Appendix 16

View Analysis

Kanaha Hotel

Photo Simulations

Interacta Inc.
Ron Stevens
13 May 2021

interacta inc.
805.962.1300
www.interacta3d.com

Kanaha Hotel

Map
Photo Simulation Locations

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Kanaha Hotel

Photo Simulation - KH1

Current Conditions (2019)

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Kanaha Hotel

Photo Simulation - KH1

Proposed

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Kanaha Hotel

Photo Simulation - KH2

Current Conditions (2019)

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Photo Simulation - KH2

Proposed

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Kanaha Hotel

Photo Simulation - KH3

Current Conditions (2019)

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Photo Simulation - KH3

Proposed

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Kanaha Hotel

Photo Simulation - KH4

Current Conditions (2020)

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Kanaha Hotel

Photo Simulation - KH4

Proposed

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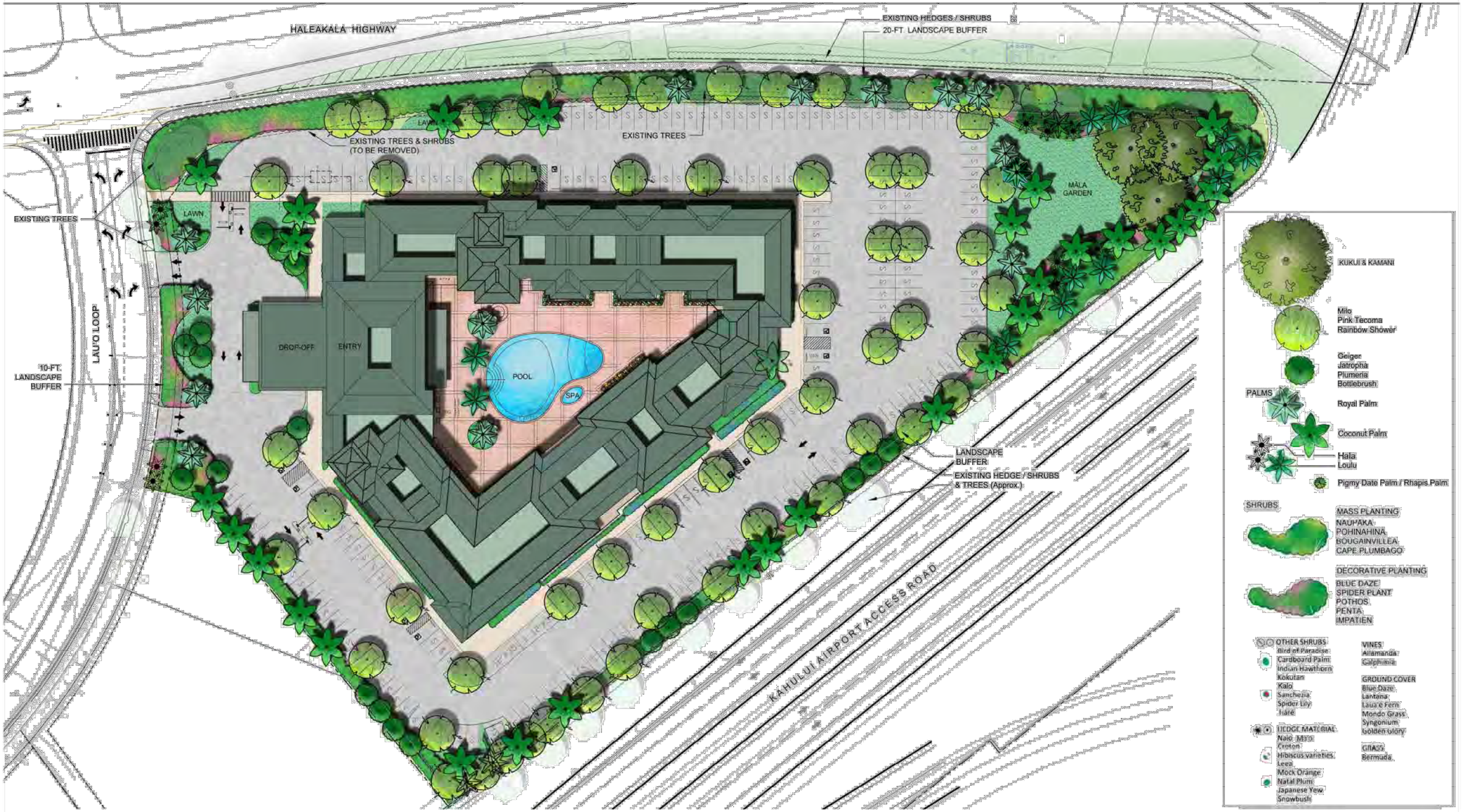

R.D. OLSON DEVELOPMENT

CHRIS HART & PARTNERS, INC. LANDSCAPE ARCHITECTURE & LAND USE PLANNING

AXIS GFA ARCHITECTURE + DESIGN

HONUA CONSULTING

CONCEPT LANDSCAPE PLAN - OPT 1

KANAHĀ HOTEL AT KAHULUI AIRPORT
KAHULUI, MAUI, HAWAI'I

04/16/2021
JOB NO.: 1710
SHEET NO.: 26

Kanaha Hotel

Landscape Plan used in photo simulations

Tree Sizes

	HEIGHT feet	CANOPY SPREAD feet
	30	50
	20	20
	15	10
	30	20
	50	20
	10	6

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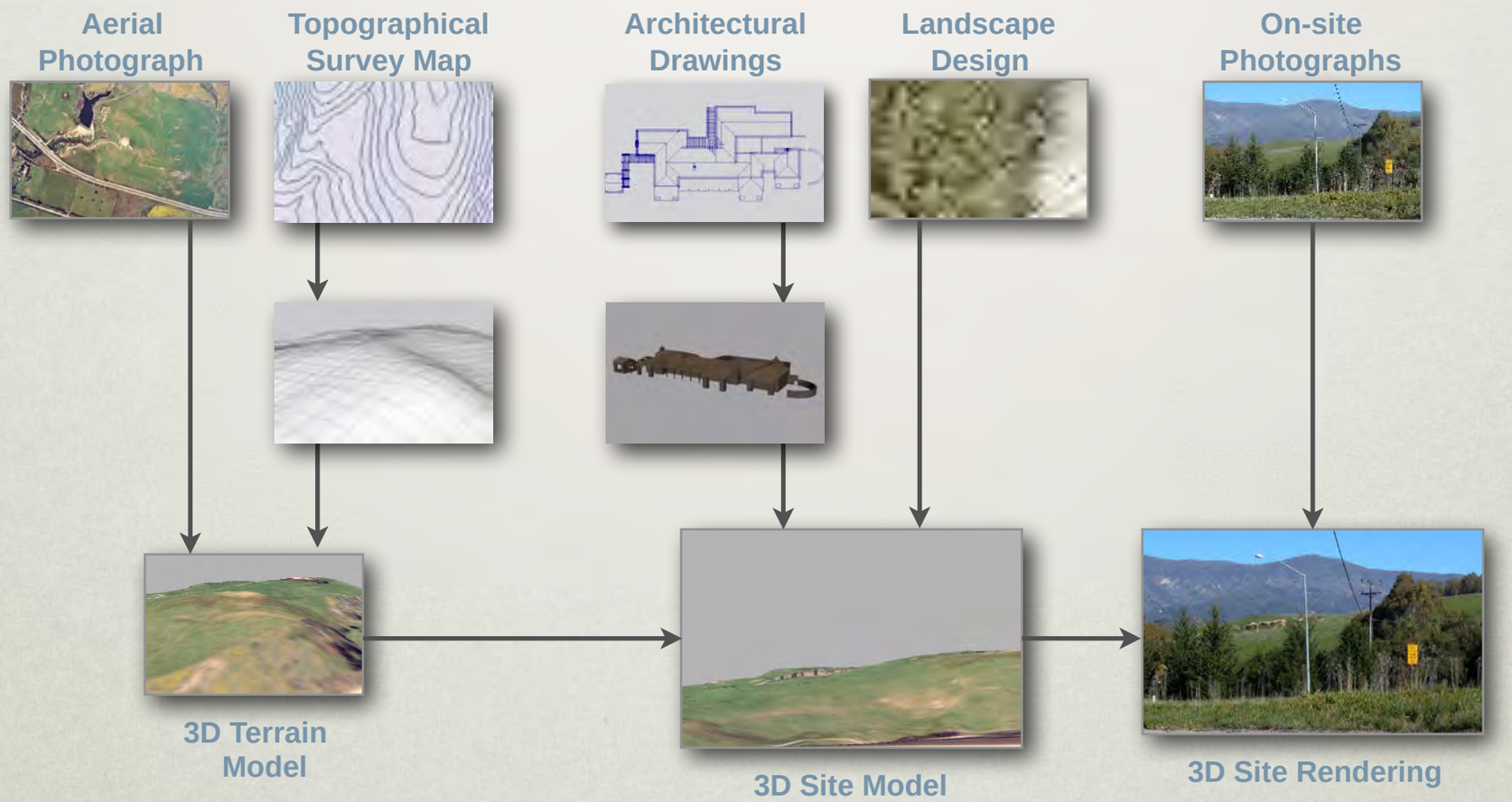
Disclaimer

- The photo simulations were developed using Interacta's methodology process as described below.
- Interacta's methodology uses high end 3D software for generating simulated objects based on architectural CAD files and sketches, terrain surfaces based on topo data files and simulated camera locations based on actual photographs taken.
- Every effort has been made to make these photo simulations as accurate as possible based on the data provided.

interacta's methodology integrates input from …



… to create an accurate and comprehensive representation of your project.

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Appendix 17

Potential Impact on Water Resources

Potential Impact on Water Resources of the Proposed Kanaha Hotel at Kahului Airport, Island of Maui

Prepared for:

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Prepared by:

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June 2021

Table of Contents

List of Figures

List of Tables

Introduction

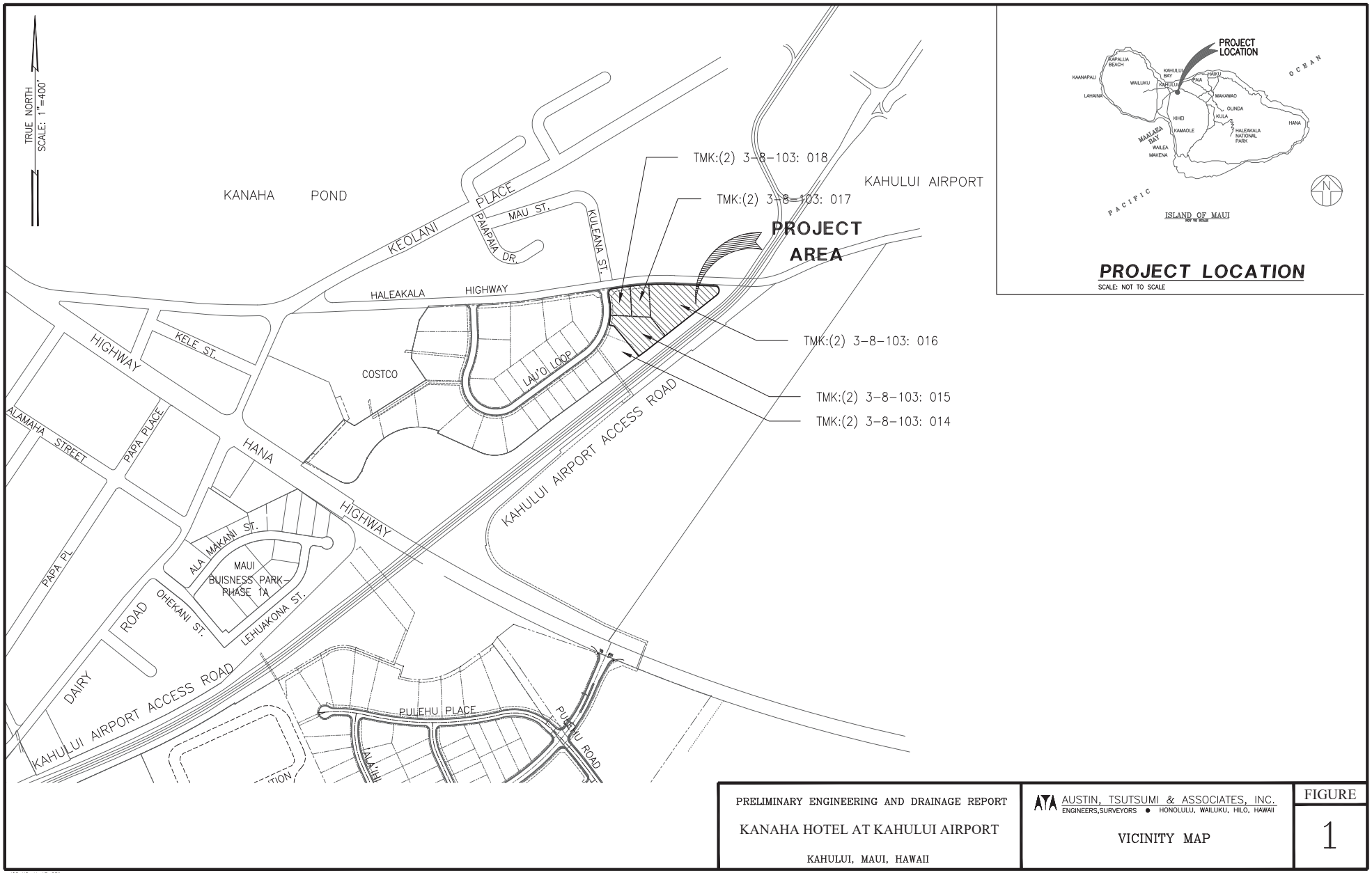
The location of the proposed Kanaha Hotel at Kahului Airport on four parcels in A&B's Maui Business Park is shown on Figure 1. A site plan of improvements on the 5.2-acre site is presented on Figure 2. The 200-room hotel will have related guest facilities and surface parking for 221 vehicles. This report provides an assessment of the project's potential impact on water resources. For those more interested in the results of the assessment rather than its methodology, a summary of the project's potential impacts is provided in the bullet points below.

- There are no streams or other inland water bodies that would be impacted by the project, so the assessment focuses on impacts to groundwater.
- Water supply for the project would be provided by the separate and private potable and non-potable water systems constructed to supply the Maui Business Park.
- Wells for these water systems would ultimately draw 0.0339 million gallons per day (MGD) from the Kahului Aquifer System, an increase of less than one (1) percent of current pumpage from the Aquifer and not considered to be a significant impact.
- Nutrients removed from the Aquifer by the wells would be greater than the nutrients returned to the aquifer from the irrigated landscaping, but the amounts are very small and of no significant environmental consequence.
- The project is expected to generate about 0.030 MGD of wastewater which would be conveyed to the County's Wailuku-Kahului Wastewater Reclamation Facility where it would be treated to secondary (R-2) standards and then disposed of in the facility's eight (8) disposal wells arrayed along the Kahului shoreline. Current disposal in these wells is approximately 5.7 MGD. The addition of the project's wastewater would be an increase of about 0.5 percent, not considered to be of significant consequence.
- Development of the 5.2-acre site, due to the impervious surfaces that would be created, will increase the peak rates and volumes of runoff during rainfall events. The runoff will be conveyed via the Maui Business Park's subsurface drainage system to an existing concrete lined channel which outlets at the Kahului shoreline. The increases of runoff were accounted for in the design of the Business Park's drainage system and are considered to be of no significant consequence in the discharge from the channel outlet into the marine environment.

Identification of Potential Impacts

The Kanaha Hotel project has the potential to impact water resources in the following three ways: use of groundwater for potable consumption and landscape irrigation; generation of domestic wastewater requiring treatment and disposal; and creating an increase in surface runoff in comparison to the undeveloped site. Each of these potential impacts is described and quantified in the sections following.

Use of Groundwater for Potable Consumption and Landscape Irrigation. Potable and non-potable water use within A&B's Maui Business Park will be provided by separate privately owned and operated systems. Supply for the potable system is provided by two wells identified as State Nos. 5129-004 and -005 and known as the Waiale-1 and Waiale-2 wells. Both wells are outfitted with 450 gallons per minute (GPM) pumps and draw water from the Kahului Aquifer System. Water from the wells is delivered into an adjacent 0.6-million-gallon storage tank, from which it flows by gravity via a 16-inch transmission pipeline to the Business Park.



PRELIMINARY ENGINEERING AND DRAINAGE REPORT

KANAHA HOTEL AT KAHULUI AIRPORT

KAHULUI, MAUI, HAWAII

AUSTIN, TSUTSUMI & ASSOCIATES, INC.
ENGINEERS,SURVEYORS ● HONOLULU, WAILUKU, HILO, HAWAII

VICINITY MAP

FIGURE 1

JOB NO. M-17-539

Z:\2017\17-539\ENGINEERING\Reports\PER\EXHIBITS\EXH 1 – VICINITY MAP.dwg

JUNE 2019

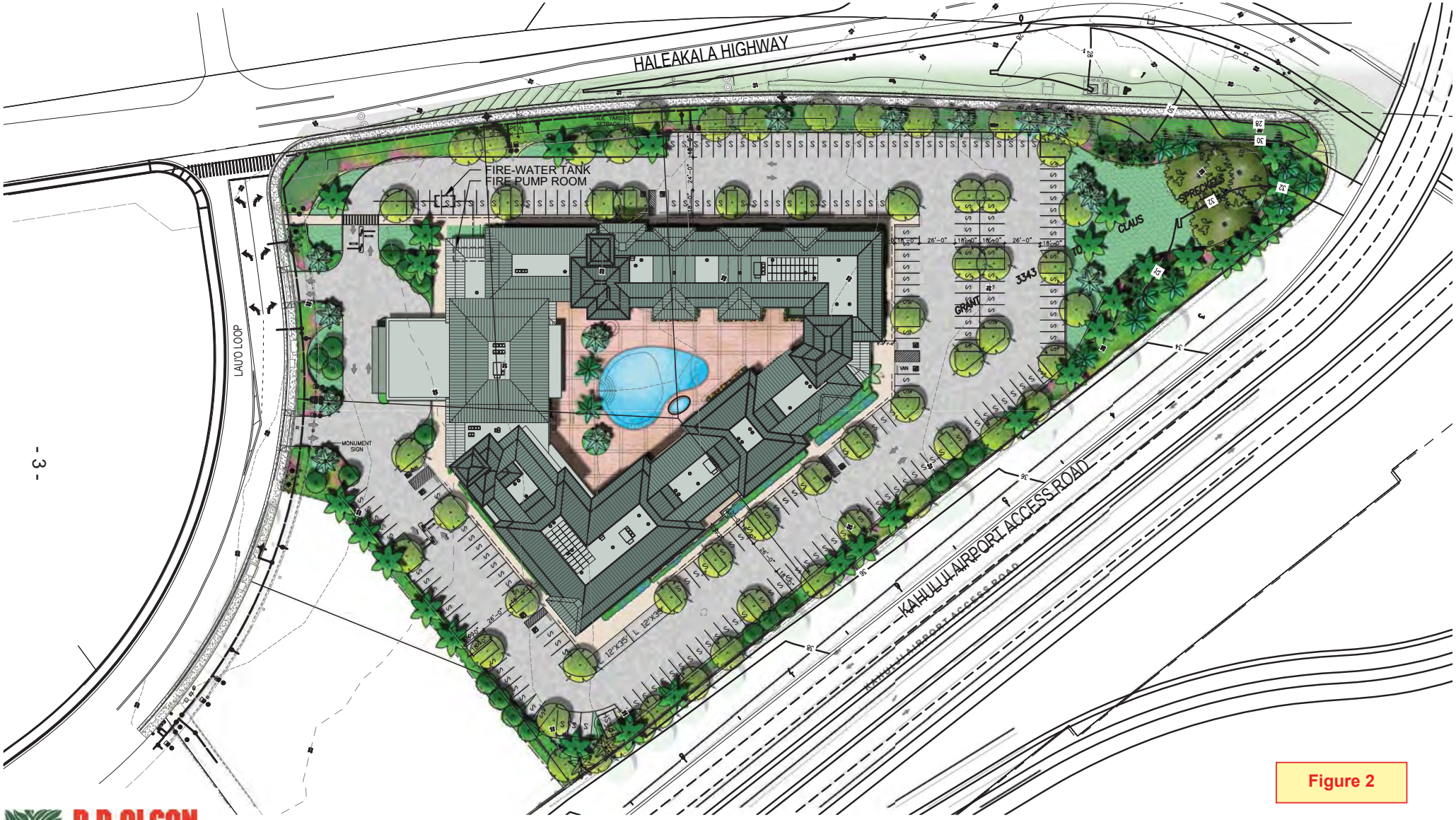


Figure 2

OVERALL SITE PLAN - OPT. 1

KANAHĀ HOTEL AT KAHULUI AIRPORT
KAHULUI, MAUI, HAWAI'I

SCALE: 1/64" = 1'-0"

04/16/2021
JOB NO.: 1710
SHEET NO.: 06

The projected use of potable water for the project is 150 gallons per day (GPD) per room or 30,000 GPD for the project. Notably, this use rate is substantially less than the 350 GPD/room design standard of the Maui Department of Water Supply (MDWS). However, it is based on analyses of the actual use rates of the Courtyard by Marriot in Kahului and the Residence Inn at Wailea, both of which have average potable use rates which are less than 150 GPD/room. To ensure that A&B's private potable water system will have adequate supply for the Kanaha Hotel and all other lots in the Business Park at full build out, R. D. Olson has entered into an agreement with A&B to construct a third supply well for the system.

The non-potable water system that will provide water for the Hotel's landscape irrigation is supplied by a single well identified as State No. 5226-001. It is actually a horizontal skimming tunnel that was constructed in 1899 for sugarcane irrigation and draws water from the Kahului Aquifer System. During the period of its use by HC&S, it was also known as Shaft 19 and Puunene Pump 5. In that period, it had an installed pumping capacity of nine (9) million gallons per day (MGD) and average use on the order of six (6) to seven (7) MGD (Takasaki, 1972). When the Shaft was modified to supply the Business Park, three new pumps of 450 GPM capacity were installed. Delivery to customers is by an on-demand pumping system without reservoir storage.

Projected use of the water for landscape irrigation is presented on Table 2 of Austin Tsutsumi & Associates, 2021. It includes some potable water less salt tolerant plants (1,287 GPD on 0.44 acres) and the balance for supplied by the non-potable system (2653 GPD on 0.96 acres).

Wastewater Generation, Treatment, and Disposal. Wastewater generation of the project, as stated in Table 3 of Austin Tsutsumi & Associates (2021), is expected to be 30,000 GPD, equivalent to 100 percent of the projected domestic water use. The wastewater will be conveyed via existing infrastructure to the County's Wailuku-Kahului Wastewater Reclamation Facility where it will be treated to secondary (R-2) standards. Disposal of the treated effluent will be into the battery of eight (8) disposal wells which deliver the treated effluent at depths from 170 to 380 feet below sea level.

Surface Water Runoff. During substantial rainfall events, surface runoff from the property moves in a westerly direction to an existing catch basin in Lau'o Loop. From there it is conveyed via the existing drainage system in the Maui Business Park to an existing concrete lined channel which runs to the shoreline. Surface runoff resulting from the proposed development, due to its impervious surfaces, will be more frequent and of greater magnitude than now occurs from the undeveloped site. It will follow the same path to the shoreline as it presently occurs.

Groundwater Body Potentially Impacted by the Project

Since there are no streams that will be impacted by the Kanaha Hotel project, this assessment focuses on the potential impact to groundwater. The groundwater body underlying the project site is known as the Kahului Aquifer System. It is a 27.5 square mile area encompassing the entire isthmus between Haleakala and the West Maui Mountain. Discharge from the Aquifer to the marine environment occurs along its Kahului and Maalaea Bay shorelines.

In the Commission on Water Resource Management's 1990 Water Resources Protection Plan (WRPP), the Aquifer's sustainable yield was set at 1.0 million gallons per day (MGD), a calculation based exclusively on rainfall recharge on its 9.54-square mile area that is not covered by caprock (George A. L. Yuen and Associates, 1990). This ignored all other contributions to the Aquifer's actual recharge,

including water brought into the area by the HC&S plantation ditch systems, irrigation return from sugarcane cultivation, subsurface groundwater flow into Aquifer from both Haleakala and the West Maui Mountain, and surface runoff from Haleakala and the West Maui Mountain. At the time the sustainable yield was adopted in 1990, total pumpage in the Aquifer was about 40 MGD (Figure 3). The first update of the WRPP, done in 2008, retained the 1.0 MGD sustainable yield (Wilson Okamoto Corporation, 2008).

Subsequent to the 2008 WRPP, two studies by the USGS included more sophisticated methods for calculating aquifer recharge. In Engott and Vana (2007), recharge was computed to be 1.35 MGD on just 5.62 square miles, an area which excluded all areas covered with sedimentary deposits, and 6.62 MGD for the Aquifer's entire 27.5 square mile area. The other and more recent study, Johnson, Engott, and Bassiouni (2014), put the recharge much higher at 23 to 25 MGD for Aquifer areas of 23.0 to 27.5 square miles.

The most recent update of the WRPP in 2019 listed the range of the Aquifer's sustainable yield at 1 to 10 MGD, retained the 1.0 MGD as the sustainable yield, but in a footnote indicated that the upper end of the range is more likely for "current" conditions (Footnote 32 of Table F-10 in Townscape, 2019). In comparison, actual groundwater pumpage by wells in the post-plantation period has been reasonably consistent at about 3.5 MGD (Figure 4). It should be noted that this amount does not include pumpage by the 10 Maui Electric saline cooling water wells at its power plant along the Kahului shoreline. Pumpage of saline groundwater by these wells has been on the order of 45 MGD for the last several years (Figure 5).

The two wells currently providing water for the Maui Business Park's potable system are Waiale-1 and Waiale-2, also identified as State Nos. 5129-004 and -005). Their locations are shown on Figure 6. Their use for the Business Park began in October 2011 and has been quite variable since then, reflecting the relatively low occupancy of the Business Park's lots to date (Figure 7). At full build out and occupancy of the Business Park, the average use is projected to be 0.320 MGD exclusive of use by the Kanaha Hotel. Each of the two wells is outfitted with a 450 GPM pump so that one pump has sufficient capacity for periods of maximum use with the other providing 100 percent standby capacity.

Full occupancy of the Kanaha Hotel will increase the projected ultimate use of 0.32 MGD to 0.35 MGD, a relatively modest increase that could likely be supplied by the two existing wells. However, with the Aquifer's actual long-term sustainable yield in doubt due to the end of sugarcane cultivation, a third well at the location shown on Figure 6 will be added to the system. It is approximately 500 feet from the Waiale-1 well, sufficient distance to avoid interference effects with the existing Waiale Wells. Its existence will enable pump capacities of the two existing wells to be reduced, if necessary, while still being able to provide the future, full build out and occupancy supply requirements.

The Maui Business Park's non-potable system is supplied by a single well now known as MBP II Non-Potable or State No. 5226-001. Its location is shown on Figure 8. The Shaft is now outfitted with three identical pumps of 450 GPM capacity and outfitted with variable frequency drives. The Business Park's projected use at full build out was less than 0.10 MGD. As shown on Figure 9, actually monthly use has peaked at 0.73 MGD and its moving annual average has exceeded 0.3 MGD, both amounts that are far greater than initially expected. However, the Shaft has more capacity than will ultimately be required and the additional use by the Kanaha Hotel of just 0.0026 MGD is considered to be inconsequential.

Based on the foregoing, the impact to the Kahului Aquifer of supplying water for the Kanaha Hotel project is not considered to be significant for the following reasons:

Figure 3. Pumpage from the Kahului Aquifer System in the Plantation Era from Janaury 1988 to December 2015

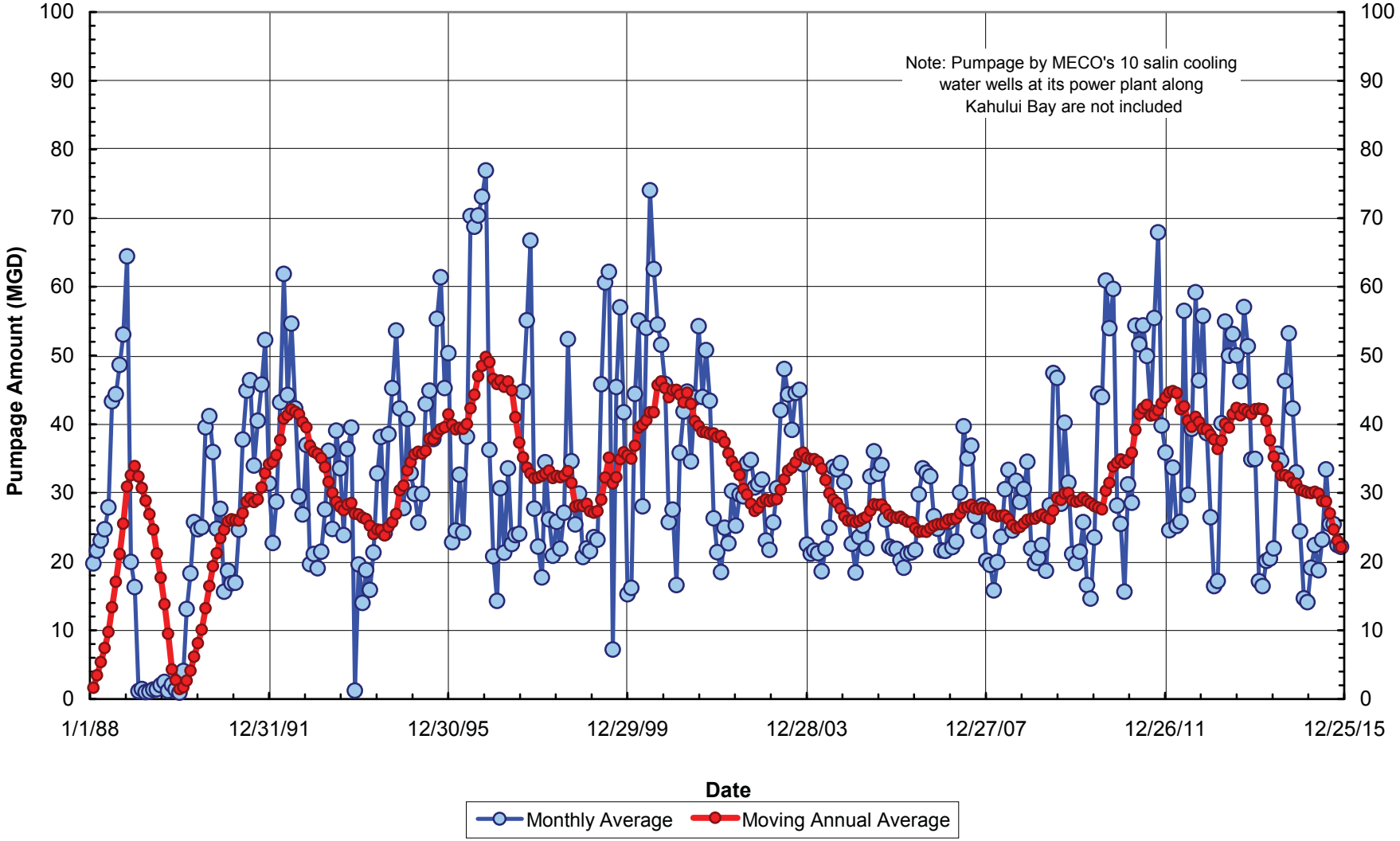


Figure 4. Pumpage from the Kahului Aquifer System Since the Plantation's Closing and Excluding MECO's Use of its Saltwater Wells

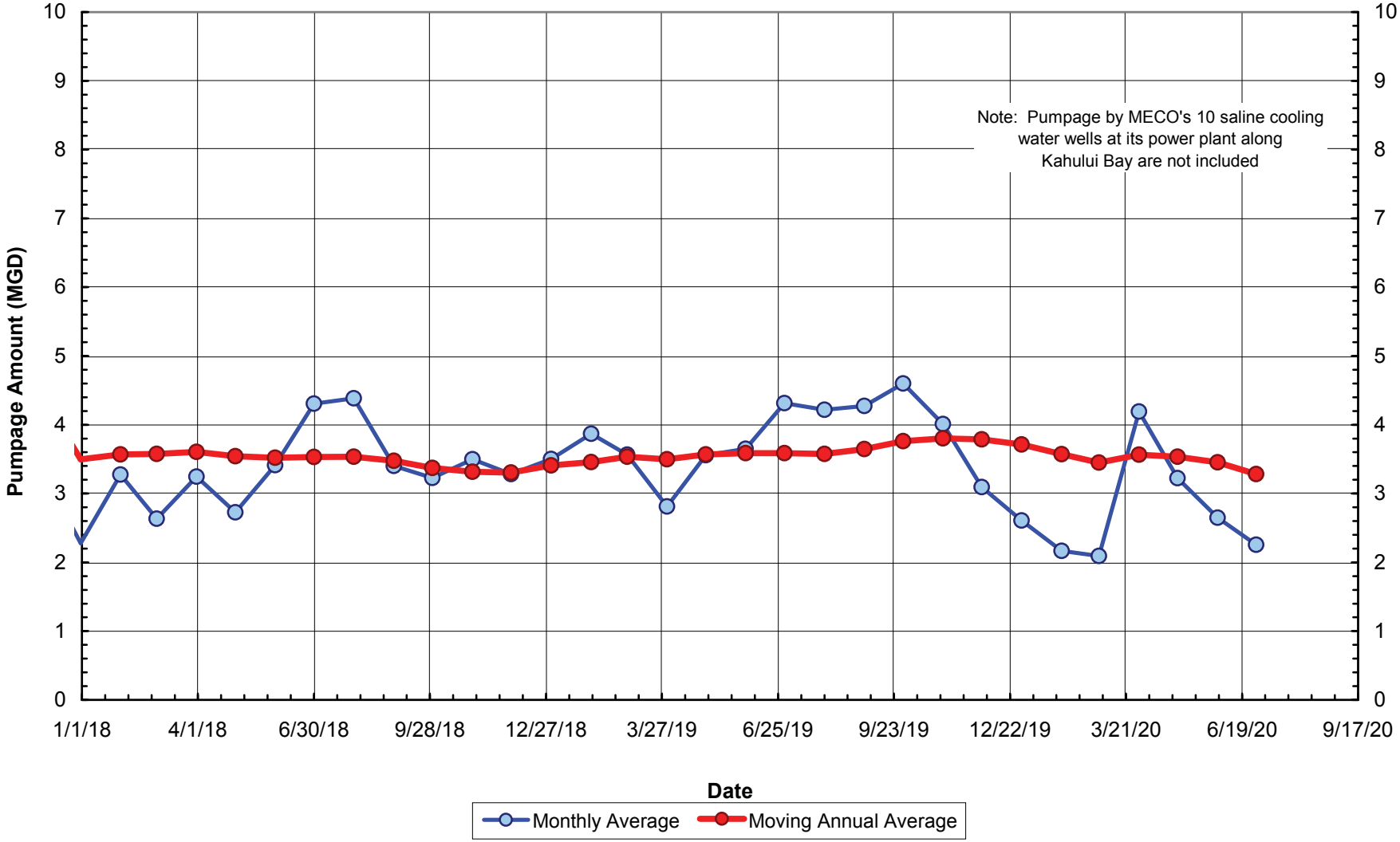


Fig 5. Pumpage by MECO's Saline Cooling Water Wells for its Kahului Power Plant

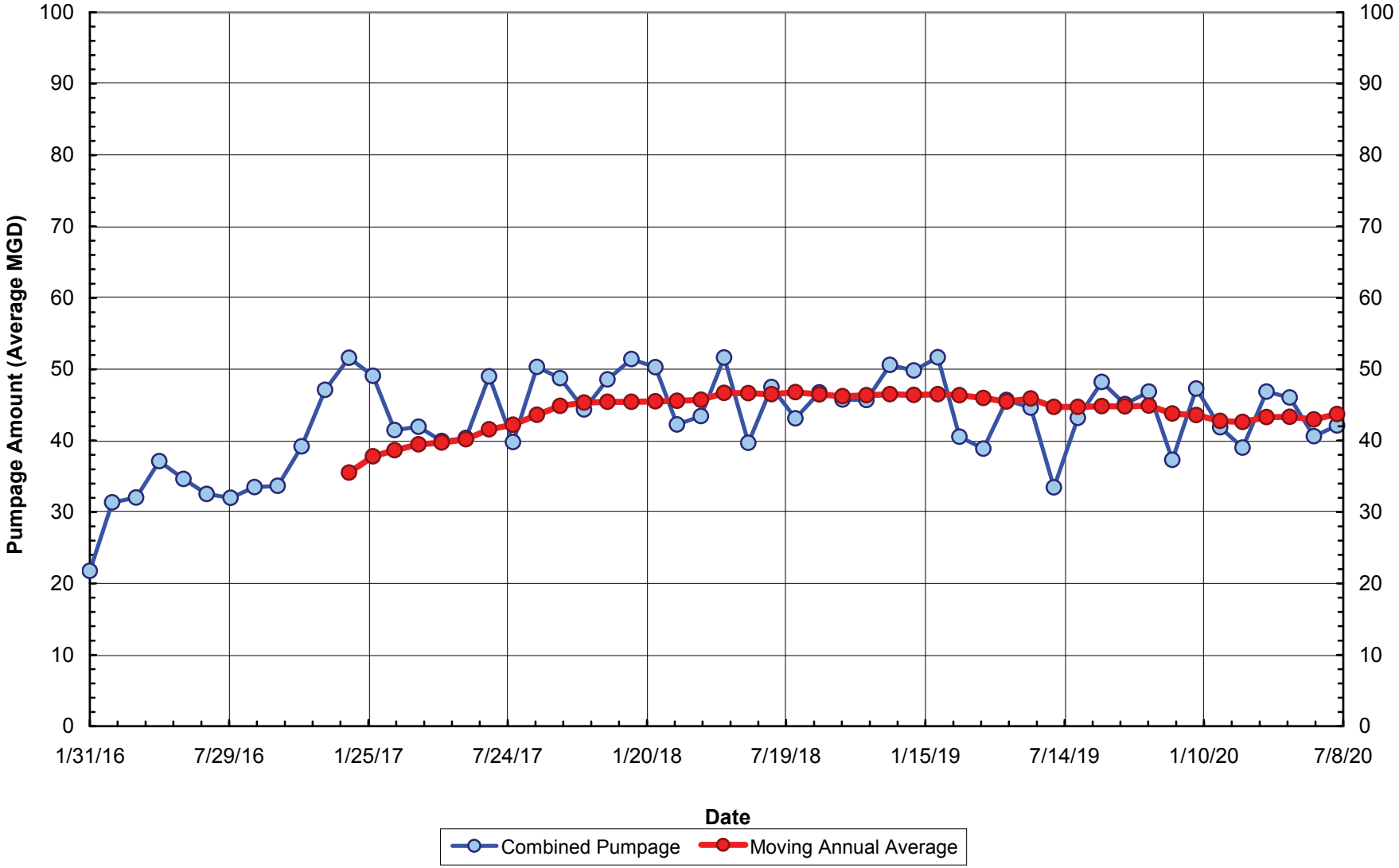


Figure 6

Locations of the Waiale Wells Which Provide Potable Supply for the Maui Business Park

Figure 7. Pumpage Amounts of the Two Waiale Wells Sources for the Maui Business Park's Potable System

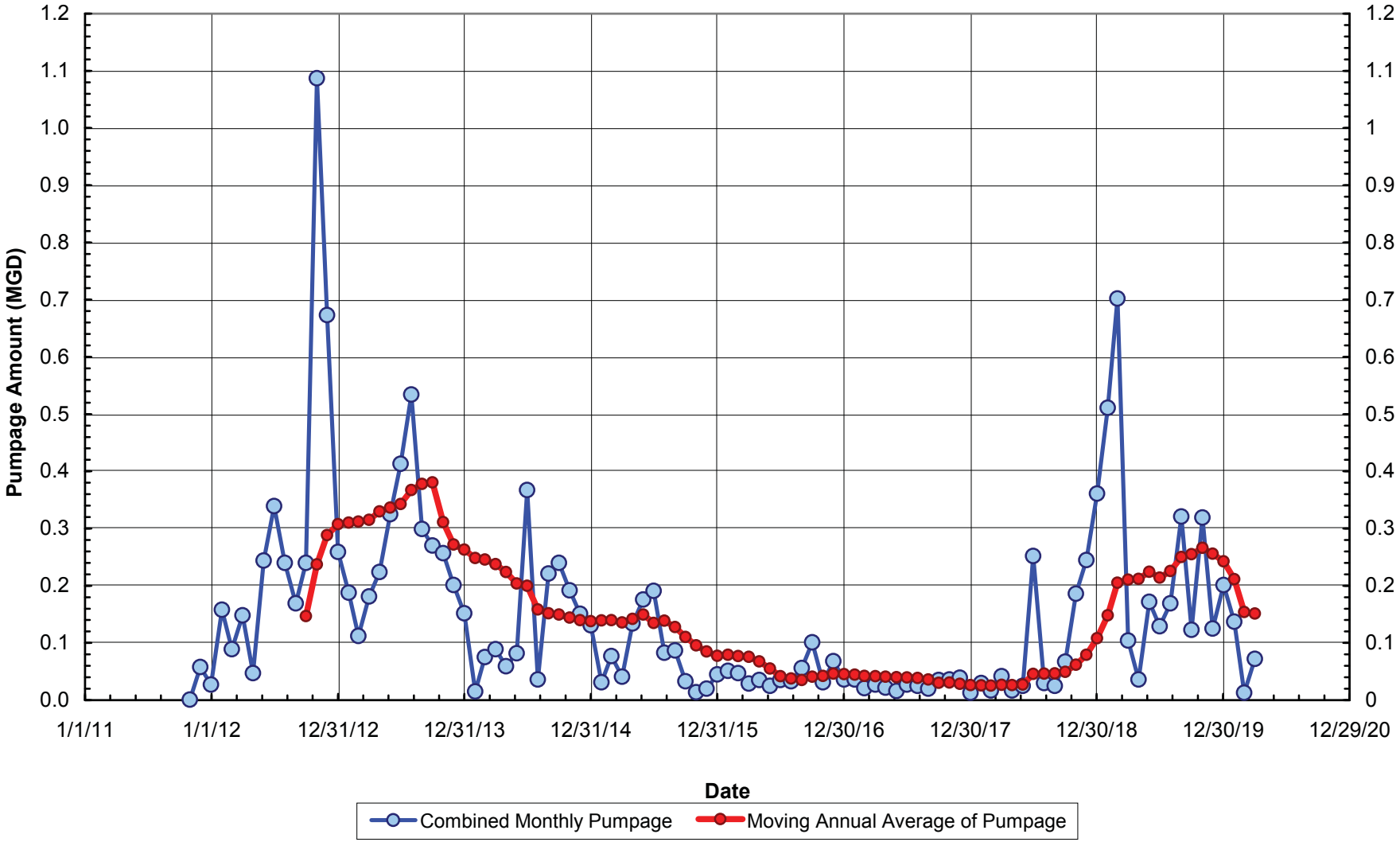
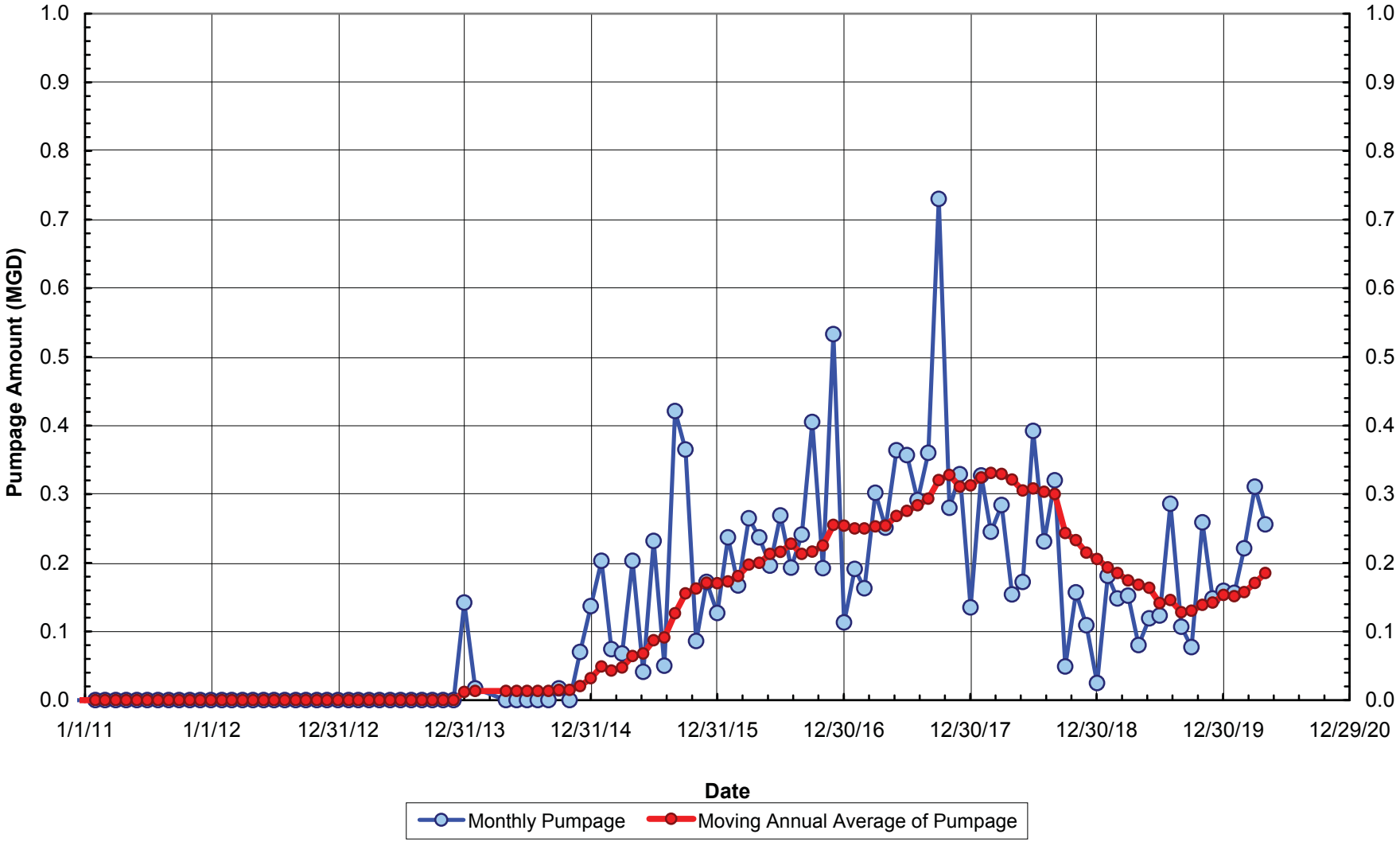


Figure 8

Location of Well 5226-001, the Source of Non-Potable Supply for the Maui Business Park

Figure 9. Pumpage Amounts of Well 5226-001, the Source of Irrigation Supply for the Maui Business Park's Non-Potable System



- The Aquifer's adopted sustainable yield is just 1.0 MGD, a number based exclusively on rainfall recharge.
- In actuality, its actual sustainable yield, considering ongoing sources of recharge which are significantly greater than direct rainfall-recharge, is more likely to be in the range of five to 10 MGD.
- Current pumpage in the Aquifer in the post-plantation period has been about 3.5 MGD (refer back to Figure 4).
- The additional pumpage to supply the Kanaha Hotel would be 0.0339 MGD. This would be an increase of less than one (1) percent of the ongoing total pumpage in the Aquifer.

In addition to the groundwater use amounts described above, there will be a relatively minor impact on water quality in the Kahului Aquifer. To quantify this potential impact, samples of the two potable wells and one non-potable well which will supply the project were taken on July 31, 2020 and analyzed for their nutrient content, silica, and salinity. The laboratory results are listed in Table 1. Results of the two drinking water wells (Waiale 1 and 2) were quite similar. Nitrogen and silica levels in the slightly brackish non-potable well (MBPII) were significantly higher.

Based on the assumptions listed below and using nitrogen and phosphorus as indicators of potential water quality impacts, the changes in these levels in the Kahului Aquifer can be calculated.

- Drafts from the two potable wells will be 31,287 GPD, 30,000 for potable use and 1,287 GPD for landscaping. This withdrawal will remove 0.0704 pounds per day of nitrogen and 0.0022 pounds per day of phosphorus from the Aquifer.
- Drafts for irrigation use by the non-potable well will be 2,653 GPD. This will remove 0.0170 and 0.0001 pounds per day of nitrogen and phosphorus from the Aquifer, respectively.
- Irrigation return from the project's 1.4 acres of irrigated landscaping will add nitrogen and phosphorus to the groundwater as approximated below:
    - It is assumed that all 1.4 acres are fertilized at 6 pounds / year / 1,000 square feet of nitrogen and 0.75 pounds / year / 1,000 square feet of phosphorus.
    - Loss rates of the applied fertilizer below the root zone to the groundwater below are assumed to be 15 percent for nitrogen and two (2) percent for phosphorus. This would add 0.0150 and 0.00025 pounds per day of nitrogen and phosphorus to the Aquifer.
    - Of the applied landscape irrigation (1,287 GPD of potable and 2,653 GPD of non-potable), it is assumed that 15 percent percolates below the root zone to the groundwater below and that removal rates of nitrogen and phosphorus due to plant uptake are 50 and 80 percent, respectively. That calculates to be additions of 0.0124 and 0.0000057 pounds per day of nitrogen and phosphorus, respectively.
- The net result of drafts by wells and irrigation return from the 1.4 acres of irrigated landscaping is that nitrogen removal by the wells will be greater than returned in the landscaped area by 0.060 pounds per day. Similarly, the phosphorus removal will exceed the return by 0.002 pounds per day. Both net amounts are very small and considered to be insignificant.

Table 1

Quality of the Potable and Irrigation Wells Which Supply the
Potable and Non-Potable Water Systems Serving the Maui Business Park

Wells		Sample Date	NO_3 (µM)	NH_4 (µM)	DON (µM)	TN (µM)	PO_4 (µM)	DOP (µM)	TP (µM)	Silica (µM)	Salinity (PPT)
State No.	Name										
5129-004	Waiale 1	7-31-20	158.13	0.10	4.27	162.50	1.91	0.40	2.31	749	0.33
5129-005	Waiale 2	7-31-20	153.75	0.10	5.09	158.93	1.94	0.22	2.15	746	0.29
5226-001	MBPII	7-31-20	449.41	0.09	8.50	458.00	1.59	0.08	1.68	1092	1.14

Notes: 1. Sampled by Tom Nance
2. Laboratory analysis by Marine Consulting and Analytical Resources, LLC
3. Units of micro-molar (µM) can be converted to milligrams per liter (MG/L) by multiplying by the atomic weight and dividing by 1000.

Impact of Wastewater Generation, Treatment, and Disposal

As indicated previously, it is assumed that all of the potable consumption of 30,000 GPD becomes wastewater. The wastewater will be conveyed to the County's Wailuku-Kahului Wastewater Reclamation Facility where it will be treated to secondary (R-2) standards and then disposed of in its onsite battery of eight disposal wells. The disposal wells are operated under UIC Permit No. UM-1398. The wells are arrayed along and near to the shoreline and are designed to deliver the treated effluent at depths from 170 to 380 feet below sea level.

The permitted disposal amount for the facility's eight disposal wells is not to exceed 9.3 MGD on average and not to exceed 15.8 MGD on any given day. Based on information provided by the County's Department of Environmental Management to the State Department of Health, the current average disposal of treated effluent is about 5.7 MGD. Total nitrogen and total phosphorus of the effluent delivered to the disposal wells are on the order of 15 and 4.6 MG/L, respectively. This amounts to approximately 712 pounds per day of nitrogen and 218 pounds per day of phosphorus which ultimately reaches the marine environment offshore. The addition of 30,000 GPD of wastewater generated by the Kanaha Hotel project would increase these amounts by about 0.5 percent, an obviously minor amount.

Quantification of the Increase in Surface Water Runoff

The 5.2-acre project site is presently undeveloped. When rainfall of sufficient runoff producing intensity occurs, the runoff moves westerly across the site into a catch basin on Lau'o Loop. From there it is conveyed in the Maui Business Park's subsurface drainage system to an open, concrete-lined channel to the shoreline. Development of the site will consist of 1.4 acres of landscaped area and the remaining 3.8 acres of impervious building roof tops and paved parking areas. This land use change will increase the frequency and magnitude of runoff producing rainfall events and increase the total volume of runoff on a long-term basis.

Austin Tsutsumi & Associates (2021) calculates the potential increase in the peak rate of runoff for a 50-year, 1-hour rainfall event. The calculated rate for the existing undeveloped project site is 6.88 cubic feet per second (CFS). After development, the calculated peak runoff rate is 17.8 CFS, and increase of 10.9 CFS. The same existing conveyance via the Maui Business Park system and concrete-lined channel to the shoreline would be used. The Austin Tsutsumi & Associates (2021) report also indicates that an onsite storm water quality system would be implemented to reduce the amount of sediment and debris conveyed in the runoff.

The total volume of runoff on a longer-term basis can be approximated with the following. Annual rainfall at the site is approximately 16.5 inches (Giambelluca et al, 2013). If 25 percent of this rainfall on the existing site becomes runoff, that translates to an annual volume of 0.58 million gallons. After development and assuming that 85 percent of the rainfall or impervious surfaces and 33 percent of rainfall on the landscaped areas become runoff, the calculated annual volume is 1.66 MGD, almost three times greater. However, relative to the total volume of runoff conveyed to the Kahului shoreline via the concrete-lined channel, neither the increase in the peak runoff or the annual volume of runoff are considered to be of any environmental consequence.

References

Austin Tsutsumi & Associates, Inc. 2021. Preliminary Engineering and Drainage Report for the Windward Hotel Project, Kahului, Maui, Hawaii. Consultant Report Prepared for R. D. Olson Development.

Engott, J. A. and T. T. Vana. 2007. Effects of Agricultural Land-Use Changes and Rainfall on Ground-Water Recharge in Central and West Maui, Hawaii, 1926-2004. Scientific Investigations Report 2007-5103, U. S. Geological Survey.

George A. L. Yuen and Associates, Inc. 1990. Water Resources Protection Plan, Volumes I and II. Consultant Report Prepared for the Commission on Water Resource Management, DLNR, State of Hawaii.

Giambelluca, T. W., Q. Chen, A. G. Frazier, J. P. Price, Y-L. Chen, P-S. Chu, J. K. Eischeid, and D. M. Delparte. 2013. Online Rainfall Atlas of Hawaii. Geography Department, University of Hawaii at Manoa.

Johnson, A. G., J. A. Engott, and M. Bassiouni. 2014. Spatially distributed Groundwater Recharge Estimated Using a Water Budget Model for the Island of Maui, 1978-2007. Scientific Investigations Report 2014-5168, U. S. Geological Survey.

Takasaki, K. J. 1972. Preliminary Report on The Water Resources of Central Maui. Circular C62. Prepared by the U. S. Geological Survey in cooperation with the Division of Water and Land Development Department of Land and Natural Resources, State of Hawaii.

Townscape, Inc. 2019. Water Resources Protection Plan 2019 Update. Consultant Report Prepared for the Commission on Water Resource Management, DLNR, State of Hawaii.

Wilson Okamoto Corporation. 2008. Water Resource Protection Plan. Consultant Report Prepared for the Commission on Water Resource Management, DLNR, State of Hawaii.

Appendix 18

Alternative Approaches for Water Supply

Tom Nance Water
Resource Engineering

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Original will not be mailed to you.

April 7, 2021
20-080.r3 | 17-53

MEMORANDUM

To: Anthony Wrzosek – R. D. Olson Development

From: Tom Nance

Subject: Alternative Approaches for Water Supply for the Kanaha Hotel at Kahului Airport from A&B's Private Potable and Irrigation Systems

Introduction

This memo and its attachments evaluate two alternatives to provide the potable and irrigation supply requirements of the Kanaha Hotel at Kahului Airport entirely from A&B's private potable and irrigation systems that were developed for A&B's Business Park. Four of the five lots that R. D. Olson has acquired will be used for the Hotel. The four lots have a total area of 5.20 acres (refer to Table 1). The combined allocated supply for these four lots is not sufficient for the project.

Required Supply for the Kanaha Hotel at Kahului Airport

My memo of July 3, 2019 provided an analysis of metered potable water use of the Courtyard by Marriot in Kahului (138 rooms, of which four included kitchen facilities) and the Residence Inn at Wailea (200 rooms, all of which have kitchen facilities). Water use rates by these hotels are considered to be representative of what the use will be by the Kanaha Hotel. Average and maximum monthly use rates of potable water for these two hotels are shown graphically on Figure 1 and also tallied below:

Hotel	Average Monthly Use Rate per Room (GPD)	Maximum Monthly Use Rate per Room (GPD)
Courtyard by Marriot	119	147
Residence Inn	112	152

Very conservatively, I assumed that the year-round average potable use by the Kanaha Hotel would be 150 gallons per day (GPD) per room, essentially equivalent to the maximum monthly use rate at either of the two hotels. It is also worth noting that the use rate per room with or without kitchen facilities was about the same. For the assumption of a 150 GPD use rate per room, average potable use for the Kanaha Hotel at Kahului Airport is conservatively estimated to be 30,000 GPD. Irrigation use on its 1.40 acres of landscaping, at 3000 GPD per acre, would be 4200 GPD. Both alternatives described in the sections following are based on providing these required supply amounts.

Alternative 1: Increase the Pump Capacities of the Potable System's Two Wells

The water system's potable well pumping capacity must be sufficient to provide the maximum day supply requirement. This requirement is defined as providing 1.5 times the average use in a 24-hour pumping day. For all of A&B's Business Park lots, the projected average day potable use at full build out and occupancy was computed by Austin Tsutsumi & Associates to be 389,685 gallons per minute (GPM). With the 1.5 factor, the maximum day use of 584,528 GPD would require pumping continuously over 24 hours at 406 GPM. Each of the system's two wells is outfitted with a 450 GPM pump. This enables each well to provide all of the system's supply requirement with the other well providing 100% backup capacity.

Each of the wells was originally pump tested at about 510 GPM for 48 hours continuously. If the pump capacities were increased from 450 to 500 GPM, the excess capacity would be more than sufficient to cover the water use of the Kanaha Hotel. Although this alternative appears to be a possibility in terms of the quantity of water that could be produced, it is not recommended for the salinity concerns explained in the discussion of Alternative 2 below.

Alternative 2: Develop a New Well for the A&B Potable System at an Appropriate Distance from the System's Two Existing Wells

The potable system's two existing wells are identified as Waiale Well Nos. 1 and 2 (State Nos. 5129-004 and -005). They are both located in the system's offsite well and tank lot and draw water from the Kahului Aquifer. Groundwater in this aquifer exists as a relatively thin basal lens overlying saline groundwater beneath it. As such, the salinity of water pumped by wells in the aquifer will increase if over pumpage occurs or if recharge to the aquifer is reduced significantly.

Historically, the aquifer was pumped by more than 10 HC&S well facilities at combined rates in excess of 50 million gallons per day for decades and with offsetting recharge to the aquifer occurring by percolation to groundwater of excess irrigation water applied on the HC&S fields. With the termination of HC&S operations and the as yet unknown amounts of future water use by agriculture on the fallowed fields, there is a legitimate concern regarding the long-term salinity of wells drawing water from this aquifer. Because of this, monitoring pumped water salinity as a function of pumped water amount must be continuously and accurately done to detect any long-term adverse trend. I have only limited data for the performance of the two Waiale Wells (from February 2012 through January 2016). Unfortunately, the data are erratic and not reliable, even after I eliminated obvious outliers (Figure 2). No obvious trend of pumped water salinity is defined, but updating the data with consistently accurate determinations of salinity should be undertaken.

The back-up capacity provided by the two wells at the same site covers the possibility of pump or motor failures. However, due to their close proximity to each other, they do not address the long-term possibility of increasing salinity in the aquifer. Such an increase would require pumpage at individual wells to be appropriately reduced. If the A&B system were to have a third well located at an appropriate distance to avoid any interference effect on the two existing wells, then the system's supply requirement could be met by reduced pumpage from the third well plus reduced pumpage by one or the other of the two existing wells. This would be a significant benefit to the system as it would be the only way, except for reverse osmosis filtration, to deal with a salinity increase in the aquifer to an unacceptable level. One possible location for the third well is shown on Figure 3. Other locations could be evaluated if necessary

to avoid conflicts with development plans of A&B. It is my understanding that an agreement with A&B has been reached to implement this alternative.

Attachments: Table 1 and Figures 1-3

Email Copy: Greg Fukumitsu and Todd Yonamine – TNWRE Inc.

Table 1

Allocated Potable and Irrigation Amounts for the
R. D. Olson Lots in A&B's Business Park

TMK	Lot Area (Acres)	Allocated Supply Amounts (GPD)	
		Potable	Irrigation
R. D. Olson Lots			
3-8-103:015	1.46	4292	657
:016	2.44	7174	1098
:017	0.65	1911	292
:018	0.65	1911	292
Total	5.20	15,288	2340
Three Adjacent Lots			
3-8-103:019	1.33	3910	598
:029	1.98	5821	891
:030	1.03	3028	464
Total	4.34	12,759	1953
Combined Total	9.54	28,048	4293

Figure 1. Monthly Average Metered Potable Water Use by the Courtyard by Marriot in Kahului and the Residence Inn Wailea

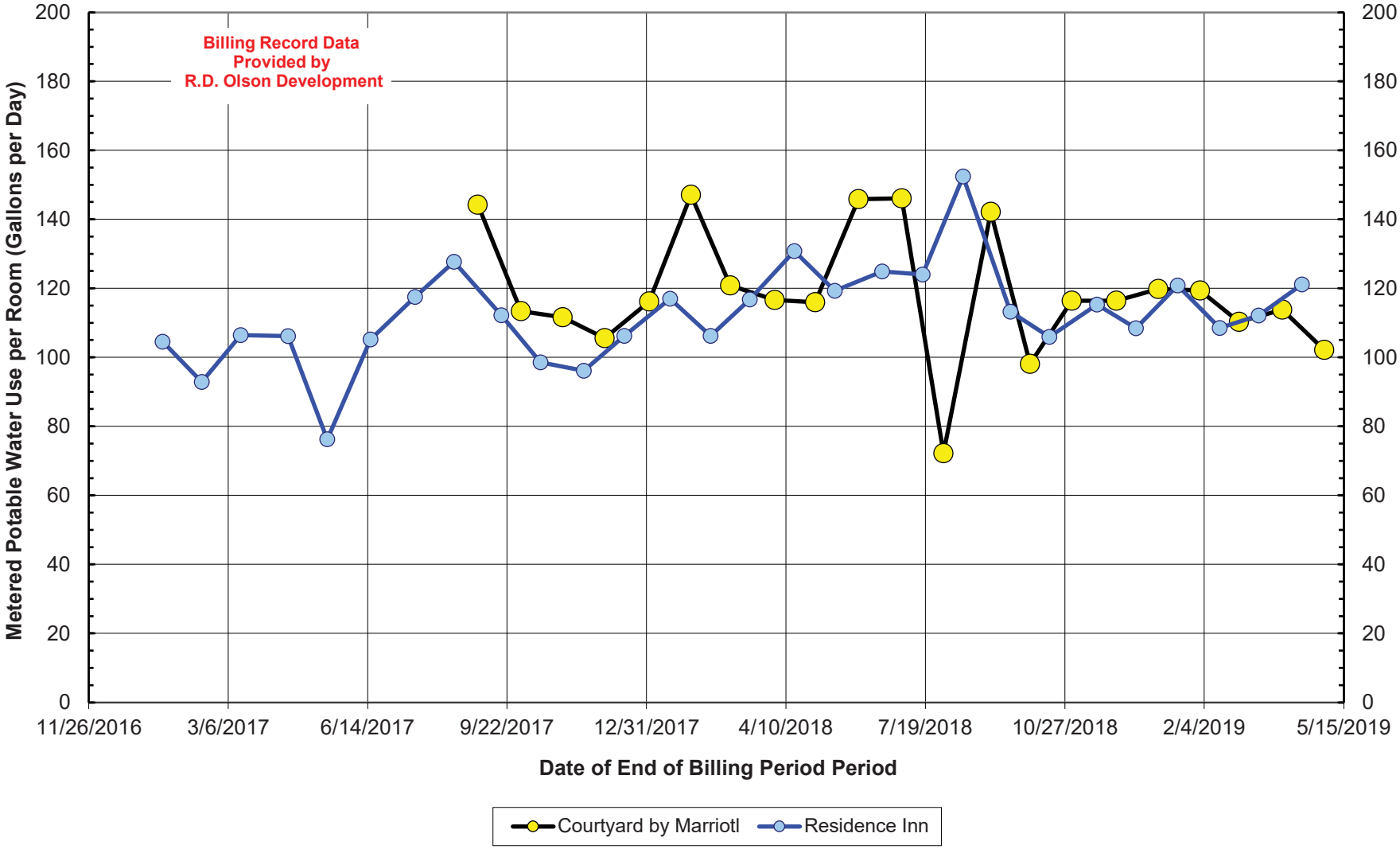


Figure 2. Combined Monthly Average Pumpage and Chlorides of Waiale Wells 1 and 2 from February 2012 through January 2016

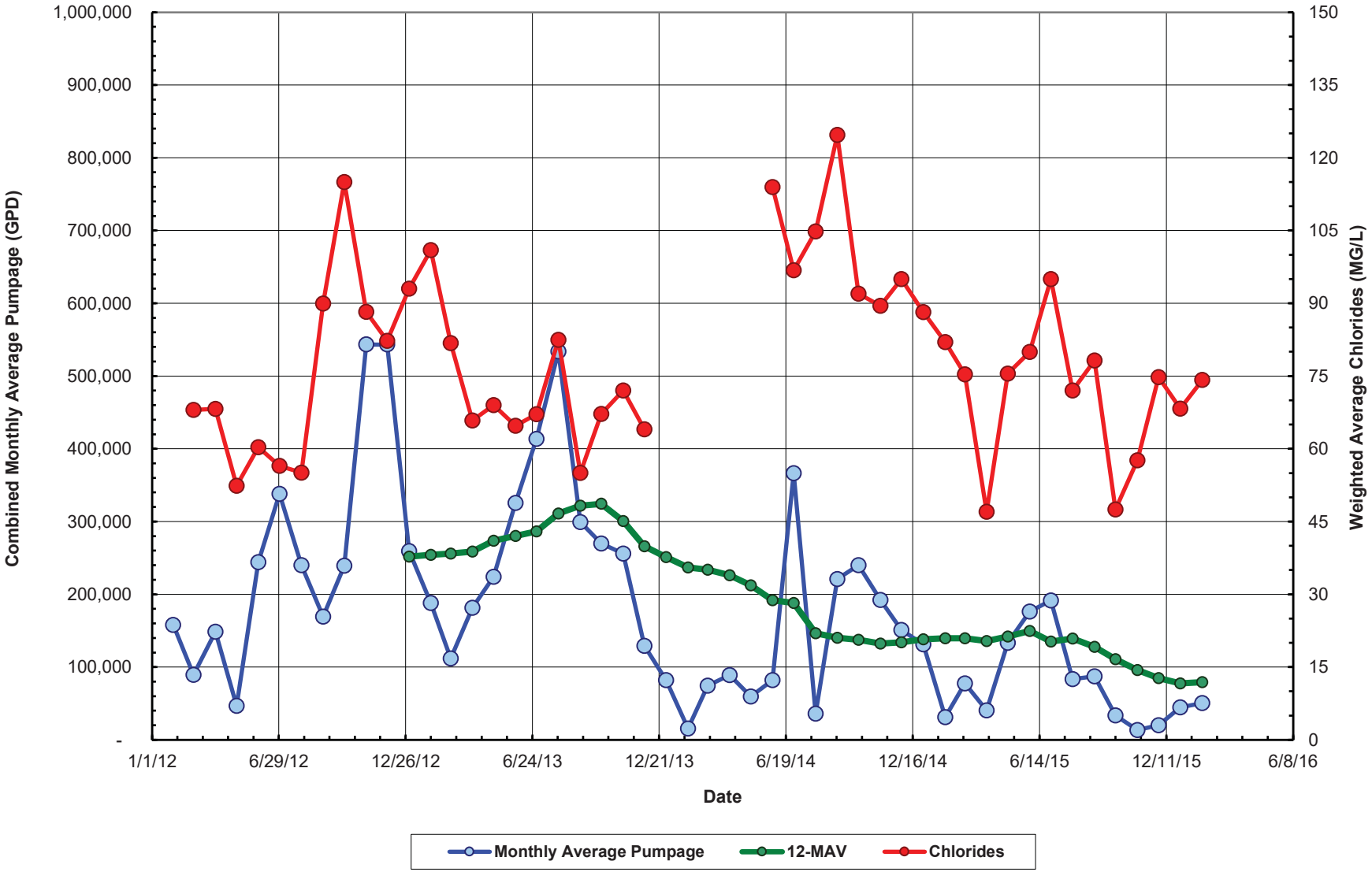
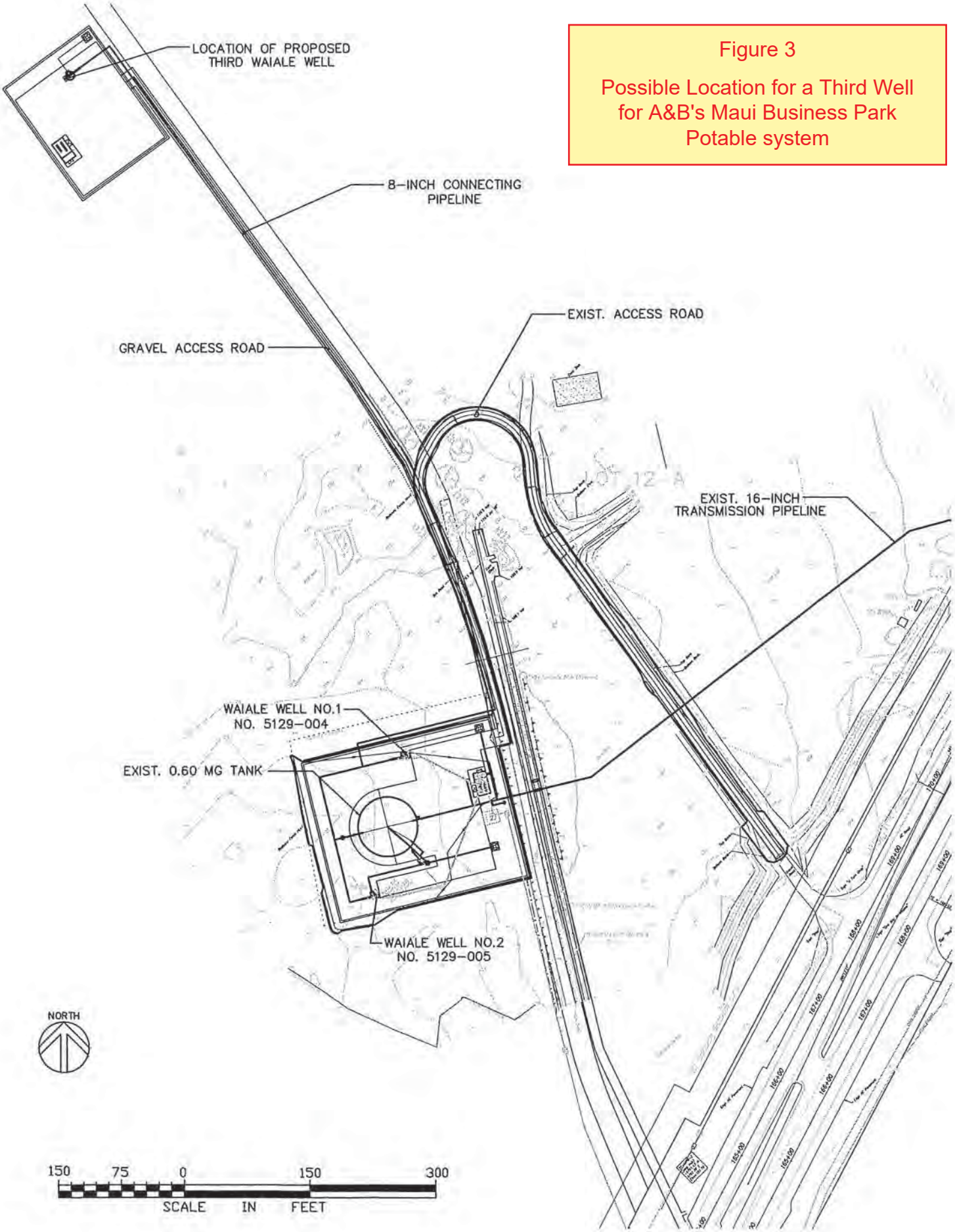


Figure 3

Possible Location for a Third Well for A&B's Maui Business Park Potable system



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Appendix 19

Baseline Assessment of Marine Water Chemistry
and Marine Biotic Communities

BASELINE ASSESSMENT OF MARINE WATER CHEMISTRY
KANAHĀ HOTEL AT KAHULUI AIRPORT
WAILUKU-KAHULUI, MAUI, HAWAII

Prepared for:

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I. INTRODUCTION AND PURPOSE

The Kanahā Hotel at Kahului Airport (formerly called the Windward Hotel) is a hotel proposed to be built on vacant parcels within the Maui Business Park, Kahului, Maui, State of Hawaii. The subject parcels lie within the State Urban District. They are designated Light Industrial in the Wailuku-Kahului Community Plan and are zoned M-1 Light Industrial by Maui County. The construction timeframe is anticipated to start in Quarter 1 of 2023 and the hotel will open for business in Quarter 1 of 2025.

The proposed action is to develop a 200-unit Hotel with associated infrastructure and landscaping. The proposed hotel building varies from one (1) two (2) and four (4) stories in height and will be massed toward the center of the Project Site with generous setbacks on all sides accommodating the width of a landscape buffer, the width of two parking stalls and a parking lot drive isle. Amenities and uses include but are not limited to, swimming pool, dining area, and other typical and similar incidental support services and accessory uses for hotel operation. Figure 1 shows the location of the project site in relation to the downslope coastal area.

The purpose of this document is to provide the results of an assessment of marine and pond water quality within the ecosystems downslope from the Kanahā Hotel at Kahului Airport project site. Water chemistry was assessed by collecting samples along three transects extending from the shoreline to the offshore open ocean. Sampling was conducted on two separate occasions spaced approximately three years apart. The purpose of the assessment is to provide a quantitative depiction of the existing condition of marine water chemistry in the area that has the potential to be affected by the proposed hotel. Evaluation of the existing condition of the water chemistry provides an insight into the physical and chemical factors that influence the marine setting. In addition, by collecting two identical sets of samples separated by a period of approximately three years, it is possible to evaluate if there have been changes to water chemistry from factors other than the proposed project. Understanding the existing physical and chemical conditions of the marine environment provides a basis for predicting the potential affects that might occur as a result of the proposed Kanahā Hotel at Kahului Airport project.

II. WATER QUALITY/CHEMISTRY METHODS

Water chemistry field collection was conducted on October 2, 2017, and October 23, 2020. All samples were collected by investigators working from a personal watercraft (jet-ski). Water chemistry was assessed along three survey transects oriented perpendicular to the shoreline. The transects originated at the sand-water interface of the beach and extend approximately 150 meters (m) offshore. Transect 1 was located off of Kanahā Beach Park downslope from the runways of the Kahului airport. Transect 2 was located off a large drainage channel that extends to the shoreline from the airport area (although the channel was dry during sampling). Transect 3 was located downslope from the Kanahā Pond State Wildlife Sanctuary at the

eastern side of the revetment separating the retention basin of the Wailulu-Kahului Wastewater Reclamation Facility (Figure 1).

Water samples were collected at seven locations along each transect (Tables 1 and 2). Such a sampling scheme is designed to span the greatest range of salinity with respect to potential freshwater efflux at the shoreline. Sampling was more concentrated in the nearshore zone because this area receives the majority of groundwater discharge, and hence is most important with respect to identifying the effects of shoreline modification. At sampling stations within 15 m of the shoreline, water samples were collected at a single depth approximately in the mid-point of the water column. Beyond 15 m from the shoreline two samples were collected at each station; a surface sample was collected within 10 centimeters (cm) of the air-water interface and a bottom sample was collected within 10 cm of the seafloor.

During the 2017 survey, water samples were also collected at four locations in Kanahā Pond (Figure 1). One sample was collected from discharge of a pipe at the makai end of the pond that consists of pumped basal groundwater. One sample was collected near the shoreline of the makai side of the pond near the viewing kiosk. One sample was collected at the mauka side of the pond and one sample was collected at the discharge from the pond to the ocean.

Water quality constituents evaluated included all specific criteria designated for open coastal waters in Chapter 11-54, Section 06 (b) (Open Coastal waters) of the State of Hawaii Department of Health (DOH) Water Quality Standards. These criteria include: total nitrogen (TN), nitrate + nitrite nitrogen (NO_3^- + NO_2^-, hereafter referred to as NO_3^-), ammonium nitrogen (NH_4^+), total phosphorus (TP), Chlorophyll a (Chl *a*), turbidity, temperature, pH, and salinity. In addition, silica (Si) and orthophosphate phosphorus (PO_4^{-3}) were also reported because these constituents are sensitive indicators of biological activity and the degree of groundwater mixing.

Water samples were collected by filling pre-rinsed 500-milliliter (ml) acid-washed, triple rinsed, polyethylene bottles and stored on ice. The 2017 sample set was analyzed for Si, NH_4^+, PO_4^{-3} and NO_3^- with a Technicon Autoanalyzer using standard methods for seawater analysis (Strickland and Parsons 1968, Grasshoff 1983). TN and TP were analyzed in a similar fashion following digestion. Total organic nitrogen (TON) and total organic phosphorus (TOP) were calculated as the difference between TN and dissolved inorganic N and TP and dissolved inorganic P, respectively.

Water for other analyses was sub-sampled and kept chilled until analysis. Chl *a* was measured by filtering enough water through glass-fiber filters to detect color; pigments on filters were extracted in 90% acetone in the dark at -20°C for 12-24 hours. Fluorescence before and after acidification of the extract was measured with a Turner Designs fluorometer. Salinity was determined using an AGE Model 2100 laboratory salinometer with a readability of 0.01parts per thousand (‰ or ppt). Turbidity was determined using a 90-degree nephelometer and reported in nephelometric turbidity units (NTU) (precision of 0.01 NTU). Vertical profiles of salinity,

temperature, and dissolved oxygen were acquired using an RBR-Concerto data logger calibrated to factory standards.

The 2020 sample set was analyzed for Si, NH_4^+, PO_4^{-3} and NO_3^- using a Seal Analytical AutoAnalyzer 3 HR (AA3HR) using standard methods for seawater analysis. TN and TP were analyzed in a similar fashion following digestion. Total organic nitrogen (TON) and total organic phosphorus (TOP) were calculated as the difference between TN and dissolved inorganic N and TP and dissolved inorganic P, respectively.

Water for other analyses was kept chilled until analysis. Chl *a* was measured by filtering 150 ml through a GFF/F glass-fiber filters; pigments on filters were extracted in 90% acetone in the dark at -20°C for 24 hours. Fluorescence of the extract was measured with a Turner Designs Trilogy Fluorometer model 7200-000 equipped with an extracted chlorophyll non-acidification module. Salinity was determined using a Mettler Toledo Seven Excellence Multi-parameter meter with an InLab 731-ISM conductivity probe, calibrated to a Hach Instruments traceable salinity standard of 35.00 parts per thousand (‰ or ppt), 53.0 mS/cm, with a readability of 0.01 ppt. Turbidity was determined using a Hanna Instruments Model #HI88703 Turbidimeter, and reported in NTU (precision of 0.01 NTU).

In situ field measurements of water temperature, pH, dissolved oxygen, and salinity were acquired using an RBR Concerto data logger calibrated to factory specifications. The logger has a resolution of 0.001°C, 0.001pH units, 0.001% saturation, and 0.001 ppt.

The EPA and Standard Methods (SM) methods that were employed for chemical analyses, as well as the detection limits, are listed in the Code of Federal Regulations (CRF) Title 40, Chapter 1, Part 136. They are as follows:

Parameter	***Method***	***Detection Limit***
NH_4^+	EPA 350.1, Rev. 2.0 or SM4500-NH3 G	0.042 µg/L
$NO_3^- + NO_2^-$	EPA 353.2, Rev. 2.0 or SM4500-NO3F	0.084 µg/L
PO_4^{-3}	EPA 365.5 or SM4500-P F	0.28 µg/L
Total P	EPA 365.1, Rev. 2.0 or SM4500-P E J	0.93 µg/L
Total N	SM 4500-N C.	1.96 µg/L
Si	EPA 370.1 or SM 4500 SiO2 E	0.45 µg/L
Chlorophyll *a*	SM 10200	0.006 µg/L
pH	EPA 150.1 or SM4500H+B	0.002 pH units
Turbidity	EPA 180.1, Rev. 2.0 or SM2130 B	0.008 NTU
Temperature	SM 2550 B	0.01 degrees centigrade
Salinity	SM 2520	0.003 ppt
Dissolved Oxygen	SM4500 O G	0.01% sat.

All fieldwork was conducted by Dr. Steven Dollar and Ms. Andrea Millan. All laboratory analyses in 2017 were conducted by Marine Analytical Specialists located in Honolulu, HI (Labcode: HI 00009). All laboratory analyses in 2020 were conducted by Marine Consulting and Analytical Resources located in Honolulu, HI (Labcode: HI 00078). Both analytical laboratories have acceptable ratings from EPA-compliant proficiency and quality control testing.

III. RESULTS

A. *Distribution of Chemical Constituents*

Tables 1 and 2 show results of all water chemistry analyses on samples collected off the Kanahā Hotel at Kahului Airport site in October 2017, while Tables 3 and 4 show results for analyses at the same locations in October 2020. Tables 1 and 3 show concentrations of nutrients as micromoles (µM), while Tables 2 and 4 shows nutrient concentrations as micrograms per liter (µg/L). Concentrations of eight dissolved nutrient constituents are plotted as functions of distance from the shoreline in Figures 2 (2017) and 3 (2020); values of salinity, Chl *a*, turbidity, pH, temperature, and dissolved oxygen are plotted as functions of distance from shore in Figures 4 (2017) and 5 (2020).

Several patterns of distribution are evident for dissolved nutrients. Overall, the patterns of distribution and magnitude of concentrations are similar for samples collected in 2017 and 2020 (Tables 1-4, Figures 2 and 3). The only major difference is the elevated values of several nutrient constituents (PO_4^{-3} and NH_4^{+}) at the shoreline of Transect 1 in 2017 that did not occur in 2020. During both years the values of Si and NO_3^{-} on all three transects display slightly elevated concentrations in the samples collected at and near the shoreline. From a distance of 20 m from the shoreline to the outer limit of sampling (150 m), the concentrations of each nutrient show little variation (Figure 2). In 2017 the widest range of NO_3^{-} was about 1.8 µM (25 µg/L) from the shoreline to 150 m offshore, and occurred on Transect 1. In 2020 the range of NO_3^{-} was about 1.3 µM (19 µg/L) and occurred on Transect 3 (Tables 1-4). The exception to the pattern of increasing concentrations with distance from shore occurred for Si on Transect 3 in 2017 where lowest values were near the shoreline relative to offshore samples. The reversed pattern of distribution suggests that a different water source was entering the shoreline in this area (Figure 2). This pattern was not apparent in 2020, suggesting that the nearshore water composition detected in 2017 is not a permanent feature of the area.

During both years concentrations of TN are essentially the same as total organic nitrogen (TON) indicating that the contribution of inorganic N (NO_3^{-} and NH_4^{+}) to TN is small. Concentrations of TP reflect an equal contribution from TOP and inorganic PO_4^{-3} (Tables 1-4). Salinity displays the opposite trend as inorganic nutrients, with lowest values near the shoreline and increasing values with distance from shore (Figures 3 and 5). As there are no streams or drainage channels that were discharging to the ocean in the vicinity of the sampling area, the gradients of salinity reflect input of groundwater to the ocean near the shoreline. Low salinity groundwater, which

typically contains high concentrations of the inorganic nutrients Si, NO_3^- and PO_4^{-3}, percolates to the ocean at the shoreline, resulting in a nearshore zone of mixing. In many areas of the Hawaiian Islands, such groundwater percolation results in steep horizontal gradients of increasing salinity and decreasing nutrients with increasing distance from shore. While relatively weak, such patterns are evident for Si, NO_3^-, and PO_4^{-3} on all three transects in 2020 and for NO_3^- and PO_4^{-3} on Transects 1 and 2 in 2017. The elevated concentration as well as the reversal of the pattern for Si at Transect 3 relative to the other two transect sites in 2017 indicates a different composition of groundwater entering the shoreline in this area.

As the sampling area off the Kanahā Hotel at Kahului Airport site is an open coastal area exposed to wind and wave, the zone of groundwater-ocean water mixing is small, extending only several meters from shore. These gradients are far less pronounced than at other areas of Maui with either semi-enclosed embayments or less vigorous physical mixing processes.

At all three transects during both years, the distribution of Chl *a* is highest near the shoreline and decreases with distance offshore. Overall, values of Chl *a* are similar at all transect sites within each year, with the exception of a single sample near the shoreline of Transect 3 in 2017, which displayed an anomalously high value (Table 1, Figure 4). Turbidity displays a similar trend, although the patterns are different between years. In 2017 all of the values of turbidity are lower on Transect 3 than on the other two transects, while in 2020 the values of turbidity are distinctly higher on Transect 3 (Tables 1and 3, Figures 4 and 5). Temperature exhibits a consistent pattern with highest values at the shoreline and progressively decreasing values with distance from shore. During both years, temperature was higher on Transect 3, although the overall temperature from the entire data set was elevated in 2017 relative to 2020 (Tables 1and 3, Figures 4 and 5). In 2017 dissolved oxygen was near 100% saturation near the shoreline at all three transect sites, and decreased sharply from a distance of approximately 20 m from shore to the seaward limits of the survey. In 2020, there was less of a decrease in dissolved oxygen at offshore sites. The decline beyond the shoreline is likely a result of respiration of biota on the shallow reef platform during the calm conditions of the early morning hours when sampling was conducted.

Of note is that during both years that the surveys took place, it is apparent that there is a difference in composition of groundwater mixing in the ocean at Transect 3 relative to the other sites. With consistently higher Si and higher temperature it is apparent that different shoreline factors, or physical conditions, are differentially affecting this area. As this site lies adjacent to the Wailuku-Kahului Wastewater Reclamation Facility (WWRF), and in immediate proximity to a revetment of the retention pond drying basin, it is possible that there is some effect of this operation to adjoining water. In addition, Transect 3 lies directly downslope from Kanahā Pond. However, if the Reclamation facility or the wetland pond is contributing some material input to the marine system, it is not in the form of nitrogen or phosphorus, which are the nutrients that are typically found in high concentrations in sewage effluent.

It is also important to note that while there are some differences in the characteristics of the patterns of water chemistry in the nearshore waters off the Kanahā Hotel at Kahului Airport site, the overall composition of nearshore waters does not reflect significant input of materials from land.

Tables 1 and 3 also show results of samples collected from the mauka and makai sides of Kanahā Pond in 2017. Inspection of this data reveals several points about the dynamics of water chemistry within the pond. Input water to the pond consists of basal groundwater. It can be seen that such water contains very high concentrations of inorganic nutrients (Si, NO_3^-, and PO_4^{-3}) and low concentrations of inorganic nutrients (NH_4^+, TON, TOP). During transit time through the pond, the groundwater undergoes alteration by biotic processes, which results in uptake of inorganic nutrients that are converted to organic nutrients. Waters leaving the pond at the makai discharge point contain essentially no NO_3^- and relatively high concentration of NH_4^+, TON, and TOP. As water with such composition is distinctly different that groundwater, pond water would represent a different material source than groundwater as they mix with ocean water.

B. Conservative Mixing Analysis

A useful treatment of water chemistry data for interpreting the extent of material inputs from land is application of a hydrographic mixing model. In the simplest form, such a model consists of plotting the concentration of a dissolved chemical species as a function of salinity. Using this technique it is possible to evaluate the extent of nutrient input from sources other than natural groundwater efflux (Officer 1979, Smith and Atkinson 1992, Dollar and Atkinson 1992).

Comparison of the curves produced by such plots with conservative mixing lines provides an indication of the origin and fate of the material in question. Figure 6 shows the concentrations of four dissolved nutrient constituents (Si, NO_3^-, NH_4^+, and PO_4^{-3}) from all sampling sites collected during the October 2017 and October 2020 surveys plotted as functions of salinity. Each mixing plot also shows a conservative mixing line that is constructed by connecting the endpoint concentrations of open ocean water and basal groundwater that is pumped into Kanahā Pond (Tables 1 and 3). It is assumed that the groundwater source is taken from the aquifer mauka of any potential input from human activities.

If the parameter in question displays purely conservative behavior (no input or removal from any process other than physical mixing), and the only source of groundwater is from the aquifer where the endpoint well is located, data points should fall on the conservative mixing line. If, however, external material is added to the system, data points will fall above the mixing line. If material is being removed from the system by processes such as biological uptake, data points will fall below the mixing line.

Dissolved Si represents a check on assumptions of the method, as it is present in high concentration in groundwater, but is not a major component of fertilizer, and is not generally

utilized rapidly within the nearshore marine environment by biological processes. For the October 2017 sampling, data points from Transects 1 and 2 fall in the same linear array just below the conservative mixing line. Samples from Transect 3, however, fall in a distinctly non-linear array above the conservative mixing line (Figure 6). With the exception of a single sample point from Transect 3, all of the data points for the 2020 survey fall near or on the conservative mixing line. The distinctive linearity of the data points of Si from Transects 1 and 2 as functions of salinity indicate that water at these sites is a mixture of oceanic water and groundwater discharging at the shoreline. The lack of a linear relationship for the samples from Transect 3 with the conservative line suggests that the source of Si in the marine samples is not from basal groundwater, but rather from another source that is not a function of salinity. The absence of upward curvature of the linear data array for Transects 1 and 2 indicate that there is little detectable uptake of Si in the ocean.

NO_3^- is the form of nitrogen most common in agricultural fertilizer mixes and sewage effluent, and is the most mobile form of nitrogen within soils and groundwater. Unlike the plots of Si, data points for NO_3^- as functions of salinity do not prescribe the same distinct linear arrays for any of the transects during either survey year. In addition, there is not a clear distinction between the data for the three transects as there was for Si. The lack of clear-cut linear arrays indicates that there is only a relatively small amount of NO_3^- entering the marine system through groundwater discharge. The lack of a distinct differentiation between the plotted values from Transect 3 relative to Transects 1 and 2 suggest that there is not a subsidy of NO_3^- added to the marine environment in the proximity of the Wailuku-Kahului WWRF (Figure 6).

The other form of dissolved nitrogen, NH_4^+, shows a distinctly different relationship with salinity than both Si and NO_3^-. There is less difference in the concentrations of NH_4^+ between open ocean water and groundwater, resulting in a conservative mixing line with less slope than either Si or NO_3^- (Figure 6). Plots of NH_4^+ as a function of salinity reveal little indication of a linear pattern with respect to salinity during the 2017 and 2020 sampling events. Concentrations of NH_4^+ in the ocean samples occurred in a randomly scattered pattern on and above the conservative mixing line, indicating that concentrations of NH_4^+ are often higher in the ocean than in groundwater. These relationships suggest that there is not a source of NH_4^+ to the ocean originating from land, particularly the Wastewater Reclamation Facility.

PO_4^{-3} is also a component of fertilizer and treated effluent, but because of a high absorptive affinity in soils, it is usually not found to leach into groundwater to the extent that NO_3^- does. In the sample set collected in October 2017, no linear pattern between salinity and PO_4^{-3} was evident (Figure 6). Rather, in most samples on Transects 1 and 2 there is little variation in concentration of PO_4^{-3} in any of the samples, regardless of salinity. Data points for Transect 3 show a slight indication of a linear relationship with salinity, although most of the samples lie close to the conservative mixing line. Data from the October 2020 sample set shows a difference from the October 2017 set in that samples from Transect 3 fall above the conservative mixing line (Figure 6). The position of these data points indicates that there is an apparent subsidy of PO_4^{-3} to the nearshore ocean that is not from natural groundwater.

C. Compliance with DOH Criteria

State of Hawaii Department of Health Water Quality Standards (HDOH-WQS) that apply to the areas offshore of the Kanahā Hotel at Kahului Airport project site are listed as "open coastal water" in HRS Chapter §11-54-6(b). Two sets of standards are listed depending on whether an area receives more than 3 million gallons per day (mgd) of freshwater input per shoreline mile ("wet standards"), or less than 3 mgd of freshwater input per shoreline mile ("dry"). While the study area off the north coast of Maui probably receives less than 3 mgd per mile, both wet and dry criteria were used for this evaluation.

The HDOH-WQS are also separated into three standards: geometric means, "not to exceed more than 10% of the time," and "not to exceed more than 2% of the time." As all of these classifications require multiple samplings, they cannot be used for a strict evaluation of whether a single sampling is within compliance standards. However, these values provide a guideline to evaluate the overall status of sampled waters in terms of the relation with State standards.

Shown in Tables 1-4 are all values that exceed the most stringent numerical criterial (not to exceed more than 10% of the time under dry conditions) and the least stringent criteria (not to exceed more than 2% of the time under wet conditions). In 2017 concentrations of nitrate nitrogen (NO_3^-) exceeded the most stringent standard (NTE 10% Dry) within 10 meters of the shoreline on all three transect sites. On Transects 1 and 2 this standard for NO_3^- was exceeded for all surface samples. Only a single sample at the shoreline of Transect 1 exceeded the least stringent standard (NTE 2% wet). Ammonium nitrogen (NH_4^+), TN, and turbidity from shoreline samples on Transect 1 and Chl *a* at the shoreline of Transects 2 and 3 also exceed the most stringent 10% limit.

Considering the 2020 sample set, concentrations of NO_3^- were consistently above the NTE 10% standard on all three transects (Tables 2 and 4). Turbidity and Chl *a* also were consistently above DOH standards through the length of all three transects. The differences in values of turbidity and Chl *a* between the two surveys is likely a result of varying oceanic conditions resulting in different levels of phytoplankton in nearshore waters.

As discussed above, the elevated concentration of dissolved nutrients, particularly NO_3^-, near the shoreline is likely a result of mixing of groundwater with ocean water. The elevated concentrations of turbidity near the shoreline are likely a result of resuspension of fine-grained naturally occurring sediment by breaking waves in the nearshore zone.

Overall, all of the areas within the scope of the present project are close to or below the specific criteria of the State Water Quality Standards, with the caveat that this consideration is for two sample sets. As a result, it does not appear that there are any significant inputs of materials from land beyond the immediate shoreline that are impacting coastal ocean waters

downslope from the proposed Kanaha Hotel site.

IV. DISCUSSION and CONCLUSIONS

The purpose of this assessment is to assemble the information to make valid evaluations of the potential for influence to the marine environment from the proposed Kanahā Hotel at Kahului Airport project upland from the shoreline in Kahului-Wailuku, Maui. The information collected in this study provides the basis to understand some of the important processes that are operating in the nearshore ocean. Such an understanding provides information that can be used to address any concerns that might be raised in the planning process for the proposed project.

Results of this baseline study reveal that the marine habitat offshore of the region downslope from the hotel site consists of a shallow reef platform, primarily covered with a mix of sand and rubble interspersed with coral reef communities. Results of the water quality survey indicate some detectable differences between the three transect sites, although the exact cause of these differences in not clearly evident. Sources of groundwater input from the area immediately adjacent to the Wailuku-Kahului WWRF contains different groundwater signatures than the other two survey areas that were located to the west.

However, all of the results of the present survey indicate that water quality within the survey area downslope from the Kanahā Hotel at Kahului Airport site are within, or near the appropriate Dept. of Health Water Quality Standards, indicating that at present there are no significant factors from land influencing water quality. The small amount of groundwater input at the shoreline is rapidly mixed to background coastal oceanic values through wave action and other physical processes.

Tom Nance Water Resources Engineering (TNWRE) has prepared a report titled "Potential Impact on Water Resources of the Proposed Kanahā Hotel at Kahului Airport, Island of Maui," dated August 2020. A summary of the findings of this report on the potential impact on water resources is provided in the bullet points below:

- There are no streams or other inland water bodies that would be impacted by the project, so the assessment focuses on impacts to groundwater.

- Water supply for the project would be provided by the separate and private potable and nonpotable water systems constructed to supply the Maui Business Park. Wells for these water systems would ultimately draw 0.0339 million gallons per day (MGD) from the Kahului Aquifer System, an increase of less than one (1) percent of current pumpage from the Aquifer and not considered to be a significant impact.

- Nutrients removed from the Aquifer by the wells would be greater than the nutrients returned to the aquifer from the irrigated landscaping, but the amounts are very small and of no significant environmental consequence.

- The project is expected to generate about 0.030 MGD of wastewater which would be conveyed to the County's Wailuku-Kahului Wastewater Reclamation Facility where it would be treated to secondary (R-2) standards and then disposed of in the facility's eight (8) disposal wells arrayed along the Kahului shoreline. Current disposal in these wells is approximately 5.7 MGD. The addition of the project's wastewater would be an increase of about 0.5 percent, not considered to be of significant consequence.

- Development of the 5.2-acre site, due to the impervious surfaces that would be created, will increase the peak rates and volumes of runoff during rainfall events. The runoff will be conveyed via the Maui Business Park's subsurface drainage system to an existing concrete lined channel which outlets at the Kahului shoreline. The increases of runoff were accounted for in the design of the Business Park's drainage system and are considered to be of no significant consequence in the discharge from the channel outlet into the marine environment.

Based on the results of this survey as well as the results of the TNWRE evaluation of impacts to water resources, it can be concluded that with proper management practices to prevent material input to groundwater or stream discharge by the proposed Kanahā Hotel at Kahului Airport, there is little or no potential for the project to provide any affects to the marine environment that differs substantially from the present condition. Indeed, as major sources of nutrient inputs including Kanahā Pond and the Wailuku-Kahului WWRF do not presently exert a significant effect on coastal waters, it is not expected that the proposed hotel will have a different effect. The proposed project, which is not located on the shoreline, should not affect water quality in either a positive or negative manner.

V. REFERENCES CITED

Dollar, S. J. and M. J. Atkinson. 1992. Effects of nutrient subsidies from groundwater to nearshore marine ecosystems off the Island of Hawaii. Est. Coast. Shelf Sci. 35, 409-424.

Grasshoff, K. 1983. Methods of seawater analysis. Verlag Chemie, Weinheim, 419 pp.

Officer, C. B. 1979. Discussion of the behavior of nonconservative dissolved constituents in estuaries. Est. Coast. Mar. Sci. 9:569 576.

Smith, S. V. and M. J. Atkinson 1993. Mass balance analysis of C, N, and P fluxes in coastal water bodies, including lagoons. Coastal Lagoon Processes. (Ed) B. Kjerfve, Elsevier Oceanography Series, 60. pp 123-145.

Strickland J. D. H. and T. R. Parsons. 1968. A practical handbook of sea water analysis. Fisheries Research Bd. of Canada, Bull. 167. 311 pp.

Tom Nance Water Resource Engineering. 2020. Potential impact on water resources of the proposed Kanaha Hotel at Kahului Airport, Island of Maui. Prepared for: R. D. Olson Development.

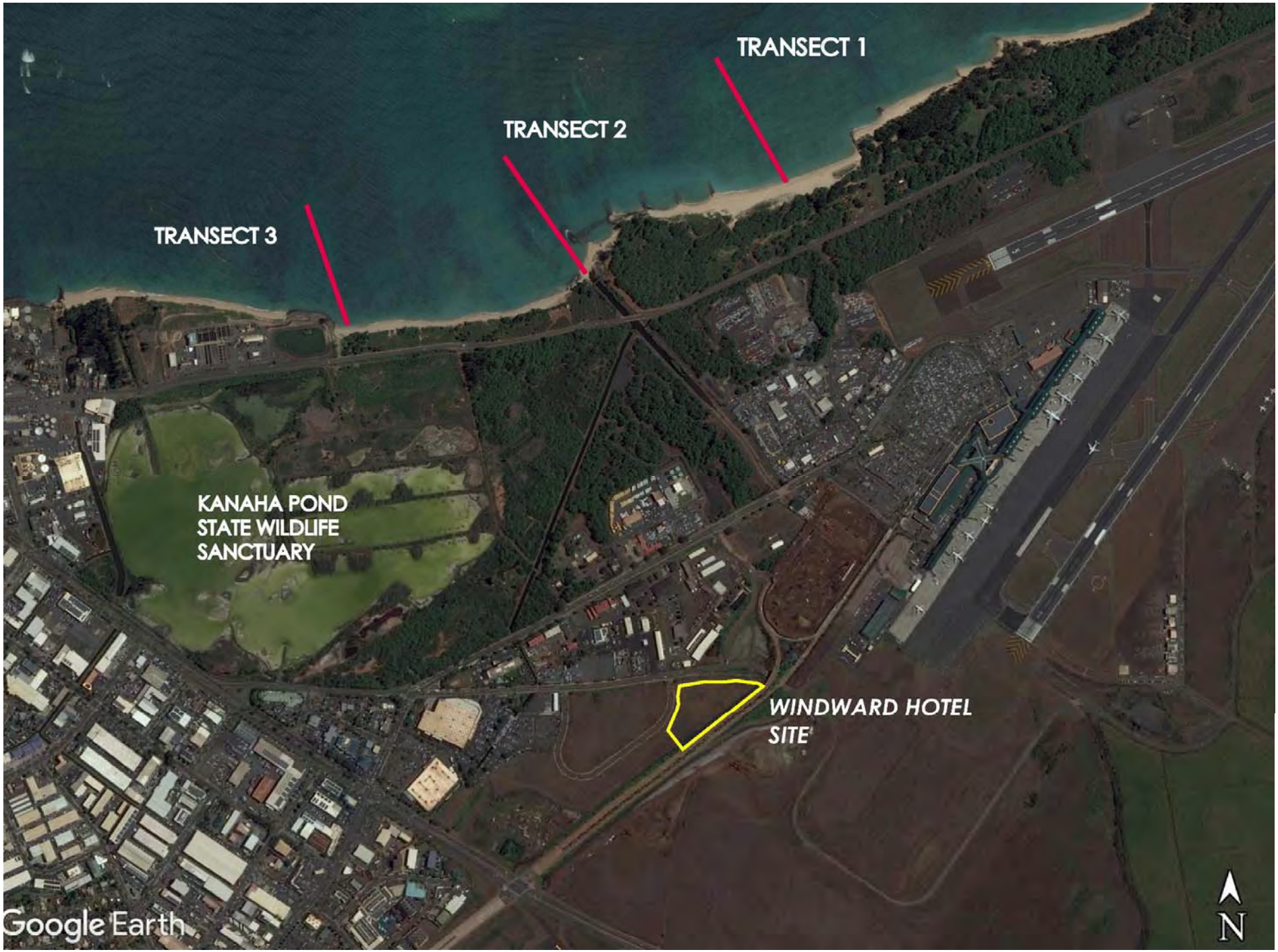


FIGURE 1. Aerial view of Kahului coastal area showing location of proposed Kanaha Hotel at Kahului Airport site. Also shown are locations of three marine water sampling transects that extend from the shoreline to the open coastal ocean.

TABLE 1. Results of water sampling off the Kanaha Hotel at Kahului Airport site, Kahului, Maui conducted on October 2, 2017. Samples 37-40 are from Kanaha Pond. Nutrient concentrations are shown as micromoles (µM). "S" indicates surface sample; "B" indicates bottom sample; "bdl" indicates below detection limit. "DFS" indicates distance from shore. Also shown are the State of Hawaii, Department of Health Water Quality Standards (DOH WQS) "not to exceed more than 10% of the time" and "not to exceed more than 2% of the time" water quality standards for open coastal waters under "dry" and "wet" conditions. Tan shaded shaded values exceed DOH 2% "wet" standards; blue shaded values exceed DOH 10% "dry" standards. For transect sampling station locations, see Figure 1.

TRANSECT	DEPTH (meters)	DFS (meters)	PO_4^{3-} (µM)	$NO_3^-+NO_2^-$ (µM)	NH_4^+ (µM)	Si (µM)	TOP (µM)	TON (µM)	TP (µM)	TN (µM)	TURB (NTU)	SALINITY (o/oo)	pH (std. units)	Chl-a (µg/l)	TEMP deg. C	Diss. O_2 % sat.
1	0.1	0	1.18	1.94	3.30	30.82	0.21	41.19	1.39	46.43	2.15	33.57	7.972	0.444	27.93	99.34
	0.1	1	0.21	1.72	0.40	29.13	0.30	11.50	0.51	13.62	1.48	33.76	7.988	0.491	27.93	99.32
	0.2	5	0.08	1.04	0.15	26.60	0.32	6.83	0.40	8.02	1.05	33.87	7.991	0.460	27.95	100.18
	0.2	10	0.08	1.06	0.15	28.14	0.34	6.41	0.42	7.62	1.53	33.68	7.979	0.312	27.91	99.19
	0.1	15S	0.22	1.55	1.19	29.12	0.22	7.37	0.44	10.11	1.19	33.59	7.958	0.304	27.89	99.84
	1.2	15B	0.07	1.14	0.21	25.75	0.31	6.56	0.38	7.91	0.88	33.90	7.978	0.327	27.89	74.82
	0.1	25S	0.05	0.91	0.24	27.04	0.37	7.30	0.42	8.45	0.69	33.75	7.977	0.156	27.88	77.60
	1.5	25B	0.08	0.78	0.20	25.99	0.36	8.22	0.44	9.20	0.68	33.89	7.990	0.374	27.94	66.02
	0.1	50S	0.08	0.91	0.94	24.52	0.35	7.28	0.43	9.13	0.59	33.86	7.969	0.280	27.71	73.06
	1.4	50B	0.06	0.42	0.26	15.99	0.41	9.96	0.47	10.64	0.46	34.20	7.960	0.265	27.92	55.48
	0.1	150S	0.06	1.31	0.49	26.42	0.34	7.92	0.40	9.72	0.56	34.00	8.025	0.171	27.37	81.58
	1.6	150B	0.06	0.17	0.25	13.54	0.31	6.78	0.37	7.20	0.53	34.43	7.971	0.241	27.71	71.78
2	0.1	0	0.07	0.64	0.21	42.17	0.32	8.28	0.39	9.13	1.32	32.96	7.970	0.569	27.85	99.03
	0.1	1	0.10	0.94	0.24	29.16	0.29	7.27	0.39	8.45	0.81	33.67	7.981	0.537	27.86	100.60
	0.1	5	0.09	1.00	0.26	30.14	0.31	7.16	0.40	8.42	1.02	33.60	7.983	0.467	27.83	99.79
	1.2	10	0.08	0.89	0.24	25.25	0.32	7.31	0.40	8.44	0.71	33.82	7.992	0.382	27.85	87.64
	0.1	15S	0.07	1.17	0.33	26.44	0.33	7.16	0.40	8.66	0.80	33.93	7.941	0.312	27.84	102.85
	1.3	15B	0.10	1.12	0.21	25.97	0.28	6.57	0.38	7.90	0.68	33.82	7.978	0.467	27.83	94.99
	0.1	25S	0.06	0.72	0.32	31.48	0.35	8.82	0.41	9.86	1.00	33.46	7.964	0.039	27.80	77.95
	1.9	25B	0.09	0.62	0.33	21.82	0.46	8.87	0.55	9.82	1.15	34.12	8.015	0.545	28.14	73.28
	0.1	50S	0.08	0.96	0.49	29.94	0.31	6.83	0.39	8.28	0.70	33.57	7.978	0.312	27.80	74.00
	2.0	50B	0.08	0.55	0.54	21.08	0.29	7.24	0.37	8.33	0.55	34.31	8.044	0.312	27.92	76.90
	0.1	150S	0.11	0.73	0.76	29.43	0.31	9.24	0.42	10.73	0.34	34.00	8.029	0.210	27.61	79.30
	2.1	150B	0.07	0.26	0.32	16.45	0.32	7.55	0.39	8.13	0.41	34.37	8.054	0.335	27.96	77.23
3	0.1	0	0.30	1.43	0.39	52.92	0.34	7.98	0.64	9.80	0.56	33.17	7.963	0.545	28.29	99.22
	0.5	1	0.31	1.44	0.68	49.98	0.30	9.35	0.61	11.47	0.48	33.42	7.937	1.433	28.29	101.83
	0.5	5	0.17	0.83	0.59	47.00	0.33	9.15	0.50	10.57	0.43	33.74	7.975	0.499	28.28	100.04
	0.2	10	0.07	0.75	0.29	47.48	0.35	7.11	0.42	8.15	0.42	33.71	7.952	0.389	28.19	94.66
	0.1	15S	0.17	0.70	1.14	56.58	0.28	8.78	0.45	10.62	0.43	33.72	7.931	0.343	28.14	99.76
	2.9	15B	0.14	0.54	0.72	49.32	0.27	8.20	0.41	9.46	0.49	33.85	7.947	0.413	28.17	57.07
	0.1	25S	0.13	0.20	0.29	71.91	0.31	7.49	0.44	7.98	0.39	33.63	7.930	0.389	28.16	83.47
	2.3	25B	0.13	0.37	0.72	68.22	0.31	7.37	0.44	8.46	0.34	33.85	7.966	0.491	27.96	66.52
	0.1	50S	0.15	0.43	0.37	68.21	0.32	7.73	0.47	8.53	0.37	33.81	7.909	0.389	28.05	64.83
	2.3	50B	0.12	0.24	0.24	62.34	0.34	10.25	0.46	10.73	0.52	34.04	7.952	0.374	27.91	66.23
	0.1	150S	0.16	0.47	0.19	85.41	0.31	9.09	0.47	9.75	0.43	33.74	7.953	0.460	27.93	67.36
	1.9	150B	0.09	0.08	0.22	64.28	0.34	8.11	0.43	8.41	0.37	34.00	7.944	0.413	27.87	62.63
KANAHA POND INPUT PIPE			4.90	285	1.30	917	bdl	8.30	4.90	295	0.05	3.74	7.353	0.031		
MAUKA KANAHA POND			1.40	27.90	12.00	255	4.70	558	6.10	597	6.17	45.34	8.605	1.566		
MAKAI KANAHA POND			1.10	0.10	38.10	455	3.50	138	4.60	176	3.39	9.89	8.212	7.572		
KANAHA POND DISCHARGE			1.80	0.10	92	373	4.10	275	5.90	367	6.64	22.07	8.476	2.321		
DOH WQS	DRY	NTE 10%		0.71	0.36				0.97	12.86	0.50	*	**	0.50	***	****
		NTE 2%		1.43	0.64				1.45	17.86	1.00	*	**	1.00	***	****
	WET	NTE 10%		1.00	0.61				1.29	17.86	1.25	*	**	0.90	***	****
		NTE 2%		1.79	1.07				1.94	25.00	2.00	*	**	1.75	***	****
Analytical Method			EPA 365.3	EPA 353.2	EPA 350.1	EPA 370.1			SM 4500P B5	SM 4500N C	SM 2130B	SM 2520	EPA 150.1	SM 10200	SM 2550B	SM 4500 OG

* = Salinity shall not vary more than 10% from natural or seasonal changes considering hydrologic input and oceanographic factors.

** = pH shall not deviate more than 0.5 units from a value of 8.1.

*** = Temperature shall not vary more than one degree C. from ambient conditions.

**** = Dissolved Oxygen not less than 75% saturation

TABLE 2. Results of water sampling off the Kanaha Hotel at Kuhului Airport site, Kahului, Maui conducted on October 23, 2020. Nutrient concentrations are shown as micromoles (µM). "S" indicates surface sample; "B" indicates bottom sample; "bdl" indicates below detection limit. "DFS" indicates distance from shore. Also shown are the State of Hawaii, Department of Health Water Quality Standards (DOH WQS) "not to exceed more than 10% of the time" and "not to exceed more than 2% of the time" water quality standards for open coastal waters under "dry" and "wet" conditions. Tan shaded shaded values exceed DOH 2% "wet" standards; blue shaded values exceed DOH 10% "dry" standards. For transect sampling station locations, see Figure 1.

TRANSECT	DEPTH (meters)	DFS (meters)	PO_4^{3-} (µM)	$NO_3^-+NO_2^-$ (µM)	NH_4^+ (µM)	Si (µM)	TOP (µM)	TON (µM)	TP (µM)	TN (µM)	TURB (NTU)	SALINITY (o/oo)	pH (std. units)	Chl-a (µg/l)	TEMP deg. C	Diss. O_2 % sat.
1	0.1	0	0.10	0.77	0.15	21.34	0.16	6.90	0.26	7.81	1.83	34.05	7.959	0.81	27.44	86.65
	0.1	1	0.09	0.68	0.45	21.48	0.16	8.35	0.25	9.48	2.22	34.15	7.969	0.57	27.43	84.56
	0.2	5	0.12	1.24	0.14	23.17	0.15	6.80	0.27	8.18	2.72	34.15	7.957	0.70	27.40	82.45
	0.2	10	0.12	1.34	0.16	23.70	0.16	7.45	0.28	8.95	3.97	34.08	7.920	0.64	27.33	97.49
	0.1	15S	0.13	1.36	0.22	23.00	0.16	7.44	0.29	9.03	3.00	34.15	7.867	0.72	27.32	83.57
	1.2	15B	0.12	1.17	0.32	21.52	0.16	7.98	0.28	9.46	3.81	34.15	7.939	0.75	27.33	77.32
	0.1	25S	0.13	1.17	0.14	22.85	0.16	7.45	0.30	8.76	3.04	34.08	7.915	0.73	27.28	82.11
	1.5	25B	0.13	1.01	0.23	21.79	0.15	7.87	0.29	9.11	4.27	34.15	7.957	0.74	27.29	80.12
	0.1	50S	0.14	1.61	0.16	24.98	0.17	7.70	0.30	9.46	2.39	34.04	7.886	0.65	27.23	85.44
	1.4	50B	0.09	0.18	0.20	21.06	0.18	6.13	0.28	6.51	2.31	34.19	7.967	0.60	27.22	87.37
	0.1	150S	0.11	0.52	0.36	21.54	0.18	7.00	0.29	7.88	1.75	34.20	7.919	0.67	27.16	95.00
	1.6	150B	0.10	0.23	0.24	20.27	0.17	7.26	0.27	7.73	1.30	34.12	7.981	0.50	27.15	85.59
2	0.1	0	0.29	1.11	0.18	27.44	0.21	6.40	0.50	7.70	2.86	33.61	7.981	0.68	27.27	100.43
	0.1	1	0.23	1.39	0.29	27.77	0.17	6.41	0.40	8.09	3.37	33.75	7.981	0.64	27.20	101.31
	0.1	5	0.19	1.36	0.16	26.65	0.18	6.65	0.37	8.18	3.57	33.71	7.975	0.66	27.19	102.54
	1.2	10	0.13	0.85	0.19	23.53	0.18	6.38	0.32	7.41	1.79	33.95	7.926	0.58	27.25	93.85
	0.1	15S	0.15	0.80	0.20	23.89	0.18	6.23	0.33	7.23	2.63	33.95	7.949	0.59	27.30	93.92
	1.3	15B	0.13	0.68	0.22	21.02	0.20	6.09	0.33	6.99	2.75	34.02	7.974	0.55	27.27	88.95
	0.1	25S	0.16	0.74	0.14	23.29	0.19	6.90	0.34	7.78	1.99	33.92	7.868	0.60	27.25	91.38
	1.9	25B	0.14	0.78	0.15	21.22	0.16	6.13	0.30	7.07	1.71	34.06	7.959	0.58	27.25	83.93
	0.1	50S	0.17	0.81	0.23	23.16	0.20	6.81	0.37	7.85	2.61	34.02	7.925	0.63	27.19	97.43
	2.0	50B	0.16	0.79	0.17	22.86	0.17	6.35	0.33	7.31	2.98	34.08	7.954	0.48	27.22	83.33
	0.1	150S	0.15	0.76	0.39	22.73	0.20	7.01	0.35	8.16	1.46	34.08	7.881	0.61	27.20	95.78
	2.1	150B	0.10	0.44	0.22	11.76	0.19	6.17	0.29	6.83	1.77	34.55	7.967	0.43	27.55	82.33
3	0.1	0	0.39	1.89	0.18	43.78	0.16	6.87	0.55	8.94	11.40	33.42	7.938	0.95	27.98	97.34
	0.5	1	0.35	1.89	0.23	43.38	0.14	6.00	0.49	8.11	9.87	33.45	7.927	0.89	27.88	97.64
	0.5	5	0.35	1.64	0.24	40.52	0.16	6.62	0.50	8.49	7.73	33.54	7.927	0.75	27.77	96.85
	0.2	10	0.28	1.23	0.18	36.02	0.15	5.75	0.43	7.16	8.33	33.78	7.901	0.78	27.73	79.14
	0.1	15S	0.28	1.11	0.53	33.86	0.16	6.51	0.43	8.16	5.43	33.81	7.961	0.77	27.68	103.81
	2.9	15B	0.26	1.00	0.69	33.82	0.16	6.18	0.42	7.87	2.32	33.84	7.966	0.60	27.82	71.99
	0.1	25S	0.26	1.06	0.27	35.26	0.15	7.54	0.41	8.87	2.67	33.84	7.897	0.58	27.55	101.78
	2.3	25B	0.17	0.62	0.19	25.73	0.19	5.75	0.36	6.55	3.07	34.12	7.949	0.63	27.84	88.75
	0.1	50S	0.15	0.57	0.14	23.25	0.18	5.69	0.33	6.40	3.69	34.19	7.977	0.54	27.55	94.93
	2.3	50B	0.28	0.84	0.93	38.02	0.18	7.25	0.47	9.02	1.32	33.81	7.924	0.47	27.78	83.47
	0.1	150S	0.35	0.63	0.75	64.13	0.09	6.69	0.44	8.07	1.06	33.84	7.907	0.42	27.72	72.23
	1.9	150B	0.14	0.55	0.74	17.29	0.16	5.11	0.31	6.40	1.20	34.48	7.970	0.32	27.74	72.81
DOH WQS	DRY	NTE 10%		0.71	0.36				0.97	12.86	0.50	*	**	0.50	***	****
		NTE 2%		1.43	0.64				1.45	17.86	1.00	*	**	1.00	***	****
	WET	NTE 10%		1.00	0.61				1.29	17.86	1.25	*	**	0.90	***	****
		NTE 2%		1.79	1.07				1.94	25.00	2.00	*	**	1.75	***	****
Analytical Method			EPA 365.3	EPA 353.2	EPA 350.1	EPA 370.1			SM 4500P B5	SM 4500N C	SM 2130B	SM 2520	EPA 150.1	SM 10200	SM 2550B	SM 4500 OG

* = Salinity shall not vary more than 10% from natural or seasonal changes considering hydrologic input and oceanographic factors.

** = pH shall not deviate more than 0.5 units from a value of 8.1.

*** = Temperature shall not vary more than one degree C. from ambient conditions.

**** = Dissolved Oxygen not less than 75% saturation

TABLE 3. Results of water sampling off the Kanaha Hotel at Kahului Airport site, Kahului, Maui conducted on October 2, 2017. Samples 37-40 are from Kanaha Pond.Nutrient concentrations are shown as micrograms per liter (µg/L). "S" indicates surface sample; "B" indicates bottom sample; "bdl" indicates below detection limit. "DFS" indicates distance from shore. Also shown are the State of Hawaii, Department of Health Water Quality Standards (DOH WQS) "not to exceed more than 10% of the time" and "not to exceed more than 2% of the time" water quality standards for open coastal waters under "dry" and "wet" conditions. Tan shaded shaded values exceed DOH 2% "wet" standards; blue shaded values exceed DOH 10% "dry" standards. For transect sampling station locations, see Figure 1.

TRANSECT	DEPTH (meters)	DFS (meters)	PO_4^{3-} (µg/L)	$NO_3^-+NO_2$ (µg/L)	NH_4^+ (µg/L)	Si (µg/L)	TOP (µg/L)	TON (µg/L)	TP (µg/L)	TN (µg/L)	TURB (NTU)	SALINITY (o/oo)	pH (std. units	Chl-a (µg/l)	TEMP deg. C	Diss. O_2 % sat.
1	0.1	0	36.58	27.16	46.20	862.96	6.51	576.66	43.09	650.02	2.15	33.57	7.972	0.444	27.93	99.34
	0.1	1	6.51	24.08	5.60	815.64	9.30	161.00	15.81	190.68	1.48	33.76	7.988	0.491	27.93	99.32
	0.2	5	2.48	14.56	2.10	744.80	9.92	95.62	12.40	112.28	1.05	33.87	7.991	0.460	27.95	100.18
	0.2	10	2.48	14.84	2.10	787.92	10.54	89.74	13.02	106.68	1.53	33.68	7.979	0.312	27.91	99.19
	0.1	15S	6.82	21.70	16.66	815.36	6.82	103.18	13.64	141.54	1.19	33.59	7.958	0.304	27.89	99.84
	1.2	15B	2.17	15.96	2.94	721.00	9.61	91.84	11.78	110.74	0.88	33.90	7.978	0.327	27.89	74.82
	0.1	25S	1.55	12.74	3.36	757.12	11.47	102.20	13.02	118.30	0.69	33.75	7.977	0.156	27.88	77.60
	1.5	25B	2.48	10.92	2.80	727.72	11.16	115.08	13.64	128.80	0.68	33.89	7.990	0.374	27.94	66.02
	0.1	50S	2.48	12.74	13.16	686.56	10.85	101.92	13.33	127.82	0.59	33.86	7.969	0.280	27.71	73.06
	1.4	50B	1.86	5.88	3.64	447.72	12.71	139.44	14.57	148.96	0.46	34.20	7.960	0.265	27.92	55.48
	0.1	150S	1.86	18.34	6.86	739.76	10.54	110.88	12.40	136.08	0.56	34.00	8.025	0.171	27.37	81.58
	1.6	150B	1.86	2.38	3.50	379.12	9.61	94.92	11.47	100.80	0.53	34.43	7.971	0.241	27.71	71.78
2	0.1	0	2.17	8.96	2.94	1180.76	9.92	115.92	12.09	127.82	1.32	32.96	7.970	0.569	27.85	99.03
	0.1	1	3.10	13.16	3.36	816.48	8.99	101.78	12.09	118.30	0.81	33.67	7.981	0.537	27.86	100.60
	0.1	5	2.79	14.00	3.64	843.92	9.61	100.24	12.40	117.88	1.02	33.60	7.983	0.467	27.83	99.79
	1.2	10	2.48	12.46	3.36	707.00	9.92	102.34	12.40	118.16	0.71	33.82	7.992	0.382	27.85	87.64
	0.1	15S	2.17	16.38	4.62	740.32	10.23	100.24	12.40	121.24	0.80	33.93	7.941	0.312	27.84	102.85
	1.3	15B	3.10	15.68	2.94	727.16	8.68	91.98	11.78	110.60	0.68	33.82	7.978	0.467	27.83	94.99
	0.1	25S	1.86	10.08	4.48	881.44	10.85	123.48	12.71	138.04	1.00	33.46	7.964	0.039	27.80	77.95
	1.9	25B	2.79	8.68	4.62	610.96	14.26	124.18	17.05	137.48	1.15	34.12	8.015	0.545	28.14	73.28
	0.1	50S	2.48	13.44	6.86	838.32	9.61	95.62	12.09	115.92	0.70	33.57	7.978	0.312	27.80	74.00
	2.0	50B	2.48	7.70	7.56	590.24	8.99	101.36	11.47	116.62	0.55	34.31	8.044	0.312	27.92	76.90
	0.1	150S	3.41	10.22	10.64	824.04	9.61	129.36	13.02	150.22	0.34	34.00	8.029	0.210	27.61	79.30
	2.1	150B	2.17	3.64	4.48	460.60	9.92	105.70	12.09	113.82	0.41	34.37	8.054	0.335	27.96	77.23
3	0.1	0	9.30	20.02	5.46	1481.76	10.54	111.72	19.84	137.20	0.56	33.17	7.963	0.545	28.29	99.22
	0.5	1	9.61	20.16	9.52	1399.44	9.30	130.90	18.91	160.58	0.48	33.42	7.937	1.433	28.29	101.83
	0.5	5	5.27	11.62	8.26	1316.00	10.23	128.10	15.50	147.98	0.43	33.74	7.975	0.499	28.28	100.04
	0.2	10	2.17	10.50	4.06	1329.44	10.85	99.54	13.02	114.10	0.42	33.71	7.952	0.389	28.19	94.66
	0.1	15S	5.27	9.80	15.96	1584.24	8.68	122.92	13.95	148.68	0.43	33.72	7.931	0.343	28.14	99.76
	2.9	15B	4.34	7.56	10.08	1380.96	8.37	114.80	12.71	132.44	0.49	33.85	7.947	0.413	28.17	57.07
	0.1	25S	4.03	2.80	4.06	2013.48	9.61	104.86	13.64	111.72	0.39	33.63	7.930	0.389	28.16	83.47
	2.3	25B	4.03	5.18	10.08	1910.16	9.61	103.18	13.64	118.44	0.34	33.85	7.966	0.491	27.96	66.52
	0.1	50S	4.65	6.02	5.18	1909.88	9.92	108.22	14.57	119.42	0.37	33.81	7.909	0.389	28.05	64.83
	2.3	50B	3.72	3.36	3.36	1745.52	10.54	143.50	14.26	150.22	0.52	34.04	7.952	0.374	27.91	66.23
	0.1	150S	4.96	6.58	2.66	2391.48	9.61	127.26	14.57	136.50	0.43	33.74	7.953	0.460	27.93	67.36
	1.9	150B	2.79	1.12	3.08	1799.84	10.54	113.54	13.33	117.74	0.37	34.00	7.944	0.413	27.87	62.63
KANAHA POND INPUT PIPE			151.90	3996	18.20	25668	bdl	116.20	151.90	4130	0.05	3.74	7.353	0.031		
MAUKA KANAHA POND			43.40	390.60	168.00	7146	145.70	7805	189.10	8364	6.17	45.34	8.605	1.566		
MAKAI KANAHA POND			34.10	1.40	533.40	12737	108.50	1926	142.60	2461	3.39	9.89	8.212	7.572		
KANAHA POND DISCHARGE			55.80	1.40	1284	10452	127.10	3846	182.90	5131	6.64	22.07	8.476	2.321		
DOH WQS	DRY	NTE 10%		10.00	5.00				30.00	180.00	0.50	*	**	0.50	***	****
		NTE 2%		20.00	9.00				45.00	250.00	1.00	*	**	1.00	***	****
	WET	NTE 10%		14.00	8.50				40.00	250.00	1.25	*	**	0.90	***	****
		NTE 2%		25.00	15.00				60.00	350.00	2.00	*	**	1.75	***	****
Analytical Method			EPA 365.3	EPA 353.2	EPA 350.1	EPA 370.1			SM 4500P B5	SM 4500N C	SM 2130B	SM 2520	EPA 150.1	SM 10200	SM 2550B	SM 4500 OG

* = Salinity shall not vary more than 10% from natural or seasonal changes considering hydrologic input and oceanographic factors.

** = pH shall not deviate more than 0.5 units from a value of 8.1.

*** = Temperature shall not vary more than one degree C. from ambient conditions.

**** = Dissolved Oxygen not less than 75% saturation

TABLE 4. Results of water sampling off the Kanaha Hotel at Kahului Airport site, Kahului, Maui conducted on October 23, 2020. Nutrient concentrations are shown in units of micrograms per liter (µg/L). "S" indicates surface sample; "B" indicates bottom sample; "bdl" indicates below detection limit. "DFS" indicates distance from shore. Also shown are the State of Hawaii, Department of Health Water Quality Standards (DOH WQS) "not to exceed more than 10% of the time" and "not to exceed more than 2% of the time" water quality standards for open coastal waters under "dry" and "wet" conditions. Tan shaded shaded values exceed DOH 2% "wet" standards; blue shaded values exceed DOH 10% "dry" standards. For transect sampling station locations, see Figure 1.

TRANSECT	DEPTH (meters)	DFS (meters)	PO_4^{3-} (µg/L	$NO_3^-+NO_2^-$ (µg/L	NH_4^+ (µg/L	Si (µg/L	TOP (µg/L	TON (µg/L	TP (µg/L	TN (µg/L	TURB (NTU)	SALINITY (o/oo)	pH (std. units	Chl-a (µg/l)	TEMP deg. C	Diss. O_2 % sat.
1	0.1	0	2.98	10.76	2.06	597.51	5.08	96.56	8.06	109.38	1.83	34.05	7.959	0.81	27.44	86.65
	0.1	1	2.88	9.51	6.33	601.53	4.99	116.85	7.87	132.69	2.22	34.15	7.969	0.57	27.43	84.56
	0.2	5	3.63	17.33	1.93	648.66	4.68	95.21	8.31	114.48	2.72	34.15	7.957	0.70	27.40	82.45
	0.2	10	3.57	18.78	2.21	663.64	5.07	104.34	8.64	125.33	3.97	34.08	7.920	0.64	27.33	97.49
	0.1	15S	3.94	19.10	3.11	643.98	5.07	104.18	9.01	126.39	3.00	34.15	7.867	0.72	27.32	83.57
	1.2	15B	3.84	16.33	4.44	602.47	4.81	111.68	8.65	132.45	3.81	34.15	7.939	0.75	27.33	77.32
	0.1	25S	4.15	16.39	2.00	639.75	5.10	104.30	9.25	122.70	3.04	34.08	7.915	0.73	27.28	82.11
	1.5	25B	4.15	14.16	3.15	609.99	4.78	110.19	8.93	127.50	4.27	34.15	7.957	0.74	27.29	80.12
	0.1	50S	4.22	22.49	2.18	699.47	5.16	107.74	9.38	132.41	2.39	34.04	7.886	0.65	27.23	85.44
	1.4	50B	2.91	2.53	2.74	589.60	5.65	85.85	8.57	91.13	2.31	34.19	7.967	0.60	27.22	87.37
	0.1	150S	3.53	7.32	5.08	603.25	5.44	97.93	8.98	110.33	1.75	34.20	7.919	0.67	27.16	95.00
	1.6	150B	3.22	3.17	3.39	567.60	5.12	101.59	8.34	108.15	1.30	34.12	7.981	0.50	27.15	85.59
2	0.1	0	9.08	15.59	2.58	768.38	6.37	89.63	15.46	107.80	2.86	33.61	7.981	0.68	27.27	100.43
	0.1	1	7.19	19.47	3.99	777.69	5.25	89.80	12.44	113.26	3.37	33.75	7.981	0.64	27.20	101.31
	0.1	5	5.95	19.06	2.30	746.21	5.58	93.12	11.54	114.48	3.57	33.71	7.975	0.66	27.19	102.54
	1.2	10	4.15	11.87	2.59	658.85	5.62	89.34	9.77	103.80	1.79	33.95	7.926	0.58	27.25	93.85
	0.1	15S	4.65	11.23	2.79	669.00	5.43	87.22	10.08	101.23	2.63	33.95	7.949	0.59	27.30	93.92
	1.3	15B	4.15	9.59	3.05	588.49	6.21	85.21	10.36	97.85	2.75	34.02	7.974	0.55	27.27	88.95
	0.1	25S	4.81	10.31	1.97	652.04	5.81	96.58	10.61	108.86	1.99	33.92	7.868	0.60	27.25	91.38
	1.9	25B	4.31	10.99	2.09	594.06	4.87	85.84	9.18	98.91	1.71	34.06	7.959	0.58	27.25	83.93
	0.1	50S	5.24	11.36	3.22	648.55	6.30	95.28	11.54	109.86	2.61	34.02	7.925	0.63	27.19	97.43
	2.0	50B	4.99	11.04	2.35	639.97	5.19	88.95	10.18	102.34	2.98	34.08	7.954	0.48	27.22	83.33
	0.1	150S	4.71	10.67	5.39	636.35	6.22	98.17	10.93	114.23	1.46	34.08	7.881	0.61	27.20	95.78
	2.1	150B	3.01	6.18	3.09	329.26	5.88	86.37	8.89	95.65	1.77	34.55	7.967	0.43	27.55	82.33
3	0.1	0	11.94	26.48	2.51	1225.73	5.04	96.20	16.98	125.19	11.40	33.42	7.938	0.95	27.98	97.34
	0.5	1	10.76	26.39	3.16	1214.59	4.49	84.01	15.25	113.57	9.87	33.45	7.927	0.89	27.88	97.64
	0.5	5	10.73	22.91	3.35	1134.58	4.87	92.62	15.60	118.87	7.73	33.54	7.927	0.75	27.77	96.85
	0.2	10	8.68	17.26	2.49	1008.62	4.75	80.46	13.43	100.21	8.33	33.78	7.901	0.78	27.73	79.14
	0.1	15S	8.53	15.57	7.46	948.11	4.93	91.16	13.46	114.18	5.43	33.81	7.961	0.77	27.68	103.81
	2.9	15B	7.94	13.93	9.72	947.00	4.94	86.49	12.87	110.14	2.32	33.84	7.966	0.60	27.82	71.99
	0.1	25S	8.09	14.84	3.74	987.39	4.54	105.63	12.63	124.21	2.67	33.84	7.897	0.58	27.55	101.78
	2.3	25B	5.39	8.63	2.62	720.36	5.79	80.44	11.18	91.69	3.07	34.12	7.949	0.63	27.84	88.75
	0.1	50S	4.74	7.94	1.96	651.11	5.54	79.69	10.28	89.59	3.69	34.19	7.977	0.54	27.55	94.93
	2.3	50B	8.80	11.79	12.96	1064.55	5.67	101.47	14.47	126.22	1.32	33.81	7.924	0.47	27.78	83.47
	0.1	150S	10.76	8.77	10.56	1795.72	2.91	93.59	13.66	112.92	1.06	33.84	7.907	0.42	27.72	72.23
	1.9	150B	4.40	7.72	10.33	484.25	5.06	71.58	9.46	89.63	1.20	34.48	7.970	0.32	27.74	72.81
DOH WQS	DRY	NTE 10%		10.00	5.00				30.00	180.00	0.50	*	**	0.50	***	****
		NTE 2%		20.00	9.00				45.00	250.00	1.00	*	**	1.00	***	****
	WET	NTE 10%		14.00	8.50				40.00	250.00	1.25	*	**	0.90	***	****
		NTE 2%		25.00	15.00				60.00	350.00	2.00	*	**	1.75	***	****
Analytical Method			EPA 365.3	EPA 353.2	EPA 350.1	EPA 370.1			SM 4500P B5	SM 4500N C	SM 2130B	SM 2520	EPA 150.1	SM 10200	SM 2550B	SM 4500 OG

* = Salinity shall not vary more than 10% from natural or seasonal changes considering hydrologic input and oceanographic factors.

** = pH shall not deviate more than 0.5 units from a value of 8.1.

*** = Temperature shall not vary more than one degree C. from ambient conditions.

**** = Dissolved Oxygen not less than 75% saturation

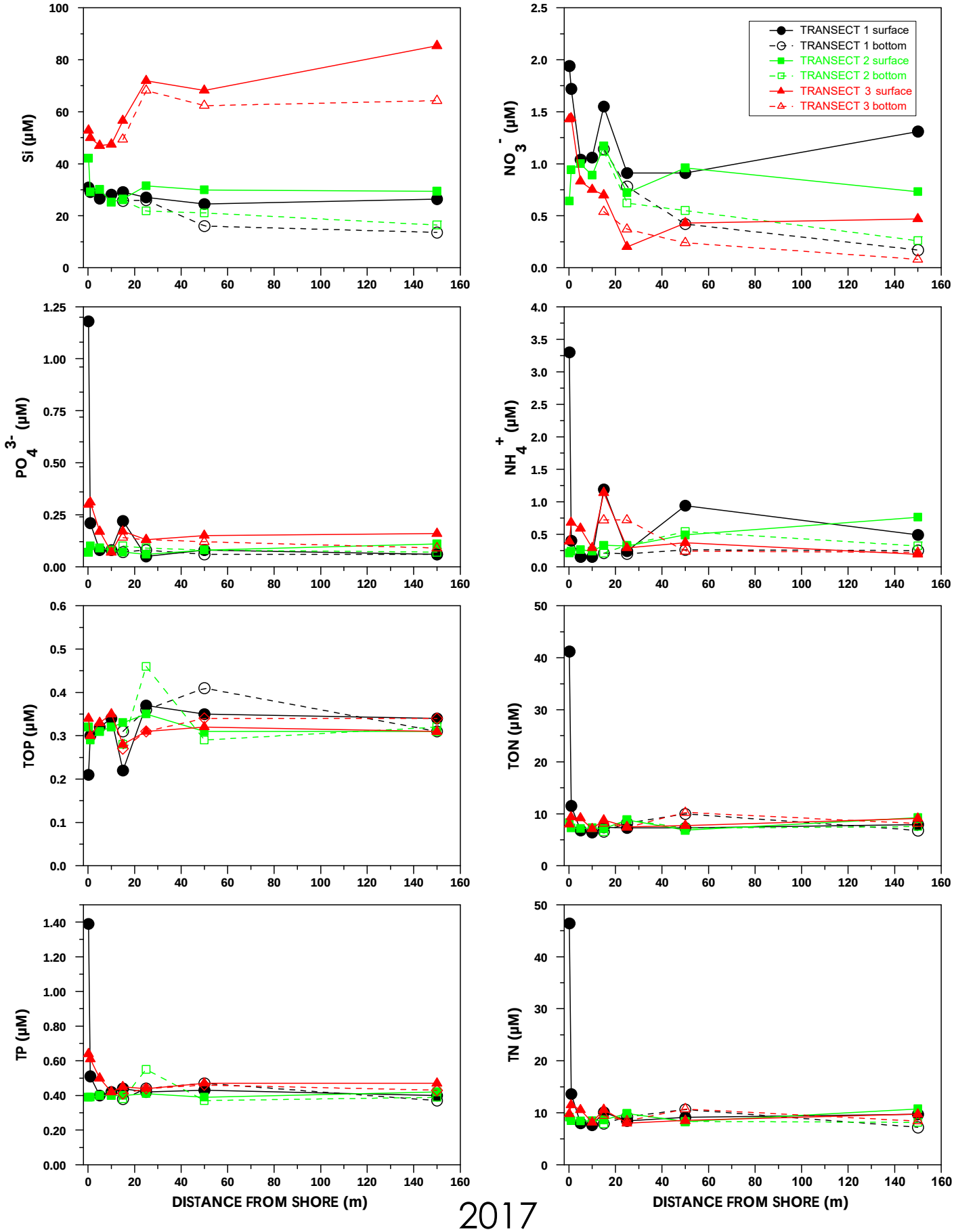
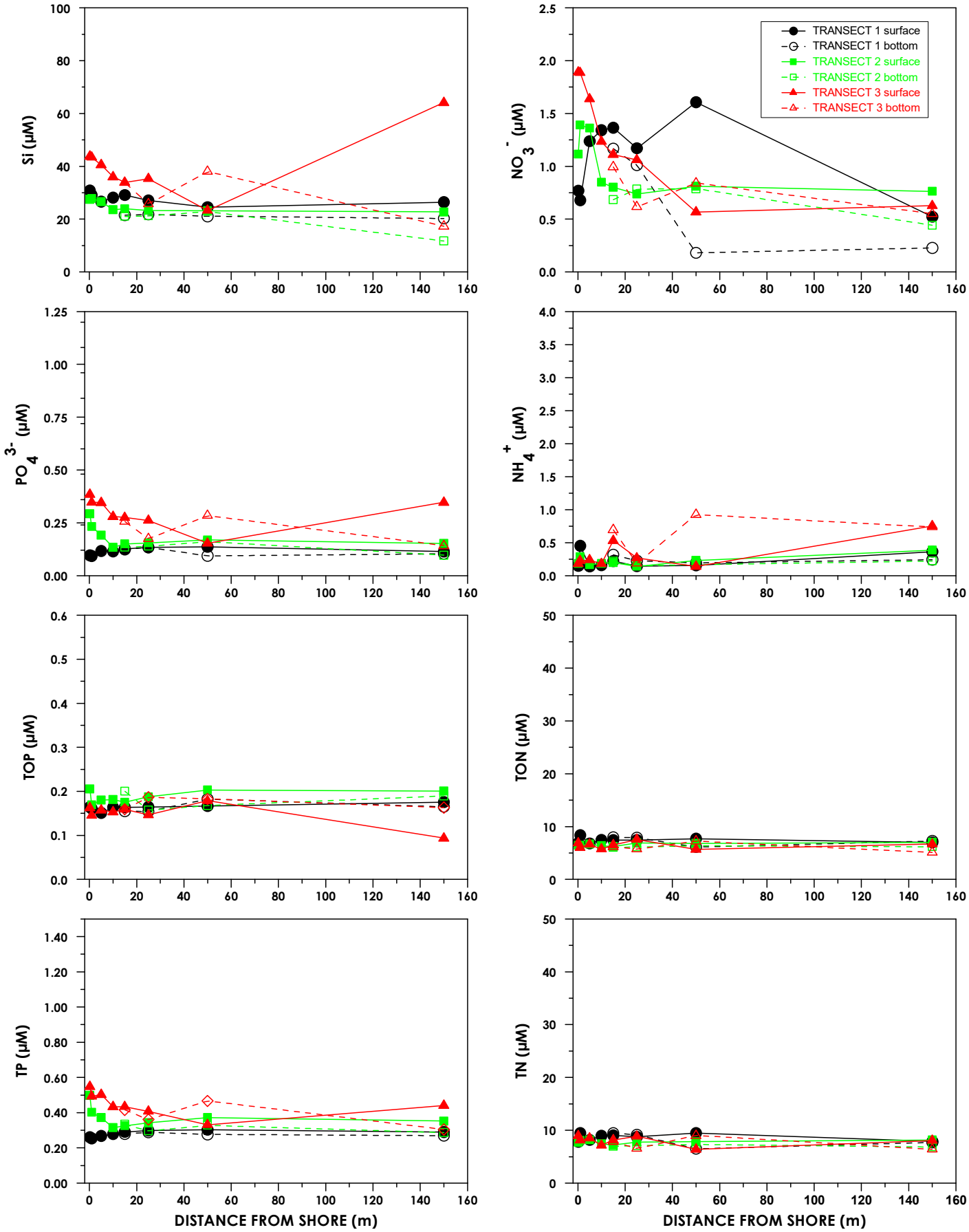


FIGURE 2. Plots of dissolved nutrients in surface and deep samples collected on October 2, 2017 as a function of distance from the shoreline along three transects downslope from the Kanaha Hotel at Kahului Airport site, Kahului Maui, Hawaii. For transect locations, see Figure 1.



2020

FIGURE 3. Plots of dissolved nutrients in surface and deep samples collected on October 23, 2020 as a function of distance from the shoreline along three transects downslope from the Kanaha Hotel **at Kahului Airport** site, Kahului Maui, Hawaii. For transect locations, see Figure 1.

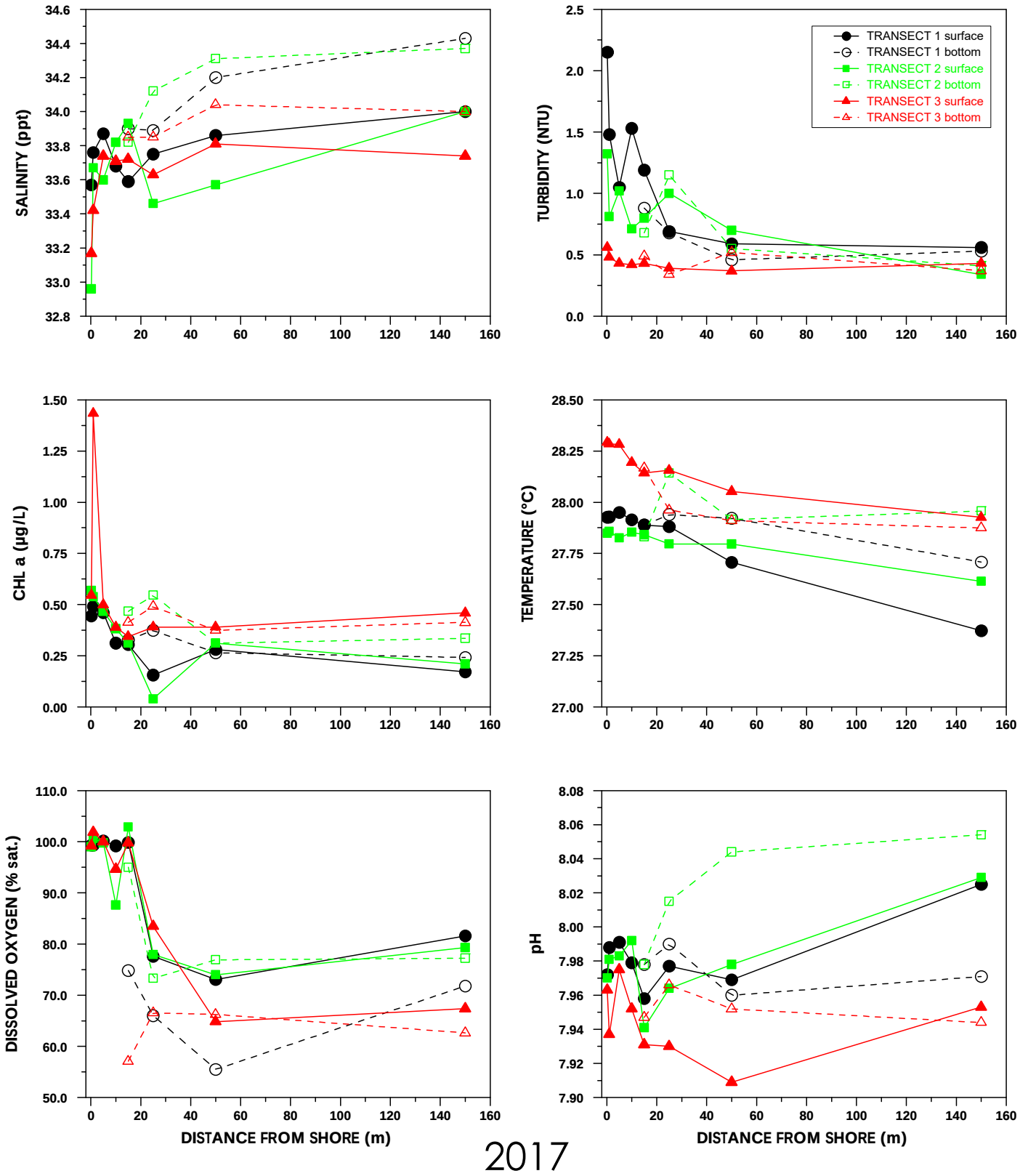


FIGURE 4. Plots of water chemistry constituents in surface and deep samples collected on October 2, 2017 along three transects downslope from the Kanaha Hotel at Kahului Airport site, Kahului Maui, Hawaii as a function of distance from the shoreline. For transect locations, see Figure 1.

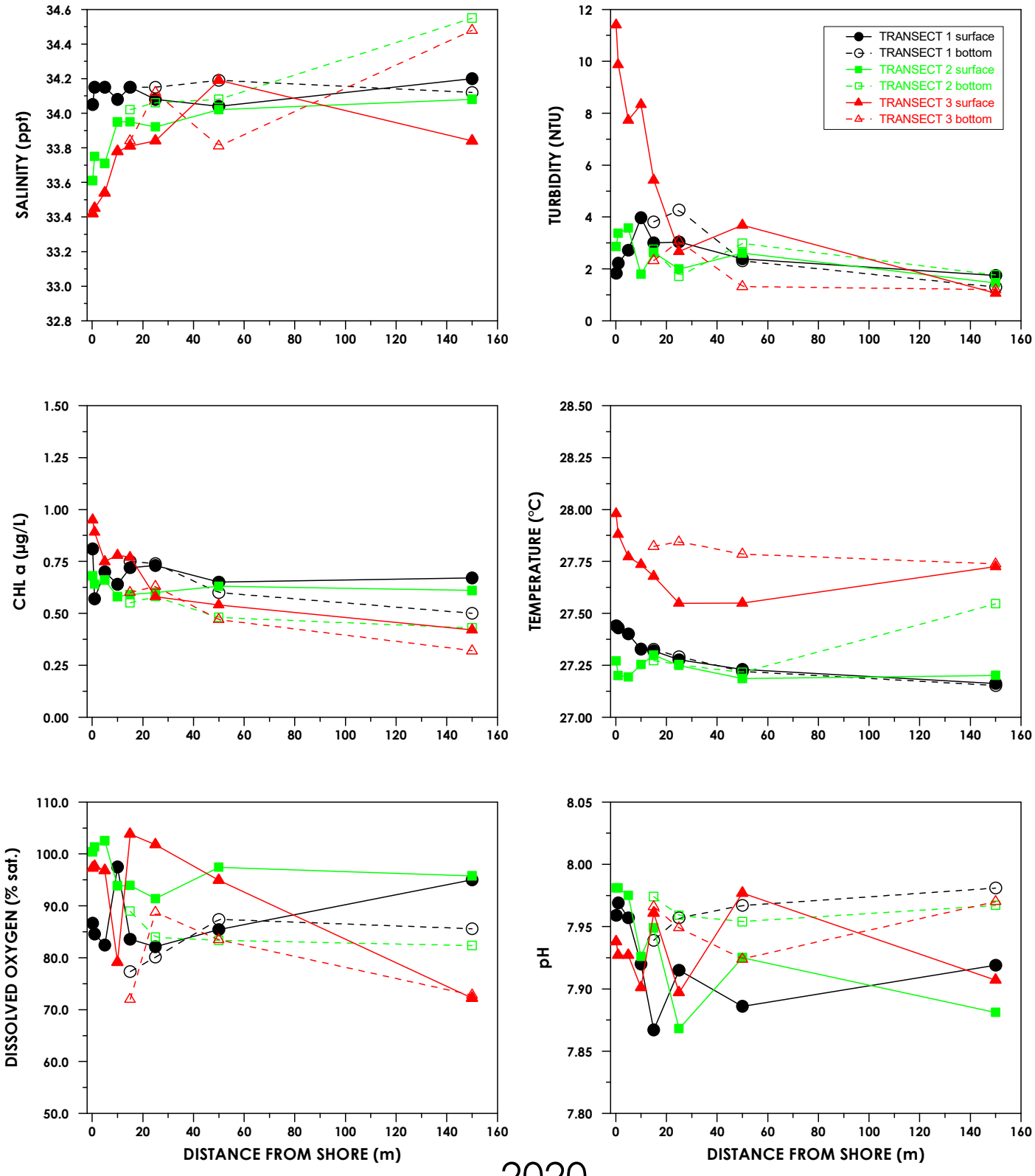


FIGURE 5. Plots of water chemistry constituents in surface and deep samples collected on October 23, 2020 along three transects downslope from the Kanaha Hotel at Kahului Airport site, Kahului Maui, Hawaii as a function of distance from the shoreline. For transect locations, see Figure 1.

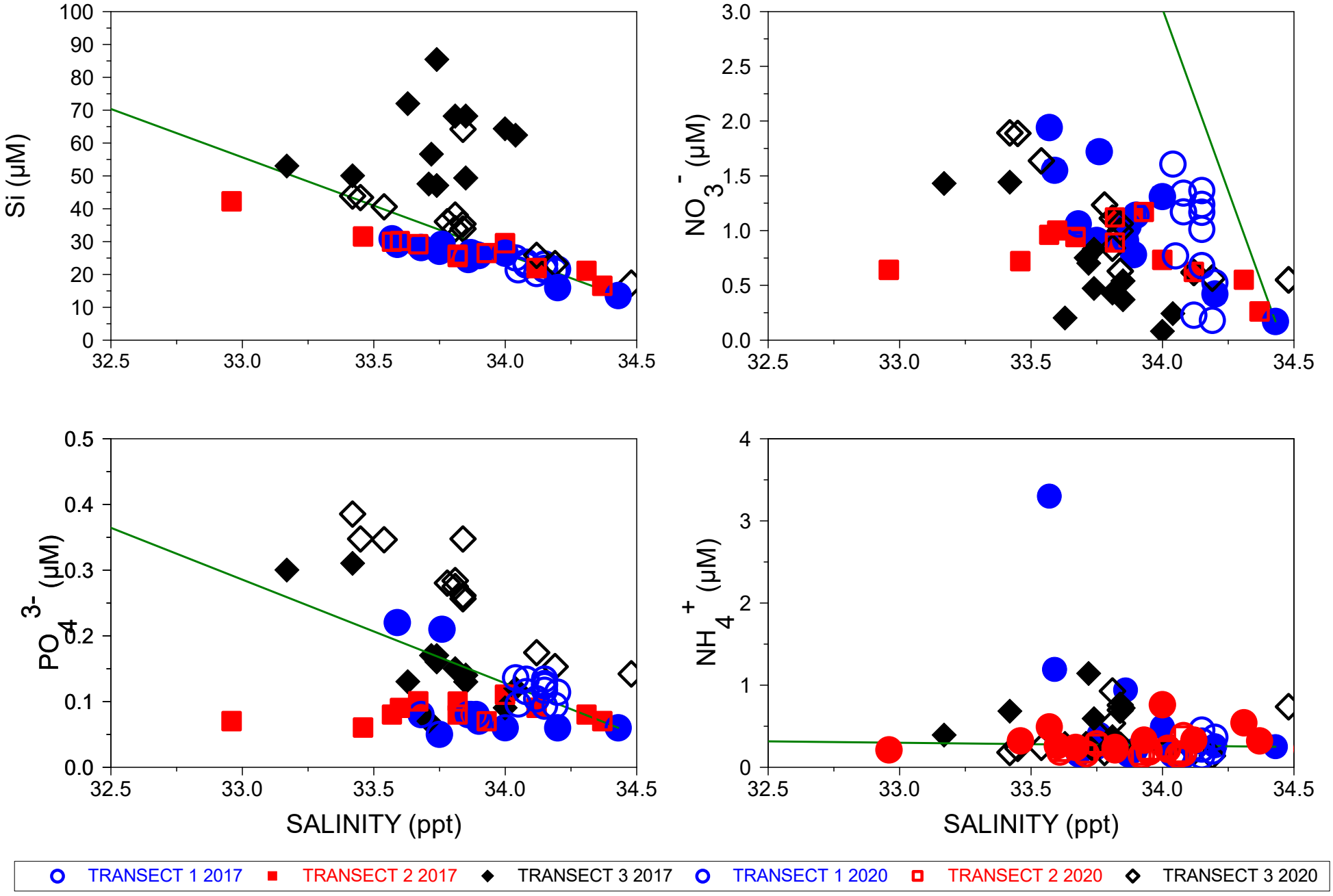


FIGURE 6. Plots of four dissolved nutrients measured from water samples collected at sampling stations downslope from the Kanaha Hotel at Kahului Airport site in Kahului, Maui, Hawaii on October 2, 2017 and October 23, 2020 as functions of salinity. Straight line in each plot is the conservative mixing line constructed by connecting the concentrations in open ocean water with groundwater pumped into Kanaha Pond. For sampling station locations, see Figure 1.

Appendix 20

Economic Impact Analysis and Public Fiscal Assessment

JOHN M. KNOX & ASSOCIATES, INC.

Kanahā Hotel Economic Effects

Assessment of Proposed New Airport Hotel

May 15, 2021

Prepared for:
R.D. Olson Development
and
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Prepared by:
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PREFACE

John M. Knox & Associates ("JMK Associates") prepared initial versions of this study in 2017 and 2019, when the proposed Kanahā Hotel was known as the "Maui Windward Hotel." This final version of May 2021 uses methods fairly similar to those in earlier versions. Changes include different assumed construction dates and related costs, as well as the years in which dollar terms are expressed. (That is, this report uses 2020 dollars, while the 2019 report used 2019 dollars.) These changes were necessitated by shifts in entitlement requirements and approving agencies. This report retains some references to inputs and information developed in those prior years, especially the 2017 period in which the core methodology was developed, along with a focus on the extent to which Maui County is projected to capture portions of statewide effects.

However, two major external changes have occurred since the 2019 report version:

1. The COVID-19 "novel coronavirus" pandemic shut down Hawai'i's tourism industry for much of 2020, with many restrictions still in place as of early 2021. Although Maui tourism appears to be recovering even more rapidly than in the rest of the state as of this writing, policy makers statewide and especially in Maui have emphasized the need for greater economic diversification and less continued reliance on traditional overseas leisure tourists.

2. The most recent market studies for the project now assume that the clientele for this proposed second Kahului airport hotel would include substantial portions of In-State (i.e., Hawai'i resident, or "kama'āina") business travelers, plus much smaller portions of In-State leisure travelers. We could find no reliable recent studies of the economic characteristics of these In-State market segments, and so we needed to make some tentative assumptions based on estimates of Neighbor Island hoteliers. There is a need for Hawai'i economists to begin tracking inter-island travel spending patterns as the push for new business activities accelerates.

Given the market studies' findings that the hotel will compete with vacation rentals and other existing lodging, rather than attract or accommodate visitors who would not come otherwise, the hotel's "new" economic effects would be primarily from Construction activities, not from Operations. However, one of the studies concluded there would likely be a small number of "new" room-nights due to hotel operations (i.e., room-nights and spending that would not occur anyway).

Therefore, the structure of this report differs somewhat from earlier versions. Most chapters focus on the economic effects *associated with* economic activity, "new" or not, a process somewhat equivalent to assuming all the economic activity flowing through and from the hotel is "new." These chapters also attempt to carefully explain the logic of the analysis. Then a final chapter shows comparable numbers *only* for the presumed "new" activity contingent upon project approval – i.e., all Construction and the limited Operations spending from business travelers induced to spend more time on Maui.

EXECUTIVE SUMMARY

This report assesses economic effects of a proposed new 200-unit Maui airport hotel, scheduled to begin construction in early 2023 and to open in April 2025, with stabilized occupancy a few years later. This study primarily relies on information from market studies and from the most recent Hawai'i State Input-Output (I-O) Model to estimate economic consequences of the project.

Two parallel complete analyses were completed:

1. The first looks at effects associated with all economic activity generated by on-site hotel guests, without regard to whether these are "new" on a net islandwide basis (i.e., whether or not the visitor bodies and dollars are expected to come to Maui with or without this project). This is the majority of the report, simply because it also includes explanation of logic and methodology.

2. The second narrows the focus on prospective "new" economic activity – which would include all Construction but just a slice of all Operational activity following the hotel opening.

All Economic Activity Associated with Project

Construction Phase: Following are statewide figures, along with estimated capture rates for Maui County.

Cumulative Construction Effects, 2022 - 2025	Cumulative Effects
Total Statewide Economic Activity (2020 $Millions)[a]	$124.6
-- *% Captured in Maui*	*74%*
Total Statewide Household Earnings (2020 $Millions)	$41.8
-- *% Captured in Maui*	*81%*
Total Statewide Jobs (Job-Years) Supported[b]	654
-- *% Captured in Maui*	*78%*
Associated Statewide Resident Population Supported[b,c]	718
-- *% on Maui*	*76%*

[a] "Totals" in this table include direct + indirect/induced "ripple effects" statewide (with vast majority in Maui)

[b] "Supported" jobs (full-/part-time) and associated resident pop. could be new or existing but maintained by project (includes a small number of soft-cost jobs in 2022)

[c] "Person-years" of population supported over 23-month construction period

The figures indicate that construction of the proposed Kanahā Hotel would generate (with "ripple effects" as construction expenditures flow through the economy) some $125 million in wages and business receipts, nearly three-quarters of which would be in Maui County. (All dollar figures in this report are constant 2020 dollars.)

During the same two-year construction period, household earnings would total $42 million statewide. Some 654 "job-years" would be supported, equivalent to 335 full-time positions for two years. And 718 people (or an average of 420 people per year) would be supported by these earnings and jobs. All of these effects would be predominantly captured within Maui County, though some would "ripple" to other parts of the state.

Operational Phase: The following summary table provides similar economic and population outcomes for sample years 2028 and 2034, with cumulative results as well for the hotel's initial decade of operations. Effects can differ somewhat by year due both to growing occupancy levels and also to year-specific aspects of the Hawai'i I-O Model, which is why the table shows figures for 2028 and 2034 as sample years.

Average Annual Operational Effects	Effects 2028	Effects 2034	Cumulative Effects, 2025 - 34
Total Economic Activity (2020 $Millions)[a]	$37.2	$36.9	$355.0
-- Pct. on Maui	*69%*	*69%*	*69%*
Total Household Earnings (2020 $Millions)	$10.2	$10.1	$97.5
-- Pct. on Maui	*72%*	*72%*	*72%*
Total Jobs (Full-/Part-Time) Supported[b]	246	272	2,439
-- Pct. on Maui	*76%*	*74%*	*75%*
Associated Resident Pop. Supported[b]	423	469	
-- Pct. on Maui	*76%*	*74%*	
Avg. Daily/Nightly Visitor Population at Hotel	295	295	
-- Pct. on Maui	*100%*	*100%*	

[a] "Totals" in this table include direct + indirect/induced "ripple effects" statewide (with clear majority in Maui)

[b] "Supported" jobs (full- and part-time) and associated resident population could be either new or existing but maintained by project

For the ten-year period, total (with "ripple effects") economic activity would be $355 million, nearly 70% in Maui County, and the cumulative household earnings would be $97.5 million. The total number of jobs (including on-site at hotel, off-site from direct visitor expenditures, and "ripple effects") would grow from 246 job-years in 2028 to 273 in 2034, for a ten-year cumulative total of 2,439, 75% in Maui. These jobs would support 423 workers and dependents by 2028 and 469 by 2034, again with about 75% in Maui County. The hotel will host an average visitor population of 295 guests.

Government Fiscal Cost-Revenue Results: As explained in the report, the fiscal analysis was conducted using three different scenarios, corresponding to the full range of possible assumptions about how much of the "population supported" by operations truly consists of people who would not reside in Maui or elsewhere in the state without this hotel development – 100%, a medium 50%, or 0%. The (highly unlikely) 100% net in-migrant scenario typically produces negative results for at least the State, but cumulative effects are positive for the State under the other two scenarios and positive for Maui County under all three scenarios.

Average Annual Net Revenues after Service Costs	Effects 2022 [a] Construction	Effects 2023 Construction	Effects 2024 Construction	Effects 2025 Construction, Initial Oper.	Effects 2026 Early Full Operations	Effects 2034 Later Full Operations	Cumulative Effects, 2022 - 34
Assuming 100% of "Population Supported" Is New Population							
Maui County (2020 $Millions)	$0.07	$0.08	$0.25	$0.48	$0.40	$0.36	$4.29
State of Hawaii (2020 $Millions)	$0.11	$2.22	$2.95	-$0.64	-$0.70	-$1.01	-$3.06
Assuming 50% of "Population Supported" Is New Population							
Maui County (2020 $Millions)	$0.07	$0.08	$0.25	$0.56	$0.56	$0.54	$5.90
State of Hawaii (2020 $Millions)	$0.11	$2.22	$2.95	-$0.11	$0.42	$0.27	$8.31
Assuming 0% of "Population Supported" Is New Population							
Maui County (2020 $Millions)	$0.07	$0.08	$0.25	$0.63	$0.72	$0.72	$7.51
State of Hawaii (2020 $Millions)	$0.11	$2.22	$2.95	$0.41	$1.53	$1.55	$19.69

[a] Construction begins Apr. 2023, but some soft costs (e.g., planning/permitting) will occur in 2022 and early 2023.

No clear basis has ever been developed for determining the actual percentage, which is highly likely to shift over time. The 100% figure is extremely conservative in that it assumes all operational workers (at the hotel and off-site) and all their dependents would either be in-migrants or else current residents who would immediately out-migrate without these jobs. The 0% assumption is extremely liberal, assuming no causal connection between the hotel and population change.

Some unknown in-between figure is most likely, and in the absence of further knowledge the 50% scenario may be considered the best estimate. At this 50% level, both levels of government enjoy positive revenues over 13 years -- $5.9 million for the County and $8.3 million for the State. (The 13 years includes a year of planning prior to construction, two years of construction, and the first ten years of operations.)

"New" Economic Activity Alone

According to market consultant reports, the hotel will primarily compete with existing vacation rentals and other lodging properties. However, it may induce extra nights on Maui from In-State Business Travelers. "New" economic activity thus would be (1) primarily the Construction Phase, which would not occur with project approval; and (2) the additional spending from additional time on island by the business travelers.

Construction Phase: See first summary table on Page ii. This is all "new" and it would be included here completely.

Operational Phase: The summary table on the following page indicates relatively ***small but positive economic effects*** deriving from the additional room-nights. These include a ten-year total of about $12 million in economic activity throughout the island, roughly $3.5 million in household earnings, about 90 job-years over the decade (supporting a total Maui resident population of 20 to 38 a year), and an additional average on-site population at the hotel each night of 16 to 21 guests.

Average Annual Operational Effects ("New" Only)	Effects 2028	Effects 2034	Cumulative Effects, 2025 - 34
Total Economic Activity (2020 $Millions)[a]	$1.1	$1.5	$12.0
-- Pct. on Maui	*100%*	*100%*	*100%*
Total Household Earnings (2020 $Millions)	$0.3	$0.4	$3.5
-- Pct. on Maui	*100%*	*100%*	*100%*
Total Jobs (Full-/Part-Time) Supported[b]	8	12	90
-- Pct. on Maui	*100%*	*100%*	*100%*
Associated Resident Pop. Supported[b]	19	28	
-- Pct. on Maui	*76%*	*74%*	
Avg. Daily Visitor Population Increase	16	21	
-- Pct. on Maui	*100%*	*100%*	

[a] "Totals" in this table include direct + indirect/induced "ripple effects" statewide (with clear majority in Maui)

[b] "Supported" jobs (full- and part-time) and associated resident population could be either new or existing but maintained by project

Government Fiscal Cost-Revenue Results: Overall, government revenue balances are generally even ***more positive over time*** just for "new" economic activity only, compared to the previous analysis based on total "associated" activity for all three in-migration scenarios.

This is primarily because so few additional residents and visitors are properly counted as "new" in the Operational Phase that government service costs are very low. Maui County is accounted a little less revenue during initial Construction years (because in this analysis we look only at the *change* in real property tax rather than the total tax collected), but this lower figure is outweighed by the more positive balance due to low Operational phase service costs for the limited "new" resident and visitor populations.

Average Annual Net Revenues after Service Costs ("New" Only)	Effects 2022 [a] Construction	Effects 2023 Construction	Effects 2024 Construction	Effects 2025 Construction, Initial Oper.	Effects 2026 Early Full Operations	Effects 2034 Later Full Operations	Cumulative Effects, 2022 - 34
Assuming 100% of "Population Supported" Is New Population							
Maui County (2020 $Millions)	$0.03	$0.21	$0.47	$0.57	$0.56	$0.56	$6.34
State of Hawaii (2020 $Millions)	$0.11	$2.22	$2.95	$0.68	-$0.03	-$0.07	$5.53
Assuming 50% of "Population Supported" Is New Population							
Maui County (2020 $Millions)	$0.03	$0.21	$0.47	$0.58	$0.57	$0.57	$6.42
State of Hawaii (2020 $Millions)	$0.11	$2.22	$2.95	$0.70	$0.01	$0.01	$6.10
Assuming 0% of "Population Supported" Is New Population							
Maui County (2020 $Millions)	$0.03	$0.21	$0.47	$0.58	$0.58	$0.58	$6.50
State of Hawaii (2020 $Millions)	$0.11	$2.22	$2.95	$0.73	$0.06	$0.09	$6.66

[a] Construction begins Apr. 2023, but some soft costs (e.g., planning/permitting) will occur in 2022 and early 2023.

CONTENTS

LIST OF TABLES

1. INTRODUCTION AND METHODOLOGY

1.1 Study Purpose

R.D. Olson Development – with planning assistance from Chris Hart Partners (CHP) Inc. – proposes development of a new 200-unit hotel near the Kahului Airport on Maui. The "Kanahā Hotel" will include limited conference facilities and is to be constructed on Tax Map Keys (2) 3-8-103:014 portion, 015 portion, 016, 017, 018. (These are new TMKs, following a recent subdivision.) R.D. Olson, developer of three other Maui hotels, this year purchased the land from Alexander & Baldwin.

The study assesses economic effects associated with development of the proposed new hotel, as part of an overall Environmental Impact Statement being prepared by CHP. The site, currently vacant, is now zoned Light Industrial District, which would permit a variety of quite different development scenarios – including retail or light industrial activities. This presents a dilemma for traditional economic impact analysis, which normally compares a proposed "With-Project Future" to an "Alternative-Action Future," with the "impact" being the difference between the two futures. In this case, because there are so many "Alternative-Action Futures," it is more practical simply to report the "economic *effects*" associated with project development – how much economic activity, jobs, etc. are created or supported on a net islandwide basis from hotel guest spending and the preceding construction activities.

This is done in two steps:

1. The majority of the report provides a detailed explanation of the economic effects that are expected to flow through the new hotel site, without regard to whether they are "new" to Maui or might occur anyway if Kanahā Hotel guests stay at other lodging choices.

2. A final chapter looks only at "new" effects, with results derived from the same methods and logic previously explained … but with inputs restricted to economic changes that would not occur somewhere on Maui without the new hotel. This amounts to all the construction benefits plus a small portion of the operational benefits (reflecting input from market studies about what would be "new").

The Kanahā Hotel is currently proposed to begin construction in late April 2023 and to start operations about 24 months later, in April 2025, reaching stabilized occupancy in 2027. This economic effects study by John M. Knox & Associates Inc. ("JMK Associates") includes the following components:

- Chapter 2 estimates primary economic consequences of the Construction phase. These effects include output, earnings, employment, and State taxes.

- Chapter 3 presents similar economic consequences from the Operational phase.

- Chapter 4 is about Population effects from each phase.

- Chapter 5 reports Fiscal Cost-Revenue Effects from both phases combined (primarily from Construction, but real property tax can be estimated for the Operational phase following construction completion).

- Chapter 6 presents in summary form the same foregoing results – economic consequences, population effects, and fiscal cost-revenue effects – only for the "new" economic activity induced on Maui, according to market consultants. Numbers in this chapter are closer to traditional understanding of "economic *impact*," but just in the sense of the difference between developing the property or leaving it vacant.

1.2 Methodological Overview

1.2.1 Overall Principles and Approach

Several key principles underlie the approach used in, and/or proper interpretation of, this study:

- **Economic and Population Analyses Are Approximations:** Because inputs and outputs in the economic analysis appear precise, it is always useful to recall that these results are in fact approximate estimates.

- **Economic Effects Do or May Occur in Two Different Phases – Construction and Operations:** Construction generates strong but short-term economic effects, while Operations (when the hotel is open and "operating") provides the more lasting economic consequences.

- **Effects Are Either Statewide or Countywide, Depending on Input-Output Model Component:** The "Input-Output Model" is explained immediately below. The Statewide component of the Model gives economic effects throughout all the islands of Hawai'i, while the County Model produces effects just for that county. Results are not limited to on-site economic activity but rather include the whole State/county.

1.2.2 Approach for Construction Phase

I-O Model: The primary method for estimating Construction Phase effects involves application of the official Hawai'i State Input-Output ("I-O") Model developed by the Hawai'i State Dept. of Business, Economic Development, and Tourism (DBEDT). Specifically, we used the *2012 Hawai'i Inter-County Input-Output Study*, which was brought online in 2016 and as of April 2021 is still the most recent available model of

economic linkages for the state and the four counties (see http://dbedt.Hawai'i.gov/economic/reports_studies/2012-inter-county-io/).[1]

This I-O Model includes various ratios and multipliers needed to estimate both Direct and Total results. Direct results are those that come from the initial round of spending – e.g., jobs at the construction site and home office. Total results include multiplier or "ripple" effects as those initial expenditures circulate through the economy – for example, workers spend their wages in local stores and pay taxes that support government workers, and contractors buy goods/services from other Hawai'i businesses.

The Hawai'i I-O Model provides estimates of four types of economic effects:

1. Output (economic activity);
2. Household Income (earnings);
3. Jobs (full- and part-time job-years[2] for Construction); and
4. State taxes.

For each of the above, three different numbers can be generated – (a) Direct Effects (regarded as Statewide, though really essentially all at the County level; (b) Total Effects (including "ripple effects") at the County level; and (c) Total Effects at the State level. Total Effects at the County level can be expressed as a percentage of Total Effects at the State level, so only two tables (Direct and Total) are actually needed to summarize results for each of the four topics.

Especially for the Construction phase, which is inherently short-term and sporadic, results in terms of output, earnings, jobs, and taxes should be understood as effects "created or supported" by the project. Most such economic activity already exists but would disappear or diminish if not "supported" by ongoing intermittent activity. However, in boom times, expanded construction adds to existing activity and employment.

Specifying Inputs in Dollar Terms: The construction "input" to an input-output model consists of new spending in the Hawai'i economy – i.e., expenditures for actual construction ("hard costs") as well as associated support activities ("soft costs" such as architectural plans and outlays for environmental studies).

[1] As this study was finalized in mid-May 2021, the State had posted a new I-O Model (based on 2017 economic information) at the overall *State* level, but this Kanahā Hotel study requires the *"Inter-County"* multipliers and associated additional unpublished multipliers to determine visitor-related and/or Maui-specific results. These were not yet available. Based on our experience with various iterations of the I-O Models over time, multipliers typically change only slightly from one version of the I-O Model to the next, and we would assume similar outcomes if the upcoming new Inter-County Model were applied.

[2] Construction – especially "hard" on-site construction activity – requires different types of workers for different periods of time, some for the length of the project and some specialty trades for a short time. It is very difficult to estimate the total number of people who may be employed on a particular project. So "job-years" are used to produce results. Two people, each working six months, would equal one "job-year."

Construction budgets typically are constantly updated, but R.D. Olson supplied JMK Associates with its most recent (Apr. 2021) set of estimates. Because the I-O Model consists of ratios and multipliers for various standard economic sectors ultimately developed by the U.S. Bureau of Economic Analysis (BEA), it was necessary to translate budget categories into these sectors. Table 1 shows the final adopted approach and numbers. This required judgment in some cases but overall was fairly straightforward – for example, projected expenditures for Furniture, Fixtures, & Equipment (excluding imported content) fit well into Maui Sector 9, "Retail Trade."

Table 1. I-O Sectors Assigned to Project Construction Costs

Presumed Timeframe:	10/22-12/22	1/23-12/23	1/24-10/24	1/25-3/25	Total
Hard Costs					
M-S2 Construction	$0	$19,096,814	$27,829,406	$6,132,344	**$53,058,564**
Heavy/Civil Construction	*$0*	*$5,643,919*	*$0*	*$0*	***$5,643,919***
Structure/Building Construction	*$0*	*$13,452,896*	*$27,829,406*	*$6,132,344*	***$47,414,645***
Soft Costs	*$1,036,864*	*$3,965,938*	*$4,192,622*	*$931,380*	*$10,126,804*
M-S12 Professional Services	$335,409	$1,236,196	$1,261,521	$280,313	**$3,113,439**
M-S10 Finance and Insurance	$256,579	$945,618	$964,951	$214,406	**$2,381,554**
M-S13 Business Services	$444,877	$1,640,574	$1,675,119	$372,424	**$4,132,994**
M-S9 Retail Trade	$0	$143,550	$291,031	$64,237	**$498,818**
SUM	**$1,036,864**	**$23,062,752**	**$32,022,027**	**$7,063,725**	**$63,185,368**

Notes: 1. These are current dollars for future years -- i.e., include projected inflation (assumed overall 1.2%/yr for hard costs; sector-specific average inflation since 1998, according to U.S. BEA data, for soft costs)

2. As further detailed in Chapter 2, additional soft costs of $3.5 million have already been spent or are budgeted for Hawai'i expenditure from 2017 through 2021.

Source: R.D. Olson Development, with sector allocations by JMK Associates

Note that the overall economic benefits (or "Direct output") for the Proposed Action Scenario is about $63.2 million (future current $s, including inflation – thus, would be somewhat less if all in 2020 dollars). Note also that the majority of the Direct expenditures for economic activity consist of construction hard rather than soft costs.

1.2.3 Approach for Operational Phase

This study's approach to the Operational phase differed from prior studies for this project, and also differs from typical analyses of economic impact/effects for hotel projects in Hawai'i. The reasons are explained in more detail in Chapter 3 on economic effects of the Operational phase, but market analyses for the report and communications with the market consultants made it apparent that, by standard I-O methodology, immediate economic effects from the project would be difficult to estimate with accuracy and would likely be very small. That is because the market studies concluded that, for the most part, the hotel would simply capture guests who would still find other (if less convenient and sometimes more problematic) lodging should the Kanahā Hotel not be approved and built.

However, it will also later be noted that one market consultant concluded the hotel actually will likely result in a modest increase in the number of visitor-nights from inter-island resident business travelers. The magnitude of that possible increase is estimated in Chapter 4 on population, and the small net positive economic effects from Operations are reported in Chapter 6.

Additionally, the project brings a different type of value to the destination and its economy as parts of (a) the ongoing process of "refreshing" the lodging inventory through both renovations and new supply; and (b) supplying needed support for Maui County's intended push for greater economic diversification, as that will likely result in more business travel. However, these sorts of value are difficult to estimate numerically; are more long-term in nature; and the "lodging refreshment" part has to do with maintaining rather than immediately growing economic activity and tax revenue.

Adjustment of State Tax Totals for New TAT Level: The Transient Accommodations Tax (TAT) plays a very minor role in Construction Phase economic effects, but we will still note an adjustment required for use of the 2012 I-O Model. That model calculates Total State Taxes as the sum of four components: (a) Individual Income Tax; (b) General Excise Tax (GET); (c) TAT; and (d) All Other Taxes. Subsequent to the 2012 Model development, the 2017 State Legislature in Special Session passed SB1, increasing (effective 2018) the statewide TAT rate from 9.25% to 10.25%, with the additional 1% virtually all flowing through to the City and County of Honolulu for rapid transit development. The bill also maintained the cap on total TAT funds that are divided among the counties. Accordingly:

- As per advice from State Chief Economist Eugene Tian during the first iteration of this study (personal communications, Sept. 12 and Nov. 24, 2017), our analysis has been modified (exact procedure devised by JMK Associates) to add new TAT revenues (1% increase) to the estimated Total State Tax figures – although it should be noted that virtually all of this additional "State" revenue will pass through to the City and County of Honolulu. Dr. Tian noted this is a somewhat liberal procedure because the TAT increase has some potential to reduce total visitor spending in non-lodging sectors such as shopping, but State economists are unable to estimate the magnitude of any such effect.

- However, because as of this writing the cap remains on total TAT funds to be divided among counties, creation of new hotel rooms and additional TAT charges will generate no additional Maui County revenues, so long as the cap remains in place. Although we suspect that increasing pressures on County budgets from tourism growth will increase pressure on the Legislature to adjust that cap, the analysis conservatively assumes it will remain in place and new hotels such as the Kanahā Hotel will not result in additional TAT funds returned to the County government from the State.[3]

[3] We further assume that Maui County, as in the past, will retain the 4.0% GET rate for non-Oʻahu counties and not choose to exercise its right to add up to a 0.5% GET surcharge to fund county transit projects. However, we note Kauaʻi and Hawaiʻi Counties have now added surcharges, and so the assumed ongoing 4.0% GET rate for Maui is likely a conservative approach. Also, as noted on the next page, the allocation of TAT among counties may change after 2021, but this is still uncertain.

Additionally, as this report was finalized, the State Legislature reduced TAT allocations to counties but gave them authority to charge additional county-specific TAT. It is unclear whether this bill will survive a possible gubernatorial veto or override vote, thought the Maui Mayor has said he would propose charging the full allowed 3% additional TAT if possible. This new, uncertain situation could not be appropriately reflected in the study.

Specific Assumptions for Operational Phase: The logic of the I-O Model analysis can be summarized as: (1) determine overall estimated annual islandwide spending (total on- and off-site) by hotel guests, considered the "Direct Output;" (2) find the product of this amount times various specific I-O multipliers in the "Maui Visitor Expenditure" category (M-VE)[4] to yield Total Output, Direct and Total Earnings, Direct and Total Jobs, and Direct and Total State Taxes.

In order to obtain the Direct Output estimate on which all other Chapter 3 results are based, the following assumptions of Table 2 and Table 3 were used. Both tables refer to four market segments – In-State (or "Kama'āina" or "Resident") Business Visitors, Out-of-State Business Visitors, In-State Leisure Visitors, and Out-of-State Leisure Visitors.

Table 2. Operational Analysis Assumptions Remaining Constant Over Time

Input	Source	Value
Property-Wide Parameters		
Number of Units	CBRE Ellis Marketing Study	200
In-State Business Visitors		
% Occupied Rooms, In-State Business	Avg. CBRE and Kloninger Sims Studies	53.9%
Avg. Party Size, In-State Business	JMK Assoc, based on interviews	1.50
PPPD,[a] 2020 $s, In-State Business	JMK Assoc, based on interviews	$157.50
Out-of-State (OOS) Business Visitors		
% Occupied Rooms, OOS Business	Avg. CBRE and Kloninger Sims Studies	18.6%
Avg. Party Size, OOS Business	JMK Assoc, Special Analysis by HTA Research	1.61
PPPD, 2020 $s, OOS Business	Special Analysis by HTA Research	$203.00
In-State Leisure Visitors		
% Occupied Rooms, In-State Leisure	Avg. CBRE and Kloninger Sims Studies	6.1%
Avg. Party Size, In-State Leisure	JMK Assoc, based on interviews	2.25
PPPD, 2020 $s, In-State Leisure	JMK Assoc, based on interviews	$168.75
Out-of-State (OOS) Leisure Visitors		
% Occupied Rooms, OOS Leisure	Avg. CBRE and Kloninger Sims Studies	21.4%
Avg. Party Size, OOS Leisure	Avg. Maui Value 2010-19 AVRR	2.20
Hotel Adjustment to Maui Avg. Party Size [b]	Avg. State Ratio Hotel:Total Party Size, 2004-19 AVRR	1.038
Hotel Adjustment to Maui Avg. PPPD [b]	Avg. State Ratio Hotel:Total PPPD, 2017-19 AVRR	1.127

[a] PPPD = "Per Person Per Day" (Average Daily Spending)

[b] Overseas hotel visitors historically have larger party sizes and spend somewhat more than average visitors, based on statewide data.

Additional Note: "AVRR" refers to Hawai'i Tourism Authority *Annual Visitor Research Reports.* http://www.hawaiitourismauthority.org/research/reports/annual-visitor-research/

[4] There are actually two sets of M-VE multipliers – one in the State I-O Model and another in the Maui portion of the Inter-County model. Dividing the second by the first yields the percentage of statewide economic effects captured in Maui County.

These categories were derived from two market studies for the project, as further explained in Chapter 3. Each segment's Direct Output is a simple function of Units in Hotel x Overall Occupancy x Segment Percent of Occupied Rooms x Average Party Size x Average Daily Spending ("PPPD" in table below). The sum of the Direct Output for each segment is then input to the I-O Model and its various multipliers.

Table 3. Operational Analysis Assumptions Changing with Time

Input	Source	2025	2026	2027	2028	2029
Property-Wide Parameters						
Total Occupancy Factor	CBRE Ellis Marketing Study	68.0%	83.0%	85.0%	85.0%	85.0%
% Year Hotel is Open for Operations	R.D. Olson Development	74.8%	100.0%	100.0%	100.0%	100.0%
Out-of-State (OOS) Leisure Visitors						
PPPD,[a] Maui, 2020 $s (Unadjusted)	DBEDT 2045 Forecast (in 2020 $s) [b]	$219.10	$218.34	$217.58	$216.82	$216.07

Input	Source	2030	2031	2032	2033	2034
Property-Wide Parameters						
Total Occupancy Factor	CBRE Ellis Marketing Study	85.0%	85.0%	85.0%	85.0%	85.0%
% Year Hotel is Open for Operations	R.D. Olson Development	100.0%	100.0%	100.0%	100.0%	100.0%
Out-of-State (OOS) Leisure Visitors						
PPPD, Maui, 2020 $s (Unadjusted)	DBEDT 2045 Forecast (in 2020 $s)	$215.32	$214.58	$213.85	$213.12	$212.39

[a] "Per Person Per Day" (Average Daily Spending)

[b] "DBEDT Forecast" refers to *Population and Economic Projections for the State of Hawaii to 2045: DBEDT 2045 Series.* http://dbedt.hawaii.gov/economic/economic-forecast/2045-long-range-forecast/

As may be apparent from Table 2, for ***Out-of-State*** Business and Leisure Visitors, the Hawai'i Tourism Authority (HTA) datasets provided information needed for assumed average party sizes and average daily spending per person. More difficult to estimate were party sizes and spending levels for the two ***In-State segments*** (Business and Leisure). We found no solid research on economic characteristics of resident inter-island travelers after checking with HTA Research, DBEDT Research and Economic Analysis, the University of Hawai'i Economic Research Organization (UHERO), island chapters of the Hawai'i Visitors and Convention Bureau (HVCB), and inquiries to all University of Hawai'i faculty in Economics and Travel Industry Management.

Therefore, we solicited estimates from various hoteliers working in the Kahului, Hilo, and Līhu'e areas, asking for their professional opinions on a confidential (anonymous) basis. Based on their input and comparison to HTA data for Out-of-State visitors of similar types, we made the judgmental assumptions shown above in Table 2.

1.2.4 County Tax Revenues and State/County Service Costs

County tax revenues are not estimated by the I-O Model. Most Maui County operating revenue comes from real property taxes. Real property tax revenue consequences are estimated as described in Chapter 5 on "Fiscal Effects," as are the assumptions for County and State service costs.

2. CONSTRUCTION PHASE ECONOMIC EFFECTS

The construction expenditures in the foregoing Table 1, assigned to calendar years as previously described, were input to two components of the I-O Model:

- The Statewide component, where the results for Total effects include some "ripples" to other counties as well; and
- The Maui component, which calculates results captured in this county only.

As previously stated in Chapter 1, all results should be understood as economic activity "supported or maintained" by the project. For example, "ripple effect" jobs (also known as "induced and indirect") might include some that are currently supported by other construction projects coming to an end – the Kanahā Hotel construction effort would continue providing the economic demand for those jobs, not create them.

Dollar results for other variables were deflated to standardized constant 2020 dollars for presentation purposes, using the 1.2% hard-cost inflation factor (and various sector-specific soft cost inflation factors)[5] incorporated into the current-dollar figures in Table 1. The final results were as follows.

2.1 Output from Construction

Output means economic activity, money flowing through the economy. Direct Output (Table 4) is simply the initial in-state expenditure, but Total Output (Table 5) shows the "ripple effects" of subsequent rounds of spending by construction workers and businesses. The Total Output is more than twice the initial expenditure – $124.6 million (about 74% of this in Maui), including soft costs dependent on project entitlement.

Table 4. Direct Output from Construction Phase, 2022 - 2025

(All dollar figures are millions of constant 2020 dollars, and show output related to direct on-site economic activity)	2022	2023	2024	2025	TOTALS
Direct Output (Expenditures in Hawai'i)					
-- Construction	$0.00	$18.43	$26.53	$5.78	**$50.74**
-- Professional Services (Soft Cost)	$0.32	$1.16	$1.16	$0.25	**$2.90**
-- Finance and Insurance (Soft Cost)	$0.25	$0.89	$0.89	$0.19	**$2.22**
-- Business Services (Soft Cost)	$0.43	$1.54	$1.54	$0.34	**$3.84**
-- Retail Trade (Soft Cost)	$0.00	$0.14	$0.28	$0.06	**$0.47**
Combined Results (Direct Effects)	**$1.00**	**$22.16**	**$30.40**	**$6.62**	**$60.18**

Note: For all results tables in report, Totals may not exactly equal sums from years due to rounding error.

[5] The 1.2% rate reflects the latest Honolulu construction inflation estimates from Rider Levett Bucknall, and the soft-cost sector inflation rates were averages from 1998 calculated by JMK Associates from U.S. Bureau of Economic Analysis data accessed in July 2020.

Table 5. Total Output from Construction Phase, 2022 - 2025

(All dollar figures are millions of constant 2020 dollars, and show output related to total statewide economic activity including "ripple effects.")	2022	2023	2024	2025	TOTALS
Total Output (Expenditures in Hawai'i)					
-- Construction	$0.0	$37.5	$54.0	$11.7	**$103.2**
-- Professional Services (Soft Cost)	$0.7	$2.5	$2.5	$0.5	**$6.21**
-- Finance and Insurance (Soft Cost)	$0.59	$2.15	$2.15	$0.47	**$5.36**
-- Business Services (Soft Cost)	$1.00	$3.60	$3.60	$0.78	**$8.98**
-- Retail Trade (Soft Cost)	$0.00	$0.25	$0.50	$0.11	**$0.85**
Combined Results (Total Effects)	**$2.28**	**$45.96**	**$62.69**	**$13.65**	**$124.58**
% on Maui	**75.2%**	**74.0%**	**73.9%**	**74.0%**	**74.0%**

Additionally, though these are not project "impacts" or "effects" (because they did or will occur regardless of whether the proposed hotel is approved and built), it should be noted that the "Direct Output" of Table 4 excludes soft cost expenditures primarily in Hawai'i and Maui for planning and entitlement purposes. According to data provided by R.D. Olson, those total to nearly $3.5 million (Table 6). This excludes recent land purchase ($9.17 million) from Alexander & Baldwin.

Table 6. Additional Direct Output from Project Planning/Entitlement, 2017 - 2021

	2017	2018	2019	2020	2021	2022*		Total
Soft Costs								
M-S12 Professional Services	$403,982	$140,908	$153,753	$256,642	$375,000	$300,000		**$1,630,285**
M-S10 Finance and Insurance	$153,000	$153,000	$3,000	$3,000	$60,000	$60,000		**$432,000**
M-S13 Business Services	$12,375	$0	$0	$0	$12,500	$1,382,042		**$1,406,917**
SUM	**$569,357**	**$293,908**	**$156,753**	**$259,642**	**$447,500**	**$1,742,042**		**$3,469,202**

Because the expenditures in Table 6 are not dependent on project approval, we do not include them in the analysis, but with "ripple effects" these past and budgeted expenditures would also more than double for Total Output, and have/will resulted in additional household earnings, jobs, and State taxes beyond the figures shown in immediately following sections of this chapter.

2.2 Earnings from Construction

This is the portion of economic activity that is captured as household income. Again we calculate both Direct (Table 7) and Total Earnings with "ripple effects" (Table 8). Construction of the project would create or support almost $42 million in household income with these multiplier effects; the vast majority of this amount is associated with actual construction hard costs contingent on approvals and about 81% would be captured in Maui County.

Table 7. Direct Earnings from Construction Phase, 2022 - 2025

(All dollar figures are millions of constant 2020 dollars, and show output related to direct on-site economic activity)	2022	2023	2024	2025	TOTALS
Direct Output (Expenditures in Hawai'i)					
-- Construction	$0.00	$7.73	$11.13	$2.42	**$21.27**
-- Professional Services (Soft Cost)	$0.17	$0.60	$0.60	$0.13	**$1.51**
-- Finance and Insurance (Soft Cost)	$0.05	$0.17	$0.17	$0.04	**$0.43**
-- Business Services (Soft Cost)	$0.13	$0.47	$0.47	$0.10	**$1.18**
-- Retail Trade (Soft Cost)	$0.00	$0.04	$0.09	$0.02	**$0.15**
Combined Results (Direct Effects)	**$0.35**	**$9.02**	**$12.46**	**$2.71**	**$24.53**

Table 8. Total Earnings from Construction Phase, 2022 - 2025

(All dollar figures are millions of constant 2020 dollars, and show earnings related to total statewide economic activity including "ripple effects.")	2022	2023	2024	2025	TOTALS
Total Earnings (Household Income)					
-- Construction	$0.00	$12.78	$18.40	$4.01	**$35.19**
-- Professional Services (Soft Cost)	$0.27	$0.97	$0.97	$0.21	**$2.41**
-- Finance and Insurance (Soft Cost)	$0.15	$0.53	$0.53	$0.12	**$1.33**
-- Business Services (Soft Cost)	$0.29	$1.05	$1.05	$0.23	**$2.63**
-- Retail Trade (Soft Cost)	$0.00	$0.07	$0.15	$0.03	**$0.25**
Combined Results (Total Effects)	**$0.71**	**$15.40**	**$21.10**	**$4.59**	**$41.81**
% on Maui	**78.9%**	**80.7%**	**80.8%**	**80.8%**	**80.7%**

2.3 Employment from Construction

The I-O Model generates estimates of both full- and part-time jobs, by year. People with jobs in one year may or may not be the same in a following year, particularly for Direct hard construction activities where many skills and trades are required at different points during a project. Thus, totals in each table might properly be called “job-years.” Table 9 suggests the overall project would generate 323 such Direct Job-Years, of which about 242 are associated with “hard” construction activity. With ripple effects (Table 10), the Total number of job-years created or supported would be 654, of which 78.3% would be in Maui.

Table 9. Direct Job-Years from Construction Phase, 2022 - 2025

(Total jobcount, both full- and part-time, related to direct on-site economic activity)	2022	2023	2024	2025	TOTALS
Direct Jobs (Full- and Part-Time)					
-- Construction	0	89	126	27	**242**
-- Professional Services (Soft Cost)	4	13	13	3	**32**
-- Finance and Insurance (Soft Cost)	1	5	5	1	**13**
-- Business Services (Soft Cost)	4	13	13	3	**33**
-- Retail Trade (Soft Cost)	0	1	2	0	**4**
Combined Results (Direct Effects)	**9**	**122**	**159**	**34**	**323**

Table 10. Total Job-Years from Construction Phase, 2022 - 2025

(Total job count, both full- and part-time, related to total statewide economic activity including "ripple effects.")	2022	2023	2024	2025	TOTALS
Total Jobs (Full- and Part-Time)					
-- Construction	0	187	262	56	**504**
-- Professional Services (Soft Cost)	6	20	20	4	**49**
-- Finance and Insurance (Soft Cost)	4	13	13	3	**33**
-- Business Services (Soft Cost)	7	25	25	5	**62**
-- Retail Trade (Soft Cost)	0	2	3	1	**6**
Combined Results (Total Effects)	**16**	**247**	**323**	**69**	**654**
% on Maui	**82.2%**	**78.4%**	**78.1%**	**78.1%**	**78.3%**

2.4 State Taxes

The I-O Model generates estimated State (though not local) tax revenues. Including the relatively small associated planning and other soft costs, Direct economic activity from constructing the project would create or maintain about $3.5 million in State Tax revenues from Direct economic activity over the construction timeframe (Table 11) and about $6.4 million including “ripple effects,” 76% derived from economic activity in Maui (Table 12).

Table 11. State Taxes from Construction Phase Direct Activity, 2022 - 2025

(All dollar figures are millions of constant 2020 dollars, and show State taxes related to direct on-site economic activity)	2022	2023	2024	2025	TOTALS
Direct State Taxes					
-- Construction	$0.00	$1.08	$1.56	$0.34	**$2.98**
-- Professional Services (Soft Cost)	$0.02	$0.08	$0.08	$0.02	**$0.20**
-- Finance and Insurance (Soft Cost)	$0.01	$0.05	$0.05	$0.01	**$0.13**
-- Business Services (Soft Cost)	$0.02	$0.06	$0.06	$0.01	**$0.14**
-- Retail Trade (Soft Cost)	$0.00	$0.01	$0.02	$0.00	**$0.03**
Combined Results (Direct Effects)	**$0.05**	**$1.28**	**$1.76**	**$0.38**	**$3.48**

Table 12. State Taxes from Construction Phase Total Activity, 2022 - 2025

(All dollar figures are millions of constant 2020 dollars, and show State taxes related to total statewide economic activity including "ripple effects.")	2022	2023	2024	2025	TOTALS
Total State Taxes					
-- Construction	$0.00	$1.94	$2.79	$0.61	**$5.34**
-- Professional Services (Soft Cost)	$0.04	$0.14	$0.14	$0.03	**$0.35**
-- Finance and Insurance (Soft Cost)	$0.03	$0.11	$0.11	$0.02	**$0.29**
-- Business Services (Soft Cost)	$0.04	$0.15	$0.15	$0.03	**$0.38**
-- Retail Trade (Soft Cost)	$0.00	$0.01	$0.03	$0.01	**$0.04**
Combined Results (Total Effects)	**$0.11**	**$2.36**	**$3.23**	**$0.70**	**$6.40**
% on Maui	**73.6%**	**75.7%**	**75.9%**	**75.9%**	**75.8%**

County Tax Revenue: County revenue from construction phases typically is minimal and comes primarily from incremental increase in property taxes. These are assessed in Chapter 5 in light of other revenue and likely governmental costs.

All Construction phase economic effects would be “new,” in the sense that they are dependent on entitlements and would not occur without such entitlements.

3. OPERATIONAL PHASE ECONOMIC EFFECTS

The numbers present in the current chapter focus strictly on the economic effects "associated with" or "flowing through" the project site, not "new" effects only occurring if the hotel is permitted and developed, as these are considered later. However, before presenting numerical economic results, we note some qualitative economic benefits associated with project location and target markets, and then summarize key market study findings on which quantitative economic results are based.

3.1 Qualitative Effects Not Covered by Traditional Input-Output Analysis

Before proceeding with the standard I-O Model quantitative analysis for Operations that parallels the foregoing analysis for Construction, we will briefly review several socio-economic aspects that are difficult to quantify and do not fit in the typical I-O approach.

3.1.1 Benefits Related to Hotel Employment Location

The I-O Model does not care where visitors stay on Maui – assuming the same profile of units and guests, it would produce the same numbers if the hotel were built in Hāna or Kīhei. The Model also does not care where jobs are located or exactly what types of jobs they are – but workers do care. According to R.D. Olson, the hotel will generate about 75 full-time jobs at opening in 2025, growing to approximately 100 at stabilization in 2027.[6] These are, of course, *hotel* jobs, and ones located in the Kahului/Wailuku area, where many current West Maui hotel workers now live and commute to hotel jobs in Wailea, Kāʻanapali, etc.

As noted shortly, Maui was losing hotel units and properties even prior to the pandemic. For example, the Mākena Beach hotel closed in 2016, with a loss of between 300 and 400 on-site jobs. It was replaced by 65 high-end condo units, with far less on-site employment. Additional hotel or other businesses may well not survive the pandemic.

A new hotel in Kahului opening in 2025 is therefore *likely,* if not certain, to provide work closer to home residences for some experienced unemployed hotel workers at that time. Overall, the alternative future for Kanahā Hotel on-site workers would be some mix of (1) unemployment, (2) long commutes to still-open West Maui hotels, or (3) likely poorer-paying jobs at vacation rentals, condos, or lower-end hotels. The *Wailuku-Kahului Community Plan* encourages hotels to be in the Wailuku town center, at the harbor, or near the airport, and the Kanahā Hotel fits this policy document.

[6] Job numbers from Anthony Wrzosek, Vice President of Planning and Development, R.D. Olson (personal email communication, Dec. 29, 2020). It should be noted that on-site jobs are not counted as net new islandwide jobs by the I-O Model in this case because, if the hotel captures guests who would otherwise be going to different properties, it would reduce on-site jobs at those other properties. The reductions would be distributed over many properties and therefore small on average for any one of them.

3.1.2 Long-Term "Destination Refreshment" Value

Just as homeowners would see property values decline if they do not occasionally paint their homes, maintain landscaping, and occasionally remodel, destinations lose value over time if they are not refreshed. In 2019, the average Maui Island overseas visitor made more than five trips to Hawai'i, and each island now increasingly has more percentages coming only to that island (about two-thirds in 2019).[7] While Maui and Hawai'i generally have natural attractions that always abide, any destination is at eventual risk if its human-created infrastructure deteriorates or simply offers little that is new.

Destination refreshment requires attention to upkeep and improvement of both public-sector infrastructure (e.g., highways and parks) and also private-sector infrastructure (activities and attractions, shopping, lodging). For example, restaurants may renovate but also compete and see changes in inventory through closures and new operations. The same is true for hotel inventory.

Such refreshment over the long term maintains visitor demand and expenditures, with attendant government tax revenues. It is difficult if not impossible to set a monetary value for any individual refreshment, but it is important to note and acknowledge.

3.1.3 Additional Benefits of Proposed Kanahā Hotel Development

As previously noted, the I-O Model does not care where visitors stay on Maui – but residents do care and so does local government. The market studies suggest that the practical alternative for many Kanahā Hotel guests would be ***vacation rentals***, and these are now believed to detract from resident housing supply and add to the cost of housing.

Both the CBRE and also the Kloninger & Sims market studies cite HTA data showing loss of hotel properties and units on Maui. After a brief period of growing hotel supply in the early 2010s, shrinkage again resumed from 2016 (8,256 units) to 2019 (7,295 units), an 11.5% loss. In the same time period, Maui average daily visitor expenditures adjusted for inflation declined by 5%. While there is no guarantee that by somehow channeling a visitor from a vacation rental to a hotel room, this would cause the same person to spend more, 2019 statewide HTA figures do indicate that hotel visitors from outside Hawai'i have a substantially higher average daily spend than do condominium visitors (a 23% differential) or those who stay in rental houses (32% differential).

Thus, while we have been appropriately conservative in not making the following assumption, there is at least the possibility that the *combination* of shutting down 200 illegal vacation rental units and replacing them with 200 hotel units would generate additional spending on Maui from the same number of visitors in future years. That is, this combination of actions could attract different but higher-spending offshore visitors.

[7] Hawai'i Tourism Authority, *Annual Visitor Research Report 2019*, Table 58.

In the case of the Kanahā Hotel, this logic would apply just to the roughly 40% of projected hotel market coming from offshore (see later Table 14 in this chapter) – i.e., the combination of shutting down 80 illegal vacation rentals and replacing them with 80 airport hotel units could attract different but higher-spending visitors.

For *kama'āina* inter-island travelers, comprising about 60% of the projected hotel market, there are no similar existing data to indicate different spending levels by lodging types. So our subsequent I-O analyses conservatively concludes that "new" impacts will be minimal, based on the market study conclusions that the hotel will primarily capture visitors coming anyway and spending anyway.

Throughout Maui and Hawai'i, the collapse of tourism during the pandemic has given new emphasis to policy makers' longstanding calls for greater economic diversification. As further discussed below, market studies indicate the Kanahā will be largely a *business* hotel. Expanding the inventory of business lodging units by itself will not create new businesses or business travelers, but it is a needed condition for new business development – part of the "infrastructure" for economic diversification.

Finally, while pandemics hopefully remain a once-in-a-century event in the modern era, what if they are not – what if it happens again? Throughout the country, airport hotels have been a critical part of the quarantine process as travelers have found themselves needing to stay longer than expected. Largely for this reason, in the first quarter of 2021, airport hotels were the fastest-recovering hotel types in the U.S. (up 250% over the first quarter of 2020), according to national lodging industry and real estate consultant JLL.[8] They may legitimately be seen as a key part of both public health response and also industry resilience in pandemic response.

3.2 Market Study Results Affecting Economic Analysis

Two different market studies, focused on somewhat different issues, were done for this project.[9] Both generally said that, rather than generating new visitors/spending that would not otherwise occur, the proposed new Kanahā Hotel will compete with and capture certain market segments that would otherwise stay at then-existing Maui lodging properties – including vacation rentals – from 2025 onward.

One of the studies, by CBRE, concluded that this airport hotel would neither *attract* new visitors to Maui nor *accommodate* demand of visitors who would not come to Maui unless it is built. The other market study, by Kloninger & Sims, had similar results in regard to minimal impact on Maui visitor counts but differed slightly in concluding that some resident business travelers could spend an extra night on-island if the hotel is

[8] JLL. March 2021. "U.S. Hotel Investment Trends: State of the Lodging Industry." https://indd.adobe.com/view/f4f27aac-cb92-40cb-928b-281f9b138048?utm_campaign=US%20Capital%20Markets%20Deck%20April%202021&utm_medium=email&utm_source=Eloqua&utm_term=1870620

[9] CBRE, Inc. April 2021, "Proposed Kanahā Hotel at Kahului Airport, Kahului, Maui" and Kloninger & Sims Consulting LLC, April 2021, letter report to R.D. Olson.

built, thus generating small amounts of additional expenditures in the Maui economy. This Chapter 3, along with following Chapters 4 and 5, takes the more economically conservative position of no additional visitors or visitor dollars due to the hotel, but this report's final Chapter 6 estimates the magnitude of changes in business visitor population and associated effects if the second market study conclusion is correct.

The two studies had slightly different but similar conclusions about ***distinct market segments*** expected to comprise the guest population when the hotel opens. Kloninger & Sims had the most detailed breakdown, assigning percentages of occupied room-nights to 12 distinct segments, which JMK Associates initially collapsed into a simpler four-segment schema, as per Table 13.

Table 13. Market Segments According to Kloninger & Sims

Original Kloninger & Sims Market Segments

	Out-of-State	Kama'aina	**Total**
Leisure	*22.0%*	*3.0%*	***25.0%***
Friends & Family	*4.5%*	*0.5%*	***5.0%***
SMERF [a] Group	0.0%	15.0%	**15.0%**
Corporate	8.0%	32.0%	**40.0%**
Corporate Meeting	2.0%	8.0%	**10.0%**
Government	1.0%	4.0%	**5.0%**
Total:	**37.5%**	**62.5%**	**100.0%**

Initial Collapsed Version for Economic Analysis

	Out-of-State	Kama'aina	**Total**
Leisure	*26.5%*	*3.5%*	***30.0%***
Business	11.0%	59.0%	**70.0%**
Total:	**37.5%**	**62.5%**	**100.0%**

[a] Social, military, education, religion, and fraternal. This is a diverse category with some Leisure elements (e.g., youth traveling sports teams) but more adult Business-type activities (e.g., service clubs, alumni reunions, military, etc.).

Working independently, CBRE concluded in their published report that the Kanahā Hotel's clientele would be 75% Business and 25% Leisure. We asked for additional estimates of the Out-of-State/In-State split for each of those market categories, and based on responses were able to generate the expanded version shown in the following Table 14. The two independent estimates were sufficiently similar that we felt comfortable averaging them to derive final input values, also shown in Table 14.

We then used the procedures described in Chapter 1, Section 1.2.3 to calculate the total Direct Output (annual countywide spending) each year from all four types of hotel guests; input that annual amount into the State's I-O Model; and generate estimates of all Output, Household Earnings, Jobs, and State Taxes. In all tables of results, total results can be broken down into amounts attributable to each of the four market segments based on their respective shares of Direct Output each year.

Table 14. Segments According to CBRE / Final Version for Economic Study

CBRE (Expanded by JMK Assoc. based on consultant input)

	Out-of-State	Kama'aina	Total
Leisure	16.3%	8.8%	**25.0%**
Business	26.3%	48.8%	***75.0%***
Total:	**42.5%**	**57.5%**	**100.0%**

Kloninger & Sims (as Collapsed by JMK Assoc.)

	Out-of-State	Kama'aina	Total
Leisure	*26.5%*	*3.5%*	***30.0%***
Business	11.0%	59.0%	**70.0%**
Total:	**37.5%**	**62.5%**	**100.0%**

Averaged Values Used for Economic Analysis

	Out-of-State	Kama'aina	Total
Leisure	21.4%	6.1%	**27.5%**
Business	18.6%	53.9%	***72.5%***
Total:	**40.0%**	**60.0%**	**100.0%**

3.3 Output from Operations

"Output," again, refers to economic activity. Table 15 shows results for Direct effects (based on estimated countywide spending by Kanahā Hotel guests), and Table 16 contains results for Total effects including multiplier or "ripple effects" throughout the county and the state as a whole. From these tables, we note here the results for a sample year (2034) and for cumulative results from late 2025 through 2034, about ten years:

- **Direct Visitor Spending, 2034 and Cumulative:** By 2034, about $20 million just from actual Maui hotel operations and other visitor spending. The ten-year cumulative amount is about $196 million from Maui spending. These effects are all within Maui, both on-site at hotel and off-site at other businesses. Of the four market segments, the most significant contributors of economic benefits – given estimated party sizes and spending levels – are Kama'āina (In-State) Business and Out-of-State Leisure travelers.

- **Total Output, 2034 and Cumulative:** With multiplier or "ripple effects," the numbers in the previous paragraph go to $37 million and $355 million, respectively. These are statewide figures but about 69% of the amounts generated on Maui itself would be captured by Maui County.

Table 15: Direct Output from Operational Phase, 2025 - 2034

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	10-Year Total
Stemming from Expenditures of Project Hotel Guests											
In-State Business Travelers	$4.7	$7.7	$7.9	$7.9	$7.9	$7.9	$7.9	$7.9	$7.9	$7.9	**$75.7**
Out-of-State Business Travelers	$2.3	$3.7	$3.8	$3.8	$3.8	$3.8	$3.8	$3.8	$3.8	$3.8	**$36.2**
In-State Leisure Travelers	$0.9	$1.4	$1.4	$1.4	$1.4	$1.4	$1.4	$1.4	$1.4	$1.4	**$13.8**
Out-of-State Leisure Travelers	$4.5	$7.3	$7.4	$7.4	$7.4	$7.4	$7.3	$7.3	$7.3	$7.3	**$70.5**
Statewide Benefits from Maui Spending	**$12.3**	**$20.1**	**$20.6**	**$20.5**	**$20.5**	**$20.5**	**$20.5**	**$20.4**	**$20.4**	**$20.4**	**$196.2**

Note: All figures in Millions of 2020 $s. Direct effect results are technically statewide, but for all practical purposes are specific to indicated islands/counties.

Table 16: Total Output from Operational Phase, 2025 - 2034

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	10-Year Total
Stemming from Expenditures of Project Hotel Guests											
In-State Business Travelers	$8.6	$14.0	$14.3	$14.3	$14.3	$14.3	$14.3	$14.3	$14.3	$14.3	**$136.9**
Out-of-State Business Travelers	$4.1	$6.7	$6.8	$6.8	$6.8	$6.8	$6.8	$6.8	$6.8	$6.8	**$65.5**
In-State Leisure Travelers	$1.6	$2.6	$2.6	$2.6	$2.6	$2.6	$2.6	$2.6	$2.6	$2.6	**$25.0**
Out-of-State Leisure Travelers	$8.1	$13.2	$13.4	$13.4	$13.4	$13.3	$13.3	$13.2	$13.2	$13.1	**$127.6**
Statewide Benefits from Maui Spending	**$22.3**	**$36.4**	**$37.2**	**$37.2**	**$37.1**	**$37.1**	**$37.0**	**$37.0**	**$36.9**	**$36.9**	**$355.0**
% of Benefits Accruing to Maui	**68.9%**	**68.9%**	**68.9%**	**68.9%**	**68.9%**	**68.9%**	**68.9%**	**68.9%**	**68.9%**	**68.9%**	**68.9%**

Note: All figures in Millions of 2020 $s and are statewide effects. Small proportions of amounts generated on any one island "ripple out" to others as well.

3.4 Household Earnings (Direct and Total, Operations)

This section looks at the amount of total economic activity captured as household earnings.

Table 17 shows results for Direct effects, and Table 18 contains results for Total effects including multiplier or "ripple effects."

Again focusing on sample year 2034 and cumulative results from early 2025 through 2034, slightly more than seven years:

- **Direct Earnings, 2034 and Cumulative:** In 2034, about $5.2 million from hotel operations and other visitor spending in Maui. The ten-year cumulative amount is about $50 million in 2020 dollars.

- **Total Earnings, 2034 and Cumulative:** With multiplier or "ripple effects," the previous numbers in the previous paragraph go to $10.1 million and $97.5 million, respectively. Roughly 72.5% of the statewide totals from Maui spending only are expected to be captured within Maui County.

Table 17: Direct Earnings from Operational Phase, 2025 - 2034

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	10-Year Total
Stemming from Expenditures of Project Hotel Guests											
In-State Business Travelers	$1.2	$2.0	$2.0	$2.0	$2.0	$2.0	$2.0	$2.0	$2.0	$2.0	**$19.3**
Out-of-State Business Travelers	$0.6	$0.9	$1.0	$1.0	$1.0	$1.0	$1.0	$1.0	$1.0	$1.0	**$9.2**
In-State Leisure Travelers	$0.2	$0.4	$0.4	$0.4	$0.4	$0.4	$0.4	$0.4	$0.4	$0.4	**$3.5**
Out-of-State Leisure Travelers	$1.1	$1.9	$1.9	$1.9	$1.9	$1.9	$1.9	$1.9	$1.9	$1.8	**$18.0**
Statewide Benefits from Maui Spending	**$3.1**	**$5.1**	**$5.2**	**$5.2**	**$5.2**	**$5.2**	**$5.2**	**$5.2**	**$5.2**	**$5.2**	**$50.0**

Note: All figures in Millions of 2020 $s. Direct effect results are technically statewide, but for all practical purposes are specific to indicated islands/counties.

Table 18: Total Earnings from Operational Phase, 2025 - 2034

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	10-Year Total
Stemming from Expenditures of Project Hotel Guests											
In-State Business Travelers	$2.3	$3.8	$3.9	$3.9	$3.9	$3.9	$3.9	$3.9	$3.9	$3.9	**$37.6**
Out-of-State Business Travelers	$1.1	$1.8	$1.9	$1.9	$1.9	$1.9	$1.9	$1.9	$1.9	$1.9	**$18.0**
In-State Leisure Travelers	$0.4	$0.7	$0.7	$0.7	$0.7	$0.7	$0.7	$0.7	$0.7	$0.7	**$6.9**
Out-of-State Leisure Travelers	$2.2	$3.6	$3.7	$3.7	$3.7	$3.7	$3.6	$3.6	$3.6	$3.6	**$35.0**
Statewide Benefits from Maui Spending	**$6.1**	**$10.0**	**$10.2**	**$10.2**	**$10.2**	**$10.2**	**$10.2**	**$10.2**	**$10.1**	**$10.1**	**$97.5**
% of Benefits Accruing to Maui	**72.5%**	**72.5%**	**72.5%**	**72.5%**	**72.5%**	**72.5%**	**72.5%**	**72.5%**	**72.5%**	**72.5%**	**72.5%**

Note: All figures in Millions of 2020 $s and are statewide effects. Small proportions of amounts generated on any one island "ripple out" to others as well.

3.5 Jobs (Direct and Total, Operations)

The I-O Model generates estimates for *all* jobs (full- or part-time) from visitor spending – whether at the hotel, at off-site restaurants and shops, at activities in Lahaina or attractions in Hāna, etc. Before presenting those results, we will also share R.D. Olson's numbers estimates for on-site jobs at the Kanahā Hotel itself.

On-Site Jobs: According to R.D. Olson (personal communication, Anthony Wrzosek, Vice President of Planning and Development, R.D. Olson), the company projects an on-site workforce of "100 – 125 employees," drawing primarily on experienced local candidates. This is important for the success of this property, though on a net basis the islandwide hotel workforce might of course require new entry-level hotel workers as a result of increased total labor demand.

All Jobs: Table 19 shows I-O Model results for Direct effects (including off-site Direct jobs at retail, restaurant, activities, attractions, etc.), and Table 20 contains results for Total effects including multiplier or "ripple effects."

With our typical focus on sample year 2034 and cumulative results from early 2025 through 2034:

- **Direct Jobs, 2034 and Cumulative:** By 2034, islandwide visitor spending is projected to support 170 Direct jobs, likely all on Maui from 2025 to 2034, the Model suggests about 1,530 job-years will be generated on a cumulative basis from guests staying at the Kanahā Hotel.

- **Total Jobs, 2034 and Cumulative:** With multiplier or "ripple effects," the previous numbers increase to 272 and 2,440, respectively. About 75% of these statewide totals from Maui-only economic activity are expected to be captured within Maui County.

Table 19: Direct Jobs from Operational Phase, 2025 - 2034

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	10-Year Total
Stemming from Expenditures of Project Hotel Guests											
In-State Business Travelers	34	57	59	60	61	62	63	64	65	66	**590**
Out-of-State Business Travelers	16	27	28	29	29	30	30	31	31	31	**282**
In-State Leisure Travelers	6	10	11	11	11	11	11	12	12	12	**108**
Out-of-State Leisure Travelers	32	54	56	56	57	58	58	59	60	60	**550**
Statewide Benefits from Maui Spending	**89**	**148**	**154**	**156**	**158**	**160**	**163**	**165**	**167**	**170**	**1,531**

Note: Both full- and part-time jobs. Direct effect results are technically statewide, but for all practical purposes are specific to indicated islands/counties.

Table 20: Total Jobs from Operational Phase, 2025 - 2034

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	10-Year Total
Stemming from Expenditures of Project Hotel Guests											
In-State Business Travelers	54	89	93	95	98	99	101	102	104	106	**941**
Out-of-State Business Travelers	26	43	45	45	47	47	48	49	50	50	**450**
In-State Leisure Travelers	10	16	17	17	18	18	18	19	19	19	**172**
Out-of-State Leisure Travelers	51	84	88	89	91	92	93	95	96	97	**876**
Statewide Benefits from Maui Spending	**141**	**233**	**242**	**246**	**254**	**257**	**261**	**265**	**268**	**272**	**2,439**
% of Benefits Accruing to Maui	**75.7%**	**75.7%**	**75.7%**	**75.7%**	**74.3%**	**74.3%**	**74.3%**	**74.3%**	**74.3%**	**74.3%**	**74.8%**

Note: Includes full- and part-time jobs, and are statewide effects. Small proportions of amounts generated on any one island "ripple out" to others as well.

3.5.1 State Taxes (Direct and Total, Operations)

Results for State Taxes are actually most relevant to the following Chapter 5, on fiscal effects for local government. Tax revenues for Maui County are estimated in that Chapter 5. However, those County-level estimates are independent of the I-O Model and methodology. The I-O Model does estimate *State* Tax revenues – on an aggregated basis, combining General Excise Tax, Transient Accommodations Tax (TAT), and other revenue sources.

Because of the similarity of I-O-based State Tax results to foregoing I-O-based output, earnings, and jobs results, the State Tax information will be presented here in similar form.

Table 21 shows State Taxes generated by Direct economic activity, and Table 22 shows Total State Taxes from all economic activity (including "ripple effects").

- **State Taxes from Direct Economic Activity, 2034 and Cumulative:** In 2034, the State would receive about $1.1 million from Kanahā Hotel operations and other visitor spending just from the initial direct spending of Kanahā Hotel guests on Maui. The ten-year cumulative amount is about $10.5 million.

- **Total Taxes, 2034 and Cumulative:** With multiplier or "ripple effects," the previous numbers in the previous paragraph change to $2.1 million and $20.0 million, respectively. About 66.5% of the statewide totals from Maui-only economic activity are expected to be captured within Maui County.

Table 21: State Taxes from Direct Operational Activity, 2025 - 2034

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	10-Year Total
Stemming from Expenditures of Project Hotel Guests											
In-State Business Travelers	$0.3	$0.4	$0.4	$0.4	$0.4	$0.4	$0.4	$0.4	$0.4	$0.4	**$4.1**
Out-of-State Business Travelers	$0.1	$0.2	$0.2	$0.2	$0.2	$0.2	$0.2	$0.2	$0.2	$0.2	**$1.9**
In-State Leisure Travelers	$0.0	$0.1	$0.1	$0.1	$0.1	$0.1	$0.1	$0.1	$0.1	$0.1	**$0.7**
Out-of-State Leisure Travelers	$0.2	$0.4	$0.4	$0.4	$0.4	$0.4	$0.4	$0.4	$0.4	$0.4	**$3.8**
Statewide Benefits from Maui Spending	**$0.7**	**$1.1**	**$1.1**	**$1.1**	**$1.1**	**$1.1**	**$1.1**	**$1.1**	**$1.1**	**$1.1**	**$10.5**

Note: All figures in Millions of 2020 $s.

Table 22: State Taxes from Total Operational Activity, 2025 - 2034

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	10-Year Total
Stemming from Expenditures of Project Hotel Guests											
In-State Business Travelers	$0.5	$0.8	$0.8	$0.8	$0.8	$0.8	$0.8	$0.8	$0.8	$0.8	**$7.7**
Out-of-State Business Travelers	$0.2	$0.4	$0.4	$0.4	$0.4	$0.4	$0.4	$0.4	$0.4	$0.4	**$3.7**
In-State Leisure Travelers	$0.1	$0.1	$0.1	$0.1	$0.1	$0.1	$0.1	$0.1	$0.1	$0.1	**$1.4**
Out-of-State Leisure Travelers	$0.5	$0.7	$0.8	$0.8	$0.8	$0.7	$0.7	$0.7	$0.7	$0.7	**$7.2**
Statewide Benefits from Maui Spending	**$1.3**	**$2.0**	**$2.1**	**$2.1**	**$2.1**	**$2.1**	**$2.1**	**$2.1**	**$2.1**	**$2.1**	**$20.0**
% of State Taxes Generated in Maui	**66.5%**	**66.5%**	**66.5%**	**66.5%**	**66.5%**	**66.5%**	**66.5%**	**66.5%**	**66.5%**	**66.5%**	**66.5%**

Note: All figures in Millions of 2020 $s.

4. POPULATION

Population effects from the hotel – on-site visitor population, residential population supported by construction, and residential population supported by operations – are relatively small.

4.1 Visitor Population

The likely average number of visitors staying at the new Kanahā Hotel each year (primarily captured from other Maui properties) would be a function of –

1. **Projected Occupancy:** CBRE projects overall occupancies of 68% for initial hotel operations in 2025; 83% in 2026; and a stabilized average 85% in 2027 and thereafter.

2. **Average Party Sizes and Proportion of Occupied Rooms for Each Market Segment:** These assumed numbers, and sources for each, were given in the foregoing Methodology section (Chapter 1, Section 1.2.3), for each of the four final segments identified in the previous chapter.

These assumptions generate the following annual estimates (Table 23), which become stable with stable occupancy in 2027. In these years, the split between various In-State segments (total business plus leisure) and Out-of-State population is roughly 55%/45% respectively, but the split between visitors by purpose is weighted toward Business travelers (about 64%) over Leisure (36%).

Table 23: On-Site Visitor Population

	2025	2026	2027	2028	2029
Total On-Site Visitor Population	**236**	**288**	**295**	**295**	**295**
In-State Business Travelers	*110*	*134*	*137*	*137*	*137*
Out-of-State Business Travelers	*41*	*50*	*51*	*51*	*51*
In-State Leisure Travelers	*19*	*23*	*23*	*23*	*23*
Out-of-State Leisure Travelers	*66*	*81*	*83*	*83*	*83*

	2030	2031	2032	2033	2034
Total On-Site Visitor Population	**295**	**295**	**295**	**295**	**295**
In-State Business Travelers	*137*	*137*	*137*	*137*	*137*
Out-of-State Business Travelers	*51*	*51*	*51*	*51*	*51*
In-State Leisure Travelers	*23*	*23*	*23*	*23*	*23*
Out-of-State Leisure Travelers	*83*	*83*	*83*	*83*	*83*

The numbers in Table 23 are estimated future averages. Actual daily and annual figures will vary depending on economic cycles, seasons,[10] etc. If the Kanahā Hotel had materialized in the year 2019, it would have captured numbers as in Table 23 above from existing properties and unit totals as per below (Table 24). This suggests limited average effects on any one property.

Table 24: Maui Island 2019 Visitor Plant Inventory

	No. Properties	No. Units	Notes
Maui Total	362	21,294	Of properties, 30 were classified as hotels.
Kahului/Wailuku	20	594	Most units (468 total) in three hotels.
Kula/Makawao	21	102	Units are mostly vacation rentals or B&Bs

4.2 Resident Population

4.2.1 Resident Population Supported by Construction Activities

Table 25 (following page) shows both Maui and statewide resident population supported by construction activities. This is likely to be existing population, other than some off-island construction workers temporarily brought in as specialty trades or for other reasons.[11]

As the small estimated number of imported workers are not counted as "residents" and it is unlikely construction of the project will induce permanent in-migration, most of the population numbers in this case are properly considered population "maintained" (and not "created") by construction. The only numbers added would be those for workers temporarily imported from outside Maui or outside the state.

4.2.2 Resident Population Supported by Operational Activities

On a net islandwide basis, the actual resident population effect/impact would be zero, or close to it, because the net visitor population effect would be zero and the net visitor expenditure effect – which supports jobs and dependent population – would also be zero, or close to it. (See Chapter 3.)

However, in line with the foregoing logic of exploring effects "associated with" or "captured by" the hotel, we can look at the population supported ("created or maintained") by Total employment (on-site and off-site, including ripple effects). Table 26 is an appropriate estimate of "population supported," without regard to determination of how much of that population would or would not be present regardless of whether the hotel is built.

[10] In recent pre-pandemic years, Maui Island's peak months have typically been July and December, when visitor arrivals have been 5% to 10% higher than year averages. The most pronounced "shoulder" (off-peak) month has usually been September, when arrivals have been 15% to 20% below year averages.

[11] R.D. Olson estimates that about 30% would be from outside Hawai'i or from other islands. As 15% out-of-state is an average figure JMK Associates has heard from contractors on other recent Hawai'i construction projects, we assume an equal 15% from other Hawai'i islands.

Table 25: Resident Population Supported by Construction Activities

Maui-Specific Figures	2023	2024	2025
With-Project Scenario			
Total Direct Construction Workers	89	126	27
Imported from Outside Maui	27	38	8
Total Workers from Construction	144	202	43
Total Workers (excl. Imported Direct)	117	164	35
Population Assoc. with Workers	**202**	**283**	**60**

Statewide Figures	2023	2024	2025
With-Project Scenario			
Total Direct Construction Workers	89	126	27
Imported from Outside Hawai'i	13	19	4
Total Workers from Construction[a]	187	262	56
Total Workers (excl. Imported Direct)	173	243	52
Population Assoc. with Workers[b]	**299**	**419**	**89**
% Effects in Maui County	**67.6%**	**67.6%**	**67.6%**

[a] Total including "ripple effect" multipliers.

[b] Estimated as 1.72 residents/worker, based on 2014-18 ACS Census.

Table 26: Statewide Resident Population Supported by Operational Activities

	2025	2026	2027	2028	2029
Population Supported, State	243	402	417	423	437
% Located on Maui	**75.7%**	**75.7%**	**75.7%**	**75.7%**	**74.3%**
	2030	**2031**	**2032**	**2033**	**2034**
Population Supported, State	444	450	456	463	469
% Located on Maui	**74.3%**	**74.3%**	**74.3%**	**74.3%**	**74.3%**

Note: Population estimated as 1.79 residents/worker, based on 2014-18 ACS Census.

5. FISCAL EFFECTS

This chapter focuses on government tax revenues and costs. It includes:

- Discussion of types of analysis, including cost issues;
- Review of input assumptions; and
- Results flowing from analyses in preceding chapters.

5.1 Types of Analysis

Analysis of government fiscal effects in theory involves both revenues and costs from proposed developments. The cost analysis is normally conducted in one of two different possible approaches:

- **Marginal-Cost Approach** – This approach involves identifying the new or "marginal" costs to government unique to the project. An example might be a large new community on previously undeveloped land, as this could require government expenses for new roads, schools, etc. However, this project is located in a well-developed area and, according to EA overall contractor CHP, as well as R.D. Olson, is unlikely to require significant new State or County expenditures.

- **Average-Cost Approach** – This frequently-used approach is most useful when a project is not expected to generate unique capital costs for government but would generate additional visitors to the state. That is clearly the case with this project (or would be, if market studies had indicated the project were attracting or accommodating visitors who would not have come anyway), and so average service costs are assumed for appropriate populations.

  Arguably, these appropriate populations should be just the *transient* ones – primarily visitors, secondarily imported construction workers. For residential populations, revenues collected from the overall population tend all to be expended on that population, and history has shown Island populations grow steadily regardless of economic conditions.

  Additionally, the resident population effects are not necessarily *new* people on-island – as frequently noted in this study, they may well be “maintained” rather than “created” – but additional visitors and imported construction workers are assumed always to be present only as a result of project approval and implementation.

5.2 Fixed Assumptions for Analysis

The analysis primarily flows from previously-calculated results – both Construction and Operations – and from assumed I-O multipliers (as well as updated TAT rates) already provided or discussed in Table 1 and the general methodological discussion of Chapter 1, Section 1.2.

State and County service costs were derived by examining published *State Data Book* and *Maui Data Book* budget figures for a 14-year period (Fiscal Years 2005 to 2019) in inflation-adjusted real 2020 dollars and calculating averages, based on which categories were most likely to apply to residents only vs. both residents and visitors. The estimated values were:

- State Costs Per Resident: $7,327
- State Costs Per Visitor: $1,784
- Maui County Costs Per Resident: $2,602
- Maui County Costs Per Visitor: $1,505

Additionally, for property tax calculations, the current Hotel and Resort rate of $10.70 (2019 dollars) per $1,000 assessed value is assumed to apply separately to land and building values. Assessments are generally made of value on December 31 for the year before taxes are due. We assume a 2021 land value of $9.17 million, the amount paid by R.D. Olson to acquire the property this year. Our analysis converts these values to estimated 2020 dollars, and this land value is conservatively presumed to remain constant (in real dollars) in the future, though the projected value is reduced by about 5% to reflect plans to transfer some 11,776 sq. ft. to the State for a vehicular on-ramp.

For the building portion under the proposed effect, actual future property tax assessments will depend on a variety of factors that cannot be known until the assessment is conducted. However, as the best currently available estimate for the project, we assume the new building value will be equal to total hard costs of construction expenditures. During construction years, building values are assumed to equal value of construction in place by December 31 of that year, estimated as the percentage of that year's total projected construction expenditures. While revenue streams for the owners may be affected by the construction activities, assessed value of the site (land) is assumed to remain stable during construction years and beyond.

The current rate of $10.70 per $1,000 assessed value can be changed annually by the Maui County Council, and in real terms has in fact been both decreased and increased over various recent years. Because of government fiscal needs exacerbated by the pandemic, we assume no imminent future *reductions* in the rate, but rather assume that increases will keep pace with inflation and remain at $10.70 in 2020 dollars.

5.3 Changes from Previous Fiscal Effects Approach

The approach used in this analysis follows the same logic and uses the same types of inputs as did our fiscal effects analysis for previous studies for this project. However, the new assumption of zero net islandwide change in both visitor and resident populations means that, in reality, all potential revenues as well as all potential costs associated with these populations are also now technically zero.

Nevertheless, we continue the same chain of logic used in preceding chapters to complete the overall analysis based on economic activity "associated with" or "captured by" the new hotel. This means the fiscal cost-revenue analysis becomes something of a hypothetical exercise, as its structure assumes new revenues and new costs. As will be detailed in Chapter 6, only some revenues and costs would likely be "new."

We should note that all fiscal analyses of this nature likely *will* change in coming years as a result of the 2021 State Legislature's decision to reduce TAT allocations to counties but allow each county to add up to 3% more TAT for county-level tourism impact management activities. However, at this time, it remains unclear whether Maui County will do so, or at what exact level.

Fiscal cost-revenue studies are inherently rough estimates. Worth noting is that a general difficulty in applying cost-revenue methodologies to relatively small projects such as this one is that the basis for estimates come from macro-economic data, while a specific economic activity like hotel construction is more at the micro-level. The real fiscal outcomes for State and County governments are determined more by macro forces (tourism industry performance in general) than micro forces (such as adding a single new hotel).

5.4 Varying Assumptions (Scenarios)

In a fiscal cost-revenue analysis, one key factor is the level of resident "Population Supported" by economic activity, as these residents both generate tax revenue and also service costs. The overall logic of cost-revenue analysis actually focuses only on the percentage of "Population Supported" that would be *new* to the County or State – i.e., population supported by *in-migrant* workers if on-island labor is not available, as these are people not already generating costs and revenue.

In this part of the analysis, unlike that of the following Chapter 6, we bear in mind that none of the "Population Supported" is assumed actually to be new, and that our analysis is a hypothetical exercise that effectively assumes some of the operational workers would be "new" to the island. But exactly how much? There is no reliable study or statistic that can say exactly what percentage of "Population Supported" by a new economic activity will be new population on-island and/or existing population that would otherwise out-migrate. Therefore, our analysis shows a sample of the full range of possible assumptions, as scenarios:

- Scenario 1: 100% of population supported consists of in-migrants. This is the very most conservative approach, usually resulting in low or even negative results, but it means taking the extreme position that all current economic activities continue to demand as much labor as at present and that all workers and dependents "supported" by the new hotel would either be (a) in-migrants or else (b) current residents who would promptly out-migrate without hotel development.

- Scenario 2: 50% of population consists of in-migrants. This is the middle-ground scenario. In the absence of solid evidence about an actual percentage, it could be considered the "more likely" scenario of the three.

- Scenario 3: 0% of population supported consists of in-migrants. This is the very most liberal possible approach, reliably generating positive results for government. While it is intuitively unlikely, especially in times of low unemployment, there are arguments to be made in its favor – primarily, that population growth in Hawai'i historically has actually not been very well correlated with economic change overall.

5.5 Results by Scenario

Table 27 to Table 29 provide results for the three different scenarios outlined above. Most rows of these tables have identical numbers for all three scenarios, but any row involving costs or revenues depending on assumed "population supported" by operations varies according to the assumed 100%, 50%, or 0% levels.

As expected, for the very conservative 100% scenario in Table 27, results are either somewhat negative (as with the State "loss" of $3.1 million over 13 years) or moderately positive (as with the County "profit" of just 4.3 million over the same period). But at an assumed 50% (Table 28), the "most likely" of the three outcomes, both levels of government enjoy positive revenues over 13 years -- $5.9 million for the County and $8.3 million for the State. And at the other extreme of 0% (Table 29), the County 13-year positive figure goes up to $7.5 million and the State to $19.7 million.

Table 27: Govt. Revenues and Costs If 100% Population Supported Is In-Migrant

(All dollar figures are millions of projected constant 2020 dollars)	soft costs only 2022	soft costs all year; hard costs from 4/21 2023	construc-tion year 2024	construc-tion year thru Mar.; opens Apr. 2025	full oper-ations 2026	full oper-ations 2027	full oper-ations 2028
County Revenues From Project (by Source)	**$0.07**	**$0.13**	**$0.35**	**$1.13**	**$1.63**	**$1.66**	**$1.67**
Property Tax (from Site) [a]	$0.07	$0.10	$0.29	$0.58	$0.64	$0.64	$0.64
Non-Tax Revenue,[b] Off-Island Direct Construction Workers	$0.00	$0.03	$0.06	$0.00	$0.00	$0.00	$0.00
Non-Tax Revenue, Resident Population Supported (Operations)	$0.00	$0.00	$0.00	$0.22	$0.48	$0.49	$0.50
Non-Tax Revenue, Visitors	$0.00	$0.00	$0.00	$0.33	$0.51	$0.53	$0.53
Costs Of County Services From Project	**$0.00**	**$0.05**	**$0.10**	**$0.65**	**$1.22**	**$1.27**	**$1.28**
County Service Costs -- Off-Island Direct Construction Workers	$0.00	$0.05	$0.10	$0.00	$0.00	$0.00	$0.00
County Service Costs -- Resident Population Supported (Ops)	$0.00	$0.00	$0.00	$0.37	$0.79	$0.82	$0.83
County Service Costs -- Direct Visitor Population	$0.00	$0.00	$0.00	$0.28	$0.43	$0.44	$0.44
Net County Revenues	**$0.07**	**$0.08**	**$0.25**	**$0.48**	**$0.40**	**$0.39**	**$0.39**
State Revenues From Project (All, from I-O Model)	**$0.11**	**$2.36**	**$3.23**	**$0.76**	**$2.05**	**$2.09**	**$2.09**
All State Taxes (from I-O multiplier) - Construction, Total	$0.11	$2.36	$3.23	$0.70	$0.00	$0.00	$0.00
All State Taxes (from I-O multiplier) - Total, Maui Operations	$0.00	$0.00	$0.00	$0.05	$2.05	$2.09	$2.09
Costs Of State Services From Project	**$0.00**	**$0.14**	**$0.28**	**$1.39**	**$2.74**	**$2.84**	**$2.87**
State Service Costs -- Off-Island Direct Construction Workers	$0.00	$0.14	$0.28	$0.01	$0.00	$0.00	$0.00
State Service Costs -- Resident Population Supported (Ops)	$0.00	$0.00	$0.00	$1.05	$2.23	$2.32	$2.35
State Service Costs -- Direct Visitor Population	$0.00	$0.00	$0.00	$0.33	$0.51	$0.53	$0.53
Net State Revenues	**$0.11**	**$2.22**	**$2.95**	**-$0.64**	**-$0.70**	**-$0.75**	**-$0.78**

	full oper-ations 2029	full oper-ations 2030	full oper-ations 2031	full oper-ations 2032	full oper-ations 2033	full oper-ations 2034	Total (2022-2034)
County Revenues From Project (by Source)	**$1.67**	**$1.68**	**$1.69**	**$1.69**	**$1.70**	**$1.71**	**$16.78**
Property Tax (from Site)	$0.64	$0.64	$0.64	$0.64	$0.64	$0.64	**$6.78**
Non-Tax Revenue, Off-Island Direct Construction Workers	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$0.09**
Non-Tax Revenue, Resident Population Supported (Operations)	$0.51	$0.52	$0.52	$0.53	$0.54	$0.55	**$4.86**
Non-Tax Revenue, Visitors	$0.53	$0.53	$0.53	$0.53	$0.53	$0.53	**$5.05**
Costs Of County Services From Project	**$1.29**	**$1.30**	**$1.31**	**$1.33**	**$1.34**	**$1.35**	**$12.49**
County Service Costs -- Off-Island Direct Construction Workers	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$0.15**
County Service Costs -- Resident Population Supported (Ops)	$0.85	$0.86	$0.87	$0.88	$0.90	$0.91	**$8.08**
County Service Costs -- Direct Visitor Population	$0.44	$0.44	$0.44	$0.44	$0.44	$0.44	**$4.26**
Net County Revenues	**$0.38**	**$0.38**	**$0.37**	**$0.37**	**$0.36**	**$0.36**	**$4.29**
State Revenues From Project (All, from I-O Model)	**$2.09**	**$2.08**	**$2.08**	**$2.08**	**$2.08**	**$2.07**	**$25.17**
All State Taxes (from I-O multiplier) - Construction, Total	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$6.40**
All State Taxes (from I-O multiplier) - Total, Maui Operations	$2.09	$2.08	$2.08	$2.08	$2.08	$2.07	**$18.76**
Costs Of State Services From Project	**$2.91**	**$2.94**	**$2.98**	**$3.01**	**$3.05**	**$3.08**	**$28.23**
State Service Costs -- Off-Island Direct Construction Workers	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$0.43**
State Service Costs -- Resident Population Supported (Ops)	$2.38	$2.42	$2.45	$2.49	$2.52	$2.56	**$22.76**
State Service Costs -- Direct Visitor Population	$0.53	$0.53	$0.53	$0.53	$0.53	$0.53	**$5.05**
Net State Revenues	**-$0.82**	**-$0.86**	**-$0.89**	**-$0.93**	**-$0.97**	**-$1.01**	**-$3.06**

[a] Assumed property tax rate from 2023 based on 2020 rate of $10.70 -- i.e., assumes rate increases over time will match inflation. Prior to 2023, assumed rate is 2020 rate of $7.20 for unimproved industrial, with actual value adjusted for inflation. Land valuation conservatively assumed to remain at 2021 sale value (in 2020 dollars), but total reduced by about 5% after 2023 due to land transfer to State.

[b] "Non-Tax Revenue" for counties primarily comes from licenses/permits and charges for services (user fees).

Table 28: Govt. Revenues and Costs If 50% Population Supported Is In-Migrant

(All dollar figures are millions of projected constant 2020 dollars)	soft costs only 2022	soft costs all year; hard costs from 4/21 2023	construc-tion year 2024	construc-tion year thru Mar.; opens Apr. 2025	full oper-ations 2026	full oper-ations 2027	full oper-ations 2028
County Revenues From Project (by Source)	**$0.07**	**$0.13**	**$0.35**	**$1.02**	**$1.39**	**$1.41**	**$1.41**
Property Tax (from Site) [a]	$0.07	$0.10	$0.29	$0.58	$0.64	$0.64	$0.64
Non-Tax Revenue,[b] Off-Island Direct Construction Workers	$0.00	$0.03	$0.06	$0.00	$0.00	$0.00	$0.00
Non-Tax Revenue, Resident Population Supported (Operations)	$0.00	$0.00	$0.00	$0.11	$0.24	$0.25	$0.25
Non-Tax Revenue, Visitors	$0.00	$0.00	$0.00	$0.33	$0.51	$0.53	$0.53
Costs Of County Services From Project	**$0.00**	**$0.05**	**$0.10**	**$0.46**	**$0.83**	**$0.85**	**$0.86**
County Service Costs -- Off-Island Direct Construction Workers	$0.00	$0.05	$0.10	$0.00	$0.00	$0.00	$0.00
County Service Costs -- Resident Population Supported (Ops)	$0.00	$0.00	$0.00	$0.19	$0.40	$0.41	$0.42
County Service Costs -- Direct Visitor Population	$0.00	$0.00	$0.00	$0.28	$0.43	$0.44	$0.44
Net County Revenues	**$0.07**	**$0.08**	**$0.25**	**$0.56**	**$0.56**	**$0.56**	**$0.55**
State Revenues From Project (All, from I-O Model)	**$0.11**	**$2.36**	**$3.23**	**$0.76**	**$2.05**	**$2.09**	**$2.09**
All State Taxes (from I-O multiplier) - Construction, Total	$0.11	$2.36	$3.23	$0.70	$0.00	$0.00	$0.00
All State Taxes (from I-O multiplier) - Total, Maui Operations	$0.00	$0.00	$0.00	$0.05	$2.05	$2.09	$2.09
Costs Of State Services From Project	**$0.00**	**$0.14**	**$0.28**	**$0.87**	**$1.63**	**$1.68**	**$1.70**
State Service Costs -- Off-Island Direct Construction Workers	$0.00	$0.14	$0.28	$0.01	$0.00	$0.00	$0.00
State Service Costs -- Resident Population Supported (Ops)	$0.00	$0.00	$0.00	$0.52	$1.11	$1.16	$1.17
State Service Costs -- Direct Visitor Population	$0.00	$0.00	$0.00	$0.33	$0.51	$0.53	$0.53
Net State Revenues	**$0.11**	**$2.22**	**$2.95**	**-$0.11**	**$0.42**	**$0.41**	**$0.39**

	full oper-ations 2029	full oper-ations 2030	full oper-ations 2031	full oper-ations 2032	full oper-ations 2033	full oper-ations 2034	Total (2022-2034)
County Revenues From Project (by Source)	**$1.42**	**$1.42**	**$1.43**	**$1.43**	**$1.43**	**$1.44**	**$14.35**
Property Tax (from Site)	$0.64	$0.64	$0.64	$0.64	$0.64	$0.64	**$6.78**
Non-Tax Revenue, Off-Island Direct Construction Workers	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$0.09**
Non-Tax Revenue, Resident Population Supported (Operations)	$0.25	$0.26	$0.26	$0.27	$0.27	$0.27	**$2.43**
Non-Tax Revenue, Visitors	$0.53	$0.53	$0.53	$0.53	$0.53	$0.53	**$5.05**
Costs Of County Services From Project	**$0.87**	**$0.87**	**$0.88**	**$0.88**	**$0.89**	**$0.90**	**$8.45**
County Service Costs -- Off-Island Direct Construction Workers	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$0.15**
County Service Costs -- Resident Population Supported (Ops)	$0.42	$0.43	$0.44	$0.44	$0.45	$0.45	**$4.04**
County Service Costs -- Direct Visitor Population	$0.44	$0.44	$0.44	$0.44	$0.44	$0.44	**$4.26**
Net County Revenues	**$0.55**	**$0.55**	**$0.55**	**$0.54**	**$0.54**	**$0.54**	**$5.90**
State Revenues From Project (All, from I-O Model)	**$2.09**	**$2.08**	**$2.08**	**$2.08**	**$2.08**	**$2.07**	**$25.17**
All State Taxes (from I-O multiplier) - Construction, Total	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$6.40**
All State Taxes (from I-O multiplier) - Total, Maui Operations	$2.09	$2.08	$2.08	$2.08	$2.08	$2.07	**$18.76**
Costs Of State Services From Project	**$1.72**	**$1.73**	**$1.75**	**$1.77**	**$1.79**	**$1.80**	**$16.85**
State Service Costs -- Off-Island Direct Construction Workers	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$0.43**
State Service Costs -- Resident Population Supported (Ops)	$1.19	$1.21	$1.23	$1.24	$1.26	$1.28	**$11.38**
State Service Costs -- Direct Visitor Population	$0.53	$0.53	$0.53	$0.53	$0.53	$0.53	**$5.05**
Net State Revenues	**$0.37**	**$0.35**	**$0.33**	**$0.31**	**$0.29**	**$0.27**	**$8.31**

[a] Assumed property tax rate from 2023 based on 2020 rate of $10.70 -- i.e., assumes rate increases over time will match inflation. Prior to 2023, assumed rate is 2020 rate of $7.20 for unimproved industrial, with actual value adjusted for inflation. Land valuation conservatively assumed to remain at 2021 sale value (in 2020 dollars), but total reduced by about 5% after 2023 due to land transfer to State.

[b] "Non-Tax Revenue" for counties primarily comes from licenses/permits and charges for services (user fees).

Table 29: Govt. Revenues and Costs If 0% Population Supported Is In-Migrant

(All dollar figures are millions of projected constant 2020 dollars)	soft costs only 2022	soft costs all year; hard costs from 4/21 2023	construc-tion year 2024	construc-tion year thru Mar.; opens Apr. 2025	full oper-ations 2026	full oper-ations 2027	full oper-ations 2028
County Revenues From Project (by Source)	**$0.07**	**$0.13**	**$0.35**	**$0.91**	**$1.15**	**$1.16**	**$1.16**
Property Tax (from Site) [a]	$0.07	$0.10	$0.29	$0.58	$0.64	$0.64	$0.64
Non-Tax Revenue,[b] Off-Island Direct Construction Workers	$0.00	$0.03	$0.06	$0.00	$0.00	$0.00	$0.00
Non-Tax Revenue, Resident Population Supported (Operations)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Non-Tax Revenue, Visitors	$0.00	$0.00	$0.00	$0.33	$0.51	$0.53	$0.53
Costs Of County Services From Project	**$0.00**	**$0.05**	**$0.10**	**$0.28**	**$0.43**	**$0.44**	**$0.44**
County Service Costs -- Off-Island Direct Construction Workers	$0.00	$0.05	$0.10	$0.00	$0.00	$0.00	$0.00
County Service Costs -- Resident Population Supported (Ops)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
County Service Costs -- Direct Visitor Population	$0.00	$0.00	$0.00	$0.28	$0.43	$0.44	$0.44
Net County Revenues	**$0.07**	**$0.08**	**$0.25**	**$0.63**	**$0.72**	**$0.72**	**$0.72**
State Revenues From Project (All, from I-O Model)	**$0.11**	**$2.36**	**$3.23**	**$0.76**	**$2.05**	**$2.09**	**$2.09**
All State Taxes (from I-O multiplier) - Construction, Total	$0.11	$2.36	$3.23	$0.70	$0.00	$0.00	$0.00
All State Taxes (from I-O multiplier) - Total, Maui Operations	$0.00	$0.00	$0.00	$0.05	$2.05	$2.09	$2.09
Costs Of State Services From Project	**$0.00**	**$0.14**	**$0.28**	**$0.34**	**$0.51**	**$0.53**	**$0.53**
State Service Costs -- Off-Island Direct Construction Workers	$0.00	$0.14	$0.28	$0.01	$0.00	$0.00	$0.00
State Service Costs -- Resident Population Supported (Ops)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
State Service Costs -- Direct Visitor Population	$0.00	$0.00	$0.00	$0.33	$0.51	$0.53	$0.53
Net State Revenues	**$0.11**	**$2.22**	**$2.95**	**$0.41**	**$1.53**	**$1.57**	**$1.56**

	full oper-ations 2029	full oper-ations 2030	full oper-ations 2031	full oper-ations 2032	full oper-ations 2033	full oper-ations 2034	Total (2022-2034)
County Revenues From Project (by Source)	**$1.16**	**$1.16**	**$1.16**	**$1.16**	**$1.16**	**$1.16**	**$11.92**
Property Tax (from Site)	$0.64	$0.64	$0.64	$0.64	$0.64	$0.64	**$6.78**
Non-Tax Revenue, Off-Island Direct Construction Workers	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$0.09**
Non-Tax Revenue, Resident Population Supported (Operations)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$0.00**
Non-Tax Revenue, Visitors	$0.53	$0.53	$0.53	$0.53	$0.53	$0.53	**$5.05**
Costs Of County Services From Project	**$0.44**	**$0.44**	**$0.44**	**$0.44**	**$0.44**	**$0.44**	**$4.41**
County Service Costs -- Off-Island Direct Construction Workers	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$0.15**
County Service Costs -- Resident Population Supported (Ops)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$0.00**
County Service Costs -- Direct Visitor Population	$0.44	$0.44	$0.44	$0.44	$0.44	$0.44	**$4.26**
Net County Revenues	**$0.72**	**$0.72**	**$0.72**	**$0.72**	**$0.72**	**$0.72**	**$7.51**
State Revenues From Project (All, from I-O Model)	**$2.09**	**$2.08**	**$2.08**	**$2.08**	**$2.08**	**$2.07**	**$25.17**
All State Taxes (from I-O multiplier) - Construction, Total	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$6.40**
All State Taxes (from I-O multiplier) - Total, Maui Operations	$2.09	$2.08	$2.08	$2.08	$2.08	$2.07	**$18.76**
Costs Of State Services From Project	**$0.53**	**$0.53**	**$0.53**	**$0.53**	**$0.53**	**$0.53**	**$5.47**
State Service Costs -- Off-Island Direct Construction Workers	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$0.43**
State Service Costs -- Resident Population Supported (Ops)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$0.00**
State Service Costs -- Direct Visitor Population	$0.53	$0.53	$0.53	$0.53	$0.53	$0.53	**$5.05**
Net State Revenues	**$1.56**	**$1.56**	**$1.56**	**$1.55**	**$1.55**	**$1.55**	**$19.69**

[a] Assumed property tax rate from 2023 based on 2020 rate of $10.70 -- i.e., assumes rate increases over time will match inflation. Prior to 2023, assumed rate is 2020 rate of $7.20 for unimproved industrial, with actual value adjusted for inflation. Land valuation conservatively assumed to remain at 2021 sale value (in 2020 dollars), but total reduced by about 5% after 2023 due to land transfer to State.

[b] "Non-Tax Revenue" for counties primarily comes from licenses/permits and charges for services (user fees).

6. "NEW" ECONOMIC EFFECTS FROM KANAHĀ HOTEL

In foregoing chapters, numerical results show islandwide effects flowing from development of the proposed hotel and expected total expenditures in Maui – economic activity flowing through or captured by the hotel. But how much of this is "new," in the sense that it would not be happening anyway somewhere else on Maui? Another way to say this is that numbers in foregoing chapters show the *gross* economic effects, but how much of that can be termed *net new* economic activity, earning, jobs, and taxes?

The broad qualitative answers to that question would be:

1. All of the Construction phase effects because this construction would not occur without hotel entitlement. If government permits for hotel development are not received, possibly some different type of construction might eventually be proposed for the site, but that would require its own analysis and might not occur for many years. No alternative use of the site is currently proposed.

2. A slice of the Operations phase effects, because market studies indicate the hotel will primarily capture guests who would otherwise stay at other, less convenient lodging – such as vacation rentals or hotels farther from the Wailuku business area. However, the market studies also say some *resident business travelers* would likely spend extra nights (and extra dollars) on Maui if the hotel is developed. That would be the "new" economic activity from Operations.[12]

This chapter attempts to quantify these net "new" economic effects, by applying the same procedures and multipliers used previously – but only to the inputs associated with "new" activity dependent on hotel entitlement (i.e., all Construction and the designated slice of Operations from induced resident business traveler visitor-nights on Maui). Most of the following sections focus just on Operations, as those are the numbers that differ from ones in foregoing chapters. However, the final section on Fiscal Cost-Revenue shows the entire "new" picture, including Construction.

6.1 Specific Assumptions About "New" Operational Economic Activity

As previously noted, the two market studies for this project both concluded that the Kanahā Hotel would essentially compete with existing vacation rentals and hotels for

[12] This is from the perspective of the Input-Output Model, or any other perspective that does not attach importance to the locational distribution of Maui's lodging inventory. As noted in Chapter 3, though it cannot be readily quantified, there is value to employment closer to the island's population center, to provision of business lodging that support economic diversification policies, and to the refreshment of the island's hotel lodging inventory. It should also be remembered that we are being conservative in not assuming that some portion of Kanahā Hotel guests who would otherwise stay in vacation rentals will spend more money each day, though hotel visitors do in fact spend more than vacation rental visitors.

market share and would not cause new visitors or visitor spending to occur. However, Chapter 3 also noted the Kloninger & Sims study differed from the CBRE study in one regard: Kloninger & Sims concluded that some residents traveling on business from O‘ahu or other islands to Maui would spend an extra night on island because of the hotel.

If this is true, there is still no effect on *statewide* numbers, nor would there be any increase in out-of-state leisure or business visitation to Maui – just the number of *kama‘āina* business travelers, with the majority of this small additional number of off-island bodies likely occurring primarily in the Wailuku/Kahului area itself. Thus, only the Maui County component of the I-O Model is appropriate to use for this analysis.

Kloninger & Sims estimates that, in the With-Project Future there would be “on the order of an additional ten occupied room nights per day” more than in the Alternative-Action Future (i.e., with no Kanahā Hotel development) due to this *kama‘āina* corporate demand for an additional night on Maui. Thus:

- The net islandwide “new” activity would on average be approximately 15 additional business travelers or dependents (ten units times previously estimated 1.5 average party size) on-island, largely in the Kahului/Wailuku area, at full stabilization in 2027 (assumed proportionately less in 2025 and 2026, when occupancies are lower);

- Given statements by both the Maui Mayor and Council about economic diversification and more business, we assume the initial 15 additional travelers will increase in subsequent, but we conservatively assume a slow growth rate of 5%/yr. through 2034;

- The net statewide impact would be zero, because these are Hawai‘i residents.

6.2 “New” Economic Activity from Operations

(Again, all Construction activity is “new,” by dint of the fact that the hotel cannot be built unless it receives permits.)

“Output,” again, refers to economic activity. Table 30 and Table 31 are equivalent to the earlier Table 15 and Table 16 but show only the portion of economic activity assumed to be “new,” along with ripple effects. The tables indicate small but positive net effects: The additional direct expenditures on Maui would be about $1 million per year in early full years of operation, rising to about $1.2 million in the 2030s. With ripple effects, Total Output would increase for Maui County by $1.1 million in earlier years, rising to $1.5 million later – and with a ten-year cumulative net benefit of some $12 million.

Table 30: "New" Direct Output from Operational Phase, 2025 - 2034

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	10-Year Total
Stemming from Expenditures of Project Hotel Guests											
In-State Business Travelers	$0.5	$0.8	$0.9	$0.9	$1.0	$1.0	$1.0	$1.1	$1.2	$1.2	**$9.6**
Out-of-State Business Travelers	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	**$0.0**
In-State Leisure Travelers	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	**$0.0**
Out-of-State Leisure Travelers	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	**$0.0**
Maui County Benefits from Maui Spending	**$0.5**	**$0.8**	**$0.9**	**$0.9**	**$1.0**	**$1.0**	**$1.0**	**$1.1**	**$1.2**	**$1.2**	**$9.6**

Note: All figures in Millions of 2020 $s. Direct effect results are technically Maui County, but for all practical purposes are specific to Maui Island.

Table 31: "New" Output from Operational Phase, 2025 - 2034

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	10-Year Total
Stemming from Expenditures of Project Hotel Guests											
In-State Business Travelers	$0.6	$1.1	$1.1	$1.1	$1.2	$1.2	$1.3	$1.4	$1.4	$1.5	**$12.0**
Out-of-State Business Travelers	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	**$0.0**
In-State Leisure Travelers	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	**$0.0**
Out-of-State Leisure Travelers	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	**$0.0**
Maui County Benefits from Maui Spending	**$0.6**	**$1.1**	**$1.1**	**$1.1**	**$1.2**	**$1.2**	**$1.3**	**$1.4**	**$1.4**	**$1.5**	**$12.0**

Note: All figures in Millions of 2020 $s and are Maui County effects only.

6.3 "New" Household Earnings (Direct and Total, Operations)

This section looks at the amount of "new" total economic activity from Operations captured as household earnings. Table 32 shows the Direct portion and Table 33 the Total, with ripple effects. Both are modest annual amounts ($400,000 or less per year) but add up over ten years to $2.4 million and $3.5 million, respectively.

6.4 "New" Jobs (Direct and Total, Operations)

Again, the I-O Model generates estimates for *all* jobs (full- or part-time) from visitor spending – on-site and off-site combined – but in this case just from the "new" spending associated with "new" additional room-nights for resident business travelers at the Kanahā Hotel.

Table 34 and Table 35 show small but positive net job changes in Direct and Total Employment, respectively. Total new Maui jobs rise from about seven in the first few years to about 12 in 2034.

6.5 "New" State Taxes (Direct and Total, Operations)

Table 36 shows State Taxes generated on Maui by "new" Direct economic activity, and Table 37 shows Total State Taxes from all "new" economic activity (including "ripple effects"). These are expectably modest but positive: Ten-year totals of about $500,000 and $650,000, respectively.

Table 32: "New" Direct Earnings from Operational Phase, 2025 - 2034

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	10-Year Total
Stemming from Expenditures of Project Hotel Guests											
In-State Business Travelers	$0.1	$0.2	$0.2	$0.2	$0.2	$0.3	$0.3	$0.3	$0.3	$0.3	**$2.4**
Out-of-State Business Travelers	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	**$0.0**
In-State Leisure Travelers	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	**$0.0**
Out-of-State Leisure Travelers	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	**$0.0**
Maui County Benefits from Maui Spending	**$0.1**	**$0.2**	**$0.2**	**$0.2**	**$0.2**	**$0.3**	**$0.3**	**$0.3**	**$0.3**	**$0.3**	**$2.4**

Note: All figures in Millions of 2020 $s. Direct effect results are technically Maui County, but for all practical purposes are specific to Maui Island.

Table 33: "New" Total Earnings from Operational Phase, 2025 - 2034

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	10-Year Total
Stemming from Expenditures of Project Hotel Guests											
In-State Business Travelers	$0.2	$0.3	$0.3	$0.3	$0.3	$0.4	$0.4	$0.4	$0.4	$0.4	**$3.5**
Out-of-State Business Travelers	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	**$0.0**
In-State Leisure Travelers	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	**$0.0**
Out-of-State Leisure Travelers	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	**$0.0**
Maui County Benefits from Maui Spending	**$0.2**	**$0.3**	**$0.3**	**$0.3**	**$0.3**	**$0.4**	**$0.4**	**$0.4**	**$0.4**	**$0.4**	**$3.5**

Note: All figures in Millions of 2020 $s and are Maui County effects only.

Table 34: "New" Direct Jobs from Operational Phase, 2025 - 2034

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	10-Year Total
Stemming from Expenditures of Project Hotel Guests											
In-State Business Travelers	4	6	6	7	7	8	8	9	9	10	**74**
Out-of-State Business Travelers	0	0	0	0	0	0	0	0	0	0	**0**
In-State Leisure Travelers	0	0	0	0	0	0	0	0	0	0	**0**
Out-of-State Leisure Travelers	0	0	0	0	0	0	0	0	0	0	**0**
Maui County Benefits from Maui Spending	**4**	**6**	**6**	**7**	**7**	**8**	**8**	**9**	**9**	**10**	**74**

Note: Both full- and part-time jobs. Direct effect results are technically Maui County, but for all practical purposes are specific to Maui Island.

Table 35: "New" Total Jobs from Operational Phase, 2025 - 2034

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	10-Year Total
Stemming from Expenditures of Project Hotel Guests											
In-State Business Travelers	4	7	8	8	9	9	10	11	11	12	**90**
Out-of-State Business Travelers	0	0	0	0	0	0	0	0	0	0	**0**
In-State Leisure Travelers	0	0	0	0	0	0	0	0	0	0	**0**
Out-of-State Leisure Travelers	0	0	0	0	0	0	0	0	0	0	**0**
Maui County Benefits from Maui Spending	**4**	**7**	**8**	**8**	**9**	**9**	**10**	**11**	**11**	**12**	**90**

Note: Includes full- and part-time jobs, and are Maui County effects only.

Table 36: "New" State Taxes from Direct Operational Activity, 2025 - 2034

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	10-Year Total
Stemming from Expenditures of Project Hotel Guests											
In-State Business Travelers	$0.0	$0.0	$0.0	$0.0	$0.1	$0.1	$0.1	$0.1	$0.1	$0.1	**$0.5**
Out-of-State Business Travelers	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	**$0.0**
In-State Leisure Travelers	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	**$0.0**
Out-of-State Leisure Travelers	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	**$0.0**
Maui County Benefits from Maui Spending	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.1**	**$0.1**	**$0.1**	**$0.1**	**$0.1**	**$0.1**	**$0.5**

Note: All figures in Millions of 2020 $s.

Table 37: "New" State Taxes from Total Operational Activity, 2025 - 2034

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	10-Year Total
Stemming from Expenditures of Project Hotel Guests											
In-State Business Travelers	$0.0	$0.1	$0.1	$0.1	$0.1	$0.1	$0.1	$0.1	$0.1	$0.1	**$0.6**
Out-of-State Business Travelers	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	**$0.0**
In-State Leisure Travelers	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	**$0.0**
Out-of-State Leisure Travelers	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	**$0.0**
Maui County Benefits from Maui Spending	**$0.0**	**$0.1**	**$0.1**	**$0.1**	**$0.1**	**$0.1**	**$0.1**	**$0.1**	**$0.1**	**$0.1**	**$0.6**

Note: All figures in Millions of 2020 $s.

6.6 Population Effects Associated with "New" Operational Economic Activity

6.6.1 "New" On-Site Visitor Population

This is simply the assumed number of people on average who spend the additional room-nights due to the availability of upgraded facilities. All would be In-State Business travelers and companions

Table 38: "New" On-Site Visitor Population

	2025	2026	2027	2028	2029
On-Site Visitor Population	12	15	15	16	17
	2030	2031	2032	2033	2034
On-Site Visitor Population	17	18	19	20	21

6.6.2 Resident Population Supported by "New" Operational Economic Activities

This population figure consists of the portion of on- and off-site workers (plus dependents) associated with "new" spending by the above population. The word "new" does not necessarily mean new to the island/state (i.e., in-migrants), but rather just the workers and dependents associated with economic activity from the additional room-nights stemming from In-State Business travelers induced to spend more time on Maui.

Table 39: Maui Resident Population Supported by "New" Operational Activities

	2025	2026	2027	2028	2029
Population Supported, Maui	8	13	13	14	15
	2030	2031	2032	2033	2034
Population Supported, Maui	16	17	18	19	21

6.7 Fiscal Effects of "New" Economic Activity

For this final section, we bring back the largest component of "new" economic activity, which is Construction. Again, however, results would vary for the Operational portion depending on how many of the jobs associated with limited "new" resident business traveler spending on the island are filled by in-migrants. Therefore, results in Table 40 through Table 42 use the same previous scenarios of 100%, 50%, and 0% in-migrants.

Primarily due to the positive effects of Construction, the results come out much more positive in all three scenarios. This is primarily because so few additional residents and visitors are properly counted as "new" in the Operational Phase that government service costs are very low. Maui County is accounted a little less revenue during initial Construction years (because in this analysis we look only at the *change* in real property tax rather than the total tax collected), but this lower figure is outweighed by the more positive balance due to low Operational phase service costs for the limited "new" resident and visitor populations.

Table 40: Revenues and Costs If 100% "New" Population Supported Is In-Migrant

(All dollar figures are millions of projected constant 2020 dollars)	soft costs only 2022	soft costs all year; hard costs from 4/21 2023	construc-tion year 2024	construc-tion year thru Mar.; opens Apr. 2025	full oper-ations 2026	full oper-ations 2027	full oper-ations 2028
County Revenues From Project (by Source)	**$0.03**	**$0.26**	**$0.57**	**$0.60**	**$0.62**	**$0.62**	**$0.62**
Increase in Property Tax (from Site) [a]	$0.03	$0.23	$0.51	$0.57	$0.57	$0.57	$0.57
Non-Tax Revenue,[b] Off-Island Direct Construction Workers	$0.00	$0.03	$0.06	$0.00	$0.00	$0.00	$0.00
Non-Tax Revenue, Resident Population Supported (Operations)	$0.00	$0.00	$0.00	$0.01	$0.02	$0.02	$0.02
Non-Tax Revenue, Visitors	$0.00	$0.00	$0.00	$0.02	$0.03	$0.03	$0.03
Costs Of County Services From Project	**$0.00**	**$0.05**	**$0.10**	**$0.03**	**$0.06**	**$0.06**	**$0.06**
County Service Costs -- Off-Island Direct Construction Workers	$0.00	$0.05	$0.10	$0.00	$0.00	$0.00	$0.00
County Service Costs -- Resident Population Supported (Ops)	$0.00	$0.00	$0.00	$0.02	$0.03	$0.03	$0.04
County Service Costs -- Direct Visitor Population	$0.00	$0.00	$0.00	$0.01	$0.02	$0.02	$0.02
Net County Revenues	**$0.03**	**$0.21**	**$0.47**	**$0.57**	**$0.56**	**$0.56**	**$0.56**
State Revenues From Project (All, from I-O Model)	**$0.11**	**$2.36**	**$3.23**	**$0.76**	**$0.09**	**$0.09**	**$0.09**
All State Taxes (from I-O multiplier) - Construction, Total	$0.11	$2.36	$3.23	$0.70	$0.00	$0.00	$0.00
All State Taxes (from I-O multiplier) - Total, Maui Operations	$0.00	$0.00	$0.00	$0.05	$0.09	$0.09	$0.09
Costs Of State Services From Project	**$0.00**	**$0.14**	**$0.28**	**$0.07**	**$0.12**	**$0.12**	**$0.13**
State Service Costs -- Off-Island Direct Construction Workers	$0.00	$0.14	$0.28	$0.01	$0.00	$0.00	$0.00
State Service Costs -- Resident Population Supported (Ops)	$0.00	$0.00	$0.00	$0.04	$0.09	$0.10	$0.10
State Service Costs -- Direct Visitor Population	$0.00	$0.00	$0.00	$0.02	$0.03	$0.03	$0.03
Net State Revenues	**$0.11**	**$2.22**	**$2.95**	**$0.68**	**-$0.03**	**-$0.04**	**-$0.04**

	full oper-ations 2029	full oper-ations 2030	full oper-ations 2031	full oper-ations 2032	full oper-ations 2033	full oper-ations 2034	Total (2022-2034)
County Revenues From Project (by Source)	**$0.63**	**$0.63**	**$0.63**	**$0.64**	**$0.64**	**$0.64**	**$7.14**
Property Tax (from Site)	$0.57	$0.57	$0.57	$0.57	$0.57	$0.57	**$6.51**
Non-Tax Revenue, Off-Island Direct Construction Workers	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$0.09**
Non-Tax Revenue, Resident Population Supported (Operations)	$0.02	$0.03	$0.03	$0.03	$0.03	$0.03	**$0.24**
Non-Tax Revenue, Visitors	$0.03	$0.03	$0.03	$0.03	$0.04	$0.04	**$0.30**
Costs Of County Services From Project	**$0.06**	**$0.07**	**$0.07**	**$0.08**	**$0.08**	**$0.09**	**$0.80**
County Service Costs -- Off-Island Direct Construction Workers	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$0.15**
County Service Costs -- Resident Population Supported (Ops)	$0.04	$0.04	$0.04	$0.05	$0.05	$0.05	**$0.40**
County Service Costs -- Direct Visitor Population	$0.02	$0.03	$0.03	$0.03	$0.03	$0.03	**$0.25**
Net County Revenues	**$0.56**	**$0.56**	**$0.56**	**$0.56**	**$0.56**	**$0.56**	**$6.34**
State Revenues From Project (All, from I-O Model)	**$0.10**	**$0.10**	**$0.11**	**$0.11**	**$0.12**	**$0.12**	**$7.38**
All State Taxes (from I-O multiplier) - Construction, Total	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$6.40**
All State Taxes (from I-O multiplier) - Total, Maui Operations	$0.10	$0.10	$0.11	$0.11	$0.12	$0.12	**$0.98**
Costs Of State Services From Project	**$0.14**	**$0.15**	**$0.16**	**$0.17**	**$0.18**	**$0.19**	**$1.85**
State Service Costs -- Off-Island Direct Construction Workers	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$0.43**
State Service Costs -- Resident Population Supported (Ops)	$0.11	$0.12	$0.13	$0.13	$0.14	$0.15	**$1.12**
State Service Costs -- Direct Visitor Population	$0.03	$0.03	$0.03	$0.03	$0.04	$0.04	**$0.30**
Net State Revenues	**-$0.04**	**-$0.05**	**-$0.05**	**-$0.06**	**-$0.06**	**-$0.07**	**$5.53**

[a] Assumed property tax rate from 2023 based on 2020 rate of $10.70 -- i.e., assumes rate increases over time will match inflation. Prior to 2023, assumed rate is 2020 rate of $7.20 for unimproved industrial, with actual value adjusted for inflation. Land valuation conservatively assumed to remain at 2021 sale value (in 2020 dollars), but total reduced by about 5% after 2023 due to land transfer to State.

[b] "Non-Tax Revenue" for counties primarily comes from licenses/permits and charges for services (user fees).

Table 41: Revenues and Costs If 50% "New" Population Supported Is In-Migrant

(All dollar figures are millions of projected constant 2020 dollars)	soft costs only 2022	soft costs all year; hard costs from 4/21 2023	construc-tion year 2024	construc-tion year thru Mar.; opens Apr. 2025	full oper-ations 2026	full oper-ations 2027	full oper-ations 2028
County Revenues From Project (by Source)	**$0.03**	**$0.26**	**$0.57**	**$0.60**	**$0.61**	**$0.61**	**$0.61**
Increase in Property Tax (from Site) [a]	$0.03	$0.23	$0.51	$0.57	$0.57	$0.57	$0.57
Non-Tax Revenue,[b] Off-Island Direct Construction Workers	$0.00	$0.03	$0.06	$0.00	$0.00	$0.00	$0.00
Non-Tax Revenue, Resident Population Supported (Operations)	$0.00	$0.00	$0.00	$0.00	$0.01	$0.01	$0.01
Non-Tax Revenue, Visitors	$0.00	$0.00	$0.00	$0.02	$0.03	$0.03	$0.03
Costs Of County Services From Project	**$0.00**	**$0.05**	**$0.10**	**$0.02**	**$0.04**	**$0.04**	**$0.04**
County Service Costs -- Off-Island Direct Construction Workers	$0.00	$0.05	$0.10	$0.00	$0.00	$0.00	$0.00
County Service Costs -- Resident Population Supported (Ops)	$0.00	$0.00	$0.00	$0.01	$0.02	$0.02	$0.02
County Service Costs -- Direct Visitor Population	$0.00	$0.00	$0.00	$0.01	$0.02	$0.02	$0.02
Net County Revenues	**$0.03**	**$0.21**	**$0.47**	**$0.58**	**$0.57**	**$0.57**	**$0.57**
State Revenues From Project (All, from I-O Model)	**$0.11**	**$2.36**	**$3.23**	**$0.76**	**$0.09**	**$0.09**	**$0.09**
All State Taxes (from I-O multiplier) - Construction, Total	$0.11	$2.36	$3.23	$0.70	$0.00	$0.00	$0.00
All State Taxes (from I-O multiplier) - Total, Maui Operations	$0.00	$0.00	$0.00	$0.05	$0.09	$0.09	$0.09
Costs Of State Services From Project	**$0.00**	**$0.14**	**$0.28**	**$0.05**	**$0.07**	**$0.08**	**$0.08**
State Service Costs -- Off-Island Direct Construction Workers	$0.00	$0.14	$0.28	$0.01	$0.00	$0.00	$0.00
State Service Costs -- Resident Population Supported (Ops)	$0.00	$0.00	$0.00	$0.02	$0.05	$0.05	$0.05
State Service Costs -- Direct Visitor Population	$0.00	$0.00	$0.00	$0.02	$0.03	$0.03	$0.03
Net State Revenues	**$0.11**	**$2.22**	**$2.95**	**$0.70**	**$0.01**	**$0.01**	**$0.01**

	full oper-ations 2029	full oper-ations 2030	full oper-ations 2031	full oper-ations 2032	full oper-ations 2033	full oper-ations 2034	Total (2022-2034)
County Revenues From Project (by Source)	**$0.62**	**$0.62**	**$0.62**	**$0.62**	**$0.63**	**$0.63**	**$7.02**
Property Tax (from Site)	$0.57	$0.57	$0.57	$0.57	$0.57	$0.57	**$6.51**
Non-Tax Revenue, Off-Island Direct Construction Workers	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$0.09**
Non-Tax Revenue, Resident Population Supported (Operations)	$0.01	$0.01	$0.01	$0.01	$0.02	$0.02	**$0.12**
Non-Tax Revenue, Visitors	$0.03	$0.03	$0.03	$0.03	$0.04	$0.04	**$0.30**
Costs Of County Services From Project	**$0.04**	**$0.05**	**$0.05**	**$0.05**	**$0.06**	**$0.06**	**$0.60**
County Service Costs -- Off-Island Direct Construction Workers	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$0.15**
County Service Costs -- Resident Population Supported (Ops)	$0.02	$0.02	$0.02	$0.02	$0.03	$0.03	**$0.20**
County Service Costs -- Direct Visitor Population	$0.02	$0.03	$0.03	$0.03	$0.03	$0.03	**$0.25**
Net County Revenues	**$0.57**	**$0.57**	**$0.57**	**$0.57**	**$0.57**	**$0.57**	**$6.42**
State Revenues From Project (All, from I-O Model)	**$0.10**	**$0.10**	**$0.11**	**$0.11**	**$0.12**	**$0.12**	**$7.38**
All State Taxes (from I-O multiplier) - Construction, Total	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$6.40**
All State Taxes (from I-O multiplier) - Total, Maui Operations	$0.10	$0.10	$0.11	$0.11	$0.12	$0.12	**$0.98**
Costs Of State Services From Project	**$0.08**	**$0.09**	**$0.10**	**$0.10**	**$0.11**	**$0.11**	**$1.28**
State Service Costs -- Off-Island Direct Construction Workers	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$0.43**
State Service Costs -- Resident Population Supported (Ops)	$0.06	$0.06	$0.06	$0.07	$0.07	$0.08	**$0.56**
State Service Costs -- Direct Visitor Population	$0.03	$0.03	$0.03	$0.03	$0.04	$0.04	**$0.30**
Net State Revenues	**$0.01**	**$0.01**	**$0.01**	**$0.01**	**$0.01**	**$0.01**	**$6.10**

[a] Assumed property tax rate from 2023 based on 2020 rate of $10.70 -- i.e., assumes rate increases over time will match inflation. Prior to 2023, assumed rate is 2020 rate of $7.20 for unimproved industrial, with actual value adjusted for inflation. Land valuation conservatively assumed to remain at 2021 sale value (in 2020 dollars), but total reduced by about 5% after 2023 due to land transfer to State.

[b] "Non-Tax Revenue" for counties primarily comes from licenses/permits and charges for services (user fees).

Table 42: Revenues and Costs If 0% "New" Population Supported Is In-Migrant

(All dollar figures are millions of projected constant 2020 dollars)	soft costs only 2022	soft costs all year; hard costs from 4/21 2023	construc-tion year 2024	construc-tion year thru Mar.; opens Apr. 2025	full oper-ations 2026	full oper-ations 2027	full oper-ations 2028
County Revenues From Project (by Source)	**$0.03**	**$0.26**	**$0.57**	**$0.59**	**$0.60**	**$0.60**	**$0.60**
Increase in Property Tax (from Site) [a]	$0.03	$0.23	$0.51	$0.57	$0.57	$0.57	$0.57
Non-Tax Revenue,[b] Off-Island Direct Construction Workers	$0.00	$0.03	$0.06	$0.00	$0.00	$0.00	$0.00
Non-Tax Revenue, Resident Population Supported (Operations)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Non-Tax Revenue, Visitors	$0.00	$0.00	$0.00	$0.02	$0.03	$0.03	$0.03
Costs Of County Services From Project	**$0.00**	**$0.05**	**$0.10**	**$0.01**	**$0.02**	**$0.02**	**$0.02**
County Service Costs -- Off-Island Direct Construction Workers	$0.00	$0.05	$0.10	$0.00	$0.00	$0.00	$0.00
County Service Costs -- Resident Population Supported (Ops)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
County Service Costs -- Direct Visitor Population	$0.00	$0.00	$0.00	$0.01	$0.02	$0.02	$0.02
Net County Revenues	**$0.03**	**$0.21**	**$0.47**	**$0.58**	**$0.58**	**$0.58**	**$0.58**
State Revenues From Project (All, from I-O Model)	**$0.11**	**$2.36**	**$3.23**	**$0.76**	**$0.09**	**$0.09**	**$0.09**
All State Taxes (from I-O multiplier) - Construction, Total	$0.11	$2.36	$3.23	$0.70	$0.00	$0.00	$0.00
All State Taxes (from I-O multiplier) - Total, Maui Operations	$0.00	$0.00	$0.00	$0.05	$0.09	$0.09	$0.09
Costs Of State Services From Project	**$0.00**	**$0.14**	**$0.28**	**$0.03**	**$0.03**	**$0.03**	**$0.03**
State Service Costs -- Off-Island Direct Construction Workers	$0.00	$0.14	$0.28	$0.01	$0.00	$0.00	$0.00
State Service Costs -- Resident Population Supported (Ops)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
State Service Costs -- Direct Visitor Population	$0.00	$0.00	$0.00	$0.02	$0.03	$0.03	$0.03
Net State Revenues	**$0.11**	**$2.22**	**$2.95**	**$0.73**	**$0.06**	**$0.06**	**$0.06**

	full oper-ations 2029	full oper-ations 2030	full oper-ations 2031	full oper-ations 2032	full oper-ations 2033	full oper-ations 2034	Total (2022-2034)
County Revenues From Project (by Source)	**$0.60**	**$0.60**	**$0.61**	**$0.61**	**$0.61**	**$0.61**	**$6.90**
Property Tax (from Site)	$0.57	$0.57	$0.57	$0.57	$0.57	$0.57	**$6.51**
Non-Tax Revenue, Off-Island Direct Construction Workers	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$0.09**
Non-Tax Revenue, Resident Population Supported (Operations)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$0.00**
Non-Tax Revenue, Visitors	$0.03	$0.03	$0.03	$0.03	$0.04	$0.04	**$0.30**
Costs Of County Services From Project	**$0.02**	**$0.03**	**$0.03**	**$0.03**	**$0.03**	**$0.03**	**$0.40**
County Service Costs -- Off-Island Direct Construction Workers	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$0.15**
County Service Costs -- Resident Population Supported (Ops)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$0.00**
County Service Costs -- Direct Visitor Population	$0.02	$0.03	$0.03	$0.03	$0.03	$0.03	**$0.25**
Net County Revenues	**$0.58**	**$0.58**	**$0.58**	**$0.58**	**$0.58**	**$0.58**	**$6.50**
State Revenues From Project (All, from I-O Model)	**$0.10**	**$0.10**	**$0.11**	**$0.11**	**$0.12**	**$0.12**	**$7.38**
All State Taxes (from I-O multiplier) - Construction, Total	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$6.40**
All State Taxes (from I-O multiplier) - Total, Maui Operations	$0.10	$0.10	$0.11	$0.11	$0.12	$0.12	**$0.98**
Costs Of State Services From Project	**$0.03**	**$0.03**	**$0.03**	**$0.03**	**$0.04**	**$0.04**	**$0.72**
State Service Costs -- Off-Island Direct Construction Workers	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$0.43**
State Service Costs -- Resident Population Supported (Ops)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$0.00**
State Service Costs -- Direct Visitor Population	$0.03	$0.03	$0.03	$0.03	$0.04	$0.04	**$0.30**
Net State Revenues	**$0.07**	**$0.07**	**$0.07**	**$0.08**	**$0.08**	**$0.09**	**$6.66**

[a] Assumed property tax rate from 2023 based on 2020 rate of $10.70 -- i.e., assumes rate increases over time will match inflation. Prior to 2023, assumed rate is 2020 rate of $7.20 for unimproved industrial, with actual value adjusted for inflation. Land valuation conservatively assumed to remain at 2021 sale value (in 2020 dollars), but total reduced by about 5% after 2023 due to land transfer to State.

[b] "Non-Tax Revenue" for counties primarily comes from licenses/permits and charges for services (user fees).