6	25	1	0	13	0	22	0	225	2457
7:55 AM	0	79	22	0	0	59	0	0	6	16	1	0	16	0	14	0	213	2520
8:00 AM	0	46	14	0	0	51	0	0	5	30	1	0	18	0	16	0	181	2500
8:05 AM	0	57	19	0	0	65	0	0	1	23	1	0	19	0	18	0	203	2512
8:10 AM	0	66	24	0	0	71	0	0	1	29	0	0	10	0	17	0	218	2520
8:15 AM	0	51	20	0	0	75	0	0	1	6	0	0	14	0	19	0	186	2554
8:20 AM	0	54	24	0	0	53	0	0	3	32	0	0	24	0	27	0	217	2556
8:25 AM	0	64	13	0	0	73	0	0	2	22	2	0	23	0	17	0	216	2548
8:30 AM	0	58	25	0	0	45	0	0	1	21	2	0	24	0	26	0	202	2514
8:35 AM	0	69	26	0	0	70	0	0	0	24	1	0	7	0	14	0	211	2513
8:40 AM	0	46	18	0	0	61	0	0	1	18	0	0	21	0	21	0	186	2461
8:45 AM	0	73	21	0	0	52	0	0	0	11	2	0	14	0	19	0	192	2450
8:50 AM	0	54	29	0	0	52	0	0	2	29	0	0	14	0	26	0	206	2431
8:55 AM	0	74	26	0	0	44	0	0	1	26	0	0	15	0	19	0	205	2423

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1032	264	0	0	824	0	0	60	196	20	0	136	0	212	0	2744
Heavy Trucks	0	48	12		0	92	0		0	8	0		16	0	4		180
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 2/11/2026 1:58 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Maui Veterans Hwy -- Hookele St

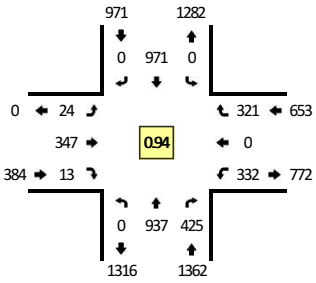
CITY/STATE: Kahului, HI

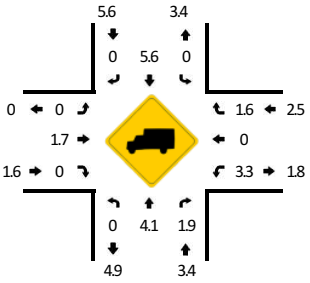
QC JOB #: 17429804

DATE: Wed, Feb 4 2026

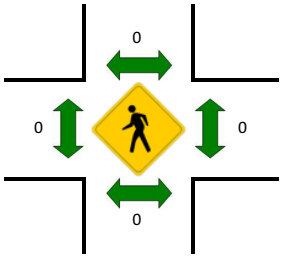
Peak-Hour: 3:30 PM -- 4:30 PM

Peak 15-Min: 3:55 PM -- 4:10 PM

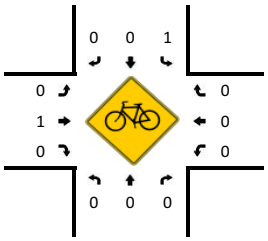


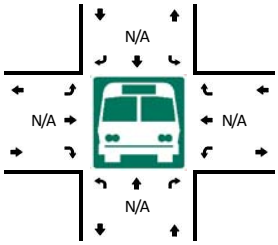


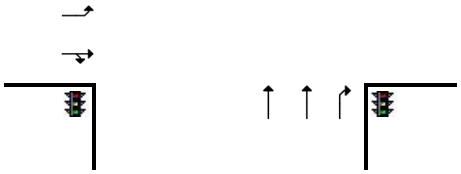
TRUE DATA TO IMPROVE MOBILITY

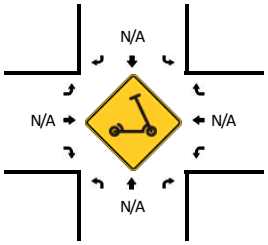












5-Min Count Period Beginning At	Maui Veterans Hwy (Northbound)				Maui Veterans Hwy (Southbound)				Hookele St (Eastbound)				Hookele St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	0	82	39	0	0	88	0	0	3	34	2	0	24	0	34	0	306	
3:05 PM	0	76	19	0	0	103	0	0	0	18	0	0	32	0	30	0	278	
3:10 PM	0	80	37	0	0	69	0	0	3	19	0	0	24	0	26	0	258	
3:15 PM	0	76	17	0	0	62	0	0	3	30	2	0	30	0	34	1	255	
3:20 PM	0	64	27	0	0	66	0	0	2	29	1	0	21	0	17	0	227	
3:25 PM	0	94	32	0	0	96	0	0	2	16	0	0	23	0	23	0	286	
3:30 PM	0	74	38	0	0	98	0	0	0	26	0	0	31	0	39	0	306	
3:35 PM	0	84	32	0	0	80	0	0	2	31	1	0	31	0	29	0	290	
3:40 PM	0	50	36	0	0	86	0	0	2	27	2	0	20	0	36	0	259	
3:45 PM	0	86	35	0	0	91	0	0	4	25	1	0	26	0	18	0	286	
3:50 PM	0	70	25	0	0	73	0	0	2	30	1	0	26	0	23	0	250	
3:55 PM	0	101	24	0	0	82	0	0	1	26	2	0	29	0	21	0	286	3287
4:00 PM	0	85	45	0	0	78	0	0	2	30	1	0	34	0	25	0	300	3281
4:05 PM	0	87	41	0	0	96	0	0	3	35	1	0	27	0	24	0	314	3317
4:10 PM	0	80	35	0	0	54	0	0	0	30	1	0	25	0	26	0	251	3310
4:15 PM	0	68	23	0	0	92	0	0	5	30	1	0	26	0	26	0	271	3326
4:20 PM	0	75	48	0	0	64	0	0	1	28	0	0	32	0	21	0	269	3368
4:25 PM	0	77	43	0	0	77	0	0	2	29	2	0	25	0	33	0	288	3370
4:30 PM	0	53	29	0	0	58	0	0	2	27	1	0	24	0	36	0	230	3294
4:35 PM	0	72	39	0	0	105	0	0	3	26	2	0	30	0	25	0	302	3306
4:40 PM	0	67	33	0	0	54	0	0	3	30	2	0	33	0	30	0	252	3299
4:45 PM	0	71	33	0	0	99	0	0	1	26	0	0	33	0	31	0	294	3307
4:50 PM	0	67	29	0	0	71	0	0	3	31	1	0	32	0	16	0	250	3307
4:55 PM	0	70	22	0	0	85	0	0	7	31	0	0	30	0	25	0	270	3291
5:00 PM	0	68	34	0	0	84	0	0	4	32	3	0	26	0	12	0	263	3254
5:05 PM	0	60	28	0	0	88	0	0	5	21	2	0	23	0	26	0	253	3193
5:10 PM	0	56	27	0	0	67	0	0	3	30	1	0	28	0	33	0	245	3187
5:15 PM	0	50	14	0	0	53	0	0	1	35	2	0	25	0	31	0	211	3127
5:20 PM	0	75	24	0	0	90	0	0	8	19	1	0	22	0	14	0	253	3111
5:25 PM	0	46	15	0	0	66	0	0	11	32	0	0	20	0	22	0	212	3035
5:30 PM	0	52	39	0	0	51	0	0	8	50	0	0	10	0	35	0	245	3050
5:35 PM	0	80	19	0	0	74	0	0	7	23	0	0	22	0	27	0	252	3000
5:40 PM	0	59	23	0	0	58	0	0	6	22	3	0	23	0	31	0	225	2973
5:45 PM	0	34	25	0	0	41	0	0	6	34	0	0	17	0	24	0	181	2860
5:50 PM	0	80	25	0	0	60	0	0	12	22	0	0	18	0	22	0	239	2849
5:55 PM	0	62	21	0	0	47	0	0	13	15	0	0	28	0	22	0	208	2787

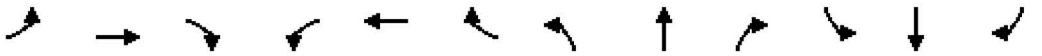
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1092	440	0	0	1024	0	0	24	364	16	0	360	0	280	0	3600
Heavy Trucks	0	52	8		0	84	0		0	12	0		8	0	0		164
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 2/11/2026 1:58 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Appendix B. Level of Service Analysis Results



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	762	289	157	568	233	209	587	256	256	636	104
Future Volume (veh/h)	88	762	289	157	568	233	209	587	256	256	636	104
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1796	1781	1707	1693	1870	1737	1841	1752	1870	1826	1826
Adj Flow Rate, veh/h	94	811	0	167	604	0	222	624	0	272	677	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	4	7	8	13	14	2	11	4	10	2	5	5
Cap, veh/h	118	1525		220	1421		282	755		339	785	
Arrive On Green	0.07	0.45	0.00	0.07	0.44	0.00	0.09	0.22	0.00	0.10	0.23	0.00
Sat Flow, veh/h	1753	3413	1510	3155	3216	1585	3209	3497	1485	3456	3469	1547
Grp Volume(v), veh/h	94	811	0	167	604	0	222	624	0	272	677	0
Grp Sat Flow(s),veh/h/ln	1753	1706	1510	1577	1608	1585	1605	1749	1485	1728	1735	1547
Q Serve(g_s), s	6.9	22.4	0.0	6.8	16.8	0.0	8.8	22.1	0.0	10.0	24.4	0.0
Cycle Q Clear(g_c), s	6.9	22.4	0.0	6.8	16.8	0.0	8.8	22.1	0.0	10.0	24.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	118	1525		220	1421		282	755		339	785	
V/C Ratio(X)	0.80	0.53		0.76	0.43		0.79	0.83		0.80	0.86	
Avail Cap(c_a), veh/h	324	1525		461	1421		592	942		638	934	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	59.8	26.1	0.0	59.4	24.9	0.0	58.1	48.6	0.0	57.4	48.3	0.0
Incr Delay (d2), s/veh	11.6	1.3	0.0	5.3	0.9	0.0	4.9	5.0	0.0	4.5	7.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	9.0	0.0	2.8	6.4	0.0	3.8	10.2	0.0	4.6	11.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	71.4	27.4	0.0	64.7	25.9	0.0	63.0	53.6	0.0	61.9	55.7	0.0
LnGrp LOS	E	C		E	C		E	D		E	E	
Approach Vol, veh/h		905			771			846			949	
Approach Delay, s/veh		32.0			34.3			56.1			57.4	
Approach LOS		C			C			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.1	64.1	16.4	35.4	14.7	63.4	17.7	34.1
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	6.0	* 6	5.0	6.0
Max Green Setting (Gmax), s	19.0	30.0	24.0	35.0	24.0	* 25	24.0	35.0
Max Q Clear Time (g_c+I1), s	8.8	24.4	10.8	26.4	8.9	18.8	12.0	24.1
Green Ext Time (p_c), s	0.3	2.4	0.6	3.0	0.2	1.9	0.7	3.2

Intersection Summary	
HCM 7th Control Delay, s/veh	45.3
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	244	11	180	0	215	0	828	247	0	782	0
Future Volume (veh/h)	41	244	11	180	0	215	0	828	247	0	782	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1856	1870	1781	1870	1841	0	1781	1856	0	1737	0
Adj Flow Rate, veh/h	44	262	12	194	0	231	0	890	0	0	841	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	3	2	8	2	4	0	8	3	0	11	0
Cap, veh/h	72	293	13	222	0	395	0	1936		0	1888	0
Arrive On Green	0.04	0.17	0.17	0.13	0.00	0.25	0.00	0.57	0.00	0.00	0.57	0.00
Sat Flow, veh/h	1781	1760	81	1697	0	1585	0	3474	1572	0	3474	0
Grp Volume(v), veh/h	44	0	274	194	0	231	0	890	0	0	841	0
Grp Sat Flow(s),veh/h/ln	1781	0	1841	1697	0	1585	0	1692	1572	0	1650	0
Q Serve(g_s), s	3.2	0.0	18.9	14.6	0.0	16.6	0.0	19.8	0.0	0.0	19.0	0.0
Cycle Q Clear(g_c), s	3.2	0.0	18.9	14.6	0.0	16.6	0.0	19.8	0.0	0.0	19.0	0.0
Prop In Lane	1.00		0.04	1.00		1.00	0.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	72	0	306	222	0	395	0	1936		0	1888	0
V/C Ratio(X)	0.61	0.00	0.89	0.87	0.00	0.58	0.00	0.46		0.00	0.45	0.00
Avail Cap(c_a), veh/h	356	0	368	378	0	395	0	1936		0	1888	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	61.4	0.0	53.1	55.5	0.0	42.9	0.0	16.2	0.0	0.0	16.0	0.0
Incr Delay (d2), s/veh	8.2	0.0	20.7	11.1	0.0	2.2	0.0	0.8	0.0	0.0	0.8	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	10.6	7.0	0.0	6.9	0.0	7.8	0.0	0.0	7.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	69.6	0.0	73.8	66.6	0.0	45.1	0.0	16.9	0.0	0.0	16.7	0.0
LnGrp LOS	E		E	E		D		B			B	
Approach Vol, veh/h		318			425			890			841	
Approach Delay, s/veh		73.2			54.9			16.9			16.7	
Approach LOS		E			D			B			B	

Timer - Assigned Phs	2	3	4		6	7	8
Phs Duration (G+Y+Rc), s	80.4	22.0	27.6		80.4	11.2	38.4
Change Period (Y+Rc), s	6.0	5.0	6.0		6.0	6.0	* 6
Max Green Setting (Gmax), s	58.0	29.0	26.0		58.0	26.0	* 30
Max Q Clear Time (g_c+I1), s	21.8	16.6	20.9		21.0	5.2	18.6
Green Ext Time (p_c), s	7.7	0.4	0.7		7.2	0.1	1.1

Intersection Summary	
HCM 7th Control Delay, s/veh	30.6
HCM 7th LOS	C

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	136	185	47	109	182	184	66	132	43	167	136	101
Future Volume (veh/h)	136	185	47	109	182	184	66	132	43	167	136	101
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1856	1870	1870	1870	1841	1856	1870	1870	1856	1826	1870
Adj Flow Rate, veh/h	146	199	29	117	196	39	71	142	11	180	146	33
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	3	2	2	2	4	3	2	2	3	5	2
Cap, veh/h	464	515	74	462	466	91	494	342	286	527	427	367
Arrive On Green	0.10	0.17	0.17	0.09	0.16	0.16	0.07	0.18	0.18	0.12	0.23	0.23
Sat Flow, veh/h	1781	3092	444	1781	2963	578	1767	1870	1564	1767	1826	1569
Grp Volume(v), veh/h	146	112	116	117	116	119	71	142	11	180	146	33
Grp Sat Flow(s),veh/h/ln	1781	1763	1774	1781	1777	1764	1767	1870	1564	1767	1826	1569
Q Serve(g_s), s	2.7	2.3	2.4	2.2	2.4	2.5	1.3	2.7	0.2	3.2	2.7	0.7
Cycle Q Clear(g_c), s	2.7	2.3	2.4	2.2	2.4	2.5	1.3	2.7	0.2	3.2	2.7	0.7
Prop In Lane	1.00		0.25	1.00		0.33	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	464	294	295	462	280	278	494	342	286	527	427	367
V/C Ratio(X)	0.31	0.38	0.39	0.25	0.41	0.43	0.14	0.42	0.04	0.34	0.34	0.09
Avail Cap(c_a), veh/h	1008	1752	1763	1023	1766	1753	1047	1354	1133	989	1322	1136
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.3	15.1	15.1	12.4	15.5	15.5	11.9	14.7	13.7	11.2	13.0	12.2
Incr Delay (d2), s/veh	0.4	0.8	0.8	0.3	1.0	1.0	0.1	0.8	0.1	0.4	0.5	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.9	0.9	0.7	0.9	0.9	0.4	1.1	0.1	1.1	1.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	12.7	15.9	16.0	12.7	16.5	16.6	12.1	15.5	13.8	11.6	13.5	12.3
LnGrp LOS	B	B	B	B	B	B	B	B	B	B	B	B
Approach Vol, veh/h		374			352			224			359	
Approach Delay, s/veh		14.7			15.2			14.3			12.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.3	11.9	8.2	11.3	7.3	14.0	8.5	10.9
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	15.5	29.5	16.5	40.5	15.5	29.5	16.5	40.5
Max Q Clear Time (g_c+I1), s	5.2	4.7	4.2	4.4	3.3	4.7	4.7	4.5
Green Ext Time (p_c), s	0.3	0.8	0.2	1.4	0.1	0.9	0.3	1.4

Intersection Summary	
HCM 7th Control Delay, s/veh	14.2
HCM 7th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	270	77	179	415	25	129	3	102	25	3	9
Future Volume (veh/h)	3	270	77	179	415	25	129	3	102	25	3	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		0.99	0.98		0.99	0.98		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	922	1870	1737	1811	1870	1781	1811	1411	1737	1663	1870	1870
Adj Flow Rate, veh/h	3	284	57	188	437	23	136	3	29	26	3	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	66	2	11	6	2	8	6	33	11	16	2	2
Cap, veh/h	258	584	115	479	1071	56	563	27	263	431	188	125
Arrive On Green	0.00	0.20	0.20	0.12	0.31	0.31	0.09	0.24	0.24	0.03	0.18	0.18
Sat Flow, veh/h	878	2952	583	1725	3433	180	1725	112	1086	1584	1038	692
Grp Volume(v), veh/h	3	169	172	188	226	234	136	0	32	26	0	5
Grp Sat Flow(s),veh/h/ln	878	1777	1758	1725	1777	1837	1725	0	1198	1584	0	1731
Q Serve(g_s), s	0.1	3.7	3.8	3.4	4.4	4.4	2.7	0.0	0.9	0.6	0.0	0.1
Cycle Q Clear(g_c), s	0.1	3.7	3.8	3.4	4.4	4.4	2.7	0.0	0.9	0.6	0.0	0.1
Prop In Lane	1.00		0.33	1.00		0.10	1.00		0.91	1.00		0.40
Lane Grp Cap(c), veh/h	258	351	348	479	554	573	563	0	290	431	0	313
V/C Ratio(X)	0.01	0.48	0.49	0.39	0.41	0.41	0.24	0.00	0.11	0.06	0.00	0.02
Avail Cap(c_a), veh/h	565	1236	1223	885	1236	1278	1014	0	833	942	0	1204
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.0	15.6	15.6	10.5	11.9	11.9	12.4	0.0	12.9	13.8	0.0	14.7
Incr Delay (d2), s/veh	0.0	1.0	1.1	0.5	0.5	0.5	0.2	0.0	0.2	0.1	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.3	1.4	1.0	1.4	1.5	0.9	0.0	0.2	0.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.0	16.6	16.7	11.0	12.4	12.4	12.6	0.0	13.1	13.9	0.0	14.8
LnGrp LOS	B	B	B	B	B	B	B		B	B		B
Approach Vol, veh/h		344			648			168			31	
Approach Delay, s/veh		16.6			12.0			12.7			14.0	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.7	18.2	8.5	12.4	9.7	13.2	5.9	15.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	15.5	30.5	15.5	30.5	15.5	30.5	15.5	30.5
Max Q Clear Time (g_c+I1), s	2.1	6.4	4.7	2.1	5.4	5.8	2.6	2.9
Green Ext Time (p_c), s	0.0	2.7	0.2	0.0	0.3	1.9	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	13.5
HCM 7th LOS	B



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	839	289	359	1637	227	166
Future Volume (veh/h)	839	289	359	1637	227	166
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
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	No	
Adj Sat Flow, veh/h/ln	1796	1781	1870	1856	1826	1856
Adj Flow Rate, veh/h	883	0	378	1723	239	102
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	7	8	2	3	5	3
Cap, veh/h	1640		551	2539	402	330
Arrive On Green	0.48	0.00	0.16	0.72	0.12	0.12
Sat Flow, veh/h	3503	1510	3456	3618	3374	2768
Grp Volume(v), veh/h	883	0	378	1723	239	102
Grp Sat Flow(s),veh/h/ln	1706	1510	1728	1763	1687	1384
Q Serve(g_s), s	10.2	0.0	5.8	15.0	3.8	1.9
Cycle Q Clear(g_c), s	10.2	0.0	5.8	15.0	3.8	1.9
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1640		551	2539	402	330
V/C Ratio(X)	0.54		0.69	0.68	0.59	0.31
Avail Cap(c_a), veh/h	7519		1572	9653	1053	864
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.2	0.0	22.2	4.3	23.4	22.6
Incr Delay (d2), s/veh	0.3	0.0	1.5	0.3	1.4	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	2.1	1.4	1.4	0.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	10.5	0.0	23.8	4.6	24.8	23.1
LnGrp LOS	B		C	A	C	C
Approach Vol, veh/h	883			2101	341	
Approach Delay, s/veh	10.5			8.1	24.3	
Approach LOS	B			A	C	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	13.4	31.4		11.2		44.9
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s	25.5	123.5		17.5		153.5
Max Q Clear Time (g_c+I1), s	7.8	12.2		5.8		17.0
Green Ext Time (p_c), s	1.2	6.9		0.9		23.4

Intersection Summary	
HCM 7th Control Delay, s/veh	10.4
HCM 7th LOS	B

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	518	0	73	0	1057	335	104	997	0
Future Volume (veh/h)	0	0	0	518	0	73	0	1057	335	104	997	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1811	1870	1515	1870	1811	1752	1722	1752	0
Adj Flow Rate, veh/h	0	0	0	545	0	0	0	1113	0	109	1049	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	6	2	26	2	6	10	12	10	0
Cap, veh/h	0	3	0	744	0		3	1578		139	2076	0
Arrive On Green	0.00	0.00	0.00	0.22	0.00	0.00	0.00	0.46	0.00	0.08	0.62	0.00
Sat Flow, veh/h	0	1870	0	3450	0	1284	1781	3441	1485	1640	3416	0
Grp Volume(v), veh/h	0	0	0	545	0	0	0	1113	0	109	1049	0
Grp Sat Flow(s),veh/h/ln	0	1870	0	1725	0	1284	1781	1721	1485	1640	1664	0
Q Serve(g_s), s	0.0	0.0	0.0	8.2	0.0	0.0	0.0	14.5	0.0	3.6	9.7	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	8.2	0.0	0.0	0.0	14.5	0.0	3.6	9.7	0.0
Prop In Lane	0.00		0.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	3	0	744	0		3	1578		139	2076	0
V/C Ratio(X)	0.00	0.00	0.00	0.73	0.00		0.00	0.71		0.78	0.51	0.00
Avail Cap(c_a), veh/h	0	851	0	1570	0		493	3409		454	3298	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	20.5	0.0	0.0	0.0	12.1	0.0	25.1	5.8	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.6	0.0	9.3	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	3.2	0.0	0.0	0.0	4.1	0.0	1.7	2.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	0.0	21.9	0.0	0.0	0.0	12.7	0.0	34.4	6.0	0.0
LnGrp LOS				C				B		C	A	
Approach Vol, veh/h		0			545			1113			1158	
Approach Delay, s/veh		0.0			21.9			12.7			8.7	
Approach LOS					C			B			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.2	30.2		0.0	0.0	39.4		16.6				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	15.5	55.5		25.5	15.5	55.5		25.5				
Max Q Clear Time (g_c+I1), s	5.6	16.5		0.0	0.0	11.7		10.2				
Green Ext Time (p_c), s	0.2	9.2		0.0	0.0	10.0		1.8				

Intersection Summary			
HCM 7th Control Delay, s/veh		12.8	
HCM 7th LOS		B	

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	54.9
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	267	88	33	422	15	131	181	10	5	77	44
Future Vol, veh/h	20	267	88	33	422	15	131	181	10	5	77	44
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	20	6	11	30	3	2	13	5	30	20	11	9
Mvmt Flow	22	290	96	36	459	16	142	197	11	5	84	48
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	40.2	92.1	32.8	16.5
HCM LOS	E	F	D	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	41%	5%	7%	4%
Vol Thru, %	56%	71%	90%	61%
Vol Right, %	3%	23%	3%	35%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	322	375	470	126
LT Vol	131	20	33	5
Through Vol	181	267	422	77
RT Vol	10	88	15	44
Lane Flow Rate	350	408	511	137
Geometry Grp	1	1	1	1
Degree of Util (X)	0.761	0.843	1.079	0.33
Departure Headway (Hd)	8.172	7.754	7.602	9.118
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	445	469	475	397
Service Time	6.172	5.754	5.691	7.118
HCM Lane V/C Ratio	0.787	0.87	1.076	0.345
HCM Control Delay, s/veh	32.8	40.2	92.1	16.5
HCM Lane LOS	D	E	F	C
HCM 95th-tile Q	6.4	8.4	16.3	1.4

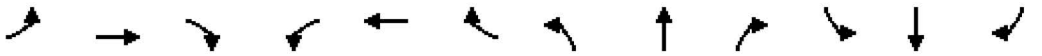
Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰	↑↑				↱			↱
Traffic Vol, veh/h	0	999	8	454	1970	0	0	0	289	0	0	0
Future Vol, veh/h	0	999	8	454	1970	0	0	0	289	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	Free	-	-	None
Storage Length	-	-	477	500	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	94	94	94	94	92	94	92	94	92	92	92
Heavy Vehicles, %	2	7	25	5	2	2	2	2	4	2	2	2
Mvmt Flow	0	1063	9	483	2096	0	0	0	307	0	0	0

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	0	1063	0	0			-	-	1048
Stage 1	-	-	-	-	-	-			-	-	-
Stage 2	-	-	-	-	-	-			-	-	-
Critical Hdwy	-	-	-	4.2	-	-			-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-			-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-			-	-	-
Follow-up Hdwy	-	-	-	2.25	-	-			-	-	3.32
Pot Cap-1 Maneuver	0	-	-	634	-	0			0	0	224
Stage 1	0	-	-	-	-	0			0	0	-
Stage 2	0	-	-	-	-	0			0	0	-
Platoon blocked, %		-	-		-						
Mov Cap-1 Maneuver	-	-	-	634	-	-			-	0	224
Mov Cap-2 Maneuver	-	-	-	-	-	-			-	0	-
Stage 1	-	-	-	-	-	-			-	0	-
Stage 2	-	-	-	-	-	-			-	0	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	4.97	0
HCM LOS			A

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	634	-	-
HCM Lane V/C Ratio	-	-	0.762	-	-
HCM Control Delay (s/veh)	-	-	26.5	-	0
HCM Lane LOS	-	-	D	-	A
HCM 95th %tile Q(veh)	-	-	7	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	289	743	289	482	908	339	333	638	287	302	566	72
Future Volume (veh/h)	289	743	289	482	908	339	333	638	287	302	566	72
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1826	1856	1870	1870	1841	1856	1841	1870	1841	1796
Adj Flow Rate, veh/h	298	766	0	497	936	0	343	658	0	311	584	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	6	6	5	3	2	2	4	3	4	2	4	7
Cap, veh/h	323	1247		539	1156		410	754		378	709	
Arrive On Green	0.19	0.36	0.00	0.16	0.33	0.00	0.12	0.21	0.00	0.11	0.20	0.00
Sat Flow, veh/h	1725	3441	1547	3428	3554	1585	3401	3526	1560	3456	3497	1522
Grp Volume(v), veh/h	298	766	0	497	936	0	343	658	0	311	584	0
Grp Sat Flow(s),veh/h/ln	1725	1721	1547	1714	1777	1585	1700	1763	1560	1728	1749	1522
Q Serve(g_s), s	23.8	25.6	0.0	20.0	33.8	0.0	13.8	25.3	0.0	12.3	22.4	0.0
Cycle Q Clear(g_c), s	23.8	25.6	0.0	20.0	33.8	0.0	13.8	25.3	0.0	12.3	22.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	323	1247		539	1156		410	754		378	709	
V/C Ratio(X)	0.92	0.61		0.92	0.81		0.84	0.87		0.82	0.82	
Avail Cap(c_a), veh/h	394	1247		539	1156		753	881		765	874	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	55.9	36.6	0.0	58.2	43.3	0.0	60.2	53.2	0.0	61.0	53.4	0.0
Incr Delay (d2), s/veh	24.2	2.3	0.0	21.6	6.2	0.0	4.6	8.6	0.0	4.5	5.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.3	10.9	0.0	10.1	15.4	0.0	6.2	12.1	0.0	5.7	10.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	80.0	38.9	0.0	79.7	49.5	0.0	64.8	61.8	0.0	65.6	58.8	0.0
LnGrp LOS	F	D		E	D		E	E		E	E	
Approach Vol, veh/h		1064			1433			1001			895	
Approach Delay, s/veh		50.4			60.0			62.8			61.1	
Approach LOS		D			E			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	27.0	56.8	21.9	34.4	32.2	51.5	20.3	35.9
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	6.0	* 6	5.0	6.0
Max Green Setting (Gmax), s	22.0	30.0	31.0	35.0	32.0	* 20	31.0	35.0
Max Q Clear Time (g_c+I1), s	22.0	27.6	15.8	24.4	25.8	35.8	14.3	27.3
Green Ext Time (p_c), s	0.0	1.1	1.1	2.9	0.5	0.0	1.0	2.7

Intersection Summary	
HCM 7th Control Delay, s/veh	58.5
HCM 7th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	347	13	332	0	321	0	937	425	0	971	0
Future Volume (veh/h)	24	347	13	332	0	321	0	937	425	0	971	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1856	1870	1870	0	1841	1870	0	1811	0
Adj Flow Rate, veh/h	25	358	13	342	0	331	0	966	0	0	1001	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	3	2	2	0	4	2	0	6	0
Cap, veh/h	64	390	14	369	0	603	0	1593		0	1568	0
Arrive On Green	0.04	0.22	0.22	0.21	0.00	0.38	0.00	0.46	0.00	0.00	0.46	0.00
Sat Flow, veh/h	1781	1793	65	1767	0	1585	0	3589	1585	0	3622	0
Grp Volume(v), veh/h	25	0	371	342	0	331	0	966	0	0	1001	0
Grp Sat Flow(s),veh/h/ln	1781	0	1858	1767	0	1585	0	1749	1585	0	1721	0
Q Serve(g_s), s	1.9	0.0	27.3	26.6	0.0	22.9	0.0	29.1	0.0	0.0	31.3	0.0
Cycle Q Clear(g_c), s	1.9	0.0	27.3	26.6	0.0	22.9	0.0	29.1	0.0	0.0	31.3	0.0
Prop In Lane	1.00		0.04	1.00		1.00	0.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	64	0	404	369	0	603	0	1593		0	1568	0
V/C Ratio(X)	0.39	0.00	0.92	0.93	0.00	0.55	0.00	0.61		0.00	0.64	0.00
Avail Cap(c_a), veh/h	76	0	464	461	0	742	0	1593		0	1568	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	66.0	0.0	53.6	54.3	0.0	34.0	0.0	28.7	0.0	0.0	29.3	0.0
Incr Delay (d2), s/veh	3.9	0.0	21.6	21.9	0.0	0.8	0.0	1.7	0.0	0.0	2.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	15.3	14.2	0.0	9.1	0.0	12.6	0.0	0.0	13.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	69.9	0.0	75.1	76.2	0.0	34.8	0.0	30.4	0.0	0.0	31.3	0.0
LnGrp LOS	E		E	E		C		C			C	
Approach Vol, veh/h		396			673			966			1001	
Approach Delay, s/veh		74.8			55.8			30.4			31.3	
Approach LOS		E			E			C			C	

Timer - Assigned Phs	2	3	4	6	7	8
Phs Duration (G+Y+Rc), s	69.8	33.8	36.5	69.8	11.0	59.2
Change Period (Y+Rc), s	6.0	4.5	6.0	6.0	6.0	* 6
Max Green Setting (Gmax), s	52.0	36.5	35.0	52.0	6.0	* 66
Max Q Clear Time (g_c+I1), s	31.1	28.6	29.3	33.3	3.9	24.9
Green Ext Time (p_c), s	7.2	0.7	1.1	7.1	0.0	2.7

Intersection Summary	
HCM 7th Control Delay, s/veh	42.1
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	263	318	49	131	225	264	98	166	115	214	168	163
Future Volume (veh/h)	263	318	49	131	225	264	98	166	115	214	168	163
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	277	335	40	138	237	64	103	175	20	225	177	40
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	539	793	94	466	485	128	447	299	253	482	420	355
Arrive On Green	0.16	0.25	0.25	0.09	0.17	0.17	0.08	0.16	0.16	0.14	0.22	0.22
Sat Flow, veh/h	1781	3198	379	1781	2777	733	1781	1870	1579	1781	1870	1581
Grp Volume(v), veh/h	277	185	190	138	150	151	103	175	20	225	177	40
Grp Sat Flow(s),veh/h/ln	1781	1777	1801	1781	1777	1734	1781	1870	1579	1781	1870	1581
Q Serve(g_s), s	5.9	4.4	4.4	3.1	3.8	3.9	2.3	4.3	0.5	4.9	4.0	1.0
Cycle Q Clear(g_c), s	5.9	4.4	4.4	3.1	3.8	3.9	2.3	4.3	0.5	4.9	4.0	1.0
Prop In Lane	1.00		0.21	1.00		0.42	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	539	441	446	466	310	303	447	299	253	482	420	355
V/C Ratio(X)	0.51	0.42	0.43	0.30	0.48	0.50	0.23	0.58	0.08	0.47	0.42	0.11
Avail Cap(c_a), veh/h	800	1975	2001	857	1975	1927	864	1329	1122	784	1329	1124
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.4	15.8	15.8	14.6	18.6	18.6	15.5	19.4	17.8	13.7	16.6	15.4
Incr Delay (d2), s/veh	0.8	0.6	0.6	0.4	1.2	1.3	0.3	1.8	0.1	0.7	0.7	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	1.6	1.7	1.1	1.5	1.5	0.9	1.9	0.2	1.8	1.7	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	13.1	16.4	16.4	15.0	19.7	19.9	15.7	21.2	18.0	14.4	17.2	15.5
LnGrp LOS	B	B	B	B	B	B	B	C	B	B	B	B
Approach Vol, veh/h		652			439			298			442	
Approach Delay, s/veh		15.0			18.3			19.1			15.6	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.5	12.5	9.0	16.9	8.3	15.7	12.7	13.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	15.5	35.5	15.5	55.5	15.5	35.5	15.5	55.5
Max Q Clear Time (g_c+I1), s	6.9	6.3	5.1	6.4	4.3	6.0	7.9	5.9
Green Ext Time (p_c), s	0.4	1.1	0.2	2.4	0.2	1.2	0.5	1.9

Intersection Summary	
HCM 7th Control Delay, s/veh	16.6
HCM 7th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	1	385	0	105	0	1156	437	97	1104	1
Future Volume (veh/h)	0	0	1	385	0	105	0	1156	437	97	1104	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	418	1841	1870	1811	1870	1841	1826	1796	1856	418
Adj Flow Rate, veh/h	0	0	0	405	0	0	0	1217	0	102	1162	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	100	4	2	6	2	4	5	7	3	100
Cap, veh/h	0	3	0	598	0		3	1749		132	2390	2
Arrive On Green	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.50	0.00	0.08	0.66	0.66
Sat Flow, veh/h	0	1870	0	3506	0	1535	1781	3497	1547	1711	3615	3
Grp Volume(v), veh/h	0	0	0	405	0	0	0	1217	0	102	567	596
Grp Sat Flow(s),veh/h/ln	0	1870	0	1753	0	1535	1781	1749	1547	1711	1763	1855
Q Serve(g_s), s	0.0	0.0	0.0	5.8	0.0	0.0	0.0	14.3	0.0	3.1	8.6	8.6
Cycle Q Clear(g_c), s	0.0	0.0	0.0	5.8	0.0	0.0	0.0	14.3	0.0	3.1	8.6	8.6
Prop In Lane	0.00		0.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	3	0	598	0		3	1749		132	1166	1227
V/C Ratio(X)	0.00	0.00	0.00	0.68	0.00		0.00	0.70		0.77	0.49	0.49
Avail Cap(c_a), veh/h	0	891	0	1671	0		516	3627		495	1828	1924
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	20.8	0.0	0.0	0.0	10.3	0.0	24.2	4.5	4.5
Incr Delay (d2), s/veh	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.5	0.0	9.2	0.3	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	2.3	0.0	0.0	0.0	3.7	0.0	1.5	1.9	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	0.0	22.2	0.0	0.0	0.0	10.8	0.0	33.5	4.8	4.8
LnGrp LOS				C				B		C	A	A
Approach Vol, veh/h		0			405			1217			1265	
Approach Delay, s/veh		0.0			22.2			10.8			7.1	
Approach LOS					C			B			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.6	31.3		0.0	0.0	39.9		13.6				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	15.5	55.5		25.5	15.5	55.5		25.5				
Max Q Clear Time (g_c+I1), s	5.1	16.3		0.0	0.0	10.6		7.8				
Green Ext Time (p_c), s	0.2	10.5		0.0	0.0	10.3		1.4				

Intersection Summary		
HCM 7th Control Delay, s/veh	10.8	
HCM 7th LOS	B	

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	30.2
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	55	415	70	4	278	12	66	90	6	40	126	38
Future Vol, veh/h	55	415	70	4	278	12	66	90	6	40	126	38
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	4	2	2	4	2	6	3	2	2	3	2
Mvmt Flow	58	437	74	4	293	13	69	95	6	42	133	40
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	47.5	17.4	14.4	15.2
HCM LOS	E	C	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	41%	10%	1%	20%
Vol Thru, %	56%	77%	95%	62%
Vol Right, %	4%	13%	4%	19%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	162	540	294	204
LT Vol	66	55	4	40
Through Vol	90	415	278	126
RT Vol	6	70	12	38
Lane Flow Rate	171	568	309	215
Geometry Grp	1	1	1	1
Degree of Util (X)	0.349	0.939	0.556	0.42
Departure Headway (Hd)	7.376	5.948	6.47	7.037
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	484	608	554	509
Service Time	5.47	4.01	4.548	5.123
HCM Lane V/C Ratio	0.353	0.934	0.558	0.422
HCM Control Delay, s/veh	14.4	47.5	17.4	15.2
HCM Lane LOS	B	E	C	C
HCM 95th-tile Q	1.5	12.4	3.4	2.1

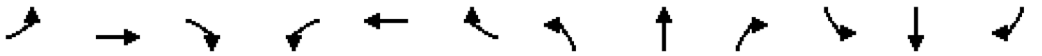
Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰	↑↑				↱			↱
Traffic Vol, veh/h	0	1829	16	262	1324	0	0	0	460	0	0	0
Future Vol, veh/h	0	1829	16	262	1324	0	0	0	460	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	Free	-	-	None
Storage Length	-	-	477	500	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	2	2	6	3	2	2	2	2	2	2	2	2
Mvmt Flow	0	1866	16	267	1351	0	0	0	469	0	0	0

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	0	1866	0	0			-	-	676
Stage 1	-	-	-	-	-	-			-	-	-
Stage 2	-	-	-	-	-	-			-	-	-
Critical Hdwy	-	-	-	4.16	-	-			-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-			-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-			-	-	-
Follow-up Hdwy	-	-	-	2.23	-	-			-	-	3.32
Pot Cap-1 Maneuver	0	-	-	315	-	0			0	0	396
Stage 1	0	-	-	-	-	0			0	0	-
Stage 2	0	-	-	-	-	0			0	0	-
Platoon blocked, %		-	-		-						
Mov Cap-1 Maneuver	-	-	-	315	-	-			-	0	396
Mov Cap-2 Maneuver	-	-	-	-	-	-			-	0	-
Stage 1	-	-	-	-	-	-			-	0	-
Stage 2	-	-	-	-	-	-			-	0	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	9.36	0
HCM LOS			A

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	315	-	-
HCM Lane V/C Ratio	-	-	0.848	-	-
HCM Control Delay (s/veh)	-	-	56.6	-	0
HCM Lane LOS	-	-	F	-	A
HCM 95th %tile Q(veh)	-	-	7.5	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	900	340	190	670	280	250	690	310	310	750	130
Future Volume (veh/h)	110	900	340	190	670	280	250	690	310	310	750	130
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1796	1781	1707	1693	1870	1737	1841	1752	1870	1826	1826
Adj Flow Rate, veh/h	117	957	0	202	713	0	266	734	0	330	798	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	4	7	8	13	14	2	11	4	10	2	5	5
Cap, veh/h	141	1301		248	1220		321	912		381	940	
Arrive On Green	0.08	0.38	0.00	0.08	0.38	0.00	0.03	0.09	0.00	0.11	0.27	0.00
Sat Flow, veh/h	1753	3413	1510	3155	3216	1585	3209	3497	1485	3456	3469	1547
Grp Volume(v), veh/h	117	957	0	202	713	0	266	734	0	330	798	0
Grp Sat Flow(s),veh/h/ln	1753	1706	1510	1577	1608	1585	1605	1749	1485	1728	1735	1547
Q Serve(g_s), s	8.5	31.3	0.0	8.2	23.0	0.0	10.7	26.8	0.0	12.2	28.3	0.0
Cycle Q Clear(g_c), s	8.5	31.3	0.0	8.2	23.0	0.0	10.7	26.8	0.0	12.2	28.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	141	1301		248	1220		321	912		381	940	
V/C Ratio(X)	0.83	0.74		0.81	0.58		0.83	0.80		0.87	0.85	
Avail Cap(c_a), veh/h	175	1301		267	1220		395	1238		399	1201	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.65	0.65	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	58.9	34.6	0.0	58.9	32.2	0.0	61.7	56.2	0.0	56.9	44.9	0.0
Incr Delay (d2), s/veh	23.0	3.7	0.0	16.3	2.0	0.0	7.8	1.9	0.0	17.4	4.8	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	13.2	0.0	3.8	9.0	0.0	5.0	12.9	0.0	6.3	12.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	81.9	38.3	0.0	75.3	34.2	0.0	69.5	58.0	0.0	74.3	49.7	0.0
LnGrp LOS	F	D		E	C		E	E		E	D	
Approach Vol, veh/h		1074			915			1000			1128	
Approach Delay, s/veh		43.1			43.3			61.1			56.9	
Approach LOS		D			D			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.2	55.5	18.0	41.2	15.4	55.3	19.3	39.9
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	11.0	36.0	16.0	45.0	13.0	34.0	15.0	46.0
Max Q Clear Time (g_c+I1), s	10.2	33.3	12.7	30.3	10.5	25.0	14.2	28.8
Green Ext Time (p_c), s	0.1	1.5	0.3	4.9	0.1	3.0	0.1	4.8

Intersection Summary	
HCM 7th Control Delay, s/veh	51.3
HCM 7th LOS	D

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	340	20	250	0	300	0	980	340	0	920	0
Future Volume (veh/h)	50	340	20	250	0	300	0	980	340	0	920	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1856	1870	1781	1870	1841	0	1781	1856	0	1737	0
Adj Flow Rate, veh/h	54	366	22	269	0	323	0	1054	0	0	989	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	3	2	8	2	4	0	8	3	0	11	0
Cap, veh/h	81	399	24	296	0	551	0	1585		0	1546	0
Arrive On Green	0.05	0.23	0.23	0.17	0.00	0.35	0.00	0.47	0.00	0.00	0.31	0.00
Sat Flow, veh/h	1781	1733	104	1697	0	1585	0	3474	1572	0	3474	0
Grp Volume(v), veh/h	54	0	388	269	0	323	0	1054	0	0	989	0
Grp Sat Flow(s),veh/h/ln	1781	0	1837	1697	0	1585	0	1692	1572	0	1650	0
Q Serve(g_s), s	3.9	0.0	26.8	20.2	0.0	21.7	0.0	31.3	0.0	0.0	33.4	0.0
Cycle Q Clear(g_c), s	3.9	0.0	26.8	20.2	0.0	21.7	0.0	31.3	0.0	0.0	33.4	0.0
Prop In Lane	1.00		0.06	1.00		1.00	0.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	81	0	423	296	0	551	0	1585		0	1546	0
V/C Ratio(X)	0.67	0.00	0.92	0.91	0.00	0.59	0.00	0.66		0.00	0.64	0.00
Avail Cap(c_a), veh/h	123	0	480	385	0	665	0	1585		0	1546	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.67	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.62	0.00
Uniform Delay (d), s/veh	61.1	0.0	48.8	52.6	0.0	34.7	0.0	26.7	0.0	0.0	35.2	0.0
Incr Delay (d2), s/veh	9.1	0.0	21.2	21.0	0.0	1.0	0.0	2.2	0.0	0.0	1.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	14.8	10.4	0.0	8.6	0.0	13.0	0.0	0.0	14.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	70.2	0.0	70.0	73.6	0.0	35.7	0.0	28.9	0.0	0.0	36.5	0.0
LnGrp LOS	E		E	E		D		C			D	
Approach Vol, veh/h		442			592			1054			989	
Approach Delay, s/veh		70.0			52.9			28.9			36.5	
Approach LOS		E			D			C			D	

Timer - Assigned Phs	2	3	4		6	7	8
Phs Duration (G+Y+Rc), s	66.9	27.2	35.9		66.9	11.9	51.2
Change Period (Y+Rc), s	6.0	4.5	6.0		6.0	6.0	* 6
Max Green Setting (Gmax), s	50.0	29.5	34.0		50.0	9.0	* 55
Max Q Clear Time (g_c+I1), s	33.3	22.2	28.8		35.4	5.9	23.7
Green Ext Time (p_c), s	7.2	0.5	1.1		6.2	0.0	2.5

Intersection Summary	
HCM 7th Control Delay, s/veh	41.9
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	200	270	70	160	260	270	100	190	70	240	200	150
Future Volume (veh/h)	200	270	70	160	260	270	100	190	70	240	200	150
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1856	1870	1870	1870	1841	1856	1870	1870	1856	1826	1870
Adj Flow Rate, veh/h	211	284	42	168	274	58	105	200	15	253	211	39
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	3	2	2	2	4	3	2	2	3	5	2
Cap, veh/h	439	561	82	441	527	110	466	381	319	505	464	399
Arrive On Green	0.11	0.18	0.18	0.10	0.18	0.18	0.08	0.20	0.20	0.13	0.25	0.25
Sat Flow, veh/h	1781	3084	451	1781	2926	610	1767	1870	1566	1767	1826	1570
Grp Volume(v), veh/h	211	161	165	168	165	167	105	200	15	253	211	39
Grp Sat Flow(s),veh/h/ln	1781	1763	1773	1781	1777	1758	1767	1870	1566	1767	1826	1570
Q Serve(g_s), s	4.5	3.9	4.0	3.5	4.0	4.1	2.1	4.5	0.4	5.3	4.6	0.9
Cycle Q Clear(g_c), s	4.5	3.9	4.0	3.5	4.0	4.1	2.1	4.5	0.4	5.3	4.6	0.9
Prop In Lane	1.00		0.25	1.00		0.35	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	439	321	322	441	320	317	466	381	319	505	464	399
V/C Ratio(X)	0.48	0.50	0.51	0.38	0.51	0.53	0.23	0.52	0.05	0.50	0.46	0.10
Avail Cap(c_a), veh/h	439	1045	1051	444	1053	1042	513	1105	925	505	1121	964
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.9	17.4	17.4	13.6	17.5	17.5	13.0	16.8	15.1	12.5	14.9	13.5
Incr Delay (d2), s/veh	0.8	1.2	1.3	0.5	1.3	1.4	0.2	1.1	0.1	0.8	0.7	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	1.5	1.5	1.3	1.5	1.6	0.8	1.9	0.1	1.9	1.8	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.7	18.6	18.7	14.1	18.8	18.9	13.2	17.9	15.2	13.3	15.6	13.6
LnGrp LOS	B	B	B	B	B	B	B	B	B	B	B	B
Approach Vol, veh/h		537			500			320			503	
Approach Delay, s/veh		17.1			17.3			16.2			14.3	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.6	14.1	9.4	13.1	8.2	16.5	9.5	13.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	6.1	27.9	5.0	28.0	5.0	29.0	5.0	28.0
Max Q Clear Time (g_c+I1), s	7.3	6.5	5.5	6.0	4.1	6.6	6.5	6.1
Green Ext Time (p_c), s	0.0	1.2	0.0	1.9	0.0	1.4	0.0	1.9

Intersection Summary	
HCM 7th Control Delay, s/veh	16.2
HCM 7th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	380	110	260	580	60	170	30	150	40	10	20
Future Volume (veh/h)	20	380	110	260	580	60	170	30	150	40	10	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	0.98		0.99	0.98		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	922	1870	1737	1811	1870	1781	1811	1411	1737	1663	1870	1870
Adj Flow Rate, veh/h	21	400	81	274	611	55	179	32	36	42	11	3
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	66	2	11	6	2	8	6	33	11	16	2	2
Cap, veh/h	240	690	138	473	1123	101	535	135	152	411	236	64
Arrive On Green	0.03	0.23	0.23	0.13	0.34	0.34	0.10	0.22	0.22	0.04	0.17	0.17
Sat Flow, veh/h	878	2944	591	1725	3296	296	1725	601	676	1584	1408	384
Grp Volume(v), veh/h	21	240	241	274	329	337	179	0	68	42	0	14
Grp Sat Flow(s),veh/h/ln	878	1777	1758	1725	1777	1815	1725	0	1277	1584	0	1792
Q Serve(g_s), s	0.9	5.9	6.0	5.5	7.4	7.4	4.1	0.0	2.2	1.1	0.0	0.3
Cycle Q Clear(g_c), s	0.9	5.9	6.0	5.5	7.4	7.4	4.1	0.0	2.2	1.1	0.0	0.3
Prop In Lane	1.00		0.34	1.00		0.16	1.00		0.53	1.00		0.21
Lane Grp Cap(c), veh/h	240	417	412	473	606	619	535	0	287	411	0	301
V/C Ratio(X)	0.09	0.58	0.58	0.58	0.54	0.54	0.33	0.00	0.24	0.10	0.00	0.05
Avail Cap(c_a), veh/h	307	990	980	473	1044	1067	535	0	725	502	0	1017
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.9	16.7	16.8	11.3	13.2	13.2	14.5	0.0	15.7	15.7	0.0	17.2
Incr Delay (d2), s/veh	0.2	1.3	1.3	1.8	0.8	0.7	0.4	0.0	0.4	0.1	0.0	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	2.2	2.2	1.9	2.5	2.6	1.5	0.0	0.6	0.4	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.1	18.0	18.1	13.0	13.9	13.9	14.8	0.0	16.1	15.8	0.0	17.3
LnGrp LOS	B	B	B	B	B	B	B		B	B		B
Approach Vol, veh/h		502			940			247			56	
Approach Delay, s/veh		17.9			13.7			15.2			16.2	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.8	21.3	9.5	12.8	11.0	16.1	6.7	15.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.6	29.0	5.0	28.0	6.5	27.5	5.0	28.0
Max Q Clear Time (g_c+I1), s	2.9	9.4	6.1	2.3	7.5	8.0	3.1	4.2
Green Ext Time (p_c), s	0.0	3.9	0.0	0.0	0.0	2.7	0.0	0.3

Intersection Summary	
HCM 7th Control Delay, s/veh	15.2
HCM 7th LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1010	420	520	1960	330	240
Future Volume (veh/h)	1010	420	520	1960	330	240
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
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	No	
Adj Sat Flow, veh/h/ln	1796	1781	1870	1856	1826	1856
Adj Flow Rate, veh/h	1063	0	547	2063	347	27
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	7	8	2	3	5	3
Cap, veh/h	1433		679	2461	467	383
Arrive On Green	0.42	0.00	0.20	0.70	0.14	0.14
Sat Flow, veh/h	3503	1510	3456	3618	3374	2768
Grp Volume(v), veh/h	1063	0	547	2063	347	27
Grp Sat Flow(s),veh/h/ln	1706	1510	1728	1763	1687	1384
Q Serve(g_s), s	14.5	0.0	8.3	23.4	5.4	0.5
Cycle Q Clear(g_c), s	14.5	0.0	8.3	23.4	5.4	0.5
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1433		679	2461	467	383
V/C Ratio(X)	0.74		0.81	0.84	0.74	0.07
Avail Cap(c_a), veh/h	1562		784	2701	539	442
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.5	0.0	21.1	6.0	22.8	20.6
Incr Delay (d2), s/veh	1.8	0.0	5.4	2.3	4.7	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	4.5	0.0	3.4	3.5	2.3	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	15.2	0.0	26.6	8.4	27.5	20.7
LnGrp LOS	B		C	A	C	C
Approach Vol, veh/h	1063			2610	374	
Approach Delay, s/veh	15.2			12.2	27.0	
Approach LOS	B			B	C	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	15.3	27.6		12.1		43.0
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s	12.5	25.2		8.8		42.2
Max Q Clear Time (g_c+I1), s	10.3	16.5		7.4		25.4
Green Ext Time (p_c), s	0.5	4.4		0.2		13.0

Intersection Summary	
HCM 7th Control Delay, s/veh	14.3
HCM 7th LOS	B

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	620	0	90	0	1270	410	130	1200	0
Future Volume (veh/h)	0	0	0	620	0	90	0	1270	410	130	1200	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1811	1870	1515	1870	1811	1752	1722	1752	0
Adj Flow Rate, veh/h	0	0	0	653	0	0	0	1337	0	137	1263	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	6	2	26	2	6	10	12	10	0
Cap, veh/h	0	3	0	805	0		2	1638		173	2141	0
Arrive On Green	0.00	0.00	0.00	0.23	0.00	0.00	0.00	0.48	0.00	0.11	0.64	0.00
Sat Flow, veh/h	0	1870	0	3450	0	1284	1781	3441	1485	1640	3416	0
Grp Volume(v), veh/h	0	0	0	653	0	0	0	1337	0	137	1263	0
Grp Sat Flow(s),veh/h/ln	0	1870	0	1725	0	1284	1781	1721	1485	1640	1664	0
Q Serve(g_s), s	0.0	0.0	0.0	13.0	0.0	0.0	0.0	24.2	0.0	5.9	15.9	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	13.0	0.0	0.0	0.0	24.2	0.0	5.9	15.9	0.0
Prop In Lane	0.00		0.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	3	0	805	0		2	1638		173	2141	0
V/C Ratio(X)	0.00	0.00	0.00	0.81	0.00		0.00	0.82		0.79	0.59	0.00
Avail Cap(c_a), veh/h	0	128	0	1208	0		122	2031		417	2582	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	26.4	0.0	0.0	0.0	16.3	0.0	31.8	7.5	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	2.6	0.0	0.0	0.0	2.2	0.0	8.0	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	5.4	0.0	0.0	0.0	8.2	0.0	2.7	4.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	0.0	29.0	0.0	0.0	0.0	18.6	0.0	39.8	7.7	0.0
LnGrp LOS				C				B		D	A	
Approach Vol, veh/h		0			653			1337			1400	
Approach Delay, s/veh		0.0			29.0			18.6			10.9	
Approach LOS					C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.2	39.2		0.0	0.0	51.4		21.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	18.5	43.0		5.0	5.0	56.5		25.5				
Max Q Clear Time (g_c+I1), s	7.9	26.2		0.0	0.0	17.9		15.0				
Green Ext Time (p_c), s	0.2	8.4		0.0	0.0	12.9		2.0				

Intersection Summary		
HCM 7th Control Delay, s/veh	17.4	
HCM 7th LOS	B	

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	13.4
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	485	600	421	179
Demand Flow Rate, veh/h	524	629	461	199
Vehicles Circulating, veh/h	185	472	408	798
Vehicles Exiting, veh/h	812	397	301	303
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	8.6	19.5	11.2	11.3
Approach LOS	A	C	B	B

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	524	629	461	199
Cap Entry Lane, veh/h	1143	853	910	611
Entry HV Adj Factor	0.925	0.954	0.914	0.902
Flow Entry, veh/h	485	600	421	179
Cap Entry, veh/h	1057	813	832	551
V/C Ratio	0.459	0.738	0.507	0.325
Control Delay, s/veh	8.6	19.5	11.2	11.3
LOS	A	C	B	B
95th %tile Queue, veh	2	7	3	1

Intersection	
Int Delay, s/veh	12.5

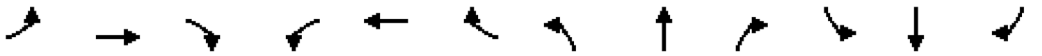
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰	↑↑				↱			↱
Traffic Vol, veh/h	0	1200	10	550	2360	0	0	0	350	0	0	0
Future Vol, veh/h	0	1200	10	550	2360	0	0	0	350	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	Free	-	-	None
Storage Length	-	-	477	500	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	7	25	5	2	2	2	2	4	2	2	2
Mvmt Flow	0	1263	11	579	2484	0	0	0	368	0	0	0

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	1263	0	0	-	-	1242
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.2	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.25	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	~ 530	-	0	0	0	166
Stage 1	0	-	-	-	-	0	0	0	-
Stage 2	0	-	-	-	-	0	0	0	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	~ 530	-	-	-	0	166
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	0	-
Stage 1	-	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	-	0	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	17.75	0
HCM LOS			A

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	~ 530	-	-
HCM Lane V/C Ratio	-	-	1.092	-	-
HCM Control Delay (s/veh)	-	-	93.9	-	0
HCM Lane LOS	-	-	F	-	A
HCM 95th %tile Q(veh)	-	-	18.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	340	880	340	570	1070	400	400	750	340	360	670	90
Future Volume (veh/h)	340	880	340	570	1070	400	400	750	340	360	670	90
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1826	1856	1870	1870	1841	1856	1841	1870	1841	1796
Adj Flow Rate, veh/h	351	907	0	588	1103	0	412	773	0	371	691	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	6	6	5	3	2	2	4	3	4	2	4	7
Cap, veh/h	333	1088		612	1073		463	849		370	741	
Arrive On Green	0.19	0.32	0.00	0.18	0.30	0.00	0.04	0.08	0.00	0.11	0.21	0.00
Sat Flow, veh/h	1725	3441	1547	3428	3554	1585	3401	3526	1560	3456	3497	1522
Grp Volume(v), veh/h	351	907	0	588	1103	0	412	773	0	371	691	0
Grp Sat Flow(s),veh/h/ln	1725	1721	1547	1714	1777	1585	1700	1763	1560	1728	1749	1522
Q Serve(g_s), s	27.0	34.3	0.0	23.8	42.3	0.0	16.9	30.5	0.0	15.0	27.2	0.0
Cycle Q Clear(g_c), s	27.0	34.3	0.0	23.8	42.3	0.0	16.9	30.5	0.0	15.0	27.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	333	1088		612	1073		463	849		370	741	
V/C Ratio(X)	1.06	0.83		0.96	1.03		0.89	0.91		1.00	0.93	
Avail Cap(c_a), veh/h	333	1088		612	1073		486	881		370	749	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.36	0.36	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	56.5	44.4	0.0	57.0	48.9	0.0	65.8	62.9	0.0	62.5	54.2	0.0
Incr Delay (d2), s/veh	64.6	7.5	0.0	26.8	34.9	0.0	7.4	5.5	0.0	47.3	18.4	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.4	15.3	0.0	12.3	23.3	0.0	8.2	15.2	0.0	9.0	13.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	121.1	52.0	0.0	83.8	83.7	0.0	73.2	68.4	0.0	109.8	72.6	0.0
LnGrp LOS	F	D		F	F		E	E		F	E	
Approach Vol, veh/h		1258			1691			1185			1062	
Approach Delay, s/veh		71.3			83.7			70.1			85.6	
Approach LOS		E			F			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.0	50.3	24.1	35.7	32.0	48.3	20.0	39.7
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	25.0	43.0	20.0	30.0	27.0	41.0	15.0	35.0
Max Q Clear Time (g_c+I1), s	25.8	36.3	18.9	29.2	29.0	44.3	17.0	32.5
Green Ext Time (p_c), s	0.0	3.1	0.2	0.4	0.0	0.0	0.0	1.3

Intersection Summary	
HCM 7th Control Delay, s/veh	78.0
HCM 7th LOS	E

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	480	20	460	0	450	0	1100	590	0	1140	0
Future Volume (veh/h)	30	480	20	460	0	450	0	1100	590	0	1140	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1856	1870	1870	0	1841	1870	0	1811	0
Adj Flow Rate, veh/h	31	495	21	474	0	464	0	1134	0	0	1175	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	3	2	2	0	4	2	0	6	0
Cap, veh/h	64	445	19	442	0	736	0	1299		0	1278	0
Arrive On Green	0.04	0.25	0.25	0.25	0.00	0.46	0.00	0.37	0.00	0.00	0.12	0.00
Sat Flow, veh/h	1781	1781	76	1767	0	1585	0	3589	1585	0	3622	0
Grp Volume(v), veh/h	31	0	516	474	0	464	0	1134	0	0	1175	0
Grp Sat Flow(s),veh/h/ln	1781	0	1857	1767	0	1585	0	1749	1585	0	1721	0
Q Serve(g_s), s	2.4	0.0	35.0	35.0	0.0	31.0	0.0	42.2	0.0	0.0	47.3	0.0
Cycle Q Clear(g_c), s	2.4	0.0	35.0	35.0	0.0	31.0	0.0	42.2	0.0	0.0	47.3	0.0
Prop In Lane	1.00		0.04	1.00		1.00	0.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	64	0	464	442	0	736	0	1299		0	1278	0
V/C Ratio(X)	0.49	0.00	1.11	1.07	0.00	0.63	0.00	0.87		0.00	0.92	0.00
Avail Cap(c_a), veh/h	76	0	464	442	0	736	0	1299		0	1278	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.39	0.00
Uniform Delay (d), s/veh	66.2	0.0	52.5	52.5	0.0	28.4	0.0	40.9	0.0	0.0	59.3	0.0
Incr Delay (d2), s/veh	5.7	0.0	75.8	63.7	0.0	1.7	0.0	8.3	0.0	0.0	5.4	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	26.2	23.4	0.0	12.3	0.0	19.6	0.0	0.0	22.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	71.9	0.0	128.3	116.2	0.0	30.1	0.0	49.2	0.0	0.0	64.8	0.0
LnGrp LOS	E		F	F		C		D			E	
Approach Vol, veh/h		547			938			1134			1175	
Approach Delay, s/veh		125.1			73.6			49.2			64.8	
Approach LOS		F			E			D			E	

Timer - Assigned Phs	2	3	4	6	7	8
Phs Duration (G+Y+Rc), s	58.0	41.0	41.0	58.0	11.0	71.0
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	52.0	35.0	35.0	52.0	6.0	64.0
Max Q Clear Time (g_c+I1), s	44.2	37.0	37.0	49.3	4.4	33.0
Green Ext Time (p_c), s	4.6	0.0	0.0	1.9	0.0	3.9

Intersection Summary	
HCM 7th Control Delay, s/veh	71.0
HCM 7th LOS	E

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	380	460	70	190	330	380	140	240	170	310	240	240
Future Volume (veh/h)	380	460	70	190	330	380	140	240	170	310	240	240
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	400	484	61	200	347	164	147	253	28	326	253	60
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	518	951	119	450	511	237	392	337	285	439	492	416
Arrive On Green	0.20	0.30	0.30	0.11	0.22	0.22	0.08	0.18	0.18	0.16	0.26	0.26
Sat Flow, veh/h	1781	3176	399	1781	2353	1092	1781	1870	1580	1781	1870	1581
Grp Volume(v), veh/h	400	270	275	200	260	251	147	253	28	326	253	60
Grp Sat Flow(s),veh/h/ln	1781	1777	1797	1781	1777	1668	1781	1870	1580	1781	1870	1581
Q Serve(g_s), s	11.7	9.1	9.2	6.1	9.7	10.0	4.8	9.3	1.1	10.3	8.4	2.1
Cycle Q Clear(g_c), s	11.7	9.1	9.2	6.1	9.7	10.0	4.8	9.3	1.1	10.3	8.4	2.1
Prop In Lane	1.00		0.22	1.00		0.65	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	518	532	538	450	386	362	392	337	285	439	492	416
V/C Ratio(X)	0.77	0.51	0.51	0.44	0.68	0.69	0.38	0.75	0.10	0.74	0.51	0.14
Avail Cap(c_a), veh/h	585	819	828	555	711	668	392	635	536	439	790	668
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.3	21.0	21.0	18.4	26.0	26.1	21.9	28.2	24.8	19.0	22.8	20.5
Incr Delay (d2), s/veh	5.7	0.7	0.8	0.7	2.1	2.4	0.6	3.4	0.1	6.7	0.8	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	3.7	3.8	2.5	4.1	4.0	2.0	4.4	0.4	4.8	3.7	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	22.0	21.7	21.7	19.1	28.1	28.5	22.5	31.5	24.9	25.7	23.6	20.6
LnGrp LOS	C	C	C	B	C	C	C	C	C	C	C	C
Approach Vol, veh/h		945			711			428			639	
Approach Delay, s/veh		21.8			25.7			28.0			24.4	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.0	17.6	12.7	26.2	10.0	23.6	18.7	20.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	11.5	24.6	12.5	33.4	5.5	30.6	16.9	29.0
Max Q Clear Time (g_c+I1), s	12.3	11.3	8.1	11.2	6.8	10.4	13.7	12.0
Green Ext Time (p_c), s	0.0	1.3	0.2	3.4	0.0	1.7	0.4	2.9

Intersection Summary	
HCM 7th Control Delay, s/veh	24.4
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	760	220	460	530	60	220	30	150	120	30	10
Future Volume (veh/h)	20	760	220	460	530	60	220	30	150	120	30	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	0.98		0.97	0.98		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1411	1870	1870	1870	1870	1781	1870	1870	1856	1870	1870	1870
Adj Flow Rate, veh/h	21	800	208	484	558	57	232	32	12	126	32	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	33	2	2	2	2	8	2	2	3	2	2	2
Cap, veh/h	335	956	249	534	1768	180	372	167	63	360	241	0
Arrive On Green	0.02	0.34	0.34	0.22	0.54	0.54	0.07	0.13	0.13	0.07	0.13	0.00
Sat Flow, veh/h	1344	2776	722	1781	3255	332	1781	1286	482	1781	1870	0
Grp Volume(v), veh/h	21	512	496	484	304	311	232	0	44	126	32	0
Grp Sat Flow(s),veh/h/ln	1344	1777	1721	1781	1777	1810	1781	0	1769	1781	1870	0
Q Serve(g_s), s	0.8	20.4	20.4	14.1	7.2	7.3	5.4	0.0	1.7	4.7	1.2	0.0
Cycle Q Clear(g_c), s	0.8	20.4	20.4	14.1	7.2	7.3	5.4	0.0	1.7	4.7	1.2	0.0
Prop In Lane	1.00		0.42	1.00		0.18	1.00		0.27	1.00		0.00
Lane Grp Cap(c), veh/h	335	612	593	534	965	983	372	0	230	360	241	0
V/C Ratio(X)	0.06	0.84	0.84	0.91	0.32	0.32	0.62	0.00	0.19	0.35	0.13	0.00
Avail Cap(c_a), veh/h	391	715	692	664	1124	1145	372	0	647	360	682	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	15.6	23.2	23.2	17.5	9.7	9.7	29.1	0.0	29.8	26.6	29.7	0.0
Incr Delay (d2), s/veh	0.1	7.6	7.8	14.1	0.2	0.2	3.2	0.0	0.4	0.6	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	9.1	8.9	7.0	2.5	2.5	4.3	0.0	0.7	2.0	0.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	15.7	30.8	31.0	31.7	9.9	9.9	32.3	0.0	30.2	27.2	29.9	0.0
LnGrp LOS	B	C	C	C	A	A	C		C	C	C	
Approach Vol, veh/h		1029			1099			276			158	
Approach Delay, s/veh		30.6			19.5			32.0			27.7	
Approach LOS		C			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.3	46.2	9.9	14.4	21.6	31.0	9.8	14.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.8	48.6	5.4	28.0	22.7	30.9	5.3	28.1
Max Q Clear Time (g_c+I1), s	2.8	9.3	7.4	3.2	16.1	22.4	6.7	3.7
Green Ext Time (p_c), s	0.0	4.0	0.0	0.1	0.9	4.1	0.0	0.2

Intersection Summary	
HCM 7th Control Delay, s/veh	25.8
HCM 7th LOS	C



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1610	670	400	1290	550	660
Future Volume (veh/h)	1610	670	400	1290	550	660
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
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	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1856	1870	1870
Adj Flow Rate, veh/h	1695	0	421	1358	579	681
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	3	2	2
Cap, veh/h	1815		471	2481	632	890
Arrive On Green	0.51	0.00	0.14	0.70	0.18	0.18
Sat Flow, veh/h	3647	1585	3456	3618	3456	2790
Grp Volume(v), veh/h	1695	0	421	1358	579	681
Grp Sat Flow(s),veh/h/ln	1777	1585	1728	1763	1728	1395
Q Serve(g_s), s	35.4	0.0	9.5	14.7	13.0	14.5
Cycle Q Clear(g_c), s	35.4	0.0	9.5	14.7	13.0	14.5
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1815		471	2481	632	890
V/C Ratio(X)	0.93		0.89	0.55	0.92	0.77
Avail Cap(c_a), veh/h	1846		471	2512	632	890
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.1	0.0	33.7	5.7	31.8	24.3
Incr Delay (d2), s/veh	9.3	0.0	19.3	0.2	18.3	4.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.1	0.0	5.0	3.4	6.8	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	27.4	0.0	53.0	5.9	50.1	28.3
LnGrp LOS	C		D	A	D	C
Approach Vol, veh/h	1695			1779	1260	
Approach Delay, s/veh	27.4			17.0	38.3	
Approach LOS	C			B	D	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	15.3	45.0		19.0		60.3
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s	10.8	41.2		14.5		56.5
Max Q Clear Time (g_c+I1), s	11.5	37.4		16.5		16.7
Green Ext Time (p_c), s	0.0	3.1		0.0		12.4

Intersection Summary	
HCM 7th Control Delay, s/veh	26.4
HCM 7th LOS	C

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	10	470	0	130	0	1390	530	120	1330	10
Future Volume (veh/h)	0	0	10	470	0	130	0	1390	530	120	1330	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	418	1841	1870	1811	1870	1841	1826	1796	1856	418
Adj Flow Rate, veh/h	0	0	0	495	0	0	0	1463	0	126	1400	11
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	100	4	2	6	2	4	5	7	3	100
Cap, veh/h	0	3	0	645	0		2	1882		163	2489	20
Arrive On Green	0.00	0.00	0.00	0.18	0.00	0.00	0.00	0.54	0.00	0.10	0.69	0.69
Sat Flow, veh/h	0	1870	0	3506	0	1535	1781	3497	1547	1711	3585	28
Grp Volume(v), veh/h	0	0	0	495	0	0	0	1463	0	126	688	723
Grp Sat Flow(s),veh/h/ln	0	1870	0	1753	0	1535	1781	1749	1547	1711	1763	1850
Q Serve(g_s), s	0.0	0.0	0.0	9.9	0.0	0.0	0.0	24.6	0.0	5.3	14.5	14.5
Cycle Q Clear(g_c), s	0.0	0.0	0.0	9.9	0.0	0.0	0.0	24.6	0.0	5.3	14.5	14.5
Prop In Lane	0.00		0.00	1.00		1.00	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	0	3	0	645	0		2	1882		163	1224	1285
V/C Ratio(X)	0.00	0.00	0.00	0.77	0.00		0.00	0.78		0.77	0.56	0.56
Avail Cap(c_a), veh/h	0	126	0	1351	0		120	2838		659	1991	2090
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	28.7	0.0	0.0	0.0	13.6	0.0	32.7	5.7	5.7
Incr Delay (d2), s/veh	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.8	0.0	7.5	0.4	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	4.2	0.0	0.0	0.0	7.6	0.0	2.5	4.0	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	0.0	30.6	0.0	0.0	0.0	14.4	0.0	40.2	6.1	6.1
LnGrp LOS				C				B		D	A	A
Approach Vol, veh/h		0			495			1463			1537	
Approach Delay, s/veh		0.0			30.6			14.4			8.9	
Approach LOS					C			B			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.5	44.3		0.0	0.0	55.8		18.1				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	28.5	60.0		5.0	5.0	83.5		28.5				
Max Q Clear Time (g_c+I1), s	7.3	26.6		0.0	0.0	16.5		11.9				
Green Ext Time (p_c), s	0.3	13.2		0.0	0.0	15.5		1.7				

Intersection Summary	
HCM 7th Control Delay, s/veh	14.2
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	10.5
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	695	390	211	274
Demand Flow Rate, veh/h	719	404	219	281
Vehicles Circulating, veh/h	238	283	676	472
Vehicles Exiting, veh/h	515	612	281	215
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	13.3	7.9	9.5	8.1
Approach LOS	B	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	719	404	219	281
Cap Entry Lane, veh/h	1082	1034	692	853
Entry HV Adj Factor	0.967	0.965	0.961	0.975
Flow Entry, veh/h	695	390	211	274
Cap Entry, veh/h	1046	997	666	831
V/C Ratio	0.664	0.391	0.316	0.330
Control Delay, s/veh	13.3	7.9	9.5	8.1
LOS	B	A	A	A
95th %tile Queue, veh	5	2	1	1

Intersection	
Int Delay, s/veh	25.6

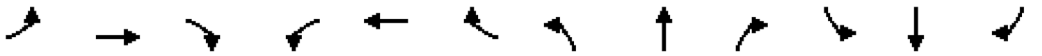
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰	↑↑				↱			↱
Traffic Vol, veh/h	0	2190	20	320	1590	0	0	0	560	0	0	0
Future Vol, veh/h	0	2190	20	320	1590	0	0	0	560	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	Free	-	-	None
Storage Length	-	-	477	500	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	6	3	2	2	2	2	2	2	2	2
Mvmt Flow	0	2305	21	337	1674	0	0	0	589	0	0	0

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	2305	0	0	-	-	837
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.16	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.23	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	~ 211	-	0	0	0	310
Stage 1	0	-	-	-	-	0	0	0	-
Stage 2	0	-	-	-	-	0	0	0	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	~ 211	-	-	-	0	310
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	0	-
Stage 1	-	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	-	0	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	55.16	0
HCM LOS			A

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	~ 211	-	-
HCM Lane V/C Ratio	-	-	1.594	-	-
HCM Control Delay (s/veh)	-	-	$ 329.2	-	0
HCM Lane LOS	-	-	F	-	A
HCM 95th %tile Q(veh)	-	-	21.6	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	920	401	194	678	280	320	753	314	310	815	130
Future Volume (veh/h)	110	920	401	194	678	280	320	753	314	310	815	130
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1796	1781	1707	1693	1870	1737	1841	1752	1870	1826	1826
Adj Flow Rate, veh/h	117	979	0	206	721	0	340	801	0	330	867	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	4	7	8	13	14	2	11	4	10	2	5	5
Cap, veh/h	141	1162		252	1093		389	1050		381	1004	
Arrive On Green	0.08	0.34	0.00	0.08	0.34	0.00	0.04	0.10	0.00	0.11	0.29	0.00
Sat Flow, veh/h	1753	3413	1510	3155	3216	1585	3209	3497	1485	3456	3469	1547
Grp Volume(v), veh/h	117	979	0	206	721	0	340	801	0	330	867	0
Grp Sat Flow(s),veh/h/ln	1753	1706	1510	1577	1608	1585	1605	1749	1485	1728	1735	1547
Q Serve(g_s), s	8.5	34.5	0.0	8.4	24.8	0.0	13.7	29.0	0.0	12.2	30.8	0.0
Cycle Q Clear(g_c), s	8.5	34.5	0.0	8.4	24.8	0.0	13.7	29.0	0.0	12.2	30.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	141	1162		252	1093		389	1050		381	1004	
V/C Ratio(X)	0.83	0.84		0.82	0.66		0.87	0.76		0.87	0.86	
Avail Cap(c_a), veh/h	175	1162		267	1093		395	1238		399	1201	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.45	0.45	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	58.9	39.7	0.0	58.9	36.5	0.0	61.4	54.0	0.0	56.9	43.8	0.0
Incr Delay (d2), s/veh	23.0	7.5	0.0	16.9	3.1	0.0	9.7	1.1	0.0	17.4	5.9	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	15.1	0.0	3.9	9.9	0.0	6.5	13.8	0.0	6.3	14.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	81.9	47.2	0.0	75.8	39.6	0.0	71.1	55.1	0.0	74.3	49.6	0.0
LnGrp LOS	F	D		E	D		E	E		E	D	
Approach Vol, veh/h		1096			927			1141			1197	
Approach Delay, s/veh		50.9			47.7			59.9			56.4	
Approach LOS		D			D			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.4	50.3	20.7	43.6	15.4	50.2	19.3	45.0
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	11.0	36.0	16.0	45.0	13.0	34.0	15.0	46.0
Max Q Clear Time (g_c+I1), s	10.4	36.5	15.7	32.8	10.5	26.8	14.2	31.0
Green Ext Time (p_c), s	0.0	0.0	0.0	4.8	0.1	2.6	0.1	5.0

Intersection Summary	
HCM 7th Control Delay, s/veh	54.1
HCM 7th LOS	D

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	364	20	270	0	308	0	1109	362	0	1026	0
Future Volume (veh/h)	50	364	20	270	0	308	0	1109	362	0	1026	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1856	1870	1781	1870	1841	0	1781	1856	0	1737	0
Adj Flow Rate, veh/h	54	391	22	290	0	331	0	1192	0	0	1103	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	3	2	8	2	4	0	8	3	0	11	0
Cap, veh/h	81	421	24	317	0	589	0	1505		0	1468	0
Arrive On Green	0.05	0.24	0.24	0.19	0.00	0.37	0.00	0.44	0.00	0.00	0.44	0.00
Sat Flow, veh/h	1781	1740	98	1697	0	1585	0	3474	1572	0	3474	0
Grp Volume(v), veh/h	54	0	413	290	0	331	0	1192	0	0	1103	0
Grp Sat Flow(s),veh/h/ln	1781	0	1838	1697	0	1585	0	1692	1572	0	1650	0
Q Serve(g_s), s	3.9	0.0	28.6	21.8	0.0	21.6	0.0	39.2	0.0	0.0	36.2	0.0
Cycle Q Clear(g_c), s	3.9	0.0	28.6	21.8	0.0	21.6	0.0	39.2	0.0	0.0	36.2	0.0
Prop In Lane	1.00		0.05	1.00		1.00	0.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	81	0	444	317	0	589	0	1505		0	1468	0
V/C Ratio(X)	0.67	0.00	0.93	0.92	0.00	0.56	0.00	0.79		0.00	0.75	0.00
Avail Cap(c_a), veh/h	123	0	481	385	0	665	0	1505		0	1468	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.55	0.00
Uniform Delay (d), s/veh	61.1	0.0	48.2	51.9	0.0	32.5	0.0	30.9	0.0	0.0	30.1	0.0
Incr Delay (d2), s/veh	9.1	0.0	23.8	23.5	0.0	0.8	0.0	4.3	0.0	0.0	2.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	16.1	11.4	0.0	8.5	0.0	16.7	0.0	0.0	14.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	70.2	0.0	72.0	75.4	0.0	33.3	0.0	35.3	0.0	0.0	32.1	0.0
LnGrp LOS	E		E	E		C		D			C	
Approach Vol, veh/h		467			621			1192			1103	
Approach Delay, s/veh		71.8			52.9			35.3			32.1	
Approach LOS		E			D			D			C	

Timer - Assigned Phs	2	3	4	6	7	8
Phs Duration (G+Y+Rc), s	63.8	28.8	37.4	63.8	11.9	54.3
Change Period (Y+Rc), s	6.0	4.5	6.0	6.0	6.0	* 6
Max Green Setting (Gmax), s	50.0	29.5	34.0	50.0	9.0	* 55
Max Q Clear Time (g_c+I1), s	41.2	23.8	30.6	38.2	5.9	23.6
Green Ext Time (p_c), s	5.3	0.5	0.9	6.1	0.0	2.6

Intersection Summary	
HCM 7th Control Delay, s/veh	42.5
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	214	294	78	168	268	286	108	190	78	271	200	162
Future Volume (veh/h)	214	294	78	168	268	286	108	190	78	271	200	162
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1856	1870	1870	1870	1841	1856	1870	1870	1856	1826	1870
Adj Flow Rate, veh/h	225	309	48	177	282	59	114	200	17	285	211	43
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	3	2	2	2	4	3	2	2	3	5	2
Cap, veh/h	441	574	88	435	550	113	463	380	318	500	455	391
Arrive On Green	0.10	0.19	0.19	0.10	0.19	0.19	0.08	0.20	0.20	0.13	0.25	0.25
Sat Flow, veh/h	1781	3061	470	1781	2932	604	1767	1870	1566	1767	1826	1570
Grp Volume(v), veh/h	225	176	181	177	169	172	114	200	17	285	211	43
Grp Sat Flow(s),veh/h/ln	1781	1763	1769	1781	1777	1759	1767	1870	1566	1767	1826	1570
Q Serve(g_s), s	4.9	4.3	4.4	3.7	4.1	4.2	2.4	4.6	0.4	6.1	4.7	1.0
Cycle Q Clear(g_c), s	4.9	4.3	4.4	3.7	4.1	4.2	2.4	4.6	0.4	6.1	4.7	1.0
Prop In Lane	1.00		0.27	1.00		0.34	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	441	330	332	435	333	330	463	380	318	500	455	391
V/C Ratio(X)	0.51	0.53	0.54	0.41	0.51	0.52	0.25	0.53	0.05	0.57	0.46	0.11
Avail Cap(c_a), veh/h	441	1033	1037	435	1042	1031	503	1093	915	500	1109	953
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.9	17.5	17.6	13.5	17.4	17.5	13.1	17.0	15.3	13.1	15.2	13.8
Incr Delay (d2), s/veh	1.0	1.3	1.4	0.6	1.2	1.3	0.3	1.1	0.1	1.5	0.7	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	1.7	1.7	1.3	1.6	1.6	0.9	1.9	0.1	2.3	1.8	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.9	18.9	18.9	14.1	18.6	18.7	13.4	18.1	15.4	14.6	16.0	14.0
LnGrp LOS	B	B	B	B	B	B	B	B	B	B	B	B
Approach Vol, veh/h		582			518			331			539	
Approach Delay, s/veh		17.4			17.1			16.3			15.1	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.6	14.2	9.5	13.5	8.4	16.4	9.5	13.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	6.1	27.9	5.0	28.0	5.0	29.0	5.0	28.0
Max Q Clear Time (g_c+I1), s	8.1	6.6	5.7	6.4	4.4	6.7	6.9	6.2
Green Ext Time (p_c), s	0.0	1.2	0.0	2.0	0.0	1.4	0.0	2.0

Intersection Summary	
HCM 7th Control Delay, s/veh	16.5
HCM 7th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	380	173	352	580	60	201	43	264	40	23	20
Future Volume (veh/h)	20	380	173	352	580	60	201	43	264	40	23	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	0.98		0.99	0.98		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	922	1870	1737	1811	1870	1781	1811	1411	1737	1663	1870	1870
Adj Flow Rate, veh/h	21	400	115	371	611	55	212	45	64	42	24	3
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	66	2	11	6	2	8	6	33	11	16	2	2
Cap, veh/h	242	671	191	465	1154	104	517	116	164	380	270	34
Arrive On Green	0.03	0.25	0.25	0.13	0.35	0.35	0.10	0.22	0.22	0.04	0.17	0.17
Sat Flow, veh/h	878	2726	775	1725	3296	296	1725	522	742	1584	1626	203
Grp Volume(v), veh/h	21	259	256	371	329	337	212	0	109	42	0	27
Grp Sat Flow(s),veh/h/ln	878	1777	1723	1725	1777	1815	1725	0	1264	1584	0	1829
Q Serve(g_s), s	0.9	6.5	6.6	6.5	7.4	7.4	5.0	0.0	3.7	1.1	0.0	0.6
Cycle Q Clear(g_c), s	0.9	6.5	6.6	6.5	7.4	7.4	5.0	0.0	3.7	1.1	0.0	0.6
Prop In Lane	1.00		0.45	1.00		0.16	1.00		0.59	1.00		0.11
Lane Grp Cap(c), veh/h	242	437	424	465	622	636	517	0	280	380	0	304
V/C Ratio(X)	0.09	0.59	0.60	0.80	0.53	0.53	0.41	0.00	0.39	0.11	0.00	0.09
Avail Cap(c_a), veh/h	307	974	945	465	1027	1049	517	0	705	468	0	1021
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.7	16.7	16.7	13.7	13.0	13.0	15.2	0.0	16.6	16.1	0.0	17.7
Incr Delay (d2), s/veh	0.2	1.3	1.4	9.5	0.7	0.7	0.5	0.0	0.9	0.1	0.0	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	2.4	2.4	3.6	2.5	2.6	1.8	0.0	1.0	0.4	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	13.9	18.0	18.1	23.2	13.7	13.7	15.7	0.0	17.5	16.2	0.0	17.8
LnGrp LOS	B	B	B	C	B	B	B		B	B		B
Approach Vol, veh/h		536			1037			321			69	
Approach Delay, s/veh		17.9			17.1			16.3			16.8	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.8	22.1	9.5	12.8	11.0	16.8	6.7	15.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.0	29.0	5.0	28.0	6.5	27.5	5.0	28.0
Max Q Clear Time (g_c+I1), s	2.9	9.4	7.0	2.6	8.5	8.6	3.1	5.7
Green Ext Time (p_c), s	0.0	3.9	0.0	0.1	0.0	2.9	0.0	0.6

Intersection Summary	
HCM 7th Control Delay, s/veh	17.2
HCM 7th LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1042	496	536	1960	434	250
Future Volume (veh/h)	1042	496	536	1960	434	250
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
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	No	
Adj Sat Flow, veh/h/ln	1796	1781	1870	1856	1826	1856
Adj Flow Rate, veh/h	1097	0	564	2063	457	28
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	7	8	2	3	5	3
Cap, veh/h	1397		686	2422	522	428
Arrive On Green	0.41	0.00	0.20	0.69	0.15	0.15
Sat Flow, veh/h	3503	1510	3456	3618	3374	2768
Grp Volume(v), veh/h	1097	0	564	2063	457	28
Grp Sat Flow(s),veh/h/ln	1706	1510	1728	1763	1687	1384
Q Serve(g_s), s	15.9	0.0	8.9	25.1	7.5	0.5
Cycle Q Clear(g_c), s	15.9	0.0	8.9	25.1	7.5	0.5
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1397		686	2422	522	428
V/C Ratio(X)	0.79		0.82	0.85	0.88	0.07
Avail Cap(c_a), veh/h	1513		760	2617	522	428
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.6	0.0	21.8	6.7	23.5	20.5
Incr Delay (d2), s/veh	2.6	0.0	6.7	2.7	15.3	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	5.2	0.0	3.7	4.3	3.8	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	17.2	0.0	28.5	9.5	38.7	20.6
LnGrp LOS	B		C	A	D	C
Approach Vol, veh/h	1097			2627	485	
Approach Delay, s/veh	17.2			13.5	37.7	
Approach LOS	B			B	D	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	15.8	27.8		13.3		43.5
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s	12.5	25.2		8.8		42.2
Max Q Clear Time (g_c+I1), s	10.9	17.9		9.5		27.1
Green Ext Time (p_c), s	0.4	3.9		0.0		11.9

Intersection Summary	
HCM 7th Control Delay, s/veh	17.3
HCM 7th LOS	B

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	111	24	25	321	220	121
Future Vol, veh/h	111	24	25	321	220	121
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	2	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	117	25	26	338	232	127

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	686	295	359	0	-	0
Stage 1	295	-	-	-	-	-
Stage 2	391	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	413	744	1200	-	-	-
Stage 1	755	-	-	-	-	-
Stage 2	684	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	404	744	1200	-	-	-
Mov Cap-2 Maneuver	576	-	-	-	-	-
Stage 1	739	-	-	-	-	-
Stage 2	684	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	12.85	0.58	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1200	-	600	-	-
HCM Lane V/C Ratio	0.022	-	0.237	-	-
HCM Control Delay (s/veh)	8.1	0	12.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.9	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	24	0	346	203	42
Future Vol, veh/h	0	24	0	346	203	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	26	0	376	221	46

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	243	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	795	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	795	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.68	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	795	-	-
HCM Lane V/C Ratio	-	0.033	-	-
HCM Control Delay (s/veh)	-	9.7	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	724	0	242	0	1270	518	256	1200	0
Future Volume (veh/h)	0	0	0	724	0	242	0	1270	518	256	1200	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1811	1870	1515	1870	1811	1752	1722	1752	0
Adj Flow Rate, veh/h	0	0	0	762	0	0	0	1337	0	269	1263	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	6	2	26	2	6	10	12	10	0
Cap, veh/h	0	2	0	849	0		2	1477		299	2194	0
Arrive On Green	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.43	0.00	0.18	0.66	0.00
Sat Flow, veh/h	0	1870	0	3450	0	1284	1781	3441	1485	1640	3416	0
Grp Volume(v), veh/h	0	0	0	762	0	0	0	1337	0	269	1263	0
Grp Sat Flow(s),veh/h/ln	0	1870	0	1725	0	1284	1781	1721	1485	1640	1664	0
Q Serve(g_s), s	0.0	0.0	0.0	20.3	0.0	0.0	0.0	34.4	0.0	15.2	19.8	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	20.3	0.0	0.0	0.0	34.4	0.0	15.2	19.8	0.0
Prop In Lane	0.00		0.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	2	0	849	0		2	1477		299	2194	0
V/C Ratio(X)	0.00	0.00	0.00	0.90	0.00		0.00	0.91		0.90	0.58	0.00
Avail Cap(c_a), veh/h	0	99	0	927	0		94	1559		320	2194	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	34.6	0.0	0.0	0.0	25.3	0.0	37.9	8.9	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	10.9	0.0	0.0	0.0	7.7	0.0	25.6	0.4	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	9.6	0.0	0.0	0.0	14.1	0.0	8.1	6.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	0.0	45.5	0.0	0.0	0.0	32.9	0.0	63.6	9.3	0.0
LnGrp LOS				D				C		E	A	
Approach Vol, veh/h		0			762			1337			1532	
Approach Delay, s/veh		0.0			45.5			32.9			18.8	
Approach LOS					D			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	21.8	45.2		0.0	0.0	67.1		27.8				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	18.5	43.0		5.0	5.0	56.5		25.5				
Max Q Clear Time (g_c+I1), s	17.2	36.4		0.0	0.0	21.8		22.3				
Green Ext Time (p_c), s	0.1	4.3		0.0	0.0	12.4		1.1				

Intersection Summary		
HCM 7th Control Delay, s/veh	29.6	
HCM 7th LOS	C	

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	80	614	904	18	23	82
Future Vol, veh/h	80	614	904	18	23	82
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	2	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	87	667	983	20	25	89

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1002	0	-	0	1834	992
Stage 1	-	-	-	-	992	-
Stage 2	-	-	-	-	841	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	691	-	-	-	84	298
Stage 1	-	-	-	-	359	-
Stage 2	-	-	-	-	423	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	691	-	-	-	73	298
Mov Cap-2 Maneuver	-	-	-	-	248	-
Stage 1	-	-	-	-	314	-
Stage 2	-	-	-	-	423	-

Approach	EB	WB	SB
HCM Control Delay, s/v	1.26	0	25.78
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	691	-	-	-	285
HCM Lane V/C Ratio	0.126	-	-	-	0.4
HCM Control Delay (s/veh)	11	-	-	-	25.8
HCM Lane LOS	B	-	-	-	D
HCM 95th %tile Q(veh)	0.4	-	-	-	1.8

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	94	543	810	42	44	113
Future Vol, veh/h	94	543	810	42	44	113
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	2	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	99	572	853	44	46	119

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	897	0	-	0	1644	875
Stage 1	-	-	-	-	875	-
Stage 2	-	-	-	-	769	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	757	-	-	-	110	349
Stage 1	-	-	-	-	408	-
Stage 2	-	-	-	-	457	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	757	-	-	-	95	349
Mov Cap-2 Maneuver	-	-	-	-	280	-
Stage 1	-	-	-	-	355	-
Stage 2	-	-	-	-	457	-

Approach	EB	WB	SB
HCM Control Delay, s/v	1.55	0	26.84
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	757	-	-	-	326
HCM Lane V/C Ratio	0.131	-	-	-	0.507
HCM Control Delay (s/veh)	10.5	-	-	-	26.8
HCM Lane LOS	B	-	-	-	D
HCM 95th %tile Q(veh)	0.4	-	-	-	2.7

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	63	524	787	65	45	63
Future Vol, veh/h	63	524	787	65	45	63
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	2	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	68	570	855	71	49	68

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	926	0	-	0	1597	891
Stage 1	-	-	-	-	891	-
Stage 2	-	-	-	-	707	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	738	-	-	-	117	341
Stage 1	-	-	-	-	401	-
Stage 2	-	-	-	-	489	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	738	-	-	-	106	341
Mov Cap-2 Maneuver	-	-	-	-	293	-
Stage 1	-	-	-	-	364	-
Stage 2	-	-	-	-	489	-

Approach	EB	WB	SB
HCM Control Delay, s/v	1.11	0	22.67
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	738	-	-	-	319
HCM Lane V/C Ratio	0.093	-	-	-	0.367
HCM Control Delay (s/veh)	10.4	-	-	-	22.7
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.3	-	-	-	1.6

Intersection	
Intersection Delay, s/veh	27.2
Intersection LOS	D

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	600	731	433	241
Demand Flow Rate, veh/h	654	764	474	271
Vehicles Circulating, veh/h	244	550	585	919
Vehicles Exiting, veh/h	946	509	313	395
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	12.2	49.1	16.5	17.3
Approach LOS	B	E	C	C

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	654	764	474	271
Cap Entry Lane, veh/h	1076	787	760	540
Entry HV Adj Factor	0.918	0.956	0.914	0.889
Flow Entry, veh/h	600	731	433	241
Cap Entry, veh/h	988	753	694	480
V/C Ratio	0.608	0.970	0.624	0.501
Control Delay, s/veh	12.2	49.1	16.5	17.3
LOS	B	E	C	C
95th %tile Queue, veh	4	15	4	3

Intersection	
Int Delay, s/veh	25.1

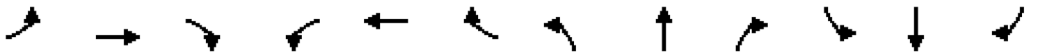
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰	↑↑				↱			↱
Traffic Vol, veh/h	0	1210	42	642	2376	0	0	0	444	0	0	0
Future Vol, veh/h	0	1210	42	642	2376	0	0	0	444	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	Free	-	-	None
Storage Length	-	-	477	500	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	7	25	5	2	2	2	2	4	2	2	2
Mvmt Flow	0	1274	44	676	2501	0	0	0	467	0	0	0

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	0	1274	0	0			-	-	1251
Stage 1	-	-	-	-	-	-			-	-	-
Stage 2	-	-	-	-	-	-			-	-	-
Critical Hdwy	-	-	-	4.2	-	-			-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-			-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-			-	-	-
Follow-up Hdwy	-	-	-	2.25	-	-			-	-	3.32
Pot Cap-1 Maneuver	0	-	-	~ 525	-	0			0	0	164
Stage 1	0	-	-	-	-	0			0	0	-
Stage 2	0	-	-	-	-	0			0	0	-
Platoon blocked, %		-	-		-						
Mov Cap-1 Maneuver	-	-	-	~ 525	-	-			-	0	164
Mov Cap-2 Maneuver	-	-	-	-	-	-			-	0	-
Stage 1	-	-	-	-	-	-			-	0	-
Stage 2	-	-	-	-	-	-			-	0	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	35.45	0
HCM LOS			A

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	~ 525	-	-
HCM Lane V/C Ratio	-	-	1.287	-	-
HCM Control Delay (s/veh)	-	-	166.7	-	0
HCM Lane LOS	-	-	F	-	A
HCM 95th %tile Q(veh)	-	-	27.9	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	340	913	438	576	1081	400	503	841	346	360	774	90
Future Volume (veh/h)	340	913	438	576	1081	400	503	841	346	360	774	90
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1826	1856	1870	1870	1841	1856	1841	1870	1841	1796
Adj Flow Rate, veh/h	351	941	0	594	1114	0	519	867	0	371	798	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	6	6	5	3	2	2	4	3	4	2	4	7
Cap, veh/h	333	1057		612	1041		486	881		370	749	
Arrive On Green	0.19	0.31	0.00	0.18	0.29	0.00	0.05	0.08	0.00	0.11	0.21	0.00
Sat Flow, veh/h	1725	3441	1547	3428	3554	1585	3401	3526	1560	3456	3497	1522
Grp Volume(v), veh/h	351	941	0	594	1114	0	519	867	0	371	798	0
Grp Sat Flow(s),veh/h/ln	1725	1721	1547	1714	1777	1585	1700	1763	1560	1728	1749	1522
Q Serve(g_s), s	27.0	36.5	0.0	24.1	41.0	0.0	20.0	34.4	0.0	15.0	30.0	0.0
Cycle Q Clear(g_c), s	27.0	36.5	0.0	24.1	41.0	0.0	20.0	34.4	0.0	15.0	30.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	333	1057		612	1041		486	881		370	749	
V/C Ratio(X)	1.06	0.89		0.97	1.07		1.07	0.98		1.00	1.06	
Avail Cap(c_a), veh/h	333	1057		612	1041		486	881		370	749	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.09	0.09	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	56.5	46.3	0.0	57.1	49.5	0.0	66.7	63.9	0.0	62.5	55.0	0.0
Incr Delay (d2), s/veh	64.6	11.3	0.0	28.9	48.8	0.0	35.3	6.0	0.0	47.3	51.5	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.4	16.8	0.0	12.7	24.6	0.0	11.6	17.1	0.0	9.0	18.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	121.1	57.5	0.0	86.1	98.3	0.0	102.0	69.9	0.0	109.8	106.5	0.0
LnGrp LOS	F	E		F	F		F	E		F	F	
Approach Vol, veh/h		1292			1708			1386			1169	
Approach Delay, s/veh		74.8			94.0			81.9			107.5	
Approach LOS		E			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.0	49.0	25.0	36.0	32.0	47.0	20.0	41.0
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	25.0	43.0	20.0	30.0	27.0	41.0	15.0	35.0
Max Q Clear Time (g_c+I1), s	26.1	38.5	22.0	32.0	29.0	43.0	17.0	36.4
Green Ext Time (p_c), s	0.0	2.3	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	89.4
HCM 7th LOS	F

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	519	20	492	0	461	0	1288	622	0	1309	0
Future Volume (veh/h)	30	519	20	492	0	461	0	1288	622	0	1309	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1856	1870	1870	0	1841	1870	0	1811	0
Adj Flow Rate, veh/h	31	535	21	507	0	475	0	1328	0	0	1349	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	3	2	2	0	4	2	0	6	0
Cap, veh/h	45	447	18	442	0	753	0	1299		0	1278	0
Arrive On Green	0.03	0.25	0.25	0.25	0.00	0.47	0.00	0.37	0.00	0.00	0.74	0.00
Sat Flow, veh/h	1781	1788	70	1767	0	1585	0	3589	1585	0	3622	0
Grp Volume(v), veh/h	31	0	556	507	0	475	0	1328	0	0	1349	0
Grp Sat Flow(s),veh/h/ln	1781	0	1858	1767	0	1585	0	1749	1585	0	1721	0
Q Serve(g_s), s	2.4	0.0	35.0	35.0	0.0	31.5	0.0	52.0	0.0	0.0	52.0	0.0
Cycle Q Clear(g_c), s	2.4	0.0	35.0	35.0	0.0	31.5	0.0	52.0	0.0	0.0	52.0	0.0
Prop In Lane	1.00		0.04	1.00		1.00	0.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	45	0	464	442	0	753	0	1299		0	1278	0
V/C Ratio(X)	0.70	0.00	1.20	1.15	0.00	0.63	0.00	1.02		0.00	1.06	0.00
Avail Cap(c_a), veh/h	76	0	464	442	0	753	0	1299		0	1278	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.20	0.00
Uniform Delay (d), s/veh	67.7	0.0	52.5	52.5	0.0	27.6	0.0	44.0	0.0	0.0	18.0	0.0
Incr Delay (d2), s/veh	17.7	0.0	108.0	89.8	0.0	1.7	0.0	30.8	0.0	0.0	29.5	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	30.3	26.6	0.0	12.4	0.0	27.8	0.0	0.0	15.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	85.4	0.0	160.5	142.3	0.0	29.3	0.0	74.8	0.0	0.0	47.5	0.0
LnGrp LOS	F		F	F		C		F			F	
Approach Vol, veh/h		587			982			1328			1349	
Approach Delay, s/veh		156.6			87.6			74.8			47.5	
Approach LOS		F			F			E			D	

Timer - Assigned Phs	2	3	4		6	7	8
Phs Duration (G+Y+Rc), s	58.0	41.0	41.0		58.0	9.5	72.5
Change Period (Y+Rc), s	6.0	6.0	6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s	52.0	35.0	35.0		52.0	6.0	64.0
Max Q Clear Time (g_c+I1), s	54.0	37.0	37.0		54.0	4.4	33.5
Green Ext Time (p_c), s	0.0	0.0	0.0		0.0	0.0	4.0

Intersection Summary	
HCM 7th Control Delay, s/veh	80.4
HCM 7th LOS	F

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	401	499	82	202	341	403	153	240	183	360	240	259
Future Volume (veh/h)	401	499	82	202	341	403	153	240	183	360	240	259
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	422	525	72	213	359	183	161	253	32	379	253	66
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	522	969	132	444	515	258	379	335	283	426	485	410
Arrive On Green	0.20	0.31	0.31	0.12	0.22	0.22	0.07	0.18	0.18	0.15	0.26	0.26
Sat Flow, veh/h	1781	3139	429	1781	2289	1147	1781	1870	1580	1781	1870	1581
Grp Volume(v), veh/h	422	296	301	213	277	265	161	253	32	379	253	66
Grp Sat Flow(s),veh/h/ln	1781	1777	1792	1781	1777	1659	1781	1870	1580	1781	1870	1581
Q Serve(g_s), s	12.7	10.3	10.4	6.7	10.7	11.0	5.5	9.6	1.3	11.5	8.7	2.4
Cycle Q Clear(g_c), s	12.7	10.3	10.4	6.7	10.7	11.0	5.5	9.6	1.3	11.5	8.7	2.4
Prop In Lane	1.00		0.24	1.00		0.69	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	522	548	553	444	399	373	379	335	283	426	485	410
V/C Ratio(X)	0.81	0.54	0.54	0.48	0.69	0.71	0.42	0.76	0.11	0.89	0.52	0.16
Avail Cap(c_a), veh/h	566	795	801	533	690	644	379	616	520	426	766	648
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.6	21.4	21.5	18.5	26.6	26.7	23.0	29.1	25.7	21.8	23.7	21.4
Incr Delay (d2), s/veh	8.0	0.8	0.8	0.8	2.2	2.5	0.8	3.5	0.2	20.1	0.9	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	4.2	4.3	2.7	4.6	4.4	2.3	4.5	0.5	7.5	3.8	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	24.6	22.3	22.3	19.3	28.8	29.2	23.8	32.6	25.9	41.9	24.6	21.6
LnGrp LOS	C	C	C	B	C	C	C	C	C	D	C	C
Approach Vol, veh/h		1019			755			446			698	
Approach Delay, s/veh		23.2			26.3			28.9			33.7	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.0	17.9	13.3	27.5	10.0	23.9	19.5	21.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	11.5	24.6	12.5	33.4	5.5	30.6	16.9	29.0
Max Q Clear Time (g_c+I1), s	13.5	11.6	8.7	12.4	7.5	10.7	14.7	13.0
Green Ext Time (p_c), s	0.0	1.3	0.2	3.7	0.0	1.7	0.3	3.1

Intersection Summary	
HCM 7th Control Delay, s/veh	27.4
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	760	322	607	530	60	266	48	315	120	51	10
Future Volume (veh/h)	20	760	322	607	530	60	266	48	315	120	51	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	0.98		0.98	0.98		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1411	1870	1870	1870	1870	1781	1870	1870	1856	1870	1870	1870
Adj Flow Rate, veh/h	21	800	297	639	558	57	280	51	55	126	54	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	33	2	2	2	2	8	2	2	3	2	2	2
Cap, veh/h	319	860	319	553	1869	190	339	115	124	293	251	9
Arrive On Green	0.02	0.34	0.34	0.26	0.57	0.57	0.06	0.14	0.14	0.06	0.14	0.14
Sat Flow, veh/h	1344	2519	934	1781	3255	332	1781	812	876	1781	1790	66
Grp Volume(v), veh/h	21	564	533	639	304	311	280	0	106	126	0	56
Grp Sat Flow(s),veh/h/ln	1344	1777	1677	1781	1777	1810	1781	0	1688	1781	0	1857
Q Serve(g_s), s	0.9	27.2	27.3	22.7	7.8	7.9	5.4	0.0	5.1	5.3	0.0	2.4
Cycle Q Clear(g_c), s	0.9	27.2	27.3	22.7	7.8	7.9	5.4	0.0	5.1	5.3	0.0	2.4
Prop In Lane	1.00		0.56	1.00		0.18	1.00		0.52	1.00		0.04
Lane Grp Cap(c), veh/h	319	607	572	553	1020	1039	339	0	238	293	0	260
V/C Ratio(X)	0.07	0.93	0.93	1.15	0.30	0.30	0.83	0.00	0.44	0.43	0.00	0.22
Avail Cap(c_a), veh/h	364	618	583	553	1020	1039	339	0	532	293	0	585
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.3	28.2	28.3	25.0	9.7	9.7	35.9	0.0	35.0	30.9	0.0	33.9
Incr Delay (d2), s/veh	0.1	20.5	21.7	88.6	0.2	0.2	15.4	0.0	1.3	1.0	0.0	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	14.3	13.7	24.8	2.8	2.8	4.8	0.0	2.2	2.4	0.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	18.3	48.8	49.9	113.6	9.9	9.9	51.3	0.0	36.3	31.9	0.0	34.3
LnGrp LOS	B	D	D	F	A	A	D		D	C		C
Approach Vol, veh/h		1118			1254			386			182	
Approach Delay, s/veh		48.8			62.7			47.1			32.6	
Approach LOS		D			E			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.5	55.5	9.9	17.0	27.2	34.9	9.8	17.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.0	48.6	5.4	28.0	22.7	30.9	5.3	28.0
Max Q Clear Time (g_c+I1), s	2.9	9.9	7.4	4.4	24.7	29.3	7.3	7.1
Green Ext Time (p_c), s	0.0	4.0	0.0	0.2	0.0	1.1	0.0	0.5

Intersection Summary	
HCM 7th Control Delay, s/veh	53.5
HCM 7th LOS	D



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1662	791	426	1290	700	675
Future Volume (veh/h)	1662	791	426	1290	700	675
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
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	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1856	1870	1870
Adj Flow Rate, veh/h	1749	0	448	1358	737	699
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	3	2	2
Cap, veh/h	1826		468	2487	628	885
Arrive On Green	0.51	0.00	0.14	0.71	0.18	0.18
Sat Flow, veh/h	3647	1585	3456	3618	3456	2790
Grp Volume(v), veh/h	1749	0	448	1358	737	699
Grp Sat Flow(s),veh/h/ln	1777	1585	1728	1763	1728	1395
Q Serve(g_s), s	37.6	0.0	10.3	14.7	14.5	14.5
Cycle Q Clear(g_c), s	37.6	0.0	10.3	14.7	14.5	14.5
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1826		468	2487	628	885
V/C Ratio(X)	0.96		0.96	0.55	1.17	0.79
Avail Cap(c_a), veh/h	1835		468	2497	628	885
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.6	0.0	34.3	5.6	32.6	24.8
Incr Delay (d2), s/veh	12.5	0.0	31.0	0.2	94.2	4.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.6	0.0	6.0	3.4	14.0	13.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	31.1	0.0	65.2	5.9	126.8	29.7
LnGrp LOS	C		E	A	F	C
Approach Vol, veh/h	1749			1806	1436	
Approach Delay, s/veh	31.1			20.6	79.5	
Approach LOS	C			C	E	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	65.3	45.5		19.0		60.8
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s	60.8	41.2		14.5		56.5
Max Q Clear Time (g_c+I1), s	12.3	39.6		16.5		16.7
Green Ext Time (p_c), s	0.0	1.4		0.0		12.4

Intersection Summary	
HCM 7th Control Delay, s/veh	41.2
HCM 7th LOS	D

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	166	39	45	269	338	197
Future Vol, veh/h	166	39	45	269	338	197
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	2	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	175	41	47	283	356	207

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	837	459	563	0	-	0
Stage 1	459	-	-	-	-	-
Stage 2	378	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	337	602	1008	-	-	-
Stage 1	636	-	-	-	-	-
Stage 2	693	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	321	602	1008	-	-	-
Mov Cap-2 Maneuver	508	-	-	-	-	-
Stage 1	606	-	-	-	-	-
Stage 2	693	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	16.63	1.25	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1008	-	523	-	-
HCM Lane V/C Ratio	0.047	-	0.412	-	-
HCM Control Delay (s/veh)	8.7	-	16.6	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	2	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	47	0	314	299	78
Future Vol, veh/h	0	47	0	314	299	78
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	51	0	341	325	85

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	367	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	678	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	678	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	10.74	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	678	-	-
HCM Lane V/C Ratio	-	0.075	-	-
HCM Control Delay (s/veh)	-	10.7	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	10	622	0	350	0	1390	703	321	1330	10
Future Volume (veh/h)	0	0	10	622	0	350	0	1390	703	321	1330	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	418	1841	1870	1811	1870	1841	1826	1796	1856	418
Adj Flow Rate, veh/h	0	0	0	655	0	0	0	1463	0	338	1400	11
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	100	4	2	6	2	4	5	7	3	100
Cap, veh/h	0	2	0	732	0		1	1624		365	2566	20
Arrive On Green	0.00	0.00	0.00	0.21	0.00	0.00	0.00	0.46	0.00	0.21	0.72	0.72
Sat Flow, veh/h	0	1870	0	3506	0	1535	1781	3497	1547	1711	3585	28
Grp Volume(v), veh/h	0	0	0	655	0	0	0	1463	0	338	688	723
Grp Sat Flow(s),veh/h/ln	0	1870	0	1753	0	1535	1781	1749	1547	1711	1763	1850
Q Serve(g_s), s	0.0	0.0	0.0	21.7	0.0	0.0	0.0	45.9	0.0	23.1	21.7	21.7
Cycle Q Clear(g_c), s	0.0	0.0	0.0	21.7	0.0	0.0	0.0	45.9	0.0	23.1	21.7	21.7
Prop In Lane	0.00		0.00	1.00		1.00	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	0	2	0	732	0		1	1624		365	1262	1324
V/C Ratio(X)	0.00	0.00	0.00	0.89	0.00		0.00	0.90		0.93	0.55	0.55
Avail Cap(c_a), veh/h	0	78	0	838	0		75	1760		409	1262	1324
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	45.9	0.0	0.0	0.0	29.4	0.0	45.9	7.9	7.9
Incr Delay (d2), s/veh	0.0	0.0	0.0	11.1	0.0	0.0	0.0	6.5	0.0	25.3	0.5	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	10.5	0.0	0.0	0.0	19.3	0.0	12.3	7.5	7.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	0.0	57.0	0.0	0.0	0.0	35.8	0.0	71.3	8.4	8.4
LnGrp LOS				E				D		E	A	A
Approach Vol, veh/h		0			655			1463			1749	
Approach Delay, s/veh		0.0			57.0			35.8			20.5	
Approach LOS					E			D			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	30.0	59.9		0.0	0.0	89.8		29.4				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	28.5	60.0		5.0	5.0	83.5		28.5				
Max Q Clear Time (g_c+I1), s	25.1	47.9		0.0	0.0	23.7		23.7				
Green Ext Time (p_c), s	0.4	7.5		0.0	0.0	15.2		1.2				

Intersection Summary		
HCM 7th Control Delay, s/veh	32.5	
HCM 7th LOS	C	

Notes
User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	130	904	722	31	36	120
Future Vol, veh/h	130	904	722	31	36	120
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	2	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	141	983	785	34	39	130

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	818	0	-	0	2067	802
Stage 1	-	-	-	-	802	-
Stage 2	-	-	-	-	1265	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	810	-	-	-	60	384
Stage 1	-	-	-	-	441	-
Stage 2	-	-	-	-	265	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	810	-	-	-	49	384
Mov Cap-2 Maneuver	-	-	-	-	207	-
Stage 1	-	-	-	-	364	-
Stage 2	-	-	-	-	265	-

Approach	EB	WB	SB
HCM Control Delay, s/v	1.31	0	28.12
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	810	-	-	-	321
HCM Lane V/C Ratio	0.174	-	-	-	0.528
HCM Control Delay (s/veh)	10.4	-	-	-	28.1
HCM Lane LOS	B	-	-	-	D
HCM 95th %tile Q(veh)	0.6	-	-	-	2.9

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	151	789	588	67	65	165
Future Vol, veh/h	151	789	588	67	65	165
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	2	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	159	831	619	71	68	174

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	689	0	-	0	1803	654
Stage 1	-	-	-	-	654	-
Stage 2	-	-	-	-	1148	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	905	-	-	-	87	467
Stage 1	-	-	-	-	517	-
Stage 2	-	-	-	-	302	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	905	-	-	-	72	467
Mov Cap-2 Maneuver	-	-	-	-	242	-
Stage 1	-	-	-	-	426	-
Stage 2	-	-	-	-	302	-

Approach	EB	WB	SB
HCM Control Delay, s/v	1.58	0	31.4
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	905	-	-	-	370
HCM Lane V/C Ratio	0.176	-	-	-	0.655
HCM Control Delay (s/veh)	9.8	-	-	-	31.4
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0.6	-	-	-	4.4

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	105	749	556	108	70	98
Future Vol, veh/h	105	749	556	108	70	98
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	2	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	114	814	604	117	76	107

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	722	0	-	0	1705	663
Stage 1	-	-	-	-	663	-
Stage 2	-	-	-	-	1042	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	880	-	-	-	100	461
Stage 1	-	-	-	-	512	-
Stage 2	-	-	-	-	340	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	880	-	-	-	87	461
Mov Cap-2 Maneuver	-	-	-	-	268	-
Stage 1	-	-	-	-	446	-
Stage 2	-	-	-	-	340	-

Approach	EB	WB	SB
HCM Control Delay, s/v	1.19	0	25.4
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	880	-	-	-	355
HCM Lane V/C Ratio	0.13	-	-	-	0.514
HCM Control Delay (s/veh)	9.7	-	-	-	25.4
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0.4	-	-	-	2.8

Intersection	
Intersection Delay, s/veh	20.5
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	862	600	229	364
Demand Flow Rate, veh/h	891	622	239	372
Vehicles Circulating, veh/h	311	384	905	667
Vehicles Exiting, veh/h	728	760	297	339
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	28.8	15.0	14.2	13.8
Approach LOS	D	B	B	B

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	891	622	239	372
Cap Entry Lane, veh/h	1005	933	548	699
Entry HV Adj Factor	0.967	0.964	0.960	0.978
Flow Entry, veh/h	862	600	229	364
Cap Entry, veh/h	972	899	526	683
V/C Ratio	0.887	0.667	0.436	0.532
Control Delay, s/veh	28.8	15.0	14.2	13.8
LOS	D	B	B	B
95th %tile Queue, veh	12	5	2	3

Intersection	
Int Delay, s/veh	71

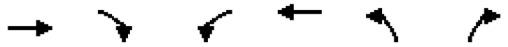
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰	↑↑				↱			↱
Traffic Vol, veh/h	0	2205	72	467	1616	0	0	0	697	0	0	0
Future Vol, veh/h	0	2205	72	467	1616	0	0	0	697	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	Free	-	-	None
Storage Length	-	-	477	500	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	6	3	2	2	2	2	2	2	2	2
Mvmt Flow	0	2321	76	492	1701	0	0	0	734	0	0	0

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	0	2321	0	0			-	-	851
Stage 1	-	-	-	-	-	-			-	-	-
Stage 2	-	-	-	-	-	-			-	-	-
Critical Hdwy	-	-	-	4.16	-	-			-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-			-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-			-	-	-
Follow-up Hdwy	-	-	-	2.23	-	-			-	-	3.32
Pot Cap-1 Maneuver	0	-	-	~ 208	-	0			0	0	304
Stage 1	0	-	-	-	-	0			0	0	-
Stage 2	0	-	-	-	-	0			0	0	-
Platoon blocked, %		-	-		-						
Mov Cap-1 Maneuver	-	-	-	~ 208	-	-			-	0	304
Mov Cap-2 Maneuver	-	-	-	-	-	-			-	0	-
Stage 1	-	-	-	-	-	-			-	0	-
Stage 2	-	-	-	-	-	-			-	0	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	148.67	0
HCM LOS			A

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	~ 208	-	-
HCM Lane V/C Ratio	-	-	2.36	-	-
HCM Control Delay (s/veh)	-	-	$ 663.1	-	0
HCM Lane LOS	-	-	F	-	A
HCM 95th %tile Q(veh)	-	-	40	-	-

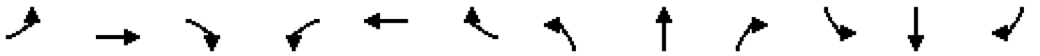
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1210	42	642	2376	0	444
Future Volume (vph)	1210	42	642	2376	0	444
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5		4.5
Lane Util. Factor	0.95	1.00	1.00	0.95		1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00
Frt	1.00	0.85	1.00	1.00		0.87
Flt Protected	1.00	1.00	0.95	1.00		1.00
Satd. Flow (prot)	3374	1264	1719	3539		1580
Flt Permitted	1.00	1.00	0.15	1.00		1.00
Satd. Flow (perm)	3374	1264	267	3539		1580
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1274	44	676	2501	0	467
RTOR Reduction (vph)	0	23	0	0	0	0
Lane Group Flow (vph)	1274	21	676	2501	0	467
Confl. Bikes (#/hr)		2				
Heavy Vehicles (%)	7%	25%	5%	2%	2%	4%
Turn Type	NA	Perm	pm+pt	NA		pm+ov
Protected Phases	2		1	6		1
Permitted Phases		2	6			6
Actuated Green, G (s)	22.6	22.6	43.9	48.4		43.9
Effective Green, g (s)	22.6	22.6	43.9	48.4		43.9
Actuated g/C Ratio	0.47	0.47	0.91	1.00		0.91
Clearance Time (s)	4.5	4.5	4.5	4.5		4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	1575	590	746	3539		1580
v/s Ratio Prot	0.38		c0.31	0.71		0.10
v/s Ratio Perm		0.02	c0.51			0.19
v/c Ratio	0.81	0.03	0.91	0.71		0.30
Uniform Delay, d1	11.1	7.0	10.9	0.0		0.3
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	4.6	0.1	14.6	0.7		0.1
Delay (s)	15.6	7.1	25.5	0.7		0.4
Level of Service	B	A	C	A		A
Approach Delay (s/veh)	15.4			5.9	0.4	
Approach LOS	B			A	A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	7.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	48.4	Sum of lost time (s)	9.0
Intersection Capacity Utilization	76.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



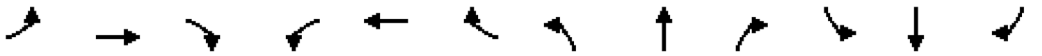
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	340	913	438	576	1081	400	503	841	346	360	774	90
Future Volume (veh/h)	340	913	438	576	1081	400	503	841	346	360	774	90
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1826	1856	1870	1870	1841	1856	1841	1870	1841	1796
Adj Flow Rate, veh/h	351	941	0	594	1114	0	519	867	0	371	798	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	6	6	5	3	2	2	4	3	4	2	4	7
Cap, veh/h	359	1008		588	1269		510	932		395	799	
Arrive On Green	0.11	0.29	0.00	0.17	0.36	0.00	0.25	0.44	0.00	0.11	0.23	0.00
Sat Flow, veh/h	3346	3441	1547	3428	3554	1585	3401	3526	1560	3456	3497	1522
Grp Volume(v), veh/h	351	941	0	594	1114	0	519	867	0	371	798	0
Grp Sat Flow(s),veh/h/ln	1673	1721	1547	1714	1777	1585	1700	1763	1560	1728	1749	1522
Q Serve(g_s), s	14.6	37.3	0.0	24.0	41.1	0.0	21.0	32.6	0.0	14.9	31.9	0.0
Cycle Q Clear(g_c), s	14.6	37.3	0.0	24.0	41.1	0.0	21.0	32.6	0.0	14.9	31.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	359	1008		588	1269		510	932		395	799	
V/C Ratio(X)	0.98	0.93		1.01	0.88		1.02	0.93		0.94	1.00	
Avail Cap(c_a), veh/h	359	1008		588	1269		510	932		395	799	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.19	0.19	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	62.3	48.2	0.0	58.0	42.1	0.0	52.5	37.9	0.0	61.5	54.0	0.0
Incr Delay (d2), s/veh	41.8	16.3	0.0	39.8	8.8	0.0	21.9	3.9	0.0	30.3	31.4	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.2	17.8	0.0	13.4	19.0	0.0	9.8	12.9	0.0	8.2	17.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	104.1	64.5	0.0	97.8	50.9	0.0	74.3	41.8	0.0	91.8	85.3	0.0
LnGrp LOS	F	E		F	D		F	D		F	F	
Approach Vol, veh/h		1292			1708			1386			1169	
Approach Delay, s/veh		75.2			67.2			54.0			87.4	
Approach LOS		E			E			D			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	29.0	47.0	26.0	38.0	20.0	56.0	21.0	43.0
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	24.0	41.0	21.0	32.0	15.0	50.0	16.0	37.0
Max Q Clear Time (g_c+I1), s	26.0	39.3	23.0	33.9	16.6	43.1	16.9	34.6
Green Ext Time (p_c), s	0.0	1.0	0.0	0.0	0.0	3.8	0.0	1.3

Intersection Summary	
HCM 7th Control Delay, s/veh	70.0
HCM 7th LOS	E

Notes

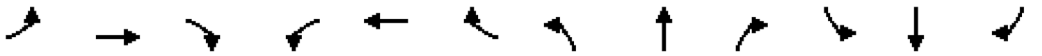
Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	519	20	492	0	461	0	1288	622	0	1309	0
Future Volume (veh/h)	30	519	20	492	0	461	0	1288	622	0	1309	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1856	1870	1870	0	1841	1870	0	1811	0
Adj Flow Rate, veh/h	31	535	21	507	0	475	0	1328	313	0	1349	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	3	2	2	0	4	2	0	6	0
Cap, veh/h	32	555	22	543	0	487	0	1399	634	0	1376	0
Arrive On Green	0.16	0.16	0.16	0.31	0.00	0.31	0.00	0.40	0.40	0.00	0.40	0.00
Sat Flow, veh/h	196	3379	133	1767	0	1585	0	3589	1585	0	3622	0
Grp Volume(v), veh/h	294	0	293	507	0	475	0	1328	313	0	1349	0
Grp Sat Flow(s),veh/h/ln	1861	0	1847	1767	0	1585	0	1749	1585	0	1721	0
Q Serve(g_s), s	22.0	0.0	22.0	39.0	0.0	41.5	0.0	51.4	20.7	0.0	54.2	0.0
Cycle Q Clear(g_c), s	22.0	0.0	22.0	39.0	0.0	41.5	0.0	51.4	20.7	0.0	54.2	0.0
Prop In Lane	0.11		0.07	1.00		1.00	0.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	306	0	303	543	0	487	0	1399	634	0	1376	0
V/C Ratio(X)	0.96	0.00	0.96	0.93	0.00	0.98	0.00	0.95	0.49	0.00	0.98	0.00
Avail Cap(c_a), veh/h	306	0	303	543	0	487	0	1399	634	0	1376	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.23	0.00
Uniform Delay (d), s/veh	58.1	0.0	58.1	47.1	0.0	48.0	0.0	40.6	31.4	0.0	41.4	0.0
Incr Delay (d2), s/veh	41.5	0.0	42.0	23.5	0.0	34.4	0.0	14.7	2.7	0.0	7.9	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.9	0.0	13.9	20.8	0.0	21.1	0.0	24.7	8.5	0.0	24.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	99.6	0.0	100.0	70.6	0.0	82.4	0.0	55.3	34.1	0.0	49.3	0.0
LnGrp LOS	F		F	E		F		E	C		D	
Approach Vol, veh/h		587			982			1641			1349	
Approach Delay, s/veh		99.8			76.3			51.3			49.3	
Approach LOS		F			E			D			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		62.0		29.0		62.0		49.0				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		56.0		23.0		56.0		43.0				
Max Q Clear Time (g_c+I1), s		53.4		24.0		56.2		43.5				
Green Ext Time (p_c), s		2.1		0.0		0.0		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	62.3
HCM 7th LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	401	499	82	202	341	403	153	240	183	360	240	259
Future Volume (veh/h)	401	499	82	202	341	403	153	240	183	360	240	259
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	422	525	72	213	359	184	161	253	33	379	253	57
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	537	988	135	460	527	265	360	347	293	385	427	361
Arrive On Green	0.20	0.31	0.31	0.12	0.23	0.23	0.08	0.19	0.19	0.12	0.23	0.23
Sat Flow, veh/h	1781	3139	429	1781	2284	1151	1781	1870	1580	1781	1870	1581
Grp Volume(v), veh/h	422	296	301	213	278	265	161	253	33	379	253	57
Grp Sat Flow(s),veh/h/ln	1781	1777	1792	1781	1777	1658	1781	1870	1580	1781	1870	1581
Q Serve(g_s), s	11.6	9.5	9.6	6.1	9.9	10.2	5.1	8.9	1.2	8.5	8.4	2.0
Cycle Q Clear(g_c), s	11.6	9.5	9.6	6.1	9.9	10.2	5.1	8.9	1.2	8.5	8.4	2.0
Prop In Lane	1.00		0.24	1.00		0.69	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	537	559	564	460	410	383	360	347	293	385	427	361
V/C Ratio(X)	0.79	0.53	0.53	0.46	0.68	0.69	0.45	0.73	0.11	0.99	0.59	0.16
Avail Cap(c_a), veh/h	609	854	861	569	741	692	360	743	627	385	824	696
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.0	19.6	19.6	16.8	24.4	24.5	20.9	26.7	23.6	24.3	23.9	21.5
Incr Delay (d2), s/veh	6.0	0.8	0.8	0.7	2.0	2.3	0.9	3.0	0.2	41.8	1.3	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	3.8	3.9	2.4	4.2	4.0	2.1	4.1	0.4	6.6	3.7	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	21.0	20.4	20.4	17.6	26.3	26.7	21.8	29.6	23.7	66.1	25.2	21.7
LnGrp LOS	C	C	C	B	C	C	C	C	C	E	C	C
Approach Vol, veh/h		1019			756			447			689	
Approach Delay, s/veh		20.6			24.0			26.4			47.4	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.0	17.4	12.7	26.4	10.0	20.4	18.6	20.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	8.5	27.6	12.5	33.4	5.5	30.6	16.9	29.0
Max Q Clear Time (g_c+I1), s	10.5	10.9	8.1	11.6	7.1	10.4	13.6	12.2
Green Ext Time (p_c), s	0.0	1.5	0.2	3.7	0.0	1.6	0.5	3.1

Intersection Summary	
HCM 7th Control Delay, s/veh	28.7
HCM 7th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	760	322	607	530	60	266	48	315	120	51	10
Future Volume (veh/h)	20	760	322	607	530	60	266	48	315	120	51	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	0.98		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1411	1870	1870	1870	1870	1781	1870	1870	1856	1870	1870	1870
Adj Flow Rate, veh/h	21	800	302	419	867	59	280	51	114	126	54	4
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	33	2	2	2	2	8	2	2	3	2	2	2
Cap, veh/h	458	854	322	502	976	66	343	80	179	245	264	20
Arrive On Green	0.34	0.34	0.34	0.28	0.28	0.28	0.06	0.16	0.16	0.06	0.15	0.15
Sat Flow, veh/h	1344	2506	945	1781	3462	236	1781	506	1132	1781	1717	127
Grp Volume(v), veh/h	21	567	535	419	468	458	280	0	165	126	0	58
Grp Sat Flow(s),veh/h/ln	1344	1777	1675	1781	1870	1828	1781	0	1638	1781	0	1844
Q Serve(g_s), s	1.2	34.5	34.6	24.7	26.8	26.8	7.0	0.0	10.5	6.5	0.0	3.1
Cycle Q Clear(g_c), s	1.2	34.5	34.6	24.7	26.8	26.8	7.0	0.0	10.5	6.5	0.0	3.1
Prop In Lane	1.00		0.56	1.00		0.13	1.00		0.69	1.00		0.07
Lane Grp Cap(c), veh/h	458	605	570	502	527	515	343	0	259	245	0	283
V/C Ratio(X)	0.05	0.94	0.94	0.83	0.89	0.89	0.82	0.00	0.64	0.51	0.00	0.20
Avail Cap(c_a), veh/h	467	617	582	530	556	543	343	0	418	245	0	462
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.7	35.6	35.7	37.6	38.4	38.4	43.4	0.0	44.0	38.1	0.0	41.3
Incr Delay (d2), s/veh	0.0	21.7	23.0	10.6	15.5	15.8	14.3	0.0	2.6	1.8	0.0	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	18.1	17.3	12.0	14.2	14.0	5.6	0.0	4.4	3.0	0.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	24.7	57.4	58.7	48.2	53.9	54.2	57.7	0.0	46.6	39.9	0.0	41.7
LnGrp LOS	C	E	E	D	D	D	E		D	D		D
Approach Vol, veh/h		1123			1345			445			184	
Approach Delay, s/veh		57.4			52.3			53.6			40.5	
Approach LOS		E			D			D			D	

Timer - Assigned Phs	2	3	4		6	7	8					
Phs Duration (G+Y+Rc), s	36.0	11.5	21.6		42.5	11.0	22.1					
Change Period (Y+Rc), s	4.5	4.5	4.5		4.5	4.5	4.5					
Max Green Setting (Gmax), s	33.2	7.0	28.0		38.8	6.5	28.5					
Max Q Clear Time (g_c+I1), s	28.8	9.0	5.1		36.6	8.5	12.5					
Green Ext Time (p_c), s	2.7	0.0	0.2		1.4	0.0	0.8					

Intersection Summary	
HCM 7th Control Delay, s/veh	53.6
HCM 7th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.



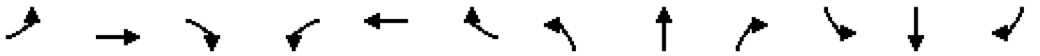
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1662	791	426	1290	700	675
Future Volume (veh/h)	1662	791	426	1290	700	675
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1856	1870	1870
Adj Flow Rate, veh/h	1749	0	448	1358	737	699
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	3	2	2
Cap, veh/h	1826		468	2487	628	885
Arrive On Green	0.51	0.00	0.14	0.71	0.18	0.18
Sat Flow, veh/h	3647	1585	3456	3618	3456	2790
Grp Volume(v), veh/h	1749	0	448	1358	737	699
Grp Sat Flow(s),veh/h/ln	1777	1585	1728	1763	1728	1395
Q Serve(g_s), s	37.6	0.0	10.3	14.7	14.5	14.5
Cycle Q Clear(g_c), s	37.6	0.0	10.3	14.7	14.5	14.5
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1826		468	2487	628	885
V/C Ratio(X)	0.96		0.96	0.55	1.17	0.79
Avail Cap(c_a), veh/h	1835		468	2497	628	885
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.6	0.0	34.3	5.6	32.6	24.8
Incr Delay (d2), s/veh	12.5	0.0	31.0	0.2	94.2	4.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.6	0.0	6.0	3.4	14.0	13.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	31.1	0.0	65.2	5.9	126.8	29.7
LnGrp LOS	C		E	A	F	C
Approach Vol, veh/h	1749			1806	1436	
Approach Delay, s/veh	31.1			20.6	79.5	
Approach LOS	C			C	E	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	15.3	45.5		19.0		60.8
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s	10.8	41.2		14.5		56.5
Max Q Clear Time (g_c+I1), s	12.3	39.6		16.5		16.7
Green Ext Time (p_c), s	0.0	1.4		0.0		12.4

Intersection Summary	
HCM 7th Control Delay, s/veh	41.2
HCM 7th LOS	D

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	10	622	0	350	0	1390	703	321	1330	10
Future Volume (veh/h)	0	0	10	622	0	350	0	1390	703	321	1330	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	418	1841	1870	1811	1870	1841	1826	1796	1856	418
Adj Flow Rate, veh/h	0	0	0	655	0	0	0	1463	0	338	1400	11
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	100	4	2	6	2	4	5	7	3	100
Cap, veh/h	0	3	0	770	0		2	1389		340	2356	19
Arrive On Green	0.00	0.00	0.00	0.22	0.00	0.00	0.00	0.40	0.00	0.20	0.66	0.66
Sat Flow, veh/h	0	1870	0	3506	0	1535	1781	3497	1547	1711	3585	28
Grp Volume(v), veh/h	0	0	0	655	0	0	0	1463	0	338	688	723
Grp Sat Flow(s),veh/h/ln	0	1870	0	1753	0	1535	1781	1749	1547	1711	1763	1850
Q Serve(g_s), s	0.0	0.0	0.0	13.1	0.0	0.0	0.0	29.0	0.0	14.4	16.0	16.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	13.1	0.0	0.0	0.0	29.0	0.0	14.4	16.0	16.0
Prop In Lane	0.00		0.00	1.00		1.00	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	0	3	0	770	0		2	1389		340	1159	1216
V/C Ratio(X)	0.00	0.00	0.00	0.85	0.00		0.00	1.05		1.00	0.59	0.59
Avail Cap(c_a), veh/h	0	128	0	888	0		122	1389		340	1159	1216
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	27.4	0.0	0.0	0.0	22.0	0.0	29.2	7.0	7.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	7.1	0.0	0.0	0.0	39.6	0.0	47.4	0.8	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	6.0	0.0	0.0	0.0	17.6	0.0	10.1	4.9	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	0.0	34.5	0.0	0.0	0.0	61.6	0.0	76.7	7.9	7.8
LnGrp LOS				C				F		E	A	A
Approach Vol, veh/h		0			655			1463			1749	
Approach Delay, s/veh		0.0			34.5			61.6			21.1	
Approach LOS					C			E			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	19.0	33.5		0.0	0.0	52.5		20.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	14.5	29.0		5.0	5.0	38.5		18.5				
Max Q Clear Time (g_c+I1), s	16.4	31.0		0.0	0.0	18.0		15.1				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	10.4		0.9				

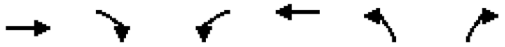
Intersection Summary		
HCM 7th Control Delay, s/veh	38.7	
HCM 7th LOS	D	

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

HCM 7th Edition methodology does not support Non-NEMA phasing.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2205	72	467	1616	0	697
Future Volume (vph)	2205	72	467	1616	0	697
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5		4.5
Lane Util. Factor	0.95	1.00	1.00	0.95		1.00
Frt	1.00	0.85	1.00	1.00		0.87
Flt Protected	1.00	1.00	0.95	1.00		1.00
Satd. Flow (prot)	3539	1524	1752	3539		1611
Flt Permitted	1.00	1.00	0.07	1.00		1.00
Satd. Flow (perm)	3539	1524	121	3539		1611
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2321	76	492	1701	0	734
RTOR Reduction (vph)	0	27	0	0	0	0
Lane Group Flow (vph)	2321	49	492	1701	0	734
Heavy Vehicles (%)	2%	6%	3%	2%	2%	2%
Turn Type	NA	Perm	pm+pt	NA		pm+ov
Protected Phases	2		1	6		1
Permitted Phases		2	6			6
Actuated Green, G (s)	56.5	56.5	82.5	87.0		82.5
Effective Green, g (s)	56.5	56.5	82.5	87.0		82.5
Actuated g/C Ratio	0.65	0.65	0.95	1.00		0.95
Clearance Time (s)	4.5	4.5	4.5	4.5		4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	2298	989	517	3539		1611
v/s Ratio Prot	c0.66		c0.23	0.48		0.11
v/s Ratio Perm		0.03	0.67			0.34
v/c Ratio	1.01	0.05	0.95	0.48		0.46
Uniform Delay, d1	15.3	5.5	29.3	0.0		0.2
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	21.3	0.0	27.7	0.1		0.2
Delay (s)	36.5	5.5	57.0	0.1		0.4
Level of Service	D	A	E	A		A
Approach Delay (s/veh)	35.5			12.9	0.4	
Approach LOS	D			B	A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	21.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	87.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	111.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Appendix C. Signal Warrants

FEHR PEERS

Project	Ho'onani Village
Major Street	Hana Highway
Scenario	Existing Conditions
Minor Street	WBL to Hansen Road
Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	262
Through	0	0	1,829	1,324
Right	460	0	16	0
Total	460	0	1,845	1,586

Major Street Direction

	North/South
x	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	56.71
Approach with Worst Case Delay	WB
Total Vehicles on Approach	262

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Existing Conditions	**4.1**	**262**	**3,891**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

FEHR PEERS

Major Street	Hana Highway	Project	Ho'onani Village
Minor Street	WBL to Hansen Road	Scenario	
		Period	

Four-Hour Volumes by Turn Movement

	NB	SB	EB	WB
Left	0	0	0	1,095
Through	0	0	6,749	5,078
Right	1,596	0	57	0
Total	1,596	0	6,806	6,173

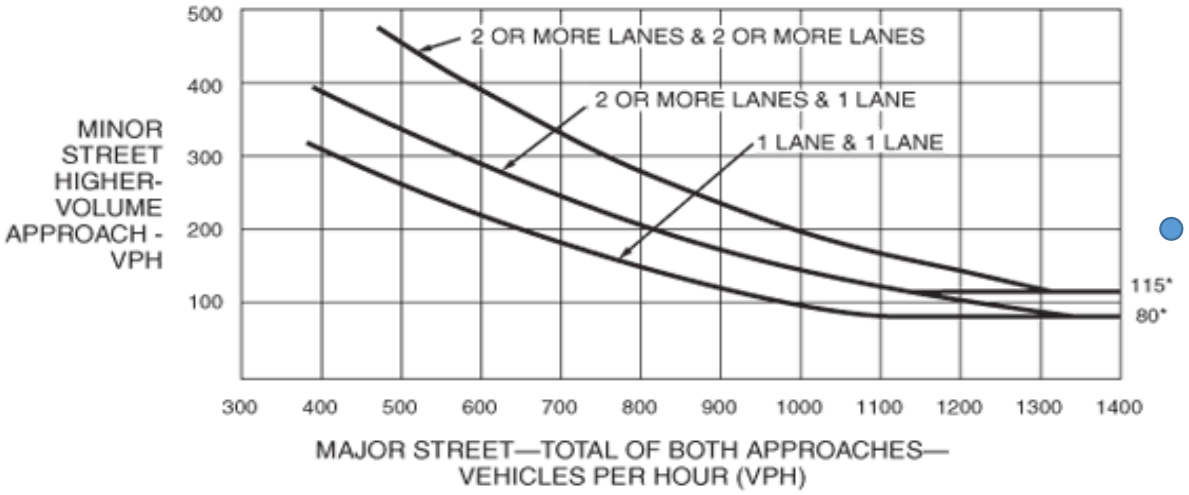
Major Street Direction

	North/South
x	East/West

	Major Street	Minor Street	Warrant Met
	Hana Highway	WBL to Hansen Road	
Number of Approach Lanes	**2**	**1**	**Yes**
Vehicles per Hour *	**1,687**	**274**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

Appendix D. Trip Generation Rates

Preferred Alternative Trip Generation

Land Use	Phase	Units	ITE Code	Quantity	Daily	AM In	AM Out	AM Total	PM In	PM Out	PM Total
(821) Shopping Plaza (40-150k) -Supermarket -No (Adj Streets, 7-9A, 4-6P)	Restaurant, Food Hall, and Entertainment Space	1000 Sq.Ft.GLA	821	45	2,942	45	27	72	105	109	214
(710) General Office Building (Adj Streets, 7-9A, 4-6P)	Office - All Phases	1000 Sq. Ft. GFA	710	100	826	116	16	132	21	109	130
(310) Hotel (Adj Streets, 7-9A, 4-6P)	Phase 7 Hospitality (Building 1)	Rooms	310	100	584	18	16	34	15	15	30
(310) Hotel (Adj Streets, 7-9A, 4-6P)	Phase 7 Hospitality (Building 2)	Rooms	310	140	818	25	23	48	33	31	64
(821) Shopping Plaza (40-150k) -Supermarket -No (Adj Streets, 7-9A, 4-6P)	Phase 9 Commercial/Civic	1000 Sq.Ft.GLA	821	30	1,961	30	18	48	70	73	143
(590) Library (Adj Streets, 7-9A, 4-6P)	Phase 9 Civic	1000 Sq. Ft. GFA	590	14	1,023	11	4	15	59	63	122
Custom	Phase 9 Recreation/Entertainment/Park (Half)	Custom	NA	12	1,493	51	4	55	95	45	140
Custom	Phase 9 Recreation/Entertainment/Park (Half)	Custom	NA	12	1,493	51	4	55	95	45	140
(220) Multifamily Housing (Low-Rise) Not Close to Rail Transit (Adj Streets, 7-9A, 4-6P)	Residential - All Phases	Dwelling Units	220	1,608	9,173	138	438	576	483	296	779
(130) Industrial Park (Adj Streets, 7-9A, 4-6P)	Light Industrial - All Phases	1000 Sq. Ft. GFA	130	255	1,329	125	37	162	43	112	155
Total Before Reduction					*21,642*	*610*	*587*	*1,197*	*1,019*	*898*	*1,917*
Internal Capture					-758	-42	-40	-82	-79	-69	-148
External Walk, Bike, and Transit					-572	-20	-20	-40	-26	-22	-48
Total Reductions					-1,330	-62	-60	-122	-105	-91	-196
Net New Driveway Trips					*20,312*	*548*	*527*	*1,075*	*914*	*807*	*1,721*
Retail with Reductions					4,602	68	40	108	157	163	320
Retail Pass-By (Percentage)					23%	15%	15%	15%	30%	30%	30%
Retail Pass-By Reduction					-1,035	-10	-6	-16	-47	-49	-96
Final Retail					3,566	57	35	92	110	114	224
Final Project Trips					**19,277**	**538**	**521**	**1,059**	**867**	**758**	**1,625**

Model Inputs

Input Variable	Input Value	Source
MXD specific inputs		
Project Area (Acres)	184.49	GIS
Intersections per Square Mile	2	EPA Smart Location Database (2013) - 2010 Scenario
Employment within 1 mile of Project Site	3294	EPA Smart Location Database (2013) - 2010 Scenario
Share of regional employment within a 30 minute trip by trans	0.03194209	EPA Smart Location Database (2013) - 2010 Scenario
Surrounding Household Size	3.20	ACS 2012 (5-year) - All Housing Types
Surrounding Vehicle Ownership	1.82	ACS 2012 (5-year) - All Housing Types
Site Household Size	3.20	ACS 2012 (5-year) - All Housing Types
Site Vehicle Ownership	1.82	ACS 2012 (5-year) - All Housing Types
Average Vehicle Occupancy (HBW Trips)	1.1	NCHRP 758
Average Vehicle Occupancy (HBO Trips)	1.1	NCHRP 758
Average Vehicle Occupancy (NHB Trips)	1.1	NCHRP 758

Small Mixed Use Alternative Trip Generation

Land Use	Phase	Units	ITE Code	Quantity	Daily	AM In	AM Out	AM Total	PM In	PM Out	PM Total
(821) Shopping Plaza (40-150k) -Supermarket -No (Adj Streets, 7-9A, 4-6P)	Restaurant, Food Hall, and Entertainment Space	1000 Sq.Ft.GLA	821	11	782	12	7	19	27	29	57
(710) General Office Building (Adj Streets, 7-9A, 4-6P)	Office - All Phases	1000 Sq. Ft. GFA	710	40	478	60	8	68	12	63	75
(310) Hotel (Adj Streets, 7-9A, 4-6P)	Phase 7 Hospitality (Building 1)	Rooms	310	153	939	28	26	55	40	39	79
(310) Hotel (Adj Streets, 7-9A, 4-6P)	Phase 7 Hospitality (Building 2)	Rooms	310	109	669	20	19	39	20	19	39
(821) Shopping Plaza (40-150k) -Supermarket -No (Adj Streets, 7-9A, 4-6P)	Phase 9 Commercial/Civic	1000 Sq.Ft.GLA	821	17	1,174	18	11	28	42	43	85
(590) Library (Adj Streets, 7-9A, 4-6P)	Phase 9 Civic	1000 Sq. Ft. GFA	590	5	408	4	2	6	23	25	48
Custom	Phase 9 Recreation/Entertainment/Park (Half)	Custom	NA	5	595	20	2	22	38	18	56
Custom	Phase 9 Recreation/Entertainment/Park (Half)	Custom	NA	5	595	20	2	22	38	18	56
(220) Multifamily Housing (Low-Rise) Not Close to Rail Transit (Adj Streets, 7-9A, 4-6P)	Residential - All Phases	Dwelling Units	220	450	2,787	43	135	178	145	89	234
(130) Industrial Park (Adj Streets, 7-9A, 4-6P)	Light Industrial - All Phases	1000 Sq. Ft. GFA	130	57	972	108	33	141	36	93	129
Total Before Reduction					*9,399*	*333*	*245*	*578*	*421*	*436*	*858*
Internal Capture					-290	-20	-14	-34	-29	-30	-60
External Walk, Bike, and Transit					-182	-8	-6	-14	-8	-8	-16
Total Reductions					-472	-28	-20	-48	-37	-39	-76
Net New Driveway Trips					*8,927*	*305*	*225*	*530*	*384*	*397*	*782*
Retail with Reductions					1,858	27	16	43	63	66	129
Retail Pass-By (Percentage)					23%	15%	15%	15%	30%	30%	30%
Retail Pass-By Reduction					-418	-4	-2	-6	-19	-20	-39
Final Retail					1,440	23	14	37	45	46	91
Final Project Trips					**8,509**	**301**	**223**	**524**	**365**	**377**	**743**

Model Inputs

Input Variable	Input Value	Source
MXD specific inputs		
Project Area (Acres)	184.49	GIS
Intersections per Square Mile	2	EPA Smart Location Database (2013) - 2010 Scenario
Employment within 1 mile of Project Site	3294	EPA Smart Location Database (2013) - 2010 Scenario
Share of regional employment within a 30 minute trip by trans	0.03194209	EPA Smart Location Database (2013) - 2010 Scenario
Surrounding Household Size	3.20	ACS 2012 (5-year) - All Housing Types
Surrounding Vehicle Ownership	1.82	ACS 2012 (5-year) - All Housing Types
Site Household Size	3.20	ACS 2012 (5-year) - All Housing Types
Site Vehicle Ownership	1.82	ACS 2012 (5-year) - All Housing Types
Average Vehicle Occupancy (HBW Trips)	1.1	NCHRP 758
Average Vehicle Occupancy (HBO Trips)	1.1	NCHRP 758
Average Vehicle Occupancy (NHB Trips)	1.1	NCHRP 758

1. DU = dweling units. KSF = 1000 square feet
2. ITE Trip Generation land use category (821) Shopping Plaza (40-150k) -Supermarket -No (Adj Streets, 7-9A, 4-6P)
   Daily: T = 65.38(X)
   AM Peak Hour: T = 1.59(X)
   PM Peak Hour: T = 4.76(X)
3. ITE Trip Generation land use category (710) General Office Building (Adj Streets, 7-9A, 4-6P)
   Daily: T = 6.18(X) + 207.96
   AM Peak Hour: T = 1.12(X) + 19.95 (88% in, 12% out)
   PM Peak Hour: T = 0.99(X) + 31.14 (17% in, 83% out)
4. ITE Trip Generation land use category (310) Hotel (Adj Streets, 7-9A, 4-6P)
   Daily: T = 5.84(X)
   AM Peak Hour: T = 0.34(X) (57.99999999999999% in, 42% out)
   PM Peak Hour: T = 0.85(X) + -55.22 (49% in, 51% out)
5. ITE Trip Generation land use category (310) Hotel (Adj Streets, 7-9A, 4-6P)
   Daily: T = 5.84(X)
   AM Peak Hour: T = 0.34(X) (57.99999999999999% in, 42% out)
   PM Peak Hour: T = 0.85(X) + -55.22 (49% in, 51% out)
6. ITE Trip Generation land use category (821) Shopping Plaza (40-150k) -Supermarket -No (Adj Streets, 7-9A, 4-6P)
   Daily: T = 65.38(X)
   AM Peak Hour: T = 1.59(X)
   PM Peak Hour: T = 4.76(X)
7. ITE Trip Generation land use category (590) Library (Adj Streets, 7-9A, 4-6P)
   Daily: T = 72.05(X)
   AM Peak Hour: T = 1.08(X) (69% in, 31% out)
   PM Peak Hour: T = 8.56(X) (47% in, 53% out)
8. ITE Trip Generation land use category Custom
   Daily: T = 0.00(X)
   AM Peak Hour: T = 0.00(X)
   PM Peak Hour: T = 0.00(X)
9. ITE Trip Generation land use category Custom
   Daily: T = 0.00(X)
   AM Peak Hour: T = 0.00(X)
   PM Peak Hour: T = 0.00(X)
10. ITE Trip Generation land use category (220) Multifamily Housing (Low-Rise) Not Close to Rail Transit (Adj Streets, 7-9A, 4-6P)
   Daily: T = 5.63(X) + 120.45
   AM Peak Hour: T = 0.35(X) + 12.93 (20% in, 80% out)
   PM Peak Hour: T = 0.48(X) + 7.35 (65% in, 35% out)
11. ITE Trip Generation land use category (130) Industrial Park (Adj Streets, 7-9A, 4-6P)
   Daily: T = 2.04(X) + 808.48
   AM Peak Hour: T = 0.14(X) + 125.84 (86% in, 14.000000000000002% out)
   PM Peak Hour: T = 0.16(X) + 114.29 (20% in, 80% out)
12. Reductions based on application of MXD+ model:
   Total Reductions: Daily = 6.1%, AM Peak Hour = 10.2%, PM Peak Hour = 10.2%
   Internal Capture: Daily = 3.5%, AM Peak Hour = 6.9%, PM Peak Hour = 7.7%
   External Walk, Bike, and Transit: Daily = 2.6%, AM Peak Hour = 3.3%, PM Peak Hour = 2.5%
13. Sources:
   ITE Trip Generation Manual, 9th and 10th Edition

Fehr and Peers

14. Person Trips:

Person Trips derived using the following average vehicle occupancy rates, applied to ITE Vehicle Trip Generation:

HBW AVO:1.05

HBO AVO:1.05

NHW AVO:1.05

APPENDIX ‘V’ – DPR COMMENTS ON ALTERNATIVE LOCATION

RICHARD T. BISSEN, JR.
Mayor

JOSIAH K. NISHITA
Managing Director

PATRICK S. MCCALL
Director

SHANE T. DUDOIT
Deputy Director

DEPARTMENT OF PARKS AND RECREATION
COUNTY OF MAUI
700 HALI'A NAKOA STREET, UNIT 2
WAILUKU, MAUI, HAWAI'I 96793
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December 22, 2025

Yukino Uchiyama, AICP
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, HI 96793

Dear Ms. Yukino:

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE FOR THE PROPOSED CENTRAL MAUI WASTEWATER RECLAMATION FACILITY; KAHULUI, MAUI, HAWAI'I

Thank you for the opportunity to review and comment on the subject project. The Department of Parks and Recreation (DPR) has the following comments and concerns. DPR, for clarity, has provided previous comments supplied on behalf of the aforementioned project. Current comments are listed below the previous submissions if they had been addressed sufficiently during the draft.

DPR requests an in-person meeting to discuss the comments provided and a list of assurances moving forward with the project applicant.

***Previous 08.21.2023*: Land purchased with revenue from the open space, natural resources, cultural resources, and scenic views preservation fund.** The Fiscal Year 2013 budget appropriated $5 million for the acquisition of the 209-acre site from the open space, natural resources, cultural resources, and scenic views preservation fund. Resolution No. 13-97 identifies the agreed upon purchase price of the property as $5,226,075 plus closing costs of $5,000. Resolution No. 13-97 further notes that the property shall be used consistently with the purposes set forth in Section 9-19, Revised Charter of the County of Maui (1983), as amended, and Chapter 3.88, Maui County Code (MCC). Pursuant to Chapter 3.88 MCC, lands purchased with these funds shall be for the following purposes:

1. Public outdoor recreation and education;
2. Preservation of historic or culturally important land areas;
3. Protection of significant habitat or ecosystems, including buffer zones;
4. Preserving forests, beaches, coastal areas and agricultural lands;
5. Protecting watershed lands to preserve water quality;

6. Conserving land for the purpose of reducing erosion, floods, landslides, and runoff; and
7. Improving disabled and public access to, and enjoyment of, public land, open space, and recreational facilities.

The proposed Central Maui Wastewater Reclamation Facility as described in the EISPN is not consistent with the purposes set forth in Section 9-19, Revised Charter of the County of Maui (1983), as amended, and Chapter 3.88, MCC.

***Previous 12.19.2024*: Criteria set forth in Section 9-19, Revised Charter of the County of Maul (1983), as amended, and Chapter 3. 88, Maui County Code (MCC)**
On the topic of the proposed WWRF site on land purchased with the Open Space, Natural Resources, Cultural Resources, and Scenic Views Preservation Fund (Preservation Fund), the DEM contends that the proposed project meets the regulatory compliance of the Preservation Fund by protecting watershed resources since the facility will provide an alternative to cesspools and septic tanks and will produce R-1 quality recycled water for agricultural and irrigation use.

The DPR acknowledges the project may protect watershed resources in the future by providing an alternative wastewater management system to reduce dependency on cesspools and septic tanks in preparation of a growing population and future development. Furthermore, DPR agrees that the proposed facility will preserve water by producing recycled water. In consideration of this, we concur that project may be consistent with the goals and objectives of the Preservation Fund.

Although the project may comply with the regulatory requirements on land acquired with the Preservation Fund, it doesn't mean that the proposed use is the best use. The EISPN fails to acknowledge the Preservation Fund and associated criteria. The draft EIS should provide an assessment of the project's compliance with the Preservation Fund, and it should provide an alternatives analysis that weighs the benefits of the proposed project against the alternative use of the project site as part of a regional park.

Current 12.18.2025: The applicant has failed to present a discussion relating to the Preservation Fund as requested in the previous comments.

***Previous 08.21.2023*: DPR planning for a regional park at the site.** The Maui Island Plan (2012) identifies the subject 209-acre site and the adjacent 100-acre County base yard site as the Central Maui Regional Park and County Facility Area. Both sites are designated Park on the Protected Areas Diagram and described in the Directed Growth Plan to be used for parks, open space, recreation, and preservation of the cultural resources in the Central Maui Sand Dune system.

To fulfill the purposes as described in the Maui Island Plan and Resolution No. 13-97, the DPR retained a consultant in 2020 to prepare a master plan and technical studies including an existing site conditions analysis, Preliminary Engineering Report, Traffic Impact Assessment Report (TIAR), and Cultural Impact Assessment (CIA). The CIA is underway and the results of the study will inform the range of potential recreational or

cultural uses of the site.

***Previous 12.19.2024*: The Maui Island Plan (MIP) Designation**
The MIP states "The Central Maui Regional Park may provide an area for the offices of the County Department of Parks and Recreation, a community center, County base yards and like County facilities, and a location for the annual County Fair. " Since other uses are possible on this parcel, the draft EIS should provide an alternatives analysis of other possible uses at the proposed WWRF site.
The DEM argues that the Central Maui Regional Park allows for "County baseyards and like County facilities", and that the proposed WWRF qualifies as a like County facility. While DPR will not dispute that the proposed WWFR is a county facility that complies with other relevant criteria described in the MIP, we do maintain that the primary intended use of the Central Maul Regional Park property is to provide recreation facilities and open space for use as a regional park. We concur that the proposed WWFR could be a reasonable secondary use compliant with the MIP designation if adverse impacts are properly mitigated.

Current 12.18.2025: The applicant has submitted comments that these requests will be addressed, but has failed to present viable options on how odors or sight lines will be controlled with tangible methodology or proposed schematics.

***Previous 08.21.2023:* Potential impacts on the proposed park**. **Historic properties at the proposed facility.** Regardless of what the specific uses are, the presence of a wastewater facility in proximity to the park will likely have negative impacts due to odors and other operational functions at the facility. As a result, the “usable” area of the site would be limited to areas where odors and other impacts are not experienced. Furthermore, the final footprint of the WWRF site could be larger than what has been shown. Access roads and other ancillary structures for the facility should be displayed, along with any buffer areas that will be provided and are not part of the park.

As noted earlier, a CIA is now being prepared for the 209-acre site. The DPR starts master plan projects with a CIA before any planning is initiated, as part of its commitment to understanding the cultural importance of lands we steward and identifying and protecting cultural features and historic properties. This approach is part of the department’s four pillars for its planning program. Under the Stewardship Pillar, the strategy is to “Respect the historical and cultural legacy of park sites and features during planning and design”.

As part of this approach and in addition to the CIA, we consult with Dr. Janet Six, the County of Maui’s archaeologist, on projects where her expertise is needed. Dr. Six has provided information on other historic properties in the area and has provided the DPR with the comments below.

Comments from Dr. Six

As DPR has already pointed out, a project such as this is not appropriate for this area based on vetted criteria, therefore I would like to weigh in on the cultural inappropriateness of constructing such a facility in or adjacent to a known burial ground

– the Pu`uone Dune Complex.

Below are my comments and concerns with the proposed Waste Water Reclamation Facility being constructed in this area. If they seem familiar it is because they are. This is some of the same data that I presented to our former Mayor when he wanted to build "Dream City II" in the Wai`ale area leading to the "Wai`ale Acquisition" and the preservation of over 500 acres to the northeast. The only thing that has changed since I presented this data in 2020, is that additional precontact burials have been identified in the immediate area.

Previous 12.19.2024: **Potential Impacts / Historic Properties**
The EISPN does not adequately assess potential impacts and mitigation For example, under the section assessing potential impacts to recreational facilities, the EISPN only states, "the proposed project is not anticipated to impact recreational facilities in Central Maui. " DPR does not concur with this statement in the EISPN. We believe that one of the biggest impacts of the proposed project is that it is taking away lands that were intended for use as a regional park, and that the project may adversely impact the adjacent planned future recreational area. The draft EIS should acknowledge the impact of the proposed project, account for the area of impact beyond the footprint of the facilities and describe the mitigation that will be implemented to promote the full enjoyment of the surrounding planned Central Maui Regional Park. The DPR acknowledges that the design of the proposed facilities will include odor control and visual buffers. Please provide a detailed description of these and other mitigation in your draft EIS.

The DPR recognizes that the culturally sensitive nature of the project area would have similar implications for any proposed development in the Pu'uone dune complex, and that other possible sites for the proposed WWRF would also likely have potential impacts to historic and cultural resources. We also recognize that as part of the EIS, consultation with the State Historic Preservation Division (SHPD) and Office of Hawaiian Affairs (OHA) will be conducted to ensure historic, archaeological, and cultural concerns are addressed and appropriate mitigation measures identified. The draft EIS should provide a comprehensive oven/iew of the project area's history and cultural significance, clarify likely impacts of the proposed project, and describe all mitigation measures that will be implemented to minimize adverse impacts.

Current 12.18.2025: The applicant has submitted alternative locations, but all are deemed 'non-viable'. Due to this DPR does not accept these as substantial location alternatives.

Previous 08.13.2023: **The Pu`uone Dune Complex:**
The following maps are the result of a collaborative effort in August of 2020, between the Principal Archaeologist for Maui County, Janet Six, PhD, County GIS specialists Michael Napier (Planning) and Daniel Sereno (Management) and the State Historic Preservation Division (SHPD) GIS specialist Michael Wahl. Dr. Susan Lebo, head of the SHPD Archaeology Branch, allowed the County to utilize sensitive SHPD data to create a cultural sensitivity "fishnet" layer to better inform the then-Mayor Michael Victorino's proposed Wai`ale 100% affordable housing project***. This analysis comes with the following caveat: the following data displayed is what has been digitized by the SHPD at the time of this request and does not represent the entire scope of SHPD***

data.

The cultural sensitivity fishnet layer – visible as red for high sensitivity and yellow for medium sensitivity - is based on the intersection of soil type and previously recorded archaeological data. It is displayed as a "fishnet" comprised of 100 meter red or yellow squares. The analysis below is based on the following question: ***Where is the intersection of sand, known burials and burial preserves in relation to the parcels that are proposed for development by the County?***

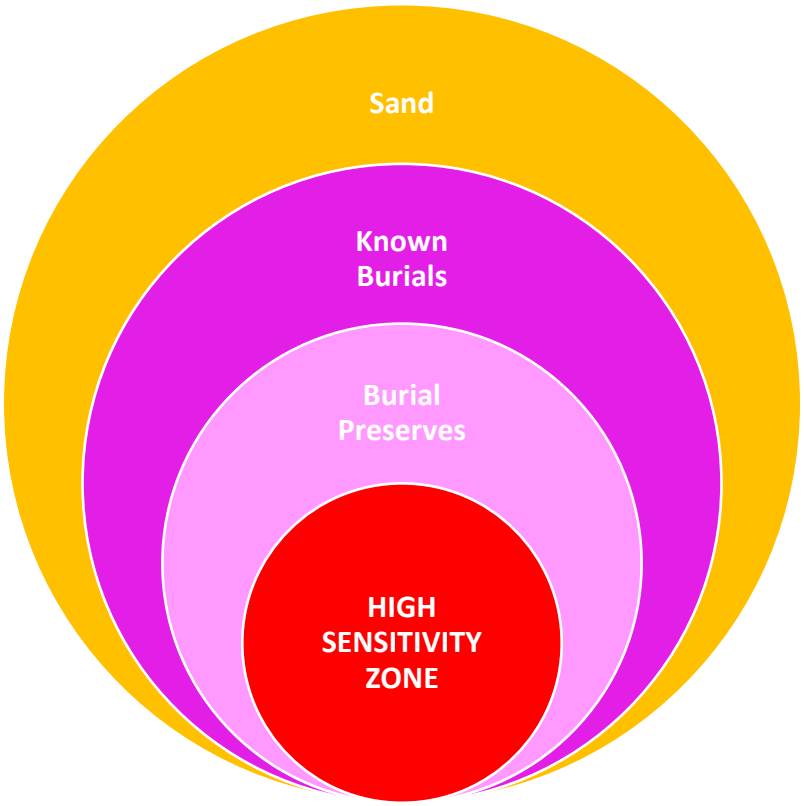


Figure 1: Attributes of HIGH SENSITIVITY areas.
Areas that possess these attributes are displayed on the following map in red or yellow.

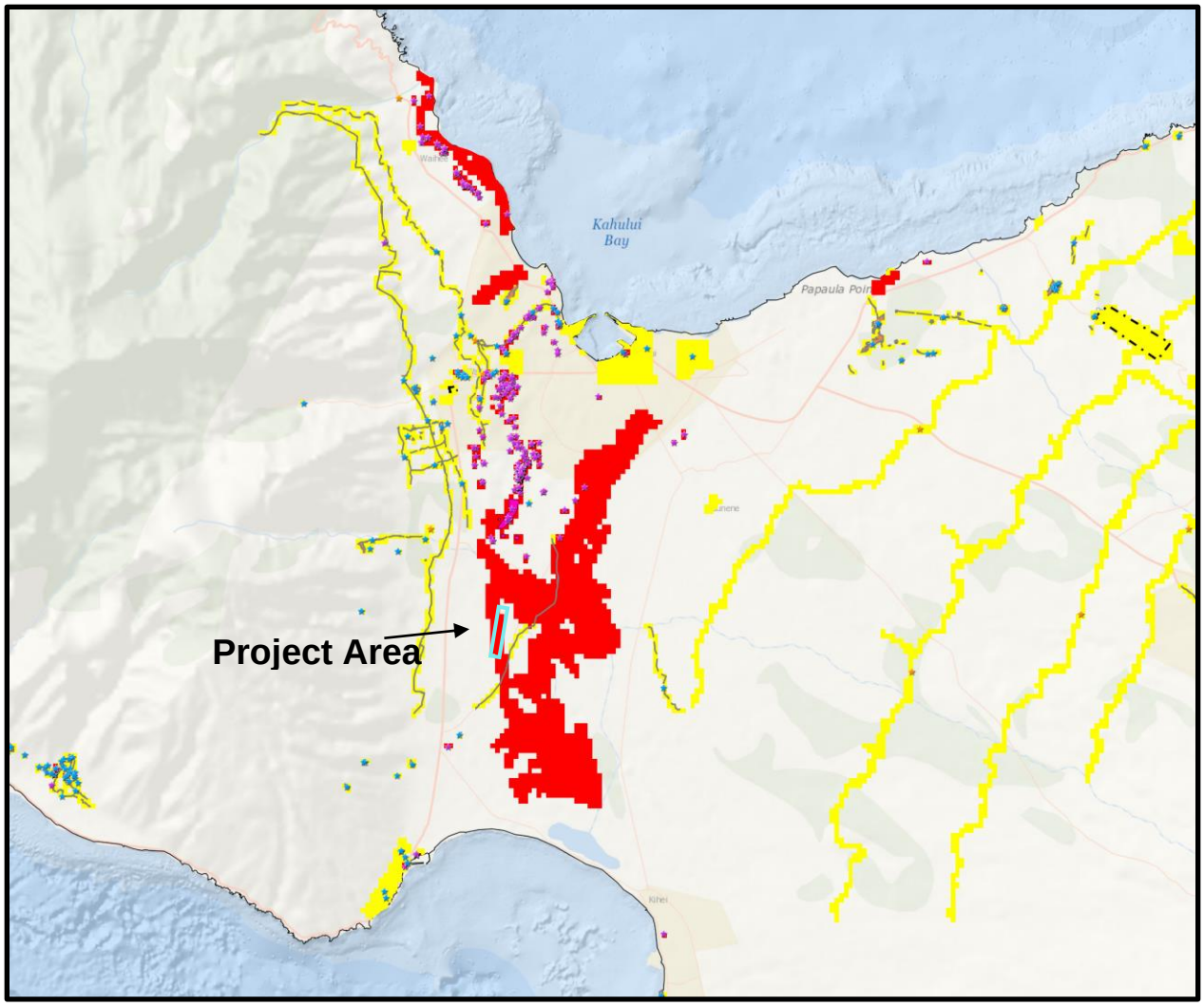


Figure 2: Pu`uone dune complex with the Cultural Sensitivity Fishnet Layer displaying the SHPD data.

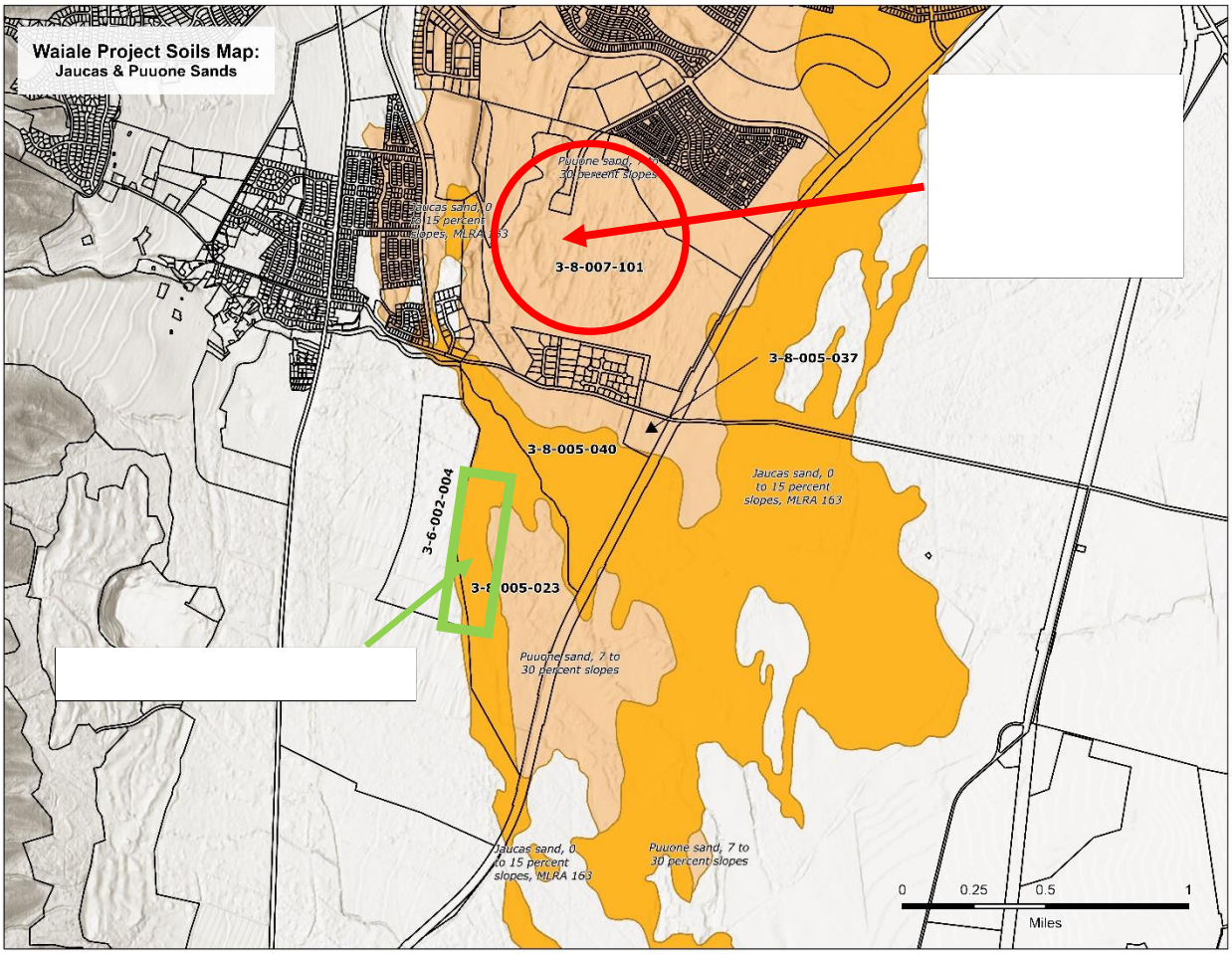


Figure 3: Soils map showing Jaucaus (dark orange) and Pu`uone (light orange) Sands in relation to known burial preserves and the proposed project area.

In an aeolian environment where the wind can shape and shift the dunes over time, "burial depths" could be deeper or shallower than anticipated. At Waiko Light Industrial the ten inadvertent finds are found at three different depths likely indicating various interments over a length of time where surface elevations had likely shifted.

It is well known that people lived in the adjacent valleys such as Waikapu, and not in the dunes so this should not be surprising there is a lack of habitation sites found here. This dune complex is an **Ao Kuewa -** realm of Homeless Spirits.

The following excerpt, taken from a document drafted for the County by then Cultural Advisor to Mayor Victorino, Kumu Hula Pueo Pata. Pata, noted the following about the Pu`uone Dune Complex:

"The expansive region contemporarily known by the superimposed term of "Wailuku Commons" encompasses the low lying plains of Kama'oma'o. Kama'oma'o, also Kulaokama'oma'o, is famed as an **ao kuewa**. Although mentioned in numerous ka'ao, a concise description about this culturally significant is featured herein. In his 48th installment of his "Ka Moolelo Hawaii" series in the Hawaiian language newspaper, *Ke*

Au Okoa, historian Samuel Kamakau wrote:

> *. . . There are three realms spoken of frequently by the very learned people of the olden days here in Hawai‘i, and so too thought the prophets, the geologists, the astronomers, and the architects: 1. The realm of homeless spirits; 2 The realm of family gods and guardians; 3 The realm of Milu. Those are the orders also known as ‘Owā, Kapōkuakini, Kapōkuamano, and as many other names by the people of old. 1. The realm of homeless spirits, the wandering realm is another name. When a person without blood relatives died, their spirit wandered drifting while blundering amongst the wild weeds, and went aimlessly to Kama‘oma‘o, and to the wiliwili tree of Kaupe‘a, and their spirit could go to Leilono where the ‘Uluola‘iwalo is. If their spirit is not procured by their own family god or guardian, or one that might help them, then their spirit will leap upon the rotten breadfruit branch and they will fall all the way down into the endless night presided over by Milu . . . There are places spoken of as belonging to wandering spirits, Maui has Kama‘oma‘o . . .”* (Volume VI, October 6, 1870)”

In Ruling Chiefs of Hawaii, Samuel M. Kamakau writes the following about the Battle of Kakanilua that took place in Sandhills in 1776, between the paramount chief of Hawai`i Island, Kalani‘opu‘u and Maui’s Kahekili.

> *“They slew the Alapa on the sandhills at the southeast of Kalua**. There the dead lay in heaps strewn like kukui branches; the corpses lay heaped in death**; they were slain like fish in enclosed in a net. This great slaughter was called Ahulau ka Pi‘ipi‘i i Kakanilua (Slaughter-of-the-Pi‘ipi‘i-at-Kaka-nilua)” (1961: 84-87).*

In Elsbeth Sperling’s Sites of Maui the following first-hand experience is recorded, describing the Pu`uone Dune Complex as a huge “Golgotha” and also speaks to the scirocco like winds in this region:

WAILUKU 127 BATTLE AND BURIAL SITES

G. W. Bates. *Sandwich Island Notes*, 309.

[Coming from Lahaina.] This mountain-region once passed, the traveler enters on the plain or isthmus of Kula. It is a sandy alluvial, constantly changing the configuration of its surface beneath the action of heavy winds. This neck of land has a gradual elevation from the sea-shore on the southwest, to nearly two hundred feet on the northeast, in the region of Wai-lu-ku. In extent it is seven miles by twelve. During three fourths of the year it forms a fine pasture-land for hundreds of cattle that range over its surface. It is not fit for cultivation.

Leaving Wai-lu-ku, and passing along toward the village Kahului, a distance of three miles, the traveler passes over the old battle-ground named after the village. It is distinctly marked by moving sand-hills, which owe their formation to the action of the northeast trades. Here these winds blow almost with the violence of a sirocco, and clouds of sand are carried across the northern side of the isthmus to a height of several hundred feet. These sand-hills constitute a huge "Golgotha" for thousands of warriors who fell in ancient battles. In places laid bare by the action of the winds, there were human skeletons projecting, as if in the act of struggling for a resurrection from their lurid sepulchres. In many portions of the plain whole cart-loads were exposed in this way. Judging of the numbers of the dead, the contests of the old Hawaiians must have been exceedingly bloody. . . .

Although I could not reconcile my mind to the belief that a removal of any of these remains would be exactly right, I could not resist the inclination to procure a few perfect craniums. This "Golgotha," however, afforded no such specimens. Calling at a store in the village of Kahului, I borrowed a shovel to aid me in my researches. As I rode a short distance to the eastward beyond the village, that shovel, dangling from my saddle-bow, sent forth such sepulchral notes as seemed to chide my resolves. But I rode on. Arriving at the eastern extremity of this old battle-ground, I took off coat and vest, for the weather was intensely warm.

Wailuku 127–132

The openness of the plain caused my operations to be seen by a few natives, who lived the sea-shore, at the distance of a short mile. An ever-restless curiosity brought them to the sc of my excavations, but they manifested not the least concern on account of my sacrilegious a . . . I discovered a few decomposed vertebrae, and some imperfect craniums, which crumble dust by an exposure to the atmosphere.

Conclusion and Expectations:

It is important to consider the data at hand both textual and physical in order to fully comprehend the risks and challenges associated with developing any portion of the Pu`uone dune complex. ***Based solely on the SHPD data, the Cultural Sensitivity Fishnet Layer indicates a high statistical probability of encountering intact and/or previously disturbed burials within portions of the proposed project area.***

Current 12.18.2025: No direct response has been provided for the aforementioned comment. A SHPD consultation has begun, as stated by the applicant on PDF page 39 of the draft (or xxxii) under A List of Permits and Approvals; State of Hawaii; 2.) Chapter 6E, HRS, Historic Preservation Compliance

Should you have any questions, please feel free to contact me or Samual Marvel, Chief of Planning and Development, at samual.marvel@co.maui.hi.us or (808) 270-6173.

Sincerely,

PATRICK S. MCCALL
Director of Parks and Recreation

c: Juan Rivera, Department of Environmental Management
Janet Six, PhD, County of Maui Principal Archaeologist
Samual A. Marvel, Chief of Planning and Development

PSM:SAM:eh

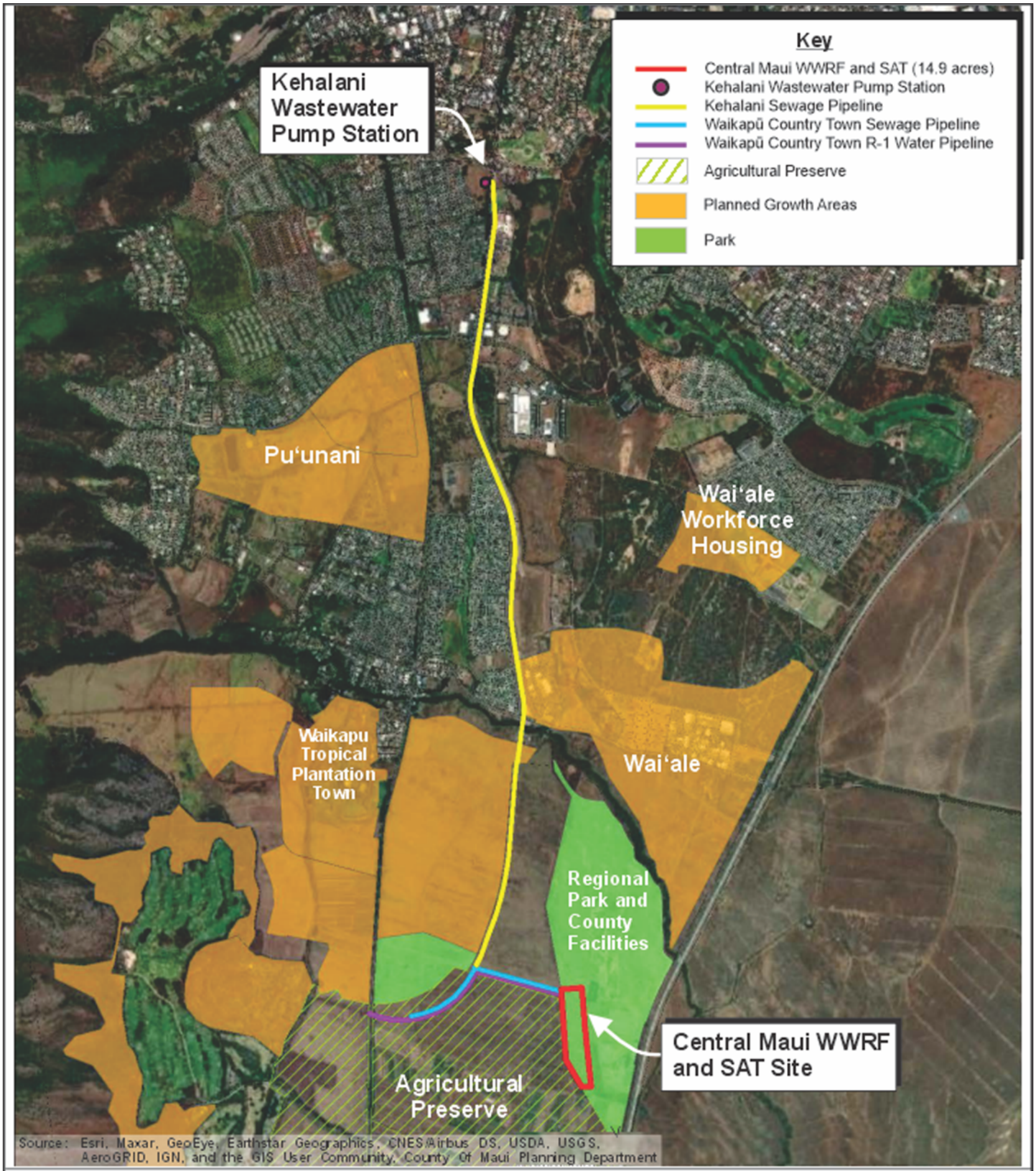


Figure 27 Proposed Central Maui Wastewater Reclamation Facility
Maui Island Plan Growth Areas Map

0 1250 Feet
625 2500

Prepared for: County of Maui, Department of Environmental Management

MUNEKIYO HIRAGA

COM/DEM Cmaui WW Infrastructure/Applications/Figures/MIP Growth Areas

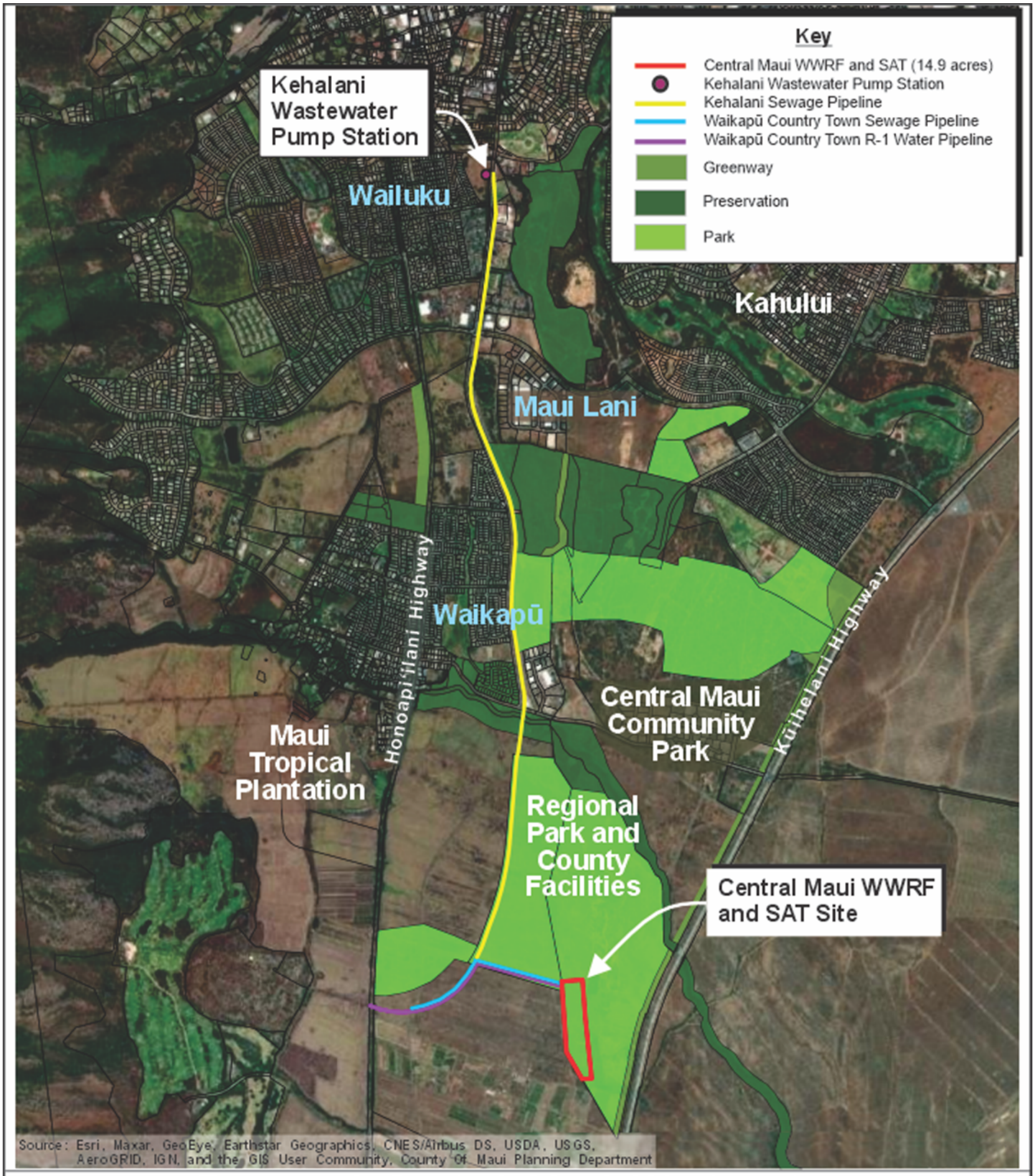


Figure 28 Proposed Central Maui Wastewater Reclamation Facility
Maui Island Plan Planned Protected Areas Map

0 625 1250 2500 Feet

Prepared for: County of Maui, Department of Environmental Management

MUNEKIYO HIRAGA

COM/DEM Cmaui WW Infrastructure/Applications/Figures/MIP Protected Areas

APPENDIX ‘W’ – LAND USE COMMISSION DECISION AND ORDER

BEFORE THE LAND USE COMMISSION

OF THE STATE OF HAWAI'I

In the Matter of the Petition of HO'ONANI DEVELOPMENT LLC To Amend the Agricultural Land Use District Boundary into the Urban Land Use District for Approximately 166.512 acres of land situated at Pu'unēnē, Wailuku, Island and County of Maui, State of Hawai'i, Tax Map Key: (2) 3-8-006- 004-0005	) DOCKET NO. A25-811)) FINDINGS OF FACT, CONCLUSIONS OF) LAW, AND DECISION AND ORDER) CERTIFICATE OF SERVICE) DETERMINING THAT (1) THE LAND USE) COMMISSION AGREES TO BE THE) ACCEPTING AUTHORITY FOR) ENVIRONMENTAL IMPACT STATEMENT) PURSUANT TO HAWAI'I REVISED) STATUTES CHAPTER 343; AND (2) AN EIS) IS LIKELY TO BE REQUIRED; AND (3) TO) PREPARE AN ENVIRONMENTAL IMPACT) STATEMENT PREPARATION NOTICE TO) THE ENVIRONMENTAL REVIEW) PROGRAM; AND CERTIFICATE OF) SERVICE

FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER DETERMINING (1) THAT THE LAND USE COMMISSION AGREES TO BE THE ACCEPTING AUTHORITY PURSUANT TO HAWAI'I REVISED STATUTES CHAPTER 343 AND (2) TO PREPARE AN ENVIRONMENTAL IMPACT STATEMENT PREPERATION NOTICE TO THE ENVIRONMENTAL REVIEW PROGRAM

This is to certify that this is a true and correct copy of the document on file in the office of the State Land Use Commission, Honolulu, Hawai'i.

11/25/2025

BY _____

DANIEL E. ORODENKER
Executive Officer

BEFORE THE LAND USE COMMISSION

OF THE STATE OF HAWAI‘I

In the Matter of the Petition of HO‘ONANI DEVELOPMENT LLC To Amend the Agricultural Land Use District Boundary into the Urban Land Use District for Approximately 166.512 acres of land situated at Pu‘unēnē, Wailuku, Island and County of Maui, State of Hawai‘i, Tax Map Key: (2) 3-8-006- 004-0005	) DOCKET NO. A25-811)) FINDINGS OF FACT, CONCLUSIONS OF) LAW, AND DECISION AND ORDER) CERTIFICATE OF SERVICE) DETERMINING THAT (1) THE LAND USE) COMMISSION AGREES TO BE THE) ACCEPTING AUTHORITY FOR) ENVIRONMENTAL IMPACT STATEMENT) PURSUANT TO HAWAI‘I REVISED) STATUTES CHAPTER 343; AND (2) AN EIS) IS LIKELY TO BE REQUIRED; AND (3) TO) PREPARE AN ENVIRONMENTAL IMPACT) STATEMENT PREPARATION NOTICE TO) THE ENVIRONMENTAL REVIEW) PROGRAM; AND CERTIFICATE OF) SERVICE

FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER DETERMINING (1) THAT THE LAND USE COMMISSION AGREES TO BE THE ACCEPTING AUTHORITY PURSUANT TO HAWAI‘I REVISED STATUTES CHAPTER 343 AND (2) TO PREPARE AN ENVIRONMENTAL IMPACT STATEMENT PREPERATION NOTICE TO THE ENVIRONMENTAL REVIEW PROGRAM

The 2025 Motion to Designate The Land Use Commission As The Accepting Authority For The Environmental Impact Statement (“EIS”) Under Hawai‘i Revised Statutes (“HRS”) Chapter 343 And For Authority To Prepare An Environmental Impact Statement Preparation

BEFORE THE LAND USE COMMISSION

OF THE STATE OF HAWAI‘I

In the Matter of the Petition of HO‘ONANI DEVELOPMENT LLC To Amend the Agricultural Land Use District Boundary into the Urban Land Use District for Approximately 166.512 acres of land situated at Pu‘unēnē, Wailuku, Island and County of Maui, State of Hawai‘i, Tax Map Key: (2) 3-8-006- 004-0005	) DOCKET NO. A25-811)) FINDINGS OF FACT, CONCLUSIONS OF) LAW, AND DECISION AND ORDER) CERTIFICATE OF SERVICE) DETERMINING THAT (1) THE LAND USE) COMMISSION AGREES TO BE THE) ACCEPTING AUTHORITY FOR) ENVIRONMENTAL IMPACT STATEMENT) PURSUANT TO HAWAI‘I REVISED) STATUTES CHAPTER 343; AND (2) AN EIS) IS LIKELY TO BE REQUIRED; AND (3) TO) PREPARE AN ENVIRONMENTAL IMPACT) STATEMENT PREPARATION NOTICE TO) THE ENVIRONMENTAL REVIEW) PROGRAM; AND CERTIFICATE OF) SERVICE

FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER DETERMINING (1) THAT THE LAND USE COMMISSION AGREES TO BE THE ACCEPTING AUTHORITY PURSUANT TO HAWAI‘I REVISED STATUTES CHAPTER 343 AND (2) TO PREPARE AN ENVIRONMENTAL IMPACT STATEMENT PREPERATION NOTICE TO THE ENVIRONMENTAL REVIEW PROGRAM

The 2025 Motion to Designate The Land Use Commission As The Accepting Authority For The Environmental Impact Statement (“EIS”) Under Hawai‘i Revised Statutes (“HRS”) Chapter 343 And For Authority To Prepare An Environmental Impact Statement Preparation

Notice ("EISPN") ("Motion") was filed on August 28, 2025, pursuant to Hawai'i Administrative Rules ("HAR") §15-15-70, for an order to (1) Designate the Land Use Commission as the Accepting Authority for the Environmental Impact Statement Under HRS Chapter 343; and (2) to Determine, Through Its Judgment and Expertise That an EIS is Likely to be Required; and (3) to Authorize Petitioner to Prepare an Environmental Impact Statement Preparation Notice to Submit to the Environmental Review Program.

The State of Hawai'i Land Use Commission ("LUC" or "Commission"), having heard and examined the testimony, exhibits, evidence, and argument of counsel and the parties present during the November 19, 2025, hearing for Ho'onani Development LLC. ("Petitioner") Motion, along with the pleadings and files herein, hereby makes the following Finding of Facts, Conclusions of Law and Decision and Order.

FINDINGS OF FACT

Previous Procedural Matters

1. To the extent that any of the following Findings of Fact shall be determined to be Conclusions of Law, they shall be deemed as such.
2. On August 20, 2025, Petitioner filed their Petition for Land Use District Boundary Amendment ("2025 DBA Petition"), including, Exhibits 1-4, Verification, and Certificate of Service for the Ho'onani Village Mixed-Use Development Project ("Project").
3. On August 26, 2025, Land Use Commission Staff sent a letter to Petitioner deeming the 2025 DBA Petition incomplete.

4. On August 28, 2025, the LUC received the Petitioners Motion to Designate the Land Use Commission as Accepting Authority for the Environmental Impact Statement Under HRS Chapter 343 and for Authority to Prepare an Environmental Impact Statement Preparation Notice; Memorandum in Support of Motion; and Certificate of Service ("EIS Motion").
5. On September 8, 2025, The LUC Received the State of Hawai‘i Office of Planning and Sustainable Development's ("OPSD") Response to the Petitioners EIS Motion.
6. On September 10, 2025, the LUC Received the County of Maui Planning Department's Formal Withdrawal of Environmental Statement Preparation Notice.
7. On September 15, 2025, the LUC received Notice of Intent to Intervene from Pacific Resource Partnership ("PRP").
8. On September 16, 2025, the LUC received PRP's Amended Certificate of Service.
9. On October 17, 2025, the LUC received the Petitioners Filing Fee.
10. On November 10, 2025, the LUC Emailed and Mailed the November 19, 2025, Agenda to the Parties, Statewide agenda subscribers, and Maui County mailing list.
11. On November 14, 2025, the LUC received the Petitioners Presentation Filing for the November 19, 2025, Hearing. The Presentation and the LUC Staff Report was posted to the LUC website and made publicly available that same day. Additionally, the LUC received public testimony from the potential intervener taking a position of no opposition, the filing was stamped on November 14, 2025, but posted to the LUC website and made publicly available on November 20, 2025.

12. On November 18, 2025, the Land Use Commission received one written public testimony, which was posted to the LUC website and made publicly available that same day.
13. On November 19, 2025, 8:58 A.M, the County of Maui Department of Planning emailed their response to the Petitioners Motion, and Land Use Commission Staff processed the document after the hearing.
14. On November 19, 2025, the Commission held its hybrid meeting in Kahului, Maui at the Maui Arts & Cultural Center, Haynes Meeting Room 1 Cameron Way, Kahului, HI 96732, open to the public, to consider the Petitioner's Motion for an order to (1) Designate the Land Use Commission as the Accepting Authority for the Environmental Impact Statement Under HRS Chapter 343; and (2) to Determine, Through Its Judgment and Expertise That an EIS is Likely to be Required; and (3) to Authorize Petitioner to Prepare an Environmental Impact Statement Preparation Notice to Submit to the Environmental Review Program.
15. Individuals representing the Parties present at the hearing in person include the following: Jeff Ueoka for Petitioner Hoʻonani Development LLC.; Kate Blystone and Mimi Desjardins, Esq. Corporation Counsel for the County of Maui Planning Department; Mary Alice Evans, Rachel Beasley, and Alison Kato, Esq., Deputy Attorney General for the OPSD.
16. At the November 19, 2025, hearing there was one member of the public online that wished to provide verbal public testimony prior to the Parties presentations.
17. The Commission began the evidentiary portion of the hearing. During the evidentiary portion of the hearing, presentations were made by the Petitioner, the County of Maui

Department of Planning and the OPSD. The evidentiary portion of the hearing was closed on November 19, 2025.

18. Following the close of the evidentiary portion of the hearing, the Commission provided a second round of public testimony and received public testimony from one individual online.
19. After the Petitioner, DPP, and OPSD were given the opportunity to provide final comments, the LUC entered deliberation on this matter. Following discussion, a motion was made to (1) Designate the Land Use Commission as the Accepting Authority for the Environmental Impact Statement Under HRS Chapter 343; and (2) to Determine, Through Its Judgment and Expertise That an EIS is Likely to be Required; and (3) to Authorize Petitioner to Prepare an Environmental Impact Statement Preparation Notice to Submit to the Environmental Review Program, and to authorize the Chairperson to sign the Findings of Fact, Conclusions of Law and Decision and Order.

OFFICE OF PLANNING AND SUSTAINABLE DEVELOPMENT POSITION

20. The OPSD filed their Response to Petitioners Motion with the LUC on September 8, 2025, and stated no objection.
21. During the LUC's November 19, 2025, hearing, OPSD presented no objection to the Petitioners Motion, identifying that it is appropriate that the Land Use Commission be the Accepting Authority and an Environmental Impact Statement is likely required.

COUNTY OF MAUI PLANNING DEPARTMENT POSITION

22. The County of Maui Planning Department filed their Formal Withdrawal Notice of the Environmental Impact Statement Preparation Notice, with the LUC on September 10, 2025.

23. On November 19, 2025, at 8:58 A.M, the County of Maui Department of Planning emailed their response to the Petitioners Motion, and Land Use Commission Staff processed the document after the hearing.

24. During the LUC November 19, 2025, hearing, the County of Maui Planning Department presented their written position statement, in no opposition, but based on community concern, suggested the Commission consider conditioning the acceptance of being the accepting authority on submittal of a preliminary noise report before entertaining the Motion to be the accepting authority, or conditioning the acceptance of being the accepting authority on including a full and complete noise study.

ENVIRONMENTAL CONSIDERATIONS

25. The proposed project may require the use of State or County lands and/or funds, and will include the development of a wastewater treatment unit, which will require the completion of an Environmental Impact Statement in compliance with HRS Chapter 343. *See* Petitioners 2025 Motion at pg. 2.

CONCLUSIONS OF LAW

1. To the extent that any of the following Conclusions of Law shall be determined to be Findings of Fact, they shall be deemed as such.
2. HAR §11-200.1-14(d)(2) and Hawai‘i Revised Statute (“HRS”) §343-5(e) Applicability and requirements. Allows an approving agency to determine, through its judgment and

experience, that an EIS is warranted and direct an applicant to go directly to preparing an EISPN rather than an Environmental Assessment.

3. The LUC, through its judgment and experience, determined that an EIS would be required here given the likely significant impacts to the environment from the Project.

DECISION AND ORDER

The LUC, having duly considered the written and oral arguments presented by the Petitioner, HASEKO (EWA) INC., the DPP, the OPSD, and members of the public, and a motion having been made and seconded at the meeting on November 19, 2025, held at Maui Arts & Cultural Center, Haynes Meeting Room 1 Cameron Way, Kahului, HI 96732, and the motion having received the affirmative votes required by HAR § 15-15-13, and there being good cause for the motion,

HEREBY FINDS AND CONCLUDES that, pursuant to HRS Chapter 205 and the Commission Rules under HAR chapter 15-15, upon consideration of the decision-making criteria set forth in HRS § 205-17, and based upon the preponderance of the evidence and good cause shown, the Petitioner's 2025 Motion for an order to (1) Designate the Land Use Commission as the Accepting Authority for the Environmental Impact Statement to be prepared by Petitioner Under HRS Chapter 343; and (2) to Determine, Through Its Judgment and Expertise That an EIS is Likely to be Required; and (3) to Authorize Petitioner to Prepare an Environmental Impact Statement Preparation Notice to Submit to the Environmental Review Program.

The motion received 7 affirmative votes, 0 nays, and 2 excused, therefore, the motion passed.

ADOPTION OF DECISION AND ORDER

The undersigned Commissioners, being familiar with the record and proceedings, hereby adopt and approve the foregoing DECISION AND ORDER on 11/25/2025. This DECISION AND ORDER may be executed in counterparts. This DECISION AND ORDER shall take effect upon the date this DECISION AND ORDER is certified by this Commission.

Done at Honolulu, Hawai'i, this day of 11/25/2025, per motion on November 19, 2025.

APPROVED AS TO FORM

JOHN DUBIEL
Deputy Attorney General

LAND USE COMMISSION

STATE OF HAWAI'I

By
BRIAN LEE
Chairperson and Commissioner

Filed and effective on:

11/25/2025

Certified by:

DANIEL E. ORODENKER
Executive Officer

BEFORE THE LAND USE COMMISSION

OF THE STATE OF HAWAI‘I

In the Matter of the Petition of HO‘ONANI DEVELOPMENT LLC To Amend the Agricultural Land Use District Boundary into the Urban Land Use District for Approximately 166.512 acres of land situated at Pu‘unēnē, Wailuku, Island and County of Maui, State of Hawai‘i, Tax Map Key: (2) 3-8-006- 004-0005	) DOCKET NO. A25-811)) FINDINGS OF FACT, CONCLUSIONS OF) LAW, AND DECISION AND ORDER) CERTIFICATE OF SERVICE) DETERMINING THAT (1) THE LAND USE) COMMISSION AGREES TO BE THE) ACCEPTING AUTHORITY FOR) ENVIRONMENTAL IMPACT STATEMENT) PURSUANT TO HAWAI‘I REVISED) STATUTES CHAPTER 343; AND (2) AN EIS) IS LIKELY TO BE REQUIRED; AND (3) TO) PREPARE AN ENVIRONMENTAL IMPACT) STATEMENT PREPARATION NOTICE TO) THE ENVIRONMENTAL REVIEW) PROGRAM; AND CERTIFICATE OF) SERVICE

CERTIFICATE OF SERVICE

I hereby certify that a copy of the FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER GRANTING THE MOTION TO (1) DESIGNATE THE LAND USE COMMISSION AS THE ACCEPTING AUTHORITY FOR THE ENVIRONMENTAL IMPACT STATEMENT UNDER HRS CHAPTER 343; AND (2) TO DETERMINE, THROUGH ITS JUDGMENT AND EXPERTISE THAT AN EIS IS LIKELY TO BE REQUIRED; AND (3) TO AUTHORIZE PETITIONER TO PREPARE AN

ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE TO SUBMIT TO THE ENVIRONMENTAL REVIEW PROGRAM, AND TO AUTHORIZE THE CHAIRPERSON TO SIGN THE FINDINGS OF FACT, CONCLUSIONS OF LAW AND DECISION AND ORDER, received on August 28, 2025, was served upon the following, by either hand delivery or depositing the same in the U.S. Postal Service by regular or certified mail on the date appearing below, as follows:

HAND DEL.: LEO ASUNCION, Land Use Division Administrator
MARY ALICE EVANS, Director
Office of Planning and Sustainable Development
P. O. Box 2359
Honolulu, Hawai'i 96804-2359

HAND DEL.: ALISON KATO, Esq.
Deputy Attorney General
425 Queen Street
Honolulu, Hawai'i 96813

CERT. MAIL: MIMI DESJARDINS, ESQ.
Corporation Counsel
200 S. High Street, 3rd Floor,
Wailuku, HI 96793

CERT. MAIL: KATE BLYSTONE, Director
Planning Department
One Main Plaza, 2200 Main Street, Suite 315,
Wailuku, HI 96793

CERT. DEL.: JEFFREY UEOKA ESQ.
Wells Street Law, LLLC
2145 Wells Street, Suite 406
Wailuku, Hawaii 96793

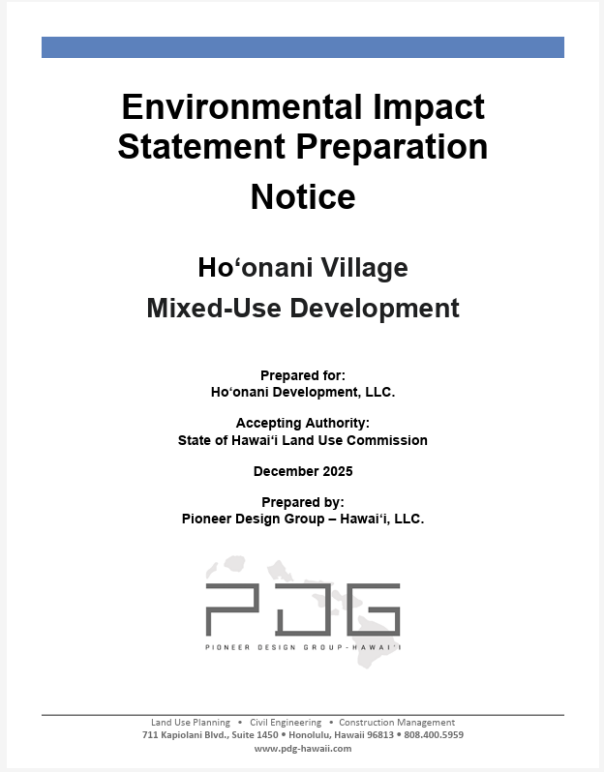
Dated 11/25/2025
Honolulu, Hawai'i.



DANIEL E. ORODENKER
Executive Officer

APPENDIX ‘X’ – SCOPING MEETING DETAILS AND INFORMATION

Hoʻonani Village EIS Public Scoping Meting- December 18, 2025, 6:00 p.m.
Maui Arts & Cultural Center, Alexa Higashi Meeting Room



Environmental Impact Statement Preparation Notice

Hoʻonani Village
Mixed-Use Development

Prepared for:
Hoʻonani Development, LLC.

Accepting Authority:
State of Hawai'i Land Use Commission

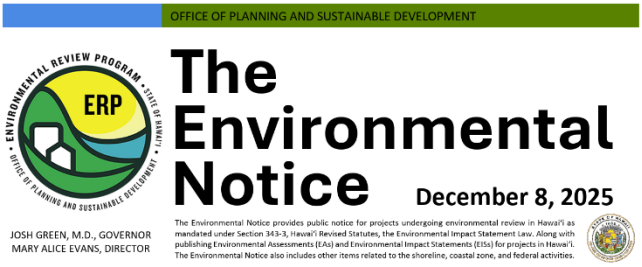
December 2025

Prepared by:
Pioneer Design Group – Hawai'i, LLC.

PDG
PIONEER DESIGN GROUP - HAWAI'I

Land Use Planning • Civil Engineering • Construction Management
711 Kapiolani Blvd., Suite 1450 • Honolulu, Hawaii 96813 • 808.400.5959
www.pdg-hawaii.com

You may access the EISPN via *The Environmental Notice* or at the following online link or QR code below:



OFFICE OF PLANNING AND SUSTAINABLE DEVELOPMENT

ENVIRONMENTAL REVIEW PROGRAM • STATE OF HAWAI'I • OFFICE OF PLANNING AND SUSTAINABLE DEVELOPMENT
ERP

JOSH GREEN, M.D., GOVERNOR
MARY ALICE EVANS, DIRECTOR

The Environmental Notice

December 8, 2025

The Environmental Notice provides public notice for projects undergoing environmental review in Hawai'i as mandated under Section 343-3, Hawai'i Revised Statutes, the Environmental Impact Statement Law. Along with publishing Environmental Assessments (EAs) and Environmental Impact Statements (EISs) for projects in Hawai'i. The Environmental Notice also includes other items related to the shoreline, coastal zone, and federal activities.

LINK: https://tinyurl.com/HoonaniVillage

Comments are due by January 7, 2026, and can be sent to the following:

Emily Murai
Pioneer Design Group- Hawai'i
711 Kapiolani Blvd, Suite 1450
Honolulu, Hawai'i 96813
emurai@pdg-hawaii.com

and

Martina Segura
State of Hawai'i, Land Use Commission
P.O. Box 2359
Honolulu, Hawai'i 96813
dbedt.luc.web@hawaii.gov

Ho'onani Village Environmental Impact Statement Notice Meeting

Sign-In Sheet

Name	Contact information (mailing address and/or email address to receive further updates on the project)
1. Debbie Cabalu	
2. Christy Chung	christy.chung@meoinc.org
3. Kurt	kfronbeck@yahoo.com
4. Jade Rojas-Lefisi	jade.rojas-lefisi@mauicounty.gov
5.	
6.	
7.	
8.	

HOʻONANI VILLAGE

A Vision for Sustainable Community Growth

Environmental Impact Statement (EIS)
Public Scoping Meeting
December 18, 2025 6:00 p.m.
Maui Arts & Cultural Center, Alexa Higashi Meeting Room

Agenda

- Meeting Purpose
- Project Overview
- Public Comments

*This meeting is being conducted and audio recorded in accordance with Hawai‘i Administrative Rules (HAR) §11-200.1-23

Scoping Meeting Purpose

- Provide an overview of the proposed project.
- Receive comments on the proposed project, alternatives, impacts, and mitigation measures to be considered and analyzed in the Draft EIS.

Project Members

- Applicant: Hoʻonani Development, LLC
- Developer Consultant: Aspire Development & Consulting
- EIS Consultant: Pioneer Design Group- Hawaiʻi
- Accepting Authority: State Land Use Commission

Regional Location Map



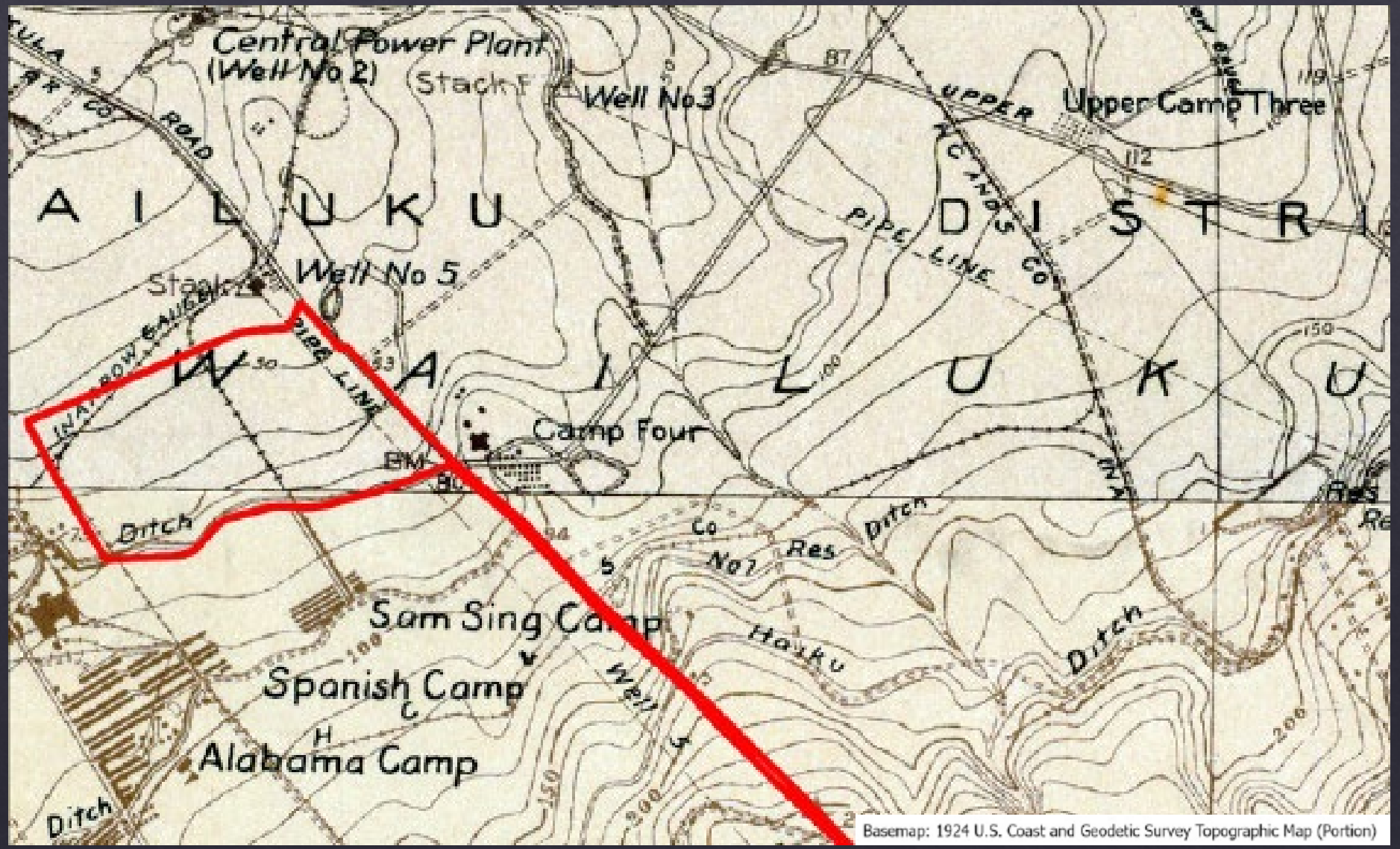
Project Location Map



Land Use History

- The project site encompasses approximately 166.5 acres located at the northwest corner of Hansen Road and Pūlehu Road in Kahului, Maui. Historically, the site has been limited to plantation agriculture and related uses.
- From the late 19th century through the mid-20th century, the project area was fully integrated into Claus Spreckels' sugarcane enterprise, which was later subsumed into the Hawaiian Commercial & Sugar Company (HC&S). Historical maps depict the presence of sugarcane fields, railroad lines, irrigation ditches, associated infrastructure and plantation villages in and near the project site.
- Since 2016, the property has remained undeveloped, fallow agricultural land. The site is currently designated Agricultural by the State Land Use Commission (LUC), consistent with its historical use.

Historic Topographic Map



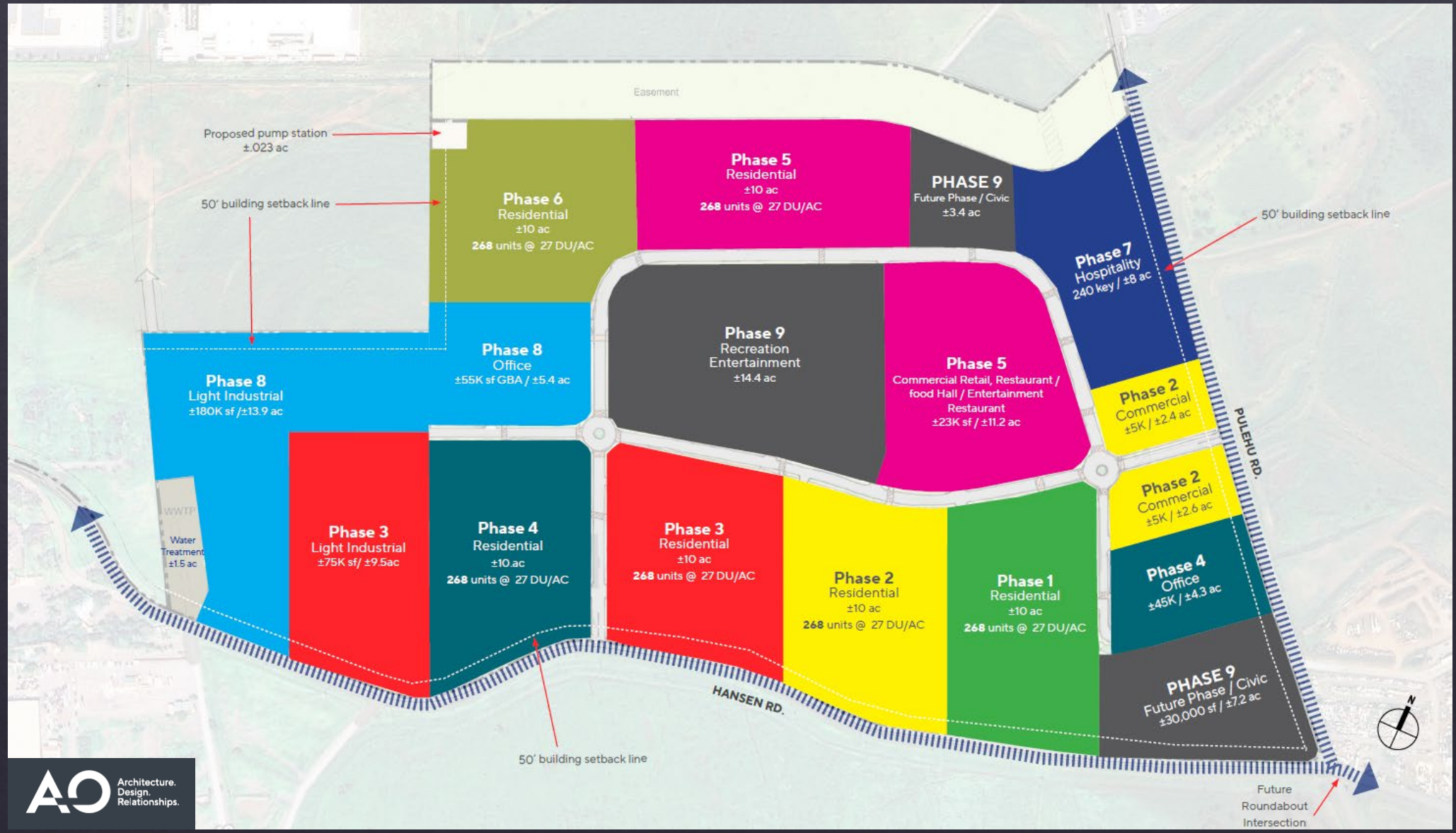
Project Objectives

- Provide housing opportunities for Maui residents across a range of income levels near existing services and job opportunities.
- Commercial business and industrial spaces for local businesses to operate and expand.
- Create an *authentic* community and gathering places for locals that honors the history, culture, and connection to Central Maui.

Hoʻonani Mixed-Use Vision

- 1,608 Multi-family Units
- Commercial, office, retail, restaurant, hospitality, light industrial uses
- Focus on local businesses
- Open Space, sports courts, outdoor amphitheater, civic uses
- Restaurants and Outdoor Areas
- Community gathering places

Preliminary Site Plan



Architecture.
Design.
Relationships.

Features

- **Unit Mix**
  - Studios, 1, 2, and 3 Bedrooms
- **Parking**
  - Provided as required by code
  - Parking rates and traffic management will be implemented via studies and best practices
- **Laundry Facilities Onsite**
- **Transit Oriented Design**
  - Walkable Neighborhoods
  - Bicycle Routes Throughout
  - Improvements to Hansen and Pūlehu Roads
  - Bus Stops
    - Working with County Department of Transportation to confirm interest and possible routes
- **Photovoltaics**
  - Yes, as feasible and allowable
- **Space for County Facilities**
  - Will work with the County to provide land for civic uses, such as a park or community center

Infrastructure

- **Street & Pedestrian Improvements**
  - Meet County of Maui Street Design Standards.
  - Improve bicycle circulation along Pūlehu and Hansen Roads
  - Walkable neighborhood with multi-use paths to improve interior circulation
- **Water System Alternatives**
  - Connect to the County water system
  - Modify existing water source
  - Create new water source
- **Sewer System Alternatives**
  - Connect to the County Sewer system
  - Construct WWTP
  - Connect to future Central Maui WWTP
- **Drainage Improvements**
  - Manage on-site and upstream runoff
  - Water Quantity control meeting Rules for the Design of Storm Drainage Facilities.
  - Water Quality treatment meeting Rules for the Design of Storm Water Treatment BMPs
- **Power System**
  - Coordination with HECO
- **Cable TV/Internet**
  - Coordination with existing providers

Required Permits & Approvals

Federal

- Federal Aviation Authority (FAA) Determination of No Hazard to Air Navigation

State of Hawai‘i:

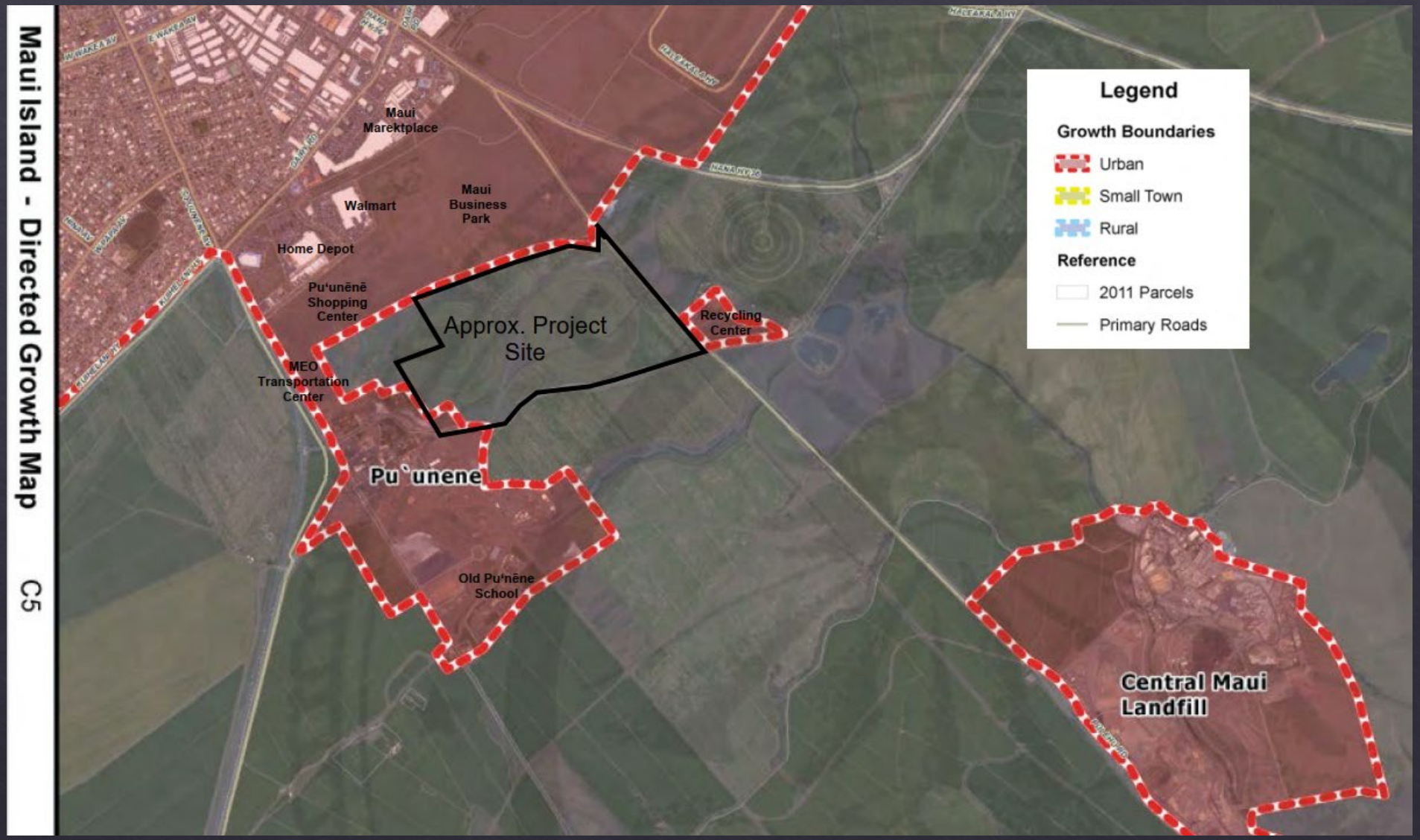
- Chapter 343, Hawai’i Revised Statutes (HRS), Environmental Impact Statement
- State Land Use Commission District Boundary Amendment
- National Pollutant Discharge Elimination System (NPDES) Permit
- Noise Permit, as applicable
- Section 401 Water Quality Certification, as applicable (if DA permit required)
- Well Permit for off-site water source (if applicable)
- Pump Modification Permit (if applicable)
- Wastewater Permit with the Department of Health for the WWTP. (if applicable).
- Department of Health
- Energy Code
- Hawai‘i Housing & Finance Development Coproration (HHFDC) 201H Board Approval.

Required Permits & Approvals contd.

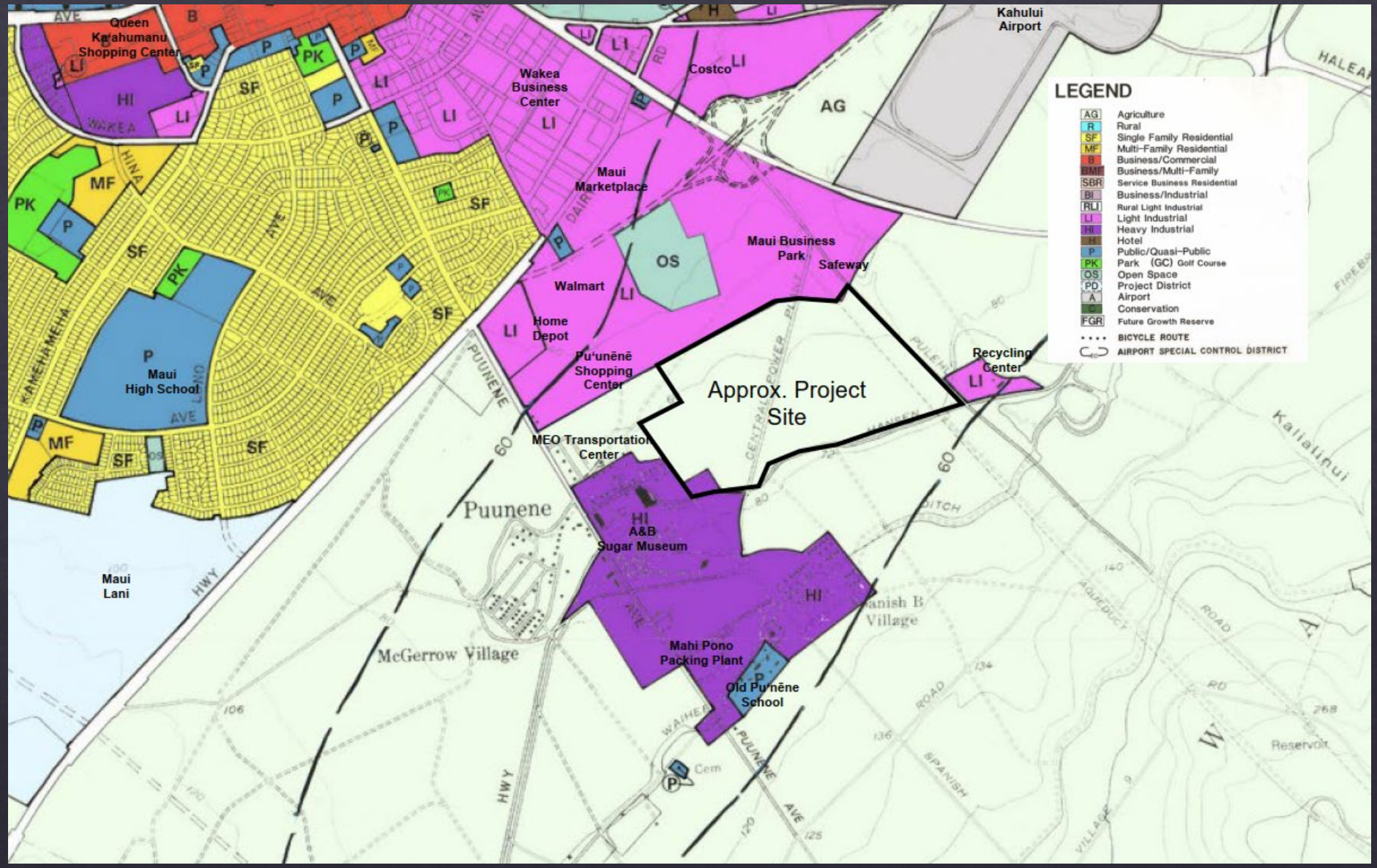
County of Maui:

- Subdivision
- Traffic
- Roadways
- Sidewalks
- Drainage
- County Council Initiated Maui Island Plan Amendment
- County Council Initiated Community Plan Amendment
- County Council Initiated Change In Zoning
- Fire
- Building Permits
- Grading, Accessories & Sitework (including off-site improvements)
- County Right of Way (Roadway)
- Electrical Permit
- Plumbing Permit

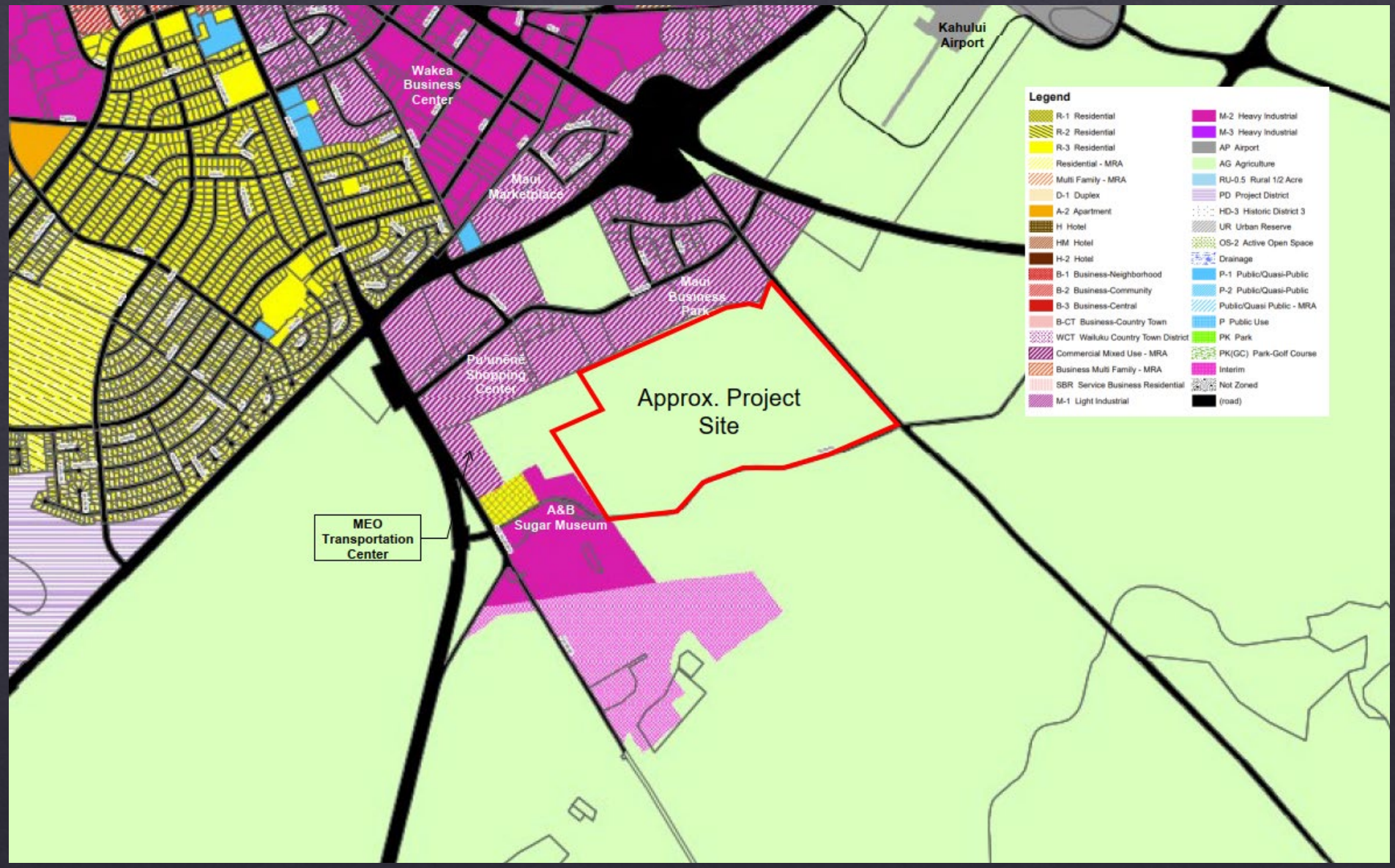
Maui Island Plan Growth Boundaries



Wailuku-Kahului Community Plan



County Zoning



Estimated Phasing Timeline

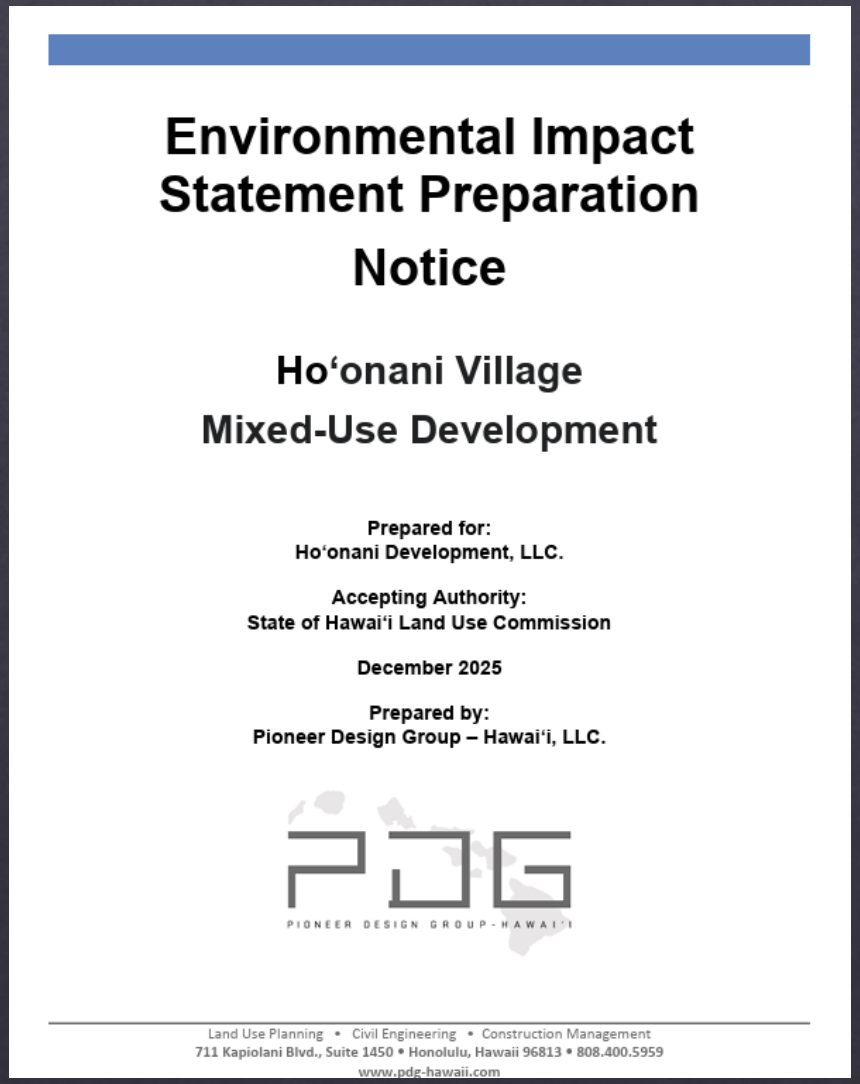
- **February 2026 – January 2027**: Phase I Design.
- **January 2028:** Phase I Building Permit Issued.*
- **January 2028– June 2029:** Phase I Construction to Substantial Completion.
- **June 2028 – June 2029**: Phase II Design.
- **July 2030 – December 2031:** Phase II Construction to Substantial Completion.
- **December 2031 – December 2032:** Phase III Design.
- **January 2033– June 2034:** Phase III Construction to Substantial Completion.
- **June 2033 – June 2034:** Phase IV & V Design.
- **July 2035 – December 2036:** Phase IV Construction to Substantial Completion (Office).
- **July 2035 – December 2036:** Phase V Construction to Substantial Completion.
- **December 2035 – December 2036:** Phase VI & VII Design.
- **January 2037– June 2038:** Phase VI Construction to Substantial Completion.
- **January 2037– June 2038:** Phase VII Construction to Substantial Completion.
- **June 2037 – June 2038:** Phase VIII Design.
- **July 2039 – December 2040:** Phase VIII Construction to Substantial Completion.
- **December 2039 – December 2040:** Phase IX Design.
- **January 2041– June 2042:** Phase IX Construction to Substantial Completion.
- **If 201-H is approved, Building Permit could be issued as early as Q1 of 2027.*

Next Steps for EIS Process

- EIS Preparation Notice
  - Published 12/8/25
  - Public Scoping Meeting
  - 30 – day Public Comment Period through January 7, 2026
  - Prepare Technical Reports
- Draft EIS
  - Publication targeted for Q1 of 2026
  - 45- day Public Comment Period
  - Address Comments for Final EIS
- Final EIS
  - Publication Summer of 2026

Technical Studies and Reports

Document Name	Author
Preliminary Engineering and Drainage Report	Pioneer Design Group – Hawaii, LLC.
Geotechnical Report	Hawaii Geotechnical Consulting, Inc.
Flora and Fauna Survey	Starr Environmental; Maya LeGrande
Retail Demand Report	Street Sense
Housing Demand Study	Ricky Cassiday
Economic Impact Study	CBRE
Traffic Impact Analysis Report	Fehr and Peers
Agricultural Impact Report	Plasch Econ Pacific, LLC.
Air Quality and Climate Change Study	Terry A. Hayes Associates Inc.
Archaeological Literature Review and Assessment	Honua Consulting
Environmental Site Assessment (Phase 1)	Malama Environmental
Soil Sampling Report (Phase 2)	Malama Environmental
Water Resource Impact Report	Tom Nance Water Resource Engineering
Environmental Noise Assessment	D.L. Adams Associates
Cultural Impact Assessment	Honua Consulting



EISPN Publication

- The EISPN was published in the 12/8/25 edition of *The Environmental Notice*.
- https://tinyurl.com/HoonaniVillage

Comments

- The purpose of receiving comments is to identify issues to be studied in the EIS.
- Effective comments will speak to
  - The range of actions, alternatives, impacts, and mitigation measures to be considered in the Draft EIS.
  - Significant issues to be analyzed in the Draft EIS.
- Please limit comments to 3 minutes. If time permits, individuals may be presented with a second 3-minute comment period after everyone has had the opportunity to speak. Additional comments may be submitted in writing.

Mahalo!

To comment, you may provide oral comments at this meeting or send written comments to the following email or mailing addresses.

Emily Murai
Pioneer Design Group- Hawai‘i
711 Kapiolani Blvd, Suite 1450
Honolulu, Hawai‘i 96813
emurai@pdghawaii.com

and

Martina Segura
State of Hawai‘i, Land Use Commission
P.O. Box 2359
Honolulu, Hawai‘i 96813
dbedt.luc.web@hawaii.gov

Deadline for comments: January 7, 2026

Audio file

Ho'onani Scoping Meeting Audio_121825.mp3

Transcript

00:00:00 Speaker 1

Perfect.

00:00:01 Speaker 1

Well, aloha, and thank you guys for being here.

00:00:03 Speaker 1

My name is TC Campbell, and so we are from PDG Hawaii, a small local firm on Oahu.

00:00:08 Speaker 1

And this is Emily Ballard.

00:00:10 Speaker 1

She's our project planner, kind of running and managing the project.

00:00:15 Speaker 1

And we are here today for Ho'onani Village, so a vision for sustainable community growth.

00:00:21 Speaker 1

This is the environmental impact statement public scoping meeting.

00:00:25 Speaker 1

And so we just appreciate you guys making your time and, out of, respect for you guys.

00:00:30 Speaker 1

Thank you for letting us get going here.

00:00:47 Speaker 2

Thanks, TC.

00:00:48 Speaker 2

Okay, so agenda for today's meeting, going over purpose of the meeting, giving you a project overview, and then a chance to provide public comments.

00:00:59 Speaker 2

And just so that everyone knows, this meeting is being conducted and audio recorded in accordance with Hawaii Administrative Rules, HAR 11-200.1-23.

00:01:12 Speaker 2

Again, the purpose of this meeting is to provide just a brief overview of the project, as well as receive comments on the proposed project, alternatives, impacts, and mitigation measures to be considered and analyzed further in the draft EIS.

00:01:32 Speaker 1

And so just a little bit about the project members.

00:01:35 Speaker 1

So the developer on the project is Ho'onani Development, LLC.

00:01:39 Speaker 1

The developing consultant who's been kind of helping, helping them move the project forward is Aspire Development, headed by Matt Pinas.

00:01:47 Speaker 1

And the EIS consultant is us with Pioneer Design Group Hawaii.

00:01:51 Speaker 1

And the accepting authority for the EIS is going to be the State Land Use Commission.

00:01:58 Speaker 1

So I know you guys are kind of familiar with the parcel being on it, but so here's the regional location map.

00:02:04 Speaker 1

As you can see, this is currently showing the large TMK that was currently subdivided and approved earlier this year, as well as potential off-site water source, just to kind of flag that for you and kind of where that might be located.

00:02:20 Speaker 1

So this one is just a little bit more of a detailed project location map.

00:02:23 Speaker 1

You can see we're just Mauka of the Punene shopping center with, you know, this is the current TMK boundary and the shaded area is the approximate site that was recently subdivided.

00:02:34 Speaker 1

And so like I said, with the water system, this is kind of a, this is an existing water source that we're currently looking at potentially modifying.

00:02:40 Speaker 1

We're going to get into that kind of stuff later, as well as a potential off-site pipeline down Pulehu Road, excuse me.

00:02:53 Speaker 2

I just want to talk about the land use history, what was there before.

00:02:57 Speaker 2

So the project site that we're, Ho'onani Village, is proposed to be developed on is approximately 166.5 acres, northwest corner of Hansen Road and Pulehu Road in Kahului or Punene area.

00:03:10 Speaker 2

And historically, the site has been limited to plantation agriculture and related uses.

00:03:15 Speaker 2

So from the late 19th century through mid-20th century, the project area was fully integrated in Claude Sparkle Sugarcane Enterprise and later HCNS.

00:03:24 Speaker 2

And historical maps also depict the presence of the sugarcane fields, railroad lines, irrigation ditches, and the associated infrastructure and plantation villages in and near the project site.

00:03:37 Speaker 2

And since 2016, when HCNS closed, the property has remained undeveloped fallow agricultural land.

00:03:44 Speaker 2

And the site is currently designated agricultural by the State Land Use Commission, which is consistent with its historic use.

00:03:51 Speaker 2

So this is a topo map from 1924 showing the site within the context of the plantation camps that were in the Punene area.

00:04:05 Speaker 2

Camp 4 there is where the old Punene hospital was and also within

00:04:13 Speaker 2

other historic structures like Old Panini School are in the vicinity as well.

00:04:20 Speaker 2

And so part of thinking about the past uses and how the area was a kind of thriving community of not just where people lived, but also where they, had that sense of place and community with others, these are the project objectives.

00:04:41 Speaker 2

for Houtenani Village.

00:04:43 Speaker 2

One is to provide housing opportunities for Maui residents across a range of income levels near existing services and job opportunities.

00:04:51 Speaker 2

We want to note as well that right now we intend, or the developer intends to have all units available for 140% AMI or below, which is workforce and affordable housing.

00:05:06 Speaker 2

Another objective is

00:05:08 Speaker 2

to provide a place where commercial businesses and industrial spaces, or provide commercial business and industrial spaces for local businesses to operate and expand, as well as create an authentic community and gathering places for locals that honors the history, culture, and connection to Central Maui.

00:05:28 Speaker 1

Awesome.

00:05:28 Speaker 1

And so just a little bit about the Ho Nani Village, the vision, right?

00:05:32 Speaker 1

And so the really heart behind it, you speak to the head developers, it's a place where people can work, live, grow, and just thrive together and build a community.

00:05:42 Speaker 1

So that's why there's a mixed-use vision.

00:05:44 Speaker 1

So we're currently looking at 16108 multifamily rental units, as Emily said, all at the 140 AMI or below.

00:05:56 Speaker 1

commercial office space, various retail, restaurants.

00:06:00 Speaker 1

The ideal is to focus on local businesses.

00:06:02 Speaker 1

We want to create a place where, whether it's the small clothing brands or small local restaurants can come together, feed the community around them, and make a place where they can all come together and just grow.

00:06:14 Speaker 1

There is also a potential hospitality piece in there, as well as some light industrial uses to continue to provide jobs for our local community.

00:06:24 Speaker 1

Throughout the community, there's gonna be open space areas, sports courts.

00:06:28 Speaker 1

You know, we're looking at even potential outdoor amphitheaters for events and other land for potential civic uses as well.

00:06:35 Speaker 1

The goal of Honani Village is to create a place for the Maui community to grow.

00:06:43 Speaker 1

And so this is a preliminary site plan.

00:06:45 Speaker 1

Sorry if I'm blocking your vision on that side.

00:06:48 Speaker 1

But as you can see, it is a phased development here.

00:06:50 Speaker 1

And so we have nine different phases.

00:06:53 Speaker 1

And so, and we're going to get into the schedule in a little bit.

00:06:56 Speaker 1

It is a 17 year build out for this thing is the plan.

00:07:00 Speaker 1

But as you can see, so the first phases are going to be off of Hansen Road.

00:07:04 Speaker 1

The idea is, and they're going to be focused on residential, right?

00:07:07 Speaker 1

Like what is the need from the Maui community?

00:07:09 Speaker 1

And those are the units, right?

00:07:11 Speaker 1

And so the first phase is completely residential.

00:07:13 Speaker 1

And then as we build another, so 268 units, excuse me, in phase one, phase two has the same.

00:07:20 Speaker 1

And then as phase two is getting built, we have, we're sprinkling in commercial, right?

00:07:23 Speaker 1

We want to bring in value for these people, whether it's, restaurants and other uses.

00:07:28 Speaker 1

And so little by little as this thing is built out.

00:07:31 Speaker 1

And it's basically in like 10 acre phases, at least for the residential side.

00:07:37 Speaker 1

This is kind of how we're going to slowly create this community that gets to just live together.

00:07:46 Speaker 2

So some of the highlights or features of

00:07:49 Speaker 2

The site plan, the unit mix for the residential units will be studios one, two, and three bedrooms.

00:07:57 Speaker 2

Parking will be provided as required by county code, and parking rates and traffic management will be implemented with studies and best practices.

00:08:05 Speaker 2

We do have a traffic study that will identify any improvements if needed.

00:08:12 Speaker 2

There will be laundry facilities on site, and the goal is to make this a transit-oriented design.

00:08:19 Speaker 2

with walkable neighborhoods, bicycle routes, improvements to Hanson and Pulehu Roads, as we know that has been a concern with traffic, as well as bus stops.

00:08:32 Speaker 2

We'll work with the county dot to confirm their interest and then possible routes within the community.

00:08:40 Speaker 2

Photovoltaic, so that is being considered PV for energy as feasible and allowable.

00:08:46 Speaker 2

And there, as you may have seen on the site plan, as TC mentioned, there's space for civic uses.

00:08:52 Speaker 2

So the developer will work with the county to provide land or dedicate land for the county to develop civic spaces such as parks or a community center.

00:09:06 Speaker 1

All right, as an engineer, now I get to talk about my fun stuff.

00:09:08 Speaker 1

So the infrastructure.

00:09:10 Speaker 1

For St.

00:09:11 Speaker 1

and pedestrian improvements, Emily mentioned a little bit, but all the street improvements are going to be designed to meet the County of Maui, the street design standards.

00:09:20 Speaker 1

We're already working with Kurt and Nolly and their team to make sure everything's looking good over there.

00:09:26 Speaker 1

Basically improving the main two roads, you know, Pulehu and Hansen roads, whether it's adding, you know, bike lanes, we want to make sure our bicycle cyclists are safe as they as they get through the project and to the project as well if they should be living in there.

00:09:40 Speaker 1

And then the interior streets.

00:09:42 Speaker 1

they are going to be, again, to the county code because the long-term idea is that the county or the developer does want to be able to turn these over to the county.

00:09:51 Speaker 1

For water system, and so there's several different alternatives.

00:09:54 Speaker 1

As we all know, water is a big issue and we are, taking that very, very seriously.

00:10:00 Speaker 1

So potentially to one is to potentially connect to the county water system.

00:10:05 Speaker 1

We're currently looking at potentially modifying an existing water source.

00:10:09 Speaker 1

And the other option would be to potentially create another water source.

00:10:11 Speaker 1

And so we are having Tom ***** and their team do a water impact report.

00:10:16 Speaker 1

And so this is being heavily studied.

00:10:19 Speaker 1

On the wastewater and the sewer side, so there's a few different alternatives here.

00:10:24 Speaker 1

And this can, it's where we're working with the counties

00:10:27 Speaker 1

department as well as Department of Health.

00:10:29 Speaker 1

So one option is, again, to connect to the county system to construct on-site a wastewater treatment plan.

00:10:36 Speaker 1

And so we did, I guess, mark off an area in case we need to take care of that.

00:10:41 Speaker 1

And the creation of a wastewater treatment plan is also one of the triggers for this EIS process as well.

00:10:47 Speaker 1

And then the last one is to connect to the future Central Maui wastewater treatment plan.

00:10:53 Speaker 1

And then depending on the timeline of that build out is how we could potentially connect to the county system should they divert, Wailuku or to Central Maui.

00:11:02 Speaker 1

So that one says a lot of timing, but we are, looking into this heavily as well.

00:11:08 Speaker 1

For drainage improvements, all of the drainage is going to be managed on site, and then also with the additional systems that are downstream of the project, water quantity and quality control are both going to meet the county standards.

00:11:21 Speaker 1

So pretty standard there on the drainage side.

00:11:23 Speaker 1

We are definitely looking into a lot of the different types of, whether it's LID facilities, basically ways to utilize landscaping to also potentially take care and treat storm water.

00:11:35 Speaker 1

For the power system, we're coordinating with HECO.

00:11:38 Speaker 1

And then for the cable and internet, we're coordinating with existing providers.

00:11:45 Speaker 1

So required permits and approvals, though, this is kind of a, we're not going to read through the list, but just this project's going to be, you know, heavily looked at, heavily regulated.

00:11:53 Speaker 1

So on the federal side, the state side, as well as for the county of Maui as well.

00:12:01 Speaker 1

so a lot of different permitting following this entitlement process before we can get in the ground.

00:12:09 Speaker 2

And kind of just to highlight, we do have land use amendments that need to happen.

00:12:15 Speaker 2

And so go through those maps as well.

00:12:18 Speaker 2

So first off with the Maui Island plan growth boundary in red, that's the urban growth boundary where the Maui Island has identified for where they want to see growth.

00:12:31 Speaker 2

And so it's currently partially, like there's a small area within the urban growth boundary, but what we're trying to do here is convert it from doesn't have a designation to being part of the growth boundary.

00:12:43 Speaker 2

And the idea is that it is kind of filling this kind of puka here, or kind of it's flanked by existing urban areas.

00:12:53 Speaker 2

So, you know, feel like that it would fit kind of appropriately in this space.

00:13:00 Speaker 2

The other land use plan, Wailuku Kahului Community Plan, it is current, the site's currently designated for agriculture.

00:13:08 Speaker 2

There is, again, the same area that is urban growth boundary is also heavy industrial.

00:13:14 Speaker 2

But we're seeking to have this community plan designation updated and working with the county now to find an appropriate designation since the

00:13:26 Speaker 2

planning department and county is currently updating the Waizukahului community plan with their Central Maui update.

00:13:36 Speaker 2

County zoning, it's the parcels entirely in agriculture.

00:13:41 Speaker 2

And so the intent right now is to re-designate as M1 or light industrial zoning, which would allow or encompass all the proposed uses.

00:13:55 Speaker 2

except for, I will note, except for the hospitality component, which is still, it's like, being contemplated, but would require additional amendments.

00:14:09 Speaker 1

And so this is the estimated phasing timeline I briefly mentioned before.

00:14:12 Speaker 1

And so as you can see, we're currently at the, you know, end of 2025 here, currently in our EIS process here.

00:14:20 Speaker 1

What we're looking at on, you know, in terms of the EIS, we're looking at a first quarter

00:14:25 Speaker 1

a publication of the draft EIS and then hopefully a summertime FEIS.

00:14:31 Speaker 1

And so that kind of puts us, to a phase one design starting early in the first quarter of next year.

00:14:38 Speaker 1

And then, building permits sometime in early of 2028.

00:14:43 Speaker 1

And then with phase one construction, hopefully being substantially complete in June or mid of 2029.

00:14:51 Speaker 1

Then as you can see, this is all the different phases.

00:14:54 Speaker 1

It's going to be a long build out.

00:14:55 Speaker 1

And the final substantial completion we're currently showing is June of 2042.

00:15:04 Speaker 1

Yeah, so this is the next steps for the EIS process.

00:15:07 Speaker 1

I briefly mentioned it just now.

00:15:08 Speaker 1

And so the EISP notice was published on December 8th.

00:15:13 Speaker 1

We're currently at the scoping meeting and we are currently in the 30-day comment period.

00:15:17 Speaker 1

And so that's going to end on January 7th.

00:15:20 Speaker 1

So even if you do not choose to provide comments today, we still have time for whether it's written comments to come in before the 7th.

00:15:27 Speaker 1

As I mentioned, the draft EIS is kind of what we're preparing now, and then we're going to be analyzing all the various comments that we receive from the public.

00:15:35 Speaker 1

And so the draft EIS, we're looking at Q1 of next year, and then there's a 45-day comment period again for that.

00:15:42 Speaker 1

Then we're looking into the summer for the FEIS.

00:15:48 Speaker 1

And these are the technical studies and reports that are currently being analyzed that we currently have moving for the draft EIS.

00:15:55 Speaker 1

So everything from the preliminary engineering report, geotechnical studies, we're having a bunch of market studies done for retail demand, housing demand, economic impacts, so all the jobs and different ways this project could be both beneficial for the county.

00:16:11 Speaker 1

We're doing the very in-depth traffic impact analysis by fair and peers.

00:16:17 Speaker 1

as well as noise studies.

00:16:18 Speaker 1

And so you can see that it's an archaeological, cultural, and so there is a ton of very, very good studies that are happening right now.

00:16:26 Speaker 1

And so our goal is to really take a deep look at the impacts from this project on the environment.

00:16:33 Speaker 1

And so there's a, we know a project of this size, it affects the community in so many different ways, the existing land in so many different ways.

00:16:40 Speaker 1

And so we are doing the best due diligence we can to make sure that the level of detail in this draft

00:16:46 Speaker 1

This is going to be of very high quality.

00:16:55 Speaker 2

Okay, and then, as EISPN was published.

00:16:58 Speaker 2

If you have not...

00:17:02 Speaker 2

taken a look at it yet or would like to access it, you can find it in the online publication of the environmental notice or by going through this URL link or QR code, which is also on a sheet handout at the sign-in table.

00:17:21 Speaker 2

And we will be opening it up to comments today.

00:17:24 Speaker 2

And so the purpose of receiving comments is to identify the issues to be studied in the EIS.

00:17:28 Speaker 2

It's not necessarily a question and answer session, but more

00:17:32 Speaker 2

of comments or comments to let us know what we need to study, what we need to look at, or prepare for in the draft EIS.

00:17:41 Speaker 2

So effective comments will speak to the range of actions, alternatives, impacts, and mitigation measures to be considered in the draft EIS, as well as significant issues to be analyzed.

00:17:52 Speaker 2

And

00:17:54 Speaker 2

I know it's not too many of us here tonight, but we just want to respect everyone's time.

00:18:00 Speaker 2

So if you would like to comment, just we would ask to limit it to 3 minutes until everyone has had a chance to speak.

00:18:11 Speaker 2

But thank you very much.

00:18:12 Speaker 2

I really appreciate you coming out tonight.

00:18:15 Speaker 2

And

00:18:17 Speaker 2

just want to provide other ways to comment as well.

00:18:19 Speaker 2

If you do not want to provide comments at tonight's meeting, you can send written comments to these e-mail or mailing addresses.

00:18:28 Speaker 2

It's my contact at Pioneer Design Group, as well as the State Land Use Commission, who is the accepting authority.

00:18:34 Speaker 2

So they will be the final approving agency for the EIS, or accepting authority, I should say, for the EIS.

00:18:43 Speaker 2

So at that point, they will

00:18:45 Speaker 2

there will be a land use commission hearing for them to be accepting of the final EIS.

00:18:54 Speaker 2

And just a reminder, that deadline for comments is January 7, 2026.

00:18:59 Speaker 2

So again, thank you very much.

00:19:01 Speaker 2

And right now, open it up to comments.

00:19:03 Speaker 2

If you could, I guess, raise your hand if you would like to comment now.

00:19:06 Speaker 2

Otherwise, no.

00:19:12 Speaker 2

comments?

00:19:13 Speaker 2

Okay.

00:19:14 Speaker 2

Like I said, you can always submit your written comments as well.

00:19:17 Speaker 2

But yeah, I appreciate again you coming out in person to listen to our presentation.

APPENDIX ‘Y’ – DRIP COMMITTEE COMMENT LETTERS

RICHARD T. BISSEN, JR.
Mayor

JOSIAH K. NISHITA
Managing Director

BRADFORD K. VENTURA
Fire Chief

GAVIN L.M. FUJIOKA
Deputy Fire Chief



DEPARTMENT OF FIRE & PUBLIC SAFETY
COUNTY OF MAUI
200 DAIRY ROAD
KAHULUI, MAUI, HAWAI'I 96732
www.mauicounty.gov

November 3, 2025

The Honorable Richard T. Bissen, Jr.
Mayor, County of Maui
200 South High Street
Wailuku, HI 96793

PROVED FOR TRANSMITTAL
Mayor 11-5-25

For Transmittal to:

The Honorable Tamara Paltin, Chair
Disaster Recovery, International Affairs,
and Planning Committee
200 South High Street
Wailuku, HI 96793

Dear Chair Paltin,

SUBJECT: BILL 163 (2025), BILL 164 (2025), AND BILL 165 (2025), TO AMEND THE MAUI ISLAND PLAN'S DIRECTED GROWTH MAP C5 (PULEHU ROAD), AMEND THE WAILUKU-KAHULUI COMMUNITY PLAN DESIGNATION, AND CHANGE THE ZONING FOR 166.511 ACRES SITUATED AT KAHULUI, HAWAII (HO'ONANI VILLAGE) (DRIP-19)

The Department of Fire & Public Safety is in receipt of your letter dated October 23, 2025. Please see our responses in **bold** below.

1. To the extent feasible given the shortness of time, please review and provide your Department's comments on the project and attached proposed bills, including any anticipated impacts as a result of the proposal.

   In relation to a change of land use, the Department's requirements are to meet the fire protection water supply and to ensure the fire apparatus road requirements are met, allowing access to all parcels created or re-zoned and existing and proposed roads.

   This assessment is based on the proposed land use and the potential for development within that land use designation. The Department can provide more specific applicable requirements after review of a specific detailed plan of proposed structures and locations as necessary.

Received at DRIP meeting on 11/5/25

Please reference the attached relevant fire code sections related to water supply and accessibility.

Water Supply

18.4.6 Fire Flow Requirements for Land Use Development

18.4.6.1. General. A water supply capable of delivering the required fire-flow must be provided for all new land development including subdivision and single parcel development intended for four or more structures in accordance with subsection 18.4.6. The design of the system will be subject to approval by the Authority Having Jurisdiction (AHJ.)

18.4.6.1.1 Fire flow, hydrant spacing, and dedicated water supply for fire protection must be in accordance with the requirements for designated land use:

- Agriculture: 500 gmp and 500 feet spacing between hydrants
- Rural: 1,000 gpm and 500 feet spacing between hydrants
- Single Family: 1,000 gpm and 350 feet pacing between hydrants
- Duplex: 1,250 gpm and 350 feet between hydrants
- Townhouse and Low-Rise Apartments: 1,500 gpm and 250 feet spacing between hydrants
- Businesses, High-Rise Apartments, and Light Industry: 2,000 gmp and 250 feet spacing between hydrants
- Heavy Industry and Hotels: 2,500 gpm and 250 feet hydrants spacing

Fire Apparatus Access Roads

18.2.3.5.1.1 Width. Fire apparatus access roads shall have an unobstructed width of not less than 20 feet (6.1 meters).

18.2.3.5.2. Surface. Fire apparatus access roads shall be designed and maintained to support the imposed loads of fire apparatus and shall be provided with an all-weather driving surface.

2. Please be prepared to comment on the project at the November 5th Committee meeting.

Fire Captain Oliver Vaas of the Fire Prevention Bureau has provided the responses above and will be available for the meeting on November 5, 2025.

If you have any questions, please contact the Office of the Fire Chief at (808) 270-7561.

Sincerely,

BRADFORD K. VENTURA
Fire Chief

RICHARD T. BISSEN, JR.
Mayor

RICHARD E. MITCHELL, ESQ.
Director

SAUMALU MATA'AFA
Deputy Director



DEPARTMENT OF HOUSING
COUNTY OF MAUI
2065 MAIN STREET, SUITE 108
WAILUKU, MAUI, HAWAI'I 96793
PHONE: (808) 270-7351
FAX: (808) 270-6284

November 3, 2025

Honorable Richard T. Bissen, Jr.
Mayor, County of Maui
200 South High Street
Wailuku, Hawai'i 96793

APPROVED FOR TRANSMITTAL

Mayor 11-5-25 Date

For Transmittal to:

Honorable Tamara Paltin, Chair
Disaster, Resilience, International Affairs & Planning Committee
200 South High Street
Wailuku, Hawai'i 96793

Dear Chair Paltin:

SUBJECT: **BILL 163 (2025), BILL 164 (2025), AND BILL 165 (2025), TO AMEND THE MAUI ISLAND PLAN'S DIRECTED GROWTH MAP C5 (PŪLEHU ROAD), AMEND THE WAILUKU-KAHULUI COMMUNITY PLAN DESIGNATION, AND CHANGE THE ZONING FOR 166.511 ACRES SITUATED AT KAHULUI, HAWAI'I (HO'ONANI VILLAGE)** (DRIP-19)

Thank you for your October 23, 2025, letter requesting comments relating to Bills 163, 164, and 165 (2025), relating to the proposed Ho'onani Villages project. Both your question and the Department of Housing's (Department) response are below:

Received at DRIP meeting on 11/5/2025

1. **To the extent feasible given the shortness of time, please review and provide your Department's comments on the project and attached proposed bills, including any anticipated impacts as a result of the proposal.**

The Department is supportive of projects that advance its priority mission of providing the widest array of affordable housing options for County residents, and sensitive to the need for expediency during a housing crisis while conducting an appropriate level of review. Land use review is handled by the Planning Department and Maui Planning Commission, and the Department defers to the Planning Department's response to the above question.

The Department has reviewed the Planning Department's analysis, dated November 3, 2025, and consistent with the Planning Department would like the developer to provide more information about potential project impacts, and explain the necessity of seeking a zoning change from Agriculture to M-1 (Light Industrial District), before weighing in on the project.

The Department has little information about project, except for the project proponent's conceptual presentation to the Housing & Land Use Committee in March 2024 and is unaware of a more recent presentation to the Council with current project information.

The Department notes that while it is exclusively within the Council's preview to proceed with the Council initiated bills, should the project's mix of housing materially change after the passage of the bills or the project proponent fails to meet any Council imposed conditions, the process of reverting the zoning is not without complications that must be considered.

Should you have further questions, please contact me or the Department at (808) 270-7110 or email me at director.housing@co.maui.hi.

Sincerely,

RICHARD E. MITCHELL, ESQ.
Director of Housing

RICHARD T. BISSEN, JR.
Mayor

KATE L. K. BLYSTONE
Director

ANA LILLIS
Deputy Director



DEPARTMENT OF PLANNING
COUNTY OF MAUI
ONE MAIN PLAZA
2200 MAIN STREET, SUITE 315
WAILUKU, MAUI, HAWAI'I 96793

November 3, 2025

Honorable Richard T. Bissen, Jr.
Mayor, County of Maui
200 South High Street
Wailuku, Hawai'i 96793

PPROVED FOR TRANSMITTAL

Mayor Date 11-5-25

For Transmittal to:

Honorable Tamara Paltin, Chair
Disaster, Resilience, International Affairs and Planning Committee
200 South High Street
Wailuku, Hawai'i 96793
via: drip.committee@mauicounty.us

Dear Chair Paltin:

SUBJECT: BILL 163 (2025), BILL 164 (2025), AND BILL 165 (2025), TO AMEND THE MAUI ISLAND PLAN'S DIRECTED GROWTH MAP C5 (PŪLEHU ROAD), AMEND THE WAILUKU-KAHULUI COMMUNITY PLAN DESIGNATION, AND CHANGE THE ZONING FOR 166.511 ACRES SITUATED AT KAHULUI, HAWAI'I (HO'ONANI VILLAGE) (DRIP-19)

Thank you for your October 23, 2025 letter requesting information pertaining to Bills 163, 164 and 165. The following identifies your request followed by the Planning Department's (Department) response:

1. ***To the extent feasible given the shortness of time, please review and provide your Department's comments on the project and attached proposed bills, including any anticipated impacts as a result of the proposal.***

Proposed Bills - Process Concerns:

Given the County's existing housing crisis and considering the many related General Plan goals and policies that encourage the County to address this crisis, the Department is very supportive of projects or initiatives that provide new housing opportunities for County residents. However, it is the Department's position that all

Received at DRIP meeting on 11/5/25

development projects, whether they provide additional housing opportunities or not, should be evaluated thoroughly to ensure that a project's potential impacts affecting the community are properly analyzed and addressed through the entitlement application process established within the Maui County Code (MCC). While the Department recognizes that the Maui County Charter (Charter) and to some extent MCC Titles 2 and 19 reference that the County Council may initiate changes to community plans and zoning, the Department is not supportive of this abbreviated process for the proposed Ho'onani Village project as it bypasses the standard application and environmental procedures/analysis that would normally be expected of a large private development project.

More specifically, MCC section 2.80B.060(A) and 2.80B.100 provide a process for a non-decennial amendment to the Maui Island Plan and community plans proposed by the Planning Director or County Council in accordance with the provisions of Sections 8-8.4 and 8-8.6 of the Charter. Unfortunately, other than review by the appropriate Planning Commission, MCC Sections 2.80B.060(A), 2.80B.100 or the Charter do not provide any guidance as to how the potential impacts of such requests are to be analyzed. For example, there are no stated requirements for the submittal of a project application or environmental analysis for the Department or Planning Commission to consider in formulating their recommendations prior to the Council acting on the amendment.

On the other hand, MCC Sections 2.80B.060(B) and 2.80B.110 provide a process for a non-decennial amendment to the Maui Island Plan and community plans proposed by a private party such as the applicant for Ho'onani Village. Under these sections, it is clearly stated that the applicant, must submit an application in compliance with the requirements of MCC Sections 19.510.010 and 19.510.020. Additionally, MCC Sections 2.80B.060(B) and 2.80B.110 mandate the submittal of an Environmental Assessment (EA) or Environmental Impact Statement (EIS) in accordance with Hawai'i Revised Statutes (HRS) Chapter 343. Thus, within the MCC, there is an expressed difference between what is expected from Council-initiated versus developer-initiated Maui Island Plan and community plan amendments. The Department believes that this difference is crucial in ensuring that private development projects are thoroughly analyzed and considered by the community before any action is taken.

Importantly, as part of the application process for a developer-initiated community plan amendment and/or change in zoning, MCC Section 19.510.010 requires detailed information to be submitted by an applicant so that the project can be properly analyzed by the Department, and evaluated by the public, Planning Commission and Council before final action. This is evident through MCC Subsection 19.510.010(C)(2), which requires that for all community plan amendment and change in zoning applications deemed complete, the director shall prepare a report that includes an assessment and detailed explanation for each requirement set forth in MCC Subsection 19.510.010(D), and that

report shall include all relevant data, studies, agency reports, and any other information relied upon by the Director in finding that an application is complete. Amongst a variety of application materials required of Subsection 19.510.010(D), the applicant of a developer-initiated project would be required to submit the following:

- *"19.510.010(D)(7): Policies and objectives of the general plan, the provisions of the community plan applicable to the application, the provisions of the applicable district and an analysis of the extent to which the application, if granted, conforms to these policies, objectives and provisions;*

- *19.510.010(D)(9): Preliminary archaeological and historical data and comments from the department of land and natural resources and office of Hawaiian affairs of the State, and if applicable, a preservation/mitigation plan which has been reviewed and approved by the department of land and natural resources and office of Hawaiian affairs of the State;*

- *19.510.010(D)(10): Analysis of the secondary impacts of the proposed use on surrounding uses which includes, but which is not limited to, increases in property value, populations, housing, community services and facility needs, secondary jobs and employment generated, and compatibility with surrounding uses, and if applicable, the affordable housing program and comments from the department of human concerns of the County, and other mitigation plans and comments from the respective governmental and community services agencies;*

- *19.510.010(D)(11): Traffic impact analysis and, if applicable, a traffic master plan, which includes, but which is not limited to, comments from the department of transportation of the State and department of public works and environmental management;*

- *19.510.010(D)(13): Water source, supply and distribution analysis which includes, but which is not limited to, methods of irrigation existing on the parcel and proposed for the application, location and use of groundwater and nonpotable water sources, and, if applicable, a water master plan, which includes, but which is not limited to, comments from the department of land and natural resources of the State and the departments of water supply and public works and environmental management;*

- *19.510.010(D)(14): Sewage disposal analysis, a description of a proposed method of sewage disposal, and comments, if applicable, from the departments of health and land and natural resources of the State and the departments of public works and environmental management and water supply;*

- *19.510.010(D)(15): Solid waste disposal analysis, a description of a proposed method of solid waste disposal and comments, if applicable, from the departments of health and land and natural resources of the State and the departments of public works and environmental management and water supply;*

- *19.510.010(D)(16): Identification of environmentally sensitive areas, habitat and botanical features which include, but which are not limited to, wetlands, streams, rock outcroppings, endangered plants and animals, and exceptional trees, if applicable, a baseline study and preservation/mitigation plan, and comments, if applicable, from the department of land and natural resources of the State, the United States Fish and Wildlife Service, and the United States Corps of Engineers;*

- *19.510.010(D)(17): Identification of the topographical and drainage patterns existing on the subject parcel and any proposed alterations to these patterns;*

- *19.510.010(D)(18): Identification of all meetings held between the applicant and any community or residential group which may be impacted by the applicant's request, the issues raised by these meetings, and any measures proposed by the applicant to deal with or to mitigate these issues;*

- *19.510.010(D)(22): Operations and management of the proposed use which includes, but is not limited to, number of employees, proposed employee housing plan, hours of operation, fees charged to residents and visitors, provisions for off-site parking;*

- *19.510.010(D)(24): Identification and assessment of chemicals and fertilizers used, including, but not limited to, detailing effects upon surface, underground and marine water resources and neighboring properties and surrounding flora and fauna, and if applicable, a mitigation plan and maintenance program and schedule, and comments from the departments of health and of land and natural resources of the State, the United States Fish and Wildlife Service, and the United States Environmental Protection Agency;"*

Furthermore, MCC Section 19.510.040(A) requires that applications for a change in zoning be processed to provide for community, State and County agency input through public hearing(s) in accordance with the requirements of MCC Sections 19.510.010 and 19.510.020. MCC Section 19.510.040(A) also requires that:

"1. The appropriate planning commission shall conduct a public hearing on all change of zoning applications;

2. Upon closing the public hearing and upon reviewing the report and recommendation of the planning director and all other applicable information on the application, the commission shall prepare a report which includes, but which is not

limited to, the commission's findings of fact, conclusions of law, recommendations, and any recommended condition which the commission determines to be necessary pursuant to the conditional zoning provisions of this chapter;

3. Upon appropriate action by the commission, the director of planning shall transmit the report of the commission to the county council;

4. The county council may grant a change of zoning if all of the following criteria are met:

a. The proposed request meets the intent of the general plan and the objectives and policies of the community plans of the county,

b. The proposed request is consistent with the applicable community plan land use map of the county,

c. The proposed request meets the intent and purpose of the district being requested,

d. The application, if granted, would not adversely affect or interfere with public or private schools, parks, playgrounds, water systems, sewage and solid waste disposal, drainage, roadway and transportation systems, or other public requirements, conveniences and improvements,

e. The application, if granted, would not adversely impact the social, cultural, economic, environmental, and ecological character and quality of the surrounding area, and

f. If the application change in zoning involves the establishment of an agricultural district with a minimum lot size of two acres, an agricultural feasibility study shall be required and reviewed by the department of agriculture and the United States Soil and Conservation Service."

In summary, it is the Department's position that bypassing the normal application and environmental review procedures/analysis expected of a private development project of this magnitude will result in a significant reduction in the level of impact analysis normally performed by the Department, Planning Commission and Council, result in relatively little community input, and may result in potential impacts to the community. For these reasons, the Department recommends that the Bills not be passed, and the project developer be required to submit the necessary application materials as required per the MCC for a developer-initiated project.

Anticipated Impacts of the Proposal:

Absent a complete application that would include all information as required within the MCC (see partial list above), the Department is unable to identify anticipated impacts resulting from the proposal nor provide specific recommendations. Based upon the limited information submitted thus far, the Department's Long-Range Division prepared the attached General Plan Consistency analysis. The analysis provides a list of project-applicable General Plan policies, along with staff's comments regarding level of consistency. As noted in the analysis, while the project appears to be consistent with some

policies, the Department has concerns with consistency of others. If additional project information is submitted as recommended by the Department, the Department would conduct a more thorough consistency review and analysis for future Planning Commission and Council review.

Further, an EIS provides the opportunity for a detailed environmental impact analysis, which is critical for analyzing projects of this magnitude. The Council may be aware of HRS Section 343-5(6), which indicates that an EA shall be required for actions that *"(6) Propose any amendments to existing county general plans where the amendment would result in designations other than agriculture, conservation, or preservation, <u>except actions proposing any new county general plan or amendments to any existing county general plan initiated by a county</u>"* (emphasis added). According to this Section, if this project were developer-initiated, an EA would be required to be processed prior to County action on the change in community plan designation. Since this project is Council initiated, an EA or EIS is not required prior to Council action, which bypasses this important analysis at the County level.

The Department acknowledges that the proposal requires approval of a State Land Use Boundary Amendment from the State Land Use Commission. According to the State Land Use Commission, the State Land Use Boundary Amendment application that the developer has filed with the State will not be deemed complete until an approved EIS for the project is accepted by the State Land Use Commission or another accepting authority.

Importantly, assuming Bills 163, 164 and 165 pass, along with the State Land Use Commission's approval of the State Land Use Boundary Amendment and any associated EIS, beyond any specific project conditions/mitigation measures mandated by the State, since there are no further entitlement actions required, the County would not be able to control the amount of development beyond the list of permitted uses and development standards identified within the proposed new zoning district of M-1 Light Manufacturing. With a variety of uses permitted in the M-1 District and limited permitted development standards that include an allowed 60' height limit and potential 0' setbacks along property lines, the proposed project will result in a significant change to the surrounding community without proper County impact analysis that would otherwise be required of a developer-initiated amendment.

<u>Concern with Proposed Change in Community Plan and Zoning Designations:</u>

Given the lack of information submitted, the Department is not clear as to the reason the applicant is choosing to change the zoning designation for the property to M-1 (Light Industrial District) as opposed to a designation of B-2 (Community Business District) or B-3 (Central Business District), which may be more appropriate for this site. Additionally, the proposed change in community plan designation from Agriculture to Business/Multi-Family does not appear to be consistent with the proposed change in zoning to M-1 (Light

Industrial District) and perhaps may be a better fit for a community plan designation of Light Industrial. If it is the project proponent's intention to build a complete community, however, the appropriate community plan designation is as proposed and the zoning designation should be either B-2 or B-3. The department strongly opposes M-1 and believes B-2 is a more appropriate designation based on the limited understanding the Department has of the project.

Further, within the applicant's presentation for the November 5, 2025 DRIP Committee Meeting, it appears that the applicant is proposing a "Hospitality" phase to the project, which the Department assumes to mean a transient vacation rental use. This use is not permitted in the B-1, B-2, B-3 or M-1 zoning districts. If the applicant desires such a use, then a change in zoning should be requested for a site-specific Hotel zoning district.

2. ***Please be prepared to comment on the project at the November 5th Committee meeting.***

The Department will have staff in attendance at the November 5th Committee meeting prepared to comment on the project and respond to questions.

3. ***Please provide the appropriate Community Plan Map and Land Zoning Map for Bills 164 and 165, respectively.***

Please find attached a copy of the existing Community Plan Map and existing Zoning Map for the subject property.

4. ***On September 4, 2025, you notified the State Office of Planning and Sustainable Development's Environmental Review Program that the Department withdrew its submission of the Environmental Impact Statement Preparation Notice for the project.***
   a. ***Please explain the Department's rationale for withdrawal and why the Department believes the State Land Use Commission is the more appropriate agency to be the Accepting Authority.***

The Department submitted the Environmental Impact Statement Preparation Notice for the project based upon a request from the Applicant. After further review of the project, the Department determined that it would be more appropriate for the State Land Use Commission (LUC) to be the accepting authority as the Ho'onani project requires a State District Boundary Amendment (DBA) from Agriculture to Urban. This designation must occur prior to a Change in Zoning by the County of Maui. Therefore, since LUC review and approval for the DBA must come first, the Department determined that it would be more appropriate for the LUC to be the accepting authority for the EIS.

b. What is the status of the project's Environmental Impact Statement?

The Department received a copy of the attached letter from the LUC directing the applicant to submit material necessary for the processing of the request for a State Land Use Boundary Amendment and referencing the necessity for an EA/EIS. The Department assumes that Applicant is working with the State LUC and the EIS is being processed in accordance with the requirements of Chapter 343, HRS. The Council may wish to ask the project proponent to describe the scope of the EIS to ensure that it includes analysis of the entire project area.

Thank you for the opportunity to provide this information. If you have any further questions, please do not hesitate to contact me.

Sincerely,

KATE L. K. BLYSTONE
Director

Attachments:

- General Plan Consistency Analysis
- Existing Community Plan Map for the Subject Property
- Existing Zoning Map for the Subject Property
- August 26, 2025 Letter from the Land Use Commission

cc: Ana Lillis, Deputy Director
Danny Dias, PPA, Current Division
Jacky Takakura, PPA, Long Range Division
Carolyn Cortez, PPA, ZAED Division
Gregory Pfost, Administrative Planning Officer

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LAND USE COMMISSION

Komikina Ho'ohana 'Āina

DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM

Ka 'Oihana Ho'omōhala Pā'oihana, 'Imi Wai wai a Ho'omāka'ika'i

235 S. Beretania Street, RM 406, Honolulu, Hawai'i 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawai'i 96804
Email Address: dbedt.luc.web@hawaii.gov

JOSH GREEN, M.D.
GOVERNOR

SYLVIA LUKE
LT. GOVERNOR

DANIEL ORODENKER
LUC EXECUTIVE OFFICER

Telephone: (808) 587-3822
Fax: (808) 587-3827
Website: luc.hawaii.gov

August 26, 2025

Ho`onani Development LLC
Wells Street Law, LLLC
Jeffrey Ueoko
2145 Wells Street, Suite 406
Wailuku, Hawai`i 96793

SUBJECT: A25-811 Ho`onani Development LLC Petition for Land Use Boundary Amendment

Dear Mr. Ueoka:

This is to acknowledge receipt of the subject Petition For Land Use Boundary Amendment ("Petition") and Exhibits 1-4 seeking to reclassify approximately 166.512 acres of land from the State Land Use ("SLU") Agricultural District to the SLU Urban District for the development of a mixed use development consisting of approximately 1,600 multi-family residential units along with retail, office, dining, open spaces, hospitality, and light industrial (the "Project") situated at Pu`unēnē, Wailuku, Island and County of Maui, TMK No.: (2) 3-8-006:004 unit 0005 (the "Petition Area") filed in the subject docket on August 18, 2025, by Ho`onani Development LLC ("Petitioner").

We have reviewed the information contained in the Petition pursuant to §15-15-50, Hawai`i Administrative Rules ("HAR"). Based upon our review of the submitted information, we have the following comments:

1. Pursuant to §15-15-50(b), HAR: the Petition cannot be deemed complete until an approved environmental impact statement for the Project is accepted by the LUC or another accepting authority and is incorporated as part of the Petition.

2. Pursuant to §15-15-50(c)(3), HAR:

   - Please revise Petitioner's Exhibit 3 (Petition Area) so that the Petition Area is clearly identified on the tax map (ie. use of bold outline);
   - Please provide the LUC staff with one (1) copy of a full-size tax map with the Petition Area clearly identified; and,

- Petitioner's Exhibit 3 should contain the metes and bounds description for the Petition Area and be signed by the preparer (Austin Tsutsumi & Associates). Without the surveyor's signature, these documents do not satisfy the requirement for a map and description of the Petition Area.

3. Pursuant to §§15-15-50(c)(5) and (c)(6), HAR: Petitioner should clarify the property interests identified in Petitioner's Exhibit 1 (Limited Warranty Unit Deed) that have authorized the Petitioner to file the Petition and if those interests were served with a copy of the Petition – and if not, please explain why. As this Petition Area represents a portion of a condominium property regime ("CPR") please provide information on all reservations, covenants, and restrictions that effect adjacent unit owners.

4. Pursuant to §15-15-50(c)(8), HAR: Petitioner should detail the proposed methods and the ability of the Petitioner to finance the development of the Project in terms of the Project's incremental and total estimated costs.

5. Pursuant to §15-15-50(c)(19), HAR: Petitioner will need to provide further detail on the conformity of the boundary amendment to the County General Plan, Community Plan and zoning designations.

6. Pursuant to §15-15-50(c)(20), HAR: Petitioner will need to provide a detailed schedule, in ten-year increments, of the proposed development schedule and a map showing the location of each increment.

7. Pursuant to §15-15-50(c)(21), HAR: Petitioner will need to address Hawaiian customary and traditional rights. The EIS should prepare a Cultural Impact Assessment ("CIA") and the Petition needs to have a Ka Pa'akai analysis completed.

8. Pursuant to §§15-15-50(c)(24) and (c)(25), HAR: Petitioner must address climate change related to the proposed development and proposed mitigation measures. In addition, Petitioner should conduct an analysis of the proposed development's adherence to sustainability principles and priority guidelines contained in §226-108, Hawai'i Revised Statutes ("HRS").

We recognize that until the EIS process is completed much of the required information for a petition is not yet fully available. Petitioner will be required to file a motion to designate the Land Use Commission as the approving agency under Chapter 343, HRS and for the authority to prepare an Environmental Impact Statement Preparation Notice ("EISPN").

Pursuant to §15-15-50(f), HAR, the Petition is deemed incomplete at this time as information regarding the above-mentioned items have not been submitted or addressed adequately pursuant to §15-15-50(b) and (c), HAR. We reserve the right to provide additional comments and raise additional concerns not included in this review. Pursuant to §15-15-50(f), HAR, the Petition may be deemed as a proper filing upon review of the additional information submitted and upon determination by the Executive Officer.

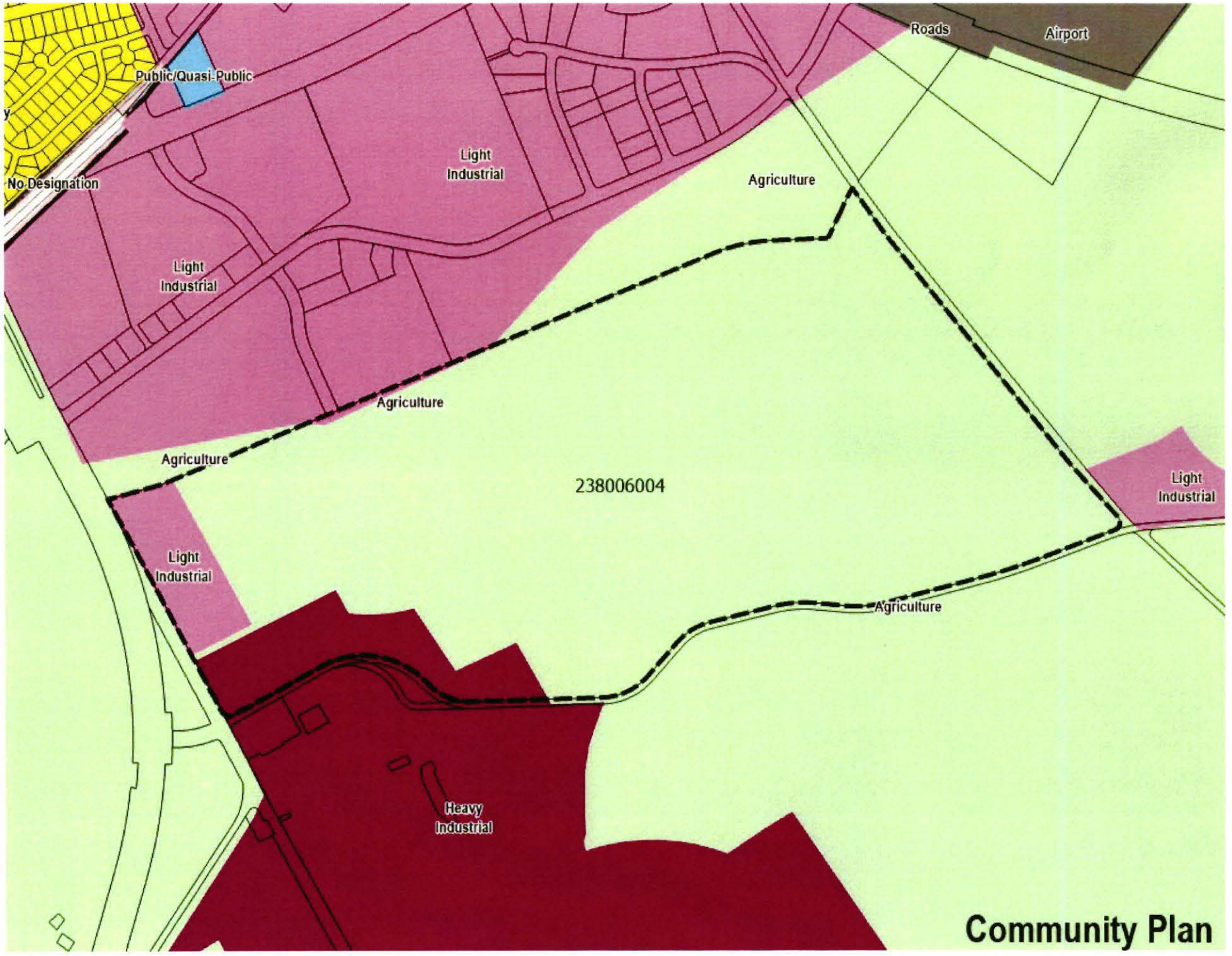
Please be advised that in the event a notice of intent to intervene is filed with the LUC pursuant to §15-15-52(b), HAR, the Petitioner is required to serve a copy of the Petition upon the potential intervenor and file an affidavit of Petitioner or its agent attesting to its compliance with §15-15-48(b), HAR.

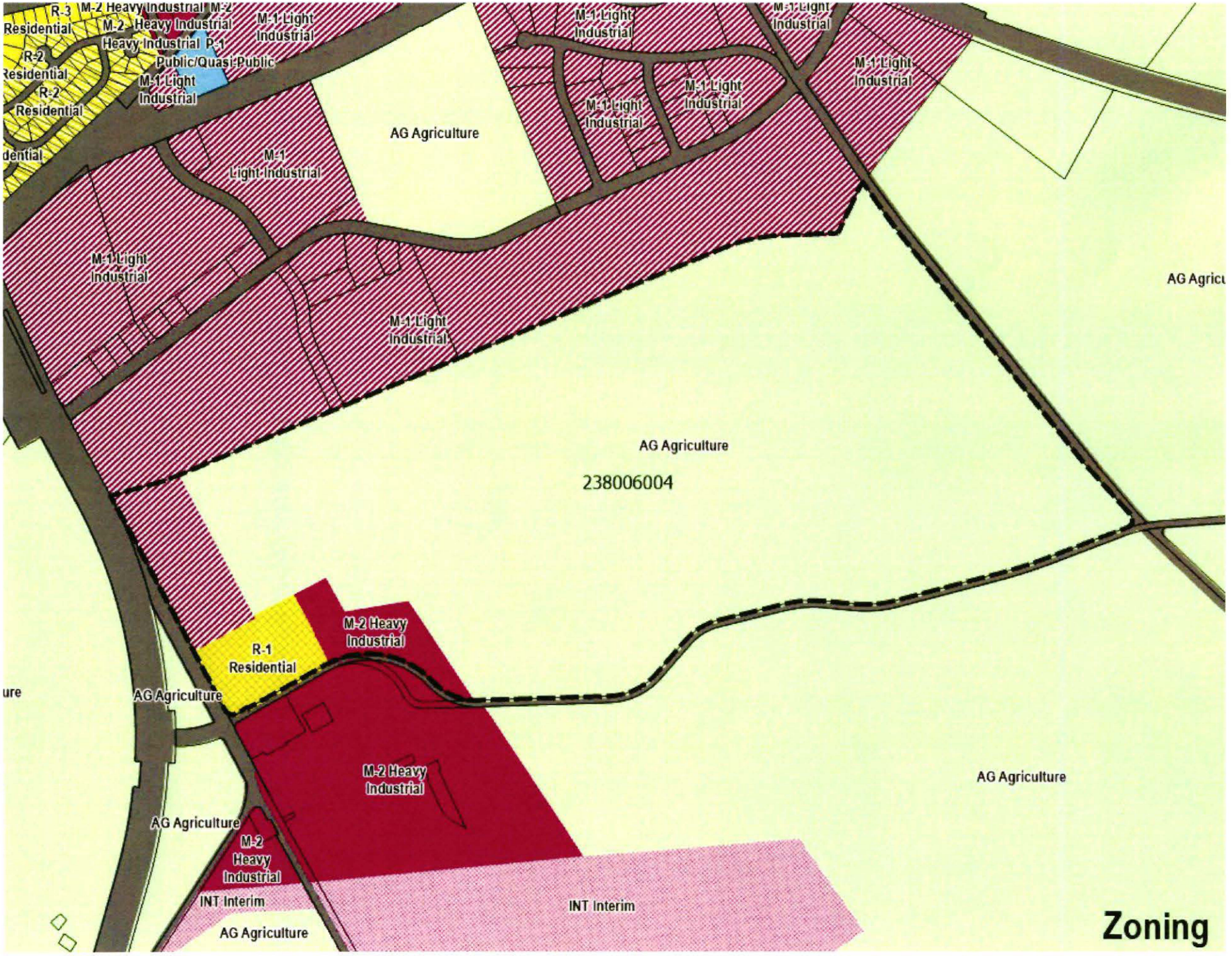
Please address the above identified matters as soon as possible. Should you require clarification or further assistance in this matter, please contact Scott Derrickson, AICP, of my staff at 587-3921.

Sincerely,

Daniel Orodenker
Executive Officer
Land Use Commission
State of Hawai`i

CC: Mary Alice Evans, Office of Planning and Sustainable Development
Kate Blystone, Maui County Planning Department


Roads
Airport
Public/Quasi-Public
No Designation
Light Industrial
Agriculture
Light Industrial
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Agriculture
238006004
Light Industrial
Light Industrial
Agriculture
Heavy Industrial
Community Plan


R-3
M-2 Heavy Industrial
M-2
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Zoning

General Plan Consistency Analysis - Ho'onani Village, Kahului
Department of Planning – Long Range Division
Bills 163, 164, 165 - Resolution 25-132, FD1
November 3, 2025

PROJECT DESCRIPTION:

It is the Department's understanding that Ho'onani Village is a proposed mixed-use development project, to include an anticipated 1,600 multi-family residential units, commercial office space, retail, restaurant dining areas, light industrial uses, recreational and open space, an outdoor amphitheater, community gathering places, and/or sports fields.

The parcel contains the following land use designations:

a) State Land Use - Agriculture
b) Maui Island Plan – Outside Urban Growth Boundary
c) Wailuku-Kahului Community Plan – Agriculture
d) County Zoning – Agriculture
e) Flood Zone – X (low-to-moderate risk of flooding and outside SFHA)
f) SMA – no

TMK (2)3-8-006:004-0005 (portion) - 166.511 acres

PROPOSED ENTITLEMENT REQUESTS:

- Amend MIP Directed Growth Map C5 (Pūlehu Road) to expand Urban Growth Boundary
- Amend Wailuku-Kahului community plan designation from Agriculture to Business/multi-family
- Change zoning from Agriculture to M-1 Light Industrial
- State Land Use Boundary Amendment from Agriculture to Urban (request not included in proposed bills)

LONG RANGE DIVISION COMMENTS:

The Long-Range Division reviews discretionary applications against the policies of the Maui County General Plan, which includes the Countywide Policy Plan (CWPP) approved in 2010 and amended in 2021, the Maui Island Plan (MIP) adopted in 2012, and the Wailuku-Kahului Community Plan adopted in 2002 to determine if the application is consistent with the General Plan. Below is a preliminary consistency analysis based upon project information submitted to date.

CWPP:

E. Expand Housing Opportunities for Residents

- *Objective 2. Increase the mix of housing types in towns and neighborhoods to promote sustainable land use planning, expand consumer choice, and protect the County's rural and small-town character.*
  Policy d. Promote infill housing in urban areas at scales that capitalize on existing infrastructure, lower development costs, and are consistent with existing or desired patterns of development.

Staff Comment: The proposal appears consistent with the objective and policy because it promotes a greater diversity of housing options and mixed uses in a location likely planned for growth in the future, supporting sustainable land use and infill development. By increasing density through multi-family housing, the proposal likely capitalizes on existing infrastructure and may lower development costs. However, the proposed area is currently outside of existing urban areas, and it is important that the design and scale of the project respect the surrounding context to avoid undermining this goal.

- *Objective 3. Increase and maintain the affordable housing inventory.*
  Policy g. Minimize the intrusion of housing on prime, productive, and potentially productive agricultural lands and regionally valuable agricultural lands.

  Staff Comment: The proposal includes multi-family residential housing, which often provides opportunities for more affordable housing types compared to single-family homes. However, this is not consistent with the policy because the project site has a long history of productive and valuable agricultural land, and according to Hawai'i Land Study Bureau website the soil classification is rated "A" which represents highest productivity.

F. Strengthen the Local Economy

- *Objective 2. Diversify and expand sustainable forms of agriculture and aquaculture*
  Policy b. Prioritize the use of agricultural land to feed the local population, and promote the use of agricultural lands for sustainable and diversified agricultural activities.
  Policy e. Support ordinances, programs, and policies that keep agricultural land and water available and affordable to farmers.

  Staff Comment: Converting high productivity ag land for non-ag uses is inconsistent with this policy.

I. Improve Physical Infrastructure

- *Objective 1. Improve water systems to assure access to sustainable, clean, reliable, and affordable sources of water.*
  Policy a. Ensure that adequate supplies of water are available prior to approval of subdivision or construction documents.

  Staff Comment: To align with objective and policy, the proposal should provide assurances or documentation that adequate, sustainable water supplies will be available before development proceeds.

- *Objective 3. Direct growth in a way that makes efficient use of existing infrastructure and to areas where there is available infrastructure capacity.*
  Policy a. Capitalize on existing infrastructure capacity as a priority over infrastructure expansion.
  Policy b. Planning for new towns should only be considered if a region's growth is too large to be directed into infill and adjacent growth areas.
  Policy c. Utilize appropriate infrastructure technologies in the appropriate locations.

Policy d. Promote land use patterns that can be provided with infrastructure and public facilities in a cost-effective manner.
Policy e. Support catchment systems and on-site wastewater treatment in rural areas and aggregated water and wastewater systems in urban areas if they are appropriately located.

Staff Comment: The project should be considered only after an analysis of the existing Urban Growth area, to ensure that there are no infill opportunities, and that the existing infrastructure can be adequately expanded.

- *Objective 5. Improve the planning and management of infrastructure systems.*
  Policy g. Ensure that infrastructure is built concurrent with or prior to development.

  Staff Comment: Proposal reflects planning-level coordination but should clarify infrastructure planning and capacity. Identify which infrastructure systems are already available (roads, sewer, water, electricity, etc.). Provide a phasing plan or commitment that infrastructure will be delivered before or during development, not after.

J. Promote Sustainable Land Use and Growth Management

- *Objective 1. Improve land use management and implement a directed-growth strategy.*
  Policy a. Establish, map, and enforce urban- and rural-growth limits.

  Staff Comment: Although the project site is currently zoned agriculture, its location abutting Pūlehu Road within the Maui Island Plan's directed growth map suggests that the proposed amendment to change zoning from agriculture to M-1 light industrial and business/multi-family uses is an effort to align zoning with the designated urban growth boundary.

  However, it is important to demonstrate that this change is part of a managed and justified growth strategy, not an ad hoc expansion into agricultural lands. The project may be more appropriate after ensuring that there are no further development opportunities within the currently mapped Urban Growth Boundary.

- *Policy b. Direct urban and rural growth to designated areas.*

  Staff Comment: The project site's adjacency to the Directed Growth Map area and proposed amendments support directing growth into designated urban zones, is consistent with this policy; however, as stated above, infill development opportunities should be exhausted prior to pursuing this project.

- *Policy e. Encourage redevelopment and infill in existing communities on lands intended for urban use to protect productive farmland and open-space resources.*

  Staff Comment: The project is partially consistent with the policy. While it is not infill or redevelopment, its proximity to existing designated urban growth areas, and its integrated, mixed-use character help it support the broader intent of promoting efficient land use.

- *Policy h. Support the dedication of land for public uses.*

Staff Comment: The inclusion of recreational spaces, community gathering places, and sports fields supports public use dedication, aligning well with this policy.

- *Objective 2. Improve planning for and management of agricultural lands and rural areas*
  Policy a. Protect prime, productive, and potentially productive agricultural lands to maintain the islands' agricultural and rural identities and economies.
  Policy c. Discourage developing or subdividing agriculturally designated lands when non-agricultural activities would be primary uses.

- *Objective 4. Improve and increase efficiency in land use planning and management.*
  Policy b. Ensure that new development projects requiring discretionary permits demonstrate a community need, show consistency with the General Plan, and provide an analysis of impacts.

  Staff Comment: The proposed amendments represent a significant land use change. This requires thorough justification showing alignment with the General Plan's vision, particularly regarding growth management and agricultural preservation. Although, the project's inclusion of multi-family housing and commercial space can address housing shortages and economic development needs, a comprehensive analysis for the following should be provided: demand for these uses, and environmental, traffic, infrastructure, and social impacts.

- *Policy c. Encourage public and private partnerships to preserve lands of importance, develop housing, and meet the needs of residents.*

  Staff Comment: The project provides housing and community spaces, which helps meet resident needs and partially supports this policy. However, since it would convert agricultural land, the project should also include ways to preserve or offset the loss of farmland, such as setting aside other agricultural lands or partnering with organizations to protect important farmland.

- *Policy d. Promote creative subdivision designs that implement best practices in land development, sustainable management of natural and physical resources, increased pedestrian and bicycle functionality and safety, and the principles of livable communities.*

  Staff Comment: The development should prioritize pedestrian and bicycle infrastructure by designing safe, accessible, and convenient pathways, crosswalks, and bike lanes. Veterans Highway currently has designated walkways and bicycle lanes. Similarly, Pūlehu and Hansen Roads should include designated walkways that connect to Veterans Highway. This emphasis not only encourages healthier transportation choices but also reduces reliance on vehicles, contributing to sustainability goals.

  Policy e. Coordinate with Federal, State, and County officials in order to ensure that land use decisions are consistent with County plans and the vision local populations have for their communities.

Staff Comment: Effective collaboration between government and residents is essential for balanced and successful land use decisions. Extensive community engagement is highly recommended.

L. Mitigate Climate Change and Work Toward Resilience

- *Objective 3. Significantly increase the use of renewable and green technologies to promote energy efficiency and energy self-sufficiency.*
  Policy a. Promote the use of locally renewable energy sources, and reward energy efficiency.

  Staff Comment: While building plans have not yet been submitted, the proposal could align with this policy if it incorporates energy-efficient design, solar panels, or other renewable energy systems. At this stage, however, no such features have been indicated.

- *Policy b. Consider tax incentives and credits for the development of sustainable- and renewable-energy sources.*

  Staff Comment: The following was not mentioned on the proposal, tax incentives, energy credits, or participation in green building programs. Including such elements would improve consistency with this policy.

- *Policy d. Encourage small-scale energy generation that utilizes wind, sun, water, biowaste, and other renewable sources of energy.*

  Staff Comment: In the absence of site layout, the inclusion of ample open space and mixed uses could potentially support solar PV arrays, small-scale wind installations, or biowaste systems—particularly in industrial or community gathering areas.

- *Objective 4. Direct growth in a way that makes efficient use of existing infrastructure and to areas where there is available infrastructure capacity.*
  Policy b. Planning for new towns should only be considered if a region's growth is too large to be directed into infill and adjacent growth areas.

  Staff Comment: The site abuts the Urban Growth Boundary and likely benefits from proximity to existing or planned infrastructure networks. The project promotes compact, efficient growth. The project qualifies as adjacent growth, not a new town. An analysis of the region's growth should be considered to ensure the project does not conflict with the policy's intent to prevent sprawl or premature expansion into undeveloped regions.

Maui Island Plan

Housing

- *Objective 5.1.1 More livable communities that provide for a mix of housing types, land uses, income levels, and age.*

Policy 5.1.1.a Promote livable communities (compact/walkable/bikeable, access to transit) that provide for a mix of housing types and land uses, including parks, open space, and recreational areas.

Staff Comment: Resolution 25-132 FD1, describes the proposed project as "a high-density, master-planned, mixed-use community, featuring multi-family residential housing, commercial office space, retail, restaurant dining areas, light industrial uses, recreational and open space, an outdoor amphitheater, community gathering places, and sports fields..." The proposal is consistent with Objective 5.1.1 and Policy 5.1.1.a, provided walking/biking paths and access to transit are provided.

Land Use

- *Objective 7.1.1. Significantly reduce the loss of productive agricultural lands.*
  Policy 7.1.1.c. Discourage developing or subdividing productive agricultural lands for residential uses in which the residence would be the primary use and any agricultural activities would be secondary uses.
  Policy 7.1.1.e. Focus urban growth, to the extent practicable, away from productive and important agricultural lands.
  Policy 7.1.1.f Strongly discourage the conversion of productive and important agricultural lands (such as sugar, pineapple, and other produce lands) to rural or urban use, unless justified during the General Plan update, or when other overriding factors are present.
  Policy 7.1.1.j Require all major developments adjacent to agricultural lands to provide an appropriate and site-specific agricultural protection buffer as part of a required site plan.

  Staff Comment: According to the Hawai'i Land Study Bureau GIS program, the project site is rated as Class "A," indicating that the property is prime agricultural land. Therefore, amending the Wailuku-Kahului Community Plan to change the designation of this land is not consistent with the policy. If the project is approved, a protection buffer must be included adjacent to any remaining agricultural lands.

- *Objective 7.3.1 Facilitate and support a more compact, efficient, human-scale urban development pattern.*
  Policy 7.3.1.c Strengthen evaluation requirements for new urban expansion, new towns, and major urban infill projects within urban growth areas. Tailor submittal requirements to reflect the impact or scale of different projects.

  Staff Comment: Expanding urban boundaries or undertaking large infill projects within urban growth areas should go through a more rigorous and transparent evaluation process. These projects often have substantial and long-term effects on infrastructure, traffic, public services, the environment, and community character.

Directed Growth

- *Goal 8.1 Maui will have well-serviced, complete, and vibrant urban communities and traditional small towns through sound planning and clearly defined development expectations.*

Policy 8.1.a. The County, with public input, will be responsible for designating new growth areas where infrastructure and public facilities will be provided, consistent with the policies of the MIP and in accordance with State and County infrastructure plans.

Staff Comment: The proposed mix of housing, employment opportunities, recreational areas, and community spaces aligns with the intent to support well-serviced and complete communities. However, its location calls for support through infrastructure planning and public input.

- *Policy 8.1.b. Amendments to a UGB or STB shall be reviewed as a MIP amendment. A UGB or STB shall only be expanded if the island-wide inventory (maintained by the Department of Planning) of existing land uses (residential, commercial, industrial) indicates that additional urban density land is necessary to provide for the needs of the projected population growth within ten years of that inventory; or, during the decennial update of the MIP.*
  Policy 8.1.e. New development shall be consistent with the UGBs, STBs, and all other applicable policies of the MIP. New urban-density development shall not be allowed outside of a UGB or STB.

  Staff Comment: The total unmet housing demand in the current Maui Island Plan (2010–2030) is 10,845 units. The table below shows some of the existing approved and ongoing housing projects, totaling 4,069 units. A detailed analysis demonstrating the need for additional urban land should be provided. With these estimates, the proposal is not consistent with the policy. (these numbers represent a preliminary review and need to be further verified for accuracy)

Approved or anticipated housing projects:	
Kahului Civic Center	300 units approximately
Maui Lani remaining entitlements	608 homes (need to verify)
DHHL Wailuku Single Family Residential	173 homes plus 31 lots
DHHL Pu'uhona (Wailuku)	171 homes
DHHL (Waiehu Mauka)	343 homes and 55 rural lots
Waikapu Country Town	1,433 residential units plus 146 ohanas
Waikapu Development Venture	80 homes
Wa'ihee Affordable Housing	752 units
Hale Pilina (Puunene Ave, Kahului)	178 apartments
	4,069 (Total)

Missing from this list are Queen Ka'ahumanu Center and Kahului Shopping Center which have significant potential for mixed use transit-oriented development but have not proposed plans yet. Also, any phase-out of Apartment district transient vacation rentals can create opportunities for some Central Maui residents to live closer to where they work in South and West Maui. Note: this is not an exhaustive list and the numbers may change.

According to the Central Maui Community Plan Update Housing Resource Paper December 2024, roughly 695 new housing units are needed in Central Maui by 2043.

- *Regional Framework Theme Two: (p. 8-14) Protect Maui's agricultural resource lands, especially prime and productive agricultural lands. "Maui's agricultural lands are an important resource for both current and future generations of island residents. Agricultural lands provide the opportunity for greater economic diversification; food and energy security; and better stewardship of land, water, and open space resources. Maui residents have expressed a strong desire to support the agricultural economy and protect the island's agricultural lands for both present and future generations."*

  Regional Framework Theme Three: (p. 8-14) Direct growth to areas proximate to existing employment centers, where infrastructure and public facility capacity can be cost-effectively provided, and where housing can be affordably constructed.

  Regional Framework Theme Four: (p. 8-15) Within the Urban Growth Boundaries, promote livable, mixed-use communities, defined by a high quality of life. "...Beyond our urban boundaries, working agricultural landscapes, natural wildland areas, and undeveloped shorelines and beaches are vitally necessary to provide a sense of refuge and escape from the stresses of urban life."

  Staff Comment: The Regional Framework Themes stress saving ag land for ag purposes, only expanding growth to areas where infrastructure and public facility capacity can be cost-effectively provided, and maintaining ag landscapes as a boundary around urban areas. The proposed project should be carefully reviewed if it can be developed within these Framework Themes.

WAILUKU-KAHULUI COMMUNITY PLAN

Proposed community plan designation

Business/Multi-Family. This includes a mixture of retail, office, and commercial services which are oriented to neighborhood service and single family and multi-family residential uses.

Staff comment: This community plan designation is more consistent with Business-type zoning districts, such as B-2 Community Business District. Community plan designations such as Business/Industrial or Light Industrial are more consistent with M-1 Light Industrial zoning.

Environment

1. Preserve agricultural lands as a major element of the open space setting that which borders the various communities within the planning region. The close relationship between open space and developed areas is an important characteristic of community form.

Staff Comment: The project is not consistent with this policy.

13. Support energy conservation measures, including the use of solar heating and photovoltaic systems, in conjunction with urban areas.

Staff Comment: The proposal could align with this policy if it includes energy-efficient building standards, use of solar panels, or other renewable systems. At this stage, no such features are described.

Housing

2. Provide sufficient land areas for new residential growth which relax constraints on the housing market and afford variety in type, price, and location of units. Opportunities for the provision of housing are presently constrained by a lack of expansion areas. This condition should be relieved by a choice of housing in a variety of locations, both rural and urban in character.

3. Seek alternative residential growth areas within the planning region, with high priority given to the Wailuku and Kahului areas. This action should recognize that crucial issues of maintaining important agricultural lands, achieving efficient patterns of growth, and providing adequate housing supply and choice of price and location must be addressed and resolved.

Staff Comment: The proposed project is partly consistent with Policies 2. and 3. in that it proposes land areas for new residential growth; however, it may need some modifications to maintain important agricultural lands and achieve efficient growth patterns such as infill. Note that these policies are over twenty years old and do not reflect housing developments built since that time.

8. Promote efficient housing designs in order to reduce residential home energy and water consumption.

Staff Comment: See above comment on environment on energy-efficient home designs. The use of water efficient appliances and fixtures are recommended that will contribute to water consumption.

Social Infrastructure

1. *Provide park and recreation areas as an integral part of project district specifications which will accommodate the needs of population growth.*

Staff Comment: The project proposal is consistent with the stated goal. The following elements are included in the project proposal: recreational and open space, an outdoor amphitheater, community gathering places, and sports fields.

Public Safety

2. Encourage communities to establish Neighborhood Crime Watch Programs

Staff Comment: This is a necessity for the future neighborhood at this site. Pūlehu Road is currently largely occupied by homeless encampments and has been the location of frequent brush fires.

Government

5. Ensure that adequate infrastructure is or will be available to accommodate planned development.

6. Support public and private partnerships to fund the planning and construction of infrastructure.

Staff Comment: The applicant should work with the county and/or state to ensure adequate infrastructure.

Land Use

1. Ensure that adequate lands are available to support the region's present and future agricultural activities.

2. Identify prime or productive agricultural lands, and develop appropriate regulations for their protection.

Staff Comment: The proposed project site is identified as a prime or productive agricultural land. The proposed project is inconsistent with this policy.

Infrastructure

- *Water and Utilities*

1. Coordinate water system improvement plans with growth areas to ensure adequate supply and a program to replace deteriorating portions of the distribution system. Future growth should be phased to be in concert with the service capacity of the water system.

3. Promote water conservation and education programs.

5. Coordinate the construction of all water and public roadway and utility improvements to minimize construction impacts and inconveniences to the public.

6. Coordinate expansion of and improvements to the water system to coincide with the development of residential expansion areas.

7. Promote conservation of potable water through the use of treated wastewater effluent for irrigation.

Staff Comment: Applicant should ensure water and utilities infrastructure meet all system standards. Information is inadequate at this time to determine consistency.

- *Liquid and Solid Waste*
  1. *Coordinate sewer system improvement plans with future growth requirements, as defined in the Community Plan.*

- *Drainage*

1. *Establish a storm drain improvement program to alleviate existing problems; implement a continuing maintenance program, and ensure that improvements to the system will meet growth requirements. This addresses safety and property loss concerns as well as the need for comprehensive flood control planning.*

5. *Encourage the incorporation of drainageways, setbacks, and flood protection areas into greenways consisting of open space, pedestrian way and bikeway networks.*

- *Energy*

  1. Promote the use of alternative energy sources, such as biomass, wind and solar.

  2. Develop efficient circulation systems, public transportation and promote bicycle and pedestrian travel to reduce energy expenditures for travel.

  6. Encourage energy efficient building design and site development practices.

  7. Support energy conservation measures, including the use of solar heating and photovoltaic systems, in conjunction with urban uses.

  8. Promote recycling programs to reduce solid waste disposal in landfills.

  Staff Comment: For liquid and solid waste, drainage, and energy source, applicant should follow all system standards requirements. Information is inadequate at this time to determine consistency.

- *Transportation*

  2. Provide bikeway and walkway systems in the Wailuku-Kahului area which offer safe and pleasant means of access, particularly along routes accessing residential districts, major community facilities and activity centers, school sites, and the shoreline between Kahului Harbor and Pa'ia.

  4. Support private efforts to expand public transit service, with an emphasis on service to the Kahului Airport and Wailuku Civic Center. Future growth in population will warrant an expanded public transportation system.

  5. For future residential development, prohibit direct lot access from primary roads.

  6. Accommodate bicycle and pedestrian ways within planned roadway improvements.

  6.b.2. (Kahului) Improve major intersections to accommodate increased traffic volumes, including turning lanes, signals, and other improvements, including but not limited to the corridors of Kamehameha, Pu'unene and Wakea Avenues.

  Staff Comment: Applicant should ensure safe multi-modal options are included in design. Applicant should consult with DPW, MDOT and HIDOT to ensure all requirements are met due to inadequate information provided at this time.

- *Urban Design*

  2. Maintain a design quality for commercial and public projects and large-scale master planned developments.

  3. Improve pedestrian and bicycle access within the region.

  6. Promote a unified street tree planting program along major highways and streets.

  7. Buffer public and quasi-public facilities and light-heavy industrial/commercial type facilities from adjacent residential uses with appropriate landscape planting.

  10. Incorporate drought tolerant plant species and xeriscaping in future landscape planting.

  14. Require all future subdivisions, construction projects and developments to comply with the adopted Maui County Planting Plan.

  Staff Comment: Applicant should ensure project design meets all Urban Design policies.

Objectives and Policies for Kahului

2. Circulation: provide and maintain sidewalks and bikeways for convenient and pleasant connections between activity centers, such as shopping centers, schools, Maui Community College and public parks. These pathways should have adequate separation from vehicular traffic for safety purposes.

Staff Comment: Applicant should ensure project design meets all objectives and policies for Kahului.

Planning Standards

- *Land Use*

  a. All zoning applications and/or proposed land uses and developments shall conform with the planned use designations, as specified in the adopted Community Plan Map, and be consistent with the Community Plan policies.

  Staff Comment: Proposed zoning and community plan designation are not consistent. As mentioned above the proposed community plan designation is more consistent with Business-type zoning districts, such as B-2 Community Business District. Community plan designations such as Business/Industrial or Light Industrial are more consistent with M-1 Light Industrial zoning.

  c. Development of the vacant properties in the Dairy Road Light Industrial Expansion (Matrix 33), identified as TMK: 3-8-1:portion of 2 and ***3-8-6:portion of 4****; and the Airport Triangle (Matrix 34), identified as TMK: 3-8-79:13, shall provide a landscaped aesthetic visual corridor*

along all adjacent highways. Additionally, a landscaped berm utilizing trees and shrubbery shall be constructed along the entire proposed collector road (Ho'okele Street Extension) to soften the visual impact of the buildings along the road. Ingress/egress or other improvements mandated by engineering safety standards shall be exempt. Additionally, alternative energy shall be utilized, including, but not limited to, the use of solar energy to heat water. Underground utilities and low impact lighting to preserve the visual appearance of the area shall also be utilized. Signalized intersections shall be minimized on the Ho'okele Street Extension, and shall be installed only when warranted by standard traffic engineering requirements.

In addition, the said Dairy Road Light Industrial Expansion (Matrix 33), shall be constructed in increments of not greater than seventy (70) acres. Building permits shall not be authorized for each increment until completion of the infrastructure construction for the prior increment. The Ho'okele Street Extension, or similar thoroughfare connecting Dairy Road to Hana Highway, shall be constructed concurrently with development of the first increment. The exact location of the Ho'okele Street Extension shall be determined as a part of the property's zoning approval, with an emphasis on maintaining a "view corridor" toward Haleakala.

Staff Comment: Applicant should ensure all Planning Standards for Land Use are met, including landscaping and other requirements as described in Policy c. above.

- *Urban Design*

  a. General

  1. Buffer public and quasi-public facilities and light-heavy industrial/commercial type facilities from adjacent residential uses with appropriate landscape planting and setbacks.
  2. Save and incorporate healthy mature trees in the landscape planting plans of subdivisions, roads and other developments.
  3. Incorporate drought tolerant plant species and xeriscaping in future landscape planting.
  4. Use native plants for landscape planting in public projects to the extent practicable.
  5. Emphasize contrasting earth-tone color schemes for buildings.

  Staff Comment: Applicant should ensure project design meets all Land Use Urban Design policies; information is inadequate at this time to determine consistency.

RICHARD T. BISSEN, JR.
Mayor

JOSIAH K. NISHITA
Managing Director

MARC I. TAKAMORI
Director

DIANE C. YOGI
Deputy Director

DEPARTMENT OF TRANSPORTATION
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October 31, 2025

APPROVED FOR TRANSMITTAL

Mayor 11-3-25 Date

Honorable Richard T. Bissen, Jr.
Mayor, County of Maui
200 South High Street
Wailuku, Hawaii 96793

For Transmittal to:

Honorable Tamara Paltin
Chair, Disaster Recovery, International Affairs, and Planning Committee
200 South High Street
Wailuku, Hawaii 96793

Dear Chair Tamara Paltin:

SUBJECT: **BILL 163 (2025), BILL 164 (2025), AND BILL 165 (2025), TO AMEND THE MAUI ISLAND PLAN'S DIRECTED GROWTH MAP C5 (PULEHU ROAD), AMEND THE WAILUKU-KAHULUI COMMUNITY PLAN DESIGNATION, AND CHANGE THE ZONING FOR 166.511 ACRES SITUATED AT KAHULUI, HAWAI'I (HO'ONANI VILLAGE)** (DRIP-19)

The Department of Transportation (DOT) hereby transmit the following response to your letter dated October 23, 2025 regarding Bill 163 (2025), Bill 164 (2025), and Bill 165 (2025), to amend the Maui Island plan's directed growth map C5 (Pulehu Road), amend the Wailuku-Kahului community plan designation, and change the zoning for 166.511 acres situated at Kahului, Hawai'i (Ho'onani Village).

Question 1: **Please review and provide your Department's comments on the project and attached proposed bills, including any anticipated impacts as a result of the proposal.**

Response: **The Maui Department of Transportation (MDOT) has reviewed the proposed Ho'onani Village mixed-use development with attention to its consistency with the Hele Mai Maui 2045 Long Range Transportation Plan (LRTP) and its multimodal transportation goals. Overall, the proposed project aligns strongly with LRTP objectives to expand mobility choices, improve safety, and connect communities through Complete Streets**

Received at DRIP meeting on 11/5/25

design and transit-oriented development. The following analysis summarizes how the project supports the LRTP's key goals and related programs.

Goal 1: Improve Safety and Promote Health
The Hele Mai Maui 2045 plan emphasizes Vision Zero, Safe Routes to School, and Complete Streets initiatives to eliminate traffic fatalities and promote active, healthy travel.

- **The inclusion of roundabouts, traffic-calmed local streets, and separated bicycle/pedestrian paths in the Ho'onani Village concept supports these safety priorities.**

- **Proposed sidewalks and multiuse paths promote active transportation and public health outcomes consistent with LRTP programs such as Neighborhood Slow Streets and Safe Routes for Kūpuna.**

- **MDOT recommends that the forthcoming Traffic Impact Analysis (TIA) evaluate pedestrian crossings on Hansen and Pulehu Roads for potential safety upgrades (e.g., Rectangular Rapid Flashing Beacons or refuge islands) to ensure alignment with the Vision Zero Maui Action Plan.**

Goal 2: Enhance Climate Resilience, Sustainability, and Cultural and Natural Resources
The LRTP calls for resilient infrastructure and reduced vehicle dependence through land-use integration and multimodal options.

- **The project's mixed-use design, combining housing, retail, and employment, reduces the need for long commutes and supports a sustainable transportation pattern.**

- **Incorporating green infrastructure, low-impact design, and shade trees along sidewalks and bikeways would enhance climate resilience and stormwater management, consistent with LRTP Goal 2.**

- **The provision of a multiuse path system supports non-motorized mobility and reduces transportation emissions.**

Goal 3: Expand Mobility Choices to Reduce Traffic Congestion
LRTP Goal 3 encourages public transit, shared mobility, and complete multimodal networks.

- **The proposed street network with sidewalks, bike/ped paths, and rideshare pull-out areas advances Shared Mobility Pilot Program and Transportation Demand Management (TDM) goals described in the LRTP.**

- **The site's proximity to Maui Veterans Highway and the planned Pakaula Street extension positions it well for future Maui Bus service or an employer shuttle program.**

- MDOT recommends coordination with Maui MPO and Maui Bus to identify future transit stop locations, paratransit service needs, and bus circulation routes.

Goal 4: Connect and Strengthen Communities to Improve Quality of Life
This goal emphasizes equitable, walkable neighborhoods with accessible public spaces.

- The central commons and pedestrian-priority design elements within the site embody LRTP strategies such as Placemaking Initiatives and Wayfinding and Signage Programs.

- The integration of housing, commercial, and light industrial uses fosters a balanced community that supports living, working, and recreating within the same area, reducing vehicle miles traveled (VMT) and strengthening local connectivity.

- MDOT encourages the inclusion of culturally appropriate wayfinding and shade-protected walking routes to enhance comfort and inclusivity.

Goal 5: Maintain Assets and Invest Strategically for Economic Vitality
The proposed roadway improvements on Hansen and Pulehu Roads, including right-of-way dedication, pavement widening, and new pedestrian facilities, support the LRTP's emphasis on maintaining and upgrading existing infrastructure.

- The project's investment in local access roads will improve safety and network efficiency on two major collector routes.

- Coordination with DPW and Maui MPO is recommended to ensure consistency with long-term maintenance and capital improvement programming.

Summary and Recommendations
The Ho'onani Village proposal is generally consistent with the goals and policies of the Hele Mai Maui 2045 Long Range Transportation Plan. The project supports multimodal access, mixed-use development, and roadway design features that align with the County's Complete Streets policy and Vision Zero principles.

MDOT recommends the following coordination and design actions:

1. Incorporate the planned multiuse paths and sidewalks into County and MPO multimodal network maps.

2. Evaluate transit access, paratransit accommodation, and potential shuttle service integration.

3. Include pedestrian safety countermeasures in the TIA consistent with Vision Zero Maui.

4. Design roadway cross-sections and roundabouts to safely accommodate bicycles, pedestrians, and large vehicles.

5. **Coordinate with the Maui MPO, DPW, and Planning Department to ensure consistency with LRTP and TIP project implementation schedules.**

Sincerely,

Marc Takamori
Director of Transportation

cc: Mayor Richard T. Bissen, Jr.

RICHARD T. BISSEN, JR.
Mayor

JOSIAH K. NISHITA
Managing Director

JOHN STUFFLEBEAN, P.E.
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November 4, 2025

Honorable Richard T. Bissen, Jr.
Mayor, County of Maui
200 South High Street
Wailuku, Hawaii 96793

APPROVED FOR TRANSMITTAL

Mayor Date 11-5-25

For Transmittal to:

Honorable Tamara Paltin, Chair
Disaster Recovery, International Affairs,
and Planning Committee
Maui County Council
200 South High Street
Wailuku, Hawaii 96793

Dear Chair Paltin:

SUBJECT: **BILL 163 (2025), BILL 164 (2025), AND BILL 165 (2025), TO AMEND THE MAUI ISLAND PLAN'S DIRECTED GROWTH MAP C5 (PULEHU ROAD), AMEND THE WAILUKU-KAHULUI COMMUNITY PLAN DESIGNATION, AND CHANGE THE ZONING FOR 166.511 ACRES SITUATED AT KAHULUI, HAWAII (HOONANI VILLAGE)** (DRIP-19)

Thank you for your letter dated November 3, 2025 regarding the above-agenda item. Please find Department of Water Supply's response:

1. If all units were rented at 140 percent of Maui County's area median income and below, would this exempt the project from the County's Water Availability Policy? Why or why not?

   Response:

   Maui County Code Chapter 14.12.020 applies to all subdivisions, unless exempted under section 14.12.030. Exemptions include residential workforce housing units developed by a qualified housing provider under chapter 2.96; and residential development projects with 100 percent

Received at DRIP meeting on 11/05/2025

affordable housing units. The code does not address rental units, so it does not appear that an exemption applies.

2. The project also proposes commercial, office, retail, hospitality, and light industrial uses throughout various project phases. How would the County's Water Availability Policy apply if the project contains phases that contain non-residential components that may not address affordable housing needs?

Response:

If the project is subdivided, the entire parcel may be subject to the County's Availability Policy. However, if the project is developed in phases, each phase may be reviewed for compliance with Maui County Code Chapter 14.12. In such case, commercial and industrial development would not be subject to the County's Availability Policy, according to the definition of "Subdivision" in Maui County Code Chapter 14.01.20: *"Subdivision" means improved or unimproved land or lands divided into two or more lots, parcels, sites, or other divisions of land for the purpose, whether immediate or in the future, of sale, lease, rental, transfer of title to or interest in, any or all of such parcels, and includes the process of consolidation and resubdivision, and, when appropriate to the context, shall relate to the process of subdividing land. The term also includes the construction of a building or group of buildings, other than a hotel, on a single lot, parcel, or site which will contain, result, or be divided into four or more dwelling units, including planned developments pursuant to chapter 19.32 of this code, condominium projects established pursuant to Hawai'i Revised Statutes, or other forms of development, provided, that unless requested by the developer, condominium projects shall not be required to install separate water meters for each condominium unit."*

If you require additional information, please free to contact me. Thank you in advance.

Sincerely,

JOHN STUFFLEBEAN, P.E.
Director

JS:EB:lkk

RICHARD T. BISSEN, JR.
Mayor

JOSIAH K. NISHITA
Managing Director

JOHN STUFFLEBEAN, P.E.
Director

JAMES A. LANDGRAF
Deputy Director

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAI'I 96793
http://www.mauicounty.gov/water



November 4, 2025

Honorable Richard T. Bissen, Jr.
Mayor, County of Maui
200 South High Street
Wailuku, Hawaii 96793

APPROVED FOR TRANSMITTAL

Mayor 11-5-25 Date

For Transmittal to:

Honorable Tamara Paltin, Chair
Disaster Recovery, International Affairs,
and Planning Committee
Maui County Council
200 South High Street
Wailuku, Hawaii 96793

Dear Chair Paltin:

SUBJECT: **BILL 163 (2025), BILL 164 (2025), AND BILL 165 (2025), TO AMEND THE MAUI ISLAND PLAN'S DIRECTED GROWTH MAP C5 (PULEHU ROAD), AMEND THE WAILUKU-KAHULUI COMMUNITY PLAN DESIGNATION, AND CHANGE THE ZONING FOR 166.511 ACRES SITUATED AT KAHULUI, HAWAII (HOONANI VILLAGE)** (DRIP-19)

Thank you for your letters dated October 23, 2025 regarding the above-agenda item. Please find Department of Water Supply's response:

1. To the extent feasible given the shortness of time, please review and provide your Department's comments on the project and attached proposed bills, including any anticipated impacts as a result of the proposal.

Response:

The proposed Ho`onani Village Mixed-Use development includes 1599 multi-family units, commercial, light industrial and park open space as well as future residential and commercial space. Based on system

Received at DRIP meeting on 11/5/2025

standards, we estimate total water demand to about 1.384 million gallons per day (mgd).

The subject property is adjacent to the Central Maui Water System. The project does not propose to connect to the DWS water system. A private water system is proposed to serve the project. The subdivision is subject to the Maui County Code Chapter 14.12, which requires a written verification of long-term, reliable supply of water. The proposed water source is is development of three private wells on tax map key 2-5-001:016, which is overlaying the Paia aquifer. Current pumpage in the Paia aquifer is 13.6 mgd while the aquifer sustainable yield is 7 mgd. While the project would not have any direct impacts on the DWS water system, it's possible that well construction permits for the private wells would not be issued by the Commission on Water Resource Management at this time to serve the project.

If you require additional information, please free to contact me. Thank you in advance.

Sincerely,

JOHN STUFFLEBEAN, P.E.
Director

JS:EB:lkk

APPENDIX ‘Z’ – MAUI PLANNING COMMISSION COMMENT LETTERS AND RESPONSES

RICHARD T. BISSEN, JR.
Mayor

JOSIAH K. NISHITA
Managing Director

MARC I. TAKAMORI
Director

DIANE C. YOGI
Deputy Director

DEPARTMENT OF TRANSPORTATION
COUNTY OF MAUI
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAI'I 96793

TELEPHONE: (808) 270-7511
FAX: (808) 270-7505

December 26, 2025

Mr. Jeffrey Ueoka
2145 Wells Street Suite 406
Wailuku, HI 96793

SUBJECT: ZPA2025-00011 – Comments Regarding Proposed Ho'onani Village Mixed-Use Development Project, Kahului, Maui, Hawai'i. TMK: (2) 3-8-006:004-0005

Dear Mr. Ueoka:

Mahalo for the opportunity to provide comment on the subject request. The Maui Department of Transportation (MDOT) is submitting the following comments in light of the Disaster Recovery, International Affairs, and Planning (DRIP) Committee discussion on November 5, 2025, regarding the proposed Ho'onani Village mixed-use development and associated legislative actions to amend the Maui Island Plan, the Wailuku–Kahului Community Plan, and zoning for approximately 166.5 acres in Kahului. The following comments are provided in addition to the comments provided to the DRIP Committee on October 31, 2025.

MDOT acknowledges and appreciates the Planning Department's testimony and the technical points raised by Planning Director Kate Blystone, particularly regarding the quality of agricultural soils, the State Land Use District designation, and the parcel's location outside the Maui Island Plan Urban Growth Boundary. In MDOT's view, these factors warrant careful consideration to ensure that this significant investment is built upon a foundation of sound land-use policy and long-term community resilience.

From a transportation perspective, MDOT continues to support the Ho'onani Village concept, as it reflects many of Maui's long-range transportation objectives. The project's mixed-use form, internal street network, and emphasis on multi-modal connectivity such as walking and bicycling are highly consistent with the goals of the Hele Mai Maui 2045 Long Range Transportation Plan. MDOT views these design elements as a positive model for future development on Maui.

However, to ensure the project's success, MDOT believes it is essential to harmonize these transportation merits with the Planning Director's concerns. The land's designation as "Prime"

Agricultural Land of Importance to the State of Hawai‘i (ALISH) designated by the State Department of Agriculture with high-quality “A” rated soils by The University of Hawai‘i’s Land Study Bureau, combined with its current exclusion from the Urban Growth Boundary, creates important policy questions. The urgent need for housing – which MDOT strongly supports – is best served by a thorough evaluation that balances development with the protection of high-productivity agricultural assets.

MDOT also recognizes the Planning Department’s concern that Maui already has a substantial number of entitled or planned housing units within the existing Urban Growth Boundary that have not yet been constructed. While market conditions, infrastructure timing, and other constraints may delay these projects, the significant number of entitlements that have failed to move into construction underscores the importance of addressing barriers to implementation, rather than expanding into undeveloped agricultural land. Improving infrastructure delivery, streamlining permitting where appropriate, and resolving financing and phasing challenges may help unlock housing that is already planned and entitled, without needing to expand the Urban Growth Boundary. At the same time, MDOT recognizes that new proposals like Ho‘onani Village offer modern, multi-modal design principles that are specifically intended to reduce long-term infrastructure strain. The applicant is therefore encouraged to demonstrate how this project’s unique design and housing contributions provide a compelling case for expansion that aligns with the County’s broader growth and safety goals.

Ultimately, MDOT advocates for a process that respects the established order of operations for land-use decision-making. This includes careful evaluation through the Environmental Impact Statement (EIS) process and due consideration by the State Land Use Commission regarding any proposed District Boundary Amendment. Working through these critical regulatory steps ensures that all state and county land-use policies are fully integrated and that the project is positioned for success.

In closing, MDOT emphasizes support for the development of new housing and recognizes that Ho‘onani Village reflects many positive transportation and urban design principles. While fundamental land use questions regarding the site’s location and agricultural status remain, MDOT remains committed to the realization of sustainable housing solutions. MDOT looks forward to continued coordination with the Planning Department, the Maui Planning Commission, the State Land Use Commission, and the applicant as these issues are further evaluated.

If you have any questions, please feel free to reach out to Ignacio Filippini at (808) 463-3124 or ignacio.filippini@mauicounty.gov.

Sincerely,



MARC I. TAKAMORI
Director of Transportation

Cc: Marc I. Takamori, MDOT, Director, via email
Kate Blystone, Planning Department, Director, via email
Danny Dias, Planning Department, Planning Program Administrator, via email
Kurt Wollenhaupt, Planning Department, Land Use Planning Supervisor, via email
Ignacio Filippini, MDOT, Transportation Planner, via email
Emily Murai, Pioneer Design Group-Hawai‘i, via email
Martina Segura, State of Hawai‘i, Land Use Commission, via email

Paul M. Ueoka
paul@wslmaui.com

Jeffrey T. Ueoka
jeff@wslmaui.com

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(808) 481-4210

2145 Wells Street Suite 406
Wailuku, Hawaii 96793

USPS Mailing Address:
P.O. Box 733 Wailuku,
Hawaii 96793

January 12, 2026

Via email to: marc.takamori@co.maui.hi.us

Department of Transportation
County of Maui
ATTN: Marc I. Takamori, Director
200 South High Street
Wailuku, Hawaii 96793

Re: Response to Department of Transportation Comments
ZPA2025-00011
Proposed Hoʻonani Village Mixed-Use Development Project,
Location: TMK(s): (2) 3-8-006:004-0005; Kahului, Maui

Dear Director Takamori,

Thank you for the feedback regarding the Hoʻonani Village project. The project team has reviewed and appreciates the comments provided by the Maui Department of Transportation. The feedback has been constructive and is acknowledged below. We value the guidance offered and remain committed to continued coordination and communication with MDOT and other relevant agencies as the project moves forward.

MDOT comment: Project site land designation as "Prime" ALISH, located out of the Urban Growth Boundaries, Policy considerations.

Response:
The project team acknowledges MDOTʻs comments regarding agricultural land classifications and urban growth boundary considerations. These policy matters are recognized as significant and are being evaluated through the appropriate land use entitlement and review processes associated with the proposed amendments.

MDOT comment: Existing Entitled Housing

Response:
The project team acknowledges MDOTʻs observations regarding existing entitled housing and the challenges associated with bringing such project to construction, while remaining committed to advancing the proposed project as a potential contribution to meeting the communityʻs housing needs.

MDOT comment: Project Merits and Housing Contributions

Response:
The project team notes that the project's design, housing mix, and transportation features are intended to contribute to long-term community and transportation objectives. Further evaluation and refinement of these elements will continue as part of the overall planning process.

MDOT comment: Process and established order of operations for land use decision making.

Response:
The project team acknowledges MDOT's emphasis on the importance of the established regulatory framework and recognizes that environmental review and state-level processes are integral components of land use decision-making. As the project progresses through the necessary process, collaboration and communication with the proper agencies will continue to be prioritized.

Sincerely,

Jeffrey Ueoka
Project Attorney

cc: Kurt Wollenhaupt, *via e-mail to kurt.wollenhaupt@co.maui.hi.us*

JOSH GREEN, M.D.
GOVERNOR
KE KIA'ĀINA

KEITH A. REGAN
COMPTROLLER
KA LUNA HO'OMALU HANA LAULĀ

MEOH-LENG SILLIMAN
DEPUTY COMPTROLLER
KA HOPE LUNA HO'OMALU HANA LAULĀ

STATE OF HAWAI'I | KA MOKU'ĀINA O HAWAI'I
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES | KA 'OIHANA LOIHELU A LAWELAWE LAULĀ
P.O. BOX 119, HONOLULU, HAWAII 96810-0119

Response Refer to:
Ma-184(25)

MEMORANDUM

TO: Kate Blystone, Director
Department of Planning, County of Maui

ATTN: Kurt Wollenhaupt, Staff Planner

FROM: Reid K. Siarot, State Land Surveyor
DAGS, Land Survey Division

SUBJECT: Ho`onani Village
Applicant: Ho`onani Development LLC
Permit No.: ZPA2025-00011
TMKs: 3-8-06: 04

This is in regard to your email dated November 19, 2025 and request for comments on the subject application.

The subject proposal has been reviewed and confirmed that no Government Survey Triangulation Stations or Benchmarks are affected. Survey has no objections to the proposed project.

Should you have any questions, please call me at 586-0390.

JOSH GREEN, M.D.
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA

DAWN N. S. CHANG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAI'I | KA MOKU'ĀINA 'O HAWAI'I
DEPARTMENT OF LAND AND NATURAL RESOURCES
KA 'OIHANA KUMUWAIWAI 'ĀINA
LAND DIVISION

P.O. BOX 621
HONOLULU, HAWAII 96809

November 20, 2025

MEMORANDUM

FROM: ~~TO~~:

DLNR Agencies:
___Div. of Aquatic Resources (kendall.l.tucker@hawaii.gov)
___Div. of Boating & Ocean Recreation richard.t.howard@hawaii.gov)
_X_ Engineering Division (DLNR.ENGR@hawaii.gov)
_X_ Div. of Forestry & Wildlife (rubyrosa.t.terrago@hawaii.gov)
___Div. of State Parks (curt.a.cottrell@hawaii.gov)
_X_ Commission on Water Resource Management (DLNR.CWRM@hawaii.gov)
___Office of Conservation & Coastal Lands (sharleen.k.kuba@hawaii.gov)
_X_ Land Division – Maui District (dlnr.land.maui@hawaii.gov)
___Aha Moku Advisory Committee (leimana.k.damate@hawaii.gov)

TO: ~~FROM~~: Ian C. Hirokawa, Acting Land Administrator
SUBJECT: Request for Review and Comment on the proposed Urban Boundary Change-Community Plan Amendment-Zoning Change for Ho'onani Village
LOCATION: TMK (2) 3-8-006:004 Kahului, Maui
APPLICANT: County of Maui Public Works Department, Engineering Division applicants

Transmitted for your review and comment is information on the above-referenced subject matter. Please submit comments by **December 17, 2025.** If no response is received by the above date, we will assume your agency has no comments. Should you have any questions about this request, please contact Raymond Severn at raymond.severn@hawaii.gov. Thank you.

BRIEF COMMENTS:

( ) We have no objections.
( ) We have no comments.
( ) We have no additional comments.
(✓) Comments are included/attached.

Signed:
Print Name: Dina U. Lau, Acting Chief Engineer
Division: Engineering Division
Date: Dec 16, 2025

Attachments
cc: Central Files

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/Ryan K.P. Kanaka'ole

Ref: Request for Review and Comment on the proposed Urban Boundary Change-Community Plan Amendment-Zoning Change for Ho'onani Village
Location: Kahului, Maui
TMK(s): (2) 3-8-006:004
Applicant: County of Maui Public Works Department, Engineering Division applicants

COMMENTS

The rules and regulations of the National Flood Insurance Program (NFIP), Title 44 of the Code of Federal Regulations (44CFR), are in effect when development falls within a Special Flood Hazard Area (high-risk areas). Be advised that 44CFR, Chapter 1, Subchapter B, Part 60 reflects the minimum standards as set forth by the NFIP. Local community flood ordinances may stipulate higher standards that can be more restrictive and would take precedence over the minimum NFIP standards.

The owner of the project property and/or their representative is responsible for researching the Flood Hazard Zone designation for the project. Flood zones subject to NFIP requirements are identified on FEMA's Flood Insurance Rate Maps (FIRM). The official FIRMs can be accessed through FEMA's Map Service Center (msc.fema.gov). Our Flood Hazard Assessment Tool (FHAT) (fhat.hawaii.gov) could also be used to research flood hazard information.

If there are questions regarding the local flood ordinances, please contact the applicable County NFIP coordinating agency below:

- Oahu: City and County of Honolulu, Department of Planning and Permitting (808) 768-8098.
- Hawaii Island: County of Hawaii, Department of Public Works (808) 961-8327.
- Maui/Molokai/Lanai County of Maui, Department of Planning (808) 270-7139.
- Kauai: County of Kauai, Department of Public Works (808) 241-4849.

Signed: _____
DINA U. LAU, ACTING CHIEF ENGINEER

Date: Dec 16, 2025

JOSH GREEN, M.D.
GOVERNOR | KE KIA'ĀINA

DAWN N.S. CHANG
CHAIRPERSON

KENNETH S. FINK, M.D., MGA, MPH
AURORA KAGAWA-VIVIANI, PH.D.
WAYNE K. KATAYAMA
LAWRENCE H. MIIKE, M.D., J.D.
HANNAH KIHALANI SPRINGER

CIARA W.K. KAHAHANE
DEPUTY DIRECTOR

STATE OF HAWAI'I | KA MOKU'ĀINA 'O HAWAI'I
DEPARTMENT OF LAND AND NATURAL RESOURCES | KA 'OIHANA KUMUWAIWAI 'ĀINA
COMMISSION ON WATER RESOURCE MANAGEMENT | KE KAHUWAI PONO
P.O. BOX 621
HONOLULU, HAWAII 96809

Dec 16, 2025

REF: RFD.6573.6

TO: Mr. Ian Hirokawa, Acting Administrator
Land Division

FROM: Ciara W.K. Kahahane, Deputy Director
Commission on Water Resource Management

SUBJECT: Urban Boundary Change- Community Plan Amendment-Zoning Change for Ho'onani Village

FILE NO.: RFD.6573.6
TMK NO.: (2) 3-8-006:004

Thank you for the opportunity to review the subject document. The Commission on Water Resource Management (CWRM) is the agency responsible for administering the State Water Code (Code). Under the Code, all waters of the State are held in trust for the benefit of the citizens of the State, therefore all water use is subject to legally protected water rights. CWRM strongly promotes the efficient use of Hawaii's water resources through conservation measures and appropriate resource management. For more information, please refer to the State Water Code, Chapter 174C, Hawaii Revised Statutes, and Hawaii Administrative Rules, Chapters 13-167 to 13-171. These documents are available via the Internet at http://dlnr.hawaii.gov/cwrm.

Our comments related to water resources are checked off below.

- [X] 1. We recommend coordination with the county to incorporate this project into the next update of the county's Water Use and Development Plan (WUDP). Please contact the respective Planning Department and/or Department of Water Supply for further information.
- [ ] 2. We recommend coordination with the Engineering Division of the State of Hawai'i, Department of Land and Natural Resources (DLNR) to incorporate this project into the next update of the State Water Projects Plan (SWPP).
- [ ] 3. We recommend coordination with the State of Hawai'i, Department of Agriculture (HDOA) to incorporate the reclassification of agricultural zoned land and the associated agricultural water demands into the State's Agricultural Water Use and Development Plan (AWUDP). Please contact the HDOA for more information at https://hdoa.hawaii.gov/contact/.
- [X] 4. We recommend that water efficient fixtures be installed and water efficient practices implemented throughout the project to reduce the increased demand on the area's freshwater resources. Reducing the water usage of a home or building may earn credit towards Leadership in Energy and Environmental Design (LEED) certification. More information on LEED certification is available at http://www.usgbc.org/leed. A listing of fixtures certified by the EAP as having high water efficiency can be found at http://www.epa.gov/watersense.
- [X] 5. We recommend the use of best management practices (BMP) for stormwater management to minimize the impact of the project on the existing area's hydrology while maintaining on-site infiltration and preventing polluted runoff from storm events. Stormwater management BMPs may earn credit toward LEED certification. More information on stormwater BMPs can be found at http://planning.hawaii.gov/czm/initiatives/low-impact-development/.
- [X] 6. We recommend the use of alternative water sources, wherever practicable.
- [X] 7. We recommend participating in the Hawaii Green Business Program, that assists and recognizes businesses that strive to operate in an environmentally and socially responsible manner. The program description can be found online at http://energy.hawaii.gov/green-business-program.
- [X] 8. We recommend adopting landscape irrigation conservation best management practices endorsed by the Landscape Industry Council of Hawai'i. These practices can be found online at

https://hawaiiscape.com/index.php. Additional information can be found at https://dlnr.hawaii.gov/cwrm/planning/conservation/.

☐ 9. There may be the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health (HDOH) and the acceptance of any resulting requirements related to water quality.

☐ 10. The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit is required prior to use of water. The Water Use Permit may be conditioned on the requirement to use dual line water supply systems for new industrial and commercial developments.

☐ 11. The Hawai'i Water Plan is directed toward the achievement of the utilization of reclaimed water for uses other than drinking and for potable water needs in one hundred per cent of State and County facilities by December 31, 2045 (§174C-31(g)(6), Hawaii Revised Statutes). We strongly recommend that this project consider using reclaimed water for its non-potable water needs, such as irrigation. Reclaimed water may include, but is not limited to, recycled wastewater, gray water, and captured rainwater/stormwater. Please contact the Hawai'i Department of Health, Wastewater Branch, for more information on their reuse guidelines and the availability of reclaimed water in the project area. Contact information can be found at https://health.hawaii.gov/about/contact/.

☒ 12. A Well Construction Permit(s) is (are) are required before the commencement of any well construction work.

☒ 13. A Pump Installation Permit(s) is (are) required before ground water is developed as a source of supply for the project.

☐ 14. There is (are) well(s) located on or adjacent to this project. If wells are not planned to be used and will be affected by any new construction, they must be properly abandoned and sealed. A permit for well abandonment must be obtained.

☐ 15. Ground-water withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.

☐ 16. A Stream Channel Alteration Permit(s) is (are) required before any alteration can be made to the bed and/or banks of a steam channel.

☐ 17. A Stream Diversion Works Permit(s) is (are) required before any stream diversion works is constructed or altered.

☐ 18. A Petition to Amend the Interim Instream Flow Standard is required for any new or expanded diversion(s) of surface water.

☐ 19. The planned source of water for this project has not been identified in this report. Therefore, we cannot determine what permits or petitions are required by CWRM, or whether there are potential impacts to water resources.

☒ 20. The proposed water source(s) and projected water demands for the project, both potable and non-potable, should be identified. If the project will be provided water by a local water system we recommend consultation with them to ensure that system capacity is available to supply water for this project.

☒ OTHER: Planning -

The State Water Code requires each county to update its water use and development plans as necessary to maintain consistency with its zoning and land use policies (§174C-31 HRS). Should a change in zoning be approved for this project, please coordinate with the respective Maui Planning Department and/or Maui Department of Water Supply to incorporate this project into the county water use and development plan.

If the water will be provided by an existing water system, coordination is required with the Commission to determine any potential impacts that this project will have on the system's allocations.

Groundwater -

Impacts to ground water dependent ecosystems are becoming an emerging issue as impacts to these are related to impacts to traditional & customary practices of sustenance from these ecosystems. We recommend consultation with the region's (moku) Aha Moku Council on whether a land use conversion or project that uses water will impact any traditional & customary practices.

If you have any questions, please contact Ryan Imata of the Groundwater Regulation Branch at (808) 587-0225 or Katie Roth of the Planning Branch (808) 587-0216.

Paul M. Ueoka
paul@wslmaui.com

Jeffrey T. Ueoka
jeff@wslmaui.com

WELLS STREET LAW

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(808) 481-4210

2145 Wells Street
Suite 406
Wailuku, Hawaii 96793

USPS Mailing Address:
P.O. Box 733
Wailuku, Hawaii 96793

January 12, 2026

Via email to: dlnr.engr@hawaii.gov

State of Hawaii
Office of Planning & Sustainable Development
Engineering Division
ATTN: Dina U. Lau- Acting Chief Engineer
P.O. Box 621
Honolulu, Hawaii 96809

Re: Response to DLNR Engineering Division Comments
Proposed Urban Boundary Change-Community Plan Amendment-Zoning Change for Hoʻonani Village
Location: TMK(s): (2) 3-8-006:004-0005; Kahului, Maui

Dear Acting Chief Engineer Lau,

The project team has reviewed the comments provided by the Department of Land and Natural Resources- Engineering Division, and appreciates the information and guidance related to floodplain regulations and applicable requirements.

The project team acknowledges that development within areas subject to flood hazards must comply with National Flood Insurance Program (NFIP), Title 44 of the Code of Federal Regulations, as well as any applicable State and County floodplain ordinances, including those that may be more restrictive.

We understand the responsibility to review applicable Flood Hazard Zone designations using FEMA Floods Insurance Rate Maps and to coordinate with the appropriate County agencies required. We note that the project is located outside of a Special Flood Hazard Area. The project is located within FEMA's FIRMette panel# 1500030411E, indicating the project is located in Flood Zone X, an area of minimal flood hazard.

Thank you for your valuable feedback and we look forward to continued coordination and communication as the project moves forward.

Sincerely,

Jeffrey Ueoka
Project Attorney

cc: Kurt Wollenhaupt, *via e-mail to kurt.wollenhaupt@co.maui.hi.us*

Paul M. Ueoka
paul@wslmaui.com

Jeffrey T. Ueoka
jeff@wslmaui.com

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USPS Mailing Address:
P.O. Box 733
Wailuku, Hawaii 96793

January 12, 2026

Via email to: dlnr.cwrm@hawaii.gov

State of Hawaii
Department of Land and Natural Resources
Commission on Water Resource Management
ATTN: Ciara W.K. Kahahane - Deputy Director
P.O. Box 621
Honolulu, Hawaii 96809

Re: Response to DLNR CWRM Comments
Proposed Urban Boundary Change-Community Plan Amendment-Zoning Change for Hoʻonani Village
Location: TMK(s): (2) 3-8-006:004-0005; Kahului, Maui

Dear Deputy Director Kahahane,

Thank you for the opportunity to review and respond to the Commission on Water Resource Management (CWRM) comments dated December 16th, 2025.

The project team has reviewed and appreciates the feedback and recommendations provided by CWRM. Responses to specific comments are provided below. For comments that may not be addressed below, please note that all feedback outlined in the CWRM comment letter has been reviewed and will be taken into consideration as the project continues to move forward.

As the project progresses through the applicable planning and review processes, the project team remains committed to ongoing communication and coordination with the appropriate agencies and stakeholders.

We look forward to continued collaboration.

1. *We recommend coordination with the county to incorporate this project into the next update of the county's Water Use and Development Plan (WUDP). Please contact the respective Planning Department and/ or Department of Water Supply for further information.*

Response:
The project team acknowledges the importance of coordination with the County Planning Department and the Department of Water Supply (DWS) regarding incorporation of the project

into the Water Use and Development Plan. The County of Maui DWS has also been consulted and is aware of this project.

4. *We recommend that water efficient fixtures be installed and water efficient practices implemented throughout the project to reduce the increased demand on the area's freshwater resources. Reducing the water usage of a home or building may earn credit towards LEED certification.*

Response:
The project team recognizes the importance of sound water management practices. As project planning advances and additional details such as potential use of water efficient fixtures are evaluated, water management considerations will be reviewed as appropriate. The project team also appreciates the reference to LEED certification as a potential resource.

5. *Use of BMP*

Response:
The project team recognizes the importance of BMP. As project planning advances the use of BMP will be implemented as appropriate. The project team also appreciates the reference to LEED certification as a potential resource.

6. *Use of Alternative Water Sources*

Response:
The project team recognizes the importance of alternative water sources. As project planning advances the use of alternative water sources will be implemented as appropriate.

7. *Hawaii Green Business Program*

Response:
The project team will further investigate participation in the Hawaii Green Business Program.

8. *Landscape Irrigation Conservation BMP*

Response:
The project team recognizes the importance of landscape irrigation conservation BMP. As project planning advances the BMP endorsed by the Landscape Industry Council of Hawaii will be implemented as appropriate.

12. *Well Construction Permits*

Response:
The project team recognizes this requirement.

13. *Pump Installation Permits*

Response:
The project team recognizes this requirement.

20. *The proposed water source(s) and projected water demands for the project, both potable and non-potable should be identified. If the project will be provided water by a local water system we recommend consultation with them to ensure the system capacity is available to supply wanted for this project.*

Response:
The preferred alternative is now to modify an existing water source versus creating a new source. The project team will continue consultation with both CWRM and DWS. The water resource report being prepared will be provided to both agencies. Although currently unavailable for the site, a proposed wastewater treatment plant is proposed onsite, which would produce R-1 water. Recycled water will be used wherever feasible.

Other:

Planning: *If the water will be provided by an existing water system, coordination is required with the Commission to determine any potential impacts that this project will have on the system's allocations.*

Response:
As previously noted, the Applicant will continue to consult with CWRM. A Preliminary Engineering and Drainage Report and information on the water system will be included in the Draft EIS and provided to CWRM for review.

Groundwater: *CWRM Comment- Impacts to ground water dependent ecosystems are becoming an emerging issue as impacts to these are related to impacts to traditional and customary practices of sustenance from these ecosystems. We recommend consultation with the region's (moku) Aha Moku Council on whether a land use conversion or project that uses water will impact any traditional and customary practices.*

Response:
We confirm that the Aha Moku Council representatives for the Wailuku, Kula and Hāmākuapoko Moku have been consulted on the project. The project is located within the Wailuku moku, but adjacent moku representatives were also notified. In addition, a Cultural Impact Assessment with Kapa'akai Analysis is being prepared and will be included and discussed in the Draft EIS.

Sincerely,



Jeffrey Ueoka
Project Attorney

cc: Kurt Wollenhaupt, *via e-mail to kurt.wollenhaupt@co.maui.hi.us*

STATE OF HAWAI'I
OFFICE OF PLANNING
& SUSTAINABLE DEVELOPMENT

JOSH GREEN, M.D.
GOVERNOR

SYLVIA LUKE
LT. GOVERNOR

MARY ALICE EVANS
DIRECTOR

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Coastal Zone Management Program

Environmental Review Program

Land Use Commission

Land Use Division

Special Plans Branch

State Transit-Oriented Development

Statewide Geographic Information System

Statewide Sustainability Branch

DTS 202511200840NA

December 16, 2025

Kate Blystone, Director
Attn: Kurt Wollenhaupt
Planning Department
County of Maui
2200 Main Street, Suite 315
Wailuku, Hawai'i 96793

Dear Ms. Blystone:

Subject: ZPA2025-00011, Change in Zoning/Community Plan Amendment/Maui Island Plan Amendment, Kahului-Wailuku, Maui
Tax Map Key No: (2) 3-8-006:004 (por)

The Office of Planning and Sustainable Development (OPSD) has reviewed the materials submitted with the request for comments on the proposed Change in Zoning and amendments to the Maui Island Plan and Wailuku-Kahului Community Plan. In a separate application, the applicant is in the process of submitting a petition for a Land Use District Boundary Amendment (DBA) with the State Land Use Commission.

The materials posted on the Maui Automated Planning and Permitting System (MAPPS) application page indicate that Ho'onani Development, LLC proposes the development of Ho'onani Village, a high-density, master-planned, mixed-use community on 166.51 acres. The preliminary conceptual plan features approximately 1,600 affordable and market-rate multi-family low-rise residential units, including studios, and 1-, 2-, 3-bedroom units. Approximately 50% of the units will be designated as workforce housing and the development will additionally include retail, office, and commercial services as well as recreational spaces/amenities.

The project site is in the State Land Use (SLU) Agriculture District. Almost all of the project sites are outside the Urban Growth Boundary (UGB) of the Maui Island Plan as well as nearly all are designated Agriculture in the Wailuku-Kahului Community Plan. The entire project site is zoned Agriculture by the County of Maui. With these proposed amendments, the applicant proposes to expand the UGB to encompass the project site and to amend the Community Plan and County zoning to Light Industrial.

OPSD offers the following comments regarding the proposed changes and amendments.

1. **Conformance with State Land Use District (SLUD):** The project site is in the SLUD Agricultural District. Pursuant to Hawai'i Revised Statutes (HRS) §205, county zoning is to conform to SLU zoning, and therefore, the processing and decision of the DBA should occur prior to county discretionary permitting decisions. Related to the appropriate land use for this project, OPSD understands that the Maui County Planning Department is currently in the process of updating their Central Maui Community Plan. The applicant should discuss proposed amendments to this Community Plan with the County of Maui during this update process.

2. **Airport Proximity/Noise:** OPSD notes that this project is in the vicinity of Kahului Airport. Any land use change within five (5) statute miles of airport boundaries needs to consult with the Federal Aviation Administration (FAA) and the Hawai'i Department of Transportation (HDOT) to ascertain if the proposed project will create any incompatible land uses, such as hazardous wildlife attractants and glint/glare hazards. The FAA encourages proponents of land use changes within 5 statute miles of an airport to notify the FAA as early in the planning process as possible.

   In regard to noise associated with airport proximity, the applicant states, "the proposed project is within the noise contours of the Kahului Airport." Additionally stated, "Due to the presence of consistent aircraft noise disturbances throughout much of the project site, exterior glazing, wall and floor/ceiling construction will be particularly important to isolate the inhabitants." Please note that if this project intends to use affordable housing financing, e.g., via U.S. Department of Housing and Urban Development, they will need to follow the housing construction requirements to mitigate noise impacts.

   OPSD recommends that the application includes a map showing HDOT airport constraints and noise contours in relation to the project area. Application should discuss issues likely to arise due to proximity to Kahului Airport.

3. **Water:** The applicant states, "The proposed development will create an available water source…" and further states that "the groundwater salinity is too high for nearly all crops." The applicant should specify in the application what will be entailed for the development of a potable water source for this project. The applicant should consult with the Commission on Water Resource Management (CRWM) and the County of Maui on the feasibility and timeframe of the development of a new potable water source for the project. Further, the applicant may wish to consider recycled water for non-potable uses.

4. **Agricultural Land**: The project site land is designated "A" by the UH Land Study Bureau (LSB), which represents the highest productivity level and is designated "Prime" agricultural land by the Agricultural Lands of Importance in the State of Hawai'i (ALISH). OPSD notes that this represents almost a quarter of agricultural land with soils rated "A" by the UH LSB and is designated "Prime" agricultural land by ALISH. OPSD recommends that the application note the loss of these highly rated agricultural lands.

5. **Affordable Housing**: OPSD recommends that the application clarify the target populations/household incomes for affordable housing and consider some housing to target lower Area Median Income (AMI) housing.

6. **Transportation, Multimodal, and Walkability Issues:** The application should identify how the project site plan and layout will increase walkability and accommodate safe bicycle and pedestrian routes as well as connection to adjacent land uses. Consideration should also be given to activating streets for multimodal use (such as for pedestrians and bicyclists) by placement of buildings near/along streets. It is unclear whether the Maui bus services will be accommodated onsite or will be readily accessible to project residents/visitors.

7. **Energy**: The application should discuss if there will be a higher energy impact/footprint due to noise impacts, which may require air-conditioning for noise mitigation and alternative forms of renewable energy to offset higher energy uses.

8. **Complete Application:** OPSD strongly recommends that the application form contains the information requested rather than referencing external documents in its responses. This will enable the public to readily review information relevant to the project proposal.

Thank you for the opportunity to comment on the proposed application. If you have any questions, please contact Rachel Beasley, rachel.e.beasley@hawaii.gov, (808) 587-2888. If you wish to respond to this comment letter, please include DTS 202511200840NA in the subject line.

Mahalo,

Mary Alice Evans

Mary Alice Evans
Director

Paul M. Ueoka
paul@wslmaui.com

Jeffrey T. Ueoka
jeff@wslmaui.com

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January 12, 2026

Via email to: rachel.e.beasley@hawaii.gov

State of Hawaii
Office of Planning & Sustainable Development
ATTN: Rachel Beasley
P.O. Box 2359
Honolulu, Hawaii 96804

Re: Response to OPSD Comments
DTS 202511200840NA
ZPA2025-00011
Change in Zoning/Community Plan Amendment/Maui Island Plan Amendment
Ho‘onani Village
Location: TMK(s): (2) 3-8-006:004-0005; Kahului, Maui

Dear Ms. Beasley,

Mahalo for the opportunity to review and respond to the Office of Planning and Sustainable Development’s comments dated December 16, 2025.

The project team has reviewed the comments and feedback provided and appreciates OPSD‘s thoughtful input. Please find responses to specific sections below. As the project continues to advance, additional details will be developed, which would allow us to respond more fully to certain comments related to project design and infrastructure.

At this stage, and in the near term before the Maui Planning Commission, the focus of the application is on the proposed change in zoning. Detailed project level information will continue to be refined and addressed as the project progresses through the necessary process.

We truly value the continued communication and coordination with OPSD and look forward to ongoing collaboration as the project moves forward.

1. Conformance with State Land Use District (SLUD)

OPSD Comment:
The project site is in the SLUD Agricultural District. Pursuant to HRS 205, county zoning is to conform to SLU zoning, and therefore, the processing and decision of the DBA should occur prior

to county discretionary permitting decisions. Related to the appropriate land use for this project, OPSD understands that the Maui County Planning Department is currently in the process of updating their Central Maui Community Plan. The Applicant should discuss proposed amendments to the Community Plan with the county of Maui During this update process.

Response:
The Applicant is currently pursuing a State Land Use District Boundary Amendment (DBA) from the State Land Use Commission. The Applicant seeks a change in zoning for the project site prior to completion of the DBA with the expectation that the Applicant will comply with HRS 205, and until the DBA is complete, the County is expected to enforce the appropriate statutes and ordinances and allow only the more restrictive use of land in the event of conflict. The applicant will consult with the County's Planning Department on the Wailuku-Kahului Community Plan update to ensure consistency with community plan designations.

2. Airport Proximity/ Noise

OPSD Comment:
OPSD recommends that the application includes a map showing HDOT airport constraints and noise contours in relation to the project area. Application should discuss issues likely to arise due to proximity to Kahului Airport.

Response:
The applicant acknowledges the proximity of the project site to Kahului Airport. The site identified is outside of the 65 Ldn noise contour. Similar to the FAA, HDOT expresses land use compatibility guidelines based on yearly day-night average sound levels (Ldn), due to aircraft operations. In most cases, the HDOT states maximum noise limits that are 5 decibels (dB) lower than the FAA. For example, HDOT states that residences outside of the 60LDN noise contour are compatible. Residences between 60 and 70 Ldn contours are only compatible if noise mitigations treatments are implemented.

Target levels for the interiors of residential structures is 45 dBA according to the HDOH. The L1 site recorded 63.7 dBA Ldn over the 7 day measurement period, which accounts for nighttime noise levels and well as daytime. Therefore, as detailed in the noise study, mitigation in the form of exterior glazing window and partition assemblies will be incorporated to target a minimum of 20dB noise reduction. Development of the project will conform to HDOH acceptable noise standards.

Please see the attached Kahului Airport – 2010, 2020 Estimated Noise Contour Overlay – Project Overlay.

3. Water

OPSD Comment:
The applicant states, "The proposed development will create an available water source…" and further states that "the groundwater salinity is too high for nearly all crops." The applicant should specify in the application what will be entailed for the development of a potable water source for this project. The applicant should consult with CWRM and the County of Maui on the feasibility and timeframe of the development of a new potable water source for the project. Further, the applicant may wish to consider recycled water for non-potable users.

Response:
The preferred alternative is now to modify an existing water source vs. create a new source. The project team has consulted with both CWRM and DWS. The water resource report being prepared will be provided to both agencies. Although currently unavailable for the site, a proposed waste water treatment plant is proposed onsite, which would produce R-1 water. Recycled water will be used wherever feasible.

4. Agricultural Land

OPSD Comment:
The project site land is designated "A" by the UH Land Study Bureau (LSB), which represents the highest productivity level and is designated "Prime" agricultural land by the Agricultural Lands of Importance in the State of Hawaii (ALISH). OPSD notes that this represents almost a quarter of agricultural land with soils rated "A" by the UH LSB and is designated "Prime" agricultural land by ALISH. OPSD recommends that the application note the loss of these highly rated in agricultural lands.

Response:
The project team acknowledges OPSD's comment. In addition to the discussion on loss of agricultural lands, an Agricultural Impact Report for the project is being updated and will be discussed and included in the Environmental Impact Statement (EIS).

5. Affordable Housing

OPSD comment:
OPSD recommends that the application clarify the target populations/household incomes for affordable housing and consider some housing to target lower Area Median Income (AMI) housing.

Response:
All housing units are anticipated to be made available for rent to households earning up to 140% of area median income for a minimum period of 10 years. It is currently anticipated that approximately one-third of the units would be affordable to households earning 60 percent of area median income or below.

6. Transportation, Multimodal, and Walkability issues

OPSD comment:
The application should identify how the project site plan and layout will increase walkability and accommodate safe bicycle and pedestrian routes as well as connection to adjacent land uses. Consideration should also be given to activating streets for multimodal use (such as for pedestrians and bicyclists) by placement of buildings near/along streets. It is unclear whether the Maui bus services will be accommodated onsite or will be readily accessible to project residents/visitors.

Response:
Pedestrian and bicycle circulation will be incorporated throughout the project through on-street sidewalks and a network of multi-use paths connecting all phases of development. Coordination with MDOT regarding potential bus stop locations will continue as plans progress, along with coordination with DPW on appropriate sidewalk and bicycle path design standards.

7. Energy

OPSD comment:
The application should discuss if there will be a higher energy impact/footprint due to noise impacts, which may require air-conditioning for noise mitigation and alternative forms of renewable energy to offset high energy uses.

Response:
An Air Quality and Climate Change Study prepared for the project considers energy use, including incorporation of air conditioning. The potential impacts will be discussed in the Draft EIS. Energy efficient appliances and features will be used whenever feasible.

Sincerely,

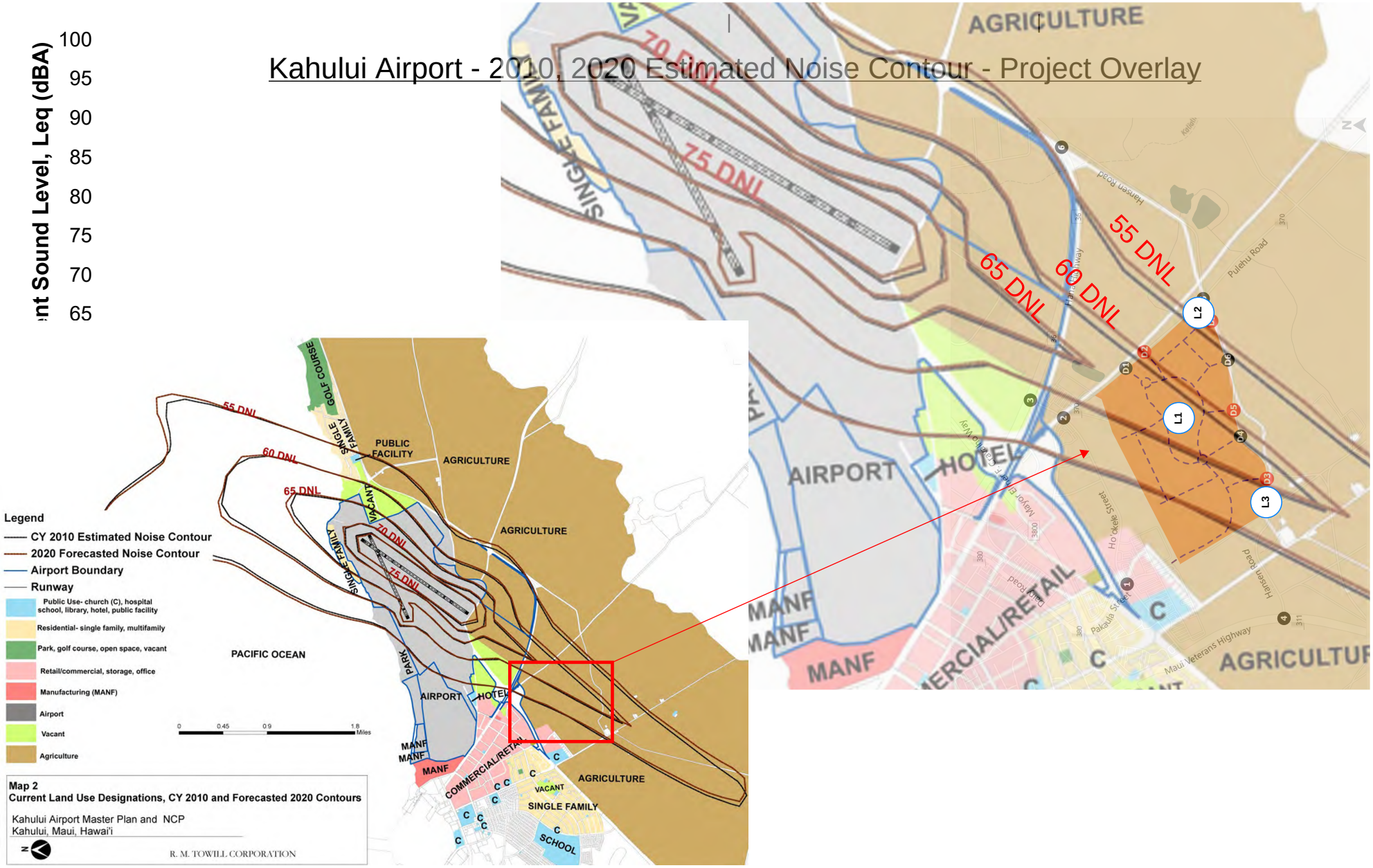


Jeffrey Ueoka
Project Attorney

Encl.

cc: Kurt Wollenhaupt, *via e-mail to kurt.wollenhaupt@co.maui.hi.us*
Mary Alice Evans, *via e-mail to maryalice.evans@hawaii.gov*

Kahului Airport - 2010, 2020 Estimated Noise Contour - Project Overlay



D. L. ADAMS ASSOCIATES acoustics | performing arts | technology	PROJECT: Ho'onani Village Development Project		
	PROJECT NO: 24-093	DATE: April, 2025	FIGURE: 6

JOSH GREEN, M.D.
GOVERNOR
KE KIA'ĀINA

EDWIN H. SNIFFEN
DIRECTOR
KA LUNA HO'OKELE

Deputy Directors
Nā Hope Luna Ho'okele
DREANALEE K. KALILI
TAMMY L. LEE
CURT T. OTAGURO
ROBIN K. SHISHIDO

STATE OF HAWAI'I | KA MOKU'ĀINA 'O HAWAI'I
DEPARTMENT OF TRANSPORTATION | KA 'OIHANA ALAKAU
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

IN REPLY REFER TO

STP 00996.26
STP 8.4028

February 2, 2026

VIA EMAIL: jeff@wslmaui.com
kurt.wollenhaupt@co.maui.hi.us

Mr. Jeffrey T. Ueoka
Project Attorney
Wells Street Law
P.O. Box 733
Wailuku, Hawaii 96793

Dear Mr. Ueoka:

Subject: Change of Zoning, General Plan Amendment, and District Boundary Amendment (ZPA2025-00011)
Hoonani Village
Kahului, Maui, Hawaii
Tax Map Key: (2) 3-8-006: 004

Thank you for your letter, dated January 12, 2026, in response to the Hawaii Department of Transportation's (HDOT) comments on the subject of rezoning and amendments. The HDOT understands that the applicant proposes to develop approximately 1,600 multi-family residential units, along with retail, office, and restaurant spaces, as well as light industrial spaces.

The HDOT would like to clarify the following:

1. Comment number 2 – The HDOT considers additional noise compatibility and noise standards in addition to the aircraft and noise land use compatibility standards set by the Federal Aviation Administration (FAA) necessary, due to the outdoor lifestyle of the resident population, and because most of Hawaii's residential structures are naturally ventilated. In accordance with the Code of Federal Regulations, Chapter 14, Part 150, Section A150.101(d), the local aircraft noise land use compatibility standards are based on local requirements and determinations associated with the local needs and values that dictate further delineation of compatibility. The HDOT reviewed noise compatibility standards from the United States (U.S.) Environmental Protection Agency, American National Standards Institute, Federal Housing Authority/Housing and Urban Development, and U.S. Department of Veterans Affairs. The HDOT established a

JOSH GREEN, M.D.
GOVERNOR

RIKI FUJITANI
EXECUTIVE DIRECTOR

Hawai'i School Facilities Authority

2759 S. KING STREET, ROOM H201
HONOLULU, HAWAI'I 96826

December 23, 2025

MEMORANDUM

TO: Kurt Wollenhaupt
Land Use Planning Supervisor
Department of Planning, County of Maui

FROM: Liz Lee
Planning Officer, Hawai'i School Facilities Authority

SUBJECT: Hawaii School Facilities Authority - Agency Review for – ZPA2025-00011 – Ho'onani Village

This memorandum is regarding the requested agency review for ZPA2025-00011 – Ho'onani Village.

Given the scale of the proposed masterplan and the associated housing units as part of the overall vision, Hawaii School Facilities Authority (SFA) would recommend the county consider existing schools and their capacity to support new families. A detailed review of the proposed housing on existing school capacity and timing of this project development may be warranted. Recent shifts in enrollment and associated redistricting in Central Maui highlight the importance of understanding how Ho'onani Village may or may not further impact area schools.

Separate but related to this, the developers building the proposed housing as part of Ho'onani Village will be subject to fees-in-lieu of land which our team is happy to lead discussions and negotiations on when the time comes. Should you have any questions on the above, please contact Liz Lee, Planning Officer, at liz.lee@hisfa.org or (415) 226-6521.

Paul M. Ueoka
paul@wslmaui.com

Jeffrey T. Ueoka
jeff@wslmaui.com

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USPS Mailing Address:
P.O. Box 733
Wailuku, Hawaii 96793

January 12, 2026

Via email to: liz.lee@hisfa.org

Hawaii School Facilities Authority
ATTN: Liz Lee, Planning Officer
2759 South King Street, Room H201
Honolulu, Hawaii 96826

Re: Hawaii School Facilities Authority – Agency Review
ZPA2025-00011
Hoʻonani Village
Location: TMK(s): (2) 3-8-006:004-0005; Kahului, Maui

Dear Planning Office Lee,

Thank you for the opportunity to review and respond to the Hawaiʻi School Facilities Authority (SFA) comments dated December 23, 2025, regarding the proposed Hoʻonani Village project.

The project team has reviewed and appreciates the feedback provided, including the observations related to existing school capacity, enrollment trends, and the potential timing of future residential development. The comments have been noted and will be taken into consideration as the project continues through the applicable planning and review processes.

Coordination with SFA is recognized as an important component in the process. As additional details related to housing phasing, population projections, and potential impacts to school capacity are further refined, the project team will be better positioned to evaluate these matters and provide additional information to the appropriate agencies and stakeholders.

The project team values continued communication and coordination and looks forward to ongoing collaboration as the project progresses.

Sincerely,

Jeffrey Ueoka
Project Attorney

cc: Kurt Wollenhaupt, *via e-mail to kurt.wollenhaupt@co.maui.hi.us*

JOSH GREEN, M.D.
GOVERNOR
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STATE OF HAWAI'I | KA MOKU'ĀINA 'O HAWAI'I
DEPARTMENT OF TRANSPORTATION | KA 'OIHANA ALAKAU
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

IN REPLY REFER TO

STP 00950.25
STP 8.4013

December 23, 2025

VIA EMAIL: kurt.wollenhaupt@co.maui.hi.us

Ms. Kate Blystone, Director
County of Maui
Planning Department
2200 Main Street
One Main Plaza, Suite 315
Wailuku, Hawaii 96793

Attention: Mr. Kurt Wollenhaupt

Dear Ms. Blystone:

Subject: Change of Zoning, General Plan Amendment, and District Boundary Amendment (ZPA2025-00011)
Hoonani Village
Kahului, Maui, Hawaii
Tax Map Key: (2) 3-8-006: 004

Thank you for your email notification, dated November 19, 2025, requesting the Hawaii Department of Transportation's (HDOT) review and comments on the subject rezoning and amendments. The HDOT understands the applicant is proposing to develop approximately 1,600 multi-family residential units along with retail, office, and restaurant spaces, as well as light industrial spaces.

The HDOT has the following comments:

1. The proposed project is approximately 0.15 miles from the property boundary of Kahului Airport (OGG) and under an existing flight path for arrivals on Runway 2. All projects within 5 miles of Hawaii State airports are advised to read the Technical Assistance Memorandum (TAM) for guidance with development and activities that may require further review and permits. The TAM can be viewed at this link:

http://files.hawaii.gov/dbedt/op/docs/TAM-FAA-DOT-Airports_08-01-2016.pdf

2. As the airport sponsor and the recipient of Federal Aviation Administration (FAA) Grants, the HDOT must comply with the FAA Grant Assurances, which include ensuring compatible land use for the safe landing and take-off of aircraft near the airport. The project site is located within the 55-75 Day-Night Average Sound Level (DNL) noise contours of the Base Year 1993 OGG Noise Exposure Map (NEM). The HDOT recommends relocating noise-sensitive land uses in the proposed project to avoid noise-sensitive areas defined by the noise contours of the Base Year 1993 OGG NEM. Specifically, all housing should be relocated outside of the 65 DNL or greater contours. In addition, Noise Level Reduction measures such as air conditioning, dual-pane windows, and concrete masonry walls should be incorporated throughout the project's design for housing and buildings where the public is received to achieve interior levels of 45 DNL or less. Please refer to the attached noise compatibility land use chart from the 1995 OGG Noise Compatibility Program for more guidance on recommended land uses within noise contours.

3. Due to the nature of the development, the HDOT requests that the property owner grant a noise and avigation easement to the HDOT.

4. Due to the proximity to OGG, the applicant, future residents, and users should be aware of potential single-event noise from aircraft operations. There is also potential for fumes, smoke, vibrations, odors, etc., resulting from occasional aircraft flight operations over or near the project location. These impacts may increase or decrease over time and are dependent on airport operations.

5. The project site is approximately 5,016 feet from the end of Runway 2 at OGG. FAA regulation requires the submittal of FAA Form 7460-1 Notice of Proposed Construction or Alteration pursuant to the Code of Federal Regulations, Title 14, Part 77.9, if the construction or alteration is within 20,000 feet of a public use or military airport which exceeds a 100:1 surface from any point on the runway of each airport with its longest runway more than 3,200 feet. Construction equipment and staging area heights, including heights of temporary construction cranes, shall be included in the submittal. The form and submission criteria can be found at the following website: https://oeaaa.faa.gov/oeaaa/external/portal.jsp. Please provide a copy of the FAA response to the Part 77 analysis to the HDOT Airport Planning Section.

6. The HDOT requires that the proposed development not provide landscape and vegetation that will create a wildlife attractant, which can potentially become a hazard to aircraft operations. Standing water also has the potential to become a wildlife attractant. Please review the FAA Advisory Circular 150/5200-33C, Hazardous Wildlife Attractants On or

Near Airports, for guidance. If the development creates a wildlife attractant, the developer shall immediately mitigate the hazard upon notification by the HDOT and/or the FAA.

7. If a solar energy photovoltaic (PV) system is going to be installed, be aware that PV systems located in or near the approach path of aircrafts can create a hazardous condition for pilots due to possible glint and glare reflected from the PV panel array. If glint or glare from the PV array creates a hazardous condition for pilots, the owner of the PV system shall be prepared to immediately mitigate the hazard upon notification by the HDOT and/or FAA.

   The FAA requires a glint-and-glare analysis for all solar energy PV systems near airports. A separate FAA Form 7460-1 will be necessary for the solar energy PV system. After the FAA determination of the Form 7460-1 glint and glare analysis, a copy shall be provided to the HDOT Airport Planning Section by the owner of the solar energy PV system.

   Solar energy PV systems have also been known to emit radio frequency interference (RFI) to aviation-dedicated radio signals, thereby disrupting the reliability of air-to-ground communications. Again, the owner of the solar energy PV system shall be prepared to immediately mitigate the RFI hazard upon notification by the HDOT and/or the FAA.

8. The development will have a total of seven access points, comprising five right-in/right-out driveways. Three of the primary access driveways are proposed on Pulehu Road, Hansen Road (east side), and Hansen Road (west side). The following project intersections connecting to our state highways may be impacted in the near future:

   a. Hansen Road (west side) via the Maui Veterans Highway, Route 311 (formerly Mokulele Road).

   b. Pulehu Road and Hansen Road (east side) with Hana Highway.

9. We have reviewed the Traffic Impact Analysis Report (TIAR), dated May 2025, which is included in the application.

   a. We note that under "Table 3: Existing Roadway Facilities," it was stated incorrectly that the Maui Veterans Highway is owned by the County. Therefore, the study should be revised to reflect that the highway is under State jurisdiction.

b. Under "Table 7: Year 2035 No Project and Plus Project," it pointed out that the westbound left turn movement on Hana Highway to Hansen Road is projected to operate at Level of Service (LOS) F during a.m. and p.m. peak hours for the existing conditions, as well as Plus Project conditions. The intersection is identified as a significant impact to Hana Highway, which is under State jurisdiction.

c. Under "Table 4: Existing 2024 Conditions Level of Service," for all scenarios, revise to show and consider delay and LOS for individual movements at signalized intersections. It is not sufficient to consider only overall intersection LOS.

    i. Regarding Hana Highway/Hansen Road, on observed delays and upstream signals, please explain whether micro-simulation would yield more accurate results? Also, please verify if observed delays are higher if the effects of vehicle platooning are not accounted for.

Under "Chapter 4: Project Traffic Estimates," the consultant should provide additional information relating to a Trip Generation Model developed by Fehr & Peers.

a. Explain, for example, whether this model took into consideration the statements mentioned in "Section 3.4: Existing Transit Facilities and Services"?

b. If the project is generating significant pedestrian and bicycle trips in an area with these limited facilities, please explain what improvements are recommended to be implemented.

c. "Table 6: Project Trip Generation," the footnotes relating to internal trips with the daily total and external trips total should be verified.

Under "Chapter 5: Year 2035 Analysis," the study should be revised to explain whether the annual growth rate in traffic of 1 percent through 2025 includes other planned developments along the Maui Veterans Highway.

a. Explain or identify the name of the additional planned development along the corridor as mentioned, and whether trips can be obtained from the traffic study for that development.

b. Section 5.1 stated that the HDOT will make the final determination on the need for a signal at the Hana Highway/Hansen Road intersection. However, the TIAR

should provide recommendations and mitigations at no cost to the State, with a new Conclusion and Recommendation section added to the study.

Under "Appendix C," an explanation should be provided for Warrant 3A Peak Hour, with why the peak hour warrant would be appropriate for the stated intersection.

a. We note that the Peak Hour Volume on Minor Approach of 460 (Existing Conditions) is the NB RT volume. The analysis indicates that it operates as free.

b. Under both the four-hour and the eight-hour scenario ("Number of Approach Lanes with Minor Street"), please revise to show all data used and plotted points. This is only for one hour of the four-hour warrant.

10. Should the subject applications be approved, we recommend that the following conditions be included in the approval before obtaining any construction permits by the petitioner:

    a. The petitioner shall coordinate a meeting with the Highways and/or Maui District Engineer to discuss its pro-rata share, any mitigation responsibilities, and shall contribute its pro-rata share to traffic improvements to be determined by the HDOT, as well as the recording of a Memorandum of Agreement if deemed necessary.

    b. The petitioner shall fund, design, and construct its pro-rata share of the necessary local and regional roadway improvements necessitated by the proposed development in designs and schedules accepted by the HDOT. A revised TIAR shall be submitted to/and accepted by the HDOT, which shall specify the petitioner's improvements that they are committed to providing.

    c. Before the commencement of any construction activity, the developer, its successors and permitted assigns, shall develop and submit a Transportation Management Plan to be reviewed by the County Department of Public Works, and a copy shall be routed to the HDOT Maui District Engineer.

11. The HDOT encourages strategies to reduce carbon emissions from the project, if any. Suggestions include:

    a. Incorporate elements that encourage and enhance the use of multiple types of transportation to reduce carbon emissions.

b. Implement energy-efficient technologies and practices, such as light-emitting diode lighting.

c. Use sustainable, recycled, or low-emission materials in construction and manufacturing.

Please submit any subsequent land use entitlement-related requests for review or correspondence to the HDOT Land Use Intake email address at DOT.LandUse@hawaii.gov.

If there are any questions, please contact Mr. Blayne Nikaido, Planner, Land Use Section of the HDOT Statewide Transportation Planning Office at (808) 831-7979 or via email at blayne.h.nikaido@hawaii.gov.

Sincerely,

EDWIN H. SNIFFEN
Director of Transportation

Attachments

Paul M. Ueoka
paul@wslmaui.com

Jeffrey T. Ueoka
jeff@wslmaui.com

WELLS STREET LAW

A Limited Liability Law Company

(808) 481-4210

2145 Wells Street
Suite 406
Wailuku, Hawaii 96793

USPS Mailing Address:
P.O. Box 733
Wailuku, Hawaii 96793

January 12, 2026

Via email to: blayne.h.nikaido@hawaii.gov

State of Hawaii
HDOT Statewide Transportation Planning Office
ATTN: Mr. Blayne Nikaido, Planner, Land Use Section
869 Punchbowl Street
Honolulu, Hawaii 96813-5097

Re: Response to HDOT Comments
STP 00950.25
STP 8.4013
Change in Zoning, General Plan Amendment, and District Boundary Amendment
ZPA2025-00011
Hoʻonani Village
Location: TMK(s): (2) 3-8-006:004-0005; Kahului, Maui

Dear Mr. Nikaido,

Thank you for the feedback regarding the Hoʻonani Village project. The project team has reviewed and appreciates the comments provided by the Hawaiʻi Department of Transportation. The feedback has been constructive and is acknowledged below. We value the guidance offered and remain committed to continued coordination and communication with HDOT and other relevant agencies as the project moves forward.

1. Technical Assistance Memorandum

The applicant will review the Technical Assistance Memorandum.

2. Federal Aviation Administration Grant Assurances

The applicant acknowledges the proximity of the project site to Kahului Airport. An environmental noise assessment has been prepared for the project, which will be included in the Draft EIS. The site identified is outside of the 65 Ldn noise contour. Similar to the FAA, HDOT expresses land use compatibility guidelines based on yearly day-night average sound levels (Ldn), due to aircraft operations. In most cases, the HDOT states maximum noise limits that are 5 decibels (dB) lower than the FAA. For example, HDOT states that residences outside of the 60LDN noise contour are compatible. Residences between 60 and 70 Ldn contours are only compatible if noise mitigations treatments are implemented.

Target levels for the interiors of residential structures is 45 dBA according to the HDOH. The L1 site recorded 63.7 dBA Ldn over the 7 day measurement period, which accounts for nighttime noise levels and well as daytime. Therefore, as detailed in the noise study, mitigation in the form of exterior glazing window and partition assemblies will be incorporated to target a minimum of 20dB noise reduction. Development of the project will conform to HDOH acceptable noise standards.

The project's noise study uses noise contours from 2010 and 2022. Please see the attached Kahului Airport – 2010, 2020 Estimated Noise Contour Overlay – Project Overlay.

3. ***Noise and avigation easement.***

Applicant will work with the Board of Land and Natural Resources on the grant of a noise and avigation easement.

4. Effects of aircraft operations.

The applicant will ensure that future residents and users of are aware of potential single-event noise from aircraft operations, and that there is also the potential for fumes, smoke, vibrations, odors resulting from occasional flight operations over or near the project location, and that these impacts may increase or decrease over time and are dependent on airport operations.

5. ***FAA Form 7460-1/ Part 77***

Response Property owner will comply with the requirements.

6. Wildlife attractants

The applicant acknowledges the importance of proper landscaping and vegetation in alignment with the FAA Advisory Circular 150/5200-33C, Hazardous Wildlife Attractants On or near airports. The Applicant confirms that the landscaping will be in compliance and there are no plans for water features, which can attract wildlife.

7. Solar Energy Photovoltaic

The applicant acknowledges HDOT‘s comments regarding potential impacts associated with solar and photovoltaic systems, including glint, glare, and radio frequency interference. Should solar PV systems be proposed in future project plans/phases, the project team understands that additional FAA review may be required and will be addressed at that time.

8. Project Intersections

The applicant will consult with HDOT on potential impacts.

9. Traffic Impact Analysis Report

Corrections regarding state jurisdiction over the Maui Veterans Highway have been forwarded to the project traffic consultant for revisions.

10. *Recommended conditions of approval.*

All housing units are anticipated to be made available for rent to households earning up to 140% of area median income for a minimum period of 10 years. It is currently anticipated that approximately one-third of the units would be affordable to households earning 60 percent of area median income or below. The applicant respectfully requests the exclusion of recommendations a and b, as requiring unknown and onerous traffic contributions will have a negative impact on this much needed housing project.

11. Carbon emission reduction strategies.

The applicant acknowledges HDOT's encouragement to incorporate strategies that reduce carbon emissions. The TIAR will include discussion of multi-modal strategies for potential implementation. Opportunities to support energy- efficient technologies, and sustainable practices may be evaluated as project design advances and implementation details are further refined.

Sincerely,

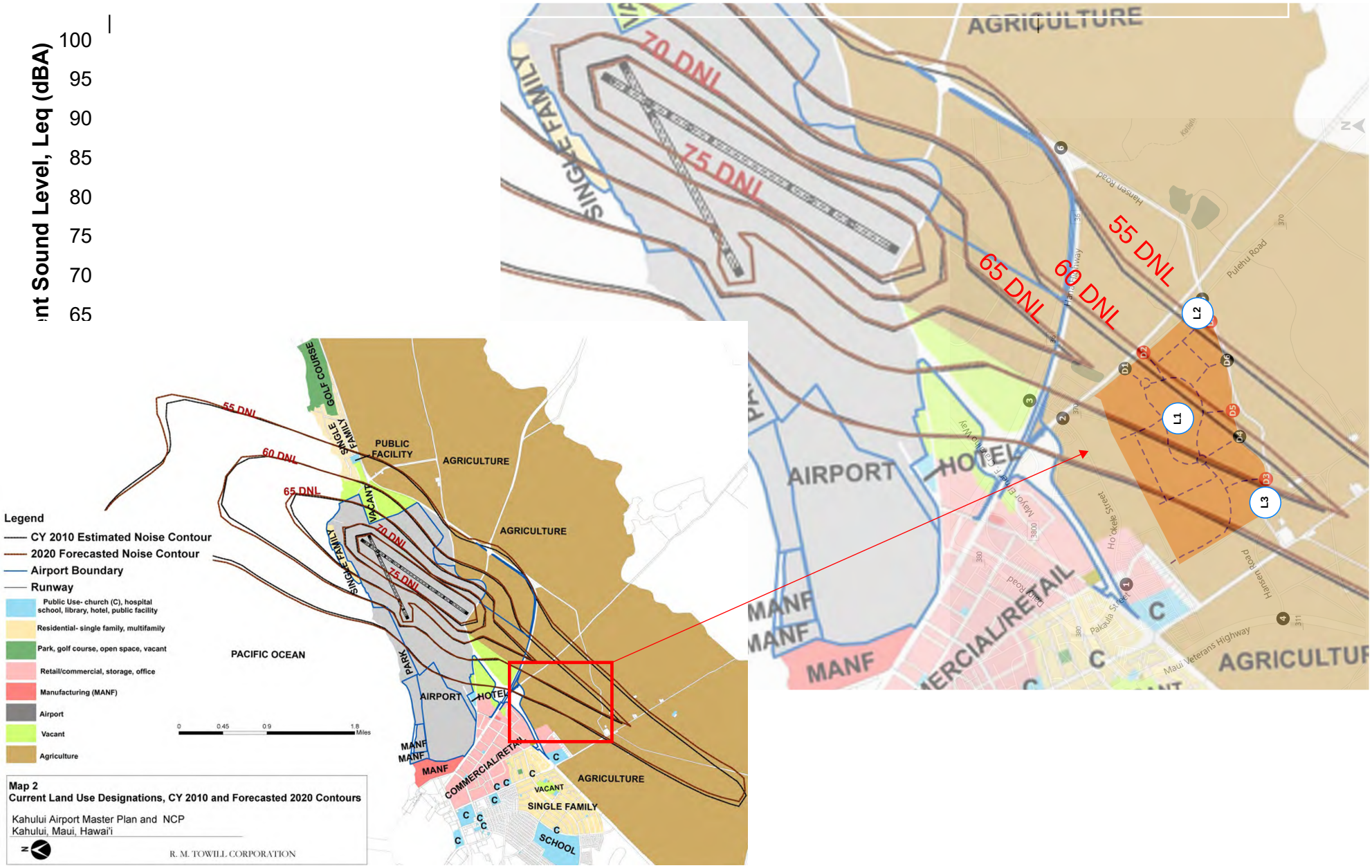


Jeffrey Ueoka
Project Attorney

Encl.

cc: Kurt Wollenhaupt, *via e-mail to kurt.wollenhaupt@co.maui.hi.us*

Kahului Airport - 2010, 2020 Estimated Noise Contour - Project Overlay



D. L. ADAMS ASSOCIATES acoustics | performing arts | technology	PROJECT: Ho'onani Village Development Project		
	PROJECT NO: 24-093	DATE: April, 2025	FIGURE: 6

JOSH GREEN, M.D.
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA

STATE OF HAWAI'I | KA MOKU'ĀINA 'O HAWAI'I
DEPARTMENT OF LAND AND NATURAL RESOURCES
KA 'OIHANA KUMUWAIWAI 'ĀINA

DIVISION OF FORESTRY AND WILDLIFE
1151 PUNCHBOWL STREET, ROOM 325
HONOLULU, HAWAII 96813

DAWN N.S. CHANG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

RYAN K.P. KANAKA'OLE
FIRST DEPUTY

CIARA W.K. KAHAHANE
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

January 16, 2026

Log no. 5244

MEMORANDUM

TO: Land Division

FROM: DAVID G. SMITH, Administrator
Division of Forestry and Wildlife

SUBJECT: Consultation Request on the proposed Urban Boundary Change, Community Plan Amendment, and Zoning Change for Ho'onani Village, Kahului, Maui, TMK (2) 3-8-006:004.

The Department of Land and Natural Resources, Division of Forestry and Wildlife (DOFAW) has received your consultation request regarding the proposed Urban Boundary Change, Community Plan Amendment, and Zoning Change for the proposed Ho'onani Village project, in Kahului, Maui, within TMK (2) 3-8-006:004. The applicant proposes to expand the current Maui Island Urban Growth Boundary, amend the Wailuku-Kahului Community Plan designation from Agricultural to Business/Multi-family, and change Maui County Zoning from Agricultural/Heavy Industrial to M-1 Light Industrial. The proposed Ho'onani Village project will include 1,608 multi-family units, commercial, office, retail, hospitality, light industrial, restaurants, outdoor areas, and community gathering places. No streams, wetlands, or critical habitats for endangered species are present within the project area, and a flora and fauna survey was conducted by Starr Environmental in 2024. The only native plant found at the proposed site was 'uhaloa (*Waltheria indica*). No other native, endangered, or threatened species were documented. Tree tobacco, a host tree for the endangered Blackburn's sphinx moth is present at the site, thus monitoring of trees for presence of Blackburn's sphinx moth will be conducted prior to construction.

DOFAW concurs with the measures included in the application intended to avoid construction and operational impacts to the State-listed Blackburn's spinx moth and provides the following additional comments regarding the potential for the proposed work to affect listed species in the vicinity of the project area.

The State listed 'ōpe'ape'a or Hawaiian hoary bat (*Lasiurus semotus*) could potentially occur at or in the vicinity of the project and may roost in nearby trees. Any required site

clearing should be timed to avoid disturbance to bats during their birthing and pup rearing season (June 1 through September 15). During this period, woody plants greater than 15 feet (4.6 meters) tall should not be disturbed, removed, or trimmed. Barbed wire should also be avoided in any construction as bats can become ensnared and killed by such fencing material during flight.

Artificial lighting can adversely impact seabirds which may pass through the area at night by causing them to become disoriented. This disorientation can result in seabird collision with manmade structures or the grounding of birds. For nighttime work that might be required, DOFAW recommends all lights used be fully shielded to minimize the attraction of seabirds. Nighttime work which requires outdoor lighting should be avoided during the seabird fledging season from September 15 through December 15, when young seabirds make their maiden voyage to sea. If nighttime construction is required during the seabird fledgling season, we recommend a qualified biologist be present at the project site to monitor and assess the risk of seabird attraction and or grounding due to lighting. If seabirds are seen circling the area, lights should be turned off. If a downed seabird is detected, please follow DOFAW's recommended response protocol by visiting https://dlnr.hawaii.gov/wildlife/seabird-fallout-season/.

Permanent lighting also poses a risk of seabird attraction, and as such should be minimized or eliminated to protect seabird flyways and preserve the night sky. For illustrations and guidance related to seabird-friendly light styles that also protect seabirds and the dark starry skies of Hawai'i please visit https://dlnr.hawaii.gov/wildlife/files/2016/03/DOC439.pdf.

The endemic pueo or Hawaiian short-eared owl (*Asio flammeus sandwichensis*) could potentially nest in the project area. Pueo nest on the ground and active nests have been found year-round. Before any potentially disturbing activity like clearing vegetation, especially ground-based disturbance, DOFAW recommends a qualified biologist conduct surveys during crepuscular hours. Observation surveys should be done at those times from vantage points where they can see the whole project area for 2-3 nights before construction is to start. If any breeding displays are observed, it is likely there could be a nest. If pueo nests are detected in the area, a buffer zone should be established in which no activity occurs within a minimum buffer distance of 100 meters until the nesting cycle is complete and the chicks are capable of flight. DOFAW staff should be notified of any nests or adult displayed breeding behavior.

State-listed waterbirds such as ae'o or Hawaiian stilt (*Himantopus mexicanus knudseni*), 'alae ke'oke'o or Hawaiian coot (*Fulica alai*), and nēnē or Hawaiian goose (*Branta sandvicensis*) could potentially occur at or in the vicinity of the proposed project site. It is against State law to harm or harass these species. If any of these species are present during construction, all activities within 100 feet (30 meters) should cease and the bird or birds should not be approached. Work may continue after the bird or birds leave the area of their own accord. If a nest is discovered at any point, please contact **Maui Branch DOFAW at (808) 984-8100** and establish a buffer zone around the nest.

DOFAW is concerned about the impacts of nonnative predators such as cats, rodents, and mongoose, on native and endangered waterbirds, seabirds, and forest birds. Take action to minimize predator presence; remove cats, place bait stations for rodents and mongoose, and provide covered trash receptacles. As predation is instinctive and even well-fed cats will hunt and kill wildlife, DOFAW recommends all homeowner associations request residents keep pet cats indoors at all times. Additionally, no feeding of feral cats should occur on the premises.

The project area is within the range of the State-listed Blackburn's sphinx moth or BSM (*Manduca blackburni*). Larvae of BSM feed on many nonnative hostplants, which includes tree tobacco (*Nicotiana glauca*), that grow in disturbed areas. DOFAW recommends removing tree tobacco less than one meter in height during the dry season to avoid harming BSM. If there is intent to either remove tree tobacco over one meter in height, or to disturb the ground around or within several meters of these plants, they must be thoroughly inspected by a qualified entomologist for the presence of BSM eggs and larvae.

DOFAW recommends using native plant species for landscaping that are appropriate for the area; i.e., plants for which climate conditions are suitable for them to thrive, plants that historically occurred there, etc. Please do not plant invasive species. DOFAW also recommends referring to www.plantpono.org for guidance on the selection and evaluation of landscaping plants and to determine the potential invasiveness of plants proposed for use in the project.

Avoid importing soil or other plant material from off-island. Soil and plant material may contain fungi (e.g., rapid 'ōhi'a death) and other pathogens which could harm our native species and ecosystems. We recommend consulting the Hawai'i Interagency Biosecurity Plan at http://dlnr.hawaii.gov/hisc/plans/hibp/ in the planning, design, and construction of the project.

DOFAW recommends minimizing the movement of plant or soil material between worksites. Soil and plant material may contain detrimental fungal pathogens (e.g., Rapid 'Ōhi'a Death), vertebrate and invertebrate pests (e.g., Coqui Frogs, Little Fire Ants, etc.), or invasive plant parts (e.g., Miconia, Mullein, etc.) that could harm our native species and ecosystems. We recommend consulting the **Maui Invasive Species Committee (MISC) at (808) 573-6472** to help plan, design, and construct the project, learn of any high-risk invasive species in the area, and ways to mitigate their spread. All equipment, materials, and personnel should be cleaned of excess soil and debris to minimize the risk of spreading invasive species.

To prevent the spread of rapid 'ōhi'a death (ROD), DOFAW requests that removal, pruning/trimming, and potentially injury to 'ōhi'a trees be avoided as much as possible. Wounds serve as entry points for ROD fungus and increase the odds that the tree will be infected and die. Also, clean gear/tools, clothes, footwear, and vehicles before and after use. Make sure to removal all loose soil from the aforementioned items, spray gear/tools with 70% rubbing alcohol, and wash clothes with hot water and soap. Wash

tires and undercarriages of all vehicles/machinery with a high-pressure water source. If ʻōhiʻa trees must be removed or pruned/trimmed, please conduct these activities on a still day to minimize blown sawdust and use a sharp saw to create chips rather than dust. Seal all wounds to these trees with a stump seal product (e.g. Spectricide, etc.). For more information, please consult https://cms.ctahr.hawaii.edu/rod.

The invasive coconut rhinoceros beetle (*Oryctes rhinoceros*) or CRB is widespread on the island of Oʻahu. CRB have been detected on other islands with moderate infestation on Kauaʻi, one incipient site on Hawai'i Island, and only one positive site on Maui in 2023. Hawai'i Department of Agriculture interim rule 24-1 restricts the movement of CRB-host material from the island of Oʻahu, which is defined as the Quarantine Area. Regulated material (host material or host plants) is considered a risk for potential CRB infestation. Host material for the beetle specifically includes 1) entire dead trees; 2) mulch, compost, trimmings, fruit and vegetative scraps, and 3) decaying stumps. CRB host plants include the live palm plants in the following genera: *Washingtonia*, *Livistona*, and *Pritchardia* (all commonly known as fan palms), *Cocos* (coconut palms), *Phoenix* (date palms), and *Roystonea* (royal palms). When such material or these specific plants are moved there is a risk of spreading CRB because they may contain CRB in any life stage. Inspection and/or treatment approved by HDOA is mandatory before inter-island transport. For more information regarding CRB, please visit https://dlnr.hawaii.gov/hisc/info/invasive-species-profiles/coconut-rhinoceros-beetle/.

We recommend that Best Management Practices are employed during and after construction to contain any soils and sediment with the purpose of preventing damage to near-shore waters and marine ecosystems.

Due to the arid climate, high fine fuel load (grasses) surrounding the worksite, and risks of wildfire to listed species and native habitats, we recommend coordinating with the Hawaiʻi Wildfire Management Organization at (808)-850-0900 or admin@hawaiiwildfire.org, on how wildfire prevention can be addressed in the project area. When engaging in activities that have a high risk of starting a wildfire—like wielding in/near tall grass, it is recommended that you: 1) wet down the area before starting your task, 2) continuously wet down the area as needed, 3) have a fire extinguisher on hand, and 4) in the event that your vision is impaired, (i.e. welding goggles) have a spotter to watch for fire ignitions. Additionally, do not park any vehicles in or near tall grass as heat from the engine/exhaust may ignite dry vegetation.

We appreciate your efforts to work with our office for the conservation of our native species. These comments are general guidelines and should not be considered comprehensive for this site or project. It is the responsibility of the applicant to do their own due diligence to avoid any negative environmental impacts. Should the scope of the project change significantly, or should it become apparent that threatened or endangered species may be impacted, please contact our staff as soon as possible. If you have any questions, please contact Kelli Yamaguchi, Protected Species Habitat Conservation Planning Associate via email at kelli.yamaguchi.researcher@hawaii.gov.