STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

STAFF SUBMITTAL

COMMISSION ON WATER RESOURCE MANAGEMENT

February 18, 2020
Honolulu, Oahu

Approval of Ground Water Use Permit (GWUP No. 1057),
Well Construction, and Pump Installation Permits for
Kualoa 2018 Well (Well No. 3-3151-001) for New Agriculture and Irrigation Use of 0.207 mgd
to Kualoa Ranch, Inc. from the Kahana Ground Water Management Area,
Koʻolaupoko, Oʻahu, TMK (1) 5-1-004:001

APPLICANT:

Kualoa Ranch, Inc.
49-560 Kamehameha Highway
P.O. Box 650
Kaʻaʻawa, HI 96730

LANDOWNER:

Kualoa Ranch, Inc.
49-560 Kamehameha Highway
P.O. Box 650
Kaʻaʻawa, HI 96730

SUMMARY OF REQUEST:

The applicant requests approval of a ground water use permit to use 0.207 million gallons per day (mgd) of potable ground water from a yet-to-be-drilled new well for crop and pasture irrigation.

LOCATION MAP: See Exhibit 1

BACKGROUND:

On July 12, 2019, a completed water use permit application was received from Kualoa Ranch, Inc. (KRI) by the Commission on Water Resource Management (Commission). Additional information regarding the source, use, notification, and objection deadline is provided in Exhibits 2 & 3.

On May 10, 2018, the consultant for the ground water outreach program investigated the Kualoa Ranch Inc. (KRI) sources and provided training for online water use reporting to facilitate monitoring of their wells.

Staff conducted a field investigation on October 28, 2019 to review the existing and former ground and surface water sources for Kualoa Ranch, and to talk to the applicant about the future use and possible alternatives.

ANALYSIS/ISSUES:

Section 174C-49(a) of the State Water Code establishes seven (7) criteria that must be met to obtain a water use permit. An analysis of the proposed permit in relation to these criteria follows:

(1) Water Availability

Through the Hawaii Water Plan, the Commission has adopted 15 mgd as the sustainable yield for the Kahana Aquifer System Area. Individual existing water use permits in this aquifer system area are shown in Exhibit 4. A summary of the current ground water conditions in the aquifer is provided in Table 1:

Table 1. Kahana Aquifer System Area

ITEM	Kahana Aquifer System Area (mgd)
Sustainable Yield	15
Less: Other Existing Water Use Permits (shown in Exhibit 4)	1.101
Reservation to DHHL	0
Subtotal (Current Available Allocation)	13.899
Less: Other Completed Applications	0
Less: This Application	0.207
Subtotal (Potential Available Allocation/Allocation Deficit)	13.692

Therefore, there is adequate water available to accommodate the requested allocation.

(2) Reasonable-beneficial

Section 174C-3 HRS defines "reasonable-beneficial use" is

"*...the use of water in such a quantity as is necessary for economic and efficient utilization, for a purpose, and in a manner which is both reasonable and consistent with the state and county land use plans and the public interest*".

I. Purpose of Use

The applicant is requesting the use of potable ground water for pasture and crop irrigation. These are considered irrigation and agricultural uses of water. The Declaration of Policy section, §174C-2(c) HRS, states that the Water Code shall be liberally interpreted to obtain maximum beneficial use of the waters of the State for various purposes including agricultural and irrigation uses.

II. Quantity Justification

(Please refer to Exhibits 5 and 6 for the calculations in this section)

The applicant is requesting a total of 0.207 mgd for pasture and crop irrigation.

These are based on duties of 1,200 gpd/acre for pasture irrigation and 1,590 gpd/acre for crops.

Pasture Irrigation

The Commission uses its Irrigation Water Requirement Estimate Decision Support System (IWREDSS Ver. 2.1) model developed in conjunction with the University of Hawai'i's College of Tropical Agriculture & Human Resources (UH-CTAHR), to estimate reasonable amounts of irrigation water needed to make up what specific crops need in specific areas. It considers a localized water budget based on data for soils, type of crop, irrigation method, and daily rainfall & evapotranspiration using a geographic information system (GIS) to synthesize data and calculated the irrigation water needed above and beyond the localized conditions.

The applicant proposes to irrigate cattle grazing type grasses, which include California, Pangola, Signal and Guinnea grasses. IWREDSS 2.1, does not have parameters for these specific types of grasses, so instead staff ran calculations using turf (2,360 gpd/acre) and Zoysia (2,189 gpd/acre) grasses for the on-in-five-year drought for the area as recommended by UH-CTAHR (see Exhibit 5). Therefore, the applicant's requested duty of 1,200 gpd/acre is below the IWREDSS 2.1 calculated duties for grass in this area for the one-in-five-year drought as recommended by UH-CTAHR as a reasonable irrigation need. As the applicant can always return to the Commission to modify their request for more water if their estimate is too low and actual use shows otherwise, the requested landscape irrigation duty appears to be reasonable.

Crop Irrigation

The applicant has stated the following types of crops to be irrigated: mixed crops, papaya, banana, and passion fruit. For comparables in IWREDSS 2.1, staff again ran calculations for generic crops (1,967 gpd/acre) and banana (1,331 gpd/acre) for the one-in-five-year drought (see Exhibit 5). The applicant's requested duty of 1,590 gpd/acre falls within this range. Therefore, the requested crop irrigation duty appears to be reasonable.

Total Request

Staff then looked at the land areas described and compared them to the total land areas listed for the parcels, and they appeared to all be within the established acreage (refer to Exhibit 1). Using these acres and multiplying by the applicant's duties, confirmed via IWREDSS 2.1, the calculated 0.207 mgd appears to be reasonable and appropriate for the listed uses.

III. Efficiency of Use

The applicant states that its operations will be efficient because the sprinkler irrigation method is *deficit irrigation*. *Deficit irrigation* (DI) is an optimization strategy in which irrigation is applied during drought-sensitive growth stages of a crop. Outside these periods, irrigation is limited or even unnecessary if rainfall provides a minimum supply of water. Water restriction is limited to drought-tolerant phenological stages, often the vegetative stages and the late ripening period. Total irrigation application is therefore not proportional to irrigation requirements throughout the crop cycle. While this inevitably results in plant drought stress and consequently in production loss, DI maximizes irrigation water productivity, which is the main limiting factor. In other words, DI aims at stabilizing yields and at obtaining maximum crop water productivity rather than maximum yields.

Further, they will monitor the system for leaks, and water early in the morning to reduce evaporation.

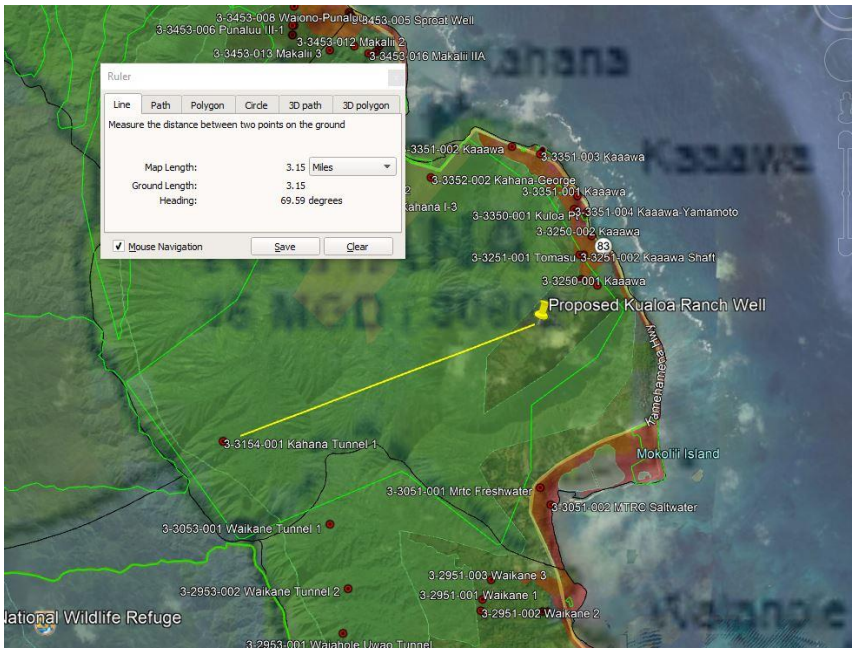
IV. Analysis of Practical Alternatives

The applicant has identified five (5) alternatives to the proposed use of well water. An analysis of each of the alternatives is as follows:

1. Municipal sources: The applicant stated that the existing Honolulu BWS Ka‘a‘awa Shaft (Well No. 3251-002) is unused and not available for use. Staff visited the site with the applicant, and found that although they have a water meter for potable needs, it is insufficient to supply the quantities that they are requesting. Further, the cost would be prohibitive due to BWS costs, as well as the construction and maintenance of infrastructure to get the water from the meter to the site. Though it’s not a municipal source, the Tomasu well (Well No. 3251-001), used by Kualoa Ranch for aquaculture purposes, is an available source of water. However, hydrologic principals favor pumpage from the aquifer to be spread out among multiple locations, thereby reducing stress on one particular location.

2. Wastewater reuse: The applicant stated that there are no reusable wastewater sources available. A copy of the application was sent to the Honolulu BWS and the Mayor’s office, and the City has not provided information regarding the availability of reuse water.

3. Ditch system: The applicant stated that the Waiahole Ditch System cannot be easily accessed from this parcel. Staff confirmed this visually at the field investigation and that the Waiahole Ditch is over three miles away as shown in the map below. Additionally, the topography between the Ditch and the area of the proposed well, with various high and low points, precludes a simple gravity feed transmission. Also, an application for water from the Waiahole Ditch System would also require an application separate from this one.



4. Desalinization: The applicant stated that desalinization is not feasible, and made the point that effluent disposal may contaminate the potable aquifer. Staff agrees with these reasons.

5. Surface Water: The applicant stated that Ka‘a‘awa Stream has aesthetic value and using water from the stream may have negative impacts to stream biota and Hawaiian gathering rights.

   The applicant addressed their existing stream diversions and the reasons that they they’re not used as an alternative. The following are their responses to staff’s query about suitability as an alternative:

   Div 654 Hakipu‘u Mauka Intake Kualoa (gage 214 "Stream Restoration"). This diversion is used to provide drinking water for cattle in the Hakipu‘u and Pilali pastures, as well as tropical flowers at the Molii ag center. The tank is essentially the end of the line, and this water is used to feed the drinking water system of our horse pastures fronting Kualoa. The locations we would like to use the proposed well water for in Ka‘a‘awa valley is approximately 2 miles away from the tank at the end of the line, and approximately 3.4 miles away (including various elevation changes) from the diversion itself.

   Staff visited the site and concurs that the distance away from the site makes using this diversion as a source difficult.

   Div 653 Hakipu‘u Old Intake Kualoa (gage 213 "Puna"). This diversion is not in use at this time and stands as a reserve for the Hakipu‘u region (cattle and agriculture) during extended drought conditions. This diversion is close to Div 654 and is approximately 3.2 miles away (including various elevation changes) from the pastures we would be using the water from the proposed well.

Staff concurs that the reserve for drought conditions and the distance away from the site make this diversion a difficult alternative.

Div 652 Kealohiwai Spring (no gage). This water source originates off of Kualoa Property, but does run through Kualoa Ranch Property. There is no diversion infrastructure in place, and it is located just mauka of Kamehameha Hwy and across the street from Diversion 1112 approximately 3 miles away from (including various elevation changes) from the pastures we would be using the water from the proposed well.

Staff concurs that this source is too far from the site to make it a viable alternative.

Div 1112 Hakipuʻu Makai Kualoa (gage 215 Pahalona Aqua Fresh). This water is used for earthen pond aquaculture and is at capacity for its current use. It is on the makai side of Kamehameha Highway, and approximately 3 miles away from (including various elevation changes) the pastures we would be using the water from the proposed well.

Again, staff verified via a site visit that this diversion's distance from the project site makes it an unsuitable alternative.

Div 1008 Un-named (no gage) I believe that this diversion is on Johnson Road (location within ranch boundaries with various privately owned lots) and is used to feed taro patches that are not affiliated with Kualoa Ranch. The registered names above are not part of Kualoa Ranch as well, but the Fukumitsus are affiliated with Johnson Road Kuleana lots. Kualoa Ranch has no records of this diversion.

More investigation is necessary to document this un-named diversion, but given the little association with Kualoa Ranch other than the fact that it's on their property, staff concurs that it's not a suitable alternative.

Div 655 Kualoa Ranch Spring Diversion at Kaʻaʻawa (gage 216 "B&W). The diversion being used in Black and White pasture services 50 head of cattle for drinking water only (no irrigation is being run off of the diversion). We measured the diversion at roughly 3.75 GPM. When considering the amount of acreage we were hoping to service for both irrigation and drinking water (the greater Kualoa herd excluding the B+W animals fluctuates upwards of 275 during calving season) from the well, using the diversion only would have insufficient flow.

Estimates for cattle stock water are in the range of 10 gallons per head of cattle per day (A Literature Compilation for Water Usage for Hawaii, dated May 1994). For 275 head, this would require 2,750 gallons per day. At 3.75 gpm from the diversion, the amount of water supplied by this diversion is 5,400 gallons per day. This diversion alone could be sufficient for stock water for the cattle. However, the remaining 2,650 gallons per day is insufficient to meet the needs described in this water use permit application.

Lo‘i near Hakipu‘u Stream (21.510728°, -157.864933°). This is an educational lo‘i system consisting of seven (7) terraces with an area less than 650 square feet collectively. It is located at the source of a small spring head that feeds Hakipu‘u stream. No diversion infrastructure is in place other than a small auwai used to guide seeping water into the aforementioned terraces. This location is approximately three (3) miles away from (including various elevation changes) from the pastures we would be using the water from the proposed well.

Staff concurs that the distance precludes this source as a suitable alternative.

(3) Interference with other existing legal uses

There are three (3) other wells currently in use within one (1) mile of this source which use water for (refer to Exhibit 1). One of these wells (Ka‘a‘awa Well, State Well No. 3-3250-001) is abandoned/lost, and the Board of Water Supply’s Ka‘a‘awa Shaft (State Well No. 3-3251-002) is unused. The only pumped well is the Tomasu Well (State Well No. 3-3251-001), used for aquaculture. Pump test data for the proposed well will show potential impacts, and the pump capacity approved may be reduced if there are impacts to other wells, as well as surface water. The potential for impacts will be seen on a pump test as a recharge boundary. This recharge boundary will be seen as a change in the rate of drawdown, which would be assumed to be a source of water other than the aquifer, possibly a stream or another body of water. Further investigation would be required if this recharge boundary is found.

As is standard procedure in pump test analysis, should the pump test data show an impact to Ka‘a‘awa Steam, staff will request the applicant to apply for an amendment to the instream flow standard (IFS) prior to issuing the pump installation permit. Therefore, staff doesn’t anticipate interference with any other existing legal uses and have provisions should the pump test show evidence that Ka‘a‘awa Stream is impacted.

(4) Public interest

Public interest is defined under §174C-2 - Declaration of policy, as follows:

“*(c) The state water code shall be liberally interpreted to obtain maximum beneficial use of the waters of the State for purposes such as domestic uses, aquaculture uses,* ***irrigation and other agricultural uses****, power development, and commercial and industrial uses. However, adequate provision shall be made for the protection of traditional and customary Hawaiian rights, the protection and procreation of fish and wildlife, the maintenance of proper ecological balance and scenic beauty, and the preservation and enhancement of waters of the State for municipal uses, public recreation, public water supply, agriculture, and navigation. Such objectives are declared to be in the public interest.”*

Because the use falls under irrigation and other agricultural uses, this applicant meets the criteria to satisfy public interest.

(5) State & county general plans and land use designations

The proposed uses are in the State AG District, and the county zoning is AG-2. Therefore, the proposed use is consistent with these land use designations.

Normal agency review includes:

1) the State's Department of Land and Natural Resources (DLNR) and its State Parks, Aquatic Resources, Historic Preservation, and Land Divisions; the Department of Health (DOH) with its Clean Water, Safe Drinking Water, and Wastewater Branches; the Department of Hawaiian Home Lands (DDHL), and Land Use Commission (LUC); and the Office of Hawaiian Affairs (OHA);
2) the Office of the Mayor, Department of Planning and Permitting, and the Honolulu Board of Water Supply.

Staff has not reviewed the state and county general plans, but rather relies on the appropriate agency reviews. No comments were received from these agencies that state that the uses are not consistent with state and county general plans.

Kualoa Ranch lies at the boundary of the Koʻolaupoko and Koʻolauloa land use planning districts. The Ranch land holdings span both the Koʻolaupoko and Koʻolauloa districts. The Koʻolauloa WUDP includes more discussion of the Ranch's water needs.

Under the most-likely demand scenario, non-potable agriculture is projected to increase from 13.25 mgd in 2000 to 17.22 mgd in 2030. Other non-potable demands are projected to increase from 1.88 mgd to 3.37 mgd. Ground water from the Koʻolaupoko GWMA will supply the majority of both potable and non-potable demand increases (17.24 mgd to 23.36 mgd), while recycled water service is anticipated to double (0.56 mgd to 1.2 mgd).

Table 6.13 Koʻolau Loa Mid/Policy Demand Scenario: Projected Water Demand and Supply Options

DEMAND (mgd)	2000	2005	2010	2015	2020	2025	2030
BWS Potable	1.46	1.57	1.86	1.89	1.92	1.96	2.15
BWS Potable export to Koʻolau Poko & North Shore	8.60	8.60	8.60	8.60	8.60	8.60	8.60
LWC Potable	0.95	1.15	1.32	1.39	1.46	1.52	1.59
Total Potable Demand	**11.01**	**11.32**	**11.78**	**11.87**	**11.97**	**12.08**	**12.34**
Non-Potable Agriculture	13.25	13.79	14.37	14.99	15.68	16.42	17.22
Non-Potable Other	1.88	2.28	2.39	2.40	2.67	3.02	3.37
Total Non-Potable Demand	**15.13**	**16.07**	**16.75**	**17.39**	**18.34**	**19.44**	**20.59**
TOTAL DEMAND	**26.14**	**27.39**	**28.53**	**29.26**	**30.32**	**31.52**	**32.93**
SUPPLY (mgd)							
Koʻolau Loa GWMA[1]	17.24	18.47	19.49	20.01	21.06	22.05	23.36
Kahana GWMA[2]	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Kawailoa GWMA	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Surface Water[3]	6.98	6.98	6.98	6.98	6.98	6.98	6.98
Recycled Water	0.56	0.57	0.68	0.89	0.90	1.10	1.20
Agriculture Water Savings	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Water Conservation	0.00	0.01	0.02	0.02	0.02	0.03	0.03
TOTAL SUPPLY	**26.14**	**27.39**	**28.53**	**29.26**	**30.32**	**31.52**	**32.93**

[1] Sustainable yield for Koʻolau Loa GWMA is 36 mgd.
[2] Sustainable yield for Kahana GWMA is 15 mgd.
[3] Surface Water is assumed to be the existing water use pending measurable instream flow standards.

Therefore, this application meets the criteria for compliance with land use designations, and staff assumes that the agricultural uses in agricultural zoned and designated areas, along with no objections, are consistent with state & county general plans.

(6) County land use plans and policies

Again, normal County review includes Office of the Mayor, Department of Planning and Permitting, and the Honolulu Board of Water Supply. No comments or objections have been made with respect to land use plans and policies. The 2009 Koʻolau Loa Watershed Management Plan (KLWMP) of the Hawaiʻi Water Plan (HWP) recognizes the 4,000 acres Kualoa Ranch as the largest agricultural water user in the Kahana GWMA. The 169.5 acres of agricultural use of this proposal appears to be consistent with keeping the rural character mentioned in the KLWMP. However, the KLWMP also mentions the desire of Kualoa Ranch not to drill wells in Kaʻaʻawa Valley.

Therefore, though the proposed use is consistent with county zoning and rural pasture plans, these applications do not seem to be consistent with the applicant's desires mentioned in 2009 KLWMP. When staff asked the applicant about this, they stated that in 2009 they had no intention of developing new wells, but they decided that drilling a well was now desirable provided there are no adverse impacts.

(7) Interference with Hawaiian home lands rights

All permits are subject to the rights of Hawaiian home lands. The Department of Hawaiian Home Lands (DHHL) and the Office of Hawaiian Affairs were sent copies of this application and no comments or objections were returned. Further, standard water use permit conditions 3.g., 6., and 9.f. notify all water use permittees that their permits are subject to and cannot interfere with Hawaiian home land rights.

Therefore, this application will not interfere with DHHL's rights.

(8) Other issues

I. Chapter 343 – Environmental Assessment (EA) Compliance

EA Triggers
In accordance with §HRS 343-5(a), the applicant's proposed action does not trigger the need for an EA.

II. Traditional and Customary Practices

To assess potential impacts and mitigation to traditional and customary practices, staff did the following:

1) Papakilo database – staff queried OHA's Papakilo database and found 235 articles.
2) Kipuka database – The OHA Kipuka database shows no sites or crown lands involved. Staff sent a request for comments to OHA but did not receive a response.
3) Consultation with Aha Moku – Staff requested comments from Aha Moku but at the time of this writing, no response has been received.

4) Consultation with State Historic Preservation Division – Staff requested comments from State Historic Preservation Division but did not receive a response.

Ka Paʻakai Analysis

In Ka Paʻakai O Kaʻaina v. Land Use Commission, the Hawaiʻi Supreme Court recognized that the State has an obligation to protect Hawaiian traditional and customary practices to the extent feasible, and that the proponent of an action must show sufficient evidence that these types of practices are protected, if they exist in the location in question. This "Ka Paʻakai framework" was created by the Court "to help ensure the enforcement of traditional and customary native Hawaiian rights while reasonably accommodating competing private development interests." The Commission is obligated to conduct a "Ka Paʻakai analysis" of a proposed action requiring CWRM approval independent of the entity proposing the action. This analysis should be used to inform any decision on the impact of the proposed action on traditional and customary practices.

Consequently, the Court required an assessment of the following:

(1) "the identity and scope of 'valued cultural, historical, or natural resources' in the petition area, including the extent to which traditional and customary native Hawaiian rights are exercised in the petition area;

- Staff sent out consultation letters to Aha Moku, OHA, DHHL, and SHPD. No responses were returned that indicated any valued cultural, historic, or natural resources.
- Staff also queried the Kipuka database and found no resources in the vicinity.

(2) "the extent to which those resources -- including traditional and customary native Hawaiian rights -- will be affected or impaired by the proposed action; and

- Staff does not anticipate that pumpage of the well will impact any streams or ocean discharge. However, pump tests are necessary and submission of pump tests to the Commission will be followed by a pump test analysis. The applicant is proposing to install a 400 gallon per minute pump. According to the Hawaii Well Construction and Pump Installation Standards, a 400 gpm pump requires a 48-hour pump test. During this pump test, drawdown needs to be recorded. Staff will then analyze the drawdown to see if there are any changes in the rate of drawdown, such that it's possible that an adjacent resource is impacted.

(3) "the feasible action, if any, to be taken … to reasonably protect native Hawaiian rights if they are found to exist"

- Any potential impacts of pumpage of this well on any adjacent resources might be detected if the required pump tests and subsequent analysis shows an anomaly to normal water drawdown. If found, staff will further investigate potential sources of this anomaly, and either require the applicant to apply for an amendment to instream flow standards (if it's found that the impact is to a stream), or to downsize the pump and redo the pump tests until no impacts are found.

III. Other uses on Kualoa Ranch property

Ground Water

From various field investigations conducted on August 7, 1990; June 16, 1993, October 20, 1993, August 13, 2008; May 10, 2018 & October 28, 2019, there are seven (7) wells that are initially associated with Kualoa Ranch. Two (2) are not actually wells, four (4) are abandoned/lost, four (4) have existing ground water use water use permits, and one (1) unused well should be sealed. An analysis of each is as follows:

3-3051-001 (MRTC Freshwater) – This old 1978 well permitted by the Honolulu Board of Water Supply (BWS) back in 1975 and constructed in 1978 takes water from the Hakipuʻu Stream. The August 7, 1990 registration field investigation found this as a dug well next to the stream; however, the May 10, 2018 reporting outreach investigation found this to be sump and pool pump taking an estimated 100,000 gpd of surface water directly from Hakipuʻu Stream via pipe in the stream. BWS records show this well was to be installed next to Hakipuʻu stream for aquaculture research and training by the University of Hawaiʻi Marine Training Center (UH-MRTC). The registration from Kualoa Ranch states that freshwater water from this "unknown" source for aquaculture was supplied from Hakipuʻu Stream using a 50 gpm (72,000 gpd) pump continuously and drawings show the well was constructed to take water from Hakipuʻu Stream. Staff initially thought this to be a well. No water use has ever been reported from this well and it has been categorized as abandoned/lost and needs a stream diversion number. Therefore, staff's understanding is that this was initially mistakenly described as a well and thought to be a well by Hakipuʻu Stream, but really is a stream diversion. Additional surface water diversion regulation will be needed for this source.

3-3051-002 (MRTC Saltwater) – On May 10, 2018 the outreach consultant found that this well actually does not exist and verified that a PVC intake pipe was directly pumping saltwater from Kāneʻohe Bay. Pumping water directly from the ocean is outside of CWRM's jurisdiction, but laying the pipe and discharging effluent would fall under DLNR Office of Conservation and Coastal Lands (OCCL), Department of Health (DOH), and possibly the U.S. Army Corps permitting requirements. However, Kualoa Ranch has a ground water allocation of 0.058 mgd for four (4) acres of aquaculture through Ground Water Use Permit (GWUP) No. 245 for this source. Though GWUP 245 was approved on May 18, 1994, it was never issued. Also, since this was declared a saltwater source, it does not affect the aquifer resource which is why it is not included in Exhibit 4. This well does not actually take ground water (saltwater) from within the Kahana Aquifer System Area. Based on this information, GWUP 245 should be revoked or cancelled.

3-3250-001 (F. Swanzy) – This well location has been unknown since 1940 (USGS Bulletin 5, 1940), and no 1987 registration was filed for this well. Subsequent investigations could not find this well either. There is no water use permit associated with this well. The well is listed on CWRM's database as abandoned/lost. Given the current field conditions in proximity to the suspected well location, there is little risk to the ground water resource.

3-3251-001 (Tomasu) – This well has been investigated several times, the latest by staff on October 28, 2019. Water from this well is used for aquaculture, and Kualoa Ranch is reporting 0.004 mgd. Ground Water Use Permit (GWUP) No. 342 for this well allows an allocation of 0.288 mgd for 46 acres of pasture irrigation and four (4) acres of aquaculture. The 12-month moving average is 0.144 mgd as of December 2019. One condition of any GWUP is the submission of a water shortage plan. None has been received to date for GWUP 342 and should be provided so the Commission can incorporate the applicant's shortage plan into an overall shortage plan.

3-3251-003 (Saito) – This 6-foot diameter dug well has been investigated several times, the latest by staff on October 28, 2019. Kualoa Ranch has reported that the well has not been used since 2004, and staff's assessment is that it should be sealed for safety and protection of the resource. Though unused, this well has an allocation of 0.200 mgd under Ground Water Use Permit (GWUP) No. 343 for 50 acres of pasture. Based on continuous 4-year non-use, GWUP 343 should be revoked or cancelled.

3-3351-003 (Ka'a'awa) – This well has been investigated several times, the latest by staff on October 28, 2019, and this well could not be located in Swanzy Beach Park. There is no water use permit associated with this well and this well was never registered. The well is listed on CWRM's database as abandoned/lost. Given the suspected location of this well at Swanzy Park next to the ocean, there is little risk to the resource.

3-3351-004 (Ka'a'awa-Yamamoto) – This well has been investigated several times, the latest by staff on October 28, 2019. This well verified in June 16, 1993 under registration and subsequently permitted under Ground Water Use Permit (GWUP) No. 334 to Kualoa Ranch on December 8, 1993 for 0.005 mgd for agricultural use for one (1) acre of papaya. During 20-year review in 2007-2008, Kualoa reported the well had been covered and the parcel was sold. Subsequent follow-up to the landowner resulted in no response and the latest field investigations on May 10, 2018 and October 28, 2019 confirmed that a home seems to be built over the old well location and there was no agricultural use. The current landowner of this parcel is now two (2) ownerships removed from the 2007 period and no transfers to the new owners were ever requested. However, Kualoa Ranch representative is reporting 0 gpd use from this well since 2004. Given these investigations the well is abandoned/lost, though no application to properly abandoned the well was ever filed. Based on the ground of lack of any use over the recent 4-continuous years, requests for transfers, and any evidence of agricultural use on the parcel, GUWP No. 334 permit should be revoked. Since the applicant cannot request cancellation of this GWUP as they no longer own it, the new owners need to be noticed of the revocation process. Further, staff should investigate when and who was responsible for abandoning the well without proper permitting.

Surface-water

Below are registered surface water diversions in the area and their current status. As discussed prior, Div 655 is the only practicable source within proximity of end uses. Staff will need to do further investigations on the status of those diversions that are unknown.

Div 654 Hakipu'u Mauka Intake Kualoa (gage 214 "Stream Restoration"). A 2" pipe and trough collects water from two (2) springs. Water not diverted flows to Hakipu'u Stream. Diverted water fills a tank 1.4 miles away. Status = active and reporting daily use of 79,200 gpd.

Div 653 Hakipu'u Old Intake Kualoa (gage 213 "Puna"). May have incorrect coordinates in WRIMS. A 1992 field drawing shows it at a higher elevation, and WRIMS has it at a lower elevation on Hakipu'u Stream. Need to re-visit and verify both WRIMS and 1992 field drawing locations. Not in use according to Taylor Kellerman, and is reporting zero because of future plans to restore the diversion. Status = not in use

Div 652 Kealohiwai Spring (no gage). May have incorrect coordinates in WRIMS. A 1992 field drawing maps it 1/2 mile North-northwest from WRIMS coordinates. Need field visit to verify both WRIMS and 1992 field drawing locations. Status = no diversion infrastructure in place

Div 1112 Hakipuʻu Makai Kualoa (gage 215 Pahalona Aqua Fresh). Pumping from Hakipuʻu Stream for fishponds. WRIMS may have incorrect coordinates. An Oct 28, 2019 field investigation GPS coordinates map the diversion 200 feet to the North West. Need field visit to re-verify location using WRIMS coordinates. Status = active and reporting daily use of 5,400 gpd.

Div 1008 Un-named (no gage) May have incorrect coordinates in WRIMS. Diversion coordinates map it on Kualoa Ranch property and it's registered to J.T. Sebastian & M.H. Fukumitsu (file ref: SEBASTIAN JT). Need field visit to verify WRIMS coordinates. Status = unknown.

Div 655 Kualoa Ranch Spring Diversion at Kaʻaʻawa (gage 216 "B&W). There is a 3 foot dam on mountain bedrock. Diverted water is sent to storage tank via pvc pipe 300 feet away from diversion. Status = active and reporting daily use of 56,842 gpd.

Loʻi near Hakipuʻu Stream (21.510728°, -157.864933°). Need field visit to identify water source, loʻi outfall, and diversion structure. Taylor Kellerman believes the loʻi was there for a long time, and the Ranch restored it. Need to investigate if this is diversion 1008, or unregistered. Status = unknown.

RECOMMENDATION:

Staff recommends that the Commission:

1. Approve the issuance of water use permit no. 01057 to Kualoa Ranch, Inc. for the reasonable and beneficial use of 0.207 million gallons per day of fresh water for irrigation/agricultural use from the Kualoa 2018 well (Well No. 3-3151-001), as described in the recommended allocation portion of Exhibit 6, and subject to the standard ground water use permit conditions listed in Exhibit 7 and the following special conditions:

    a. This permit is invalid if the use as described in Exhibit 6 changes. This includes, but is not limited to: type of use, location of use, land use classification changes, or anything that varies from the application.

    b. Should an alternate permanent source of water be found for this use, then the Commission reserves the right to revoke this permit, after a hearing.

    c. In the event that the tax map key at the location of the water use is changed, the permittee shall notify the Commission in writing of the tax map key change within thirty (30) days after the permittee receives notice of the tax map key change.

    d. Within 180 days of this approval, the applicant shall submit:

        i. Written cancellation of GUWPs 245 & 343,

ii. A water shortage plan for GWUP 342, and

iii. An application to abandon and seal Well No. 3-3251-003 (Saito).

2. Approve a well construction permit for Kualoa 2018 (Well No. 3-3151-001), subject to the standard well construction permit conditions as described in Exhibit 8.

3. Delegate the approval and issuance of a pump installation permit for Kualoa 2018 (Well No. 3-3151-001), subject to the standard pump installation permit conditions as described in Exhibit 9 and the following special condition:

   a. Should the pump tests during the well construction phase of work show that water is diverted from Ka‘a‘awa Stream, then the issuance of the pump permit shall be delayed subject to the application for and Commission action on an amendment to Ka‘a‘awa Stream instream flow standard.

Ola i ka wai,

M. KALEO MANUEL
Deputy Director

Exhibits:
1 (Location Map)
2 (Water Use Permit Detailed Information)
3 (Public Notice)
4 (Existing Water Use Permits and 12-Month Moving Average Withdrawal)
5 (IWREDSS calculations)
6 (Summary of use request and duty comparisons)
7 (Water Use Permit Standard Conditions)
8 (Well Construction Permit Standard Conditions)
9 (Pump Installation Permit Standard Conditions)

APPROVED FOR SUBMITTAL:

SUZANNE D. CASE
Chairperson

3 matching results found. Sort By: Well Number

Well Number	Aquifer System	Well Name	Well Owner/Operator	Water Use Reporter	Land Owner	TMK	Use	Year Drilled	Latest 12-MAV	Last Reported Date	Distance (miles)
3-3250-001	30602 Kahana	Kaaawa	F. Swanzy	Taylor Kellerman (Kualoa Ranch, Inc.)	Kualoa Ranch, Inc.	(1) 5-1-001:001	ABNLOS	1890		6/30/2018	0.74
3-3251-001	30602 Kahana	Tomasu	Kualoa Ranch, Inc.	Pat Carol	Kualoa Ranch, Inc.	(1) 5-1-004:001	AGRAQ	1896		4/30/2018	0.86
3-3251-002	30602 Kahana	Kaaawa Shaft	Honolulu Board of Water Supply, BWS	Nancy Matsumoto (Honolulu Board of Water Supply, BWS)		(1) 5-1-004:003	UNU	1940		7/31/2019	0.84

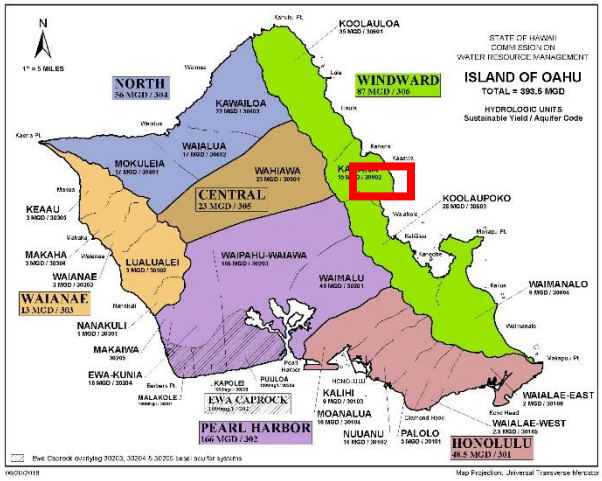


EXHIBIT 1: LOCATION MAP

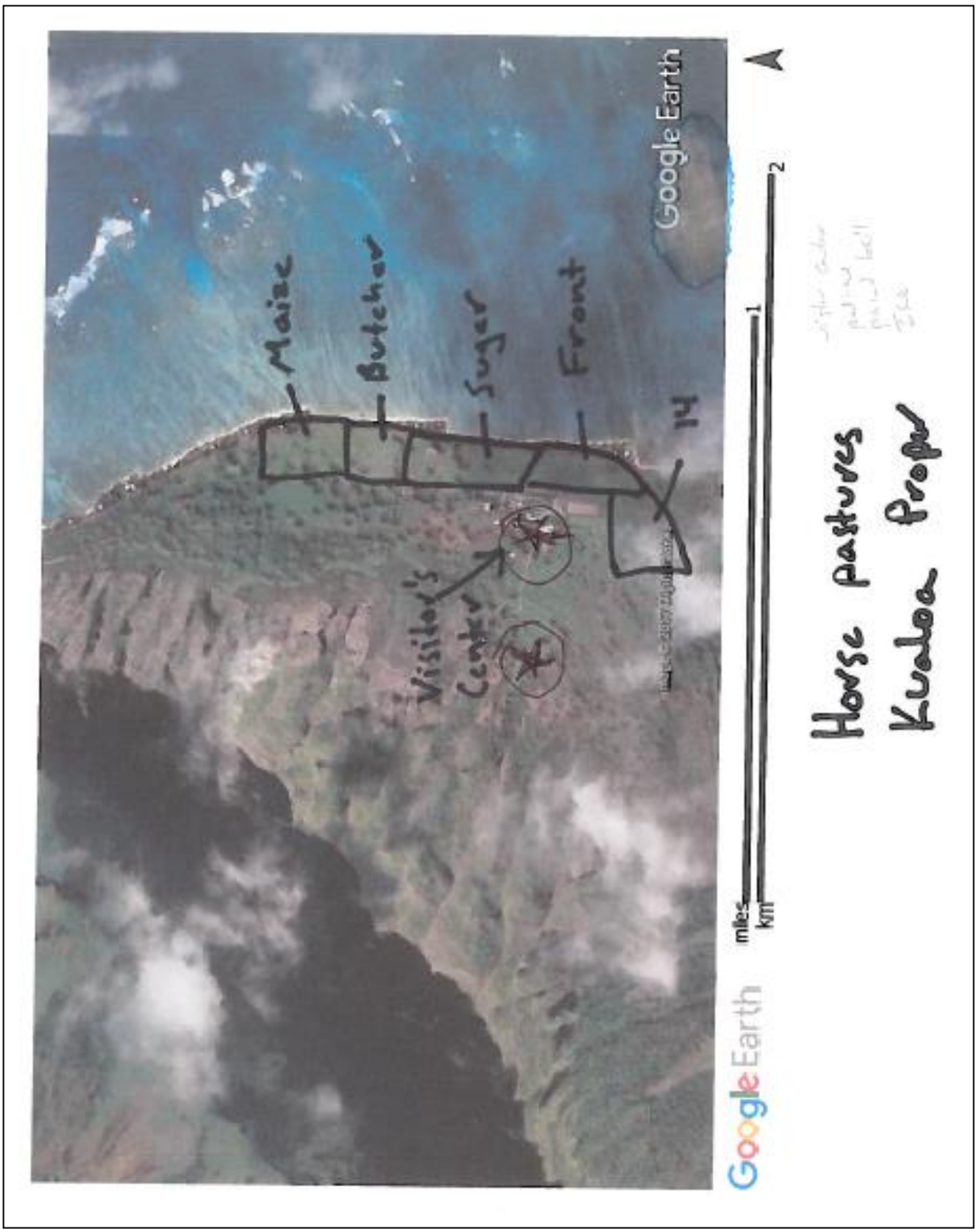


EXHIBIT 1: LOCATION MAP

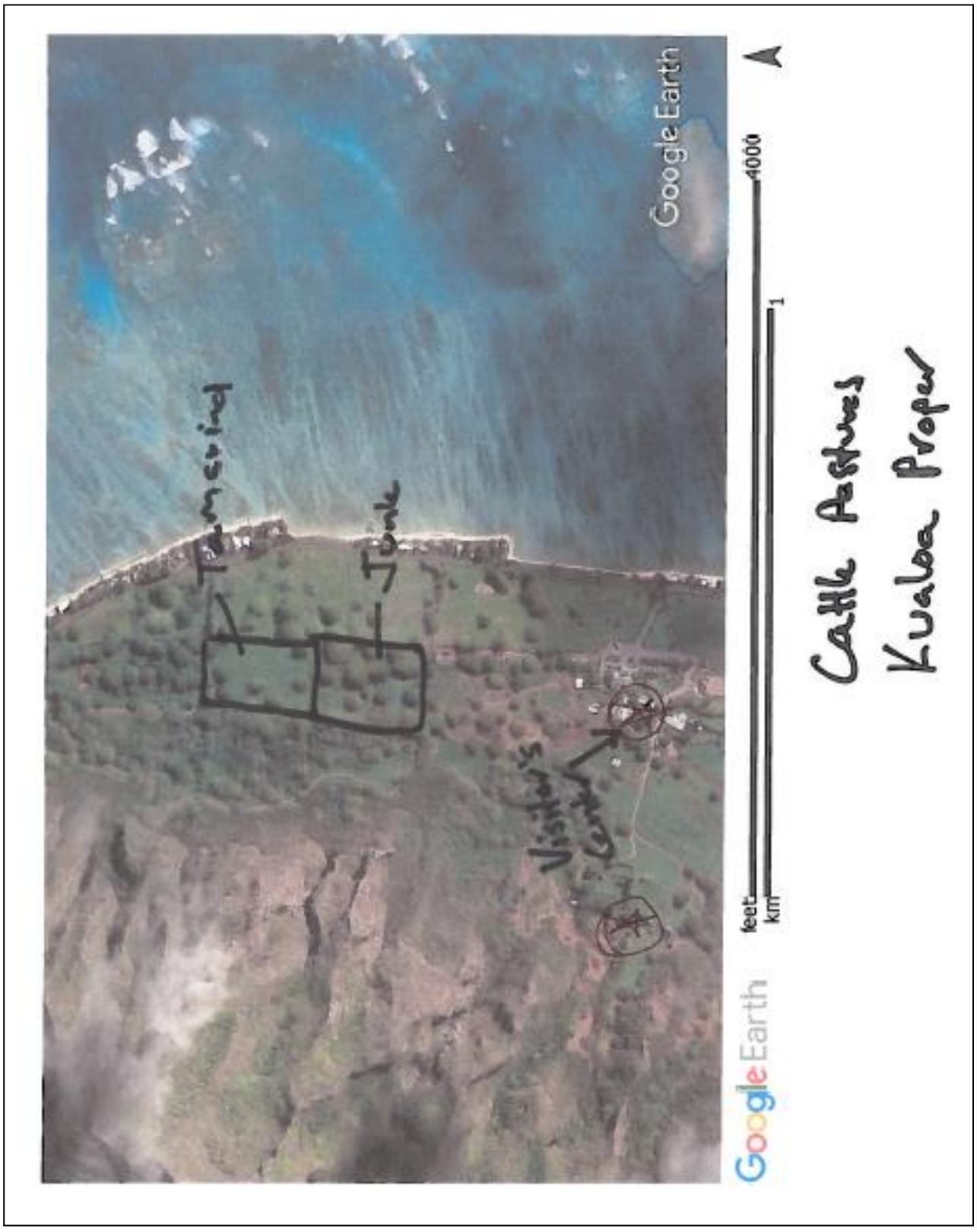


EXHIBIT 1: LOCATION MAP

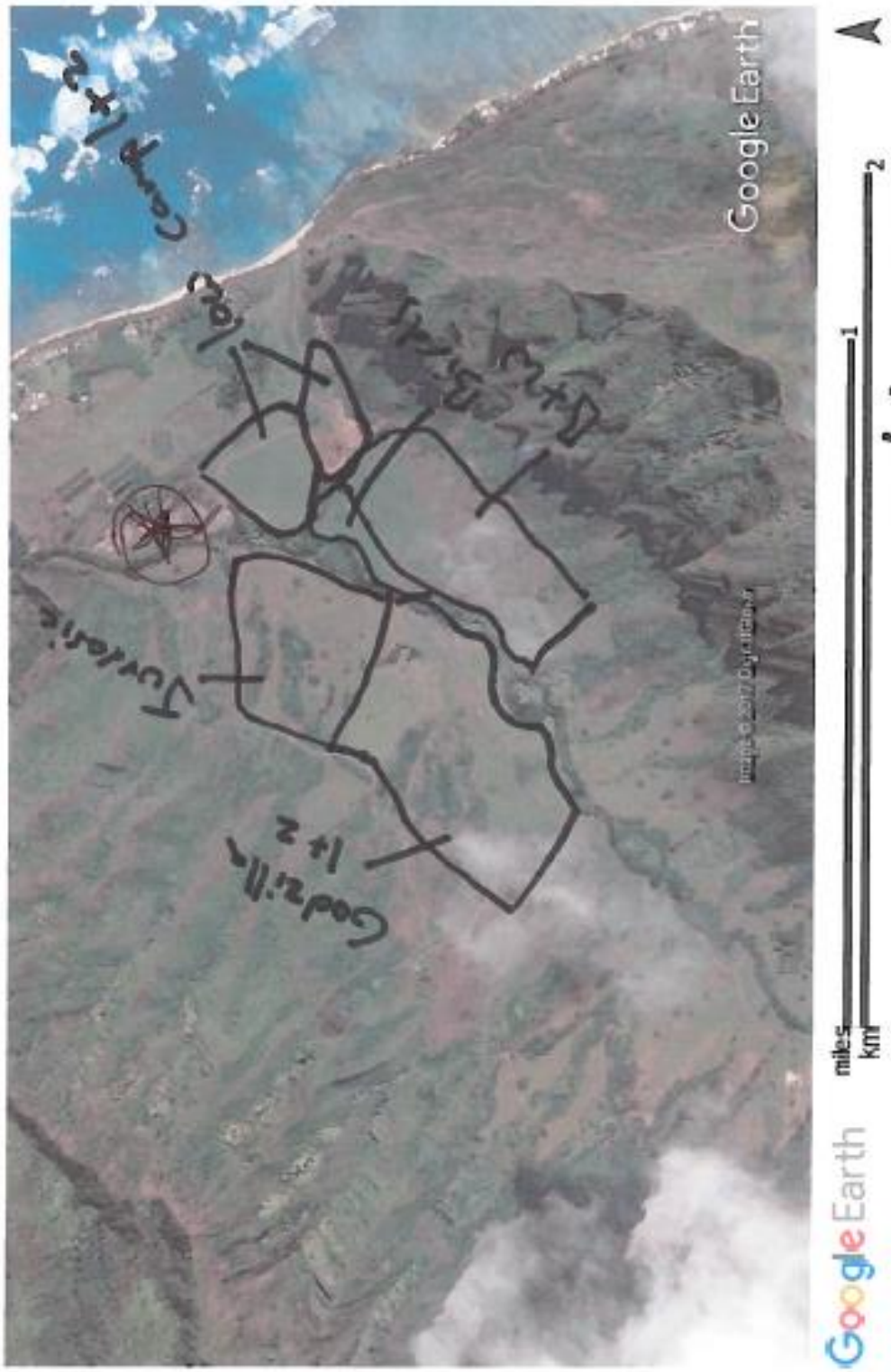


EXHIBIT 1: LOCATION MAP

EXHIBIT 1: LOCATION MAP

WATER USE PERMIT DETAILED INFORMATION

Source Information

AQUIFER:	Kahana System, Windward Sector, Oahu
Sustainable Yield:	15 mgd
Existing Water Use Permits:	1 mgd
Available Allocation:	14 mgd
Total other pending applications:	0 mgd
This application:	0.23 mgd

PROPOSED WELL SECTION:

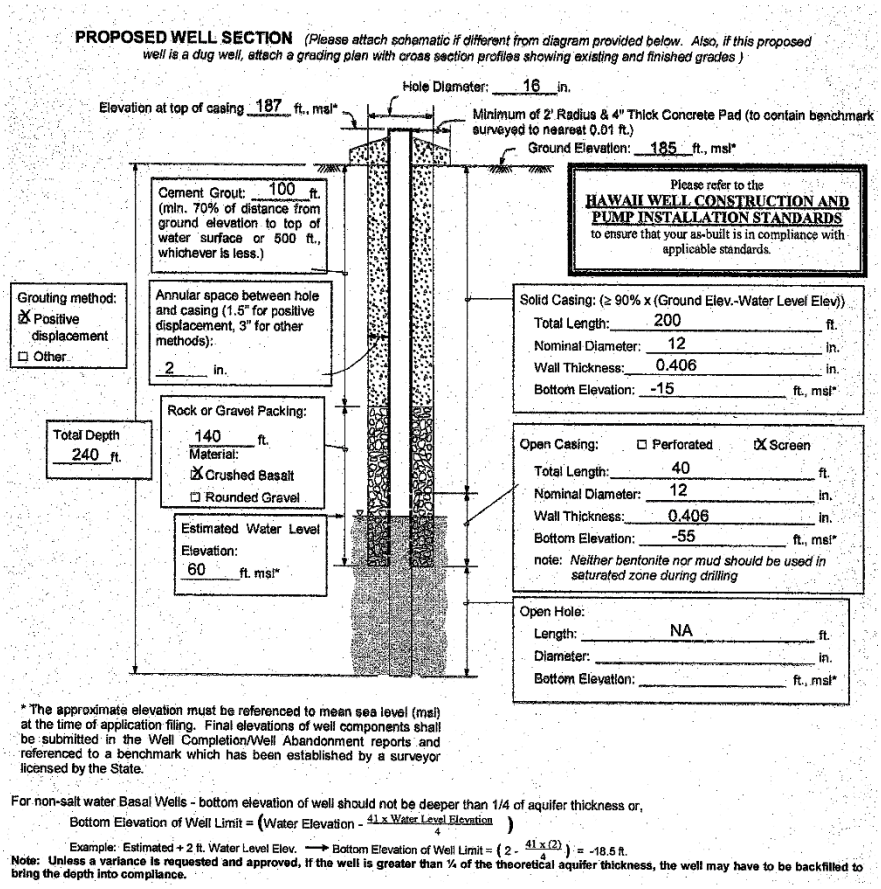


EXHIBIT 2: WATER USE PERMIT DETAILED INFORMATION

Use Information

Quantity Requested:	0.207 million gallons per day
New Type of Water Use:	Irrigation / Agriculture
Place of Water Use:	TMK: (1) 4-9-004:002

Kahana Aquifer System
Current 12-Month Moving Average Withdrawal (See Exhibit 4): 0.654 mgd

Nearby Surrounding Wells and Other Registered Ground Water Use

There are 3 other wells within a mile of the well (see Exhibit 1). 1 of these wells is currently in use.

Public Notice

In accordance with HAR §13-171-17, a public notice was published in the Star Advertiser on 08/09/2019 and 08/16/2019 and a copy of the notice was sent to the Office of the Mayor. Copies of the completed application were sent to the Board of Water Supply, Department of Planning and Permitting, Department of Health, Department of Hawaiian Home Lands, Office of Hawaiian Affairs, the various divisions within the Department of Land and Natural Resources, and other interested parties for comments. Written comments and objections to the proposed permit were to be submitted to the Commission by August 30, 2019.

Objections

The public notice specifies that an objector meet the following requirements: (1) state property or other interest in the matter; (2) set forth questions of procedure, fact, law, or policy, to which objections are taken; (3) state all grounds for objections to the proposed permits, (4) provide a copy of the objection letter(s) to the applicant, and (5) submit objections meeting the previous requirements to the Commission by August 30, 2019.

To the best of staff's knowledge there are no objectors who have property interest within the Kahana Aquifer System or who will be directly and immediately affected by the proposed water use

Briefs in Support

Responses to objections, or briefs in support, regarding the application are required to be filed with the Commission ten (10) days after an objection is filed and, presumably, copies are served to the applicant. No briefs in support were filed with the Commission.

PUBLIC NOTICE

Application for Ground Water Use Permit
Kahana Ground Water Management Area, Oahu

The Commission on Water Resource Management received the following ground water use permit application. Public Notice is given pursuant to Hawaii Administrative Rules, Section 13-171, "Designation and Regulation of Water Management Areas."

GWUPA No. 01057 (proposed) Kualoa 2018 well (Well No. 3-3151-001)

Applicant: Kualoa Ranch, Inc.
49-560 Kamehameha Highway
P.O. Box 650
Ka'a'awa, HI 96730

Landowner: Kualoa Ranch, Inc.
49-560 Kamehameha Highway
P.O. Box 650
Ka'a'awa, HI 96730

Date Application Filed as Complete: July 12, 2019
Hydrologic Unit / Aquifer System Area: Kahana System, Windward Sector, Oahu
Water Source: Kualoa 2018 well (Well No. 3-3151-001), Tax Map Key (1) 5-1-004:001
Quantity Requested: 0.207 million gallons per day.
New Use: 169.5 acres of landscape & crop irrigation
Place of Water Use: At Tax Map Key: (1) 4-9-004:002, (1) 4-9-005:001, (1) 5-1-001:001, (1) 5-1-004:001

Written objections or comments on this application may be filed by any person who has property interest in any land within the hydrologic unit of the source of water supply, any person who will be directly and immediately affected by the proposed water use, or any other interested person. Written objections must (1) state the property or other interest in the matter (provide TMK information); (2) set forth questions of procedure, fact, law, or policy, to which objections are taken; and (3) state all grounds for objections to the proposed permit. Written objections must be received by August 30, 2019. Objections must be sent to 1) the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96809 and 2) the applicant at the above address.

COMMISSION ON WATER RESOURCE MANAGEMENT

M. KALEO MANUEL, Deputy Director for
SUZANNE D. CASE, Chairperson

Dated: July 24, 2019

Publish in: Honolulu Star Advertiser issues of August 9, 2019 and August 16, 2019

EXHIBIT 3: PUBLIC NOTICE

Commission on Water Resource Management
Information Management System

Water Use Permit

Report Parameters

WUP Type:	Water Use Permit, Administrative Modification, Reservation, Transfer, CWRM Decision and Orders, Court Orders, Other
Island:	Oahu
Applicant:	All
Well # Prefix:	All
Date:	All
Issued Date:	All
Date Accepted:	All
Aquifer Sector:	All
Aquifer:	30602 Kahana
Source or End Use TMK:	All
Aquifer Type:	Alluvial, Basal, Dike, Perched, Not Specified
Water Quality:	Fresh, Brackish, Potable, Non-Potable, Not Specified
Not	Salt
Proposed Use:	All

WUP = Water Use Permit, 12-MAV = 12 month moving average, Diff = WUP-12-MAV, mgd = million gallons per day

Island of Oahu

Aquifer System Ground Water Management Area: 30602 Kahana

Sustainable Yield (mgd): 15

Wup No	Approved	Permittee	Well No	Well Name	WUP (mgd)	12-MAV (mgd)	Diff (mgd)	Date Last Reported
00311	12/08/1993	Kahana Valley State Park	3-3352-001	Kahana Valley	0.008			
00334	12/08/1993	Kualoa Ranch, Inc.	3-3351-004	Kaaawa-Yamamoto	0.005			06/30/2018
00342	05/18/1994	Kualoa Ranch, Inc.	3-3251-001	Tomasu	0.288	0.144	0.144	04/30/2018
00343	05/18/1994	Kualoa Ranch, Inc.	3-3251-003	Saito	0.200	0.000	0.200	06/30/2014
00406	02/21/1996	Honolulu Board of Water Supply, BWS	3-3353-001	Kahana I-1	0.600	0.510	0.090	06/30/2019
			3-3353-002	Kahana I-2		0.000		06/30/2019
Summary for Kahana (6 detail records)				**Total:**	1.101	0.654	0.447	
				SY Available:	13.899			
Sustainable Yield: 409				**SY Available:**	407.90			

EXHIBIT 4: EXISTING WATER USE PERMITS
AND 12-MONTH MOVING AVERAGE WITHDRAWAL

Turf:

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*********************************************************************
*   Commission on Water Resources Management IWREDSS Summary   *
*********************************************************************

IWREDSS estimates that irrigation needs for the application is:
---------------------------------------------------------------------
UNIT            /          *DROUGHT FREQUENCY         /          OTHER STATISTICS
                / 1 in 2    1 in 5   1 in 10   1 in 20 /
                /  year      year      year      year  /   Mean     Median      Max       Min
inch/acre         23.143    31.719    36.290    40.071    23.538    24.306    44.993     5.912
Thou. gpd/acre     1.722     2.360     2.700     2.981     1.751     1.808     3.347     0.440
Total thou. gpd  265.790   364.290   416.778   460.204   270.329   279.149   516.734    67.901
---------------------------------------------------------------------
     *Drought frequency of 2, 5, 10 and 20 year return periods are GIR values of 50%, 80%, 90% and 95% probabilities, respectively.
     *GIR of 1 in 5 year return period is recommended by CTAHR for design or water use allocation purposes.
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Zoysia:

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*********************************************************************
*   Commission on Water Resources Management IWREDSS Summary   *
*********************************************************************

IWREDSS estimates that irrigation needs for the application is:
---------------------------------------------------------------------
UNIT            /          *DROUGHT FREQUENCY         /          OTHER STATISTICS
                / 1 in 2    1 in 5   1 in 10   1 in 20 /
                /  year      year      year      year  /   Mean     Median      Max       Min
inch/acre         19.342    29.428    35.245    40.268    20.336    21.668    42.454     2.413
Thou. gpd/acre     1.439     2.189     2.622     2.996     1.513     1.612     3.158     0.179
Total thou. gpd  222.138   337.974   404.781   462.473   233.554   248.851   487.572    27.709
---------------------------------------------------------------------
     *Drought frequency of 2, 5, 10 and 20 year return periods are GIR values of 50%, 80%, 90% and 95% probabilities, respectively.
     *GIR of 1 in 5 year return period is recommended by CTAHR for design or water use allocation purposes.
```

Generic Crop:

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*****************************************************************
*   Commission on Water Resources Management IWREDSS Summary    *
*****************************************************************

IWREDSS estimates that irrigation needs for the application is:
---------------------------------------------------------------
UNIT            /          *DROUGHT FREQUENCY         /          OTHER STATISTICS
                / 1 in 2    1 in 5   1 in 10   1 in 20 /
                /  year      year      year      year  /   Mean     Median      Max       Min
inch/acre         17.999    26.443    31.201    35.259    18.690    20.187    37.381     2.928
Thou. gpd/acre     1.339     1.967     2.321     2.623     1.390     1.502     2.781     0.218
Total thou. gpd  103.354   151.846   179.170   202.471   107.325   115.923   214.653    16.812
---------------------------------------------------------------
     *Drought frequency of 2, 5, 10 and 20 year return periods are GIR values of 50%, 80%, 90% and 95% probabilities, respectively.
     *GIR of 1 in 5 year return period is recommended by CTAHR for design or water use allocation purposes.
```

Banana:

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*****************************************************************
*   Commission on Water Resources Management IWREDSS Summary    *
*****************************************************************

IWREDSS estimates that irrigation needs for the application is:
---------------------------------------------------------------
UNIT            /          *DROUGHT FREQUENCY         /          OTHER STATISTICS
                / 1 in 2    1 in 5   1 in 10   1 in 20 /
                /  year      year      year      year  /   Mean     Median      Max       Min
inch/acre          9.564    17.897    23.586    28.980    11.061    11.417    25.515     0.874
Thou. gpd/acre     0.712     1.331     1.755     2.156     0.823     0.849     1.898     0.065
Total thou. gpd   54.920   102.770   135.439   166.415    63.518    65.563   146.514     5.020
---------------------------------------------------------------
     *Drought frequency of 2, 5, 10 and 20 year return periods are GIR values of 50%, 80%, 90% and 95% probabilities, respectively.
     *GIR of 1 in 5 year return period is recommended by CTAHR for design or water use allocation purposes.
```

PARCEL	USE	IWREDSS DUTY RANGE	REQUESTED DUTY	DUTY OK?	AREA	PARCEL AREA	USE REQUESTED
		GPD/ACRE	GPD/ACRE		ACRES	ACRES	MGD
5-1-001:001	CROP	1331 TO 1967	1590.1	YES	10.1	143.47	0.016
5-1-001:001	LANDSCAPE	2189 TO 2360	1200	YES	13.1	143.47	0.016
5-1-004:001	LANDSCAPE	2189 TO 2360	1200	YES	96.7	497.72	0.116
4-9-005:001	LANDSCAPE	2189 TO 2360	1200	YES	35.72	149.45	0.043
4-9-004:002	LANDSCAPE	2189 TO 2360	1200	YES	13.9	117.48	0.017
							0.207

EXHIBIT 6: SUMMARY OF USE REQUEST AND DUTY COMPARISONS

STANDARD WATER USE PERMIT CONDITIONS

1. The water described in this water use permit may only be taken from the location described and used for the reasonable beneficial use described at the location described above. Reasonable beneficial uses means "the use of water in such a quantity as is necessary for economic and efficient utilization which is both reasonable and consistent with State and County land use plans and the public interest." (HRS § 174C-3)

2. The right to use ground water is a shared use right.

3. The water use must at all times meet the requirements set forth in HRS § 174C-49(a), which means that it:

   a. Can be accommodated with the available water source;
   b. Is a reasonable-beneficial use as defined in HRS § 174C-3;
   c. Will not interfere with any existing legal use of water;
   d. Is consistent with the public interest;
   e. Is consistent with State and County general plans and land use designations;
   f. Is consistent with County land use plans and policies; and
   g. Will not interfere with the rights of the Department of Hawaiian Home Lands as provided in section 221 of the Hawaiian Homes Commission Act and HRS § 174C-101(a).

4. The ground water use here must not interfere with surface or other ground water rights or reservations.

5. The ground water use here must not interfere with interim or permanent instream flow standards. If it does, then:

   a. A separate water use permit for surface water must be obtained in the case an area is also designated as a surface water management area;
   b. The interim or permanent instream flow standard, as applicable, must be amended.

6. The water use authorized here is subject to the requirements of the Hawaiian Homes Commission Act, as amended, if applicable.

7. The water use permit application and submittal, as amended, approved by the Commission at its February 18, 2020 meeting are incorporated into this permit by reference.

8. Any modification of the permit terms, conditions, or uses may only be made with the express written consent of the Commission.

9. This permit may be modified by the Commission and the amount of water initially granted to the permittee may be reduced if the Commission determines it is necessary to:

   a. protect the water sources (quantity or quality);
   b. meet other legal obligations including other correlative rights;
   c. insure adequate conservation measures;
   d. require efficiency of water uses;
   e. reserve water for future uses, provided that all legal existing uses of water as of June, 1987 shall be protected;
   f. meet legal obligations to the Department of Hawaiian Home Lands, if applicable; or
   g. carry out such other necessary and proper exercise of the State's and the Commission's police powers under law as may be required.

   Prior to any reduction, the Commission shall give notice of its proposed action to the permittee and provide the permittee an opportunity to be heard.

10. An approved flowmeter(s) need not be installed to measure monthly withdrawals and a monthly record of withdrawals, salinity, temperature, and pumping times must be kept and reported to the Commission on Water Resource Management on forms provided by the Commission on a monthly basis (attached).

11. This permit shall be subject to the Commission's periodic review of the **Kahana** Aquifer System Area's sustainable yield. The amount of water authorized by this permit may be reduced by the Commission if the sustainable yield of the **Kahana** Aquifer System Area, or relevant modified aquifer(s), is reduced.

12. A permit may be transferred, in whole or in part, from the permittee to another, if:

    a. The conditions of use of the permit, including, but not limited to, place, quantity, and purpose of the use, remain the same; and
    b. The Commission is informed of the transfer within ninety days.

    Failure to inform the department of the transfer invalidates the transfer and constitutes a ground for revocation of the permit. A transfer which involves a change in any condition of the permit, including a change in use covered in HRS § 174C-57, is also invalid and constitutes a ground for revocation.

13. The use(s) authorized by law and by this permit do not constitute ownership rights.

14. The permittee shall request modification of the permit as necessary to comply with all applicable laws, rules, and ordinances which will affect the permittee's water use.

15. The permittee understands that under HRS § 174C-58(4), that partial or total nonuse, for reasons other than conservation, of the water allowed by this permit for a period of four (4) continuous years or more may result in a permanent revocation as to the amount of water not in use. The Commission and the permittee may enter into a written agreement that, for reasons satisfactory to the Commission, any period of nonuse may not apply towards the four-year period. Any period of nonuse which is caused by a declaration of water shortage pursuant to section HRS § 174C-62 shall not apply towards the four-year period of forfeiture.

16. The permittee shall prepare and submit a water shortage plan within 30 days of the issuance of this permit as required by HAR § 13-171-42(c). The permittee's water shortage plan shall identify what the permittee is willing to do should the Commission declare a water shortage in the **Kahana** Ground Water Management Area.

17. The water use permit shall be subject to the Commission's establishment of instream standards and policies relating to the Stream Protection and Management (SPAM) program, as well as legislative mandates to protect stream resources.

18. Special conditions in the attached cover transmittal letter are incorporated herein by reference.

19. The permittee understands that any willful violation of any of the above conditions or any provisions of HRS § 174C or HAR § 13-171 may result in the suspension or revocation of this permit.

STANDARD WELL CONSTRUCTION PERMIT CONDITIONS

1. The Chairperson of the Commission on Water Resource Management (Commission), P.O. Box 621, Honolulu, HI 96809, shall be notified, in writing, at least two (2) weeks before any work authorized by this permit commences and staff shall be allowed to inspect installation activities in accordance with §13-168-15, Hawaii Administrative Rules (HAR).

2. This permit shall be prominently displayed, or made available, at the site of construction work until work is completed.

3. The well construction permit shall be for construction and testing of the well only. The permittee shall coordinate with the Chairperson and conduct a pumping test in accordance with the HWCPIS (the latest pump test worksheet can be obtained by contacting Commission staff or at http://files.hawaii.gov/dlnr/cwrm/forms/APTR.pdf). The permittee shall submit to the Chairperson the test results as a basis for supporting an application to install a permanent pump. No permanent pump may be installed until a pump installation permit is approved and issued by the Chairperson. No withdrawal of water shall be made for purposes other than testing without a Certificate of Pump Installation Completion. The permitted pump capacity described on the pump installation permit **may be reduced** in the event that the pump test does not support the capacity.

4. In basal ground water, the depth of the well may not exceed one-fourth (1/4) of the theoretical thickness (41 times initial head) of the basal ground water unless otherwise authorized by the Chairperson. If it can be shown that the well does not tap basal ground water then this condition may be waived after consultation with and acceptance by Commission staff. However, in no instance can the well be drilled deeper than one-half (1/2) of the theoretical thickness without Commission approval.

5. The permittee shall incorporate mitigation measures to prevent construction debris from entering the aquatic environment, to schedule work to avoid periods of high rainfall, and to revegetate any cleared areas as soon as possible.

6. In the event that historically significant remains such as artifacts, burials or concentrations of shells or charcoal are encountered during construction, the permittee shall stop work and immediately contact the Department of Land and Natural Resources' State Historic Preservation Division. Work may recommence only after written concurrence by the State Historic Preservation Division.

7. The proposed well construction shall not adversely affect existing or future legal uses of water in the area, including any surface water or established instream flow standards. This permit or the authorization to construct the well shall not constitute a determination of correlative water rights.

8. The Well Completion Report Part I shall be submitted to the Chairperson within sixty (60) days after completion of work (please contact staff or visit http://files.hawaii.gov/dlnr/cwrm/forms/WCR1.pdf for current form).

9. The permittee shall comply with all applicable laws, rules, and ordinances; non-compliance may be grounds for revocation of this permit.

10. The well construction permit application and, if relevant, any related staff submittal approved by the Commission are incorporated into this permit by reference.

11. If the HWCPIS are not followed and as a consequence water is wasted or contaminated, a lien on the property may result.

12. Any variances from the HWCPIS shall be approved by the Chairperson prior to invoking the variance.

13. The work proposed in the well construction permit application shall be completed within two (2) years from the date of permit approval, unless otherwise specified. The permit may be extended by the Chairperson upon a showing of good cause and good-faith performance. A request to extend the permit shall be submitted to the Chairperson no later than the date the permit expires.

14. If the well is not to be used it must be properly capped. If the well is to be abandoned during the course of the project then the permittee must apply for a well abandonment permit in accordance with §13-168-12(f), HAR, prior to any well sealing or plugging work.

15. The permittee, its successors, and assigns shall indemnify, defend, and hold the State of Hawaii harmless from and against any loss, liability, claim, or demand for property damage, personal injury, or death arising out of any act or omission of the applicant, assigns, officers, employees, contractors, and agents under this permit or relating to or connected with the granting of this permit.

16. This permit shall apply to the location shown on the application only. If the well is to be relocated, the permittee shall apply for a new well construction/pump installation permit in accordance with §13-168-12(f), HAR.

17. Special conditions in the attached cover transmittal letter are incorporated herein by reference.

STANDARD PUMP INSTALLATION PERMIT CONDITIONS

1. The Chairperson to the Commission on Water Resource Management (Commission), P.O. Box 621, Honolulu, HI 96809, shall be notified, in writing, at least two (2) weeks before any work covered by this permit commences and staff shall be allowed to inspect installation activities in accordance with §13-168-15, Hawaii Administrative Rules (HAR).

2. No withdrawal of water shall be made other than for testing until a Certificate of Pump Installation Completion has been issued by the Commission.

3. This permit shall be prominently displayed, or made available, at the site of construction work until work is completed.

4. The pump installation permit shall be for installation of a 480 gpm rated capacity, or less, pump in the well. This permanent capacity may be reduced in the event that the pump test data does not support the capacity.

5. A water-level measurement access shall be permanently installed, in a manner acceptable to the Chairperson, to accurately record water levels.

6. The permittee shall install an approved meter or other appropriate means for measuring and reporting withdrawals and appropriate devices or means for measuring chlorides and temperature at the well head.

7. Well Completion Report Part II shall be submitted to the Chairperson within sixty (60) days after completion of work (please contact staff or visit **http://files.hawaii.gov/dlnr/cwrm/forms/WCR2.pdf** for current form).

8. The permittee, well operator, and/or well owner shall comply with all applicable laws, rules, and ordinances, and non-compliance may be grounds for revocation of this permit.

9. The pump installation permit application and, if relevant, any related staff submittal approved by the Commission are incorporated into this permit by reference.

10. If the HWCPIS are not followed and as a consequence water is wasted or contaminated, a lien on the property may result.

11. Any variances from the HWCPIS shall be approved by the Chairperson **prior** to invoking the variance.

12. The work proposed in the pump installation permit application shall be completed within two (2) years from the date of permit approval, unless otherwise specified. The permit may be extended by the Chairperson upon a showing of good cause and good-faith performance. A request to extend the permit shall be submitted to the Chairperson no later than the date the permit expires.

13. The permittee, its successors, and assigns shall indemnify, defend, and hold the State of Hawaii harmless from and against any loss, liability, claim, or demand for property damage, personal injury, or death arising out of any act or omission of the applicant, assigns, officers, employees, contractors, and agents under this permit or relating to or connected with the granting of this permit.

14. Special conditions in the attached cover transmittal letter are incorporated herein by reference.

Div 655 Profile View : Approximate dam height is 3 feet

Div 655 Top View : Approximate arc length is 19 feet. Pool is filled with silt, one foot below water surface.

EXHIBIT 10: DIV 655 KUALOA RANCH SPRING DIVERSION