

COMMISSION ON WATER RESOURCE MANAGEMENT  
STATE OF HAWAI'I

In Re: Chairperson Recommendation )  
to designate Lahaina Aquifer Sector )  
Area as Ground and Surface Water )  
Management Areas )

UKUMEHAME, OLOWALU, LAUNIUPOKO, HONOKŌWAI, HONOLUA, and  
HONOKŌHAU  
Ground Water Hydrologic Units  
UKUMEHAME, OLOWALU, LAUNIUPOKO, KAUA‘ULA, KAHOMA, WAHIKULI,  
HONOKŌWAI, KAHANA, HONOKAHUA, HONOLUA, and HONOKŌHAU  
Surface Water Hydrologic Units

GROUND AND SURFACE WATER MANAGEMENT AREA DESIGNATION

DRAFT FINDINGS OF FACT REPORT



Commission on Water Resource Management  
Department of Land and Natural Resources  
April 21, 2022

## PREFACE

This Draft FINDINGS OF FACT has been prepared for the Commission on Water Resource Management (Commission) for its consideration in designating the entire Lahaina Aquifer Sector Area (Lahaina ASA), Maui as a surface and ground water management area under the authority of Chapter 174C, HRS.

These Draft FINDINGS OF FACT summarize the Commission staff investigations and research, comments from consultation with the County of Maui, the public's written and oral comments received at Commission meetings, and other existing information on file with the Department of Land and Natural Resources.

This Draft FINDINGS OF FACT is subject to change.

DRAFT

## TABLE OF CONTENTS

PREFACE.....	1
LIST OF TABLES AND FIGURES.....	6
SUMMARY.....	7
1. PURPOSE.....	8
2. LEGAL AND HISTORIC CONTEXT OF DESIGNATION .....	8
2.1 Cultural Context for Water Use and Management in Hawai‘i .....	8
2.2 Hawai‘i Constitution and Public Trust .....	9
2.3 Precautionary Principle.....	11
2.4 State Water Code .....	11
2.5 Case Law on Designation .....	11
3. CHRONOLOGY.....	12
4. PROPOSED LAHAINA AQUIFER SYSTEM AREA SURFACE AND GROUND WATER MANAGEMENT AREAS .....	14
4.1 AREAL EXTENT.....	14
4.1.1 Surface Water Management Area.....	14
4.1.2 Ground Water Management Area.....	14
4.2 DITCH SYSTEMS .....	16
4.3 WATER PURVEYORS.....	16
4.4 PUBLIC TRUST PURPOSES.....	25
4.4.1 Environmental Protection .....	25
4.4.2 Domestic Uses .....	25
4.4.3 Exercise of Traditional and Customary Native Hawaiian Rights and Practices.....	25
4.4.4 Appurtenant Rights.....	27
4.4.5 DHHL Reservations.....	28
4.5 INTERIM INSTREAM FLOW STANDARDS .....	29
4.6 CLIMATE UNCERTAINTY – WATER SUPPLY .....	33
4.7 GEOLOGY.....	33
4.8 HYDROLOGY .....	35
4.8.1 Rainfall.....	35
4.8.2 Ground-Water Recharge .....	39
4.8.3 Ground-Water Withdrawals.....	43
4.8.3.1 Ukumehame Aquifer Well List.....	46
4.8.3.2 Olowalu Aquifer Well List .....	47
4.8.3.3 Launiupoko Aquifer Well List.....	48

4.8.3.4	Honokōwai Aquifer Well List .....	50
4.8.3.5	Honolua Aquifer Well List .....	53
4.8.3.6	Honokōhau Aquifer Well List .....	55
4.8.3.7	Pending Well Applications .....	56
4.8.4	Water Use Reporting.....	57
4.8.5	Maximum Permitted Well Capacity .....	58
4.8.6	Water Levels .....	61
4.8.7	Water Quality.....	64
4.8.7.1	Chlorides.....	64
4.8.7.2	Temperature .....	79
4.8.7.3	Contaminants .....	79
4.8.8	Sustainable Yield .....	79
4.9	Authorized Planned Use .....	81
4.10	County and Public Testimony.....	88
4.10.1	January Commission Meeting.....	88
4.10.1.1	County’s Comments.....	88
4.10.1.2	Public Written and Oral Testimony .....	90
4.10.2	February Commission Meeting.....	97
4.10.3	Public Hearing .....	116
5.	ANALYSIS.....	116
5.1	CONSTITUTIONAL DUTY.....	116
5.2	PRECAUTIONARY PRINCIPLE.....	117
5.3	STATE WATER CODE REQUIREMENTS .....	118
5.3.1	Surface Water Designation Criteria.....	118
5.3.1.1	HRS § 174C-45 (1).....	118
5.3.1.2	HRS § 174C-45 (2).....	119
5.3.1.3	HRS § 174C-45 (3).....	119
5.3.2	Ground Water Designation Criteria.....	121
5.3.2.1	HRS § 174C-44 (1).....	121
5.3.2.2	HRS § 174C-44 (2).....	121
5.3.2.3	HRS § 174C-44 (3).....	122
5.3.2.4	HRS § 174C-44 (4).....	122
5.3.2.5	HRS § 174C-44 (5).....	122
5.3.2.6	HRS § 174C-44 (6).....	123

5.3.2.7 HRS § 174C-44 (7) ..... 123  
5.3.2.8 HRS § 174C-44 (8) ..... 124  
5.4 CASE LAW REQUIREMENTS ..... 125  
6. CONCLUSION..... 126  
REFERENCES ..... 127  
APPENDIX..... 128

DRAFT

## LIST OF TABLES AND FIGURES

*(Purposefully left blank; list will be finalized when Final FOF developed.)*

DRAFT

## SUMMARY

The Chairperson initiated proceedings to designate the entire Lahaina ASA, Maui as both a Surface Water and Ground Water Management Area based on threats to water resources as identified from factual data and staff investigations and the Commission accepted the Chairperson's recommendation to designate (Hawaii Revised Statutes § 174C-41).

This document reviews the water resource situation in the Lahaina ASA and makes Draft FINDINGS OF FACT based upon information on file in the Commission offices, the research and investigation of staff, the written and oral comments submitted at Commission meetings and the public hearing, and other planning and scientific literature.

From the analysis of public testimony, current, and future water resource conditions related to the Lahaina ASA, this report makes the following conclusions:

It can be reasonably determined that existing and proposed withdrawals threaten streams and aquifers.

### Harm to Ground Water Quantity and Quality by Saltwater Intrusion

Current and authorized planned uses of the Honokōwai and Launiupoko aquifer systems either exceed or approach 90% of sustainable yields and threaten the aquifer due to saltwater intrusion of the freshwater lens. Maui County Department of Water Supply projects a 67% increase in potable water consumption in the Lahaina District by 2035, from 10.819 million gallons per day (mgd) in 2020 to 15.554 mgd, based on population growth and community planned development timelines.<sup>1</sup> This demand is currently being met with a mixture of surface water and ground water, which is likely to continue.

### Serious Historic and Ongoing Disputes over Current and Planned Uses are Occurring

The use of water for non-public trust purposes is affecting the availability of water to meet public trust needs. Instream values, including water needed to support traditional and customary practices, domestic water uses, recreational uses, and native aquatic biota, have historically, currently, and will continue to be harmed if the Commission does not consider additional protective actions.

### Climate Uncertainty – Drought and Decline in Rainfall

Rainfall has declined significantly across the Lahaina District, particularly during the dry season.<sup>2</sup> Anticipated declines in rainfall based on future projections will negatively affect ground water recharge and streamflow,<sup>3</sup> reducing the water availability.<sup>4</sup>

---

<sup>1</sup> Maui County Water Use and Development Plan (“WUDP”) 2022.

<sup>2</sup> Frazier, A.G., and T.W. Giambelluca. 2017. Spatial trend analysis of Hawaiian rainfall from 1920 to 2012. *International Journal of Climatology*, 37(5): 2522-2531.

<sup>3</sup> Elison Timm, O., *et al.* 2015. Statistical downscaling of rainfall changes in Hawai‘i based on the CMIP5 global model projections. *Journal of Geophysical Research: Atmospheres*, 120(1): 92-112.

<sup>4</sup> Mair, A. *et al.* 2019. Estimated groundwater recharge from a water-budget model incorporating selected climate projections, Island of Maui, Hawai‘i. USGS SIR 2019-5064.

## Enhanced Management and Protection Through Integration of Surface and Ground Water Uses

Water use in the Lahaina Aquifer Sector (see Figure 1) and its associated surface water hydrologic units (see Figure 2) (referred to hereafter as the Lahaina District) is reliant on a combination of surface water diversions and ground water wells. Throughout the Lahaina District, there is an inextricable relationship between surface water and ground water, both in their source and in their use, such that reductions in the availability of one, affects the use and availability of the other. As interim instream flow standards are implemented, the availability of surface water to meet the non-potable needs of the Lahaina District has declined, resulting in the construction of new wells to meet non-potable demand. However, such usage may threaten public trust uses including the domestic needs supplied by existing wells and the needs of the Department of Hawaiian Home Lands in these same aquifers. Water Management Area designation will ensure that the Commission can regulate and manage surface water and ground water in an integrated manner to protect water resources in the Lahaina District.

### 1. PURPOSE

This Findings of Fact Report (FOF) has been prepared for the Commission on Water Resource Management (Commission) in accordance with §§ 174C-43 to -46 of Hawai'i Revised Statutes (HRS). This document presents the findings relative to the eight ground water designation criteria as specified in HRS § 174C-44, the three surface water designation criteria as specified in HRS § 174C-45, and other factors for the Commission to consider in its decision whether to establish administrative control over the ground and surface waters in the area to ensure protection and reasonable-beneficial use of these public trust resources. This report should facilitate the Commission's decision of designating the Lahaina Aquifer System Area (ASA) as a Surface and Ground Water Management Area.

### 2. LEGAL AND HISTORIC CONTEXT OF DESIGNATION

#### 2.1 Cultural Context for Water Use and Management in Hawai'i

Before the documented arrival of westerners in about 1778, fresh water was a foundational source of life in Hawai'i. Continuous ma uka to ma kai (from the mountains to the ocean) stream flow provided water for drinking, supported traditional agriculture and aquaculture, recharged ground water levels, fed punawai (fresh water springs) and wetlands, and sustained productive estuaries and fisheries by both bringing nutrients from the uplands to the sea and providing a travel corridor so that native stream animals could migrate between the streams and ocean and complete their life cycles. Water was also revered as a kinolau (physical manifestation) of Kāne, one of the Hawaiian pantheon's four principal akua (gods, ancestors). Traditional mo'olelo (stories or history) explain that Kāne brought forth fresh water from the earth and traveled throughout the archipelago with Kanaloa (another principal akua), creating springs and streams, many of which continue to flow today. Kānaka Maoli relied on streams and springs to satisfy many needs. One principal need was to ensure sufficient flow of fresh water to cultivate the staple crop kalo (*Colocasia esculenta* or taro). Other needs included sustaining natural systems and fisheries, as well as enabling cultural, religious, and other practices based upon free-flowing water resources.

Given these important purposes, much of traditional Kānaka Maoli law or kōnāwai developed around the management and use of fresh water. Water was a public trust resource and could not be commodified or reduced to physical ownership, which means that no one – not even ali‘i (leaders) – could own water. Instead, ali‘i managed fresh water for the benefit of present and future generations through engineering and management that ensured maximum benefits without compromising the long-term health of the resources. Under the ali‘i nui, konohiki (resource managers) stewarded ahupua‘a (loosely defined as watersheds) or smaller land divisions including ‘ili or kū. Konohiki appointed kahuwai (water stewards or superintendents) to manage water distribution within and between land divisions.

The management of fresh water resources changed dramatically with the establishment and expansion of plantation agriculture, including sugar and pineapple. Massive ditch systems were constructed on most of the major islands to transport water from wet, Windward communities to drier Central and Leeward plains, and ground water wells were developed to supplement surface water systems. Despite early written Kingdom laws that formalized and translated Hawaiian custom and tradition, including Kānaka Maoli concepts of the public trust, large agricultural plantations increased their influence and soon controlled a significant portion of Hawai‘i’s resources. The law itself was also subject to western influence over time, and cases during Hawai‘i’s Kingdom and territorial periods also began to reflect increasingly western approaches to water use and management. Conflict ensued between and among Kānaka Maoli and others, especially plantation interests.

After about a century of plantation agriculture’s monopoly over Hawai‘i’s ground and surface water resources, a movement resurfaced in the 1960s and 1970s to return water use to public management and control. A series of cases in both the state and federal court systems ultimately reaffirmed that Hawai‘i’s water resources are held in trust and should be managed for the benefit of present and future generations.<sup>5</sup> These cases also highlighted the need for a more comprehensive and equitable management system. The 1978 Hawai‘i State Constitution was instrumental in this regard and established a new legal regime for water resource management.

## 2.2 Hawai‘i Constitution and Public Trust

The Hawai‘i State Constitution mandates the state to “conserve and protect Hawaii’s natural beauty and all natural resources [...] and shall promote the development and utilization of these resources in a manner consistent with their conservation and in furtherance of the self-sufficiency of the State.” Article XI, Section 1. Additionally, the State “has an obligation to protect, control, and regulate the use of Hawaii’s water resources for the benefit of its people.” Article XI, Section 7.

Article XII, Section 7 proclaims: “The State reaffirms and shall protect all rights, customarily and traditionally exercised for subsistence, cultural and religious purposes and possessed by ahupua‘a tenants who are descendants of native Hawaiians who inhabited the Hawaiian Islands prior to 1778, subject to the rights of the State to regulate such rights.”

---

<sup>5</sup> See *McBryde Sugar Co. v. Robinson*, 54 Haw. 174, 504 P.2d 1330 (1973). (*McBryde*)

The Hawai‘i Supreme Court examined applicable Constitutional provisions and the Water Code in a series of cases, which clarified the Commission’s kuleana in upholding the public trust. The public trust imposes “a dual mandate of 1) protection and 2) maximum reasonable and beneficial use.”<sup>6</sup> This establishes an “affirmative duty to take the public trust into account in the planning and allocation of water resources, and to protect public trust uses whenever feasible.”<sup>7</sup> The Commission is the “primary guardian of public rights under the trust.” Haw. Const. art. XI, Section 7. The Commission, therefore, must not relegate itself to the role of a mere “umpire passively calling balls and strikes for adversaries appearing before it,” but instead must take the initiative in considering, protecting, and advancing public rights in the resource at every stage of the planning and decision making process.”<sup>8</sup>

The Court has identified a handful of public trust purposes: environmental protection (water in its natural state); traditional and customary Native Hawaiian rights; appurtenant rights; domestic water uses; and reservations for the Department of Hawaiian Home Lands.<sup>9</sup> Public trust purposes have priority over private commercial uses, which do not enjoy the same protection. The public trust dictates that “any balancing between public and private purposes must begin with a presumption in favor of public use, access, and enjoyment” and “establishes use consistent with trust purposes as the norm or ‘default’ condition.”<sup>10</sup> After all, “[u]nder the public trust, the state has both the authority and duty to preserve the rights of present and future generations in the waters of the state.”<sup>11</sup> The public trust also requires planning and decision making from a global, long-term perspective.<sup>12</sup>

The public trust also prescribes a higher level of scrutiny for private commercial uses.<sup>13</sup> The Commission, therefore, must closely examine requests to use public resources for private gain to ensure that the public’s interest in the resource is fully protected.<sup>14</sup>

At bottom, the public trust provides independent authority to guide the Commission in fulfilling its mandates. The Hawai‘i Supreme Court explained:

The Code and its implementing agency, the Commission, do not override the public trust doctrine or render it superfluous. Even with the enactment and any future development of the Code, the doctrine continues to inform the Code’s interpretation, define its permissible “outer limits,” and justify its existence. To this end, although we regard the public trust and Code as sharing similar core principles, we hold that the Code does not supplant the protections of the public trust doctrine.<sup>15</sup>

---

<sup>6</sup> *In re Water Use Permit Applications*, 94 Hawai‘i, 97, 139, 9 Pd.3, 409, 451 (2000). (*Waiāhole I*)

<sup>7</sup> *Id.* at 141, 9 P.3d at 453.

<sup>8</sup> *Id.* at 143, 9 Pd.3 at 455.

<sup>9</sup> *Id.* at 137-39, 9 P.3d at 449-51; *In re Wai‘ola o Moloka‘i*, 103 Hawai‘i 401, 431, 83 P.3d 664, 694 (2004). (*Wai‘ola*)

<sup>10</sup> *Waiāhole I*, 94 Hawai‘i at 142, 9 P.3d at 454.

<sup>11</sup> *Id.* at 141, 9 P.3d at 453.

<sup>12</sup> *Id.* at 143, 9 Pd.3 at 455.

<sup>13</sup> *Id.* at 142, 9 P.3d at 454.

<sup>14</sup> *See id.*

<sup>15</sup> *Id.* at 133, 9 P.3d at 445.

### 2.3 Precautionary Principle

The Commission's duties under the constitution and State Water Code embody the precautionary principle, which holds that scientific uncertainty "should not be a basis for postponing effective measures to prevent environmental degradation."<sup>16</sup> Rather, the Commission as a trustee has a duty to take anticipatory action to prevent harm to public resources. "[A]t minimum, the absence of firm scientific proof should not tie the Commission's hands in adopting reasonable measures designed to further the public interest."<sup>17</sup> In endorsing the precautionary principle, the Hawai'i Supreme Court rejected the requirement of scientific certainty before acting to protect public trust purposes, noting that to do so will often allow for only reactive, not preventive regulation.

### 2.4 State Water Code

The State Water Code (Code), HRS chapter 174C, part IV, Regulation of Water Use, provides that the Commission *shall* designate an area once a *reasonable determination* is made – based on scientific investigation and research – that water resources in an area are threatened by existing or proposed withdrawals or diversions of water. Once that determination is made, the Commission shall designate the area for the purpose of establishing administrative control over the withdrawals and diversions of ground and surface waters in the area to ensure reasonable-beneficial use of the water resources in the public interest. HRS § 174C-41(a). (Emphasis added)

The process to designate a ground and surface water management area is described in HRS §§ 174C-41 to -46 and Hawai'i Administrative Rules (HAR) § 13-171-3 to -9. The process follows these general steps:

- (1) Recommendation to designate by the Chairperson or by written; HRS § 174C-41(a).
- (2) Consultation with County Council, County Mayor, and County Water Board concerning the recommendation or petition HRS § 174C-41(b).
- (3) Commission action to accept recommendation regarding designation of water management area and to hold a public hearing. HRS § 174C-42.
- (4) Notice for and Conduct of Public Hearing. HRS § 174C-42.
- (5) Commission action to approve findings of fact and accept, deny, or defer recommendation to designate a water management area HRS § 174C-46.

### 2.5 Case Law on Designation

The Hawai'i Supreme Court held in *Ko'olau Ag.* that there is no judicial review of the Commission's decision to designate aquifers as water management areas because the rights of individual water users are fully protected in the permitting process. The Court further noted that water management area designations do not affect the interests of any potential water users; the impact of such a designation is only that the user's water source is subject to the Commission's regulation, which does not, in and of itself, affect the user's water rights.<sup>18</sup>

---

<sup>16</sup> *Waiāhole I*, 94 Hawai'i at 154, 9 P.3d at 466.

<sup>17</sup> *Id.* at 155, 9 P.3d at 467.

<sup>18</sup> *Ko'olau Agricultural Co., Ltd. v. Comm'n on Water Res. Mgmt* ("Ko'olau Ag."), 83 Hawai'i 484, 493 (1994).

In *Waiāhole I*, the Court acknowledged the direct interrelationship between ground and surface waters and held that the designation of Windward O‘ahu as a ground water management area subjected both ground and surface water diversions from the designated area to the statutory permit requirement.<sup>19</sup>

The Court also held that the Commission could consolidate the regulation of a single ditch system because it comports with the Commission’s function of comprehensive water planning and management.<sup>20</sup> The Court ruled that the areas covered by the ditch system are to be considered hydrologically controllable irrespective of hydrologic units under HRS § 174C-50 (h) which deems uses between existing users as competing when water is drawn from a hydrologically controllable area.<sup>21</sup>

### 3. CHRONOLOGY

In 2011, the Commission entered into a joint funding agreement with the U.S. Geological Survey to develop low-flow hydrological characteristics for streams from Ukumehame to Honolua for the purpose of developing interim instream flow standards (interim IFS).<sup>22</sup>

From 2016 to 2021, staff conducted investigation and research on the surface and groundwater conditions in the Lahaina ASA. (Appendix A)

On November 29, 2021, the Chairperson initiated designation proceedings and began consultation with the County Council, County Mayor, and County Water Board via formal letter. (Appendix B)

On December 7, 16, and 29, 2021, staff received responses from the County Council dated with clarifying questions requesting data and a request to present to the County Council in order to better understand the designation process and timeline. (Appendix B)

On December 17, 2021, staff responded with letter dated December 17, 2021. (Appendix B)

On December 28, 2021, staff received a response from Maui DWS providing preliminary comments. (Appendix C)

On January 18, 2022, staff presented an informational item to the Commission on Chairperson’s initiation of designation proceedings for the Lahaina Aquifer Sector Area as both a Surface and Ground Water Management Area and responses received from Maui County Council and MDWS. Written and oral public testimony is received. (Appendix D)

---

<sup>19</sup> *Waiāhole I*, 94 Hawai‘i at 173, 9 Pd.3 at 485.

<sup>20</sup> *Id.* at 174, 9 P.3d. at 486.

<sup>21</sup> *Id.*

<sup>22</sup> This work resulted in the production of the USGS Scientific Investigations Report (SIR) 2014-5087. <https://pubs.usgs.gov/sir/2014/5087/pdf/sir2014-5087.pdf>

On January 20, 2022, staff presented at the Maui Board of Water Supply monthly meeting. Subsequently, the Maui County Board of Water Supply unanimously voted to support designation of the Lahaina ASA as a surface and ground water management area.

On February 15, 2022, staff presented an action item to the Commission to accept the Chairperson's recommendation to designate the entire Lahaina ASA as a surface and ground water management area and to notice and hold a public hearing. Written and oral public testimony is received. (Appendix E)

On February 22, 2022, staff presented at the Maui County Council's Agriculture and Public Trust Committee meeting.

On March 4, 2022, the Maui County Council adopted Resolution 22-73 "Supporting the Designation of the Lahaina Aquifer Sector as a Surface Water and Ground Water Management Area" unanimously (8-0), with reservations by Chair Alice L. Lee. (Appendix F)

Public notices of the required public hearing were published in The Honolulu Star-Advertiser and The Maui News issues on March 30, April 6 and 13, 2022. (Appendix G)

Commission staff prepared a Draft Findings of Fact document, dated April 21, 2022.

On April 26, 2022, the Commission held a public hearing on the island of Maui at the Kēopūlani Hall at Waiola Church to receive public testimony related to designation of the Lahaina ASA as a surface and ground water management area.

## 4. PROPOSED LAHAINA AQUIFER SYSTEM AREA SURFACE AND GROUND WATER MANAGEMENT AREAS

### 4.1 AREAL EXTENT

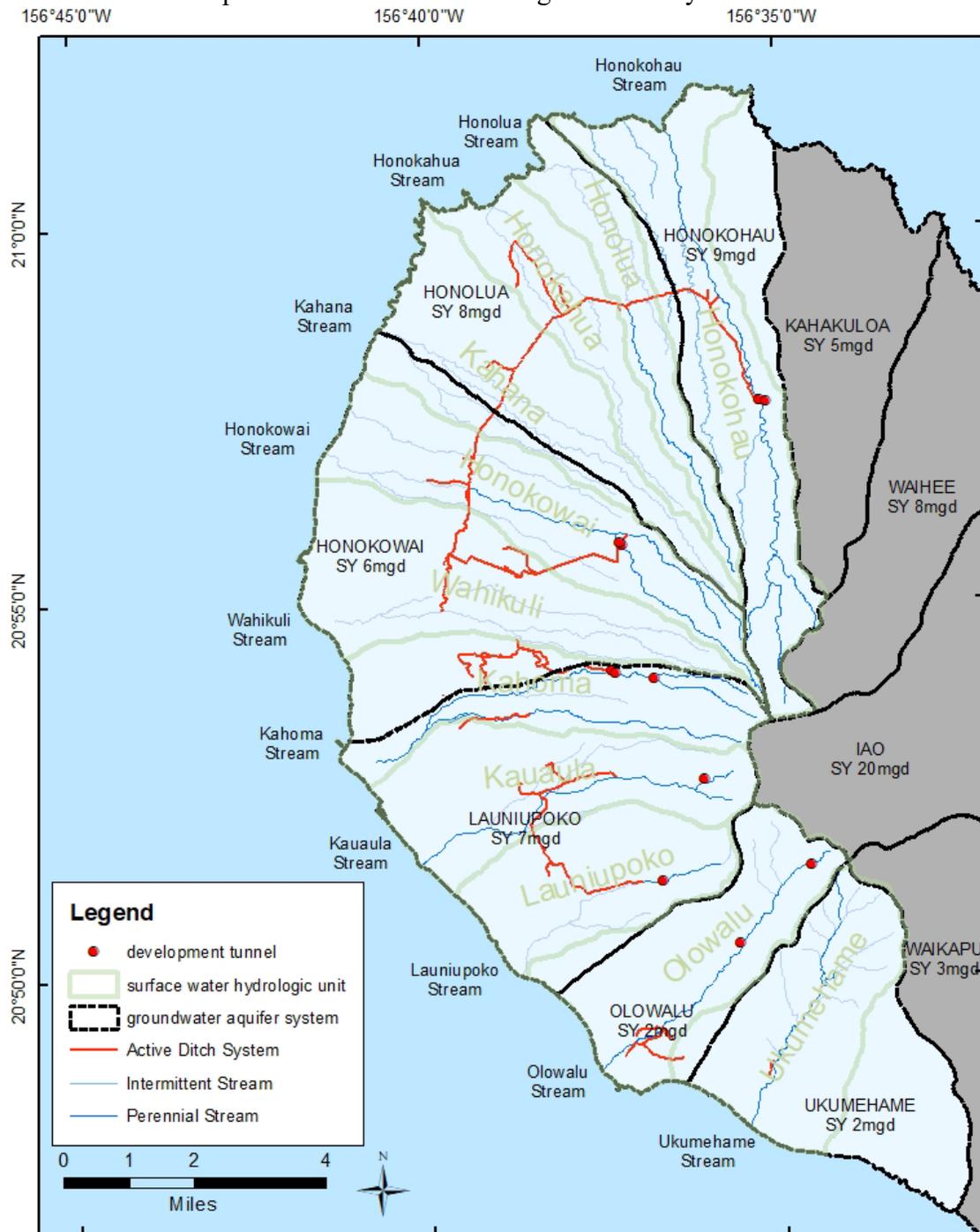
#### 4.1.1 Surface Water Management Area

The proposed Lahaina ASA Surface Water Management Areas include the Honokōhau (6014), Honolulu (6013), Honokahua (6012), Kahana (6011), Honokōwai (6010), Wahikuli (6009), Kahoma (6008), Kaua'ula (6007), Launiupoko (6006), Olowalu (6005), and Ukumehame (6004) surface water hydrologic units (see Figure XX). The corresponding land areas proposed to be designated are located in the Lahaina District and include Tax Map Keys from (2) 4-1-001 to (2) 4-1-005; (2) 4-2-001 to (2) 4-2-010; (2) 4-3-001 to (2) 4-3-022; (2) 4-4-001 to (2) 4-4-021; (2) 4-5-001 to (2) 4-5-038; (2) 4-6-001 to (2) 4-6-034; (2) 4-7-001 to (2) 4-7-014; and from (2) 4-8-001 to (2) 4-8-004 (see Figure XX).

#### 4.1.2 Ground Water Management Area

The proposed Lahaina ASA Ground Water Management Areas include the Honokōhau (60201), Honolulu (60202), Honokōwai (60203), Launiupoko (60204), Olowalu (60205), Ukumehame (60206) ground water hydrologic units (see Figure XX). The corresponding land areas proposed to be designated are located in Lahaina District and include Tax Map Keys from (2) 4-1-001 to (2) 4-1-005; (2) 4-2-001 to (2) 4-2-010; (2) 4-3-001 to (2) 4-3-022; (2) 4-4-001 to (2) 4-4-021; (2) 4-5-001 to (2) 4-5-038; (2) 4-6-001 to (2) 4-6-034; (2) 4-7-001 to (2) 4-7-014; and from (2) 4-8-001 to (2) 4-8-004 (see Figure XX).

**Figure XX:** Ground Water Aquifer Systems Areas and their sustainable yields (SY) for the Lahaina Aquifer Sector with overlaying surface water hydrologic units and their perennial and intermittent streams with development tunnels and active irrigation ditch systems.



## 4.2 DITCH SYSTEMS

The Lahaina Aquifer Sector has eight water collection systems (see Figure XX) with the Honokōhau ditch being the largest. Honokōhau ditch diverts stream and development tunnel water at the 825-foot elevation in Honokōhau Valley and transports it across six surface water hydrologic units and three aquifer systems to meet potable and non-potable needs. The Honokōwai Ditch diverts stream and development tunnel water at the 1560-foot elevation in Honokōwai Gulch for non-potable uses in the Honokōwai and Wahikuli hydrologic units. The Kahoma Ditch diverts surface and development tunnel water from Kahoma Stream at the 1920-foot elevation for non-potable use in the Kahoma hydrologic unit. Kanahā pipeline diverts water from Kanahā Stream at the 1120-foot elevation for potable and non-potable use also in the Kahoma hydrologic unit. Kaua‘ula Ditch diverts surface and development tunnel water from Kaua‘ula Valley at the 1540-foot elevation for non-potable use in Kaua‘ula and Launiupoko hydrologic units. Similarly, Launiupoko Ditch diverts water from Launiupoko Stream for non-potable use in Kaua‘ula and Launiupoko hydrologic units. Olowalu Stream is diverted at the lower Olowalu Ditch at the 200-foot elevation for non-potable uses. Ukumehame Stream is diverted at the 240-foot elevation for non-potable uses.

## 4.3 WATER PURVEYORS

There are six municipal water systems in the Lahaina ASA using either surface water, groundwater, or both. The Maui County Department of Water Supply (Maui DWS) and privately owned “public water systems” as defined by the Department of Health, which are systems serving more than 25 people or 15 service connections, are summarized in Table XX.

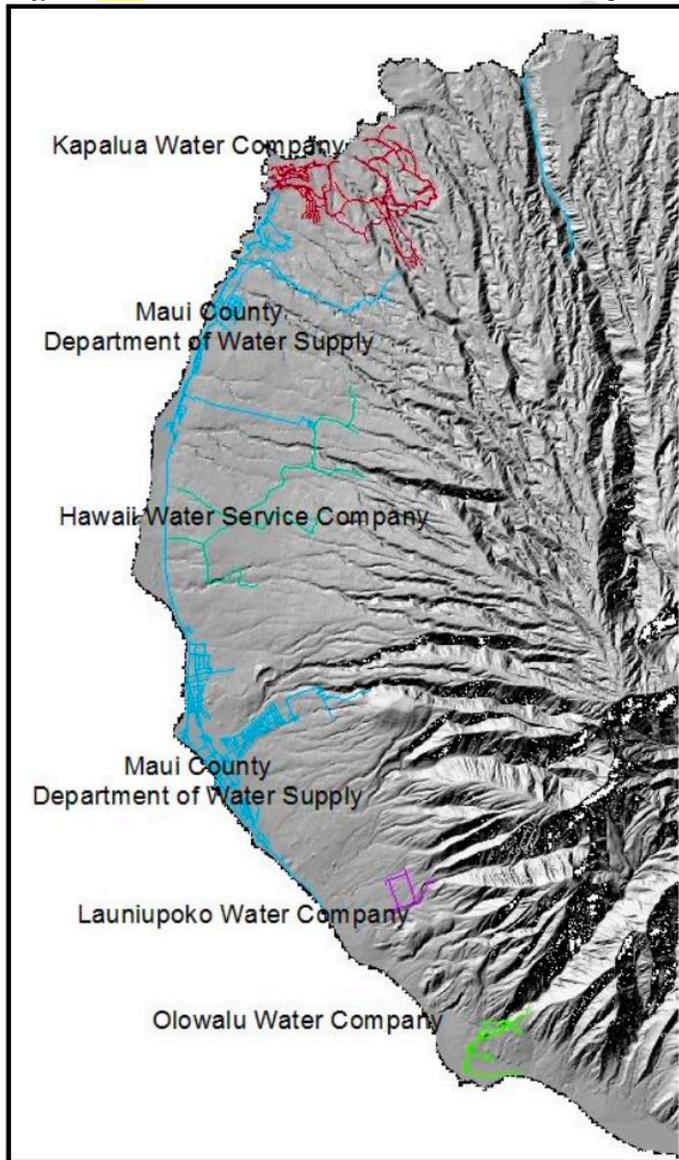
**Table XX.** Public Water Systems in Lahaina ASEA

<b>DOH No.</b>	<b>System Name</b>	<b>Operator</b>
204	Kapalua	Hawaii Water Service Company
205	Kaanapali	Hawaii Water Service Company
209	Olowalu	Olowalu Elua Associates (Olowalu Water Company)
214	Lahaina	DWS Maui
218	Honokohau	DWS Maui
251	Mahanalua Nui Subdivision	Launiupoko Water Company, Inc.

Source: DOH, list of regulated Public Water Systems as of 02/08/2022.

Maui DWS serves most of the resident population with potable water, including the coastal areas of Launiupoko (beach park), Lahaina, Kā‘anapali, Honokōwai, Nāpili and Kapalua. The resort areas of Kā‘anapali and Kapalua are served by Hawai‘i Water Service. The Mahanalua Nui, Olowalu and Ukumehame Systems serve areas south of Lahaina town. There are no interconnections between systems, and each system is independently operated and maintained. The map below shows the general service areas of the public water systems in the region. See Figure XX.

**Figure XX.** General Location of Public Water Systems in the Lahaina ASEA



**Source:** Maui WUDP, \*Kapalua Water Company has been purchased by Hawaii Water Service Company from Maui Land & Pineapple Company in March 2021.

### **Maui DWS Lahaina-Napili Service Area: Honokōhau and Kahoma Hydrologic Units**

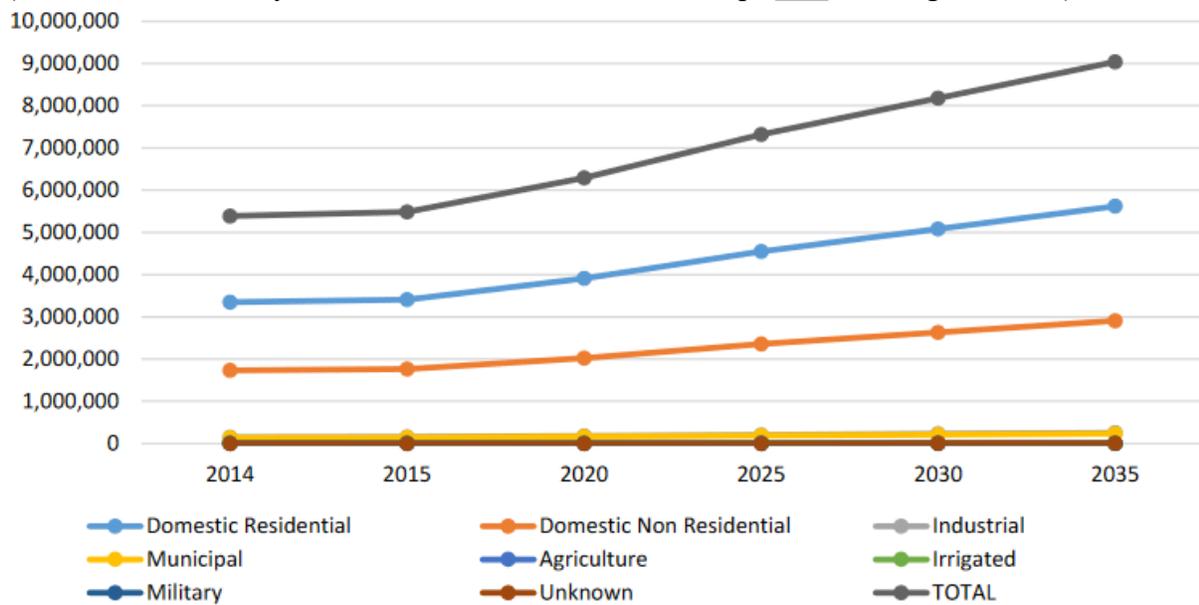
The Maui County Department of Water Supply (Maui DWS) serves a population of about 18,164 within the Lahaina-Napili water system. This system relies on a combination of two surface water treatment facilities (WTF) at Lahaina and Māhinahina and 12 production wells. A list of Maui DWS production wells can be found in table xx. The total water production of Maui DWS is approximately 5.4 mgd, of which 5.08 mgd is considered domestic use.<sup>23</sup> Non-potable water is transmitted to the Māhinahina WTF via the Honokōhau Ditch from Honokōhau Stream in

<sup>23</sup> Maui DWS Final Water Use and Development Plan (Ordinance 5335), <https://waterresources.mauicounty.gov/DocumentCenter/View/608/Ord-5335>

the Honokōhau Aquifer System. From 2015 to 2019, Māhinahina WTF treated a mean ( $\pm$ standard deviation) of 1.70 ( $\pm$ 0.28) mgd of water received from Honokōhau Stream via Honokōhau Ditch, with a maximum daily production of 2.5 mgd.

Kanahā Stream is one of two streams in the Kahoma Hydrologic Unit. Kanahā Stream is in the Launiupoko Aquifer System is diverted at the 1,050 ft elevation by Maui DWS using a large diversion structure. Diverted water is piped from the intake to an elevation of 790 feet where the Maui DWS distribution box distributes water to the Lahaina WTF, Lahainaluna High School, and to a pipeline that fed Pioneer Mill’s industrial mill. Before the distribution box, water is conveyed to H. Michel via a 1.25 inch and a 2-inch pipeline connection. The Maui DWS Lahaina WTF produced a mean ( $\pm$ standard deviation) of 1.65 ( $\pm$ 0.22) mgd from 2009 to 2018. This water is primarily (~95%) used for domestic water supply.<sup>24</sup> Projected domestic and total water demand for the Maui DWS Lahaina-Napili Water System is depicted in Figure XX. While approximately 50% of existing demand is met with surface water, future increases in demand are proposed to be met with new groundwater sources.

**Figure xx.** Projected Maui DWS Consumption by category for the Lahaina Aquifer Sector. (Source: Maui County DWS Final Water Use and Development Plan, Figure 19-28)



<sup>24</sup> *Id.*

**Table xx.** County of Maui DWS wells in the Lahaina-Napili Service Area.

Source	Hydrologic Unit	12-month MAV (mgd)	Maximum Capacity (mgd)	Notes
Waipuka 1	Kahoma	0.000	0.324	
Waipuka 2	Kahoma	0.095	0.360	
Kanahā Well 1	Kahoma	0.059	0.360	
Kanahā Well 2	Kahoma	0.044	0.360	
DHHL Honokōwai	Honokōwai	0.000		Developed by DHHL for potable needs on DHHL homesteads
Māhinahina	Honokōwai	---	---	Well drilled in 2011 but deemed unsuccessful; not usable
Kahana	Honolua	---	---	Still in development; no pump, electricity, pipe lines or tanks
Nāpili A	Honolua	0.225	1.000	
Nāpili B	Honolua	0.575	1.008	
Nāpili C	Honolua	0.874	1.430	
Honokahua A	Honolua	0.000	0.710	
Honokahua B	Honolua	0.396	1.008	

**Hawaii Water Service Area: Honokōhau, Honolua, Honokahua, Kahana Hydrologic Units**

Honokōhau Stream is diverted by Maui Land & Pineapple (MLP) and distributed by Hawai‘i Water Service Company (HWSC) for resort landscaping, golf course irrigation, luxury home landscaping, common area landscaping, agriculture, and drinking water supply. Current and future non-potable water needs of the Kapalua area are identified in Table XX. Kuleana and riparian uses in Honokōhau Valley are in direct conflict with MLP’s operation of this diversion as is Maui County DWS, which relies on the delivery of water from Honokōhau to the Māhinahina WTF. With future developments increasing non-instream water demands, conflicts among surface water uses will continue.

**Table XX.** Current actual and future estimated water use for various entities in the Kapalua-Napili region including golf course (GC) irrigation, resort landscape irrigation, luxury home landscape irrigation, Maui County Department of Water Supply (DWS), and Department of Hawaiian Home Lands (DHHL). [mgd = million gallons per day; gallons per acre per day, gad]

Water Use	2017 actual use (mgd)	2018 actual use (mgd)	2019 estimated use (mgd)	future estimated need (mgd)
Irrigation for Kapalua Resorts, common areas, luxury home landscaping	0.909	0.782	0.988	0.892
Irrigation for Plantation GC, Bay GC, Golf Academy	0.912	0.515	0.817	0.748
Other: Diversified Agriculture, Napili Gardens, Mailepai Cemetery, other homes	0.248	0.110	0.056	0.138
Future Planned Uses: Pulelehua, Waialele Ridge, Mahana Estates, Kapalua Mauka				3.64
Maui DWS Domestic/Municipal	1.74	1.78	2.00	2.28
DHHL Diversified Agriculture	--	--	--	2.10
<b>Total</b>	<b>3.81</b>	<b>3.19</b>	<b>3.72</b>	<b>9.80</b>

#### **Hawaii Water Service Area: Honolua Aquifer System**

Hawaii Water Service, a PUC-regulated company, operates three wells with a combined capacity of 3.456 mgd and a 2021 average pumpage of 0.574 mgd, although well Kapalua 3B is not currently in use due to a lack of demand. The system serves a population of 4,200 people with 555 connections. These wells are located in the Honolua aquifer system.

#### **Kaanapali Land Management Service Area: Honokōwai and Wahikuli Hydrologic Units**

Diversion 959 is located on Amalu stream at an elevation of 1,600 ft on land owned by the State of Hawai‘i and diversion 953 is located on Kapaloa Stream at an elevation of 1,560 ft on Kaanapali Land Management (KLM) owned land. Water diverted from the Honokōwai streams are used for coffee irrigation, diversified agriculture, and non-potable water needs of coffee estates. Neither total water diverted, nor total water used by KLM is currently metered, however there is approximately 267 acres of coffee in cultivation and 61 fee-simple agricultural estates with unknown landscape irrigation needs. Estimates of non-potable water needs for the KLM system are provided in Table xx. Kuleana and riparian uses in Honokōwai Valley are in direct conflict with KLM’s operation of these diversions.

**Table xx.** Estimated current water demand for the 1 in 5-year drought using drip irrigation for various agricultural crops identified in KLM’s non-potable water service area. [mgd = million gallons per day; gallons per acre per day, gad]

Water Use	area (acres)	rate (gad)	water demand (mgd)
Coffee	566.51	4,797	1.359
Livestock (350 head)	701.92	200 gal/head	0.070
Banana	13.81	3,941	0.027
Diversified Agriculture	53.18	5,200	0.138
Sod/Turf landscape	7.9	5,939	0.047
Citrus	3.35	4,013	0.007
Total =			1.648

### Hawaii Water Service Kā’anapali Water System: Honokōwai Aquifer System

Hawaii Water Service Kā’anapali, a PUC-regulated utility, operates nine wells with a combined capacity of 7.042 mgd and a 2021 average pumpage of 3.804 mgd.<sup>25</sup> The system serves 1,500 permanent residents and a large visitor population for a combined equivalent of 8,000 people through 700 service connections. Pumpage from some of HWS’s wells has been discontinued due to excessive chloride content (see Figure XX), further suggesting that the Honokōwai Aquifer System is vulnerable to saltwater intrusion.

Wells P-4, P-5 and P-6 have been found to produce water which contains levels of the chemical Dibromochloropropane (DBCP) ranging from 110 to 250 parts per trillion (ppt).<sup>26</sup> The State DOH limit for DBCP is 40 ppt at the point of entry into the distribution system. A water treatment facility near Well P-4 is being used to remove DBCP from these wells so they can be used to capacity. High levels of chloride ranging from 80 to 400 mg/l have been detected in most of the wells.

### Kahoma Ranch and Kanahā Riparian Uses: Kahoma Hydrologic Units

Diversion 951 on Kahoma Stream is located on land owned by Kamehameha Schools (tax map key number 4-5-022:001). Water diverted from this stream is currently used for non-potable needs of Kahoma Ranch, a subsidiary of Kahoma Land Company, LLC which supports diversified agriculture and ecotourism. Kahoma Ranch offers outdoor recreation opportunities through ATV tours, zip lining and swimming in Kahoma Reservoir. The Kahoma Ranch Reforestation Plan uses

<sup>25</sup> Excluding discontinued 6-5638-003 Honokowai B well, which has a pump capacity of 1.29 mgd.

<sup>26</sup> A Study to Investigate the Operation of the Kā’anapali Water Corporation Domestic Water System, December 11, 1998.

approximately 113,000 gpd (0.113 mgd) to support the irrigation needs of fruit orchards, hardwood tree silviculture and reforestation efforts. Kuleana and riparian uses in Kahoma Valley downstream are in direct conflict with Kahoma Ranch’s operation of this diversion.

Diversion 954 on Kahana Stream is maintained by Maui DWS. A pipeline transports non-potable water from the diversion to a concrete distribution box above Lahainaluna High School (LHS). Two registrations by H. Michel exist for water from the pipeline for diversified agricultural usage on a total of 6.14 acres in Kanahā Valley (approximately 20,000 gallons per day, 0.02 mgd). Kuleana and riparian uses in Kanahā Valley are in direct conflict with the county’s operation of this diversion, as are LHS’s uses.

**Table XX.** Estimated water demand from the Kahoma hydrologic unit for non-potable water by stream. [mgd = million gallons per day; gallons per acre per day, gad]

source stream	water use	method	area (acres)	water demand (mgd)
Kahoma	Kahoma Ranch	Management plan		0.113
Kanahā	H. Michel diversified agriculture	IWREDSS	6.1	0.030
Kanahā	Lahainaluna High School	Estimate	29.0	0.100
Kanahā	Maui DWS	Gage	--	1.700
			Total =	1.943

**Launiupoko Irrigation Company Service Area: Kaua‘ula and Launiupoko Hydrologic Units**

The Launiupoko Irrigation Company (LIC) is a PUC-regulated company that provides non-potable water diverted from Launiupoko and Kaua‘ula streams for irrigation of small commercial agriculture, agriculturally-zoned parcels, and landscaping across the Launiupoko and Kaua‘ula hydrologic units. Additionally, diverted water from Kaua‘ula is provided to agricultural lessees on land owned by Kamehameha Schools. Water was used to generate electricity through the Kaua‘ula hydropower plant. A small amount of water is pumped up hill to TMK parcels with appurtenant rights originally fulfilled by the Pi‘ilani ‘auwai, which was subsequently replaced by the Kaua‘ula Ditch during the plantation era. Approximately ~1.5 cfs (~1.0 mgd) is released at the Kaua‘ula siphon back into Kaua‘ula Stream after the hydropower plant to support the interim IFS in Kaua‘ula Gulch. Non-potable water is also provided directly to these homes via a separate transmission pipe on the west side of the gulch. Table XX provides a summary of the major noninstream water uses and average water diverted for each use. The interim IFS in Kaua‘ula Stream has created conflicts between cultural practitioners that rely upon a diversion managed by LIC, noninstream use of water for commercial agriculture, and the use of water for landscape irrigation of agriculturally-zoned parcels.

**Table XX.** Estimated water demand for various agricultural crops identified in LIC non-potable water service area. [mgd = million gallons per day; gallons per acre per day, gad]

water use	method	area (acres)	water demand (mgd)
Kamehameha lessees	Schools Reported		0.396
agriculturally-zoned parcels	Estimated	88.2	0.303
Landscaping	IWERDSS	193.8	0.969
Total =			1.668

### Launiupoko Water Company: Launiupoko Aquifer System

The Launiupoko Water Company (LWC) is a PUC-regulated utility that operates three wells with a combined capacity of 1.584 mgd and a 2021 average pumpage of 0.493 mgd. Following the implementation of Interim IFS for Kaua‘ula Stream, LWC pumpage from the Launiupoko Aquifer System rose to 0.695 mgd, with a maximum pumpage of 1.133 mgd in September 2019. The service area of the LWC includes mostly gentlemen farm estates, with a small amount of commercial agriculture. As of January 2018, LWC had 280 potable service connections. Launiupoko Irrigation Company (LIC), another PUC-regulated utility company owned by the same parent company as LWC, had 280 non-potable service connections in 2018. In 2017, the average metered use of non-potable water was 1.512 mgd, exceeding the LIC PUC application of 1.331 mgd when fully developed. The estimated water needed to meet the non-potable demands in the LWC and LIC service area are identified in Table XX.

**Table XX.** Estimated water demand by use within the Launiupoko Aquifer System met by the Launiupoko Water Company and LIC service areas. (gallons per acre per day, gad)

Demand	Sub-Type	Area	Rate (gad)	Total
Potable		280 connections		0.800 mgd
Agriculture	Irrigated Pasture	10 acres	2,500	0.025 mgd
Agriculture	Diversified Agriculture	43 acres	3,419	0.147 mgd
Agriculture	Tree Crops	35 acres	2,914	0.102 mgd
Agriculture	KSBE Diversified Agriculture Lessee	13 acres	6,000	0.078 mgd
Agriculture	KSBE Cacao Farm Lessee	53 acres	6,000	0.318 mgd
Landscaping	Gentlemen Estates and common areas	194 acres	7,732	1.500 mgd
			Total	2.970 mgd

## Olowalu Water Company Service Area: Olowalu Hydrologic Unit

Olowalu Water Company is a PUC-regulated water company that provides approximately 200,000 gallons per day of non-potable water for irrigation of pasture lots, agriculture and landscaping of agriculturally-zoned homes, small commercial agriculture, and lo‘i and agriculture for Maui Cultural Lands (a lessee). Current commercial agricultural demand in Olowalu is estimated at 196,000 gallons per day. The interim IFS in Olowalu has created conflicts between cultural practitioners that rely upon a diversion managed by Olowalu Water Company, non-instream use of water for commercial agriculture, and the use of water for landscape irrigation of agriculturally zoned parcels.

**Table XX.** Estimated water demand for various agricultural crops identified in Olowalu Water Company non-potable water service area. [mgd = million gallons per day; gallons per acre per day, gad]

water use	method	area (acres)	water demand (mgd)
Landscaping	IWREDSS	28.3	0.141
agriculturally-zoned parcels	IWREDSS	49.41	0.196
Maui Cultural Lands lo'i complex	estimated		0.150
Total =			0.487

## West Maui Investors Service Area: Ukumehame Hydrologic Unit

In the Ukumehame hydrologic unit, Uka LLC, (West Maui Investors) is the major developer that uses water from Ukumehame Stream for non-potable uses. Two wells are also available to provide potable water for the planned 45 lot subdivision of former Pioneer Mill agricultural lands. Non-potable water from the stream is distributed throughout the hydrologic unit for irrigation of commercial (two) and residential (two) properties. There are two commercial farms in the Ukumehame Hydrologic Unit that produce sod or nursery trees with an estimated demand of 45,400 gallons per day. The interim IFS in Ukumehame has created conflicts between cultural practitioners that rely upon a diversion managed by a mainland investment agency and the use of water for landscape irrigation of agriculturally-zoned parcels.

**Table XX.** Estimated water demand for various agricultural crops identified in Ukumehame non-potable water service area. [mgd = million gallons per day; gallons per acre per day, gad]

water use	method	area (acres)	water demand (mgd)
Landscaping	Estimated	0.813	0.004
agriculturally-zoned parcels	IWREDSS	9.089	0.045
Lo‘i x4, (consumption)	Reported		0.086
Total =			0.092

## 4.4 PUBLIC TRUST PURPOSES

### 4.4.1 Environmental Protection

The Hawai‘i Supreme Court has acknowledged resource protection, with its numerous derivative public uses, benefits, and values, as an important underlying purpose of the reserved water resources trust.<sup>27</sup> “The maintenance of waters in their natural state constitutes a distinct “use” under the water resources trust.”<sup>28</sup> This disposes of any portrayal of retention of waters in their natural state as “waste.”<sup>29</sup>

### 4.4.2 Domestic Uses

In *Waiāhole*, the Hawai‘i Supreme Court “recognize[d] domestic water use as a purpose of the state water resources trust.”<sup>30</sup> Under HRS § 174C-3 “Domestic use” means any use of water for individual personal needs and for household purposes such as drinking, bathing, heating, cooking, noncommercial gardening, and sanitation. The Code defines “domestic” and “municipal” uses separately and recognizes that municipal use encompasses not only aggregate domestic uses, but also “industrial” and “commercial” uses. HRS § 174C-3. Municipal uses are public purpose, but not a public trust purpose.

In the Lahaina ASA, for example, families in Kaua‘ula, Kahoma, and Honokōhau are relying on stream water as their only source of domestic water supply.

### 4.4.3 Exercise of Traditional and Customary Native Hawaiian Rights and Practices

Traditional and customary Native Hawaiian rights (T&C rights) are protected at every level of the law, including the constitution, statutes, and common law. The Hawai‘i Supreme Court “has stressed that the rights of native Hawaiians are a matter of great public concern in Hawaii.”<sup>31</sup> Article XII, section 7 confers upon the Commission “the power to protect [Native Hawaiian] rights and to prevent any interference with the exercise of these rights.”<sup>32</sup> Article XII, § 7 correlatively “places an affirmative duty on the State and its agencies to preserve and protect traditional and customary native Hawaiian rights.”<sup>33</sup>

The Hawai‘i Supreme Court held that the “exercise of Native Hawaiian and traditional and customary rights” is a protected public trust purpose under the constitutional public trust, which

---

<sup>27</sup> See *Robinson v. Ariyoshi*, 65 Haw. 641, 674-76, 658 P.2d 287, 310-11 (1982) (upholding the public interest in the “purity and flow,” “continued existence,” and “preservation” of the waters of the state)

<sup>28</sup> *Waiāhole I*, 94 Hawai‘i at 136, 9 P.3d at 448.

<sup>29</sup> See *Reppun v. Board of Water Supply*, 65 Haw. 531, 560 n. 20, 656 P.2d 57, 76 n. 20 (1982) (*Reppun*) (citing article XI, section 1 as an acknowledgment of the public interest in “a free-flowing stream for its own sake”).

<sup>30</sup> See *Waiāhole I*, 94 Hawai‘i at 137, 9 P.3d at 449 (quoting Restatement (Second) of Torts § 850A cmt. c (1979) which states “The preference for domestic use does not extend to withdrawals by a municipality, water company or public district that supplies the domestic needs of inhabitants of a city or other service area. These large public and commercial users receive no preference and are subject to liability if the taking of their supplies unreasonably causes harm to other reasonable use of riparians.”)

<sup>31</sup> *Ka Pa ‘akai o Ka ‘Aina v. Land Use Comm’n*, 94 Haw. 31, 42, 7 P.3d 1068, 1079 (2000) (“*Ka Pa ‘akai*”)

<sup>32</sup> *Ka Pa ‘akai*, 94 Hawai‘i at 45, 7 P.3d at 1082.

<sup>33</sup> *Nā Wai ‘Ehā*, 128 Hawai‘i at 247, 287 P.3d at 148

the Commission has an affirmative duty to protect to the extent feasible.<sup>34</sup> The Court reviewed the early law of the Hawaiian Kingdom and recognized the “specific objective of preserving the rights of native tenants during the transition to a western system of private property.”<sup>35</sup> The Court made clear its intention to uphold this “original intent” of the public trust.<sup>36</sup>

The Code provides that protected T&C rights include, but are not limited to, “the cultivation or propagation of taro on one’s own kuleana and the gathering of hīhiwai, opae, o’opu, limu, thatch, ti leaf, aho cord, and medicinal plants for subsistence, cultural, and religious purposes.” HRS § 174C-101(c). Additionally, HRS § 7-1 establishes the rights of tenants to gather certain enumerated items and also the “right of drinking water, and running water, and the right of way.” HRS § 1-1 more broadly codifies the doctrine of custom as it applies in Hawai‘i, protecting traditional and customary practices that were established by 1892.<sup>37</sup>

Staff has made extensive findings on the existence of T&C rights and practices for the surface water hydrologic units of Ukumehame, Olowalu, Launiupoko, Kaua‘ula, Kahoma, Honokōwai, Honolulu, and Honokōhau. See, e.g., [Appendix A](#), Section 12 of the respective IFSAR for each unit.

As a summary: The maintenance of instream flows is important for the protection of T&C rights, as they relate to the maintenance of stream (e.g., hīhiwai, ‘ōpae, ‘o’opu) and riparian (vegetation) resources for gathering, recreation within streams, the cultivation of kalo, and other subsistence, cultural, and religious purposes.

There is tremendous variability of instream and non-instream uses across and within the surface water hydrologic units in the Lahaina ASA. For example, one stream may support extensive taro cultivation while another may primarily support domestic and recreational uses. Further, water in its natural state supports the habitat of native aquatic biota, which is one of the identified public trust uses of water.

For example, Honokōhau Valley supported one of the largest concentrations of Hawaiian agriculture in the state, with taro cultivation in excess of 10 acres. Presently, while as much as 5.15 acres of kuleana lands exist, lo‘i kalo is currently grown on less than 3.5 acres. Kalo was historically and is currently grown in Honolulu, Honokōwai, Kahoma, Kanahā, Kaua‘ula, Olowalu, and Ukumehame.

Community members voiced grave concern over the lack of available stream water and streamflow to cultivate lo‘i kalo and to exercise traditional and customary Native Hawaiian practices that rely on water in its natural state, mauka to makai flow, and healthy native stream fauna. The concerns raised are that established IIFS are not being met, water continues to be diverted and prioritized for off stream uses while protected instream uses and Kuleana families do not have sufficient amounts of water for T&C rights and practices.

---

<sup>34</sup> *Waiāhole I*, 94 Hawai‘i at 137, 9 P.3d at 449.

<sup>35</sup> *Id.* at 137, 9 P.3d at 449.

<sup>36</sup> *Id.*

<sup>37</sup> See *Public Access Shoreline Haw. v. Haw. Planning Comm’n*, 79 Hawai‘i 425, 437-442, 447-51, 903 P.2d 1246, 1258-63, 1268-72 (1995) (“*PASHF*”).

The community members' testimonies echo what staff has experienced in the numerous informal and formal complaints in the past decades.

Additionally, West Maui Preservation Association's oral testimony highlighted Maui Komohana's (West Maui's) rich cultural history. **E ho'i ka nani i Moku'ula** (Return the beauty to Moku'ula) is the first in the series of mele (song) first published in Hawaiian newspapers in the 1860s that describes sacred springs, fishponds and Hawaiian royalty at Moku'ula in Lahaina. Moku'ula has been covered up because the water resources were depleted. Designation can be a tool to return to this beauty and carve out a better future by "extolling the past through traditional and customary Native Hawaiian practices."<sup>38</sup> Kūpuna have managed surface and ground water comprehensively without drawing artificial lines and boundaries.

Oral testimony by Blossom Feiteira highlighted that designation of West Maui is also very important in terms of the maintenance and future restoration of significant historic sites in Lahaina. The Mokuhinia complex is a Nationally Registered Historic site with the Department of Interior in the middle of Lahaina Town. The diversion of water, since 1890 has significantly impacted this area to the point where in 1905, they buried the pond due to stagnated water. The County of Maui is currently in the process of finalizing their archaeological inventory survey and are preparing an RP for the restoration project known as the Moku'ula project. Designation is so important in bringing back Mokuhinia pond. Without it, it can never happen. Stagnant water is not a good thing. The less water that comes off the streams and the underground aquifer system, would have a major impact on this very significant site.

The other impact that happened along the shoreline is that the streams of Kaua'ula and Kahoma that fed into the Mokuhinia Pond, also provided for a muliwai that fed the Pō'alima of Pakala, Makila, and Polanui, the shoreline across West Maui. At a time when the muliwai was fully functioning, there were very diverse and vibrant shoreline ecosystem that had different varieties of limu, varieties of fish species with the muliwai being considered the nursery by the kupuna of Lahaina. The tiger sharks would come in once a year to spawn in that area, and it was the baby sharks that fed through that ecosystem that fronted Moku'ula and Mokuhinia. With the diversion of water, there was immediately a degradation of the ecosystem, less fish, less limu, warmer waters, and overall degradation of the environment that led the kupuna oftentimes to kapu that place for no fishing and gathering because resources simply were not there.

#### 4.4.4 Appurtenant Rights

The Hawai'i Supreme Court noted that the public trust's protection of Native Hawaiian T&C rights "also extends to the appurtenant rights recognized in Peck."<sup>39</sup> "[A]ppurtenant water rights are rights to the use of water utilized by parcels of land at the time of their original conversion into fee simple land."<sup>40</sup> "As use of the word 'appurtenant' indicates, it is water rights which pertain to or annexed to that particular parcel of land conveyed by the original grant from the King or

---

<sup>38</sup> Oral testimony by U'ilani Tanigawa Lum on behalf of the West Maui Preservation Association.

<sup>39</sup> *Waiāhole I*, 94 Hawai'i. at 137 & n.34, 9 P.3d at 449 & n.34.

<sup>40</sup> *Reppun*, 65 Haw. at 551, 656 P.2d at 71.

Hawaiian government.”<sup>41</sup> “Appurtenant water rights are incidents of land ownership,” that constitute “an easement in favor of the property with an appurtenant right as the dominant estate.”<sup>42</sup> “[T]he right to the use of water acquired as appurtenant rights may only be used in connection with that particular parcel of land to which the right is appurtenant.”<sup>43</sup>

“[T]he proper measure of [appurtenant] rights is . . . the quantum of water utilized at the time of the Mahele.”<sup>44</sup> The Hawai‘i Supreme Court, however, recognized that “requiring too great a degree of precision in proof would make it all but impossible to ever establish such rights.”<sup>45</sup> The Commission is statutorily mandated to “determine appurtenant water rights, including quantification of the amount of water entitled to by that right, which determination shall be valid for purposes of” the Code.” HRS § 174C-5(15).

Staff conducted a cursory assessment of tax map key parcels to identify their associated Land Commission Awards, in an attempt to identify the potential for future appurtenant rights claims within the hydrologic units of Ukumehame, Olowalu, Launiupoko, Kaua‘ula, Kahoma, Honokōwai, Honolulu, and Honokōhau. See [Appendix A](#), Figure 12-1 of the respective IFSAR for each unit.

#### 4.4.5 DHHL Reservations

In *Wai‘ola* the Hawai‘i Supreme Court held that reservations of water by the Department of Hawaiian Home Lands (DHHL) are a public trust purpose.<sup>46</sup> The Honokōwai unit of DHHL’s West Maui Regional Plan incorporates 780 acres, of which approximately 270 acres are south of Honokōwai Gulch and 510 acres are north of Honokōwai Gulch. The 2017 State Water Projects Plan for DHHL identified 2.1 mgd of non-potable use for Honokōwai in the West Maui Regional Plan. To meet the non-potable water needs of DHHL for the Honokōwai unit, water sourced from Honokōhau Stream, Lahaina Wastewater Treatment Facility, groundwater, or a combination of the above is needed.

On September 18, 2018, the Commission approved DHHL’s reservation of 0.770 mgd of groundwater to meet their foreseeable groundwater needs in the Honokōwai Aquifer.

In May 2021, the Commission approved DHHL’s reservation of 2 mgd of surface water to meet their foreseeable future non-potable water needs in Honokōwai serviced by the Honokōhau Ditch from Honokōhau Stream.

---

<sup>41</sup> *McBryde*, 54 Haw. at 190-91, 504 P.2d at 1341.

<sup>42</sup> *Reppun*, 65 Haw. at 551, 656 P.2d at 70-71; *see also Peck v. Bailey*, 8 Haw. 658, 661-62 (1867).

<sup>43</sup> *McBryde*, 54 Haw. at 191, 504 P.2d at 1341.

<sup>44</sup> *Reppun*, 65 Haw. at 554, 656 P.2d at 72; *see also McBryde*, 54 Haw. at 188-89, 504 P.2d at 1340.

<sup>45</sup> *Reppun*, 65 Haw. at 554, 656 P.2d at 72. *See also Carter v. Territory*, 24 Haw. 47, 59 (1917) (“It is very difficult at this late day to show what quantity of water was used upon a particular parcel of land by ancient custom when it first became the subject of private ownership. Where the use of water upon land by ancient custom is shown by satisfactory evidence the right is not to be denied merely because the quantity has not been measured and cannot be proven.”).

<sup>46</sup> *Wai‘ola*, 103 Hawai‘i at 429, 431, 83 P.3d at 692, 694.

DHHL provided testimony in support of designation. The availability of water is one of the key barriers DHHL faces in the development and delivery of homesteads across Hawai‘i. There are two distinct ways in which WMA designation helps to fulfill the purposes of the Hawaiian Homes Commission Act (HHCA). In WMA, the Commission has issued reservations for DHHL by administrative rule, which adds protection and certainty for the reservation. The Code also provides that all water use permits “issued by the commission shall be subject to the rights of the department of Hawaiian home lands as provided in section 221 of the Hawaiian Homes Commission Act, whether or not the condition is explicitly stated in the permit.” HRS § 174C-49 (e). Currently, obligations to DHHL are not enumerated in any other permits, including the well construction permits issued across the State.

#### 4.5 INTERIM INSTREAM FLOW STANDARDS

HRS § 174C-3 defines an instream flow standard (IFS) as the amount of water “required to be present at a specific location in a stream system at certain specified times of the year to protect fishery, wildlife, recreational, aesthetic, scenic, and other beneficial instream uses” and an interim IFS as a “temporary instream flow standard of immediate applicability” that “terminate[s] upon the establishment of an IFS.”

The Code identifies beneficial instream uses including, but not limited to: “maintenance of fish and wildlife habitats”; “outdoor recreational activities”; “maintenance of ecosystems such as estuaries, wetlands, and stream vegetation”; “aesthetic values such as waterfalls and scenic waterways”; “maintenance of water quality; “the conveyance of irrigation and domestic water supplies to downstream points of irrigation”; and “the protection of traditional and customary Hawaiian rights.” HRS § 174C-3.

The Hawai‘i Supreme Court also held that the Commission “has an affirmative duty under the public trust to protect and promote instream trust uses.”<sup>47</sup>

There are ten perennial streams in West Maui with varying quantities of flow (Table XX). Of these streams, three (e.g., Honolua, Honokōwai, Launiupoko) do not naturally support mauka to makai flow year-round. Interim IFS on nine streams were established to protect the various instream uses of water, including habitat for native aquatic biota, recreational value, and traditional and customary practices of Native Hawaiians. Baseline hydrologic information and existing interim IFS for surface water hydrologic units in the Lahaina Aquifer Sector are listed in Table XX.

On March 20, 2018, the Commission established numeric interim instream flow standards (interim IFS) for streams in the surface water hydrologic units of Ukumehame, Olowalu, Launiupoko, and Kaua‘ula.

On November 20, 2018, the Commission established interim IFS for Kahoma Stream and Kanahā Stream in the Kahoma hydrologic unit.

---

<sup>47</sup> *Waiāhole I*, 94 Hawai‘i at 153, 9 P.3d at 465.

On May 18, 2021, the Commission established interim IFS for Honolua, Kaluanui, and Honokōhau Stream.

The hydrologic units of Wahikuli (6009), Kahana (6011), and Honokahua (6012) encompass intermittent streams only and the interim IFS, which were established pursuant to amendments to HAR §13-169-48 remain unchanged. HAR §13-169-48, effective on December 10, 1988, defined the interim IFS for all streams in West Maui as the “amount of water flowing in each stream on the effective date of this standard, and as that flow may naturally vary throughout the year and from year to year without further amounts of water being diverted offstream through new or expanded diversions.”

An interim IFS on the remaining perennial stream, Honokōwai, has not been established, yet. Despite the establishment of interim IFS to protect instream uses, complaints regarding the mismanagement, allocation, or use of surface water continue.

Extensive investigations and research on the surface water hydrologic units of Ukumehame<sup>48</sup>, Olowalu<sup>49</sup>, Launiupoko<sup>50</sup>, Kaua‘ula<sup>51</sup>, Kahoma<sup>52</sup>, Honolua<sup>53</sup>, and Honokōhau<sup>54</sup> are available in the respective Instream Flow Assessment Reports (IFSAR) and the Draft IFSAR for surface water hydrologic unit of Honokōwai<sup>55</sup>. See **Appendix A**.

---

<sup>48</sup> <https://files.hawaii.gov/dlnr/cwrmm/ifsar/PR201801-6004-Ukumehame.pdf>

<sup>49</sup> <https://files.hawaii.gov/dlnr/cwrmm/ifsar/PR201802-6005-Olowalu.pdf>

<sup>50</sup> <http://files.hawaii.gov/dlnr/cwrmm/ifsar/PR201803-6006-Launiupoko.pdf>

<sup>51</sup> <http://files.hawaii.gov/dlnr/cwrmm/ifsar/PR201804-6007-Kauaaula.pdf>

<sup>52</sup> <https://files.hawaii.gov/dlnr/cwrmm/ifsar/PR201808-6008-Kahoma.pdf>

<sup>53</sup> <http://files.hawaii.gov/dlnr/cwrmm/ifsar/PR201902-6013-Honolua.pdf>

<sup>54</sup> <http://files.hawaii.gov/dlnr/cwrmm/ifsar/PR201903-6014-Honokohau.pdf>

<sup>55</sup> <https://files.hawaii.gov/dlnr/cwrmm/ifsar/PR201901-6010-HonokowaiDraft.pdf>

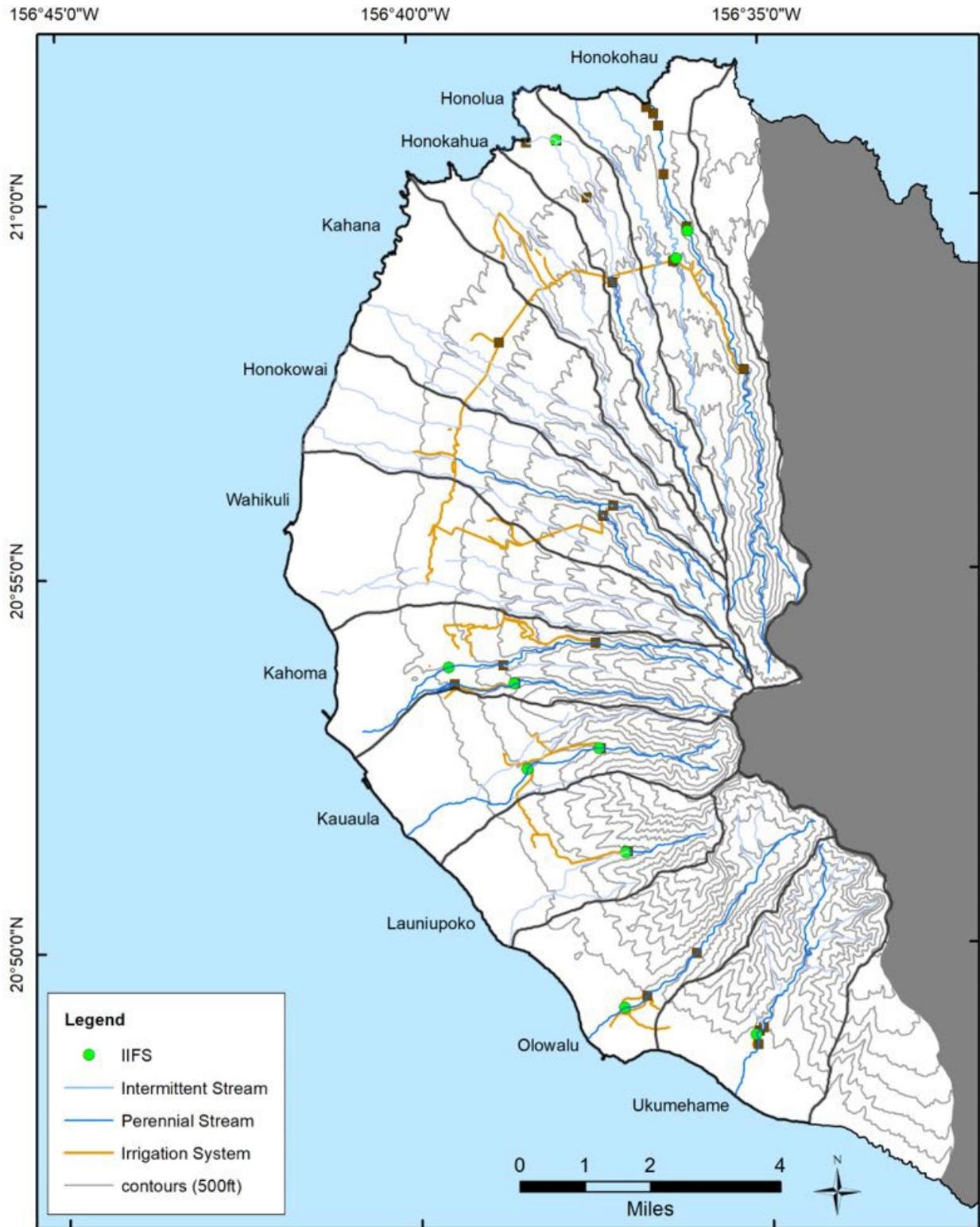
**Table XX.** Existing numeric interim IFS for surface water hydrologic units in the Lahaina Aquifer Sector. [ n/a = not applicable]

surface water hydrologic unit	stream name	Q <sub>50</sub> (mgd)	Q <sub>90</sub> (mgd)	interim IFS (mgd)	interim IFS elevation (ft)	estimated flow available for non-instream use at Q <sub>50</sub> (mgd)
Honokōhau	Honokōhau	19.4	11.0	8.6	340	12.2 <sup>1</sup>
Honolua	Honolua	2.46	0.00	natural flow	750	0.0
Honokōwai	Amalu <sup>2</sup>	--		n/a	1600	0.0
Honokōwai	Kapaloa	--		n/a	1560	n/a
Honokōwai	Honokōwai	3.49	2.32	n/a	1480	n/a
Kahoma	Kahoma	3.75	1.87	3.49	2100	0.26
Kahoma	Kanahā	3.17	2.65	0.50	1100	2.67
Kaua‘ula	Kaua‘ula	6.14	3.36	3.36	1540	2.78
Launiupoko	Launiupoko	0.30	0.23	0.00	1340	0.30
Olowalu	Olowalu	3.23	2.20	2.65	130	0.58
Ukumehame	Ukumehame	3.23	2.07	2.90	220	0.33

<sup>1</sup>amount reflects downstream location of interim IFS and groundwater gains between intake and interim IFS

<sup>2</sup>intake sealed by rockfall during 2018 storm and is no longer functional

Figure XX. Map showing location of IIFS and



Staff has data that indicate that LIC has not been compliant with the IIFS for Kaua‘ula stream, Olowalu Water Company has not been compliant with the IIFS for Olowalu stream, and that Maui DWS has not been compliant with the IIFS for Kanahā stream. Notices of alleged violation of the IIFS have been sent to LIC and Olowalu Water Company. See Appendix **H and I**.

#### 4.6 CLIMATE UNCERTAINTY – WATER SUPPLY

The Commission entered into an agreement with the U.S. Geological Survey to study the estimated groundwater recharge for mid-century and end-of-century climate projections for the islands of Kaua‘i, O‘ahu, Moloka‘i, Lāna‘i, Maui, and Hawai‘i in March 2019.<sup>56</sup> At the Commission’s January 18, 2022 meeting, USGS presented its preliminary findings. See **Appendix J**.

Rainfall has declined significantly across the Lahaina District, particularly during the dry season.<sup>57</sup> Anticipated declines in rainfall based on future projections will negatively affect ground water recharge and streamflow,<sup>58</sup> reducing the water availability.<sup>59</sup> Natural stream flow is declining in perennial streams throughout the Lahaina District due to declines in rainfall, ground water recharge, and subsequently, the baseflow contribution to streams.<sup>60,61</sup> Current estimates of median and low-flow conditions are based on limited data for the 1984-2013 climate period.<sup>62</sup> Additional declines in rainfall since then have reduced the availability of streamflow. Projected declines in seasonal and annual rainfall throughout West Maui will continue to negatively affect surface water resources and the instream values they support.<sup>63</sup>

#### 4.7 GEOLOGY

The West Maui Volcano is composed of a central caldera and two main rift zones trending northwest and southeast from the caldera. Thousands of dikes exist within the rift zone with the number increasing toward the caldera and with depth. Dikes also exist in a radial pattern around the caldera.<sup>64</sup> Most rocks in West Maui originated as shield building Wailuku Basalt overlain with post-shield Honolua Volcanics. In some locations, a late rejuvenation phase of Lahaina Volcanics is present. Wedges of sedimentary deposits are found in stream valleys and along the coasts. Sedimentary deposits have relatively low permeability compared to volcanic rocks and their subsurface extent influences the hydraulic gradient of dike-free volcanic rocks. The permeability

---

<sup>56</sup> <https://files.hawaii.gov/dlnr/cwrm/submittal/2019/sb20190319B1.pdf>

<sup>57</sup> Frazier, A.G., and T.W. Giambelluca. 2017. Spatial trend analysis of Hawaiian rainfall from 1920 to 2012. *International Journal of Climatology*, 37(5): 2522-2531.

<sup>58</sup> Elison Timm, O., *et al.* 2015. Statistical downscaling of rainfall changes in Hawai‘i based on the CMIP5 global model projections. *Journal of Geophysical Research: Atmospheres*, 120(1): 92-112.

<sup>59</sup> Mair, A. *et al.* 2019. Estimated groundwater recharge from a water-budget model incorporating selected climate projections, Island of Maui, Hawai‘i. USGS SIR 2019-5064.

<sup>60</sup> Frazier, A.G., and T.W. Giambelluca 2017. *Id.*

<sup>61</sup> Gingerich, S.B., and Engott, J.A. 2012. *Id.*

<sup>62</sup> Cheng, C.L. 2014. Low-flow characteristics of streams in the Lahaina District, West Maui, Hawai‘i. U.S. Geological Survey Scientific Investigations Report, 2014-5087.

<sup>63</sup> Elison Timm, O., *et al.* 2015. *Id.*

<sup>64</sup> Gingerich, S.B., and Engott, J.A. 2012. Groundwater availability in the Lahaina District, West Maui, Hawai‘i. U.S. Geological Survey Scientific Investigations Report 2012-5010.

of the subaerial, shield-building, and dike-free lava flows in West Maui is high and influenced by 1) clinker zones associated with ‘a‘ā flows; 2) voids along the contacts between lava flows; 3) cooling joints normal to flow surfaces; and 4) lava tubes associated with pāhoehoe flows. The regional horizontal hydraulic conductivity of the dike-free volcanic rocks ranges from hundreds to thousands of feet per day.<sup>65</sup> Because of the high permeability of these rocks, the horizontal water-table gradients are small (around one foot per mile), with the horizontal permeability as much as 10-100 times the vertical permeability. For large areas of the Lahaina Aquifer Sector, the dike-free basal aquifer is not interrupted by geologic anomalies, resulting in a homogenous region across the Launiupoko, Olowalu, and Ukumehame aquifer systems (Figure XX). Similarly, the dike-free regions of the Honokōwai, Honolua, and Honokōhau aquifer systems are also relatively homogenous, with similar hydraulic conductivities.

There is lower hydraulic conductivity in the coastal alluvium and weathered basalt relative to the north-south conductivity of the basalt aquifer system that connects the Honokōwai Aquifer System to the neighboring Honolua and Honokōhau Aquifer System Areas<sup>66</sup>. Therefore, withdrawals from Honokōwai in the dike-free basal aquifer will most likely affect the neighboring aquifers.

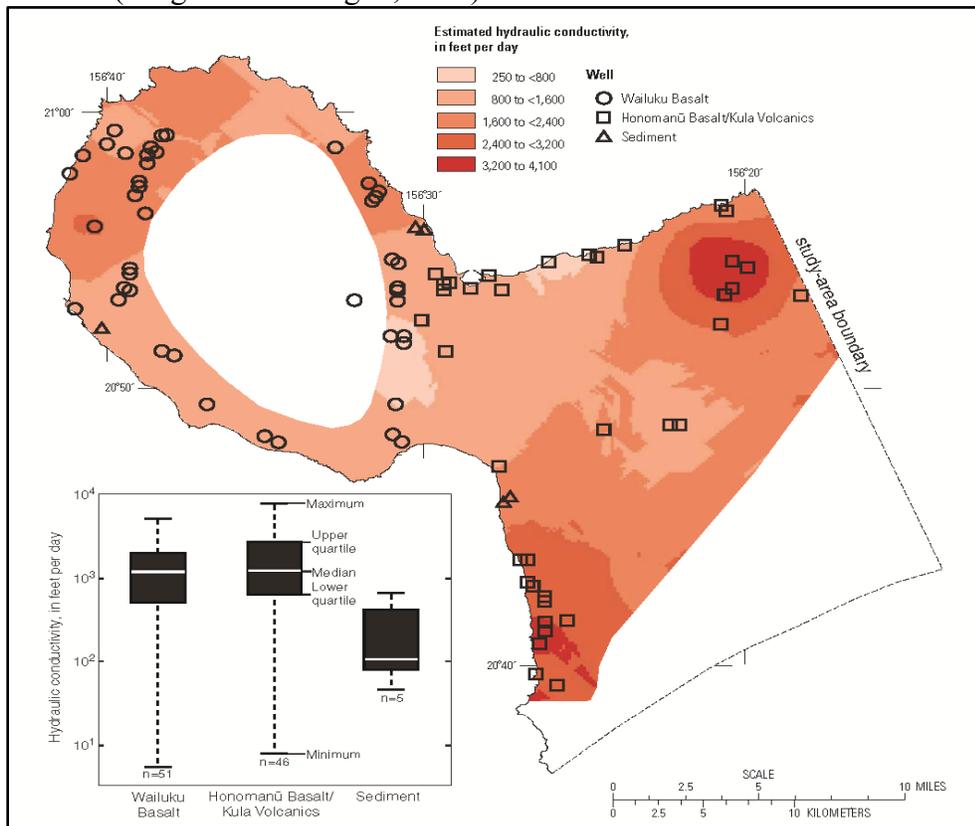
Similar to the Honokōwai system, there is lower hydraulic conductivity in the coastal alluvium and weathered basalt relative to the north-south conductivity of the basalt aquifer system that connects the Launiupoko Aquifer System to the neighboring Honokōwai and Olowalu Aquifer System Areas. Depending on well location and withdrawal rate, withdrawals from Launiupoko in the dike-free basal aquifer may affect the neighboring aquifers.

---

<sup>65</sup> Rotzoll, K., El-Kadi, A.I., and Gingerich, S.B. 2007. Estimating hydraulic properties of volcanic aquifers using constant-rate and variable-rate aquifer tests. *Journal of the American Water Resources Association*, 43(2): 334-345.

<sup>66</sup> Glenn, Craig R., Robert B. Whittier, Meghan L. Dailer, Henrieta Dulaiova, Aly I. El-Kadi, Joseph Fackrell, Jacque L. Kelly, Christine A. Waters, Jeff Sevadjan. 2013. “Lahaina Groundwater Tracer Study – Lahaina, Maui, Hawaii.” *Final Report prepared from the State of Hawaii Department of Health, the U.S. Environmental Protection Agency, and the U.S. Army Engineer Research and Development Center.*

**Figure XX.** Distribution of regional aquifer hydraulic conductivity in central and West Maui, Hawai'i (Gingerich and Engott, 2012)



## 4.8 HYDROLOGY

### 4.8.1 Rainfall

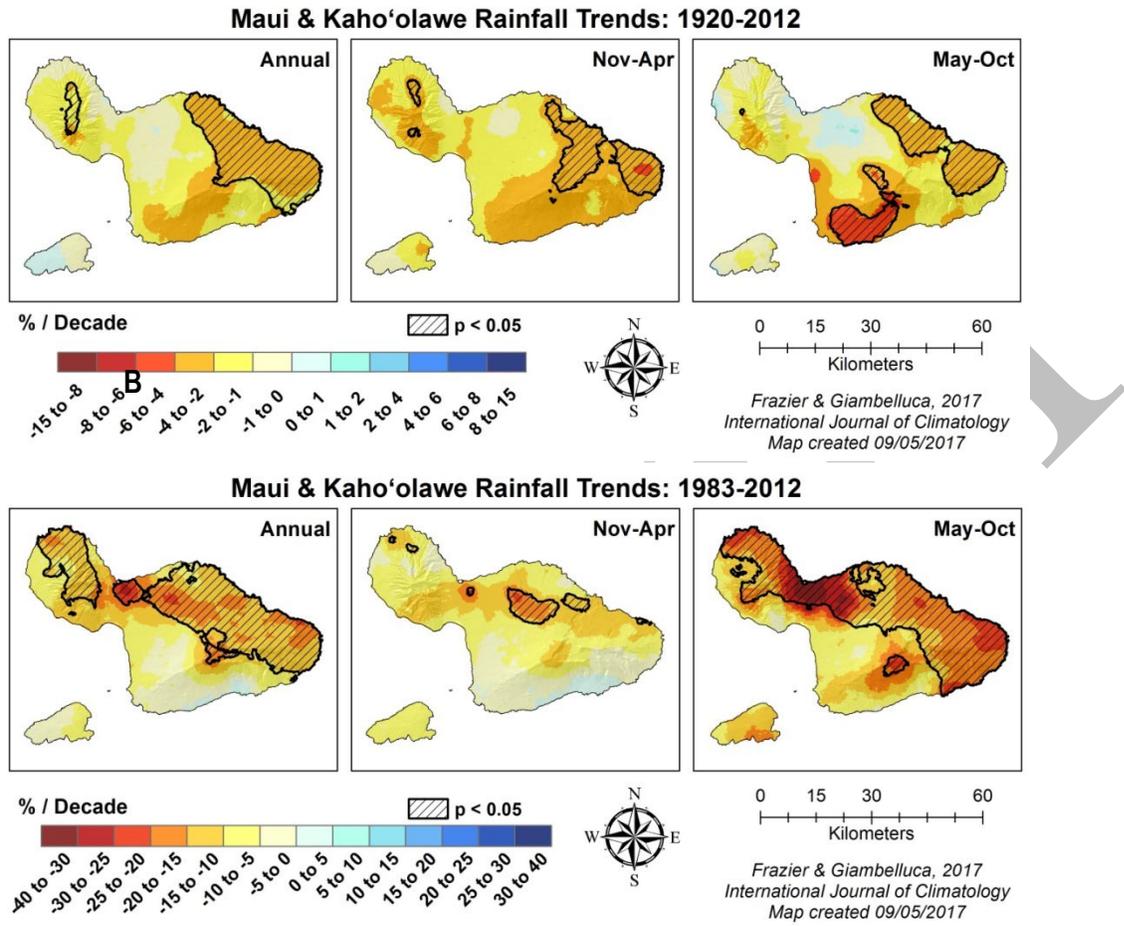
Long-term (1920-2012) and recent (1983-2012) historical trends indicate there have been significant declines in rainfall across areas of West Maui, particularly during the dry season (Figure XX). Future trends in rainfall are difficult to predict in this region as there is some disagreement between dynamical and statistical downscaling models used to predict rainfall for the RCP 4.5 and RCP 8.5 climate scenarios<sup>67</sup>. In the Honokōhau and Honolulu watersheds, for example, dynamical models suggest rainfall will marginally increase (i.e., less than 3%) and statistical models suggest rainfall will decline 6% to 8.2%. A summary of the projected rainfall trends for each scenario and method are provided in Table XX. Long-term declines in rainfall are generally coupled with a long-term decline in surface water availability and groundwater recharge, with consequences for base flow (Figure xx).

<sup>67</sup> Representative Concentration Pathway (RCP) are a set of greenhouse gas concentration trajectories adopted by the IPCC for its fifth Assessment Report in 2014

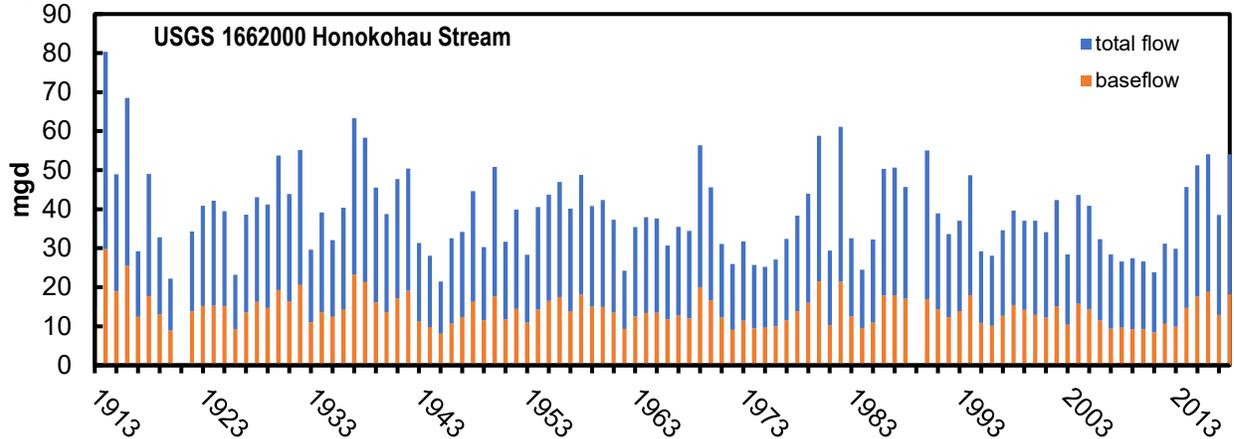
**Table XX.** Mean annual rainfall (inches, in) and percent change in mean annual rainfall by watershed for the RCP 4.5 and RCP 8.5 scenarios using the dynamical downscaling model (for 2080-2099 relative to 1990-2009 mean) or the statistical downscaling model (for 2070-2099 relative to the 1978-2007 mean). (Source: Frazier et al. unpublished)

watershed	MAR (in) 1978-2007	MAR (in) 1990-2009	dynamical downscaling		statistical downscaling	
			RCP 4.5	RCP 8.5	RCP 4.5	RCP 8.5
Honokōhau	120.0	108.6	110.4 (+1.64%)	111.4 (+2.56%)	111.4 (-7.15%)	110.1 (-8.20%)
Honolua	89.0	81.7	82.7 (+1.27%)	873.2 (+1.83%)	83.7 (-5.98%)	82.9 (-6.86%)
Honokōwai	85.2	74.1	75.2 (+1.56%)	72.1 (-2.63%)	73.2 (-14.05%)	67.9 (-20.30%)
Kahoma	85.6	70.4	73.9 (+5.06%)	68.1 (-3.19%)	70.3 (-17.86%)	64.3 (-24.92%)
Kaua‘ula	57.4	47.5	49.1 (+3.46%)	47.4 (-0.07%)	46.6 (-18.81%)	42.3 (-26.33%)
Launiupoko	41.3	35.5	34.2 (-3.62%)	34.4 (-3.02%)	31.6 (-23.65%)	27.3 (-33.97%)
Olowalu	60.4	53.1	51.4 (-3.20%)	52.3 (-1.52%)	44.7 (-26.02%)	37.3 (-38.27%)
Ukumehame	44.6	40.0	38.8 (-2.97%)	40.2 (+0.57%)	28.1 (-36.87%)	19.7 (-55.86%)

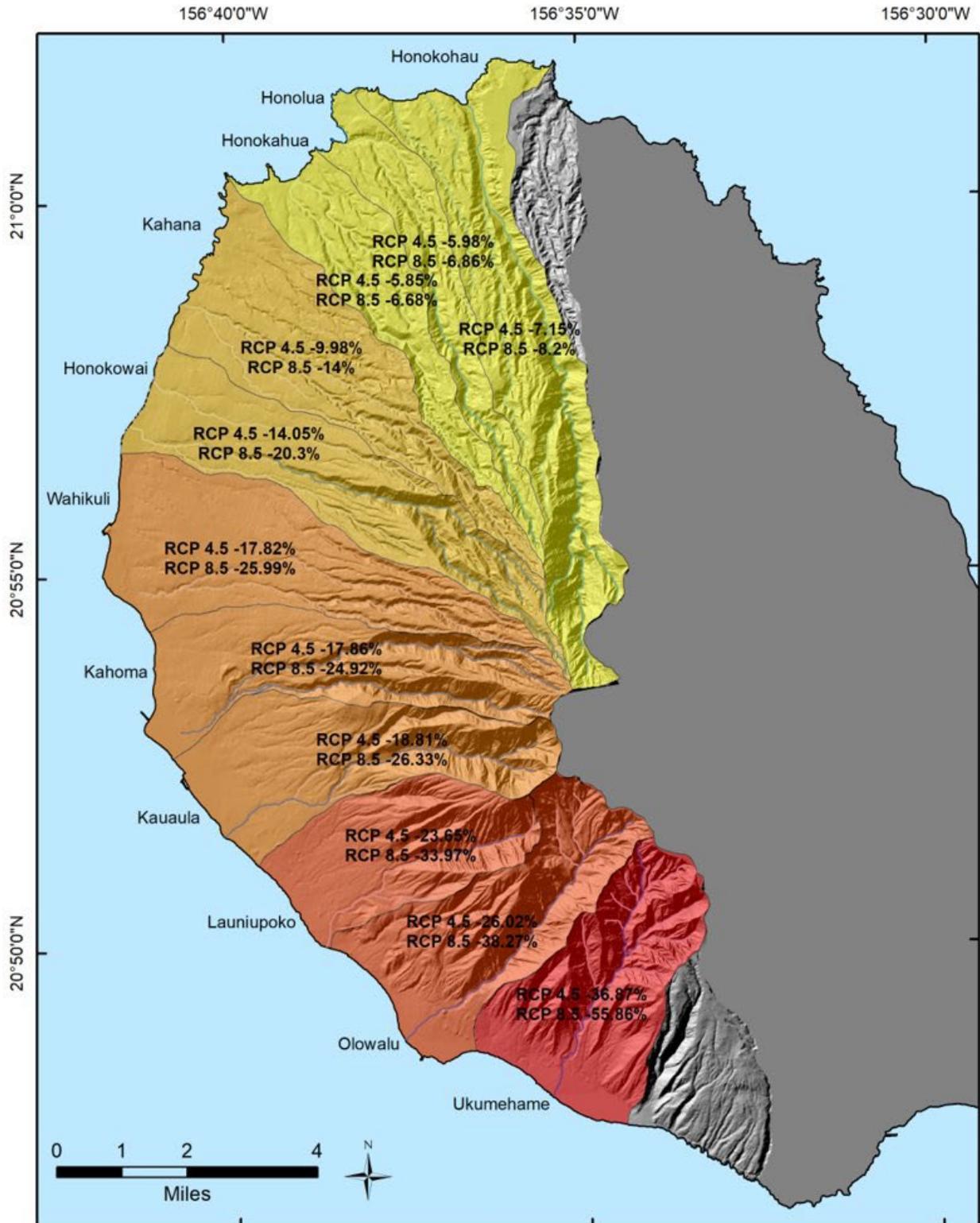
**Figure XX.** Annual, wet season (Nov-Apr) and dry season (May-Oct) rainfall trends for the 1920-2012 (A) and 1983-2012 (B) periods, Maui. Hashed line areas represent significant trend over the period. (with permission from Frazier and Giambelluca, 2017)



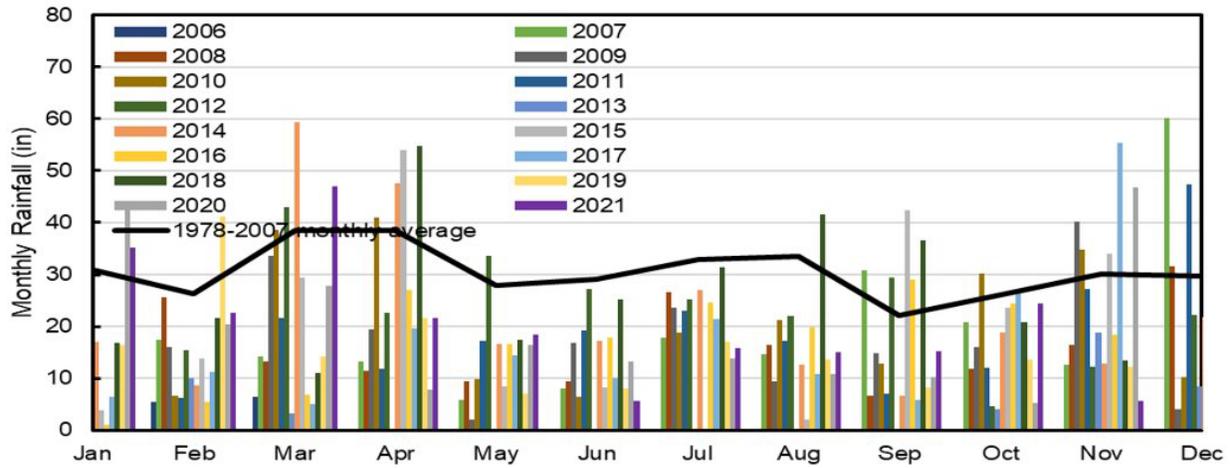
**Figure xx.** Mean annual total flow (million gallons per day, mgd) and mean annual baseflow (mgd) at USGS station 16620000 on Honokōhau Stream, West Maui.



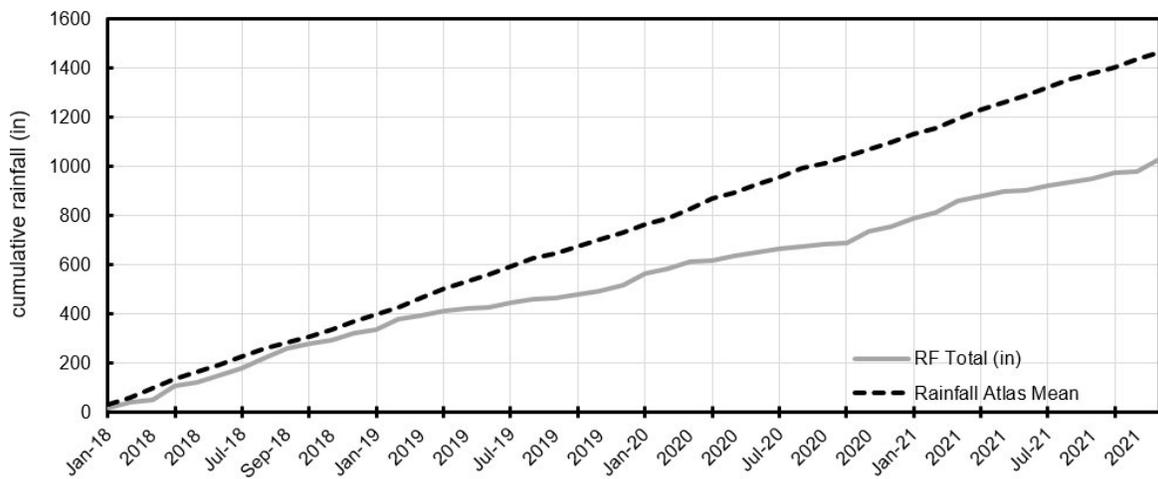
**Figure XX.** Rainfall Projections: Statistical Downscaling



**Figure XX.** Recent Trends in Rainfall on Pu‘u Kukui



**Figure XX.** West Maui 2018-present rainfall deficit



## 4.8.2 Ground-Water Recharge

### Availability of Groundwater High-level water

High-level groundwater occurs where water is impounded by dikes or perched on buried low-permeability horizons<sup>68</sup>. Dikes form vertical barriers of low-permeability rock behind which groundwater is stored in the intervening permeable lava. Dike compartments can increase the storage of an aquifer by impounding groundwater to hundreds or thousands of feet above sea level. Although conceptualized as “compartments”, regions of high permeability are not closed on all sides and dikes are generally leaky. Inflow into dikes starts as recharge from infiltration of high-

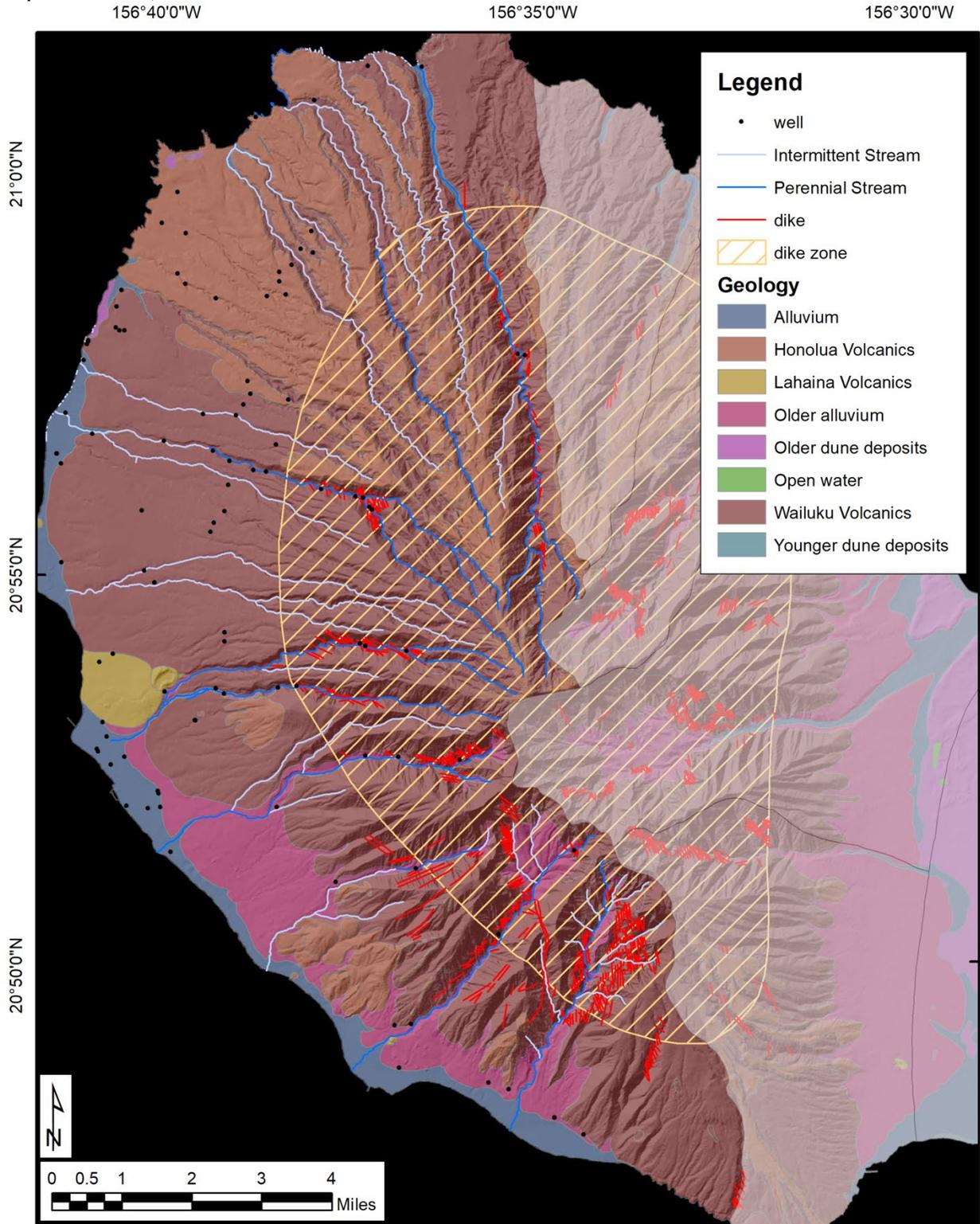
<sup>68</sup> USGS Scientific Investigations Report, 2015-5164. <https://pubs.er.usgs.gov/publication/sir20155164>



**Table xx.** Well number, USGS development tunnel number, aquifer system, receiving stream, elevation (ft), length (ft), and yield for development tunnels in West Maui; measurements from recent (2010-2022) USGS or CWRM site visits provided.  
[million gallons per day, mgd]

<b>well number</b>	<b>common name</b>	<b>Aquifer System</b>	<b>receiving stream</b>	<b>elevation (ft)</b>	<b>length (ft)</b>	<b>yield (mgd)</b>	<b>recent measurements (mgd)</b>
6-5134-001	Tunnel-14	Olowalu	Olowalu	1,710	3,000	0.00	
6-5136-001	Tunnel-15	Launiupoko	Launiupoko	1,425	1,320	0.10	0.00
6-5236-001	Tunnel-16	Launiupoko	Kaua'ula	2,920	656	2.00	--
6-5437-001	Tunnel-17	Launiupoko	Kahoma	1,923	2,500	dry	0.00
6-5437-002	Tunnel-18	Launiupoko	Kahoma	1,984	2,500	1.90	1.92
6-5436-001	Tunnel-19	Launiupoko	Kahoma	2,350	739	0.01	<0.01
6-5537-001	Tunnel-20a	Honokōwai	Honokōwai	1,700	1,250	2.00	1.93
6-5537-002	Tunnel-20b	Honokōwai	Honokōwai	1,600	1,050	0.50	0.50
6-5537-003	Tunnel-20c	Honokōwai	Honokōwai	1,650	--	dry	0.00
6-5735-001	Tunnel-21	Honokōhau	Honokōhau	880	720	1.35	0.65
6-5735-002	Tunnel-22	Honokōhau	Honokōhau	900	1,015	2.40	2.52

**Figure X.** Generalized geology, zone of high elevation dike intrusion, and wells for the Lahaina Aquifer Sector, Maui.

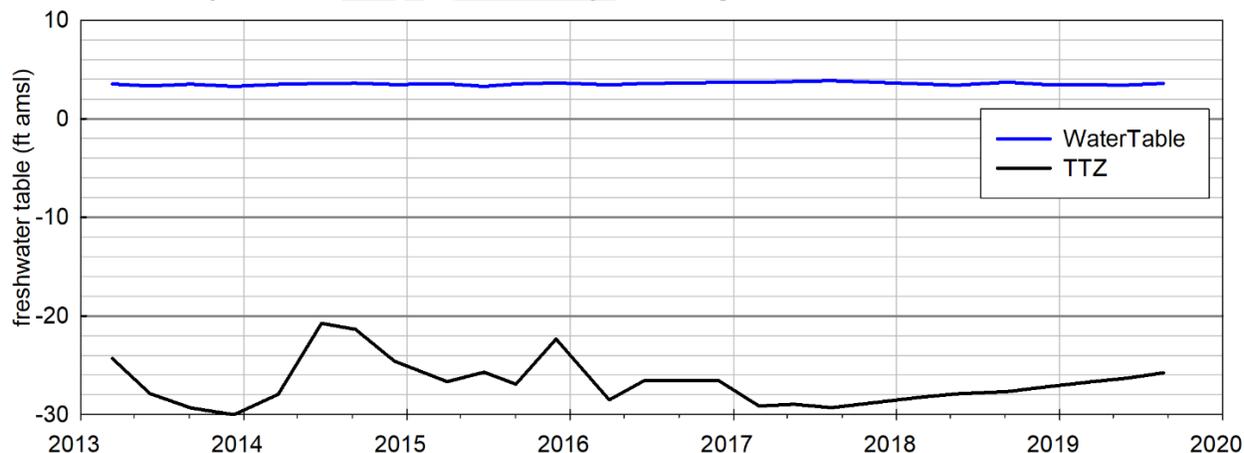


## Basal Aquifer

Much groundwater is stored in the basal aquifer found in the dike-free lava flows of the shield building phase of the volcano. This basal aquifer lens sits on the brackish transition zone, which then overlies saltwater. In the Honokōwai Aquifer System, CWRM staff have maintained a deep monitoring well (6-5739-003) to determine the elevations of the freshwater table, the top of the transition zone (TTZ) and the midpoint of the transition zone (MPTZ) of the aquifer over time. Since 2012, the water table has risen 0.11 ft, the TTZ has risen 25.77 ft, and the MPTZ has risen 16.54 ft (Figure XXX). The rise in the TTZ and MPTZ indicate a reduction in the depth of the freshwater lens which is the result of a long-term reduction in rainfall, a decline in irrigation water infiltrating the basal lens, an increase in saltwater intrusion into the basal aquifer, or a combination of the three. Overall, the basal lens is relatively thin, and vulnerable to saltwater intrusion by over pumping.

Aquifer recharge is dependent on rainfall patterns at daily, seasonal, and annual scales. As previously discussed, rainfall patterns have declined, often significantly, across West Maui (Figure XX [in rainfall section]). Projections of end-of-century climate patterns have been used to understand future trends in rainfall in West Maui<sup>70</sup>, and thus the potential for declines in aquifer recharge<sup>71</sup>. There is some disagreement between dynamical and statistical downscaling models used to predict rainfall for the RCP 4.5 and RCP 8.5 climate scenarios, with dynamical models suggesting rainfall in the Honokōhau and Honolua aquifer systems marginally increasing (i.e., less than 3%) and statistical models suggesting rainfall declining 7.3% to 9.5%. Overall, dynamical modelling produced more conservative estimates of end-of-century changes in rainfall and recharge (e.g.,  $\pm 5\%$ ) while statistical modelling produced more extreme results (e.g., -30- to 56%)

**Figure XX.** Elevation of the freshwater table and the top of the transition zone (TTZ) in the Māhinahina Deep Monitor Well from 2012 to present day, West Maui.



### 4.8.3 Ground-Water Withdrawals

<sup>70</sup> Elison Timm et al. 2015. *Journal of Geophysical Research: Atmospheres*, 120(1): 91-112.

<sup>71</sup> Mair, A., et al. 2019. Estimated groundwater recharge from a water-budget model incorporating selected climate projections, Island of Maui, Hawai'i. U.S. Geological Survey Scientific Investigations Report 2019-5064.

Current 12-month moving average ground water withdrawals, development tunnel discharge, entitled/authorized planned use, other permitted well capacity and their totals are provided in Table XX for the Aquifer System Areas in the Lahaina Aquifer Sector. Honokōwai and Launiupoko are exceeding SY.

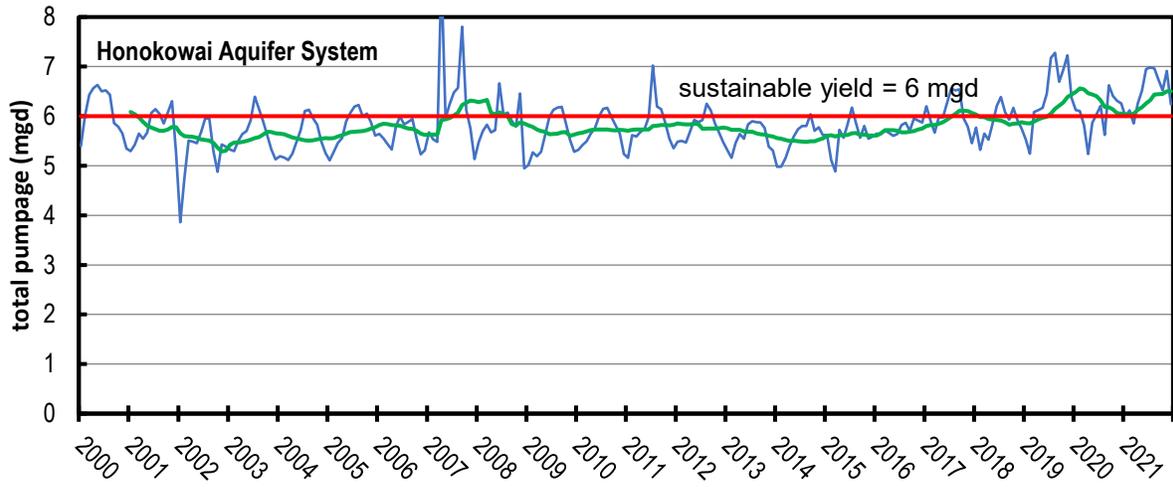
**Table xx.** Current (December 2021) 12-month moving average (MAV) reported pumpage and for aquifer systems in the Lahaina Aquifer Sector. development tunnel discharge and existing entitled/authorized planned use (APU) [million gallons per day, mgd]

Aquifer System	SY	2020 12-MAV	2021 12-MAV	Develop. tunnel discharge	APU*	total existing + APU	% SY	other perm. well capacity	total incl. other perm. well capacity	% SY
Ukumehame	2	0.042	0.065	0	1.08	1.145	57%	0	1.145	57%
Olowalu	2	0.082	0.069	0.1	0.003	0.167	8%	0.065	0.167	8%
<b>Launiupoko</b>	<b>7</b>	<b>1.637</b>	<b>1.303</b>	<b>3.91</b>	<b>1.036</b>	<b>6.249</b>	<b>89%</b>	<b>1.433</b>	<b>7.682</b>	<b>110%</b>
<b>Honokōwai</b>	<b>6</b>	<b>3.48</b>	<b>4.008</b>	<b>2.5</b>	<b>2.533</b>	<b>9.041</b>	<b>151%</b>	<b>0</b>	<b>9.041</b>	<b>151%</b>
Honolua	8	2.131	2.534	0	1.969	4.503	56%	0	4.503	56%
Honokōhau	9	0	0	3.75	0.001	3.751	42%	0	3.751	42%

\*Based on email and excel table from County of Maui DWS September 3, 2020. See also Section 4.9 Authorized Planned Use.

The sustainable yield of the Honokōwai Aquifer is 6.0 mgd. As of December 2021, the average withdrawals of ground water from the Honokōwai Aquifer are 4.008 mgd. These values do not consider the withdrawal of approximately 2.5 mgd of ground water from development tunnels. In addition, DHHL has an approved water reservation of 770,000 gpd from the Honokōwai Aquifer that is included in the authorized planned use total of 2.533 mgd that counts against sustainable yield. Reported total ground water withdrawals and 12-month moving average (12-MAV) for the Honokōwai Aquifer are provided in Figure XX.

**Figure XX.** Current monthly pumpage (blue line) and 12-month moving average (green line) from the Honokōwai Aquifer System, including ground water development tunnel discharge, (mgd).



DRAFT

4.8.3.1 Ukumehame Aquifer Well List

60206 Ukumehame													
State Well No.	Well Name	Old Well No.	Well Owner/Operator	Well Type	Year Drilled	Well depth (ft)	Ground Elevation	Initial Head (ft)	Initial Temp (F)	Test Chloride (mg/L)	Installed Pump Capacity (mgd)	12 MAV (mgd)	Type of Use
6-4834-001	Environmental		State of Hawaii, DOD, Hawaii Army National Guard, HIARNG	ROT	2003	35	27	2.07			0.101	0.000	UNU
6-4835-001	Ukumehame-Pump P		State of Hawaii	SHF	1934	143	79			467	4.694	0.000	UNU
6-4835-002	Sugar Way 1		Uka LLC	ROT	2003	152	141	4.86		380	0.036	0.000	UNU
6-4835-003	Ukumehame-Sugar Way 2		Uka LLC	ROT	2004	90	63.51	2.98	78.6	20	0.065	0.033	MUNPR
6-4835-004	Ukumehame 3		Uka LLC	ROT	2005	73	61.97	2.73	79.5		0.065	0.033	MUNPR

4.8.3.2 Olowalu Aquifer Well List

60205 Olowalu													
State Well No.	Well Name	Old Well No.	Well Owner/Operator	Well Type	Year Drilled	Well depth (ft)	Ground Elevation	Initial Head (ft)	Initial Temp (F)	Test Chloride (mg/L)	Installed Pump Capacity (mgd)	12 MAV (mgd)	Type of Use
6-4837-001	Olowalu Pump O	11-SH	Olowalu Elua Associates, LLC	SHF	1905	20	20	2		187	2.995	0.000	UNU
6-4936-001	Olowalu Elua		Olowalu Mauka Condo - Condo Master	ROT	1999	230	205	4.79		20	0.36	0.067	IRRLA
6-4936-003	McGee		James B. & Nancy E. McGee	ROT	2021	240	219	9	76.4		0.065	0.004*	IRRLA
6-4937-001	Olowalu Pump N	10-SH	Olowalu Elua Associates, LLC	SHF	1933	300	165	3.5			5.198	0.000	UNU
6-5035-001	Olowalu Tunnel	14-TU	Pioneer Mill Company, LLC	TUN	1912		775					0.000	ABNSLD
6-5134-001	Olowalu Tun	13-TU	Vincent H. Rodrigues	TUN			1710	1710				0.000	IRR

\*No 12-MAV available as this is a new well, average pumpage listed.

### 4.8.3.3 Launiupoko Aquifer Well List

60204 Launiupoko													
State Well No.	Well Name	Old Well No.	Well Owner/Operator	Well Type	Year Drilled	Well depth (ft)	Ground Elevation	Initial Head (ft)	Initial Temp (F)	Test Chloride (mg/L)	Installed Pump Capacity (mgd)	12 MAV (mgd)	Type of Use
6-5136-001	Launiupoko Tun	15-TU	Pioneer Mill Company, LLC	TUN			1425	1425				0.000	ABN
6-5137-001	Launiupoko 2		Launiupoko Water Company, Inc.	ROT	2000	865	827	5.49		50	0.144	0.001	MUNPR
6-5138-001	Launiupoko 1		Launiupoko Water Company, Inc.	PER	1979	677	633	4.61		170	0.72	0.372	MUNPR
6-5138-002	Makila Kai		Sea Grace LLC	ROT	2020	344	288	6.51	73	120	0.554	0.000	AGRCP
6-5138-003	Duvall		Craig A. Duvall Trust	ROT	2019	552.1	517.1	4.33	73		0.036	0.012	DOM
6-5139-001	LIC 1		Launiupoko Irrigation Co., Inc.	ROT	2017	416	376	5.67	77	35	0.72	0.046	AGR
6-5139-002	McDonald 1		Mark McDonald	ROT	2019	420	380.19	4.94	73	76	0.122	0.024	AGRCP
6-5139-003	Strombeck		Fetsch Trust	ROT	2019	340	316.85	4.29	74		0.065	0.017	IRRLA
6-5140-001	Puamana 1		Puamana Community Association	ROT	1987	28.1	8.57	3.84	69	283	0.138	0.046	IRRLA
6-5140-002	Puamana 2		Puamana Community Association	ROT	1987	56	11				0.138	0.025	IRRLA
6-5236-001	Kauaula Tunnel	16-TU	Makila Land Company, LLC	TUN			2920	2920				0.000	UNU
6-5237-001	Kauaula TH 1		State of Hawaii, DLNR Land Division Oahu, DLNR-LD	ROT	1970	356	1530					0.000	OBS
6-5237-002	Kauaula TH 2		State of Hawaii, DLNR Land Division Oahu, DLNR-LD	ROT	1970	317	1800					0.000	OBS
6-5238-001	Launiupoko 3		Launiupoko Water Company, Inc.	ROT	2003	799	751	6.17		18	0.72	0.120	MUNPR
6-5240-001	Mill Shaft Pump C	7-SH	Pioneer Mill Company, LLC	SHF	1897	39	34			680	10	0.000	ABN
6-5240-002	Lahaina Shaft-Pump B	8-SH	Wainee Land and Homes, LLC	SHF	1897	31	30				2	0.000	UNU
6-5240-003	Lahaina Shaft-Pump A	9-SH	Wainee Land and Homes, LLC	SHF	1897	31	30				10	0.002	INDMI
6-5240-004	Lahaina	290-	State of Hawaii		1956	55	10	4		3140	0.22	0.000	ABNLOS

6-5240-005	Lahaina UMC		Lahaina United Methodist Church	ROT	1989	78	8			1200	0.04	0.002	IRRLA
6-5240-007	Lahaina Recreation Center #1		County of Maui Dept. of Parks and Recreation, Central Maui	ROT	2002	48	40.61	6.76		340	0.158	0.035	IRRPA
6-5240-008	Lahaina Recreation Center #2		County of Maui Dept. of Parks and Recreation, Central Maui		1986	45					0.144	0.046	IRRPA
6-5240-009	Kahoma Irr		Opukea at Lahaina	ROT	2006	58	29	3.5		820	0.216	0.010	IRRLA
6-5241-001	Lahaina Surf		Hale Mahaolu Lahaina Surf Inc.	ROT	1985	28					0.05	0.004	IRRLA
6-5338-001	Kanaha TH 1		State of Hawaii, DLNR Land Division Oahu, DLNR-LD	ROT	1970	750	1070	431				0.000	OBS
6-5338-002	Kanaha TH 2		State of Hawaii, DLNR Land Division Oahu, DLNR-LD	ROT	1970	597	1257	820				0.000	OBS
6-5339-001	Waipuka 1	291-	Maui Department of Water Supply, MDWS	PER	1962	482	440	2.6		180	0.324	0.181	MUNCO
6-5339-002	Waipuka 2	292-	Maui Department of Water Supply, MDWS	PER	1963	498	441	1.8		240	0.36	0.138	MUNCO
6-5339-003	Kanaha 1		Maui Department of Water Supply, MDWS	ROT	1971	642	590	2.5		265	0.36	0.098	MUNCO
6-5339-004	Kanaha 2		Maui Department of Water Supply, MDWS	PER	1974	749	654	3.2		60	0.36	0.124	MUNCO
6-5340-001	Kahoma Pump M	5-SH	Kahoma Land LLC	SHF	1933	323	322				10.08	0.000	UNU
6-5341-001	Wahikuli Pump L	6-SH	DOF IV Lahaina LLC	SHF	1897	27	26				5.04	0.000	UNU
6-5341-002	Front St. House		William Dorbush (Front Street Affordable Partners)	DUG		35	13	0.52		2360	0.147	0.000	UNU
6-5436-001	Kahoma Tun 3	19-TU	Kahoma Ranch	TUN			2350	2350				0.000	ABN
6-5437-001	Kahoma Tun 1	17-TU	Kahoma Ranch	TUN			1923					0.000	UNU
6-5437-002	Kahoma Tun 2	18-TU	Kahoma Ranch	TUN			1984	1984				0.000	AGRCP

4.8.3.4 Honokōwai Aquifer Well List

60203 Honokōwai													
State Well No.	Well Name	Old Well No.	Well Owner/Operator	Well Type	Year Drilled	Well depth (ft)	Ground Elevation	Initial Head (ft)	Initial Temp (F)	Test Chloride (mg/L)	Installed Pump Capacity (mgd)	12 MAV (mgd)	Type of Use
6-5439-001	Wahikuli 1		Kahoma Land LLC	ROT	1992	1115	1055			12		0.000	DOM
6-5439-002	Wahikuli 2		State of Hawaii Hawaii Housing Finance & Development Corporation, HHFDC	ROT	1993	1120	1055			30		0.000	UNU
6-5440-001	Wahikuli Irr		State of Hawaii Hawaii Housing Finance & Development Corporation, HHFDC	PER	1993	162	148					0.010	IRRLA
6-5441-002	Lahaina Civic Center		County of Maui Dept. of Parks and Recreation, Central Maui	PER	1993	97				540		0.062*	IRRLA
6-5537-001	Honokowai Tun 1	20-A TU	Kaanapali Land Management Corp.	TUN			1700					0.000	AGRCP
6-5537-002	Honokowai Tun 2	20-B TU	Kaanapali Land Management Corp.	TUN			1600					0.000	AGRCP
6-5537-003	Honokowai Tun 3	20-C TU	Kaanapali Land Management Corp.	TUN			1600					0.000	AGRCP
6-5539-001	Kaanapali P-1		Hawaii Water Service Company, Inc., Kaanapali	PER	1990	985	924				0.576	0.438	MUNPR
6-5539-002	Kaanapali P-2		Hawaii Water Service Company, Inc., Kaanapali	PER	1991	990	927			70	0.72	0.027	MUNPR

6-5539-003	Kaanapali P-3		Hawaii Water Service Company, Inc., Kaanapali	ROT	2008	988	943	6		65	0.72	0.701	MUNPR
6-5540-001	Puukoolii		Kaanapali Land Management Corp.		1968	472	444			250	1.5	0.093	IRRG
6-5540-002	Hahakea 1		Kaanapali Land Management Corp.	ROT	1971		450					0.000	ABNLOS
6-5540-003	Hahakea 2		Hawaii Water Service Company, Inc., Kaanapali		1971	524	504		73.76		0.576	0.292	MUNPR
6-5541-001	Hahakea Pump G	4-SH	Kaanapali Land Management Corp.	SHF	1923	12	14					0.000	UNU
6-5637-001	Honokowai TH 1		AMFAC	ROT	1964	170	1450					0.000	OBS
6-5637-002	Honokowai TH 2		AMFAC	ROT	1964	301	1350					0.000	OBS
6-5637-003	Honokowai TH 3		AMFAC	ROT	1964	175	1450					0.000	OBS
6-5637-004	Honokowai		AMFAC	ROT	1964	90	1450					0.000	OBS
6-5637-005	Honokowai A	307-	Pioneer Mill Company, LLC	ROT	1965	165	1450				1.728	0.000	UNU
6-5638-001	Honokowai TH 6		AMFAC	ROT	1966	252	776					0.000	OBS
6-5638-002	Honokowai TH 7		AMFAC	ROT	1966	314	1169					0.000	OBS
6-5638-003	Honokowai B		Hawaii Water Service Company, Inc., Kaanapali	PER	1976	895	852	5.43		55	1.29	0.000	MUNPR
	Mahinahina		Maui Department of Water Supply, MDWS	ROT	2014	1595	1313.57	44.2	68			0.000	UNU
6-5639-001	Honokowai TH 5		AMFAC	ROT		580	560					0.000	OBS
6-5639-002	Honokowai TH 8		AMFAC	ROT		671	652					0.000	OBS
6-5639-004	DHHL Honokowai 1		MDWS	ROT	2010	993	926			13		0.000	UNU
6-5640-001	Honokowai Pump R	36-SH	Pioneer Mill Company, LLC	SHF	1952		300				5.04	0.000	UNU
6-5641-001	Kaanapali-Pump D	3-SH	Pioneer Mill Company, LLC	SHF	1897	28	27				14.4	0.000	UNU
6-5641-002	Honokowai Pump F	2-SH	Pioneer Mill Company, LLC	SHF	1921	65	65				5	0.000	UNU

6-5641-003	KOR Lot 3 Saltwater		Vistana Signature Experiences, VSE Pacific, Inc.	ROT	2015	300	11.87	1.87	74		3.456	0.000	INDEL
6-5641-004	KOR Lot 3 Saltwater Backup		Vistana Signature Experiences, VSE Pacific, Inc.	ROT	2015	300	11.87	1.87	74		3.456	0.000	INDEL
6-5738-001	Kaanapali P-5		Hawaii Water Service Company, Inc., Kaanapali	PER	1982	985	934			16	1.296	1.180	MUNPR
6-5739-001	Kaanapali P-4		Hawaii Water Service Company, Inc., Kaanapali	PER	1982	922	868			107	1.008	0.396	MUNPR
6-5739-002	Kaanapali P-6		Hawaii Water Service Company, Inc., Kaanapali	PER	1982	992	945			33	1.498	0.207	MUNPR
6-5739-003	Mahinahina Deep Monitor		Commission on Water Resource Management, CWRM	ROT	2001	1268	664					0.000	OBSDM
6-5739-004	Kaanapali P-5A		Hawaii Water Service Company, Inc., Kaanapali	ROT	2009	952	912			101	0.648	0.563	MUNPR
6-5741-001	McDonald		Levy Family Trust	ROT	2000	60	33.67		72	800	0.057	0.003	IRRLA
6-5741-002	Honokowai-Kosaka		Aston at Papakea Resort			25						0.000	ABNSLD
6-5840-002	Kahana Ridge		Kahana Ridge Association, Inc	ROT	1998	60	32			201	0.288	0.026	IRRLA
6-5840-003	Kahana Ranch		Lars Wernars	ROT	2000	186	161			900	0.055	0.007	IRRLA
6-5840-004	Kahana Betsill		Villas at Kahana Ridge	ROT	2003	135	118			740	0.432	0.008	IRRLA
6-5840-005	Kahana-Kurose		James Kurose	ROT	2003	126	118			580	0.057	0.000	AGRON
6-5840-006	Kahana-Delaney		William Delaney	ROT	2003	98	81			600	0.086		IRRLA
6-5841-001	Tmk 4-3-09-2	310-	Noelani - Condo Master	ROT	1956	53	15					0.000	ABNLOS
6-5841-002	Tmk 4-3-09-3		Lloyd J. White Jr. ETAL	ROT	1963	27	6					0.000	ABNLOS
6-5841-003	Shoemaker		Lloyd J. White Jr. ETAL	ROT	1999	50	34			1400	0.058	0.005	IRRLA

\*No 12-MAV available as this is a new well, average pumpage listed.

4.8.3.5 Honolulu Aquifer Well List

60202 Honolulu													
State Well No.	Well Name	Old Well No.	Well Owner/Operator	Well Type	Year Drilled	Well depth (ft)	Ground Elevation	Initial Head (ft)	Initial Temp (F)	Test Chloride (mg/L)	Installed Pump Capacity (mgd)	12 MAV (mgd)	Type of Use
6-0037-001	Stoops		David Stoops	ROT	2007	150					0.046	0.000	DOM
6-0038-001	Kapalua Brennan J		Chu Young Lee	ROT	2005	54				520	0.072	0.006	DOM
6-0040-001	Napili Bay	320-	Napili Lani - Condo Master	ROT	1956	60	15				0.07	0.000	ABNLOS
6-5738-002	Kahana		MDWS	ROT	2017	1378	1317	7.37	70	60		0.000	UNU
6-5838-001	Napili A		MDWS	ROT	1971	893	860	4.65		140	1	0.018	MUNCO
6-5838-002	Napili B		MDWS	ROT	1972	915	883	6.3		36	1.008	0.499	MUNCO
6-5838-003	Honokahua A		MDWS	ROT	1978	942	911	6.83		78	0.71	0.000	MUNCO
6-5838-004	Napili C		MDWS	ROT	1979	919		5.8		34	1.43	0.835	MUNCO
6-5839-001	Alaeloa Shaft	1-SH	Baldwin Packer	SHF	1934	245	244				0.01	0.000	IRR
6-5839-002	Alaeloa	318-1	State of Hawaii, DLNR Land Division Oahu, DLNR-LD	PER	1967	525	491	1.5		180		0.000	UNU
6-5840-001	Alaeloa	318-	State of Hawaii, DLNR Land Division Oahu, DLNR-LD	ROT	1964	274	257	2.69		352		0.000	OBS
6-5938-001	Honokahua B		MDWS	ROT	1987	966	946	8.3		24	1.008	0.591	MUNCO
6-5938-002	Kapalua 1		Maui Land & Pineapple Company, Inc, MLPC	PER	1989	822	764	6.8		17	1.152	0.297	MUNPR
6-5938-003	Kapalua 2		Maui Land & Pineapple Company, Inc, MLPC	PER	1991	813	771	5.4		20	1.152	0.277	MUNPR

6-5938-004	Kapalua 3B		Maui Land & Pineapple Company, Inc, MLPC	PER	1998	859	788	4.76		59		0.000	UNU
6-5939-001	Medeiros		Herb Nishijima (Kent I. Nishijima Trust)		1980							0.000	ABNLOS
6-5939-002	Napili Park		County of Maui Dept. of Parks and Recreation, Central Maui	ROT	2000	195	156	0.79		580	0.094	0.012	IRRPA
6-5940-001	Napilihau		Napilihau Community Association	PER	1971	50	38					0.000	UNU

DRAFT

4.8.3.6 Honokōhau Aquifer Well List

60201 Honokōhau													
State Well No.	Well Name	Old Well No.	Well Owner/Operator	Well Type	Year Drilled	Well depth (ft)	Ground Elevation	Initial Head (ft)	Initial Temp (F)	Test Chloride (mg/L)	Installed Pump Capacity (mgd)	12 MAV (mgd)	Type of Use
6-0136-001	McCarty		WB 8607 Honapiilani LLC	ROT	2009	40					0.012	0.000	DOM
6-0137-001	Honokohau		Rennie K Deprue		1970	140	100			300		0.000	
6-5735-001	Honokohau Tunnel	21-TU	Baldwin Packer	TUN			880	880				0.000	IRR
6-5735-002	Honokohau Tunnel	22-TU	Baldwin Packer	TUN			900	900				0.000	AGRCP

DRAFT

#### 4.8.3.7 Pending Well Applications

**Table XX.** Current well applications pending completion in the Lahaina ASA

Aquifer System/Well Number	Well Name	Well Owner/Operator	Proposed capacity (mgd)	Proposed daily pumpage (gpd)	Well Use
<b>Ukumehame</b>					
6-4834-002	UKA-4	Ukumehame Water Association, Inc./Uka LLC	0.058	30,000	MUNPR
6-4834-003	UKA-5	Ukumehame Water Association, Inc./Uka LLC	0.504	250,000	MUNPR
<b>Total</b>			<b>3.058</b>	<b>280,000</b>	
<b>Olowalu</b>					
6-4936-004	Olowalu 2	Olowalu Water Company LLC	0.36	360,000	MUN
6-4936-005	Kahili*	Francis Cornelis & Nadja Cornelis Koole	0.065	9,000	DOM
<b>Total</b>			<b>0.425</b>	<b>369,000</b>	
<b>Total *</b>			<b>0.065</b>	<b>9,000</b>	
<b>Launiupoko</b>					
6-5037-001	Jackson Rancheria*	Larry White (Jackson Rancheria Development Corp)	0.108	75,000	AGRCP
6-5038-001	Rock N Horse*	Ian Hollingsworth	0.115	100,000	DOM
6-5137-002	Maria Lynn Moyer Memorial*	Timothy & Harline Moyer Trust	0.058	5,000	DOM
6-5138-004	Mitchell*	Mitchell Family Trust	0.072	24,000	IRR
6-5138-005	LIC-2*	LIC	0.72	700,000	AGR
6-5139-004	Rogers*	Matthew Rogers (Kahalawai Holdings LLC)	--**	--**	--**
6-5239-001	Ku'ia Estate*	Gunars Valkirs (Maui Kuia Estate Chocolate Inc.)	0.36	270,000	AGRCP
<b>Total</b>			<b>1.433</b>	<b>1174,000</b>	
<b>Total *</b>			<b>1.433</b>	<b>1174,000</b>	
<b>Honokōwai</b>					
6-5639-004	DHHL Honokowai	Maui DWS/DHHL	1.008	680,000	MUN
<b>Total</b>			<b>1.008</b>	<b>680,000</b>	
<b>Honolua</b>					
6-5839-005	Pulelehua 1	Maui Oceanview, LP	0.864	280,000	MUN
6-5839-006	Pulelehua 2	Maui Oceanview, LP	0.864	280,000	MUN
<b>Total</b>			<b>1.728</b>	<b>560,000</b>	

\*Other permitted well capacity (individual or irrigation wells) not accounted for in authorized planned use

\*\*Not provided in well application

#### 4.8.4 Water Use Reporting

The owner or operator of a well is required to report their monthly water use to the Commission whether it is used or not. However not all owners are compliant, particularly in the Honokōwai Aquifer System Area, which already exceeds its SY. This makes it difficult for the Commission to monitor and account for how much water there is. The compliance rate of water use reporting is shown in Table xx.

**Table xx.** Current (2022) total number of wells, number of wells reporting, total number of production wells, number of production wells reporting, percent of wells reporting, and percent of production wells reporting for the Lahaina Aquifer Sector.

Aquifer system	# of wells (incl. OBS and UNU)	# of wells reporting	# of production wells	# of production wells reporting	% of wells reporting	% of production wells reporting
Honokōhau	4	0	3	0	0%	0%
Honolua	16	9	11	8	53%	72.7%
Honokōwai	42	28	25	19	67%	76%
Launiupoko	31	22	21	19	71%	90.5%
Olowalu	5	4	3	3	80%	100%
Ukumehame	5	4	2	2	80%	100%

**Table XX.** Overview of total wells in Lahaina ASA by usage code.

Usage Code*	Honokōhau	Honolua	Honokōwai	Launiupoko	Olowalu	Ukumehame	TOTAL
ABNSLD			1		1		2
ABN				3			3
ABNLOS		2	3	1			6
AGR	1		4	4			9
DOM	1	2	1	1			5
IND	1		2	1			4
IRR		2	9	8	3		22
MIL							0
MUN		7	9	7		2	25
OBS		1	9	4			14
OTH							0
UNU		4	8	6	2	3	23
NONE	1						1
<b>TOTAL</b>	<b>4</b>	<b>18</b>	<b>46</b>	<b>35</b>	<b>6</b>	<b>5</b>	<b>114</b>
<b>Total (w/o ABNs)</b>	<b>4</b>	<b>16</b>	<b>42</b>	<b>31</b>	<b>5</b>	<b>5</b>	<b>103</b>
<b>Non-Production</b>	<b>1</b>	<b>5</b>	<b>17</b>	<b>10</b>	<b>2</b>	<b>3</b>	<b>38</b>
<b>Production</b>	<b>3</b>	<b>11</b>	<b>25</b>	<b>21</b>	<b>3</b>	<b>2</b>	<b>65</b>

\*Usage Codes: ABNSLD abandoned and sealed, ABN abandoned, ABNLOS abandoned and lost, AGR agricultural, DOM domestic, IND industrial, IRR irrigation, MIL military, MUN municipal, OBS observation, OTH other, UNU unused

For the most part, Commission staff understands the current status of most wells, whether they are pumping, not in use, or are lost. There are a few wells with an unknown status and the well owners/operators have ignored the Commission’s out-reach program. These include two in the Honokōhau Aquifer System, one in the Honokōwai Aquifer System, and one in the Launiupoko Aquifer System. There are a number of old test holes listed as observation wells, eight in the Honokōwai Aquifer System and four in the Launiupoko Aquifer System, that staff need to verify their existence and could be potentially utilized in our network of monitoring wells on island. In addition, staffs need to visit an old shaft and two DLNR wells in the Honolulu Aquifer System to verify their current condition.

#### 4.8.5 Maximum Permitted Well Capacity

The maximum permitted well capacity describes the amount of water that the well is capable of pumping in a day. Most domestic well users only pump water for a limited amount of time per day until their need is met. Municipal wells are pumping for many hours a day and are closer to reaching their maximum pump capacity, especially in times of drought and higher water demand. Maximum permitted pump capacity is an important data set to estimate potential water uses when wells are not reporting.

**Table XX.** Maximum Permitted Pump Capacity by Aquifer System Area

Aquifer System Area	Maximum Pump Capacity (mgd)	SY (mgd)	Installed Pump Capacity as % of SY
Ukumehame	4.961	2	248%
Olowalu	8.618	2	430%
Launiupoko	42.856	7	612%
Honokōwai	43.945	6	732%
Honolulu	7.752	8	97%
Honokōhau	0.012	9	0.001%

Some of the large capacities identified include all of the former sugar skimming wells, most of which are now unused (Table XX). Skimming wells are mine-like shafts to the basal water table with one of more infiltration tunnels skimming the fresh water off the underlying saltwater. The wells that yielded excessively large volumes of water and also the had highest salt content.<sup>72</sup> Most of the skimming wells in the Lahaina ASA are unused with non-functioning pump equipment and pose a safety and contamination hazard.

<sup>72</sup> Stearns, H.T., 1942, General geology and ground-water resources of the island of Maui, Hawaii: Hawaii (Terr.) Division of Hydrography Bulletin 7, p. 127 <https://pubs.usgs.gov/misc/stearns/Maui.pdf>

**Table XX.** Skimming Wells/Shafts by Aquifer System Area

<b>Aquifer System/Well Number</b>	<b>Well Name</b>	<b>Well Owner/Operator</b>	<b>Year Drilled</b>	<b>Installed Capacity (mgd)</b>	<b>Type of Use</b>
<b>Honolua</b>					
6-5839-001	Alaeloa Shaft	Baldwin Packer	1934	0.010	IRR
<b>Total</b>	<b>1</b>			<b>0.010</b>	
<b>Honokōwai</b>					
6-5541-001	Hahakea Pump G	Kaanapali Land Management Corp.	1923		UNU
6-5640-001	Honokowai Pump R	Pioneer Mill Co., LLC	1952	5.040	UNU
6-5641-001	Kaanapali Pump D	Pioneer Mill Co., LLC	1897	14.010	UNU
6-5641-002	Honokowai Pump F	Pioneer Mill Co., LLC	1921	5.000	UNU
<b>Total</b>	<b>4</b>			<b>24.440</b>	
<b>Launiupoko</b>					
6-5240-001	Mill Shaft C	Pioneer Mill Co., LLC	1897	10.000	ABN*
6-5240-002	Lahaina Shaft-Pump B	Wainee Land and Homes, LLC	1897	2.000	UNU
6-5240-003	Lahaina Shaft-Pump A	Wainee Land and Homes, LLC	1897	10.000	INDMI
6-5340-001	Kahoma Pump M	Kahoma Land LLC	1933	10.080	UNU
6-5341-001	Wahikuli Pump L	Kaanapali Land Management Corp.	1897	5.040	UNU
<b>Total</b>	<b>4</b>			<b>37.120</b>	
<b>Olowalu</b>					
6-4837-001	Olowalu Pump O	Olowalu Assoc., LLC	Elua 1905	2.995	UNU
6-4937-001	Olowalu Pump N	Olowalu Assoc., LLC	Elua 1933	5.198	UNU
<b>Total</b>	<b>2</b>			<b>8.193</b>	
<b>Ukumehame</b>					
6-4835-001	Ukumehame-Pump P	State of Hawai‘i	1934	4.694	UNU
<b>Total</b>	<b>1</b>			<b>4.694</b>	
<b>Total Lahaina ASA</b>	<b>13</b>			<b>74.457</b>	

\*Potential unsealed parts remaining

Recently, the owner of Lahaina Shaft-Pump A (State Well No. 6-5240-003), Wainee Land and Homes, demolished the well houses of Lahaina Shaft-Pump A and B (State Well No. 6-5240-002). See photos in Figure XX. A new 700 gpm pump was installed in Pump A, which would have a maximum daily production of 1 mgd. Previously since 1942, Pump A has had a 7,000 gpm pump installed with a maximum capacity of 10 mgd and Pump B had a 1,400 gpm pump installed with maximum capacity of 2 mgd. Commission staff notified the well owner in September 2021 that a pump installation permit would be required as well as a pump test to show that there are no adverse

impacts to the environment and other existing water users. On April 20, 2022, well owner was required to develop a plan to enclose well heads, run a pump which needs to adhere to added conditions, and report chlorides and quantities pumped. See [Appendix K](#). The well owner was also reminded that prior to approval of the pump installation permit, no water for consumptive uses must be pumped. It is staff's understanding that a replacement would be also requested for Pump B, but it is not known at this time how much quantity will be requested to be withdrawn in total for the Lahaina Shaft Pumps A & B, and whether or not they would be run at the same time. This construction and proposed water use are part of the PUC Docket 2020-0083 as Wainee Land and Homes has an easement agreement with LIC.

**Figure XX.** Lahaina Shaft-Pump A and B Site Visit Photos November 18, 2021

**6-5240-003 Lahaina Shaft-Pump A**



Shaft pump house looking directly SE (May 2018)



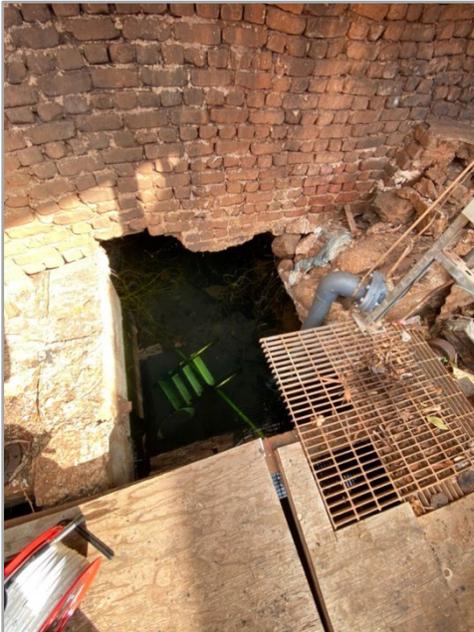
Opened shaft pump house looking directly SW



Operating motor and pump looking N



Opened shaft pump house, note piping looking directly S

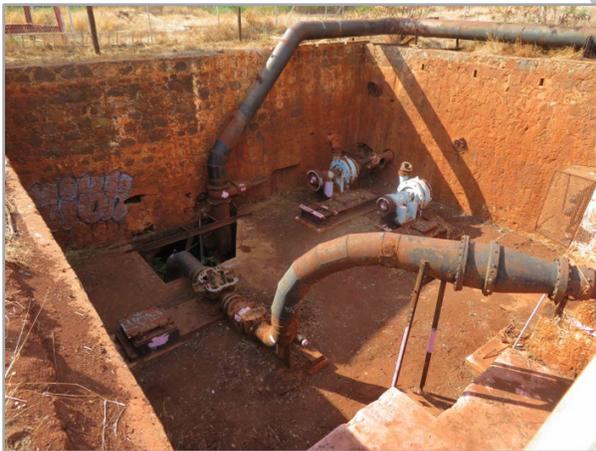


Tunnel at East side of shaft pump house.



Shaft located between the two pump houses, opened to surface exposure looking NW

#### 6-5240-002 Lahaina Shaft- Pump B



Within pump house, note piping and old motors



Within pump house trash in tunnel at West end looking directly SW

#### 4.8.6 Water Levels

#### Mahinahina Deep Monitoring Well (“DMW”) (6-5739-003)

Beginning in 2001, CWRM staff has monitored on quarterly basis, the Mahinahina DMW (6-5739-003) located approximately two miles inland and 1.4 miles southeast of the Ka‘ānapali Airport, in the Honokōwai Aquifer. Figure **XX** illustrates the most recent Conductivity, Temperature, and Depth (“CTD”) profile measured in this well on November 18, 2021. The profile

shows a typical basal aquifer lens, with fresh water overlying a brackish water transition zone, which in turn, overlies the brackish/sea water interface.

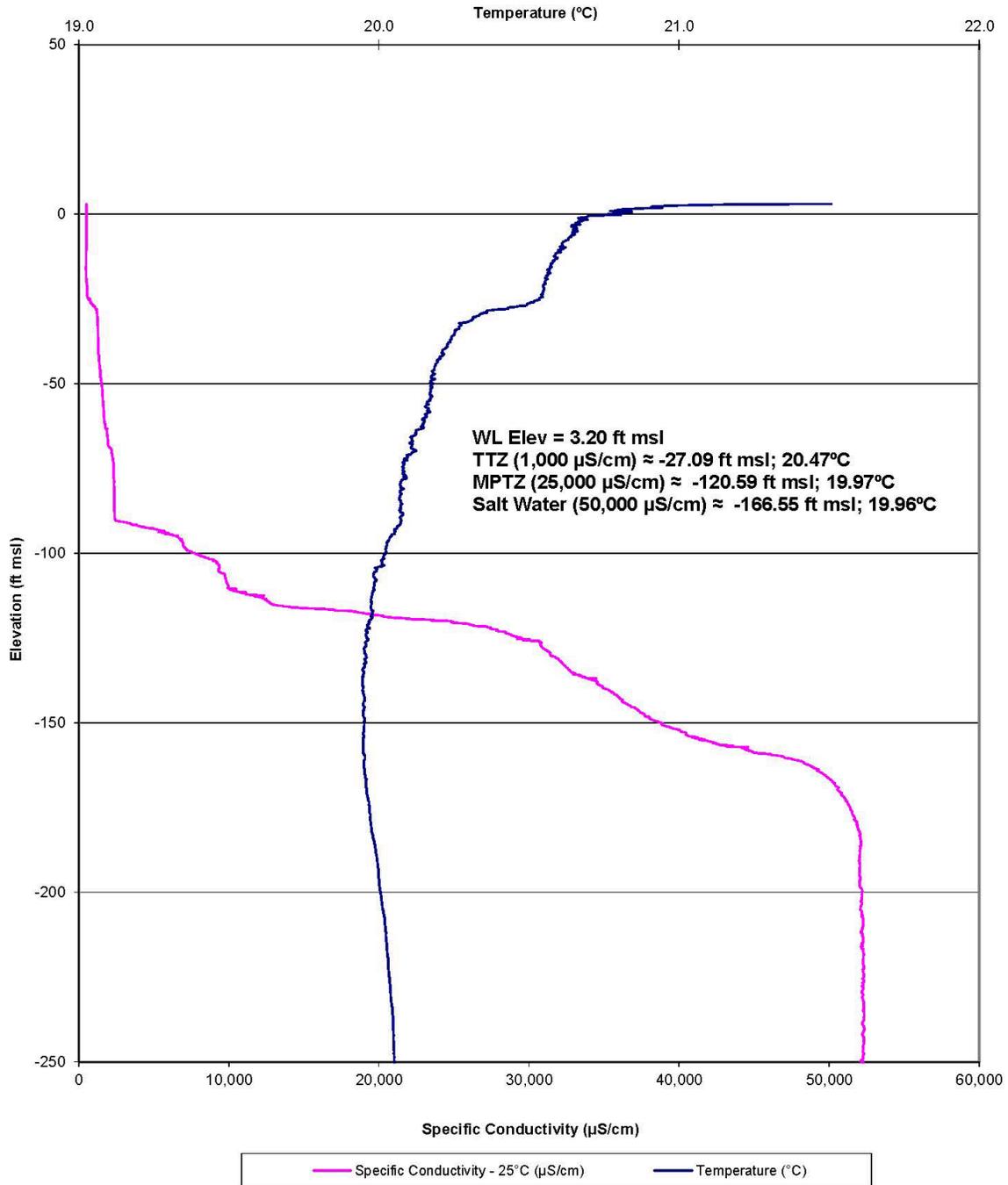
Figure XX presents a time series chart illustrating the trends of the measured Top of Transition Zone (“TTZ” at 1,000  $\mu\text{S}/\text{cm}$ ), mid-point of Transition Zone (“MPTZ” at 25,000  $\mu\text{S}/\text{cm}$ ), and brackish/sea water interface (50,000  $\mu\text{S}/\text{cm}$ ) during the period of monitoring. The time series shows the measured fresh water/ brackish water interface (TTZ) has been stable since 2013. The time series shows a slow rise in the MPTZ, near the calculated Ghyben Herzberg elevation of 128 feet below mean sea level (msl). Additionally, the sea water interface has remained relatively stable at  $\pm 170$  feet below msl.

The trends illustrated show that the water level in this DMW has risen nearly 0.5 feet, while the TTZ has declined 1.27 feet, indicating a thickening of the freshwater lens. The gentle rise of the Mid-Point (MPTZ) to near the calculated Mid-Point, based upon the water level, and the stability of the brackish/sea water interface, also indicates this area of the Honokowai Aquifer has been stable over the period of monitoring.

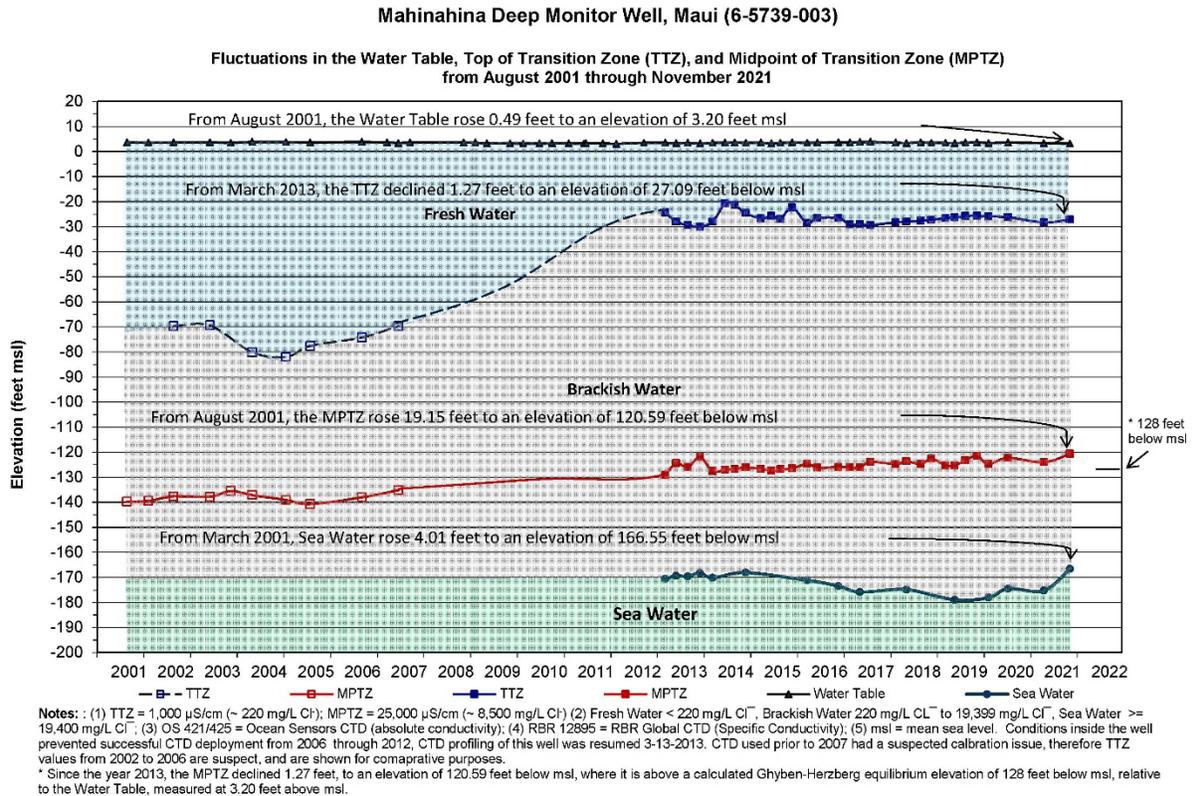
Note: the TTZ measured prior to 2006 may be considered suspect and is included on this figure for comparative purposes (stability over the period of monitoring, 2001-2006). The CTD instrument used to collect profile data prior to 2007 had a suspected calibration issue in the 1,000  $\mu\text{S}/\text{cm}$  range and was replaced in 2008 by the instrument currently used to collect CTD data (calibrated annually).

**Figure XX.** Conductivity, Temperature, and Depth (CTD) profile November 18, 2021

Mahinahina Deep Monitor Well (6-5739-003) CTD RBR 12895  
November 18, 2021



**Figure XX.** Time Series Chart of Water Trends from 2001-Present



last updated 1/13/2022

## 4.8.7 Water Quality

### 4.8.7.1 Chlorides

#### Saltwater Intrusion and Chloride Levels

Hawai‘i’s public trust describes the “authority and duty to maintain the purity and flow of Hawai‘i’s waters for future generations.”<sup>73</sup> A degradation of ground water resources that may compromise existing or future beneficial uses shall not be allowed or permitted.<sup>74</sup> Many wells in the Lahaina Aquifer Sector have become brackish and are already exceeding the chloride concentration of greater than 250 milligrams per liter (mg/L or part per million – ppm) that is considered unacceptable for drinking purposes under the EPA Secondary Drinking Water Standards.<sup>75</sup> The county water departments generally limit chloride levels of water within their municipal system to less than 160 mg/L. The public trust and the precautionary principle require the

<sup>73</sup> *Waiāhole I*, 94 Hawai‘i at 138, 9 P.3d at 450.

<sup>74</sup> The Department of Health assesses degradation of ground water quality only pertaining to organic and inorganic contaminants pursuant to HAR Chapter 11-20 and HRS § 174C-44 (2), the Commission assesses saltwater intrusion and chloride levels pursuant to HRS § 174C-44 (4) and (5).

<sup>75</sup> See <https://www.epa.gov/sdwa/secondary-drinking-water-standards-guidance-nuisance-chemicals>

Commission to limit the use of brackish water and wells to prevent further salination. This will lead to less available potable water sources.

In addition to monthly reports of water use, the Commission may require salinity and water level reporting as may deemed appropriate. Currently, only seven Maui DWS wells in Honolulu, seven Hawai'i Water Service wells in Honokōwai, and five Maui DWS wells in Launiupoko report chlorides monthly to the Commission.

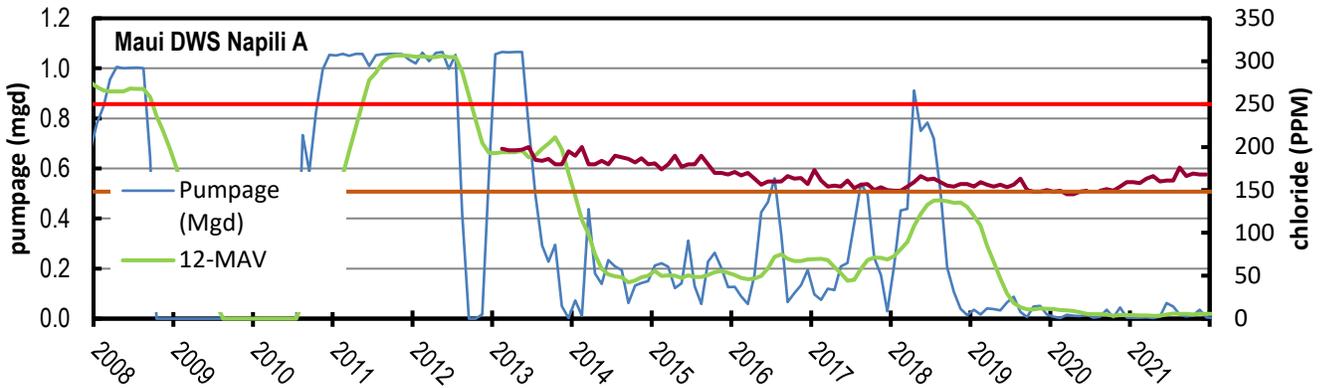
Honolua Aquifer

**Figure xx.** Overview of Maui DWS Wells in the Honolua Aquifer

Maui Department of Water Supply

Napili A Well drilled 1971

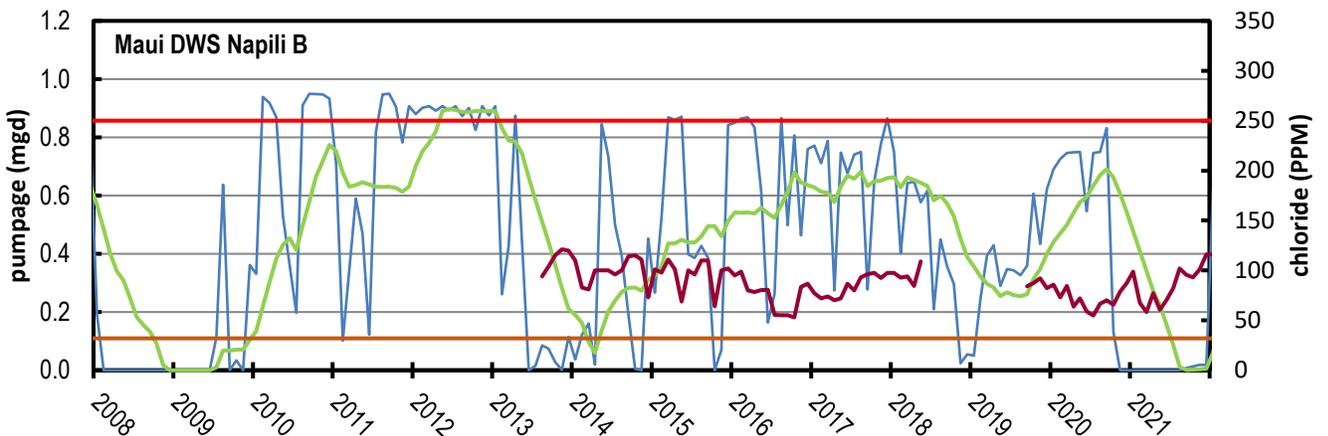
Initial Chloride = 148 ppm 2021 average chloride = 171 ppm



Maui Department of Water Supply

Napili B Well drilled 1972

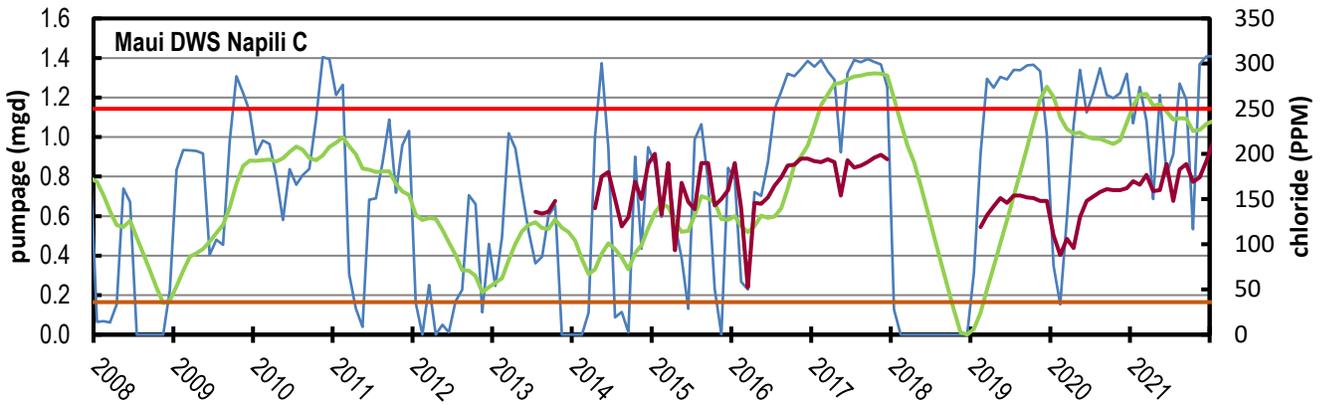
Initial Chloride = 32 ppm 2021 average chloride = 90 ppm



Maui Department of Water Supply

Napili C Well drilled 1979

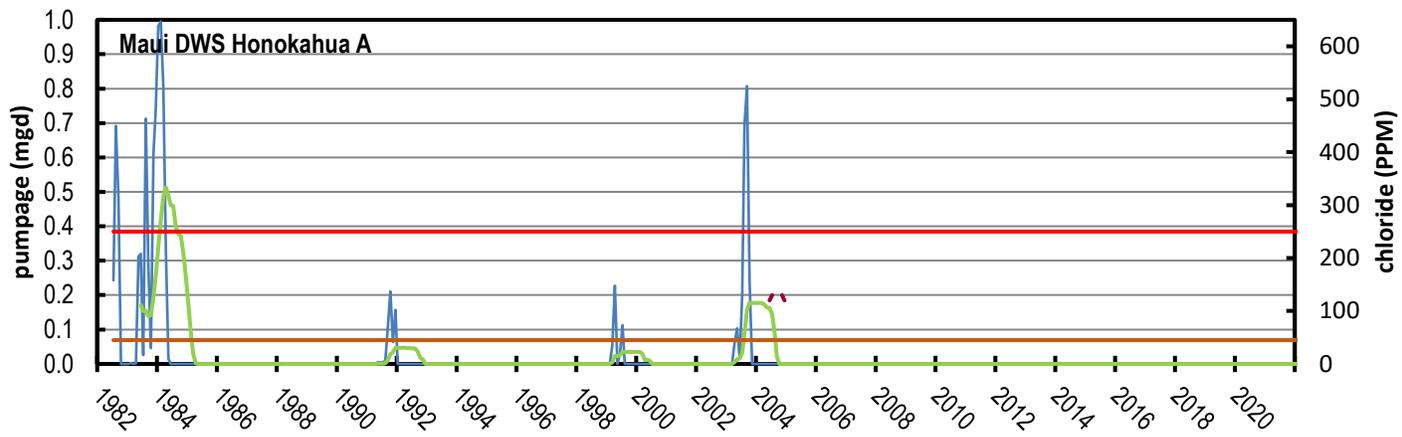
Initial Chloride = 36 ppm 2021 average chloride = 168 ppm



Maui Department of Water Supply

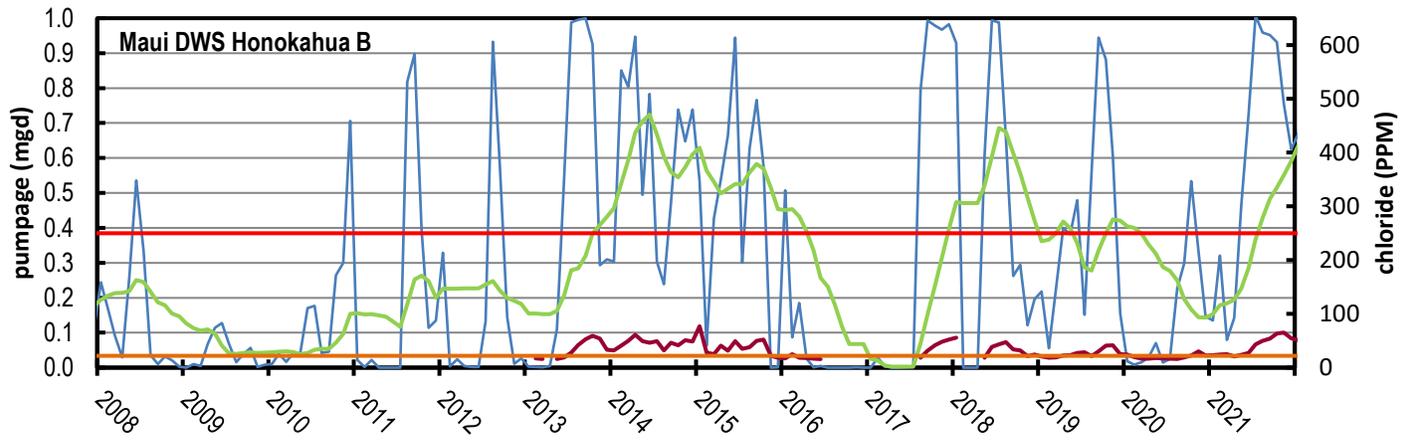
Honokahua A Well drilled 1978

Initial Chloride = 45 ppm 2021 average chloride = n/a ppm



Maui Department of Water Supply  
Honokahua B Well drilled 1987

Initial Chloride = 22 ppm    2021 average chloride = 40 ppm



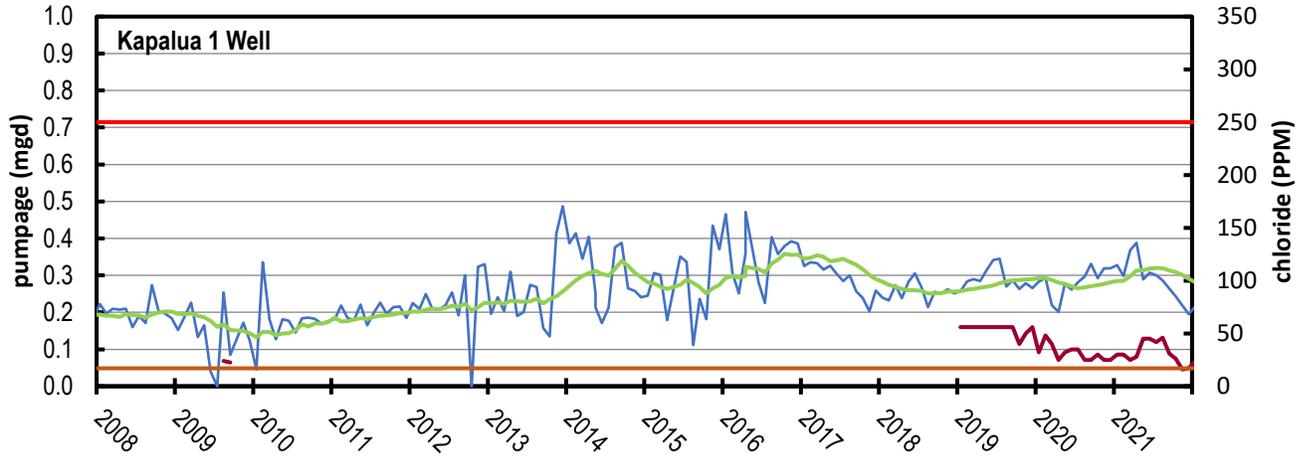
DRAFT

**Figure xx.** Overview of Hawaii Water Service wells in the Honolulu Aquifer

Kapalua Water/Hawaii Water Service

Kapalua 1 Well drilled 1989

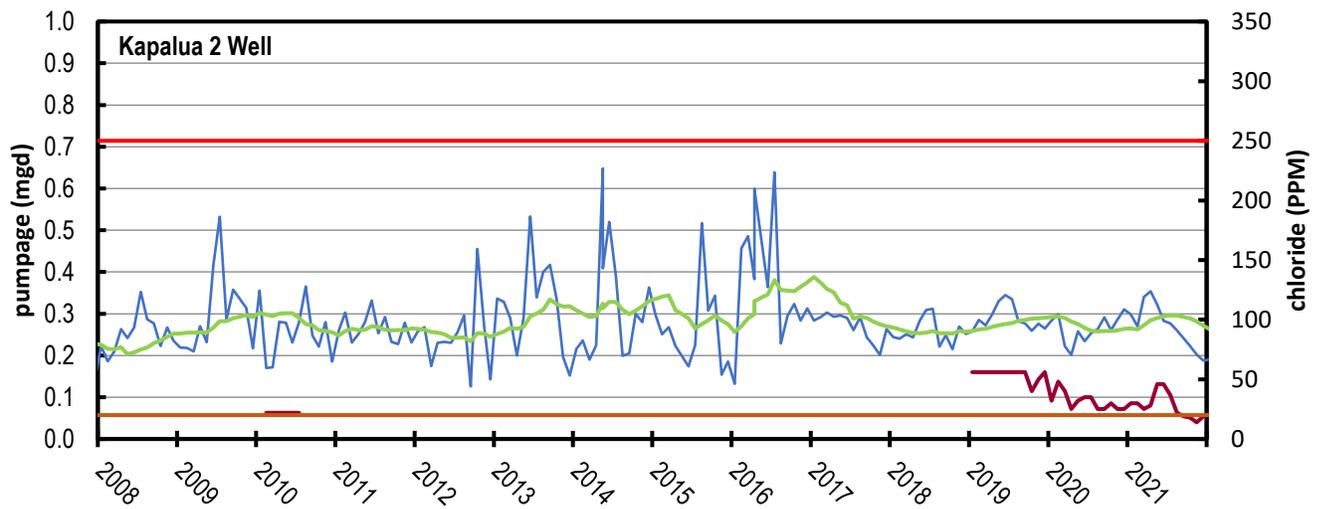
Initial Chloride = 17 ppm 2021 average chloride = 32 ppm



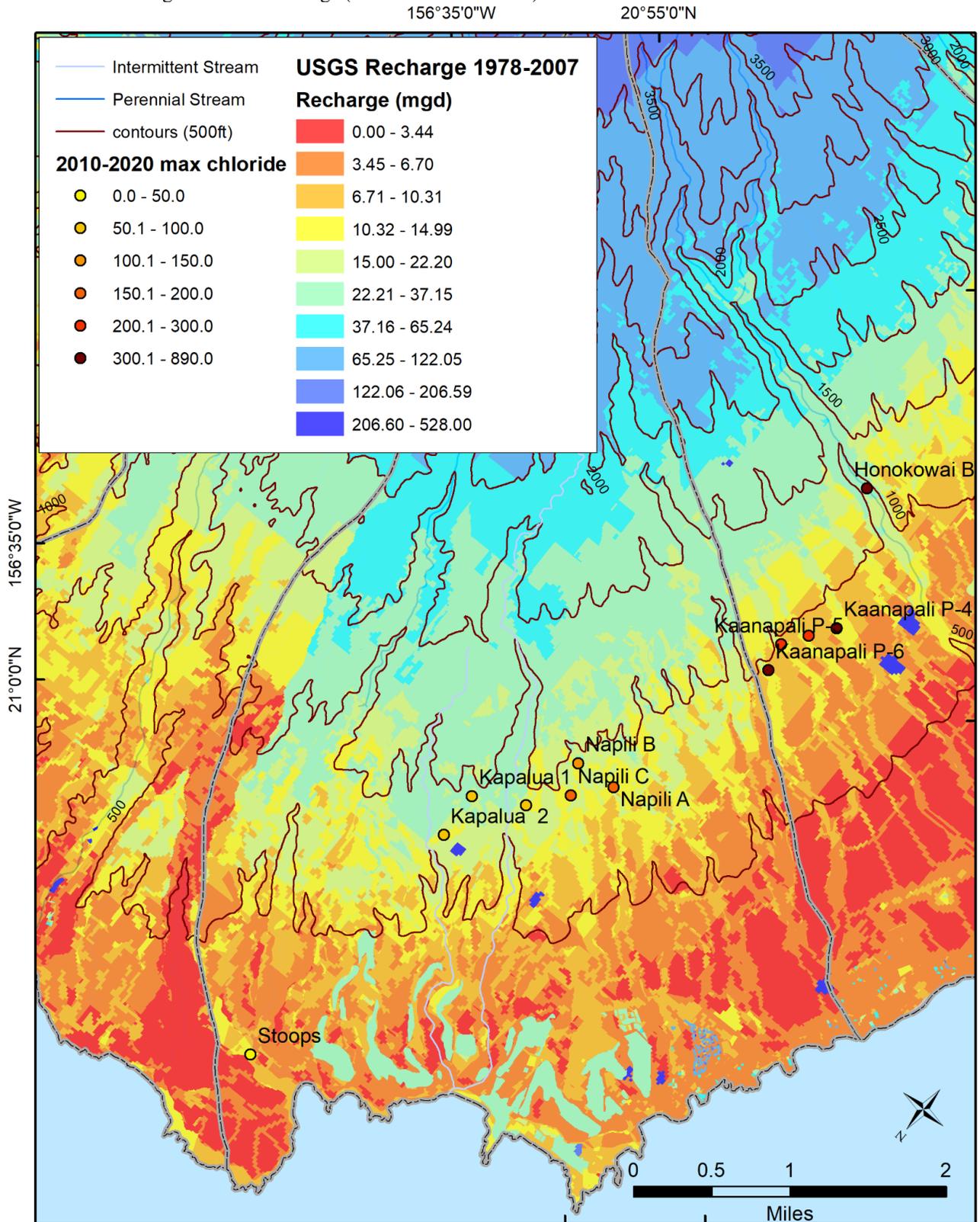
Kapalua Water/Hawaii Water Service

Kapalua 2 Well drilled 1989

Initial Chloride = 20 ppm 2021 average chloride = 21 ppm



**Figure XX.** Distribution of maximum reported chloride from 2010 to 2020 in the Honolua Aquifer System relative to mean 1978-2007 groundwater recharge (USGS SIR 2014-5168)

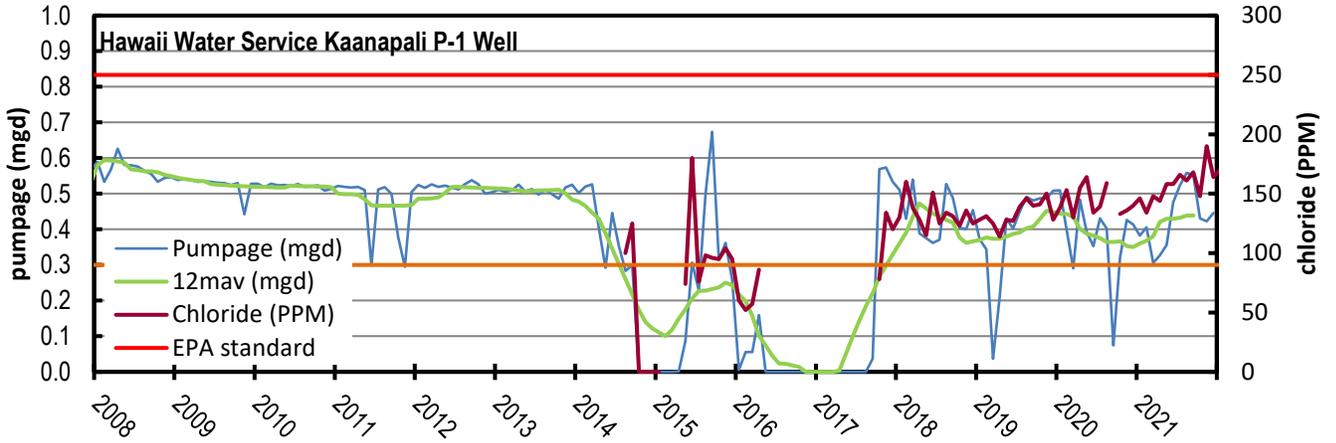


Honokōwai Aquifer

Hawaii Water Service

Kaanapali P-1 Well drilled 1990

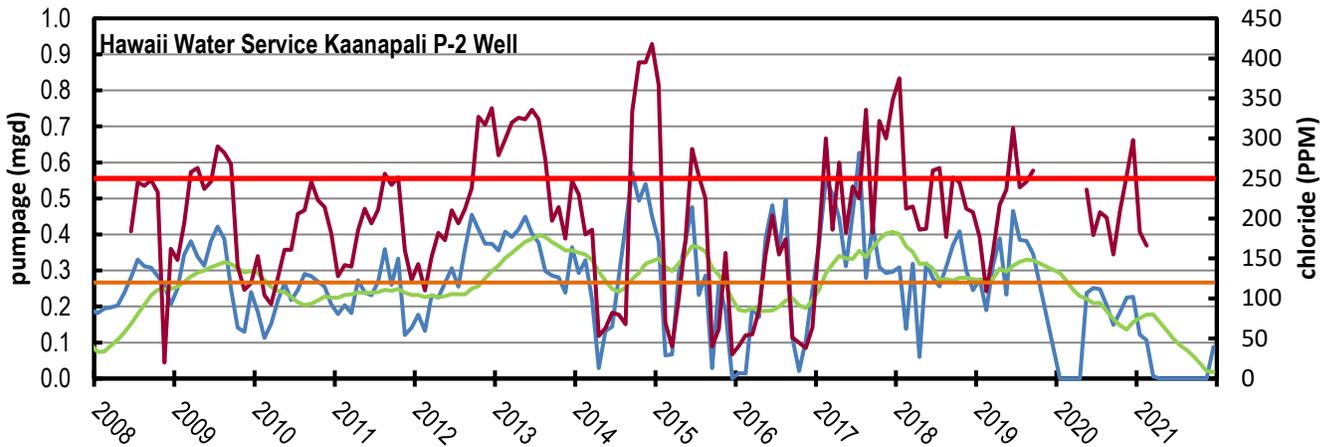
Initial Chloride = 90 ppm    2021 average chloride = 145 ppm



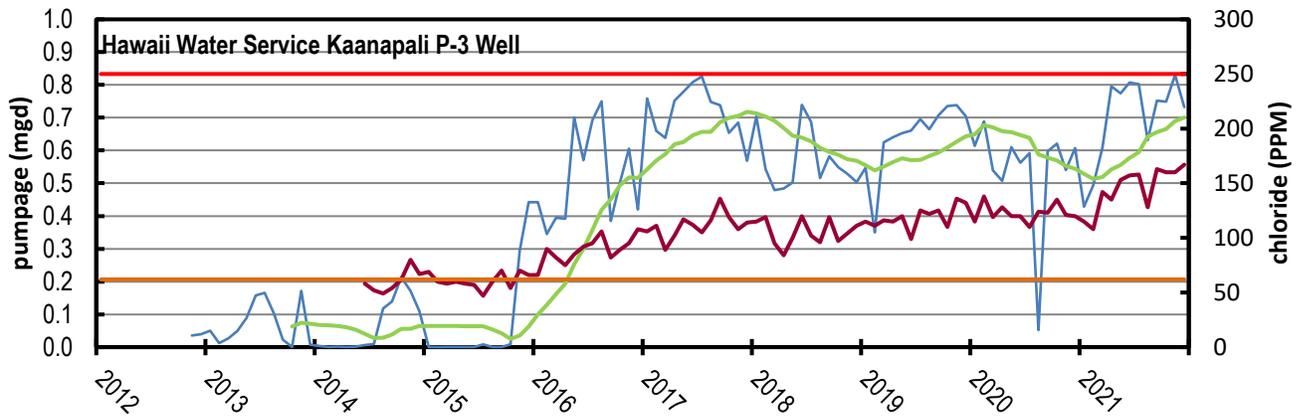
Hawaii Water Service

Kaanapali P-2 Well drilled 1990

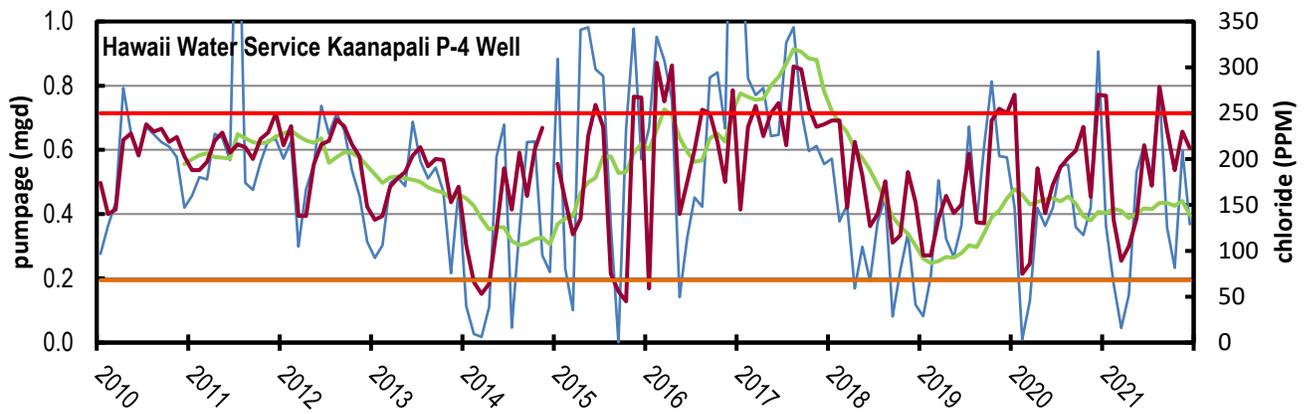
Initial Chloride = 120 ppm    2020 average chloride = 218 ppm



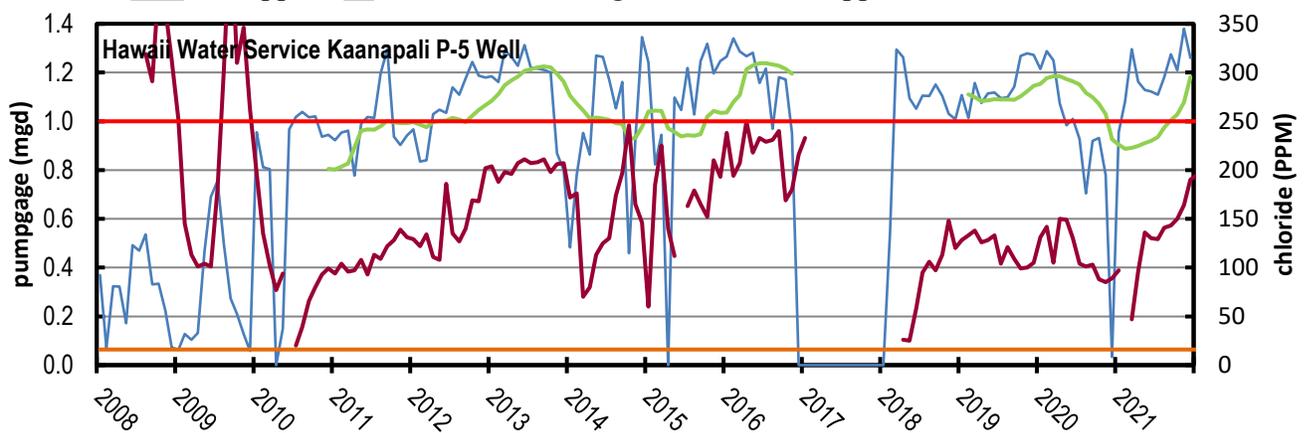
Hawaii Water Service  
 Kaanapali P-3 Well drilled 2008  
 Initial Chloride = 62 ppm      2021 average chloride = 145 ppm



Hawaii Water Service  
 Kaanapali P-4 Well drilled 1982  
 Initial Chloride = 68 ppm      2021 average chloride = 186 ppm



Hawaii Water Service  
 Kaanapali P-5 Well drilled 1982  
 Initial Chloride = 16 ppm      2021 average chloride = 143 ppm

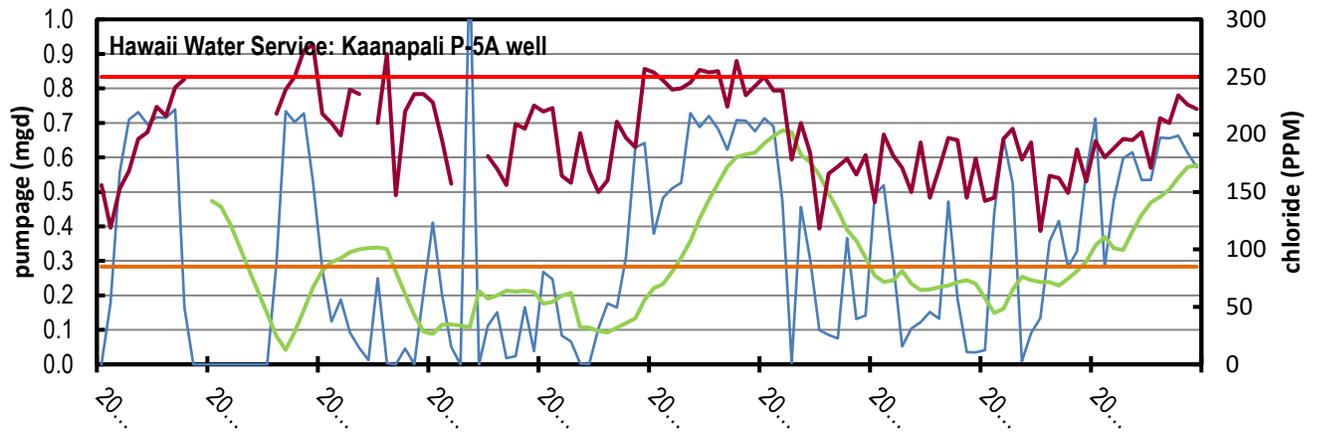


Hawaii Water Service

Kaanapali P-5A Well drilled 2009

Initial Chloride = 85 ppm

2021 average chloride = 206 ppm

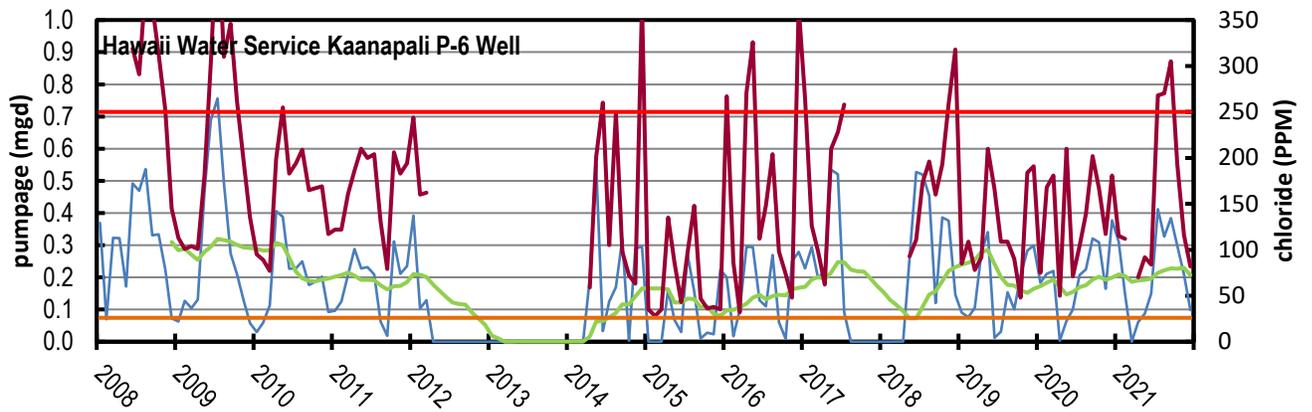


Hawaii Water Service

Kaanapali P-6 Well drilled 1982

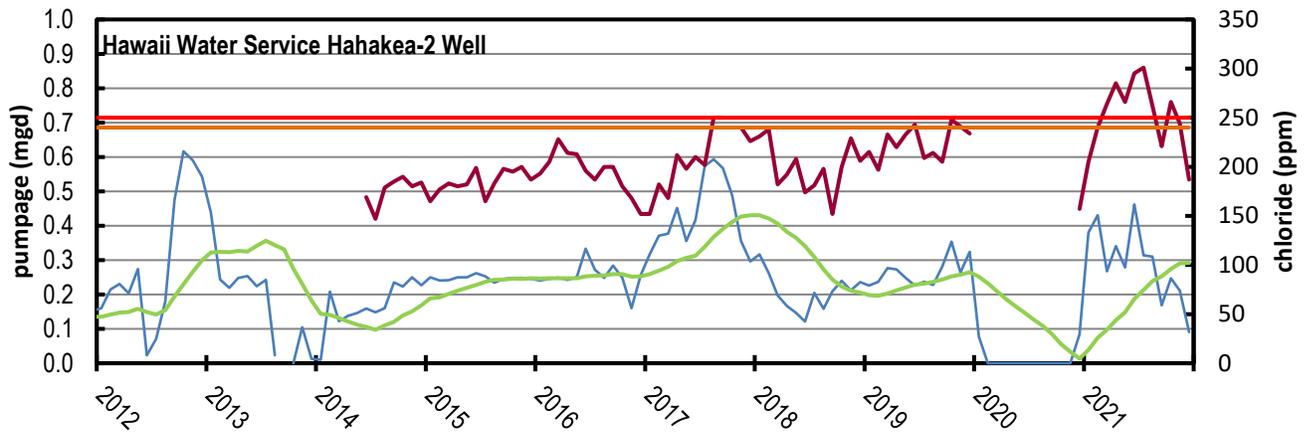
Initial Chloride = 26 ppm

2021 average chloride = 155 ppm



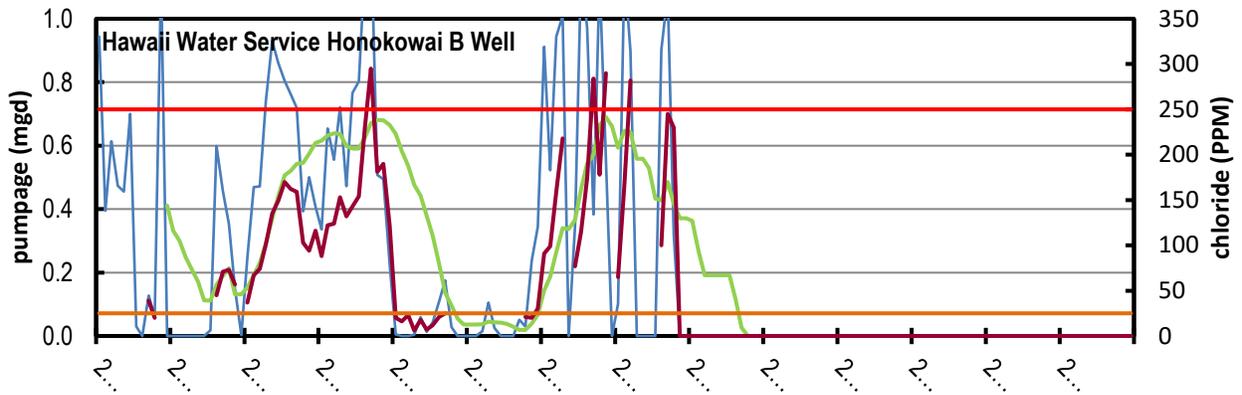
Hawaii Water Service  
Hahakea 2 Well drilled 1971  
Initial Chloride = 240 ppm

2021 average chloride = 253 ppm

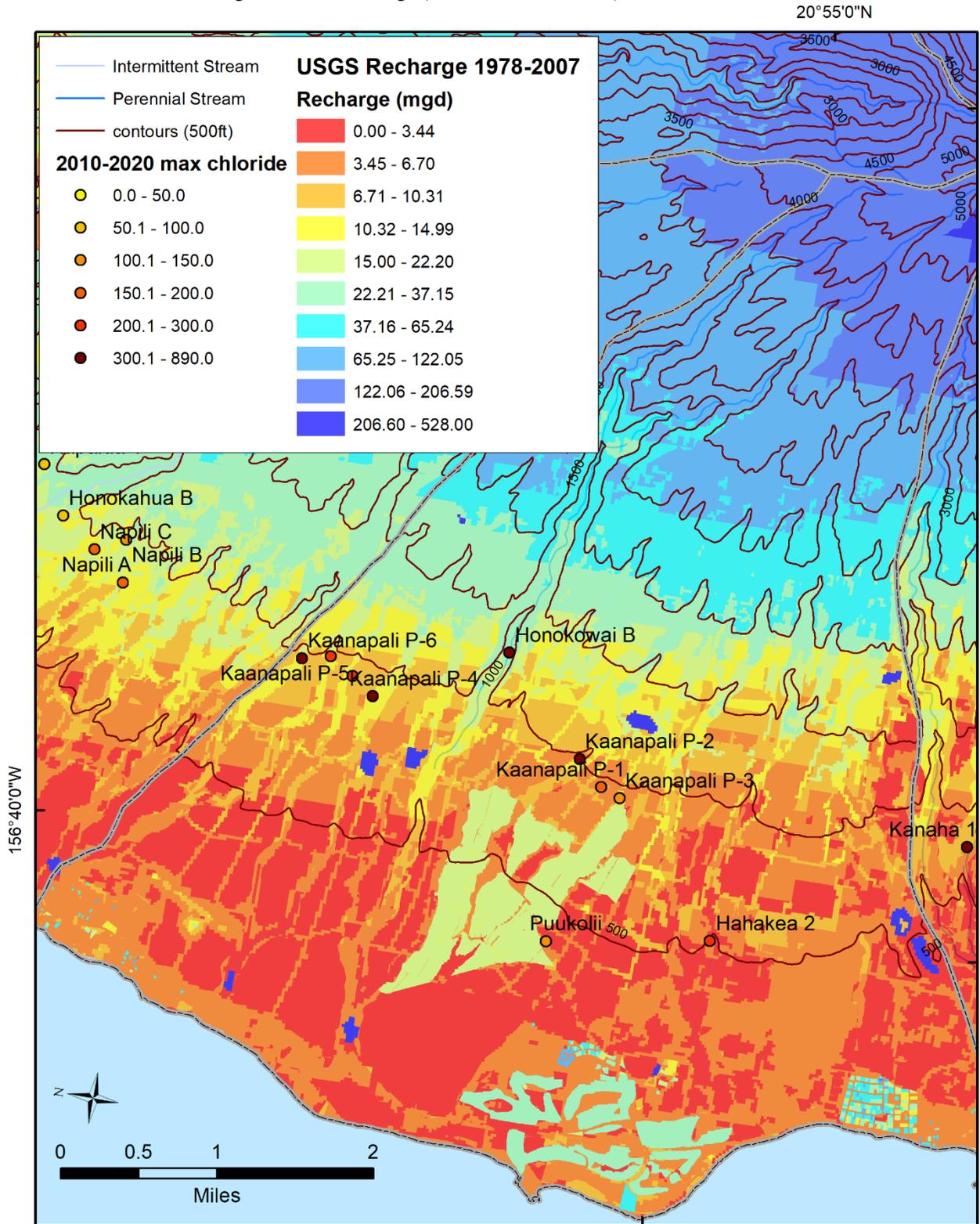


Hawaii Water Service  
Honokowai B Well drilled 1976  
Initial Chloride = 25 ppm

2015 average chloride = 182 ppm (well shut down in 2015)



**Figure XX.** Distribution of maximum reported chloride from 2010 to 2020 in the Honokowai Aquifer System relative to mean 1978-2007 groundwater recharge (USGS SIR 2014-5168)

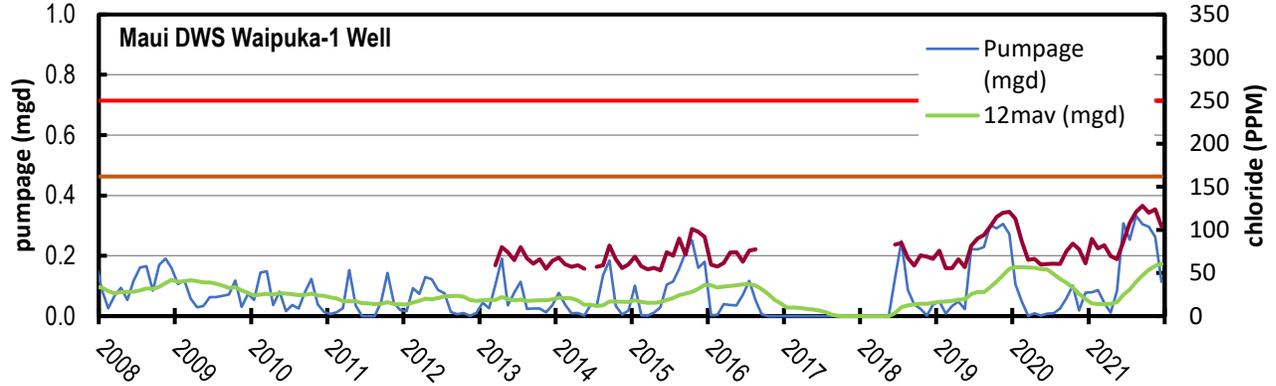


Launiupoko Aquifer

Maui Department of Water Supply

Waipuka 1 Well drilled 1962

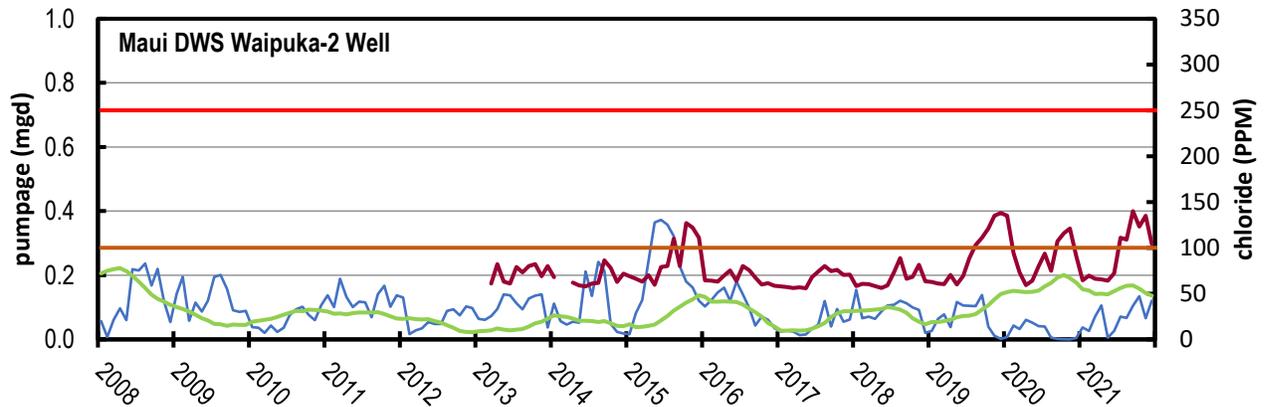
Initial Chloride = 162 ppm 2021 average chloride = 94 ppm



Maui Department of Water Supply

Waipuka 2 Well drilled 1963

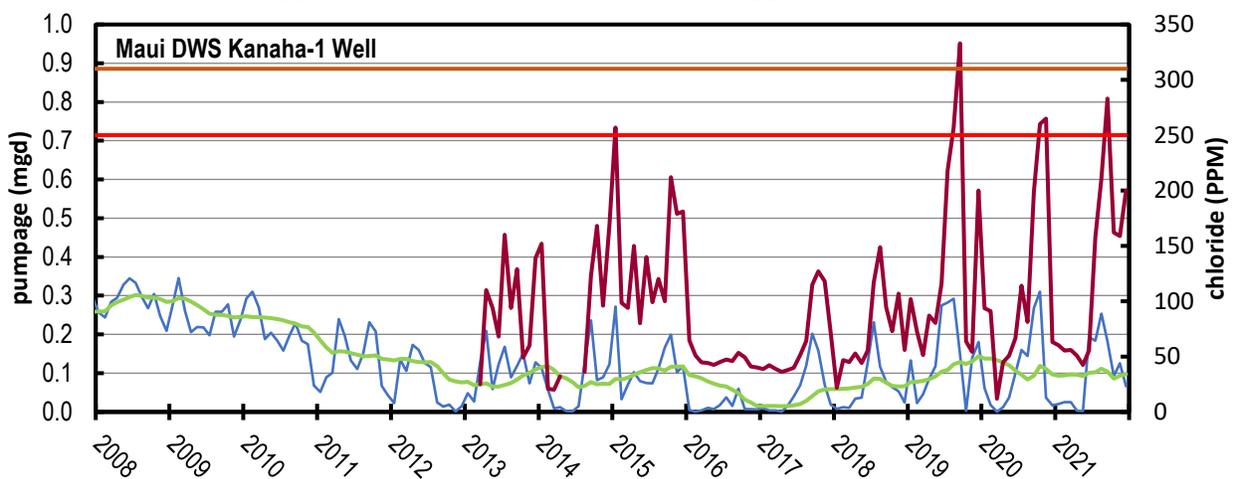
Initial Chloride = 100 ppm 2021 average chloride = 98 ppm



Maui Department of Water Supply

Kanaha 1 Well drilled 1971

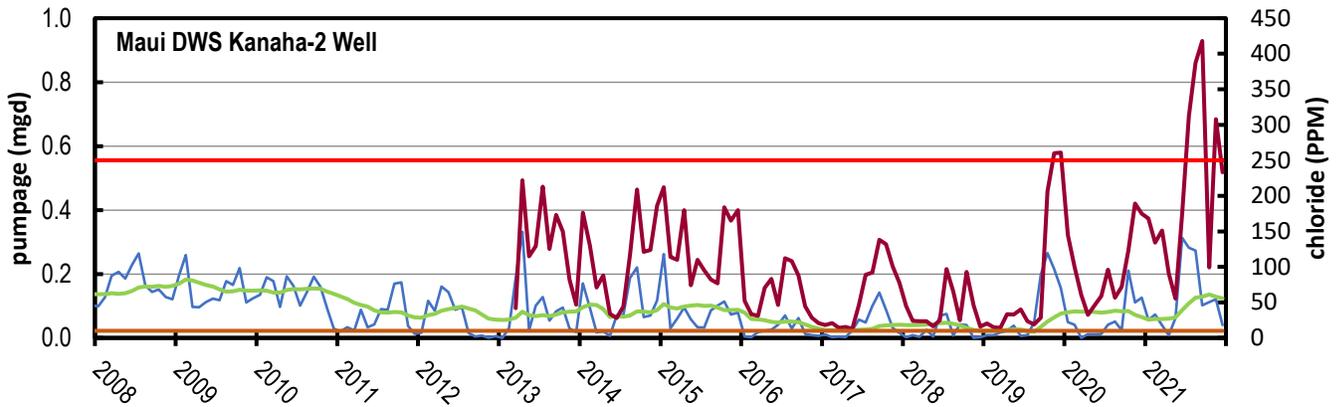
Initial Chloride = 310 ppm 2021 average chloride = 124 ppm



Maui Department of Water Supply

Kanaha 2 Well drilled 1974

Initial Chloride = 10 ppm 2021 average chloride = 211 ppm

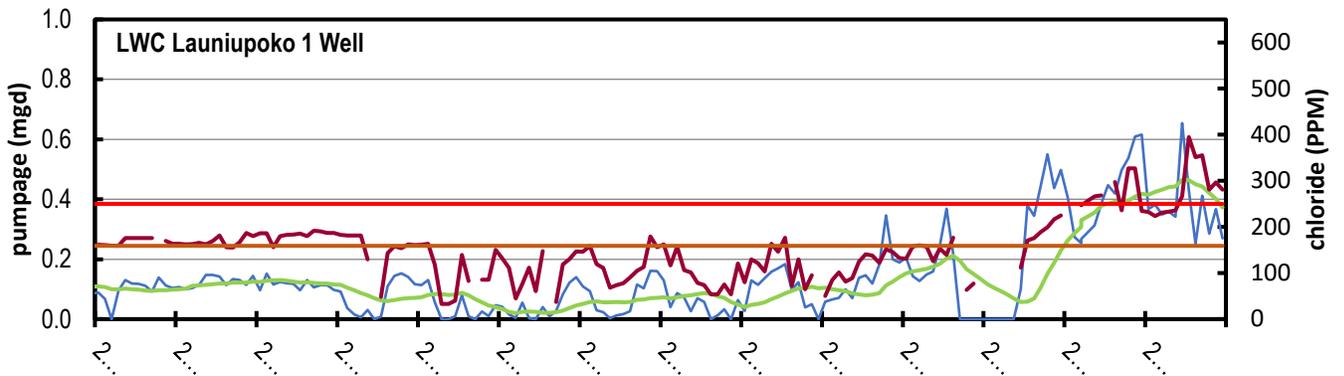


Launiupoko Water Company

Launiupoko 1 Well drilled 1979

Initial Chloride = 159 ppm

2021 average chloride = 282 ppm



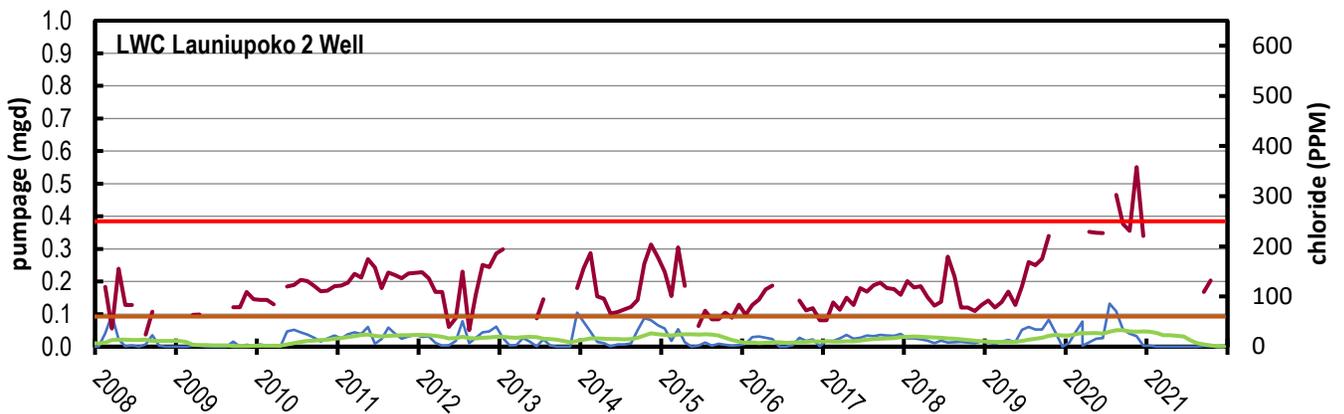
\*chloride value converted from specific conductivity

Launiupoko Water Company

Launiupoko 2 Well drilled 2000

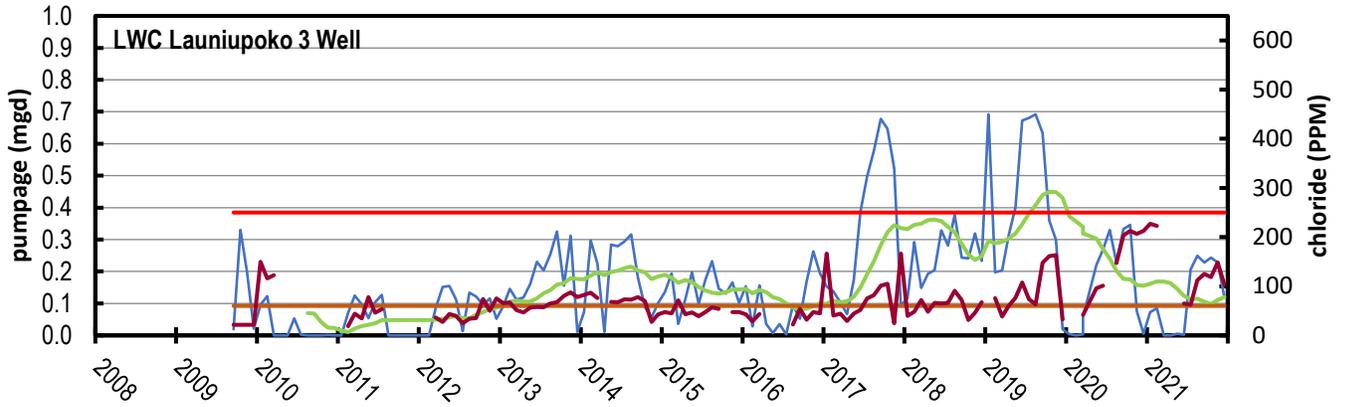
Initial Chloride = 60 ppm

2021 average chloride = 109 ppm



Launiupoko Water Company  
 Launiupoko 3 Well drilled 2003  
 Initial Chloride = 60 ppm

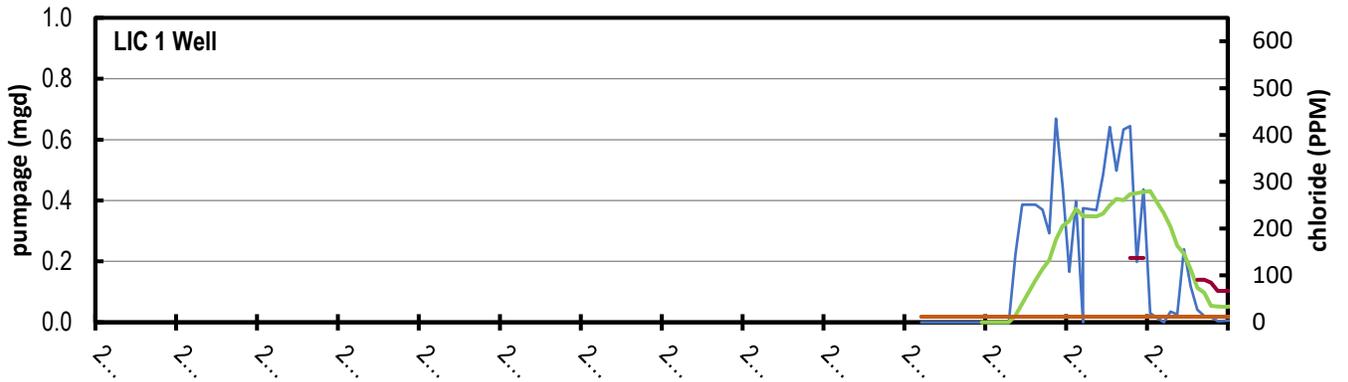
2021 average chloride = 303 ppm



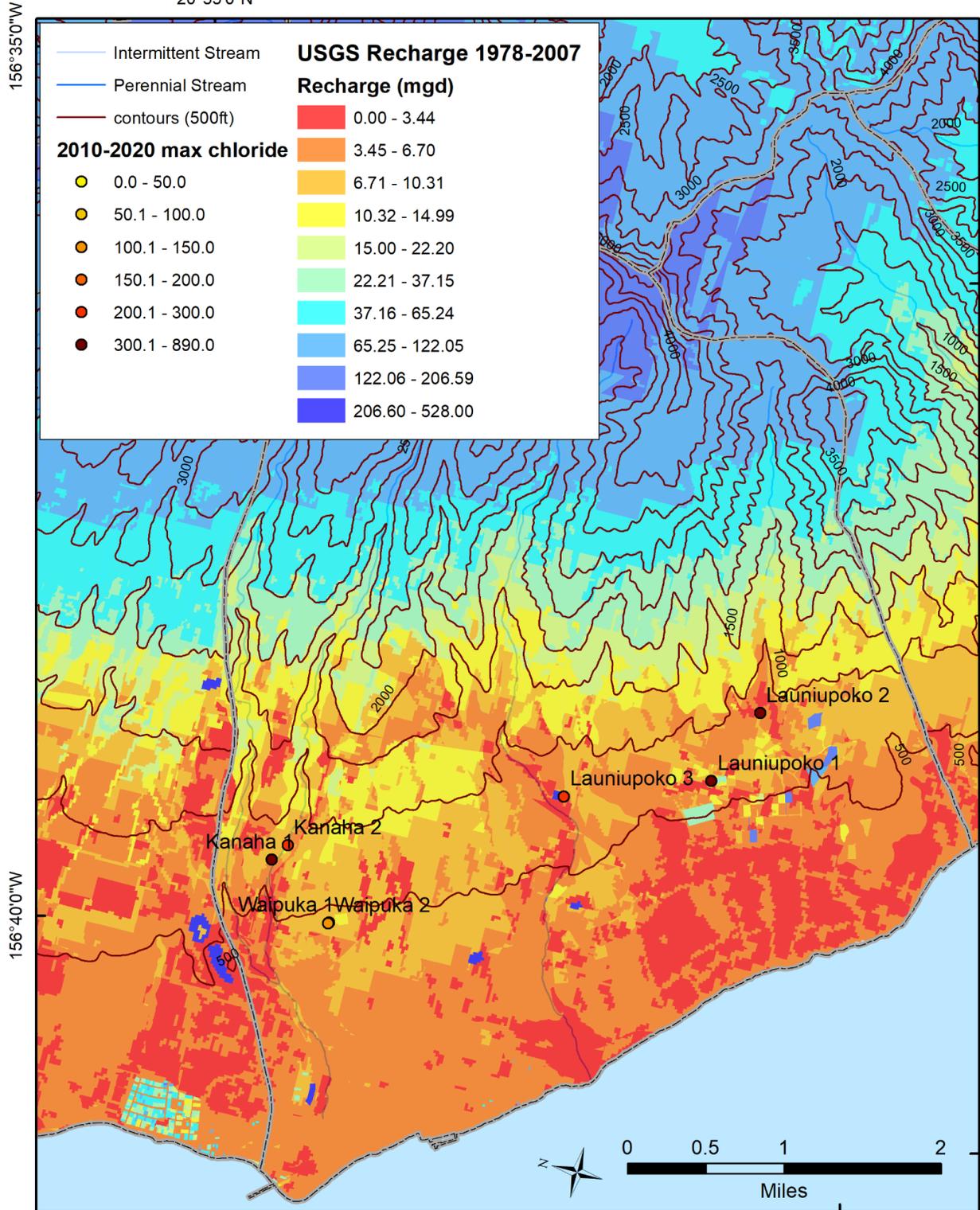
\*chloride value converted from specific conductivity using 500 scale

Launiupoko Irrigation Company  
 LIC 1 Well drilled 2017  
 Initial Chloride = 12 ppm

2021 average chloride = 81 ppm



**Figure XX.** Distribution of maximum reported chloride from 2010 to 2020 in the Launiupoko Aquifer System relative to mean 1978-2007 groundwater recharge (USGS SIR 2014-5168)  
 20°55'0"N



As ground water resources reach or exceed maximum withdrawal rates in the Honokōwai and Launiupoko Aquifer System Areas, ground water development will need to shift to other adjacent aquifers to avoid harm in over pumping and upconing. In addition, existing wells in the Lahaina Aquifer Sector have been discontinued or cannot be continuously pumped because of increasing chlorides as evident in Hawaii Water Service Honokōwai B well.

#### 4.8.7.2 Temperature

Awaiting feedback from Department of Health.

#### 4.8.7.3 Contaminants

Awaiting feedback from Department of Health.

#### 4.8.8 Sustainable Yield

Under the State Water Code, sustainable yield is defined as follows:

HRS § 174C-3 “Sustainable yield means the maximum rate at which water may be withdrawn from a water source without impairing the utility and quality of the water source as determined by the commission.”

Ground water is replenished by rainfall recharge. However, the amount of ground water that can be developed in any Hawai‘i aquifer is limited by the amount of natural recharge. Additionally, not all natural recharge an aquifer receives can be developed. Some aquifer outflow or leakage must be maintained to prevent seawater intrusion or to maintain some perennial streamflow. Therefore, the sustainable yield of an aquifer normally represents a percentage of the natural recharge. Ideally, this percentage is determined by considering all relevant aquifer hydrogeologic properties and their effects on temporal and spatial variation in flow, hydraulic head, and storage.

In Hawai‘i, the most commonly used analytical ground water model is the robust analytical model (RAM)<sup>76</sup> derived by Mink. Sustainable yield values of Hawai‘i basal aquifers were estimated by RAM and included in the 1990 WRPP. For an extensive explanation see Appendix F of the 2019 Water Resource Protection Plan section F-4.4 Establishment of the 1990 Sustainable Yield Estimates and Subsequent Updates.<sup>77</sup>

---

<sup>76</sup> Mink, 1980; Mink, J.F., 1981, Determination of Sustainable Yields in Basal Aquifer, in: *Groundwater in Hawaii- A Century of Progress*, Book published by the Water Resources Research Center, University of Hawaii at Mānoa, pp.101-116.

<sup>77</sup> [https://files.hawaii.gov/dlnr/cwrm/planning/wrpp2019update/WRPP\\_AppF\\_201907.pdf](https://files.hawaii.gov/dlnr/cwrm/planning/wrpp2019update/WRPP_AppF_201907.pdf)

**Table XX.** WRPP 2019 Updated SY per Aquifer Unit based on USGS 2017 Recharge numbers

<b>Aquifer System Area</b>	<b>SY (mgd)</b>	<b>Recharge (mgd)</b>	<b>D/I</b>	<b>System Area (sq. miles)</b>	<b>Geology</b>
<b>Ukumehame</b>	2	13.50	0.44	11.88	High level groundwater starts about two miles inland and is found chiefly in dike aquifers. The escape of basal groundwater at the coast is somewhat impeded by a sedimentary caprock wedge about half a mile wide. All of the exploitable groundwater saturates Wailuku basalt.
<b>Olowalu</b>	2	12.76	0.44	8.13	In the seaward two miles of the System is a basal lens in Wailuku basalt. The remaining 2.5 miles is part of a rift zone containing high level groundwater, also in Wailuku basalt. A coastal plain of sediments having a maximum width of one mile behaves as a weak caprock. The hydrogeology of the high-level water is complicated by intrusions of the Honolua series
<b>Launiupoko</b>	7	40.54	0.44	20.76	About two miles of basal groundwater in Wailuku basalt extends inland from the coast, beyond which is high level dike water, also in Wailuku basalt. The basal groundwater occurs in flank lavas which are covered at the coast by a narrow shelf of sediments. These sediments are ineffective as caprock.
<b>Honokōwai</b>	6	36.18	0.44	23.54	That part of the System within three miles of the coast has a basal lens; the remaining mountainous portion contains high level dike water. The Wailuku basalt is the only important water formation, but local hydrogeology is complicated by the Lahaina series in the southern part of the System. Perennial flow of streams consists of high-level groundwater seepage, all of which is either diverted or infiltrates to the basal lens before reaching the coast. Basal groundwater saturates flank lavas. At the coast a narrow zone of sediments is ineffective as caprock.
<b>Honolua</b>	8	26.43	0.44	17.8	A free basal lens in Wailuku basalt occurs for at least two miles inland of the coast, followed by high level dike water which extends to the boundary of the System. Honolua lavas cover a part of the System but are not hydrologically important. All

					high-level water is impounded in dike compartments. The basal lens saturates flank lava flows, but widely spaced dikes may reach to the coast. Outflow of the basal lens is not impeded by caprock.
<b>Honokōhau</b>	9	32.87	0.51	13.88	A rift zone extends all the way to the sea, but within a mile or so of the coast basal groundwater occurs in Wailuku basalt dike compartments. The perennial flow of Honokōhau Stream is sustained chiefly by high level dike water; perched water seeping from the Honolua series also contributes to the stream's low flow. Basal groundwater has not been developed in the lower reaches of the valley; alluvial fill behaves as a weak caprock.

#### 4.9 Authorized Planned Use

Under the State Water Code, authorized planned use is defined as follows:

HRS § 174C-3 “*Authorized planned use*” means the use or projected use of water by a development that has received the proper state land use designation and county development plan/community plan approvals.

Commission staff requested Maui DWS to provide an overview of authorized planned use for the Lahaina ASA in August 2020. Maui DWS’ response is provided in Table XX.

**Table XX:** Authorized Planned Use as provided by Maui DWS September 2020

AQUIFER (SY)	Ukumehame (2)	Olowalu (2)	Launiupoko (7)	Honokowai (6)	Honolua (8)	Honokōhau (9)
Groundwater pumpage DOM/IRR/MUN	32,253	6,041	1,344,360	4,043,730	2,159,303	0
Committed DWS						
MDWS meter reservations*			230,409		4,599	
MDWS meter installed no consumption*			94,727		102,789	
DHHL-MDWS agreement/credits**			200,000			
Open Building Permits***	1,800	3,400	99,720	123,000	121,800	600
DHHL Aquifer Reservation				770,000		
<b>Total, excl. Pending Developments</b>	<b>34,053</b>	<b>9,441</b>	<b>1,969,216</b>	<b>4,936,730</b>	<b>2,388,491</b>	<b>600</b>
% of SY	1.70%	0.47%	28.13%	82.28%	29.86%	0.01%
<i>Pending Developments****</i>	<i>1,080,000</i>	<i>0</i>	<i>411,350</i>	<i>1,640,200</i>	<i>1,740,000</i>	

\*Indicated by ASYA to service meter, not underlying ASYA. MDWS meters are served by a mix of surface and groundwater, approx. 85% surface water for Lahaina subsystem and approx. 48% surface water for Napili subsystem.

\*\*Assumed fully utilized by Leali'i Villages

\*\*\*Active BP for new construction and additions. Excludes ATF permits for existing structures and BP with existing meter reservations or meters installed.

\*\*\*\*Projects with county land use entitlements known to MDWS. Projects may have partial building permits issued (overlapping with Open Building Permits). Project may or may not be served by underlying ASYA, may be served by surface water or recycled water. Until meter reservation or meter request is received it is not known which water purveyor may serve the project.

Maui County's Water Use and Development Plan provides a comparison of its projected water demand in 2035 per aquifer system and the 2016 Development Projects List in Table 19-32. See Table XX. The WUDP breaks down of the selected demand scenarios in Table 19-39. See Figure XX.

**Table XX.** Comparison Population Based Demand to 2016 Development Projects List

Lahaina Aquifer System Area	2016 Development Project List			
	2035 Demand	Entitled	Not Entitled	Total
Honokōhau	0.000			
Honolua	2.748	0.526		0.526
Honokowai	8.474	2.317	1.780	4.097
Launiupoko	4.378	0.158	0.538	0.696
Olowalu	0.115		0.900	0.900
Ukumehame	0.011			
<b>Total</b>	<b>15.726</b>	<b>3.002</b>	<b>3.218</b>	<b>6.219</b>

Source: Maui WUDP Table 19-32 (citing to Maui DWS, Maui County Planning Department, Long Range Planning Division)

Maui County's latest update on development projects in North and South Lahaina can be found in Appendix L.<sup>78</sup> The Maui County Planning Department identifies three project categories, "Planned/Committed," "Planned/Designated," and "Proposed/Conceptual." Projects identified as "Planned/Committed" have the appropriate conforming Community Plan and zoning entitlements, are approved agricultural subdivisions, or are approved 201H projects and may currently be in the build-out phase. Projects identified as "Planned/Designated" may only have partial entitlements or the project may be fully entitled but the viability or scope of the project may be in flux. Projects identified as "Proposed/Conceptual" may be refining the project scope, petitioning for entitlement consideration, or performing necessary land use compliance studies. Tables of the development project with their units are in Table XX and Table XX. Figure XX and Figure XX provide an overlay of the Commission's Aquifer boundaries on the North and South Lahaina Development Projects maps.

<sup>78</sup> <https://www.mauicounty.gov/DocumentCenter/View/8334/Development-Projects-Kapalua---North-Lahaina?bidId=>  
<https://www.mauicounty.gov/DocumentCenter/View/8335/Development-Projects-Ukumehame---South-Lahaina?bidId=>

**Figure XX.** Aquifer System Boundary Overlay on Kapalua – North Lahaina Development Projects Map

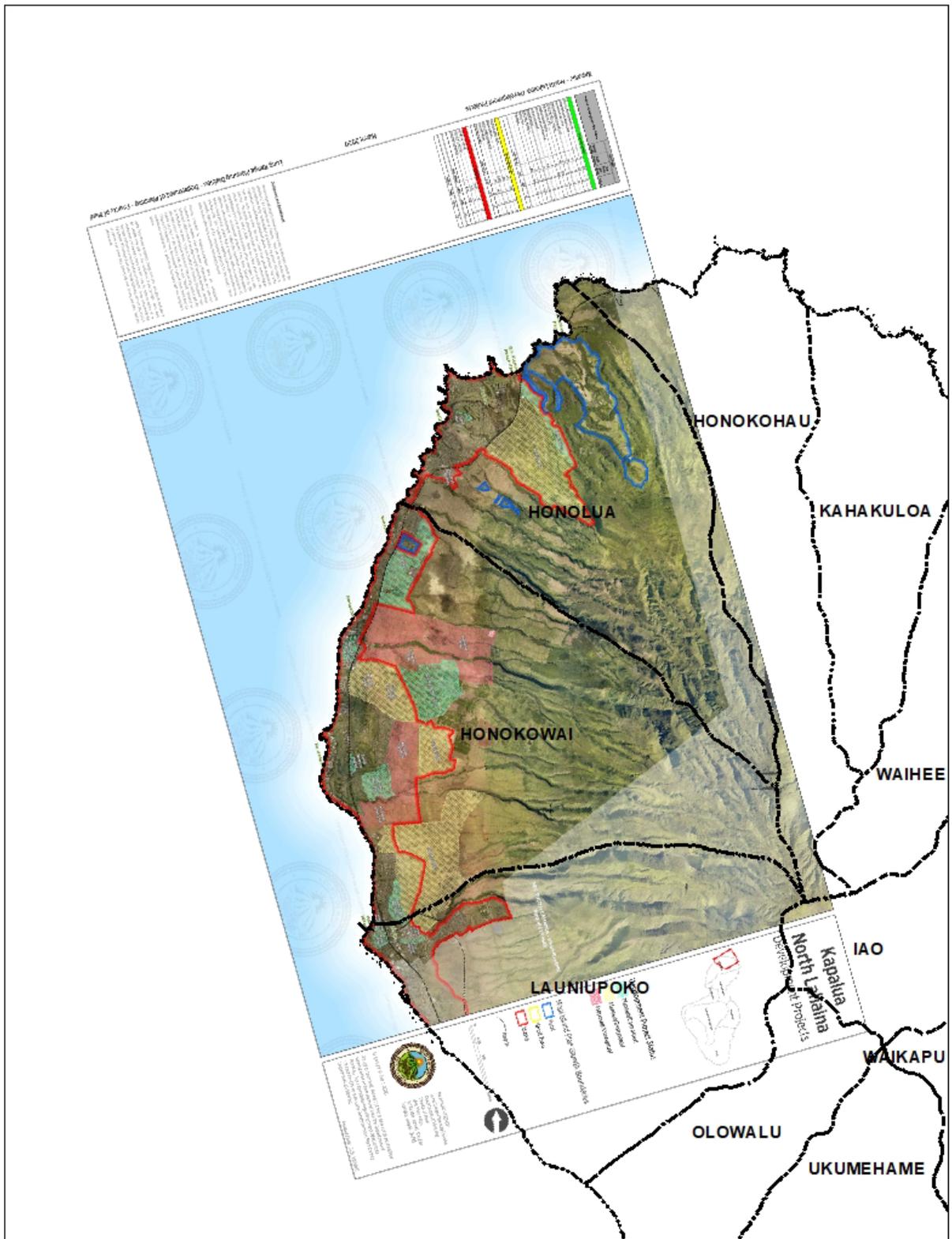
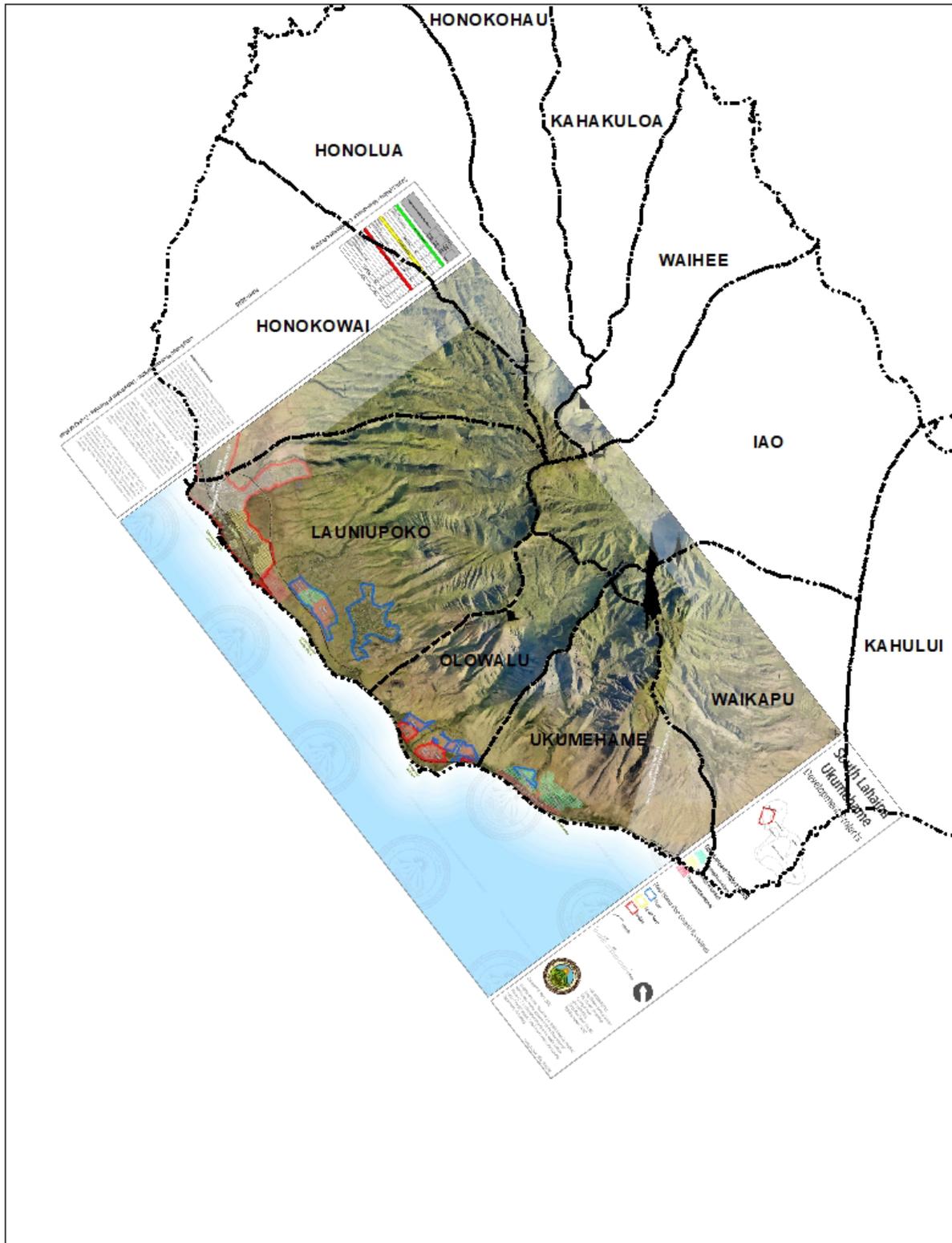


Figure XX. Aquifer System Boundary Overlay on South Lahaina – Ukumehame Development Projects Map



**Table XX.** Kapalua - North Lahaina Development Projects Unit Types

Projects by Geographic Map Extent	Unit Types			
	Single Family	Multi-Family	Time Share and Hotel	Other
<b>Planned/Committed</b>				
Kaiaulu o Kupuohi Apartments	0	89	0	0
Honua Kai/Luana Garden Villas	0	72	0	0
Ka'anapali Coffee Farms	67	0	0	0
Kahoma Residential Subdivision	68	0	0	0
Kaiaulu Workforce Housing	33	0	0	0
Kahoma Village PD4	101	102	0	0
Keawe Street Apartments	0	200	0	0
Lahaina Cannery Mall Expansion	0	0	0	1
Lanikeha Ka'anapali	132	0	0	0
Mahana Estates	51	0	0	0
Maui Prep. Academy	0	0	0	1
Pailolo Place	0	42	0	0
Pulelehua	400	400	0	0
<b>SUB-TOTAL</b>	<b>852</b>	<b>905</b>	<b>0</b>	<b>2</b>
<b>Planned/Designated</b>				
Ka'anapali Lower North	275	330	0	0
Kapalua Mauka	690	0	0	0
Leialii HHFDC Community	4,000	0	0	0
Pu'ukoli'i Villages	292	648	0	0
West Maui Hospital	0	0	0	1
<b>SUB-TOTAL</b>	<b>5,257</b>	<b>978</b>	<b>0</b>	<b>1</b>
<b>Proposed</b>				
Honokowai – DHHL	1,250	0	0	0
Ka'anapali Lower East	225	0	0	0
Ka'anapali Lower South	410	630	0	0
<b>SUB-TOTAL</b>	<b>1,885</b>	<b>630</b>	<b>0</b>	<b>0</b>
<b>TOTAL</b>	<b>7,994</b>	<b>2,513</b>	<b>0</b>	<b>3</b>

**Table XX.** South Lahaina – Ukumehame Development Projects Unit Types

Projects by Geographic Map Extent	Unit Types			
	Single Family	Multi-Family	Time Share and Hotel	Other
<b>Planned/Committed</b>				
Makila Farms	34	0	0	0
Ukumehame Ag Subdivision	48	0	0	0
<b>SUB-TOTAL</b>	<b>82</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Planned/Designated</b>				
Moku'ula	0	0	0	1
Plantation Inn	0	0	14	0
Waine'e Residential Community	360	360	0	0
<b>SUB-TOTAL</b>	<b>360</b>	<b>360</b>	<b>0</b>	<b>1</b>
<b>Proposed</b>				
Lihau'ula	59	0	0	0
Polanui Gardens	100	0	0	0
Makila Rural-East	75	0	0	0
Olowalu Eula	(?)	(?)	(?)	(?)
Pali to Puamana Shoreline Park	0	0	0	1
Pu'unoa	125	125	0	0
<b>SUB-TOTAL</b>	<b>359</b>	<b>125</b>	<b>0</b>	<b>1</b>
<b>TOTAL</b>	<b>801</b>	<b>485</b>	<b>0</b>	<b>2</b>

**Figure XX.** Maui WUDP Selected Demand Scenario: Projected Water Demand and Supply Options in the Lahaina ASA

**Table 19-39 Selected Demand Scenario: Projected Water Demand and Supply Options, Lahaina ASEA**

DEMAND	2014	2015	2020	2025	2030	2035
Domestic Potable	0.036	0.037	0.042	0.049	0.055	0.060
MDWS Potable	5.478	5.574	6.393	7.442	8.315	9.191
Municipal Private Potable	3.757	3.823	4.384	5.104	5.703	6.303
<b>Total Potable Demand</b>	<b>9.271</b>	<b>9.434</b>	<b>10.819</b>	<b>12.595</b>	<b>14.073</b>	<b>15.554</b>
Irrigation Non-Potable	7.682	7.682	4.941	5.132	5.265	5.402
Agriculture Non-Potable	6.508	6.508	5.393	5.531	7.611	7.611
DHHL Agriculture Non-Potable*	0.000	0.000	0.000	0.000	2.080	2.080
Taro met by IIFS	2.349	2.349	2.349	2.349	2.349	2.349
Honokōhau Ditch water loss,	3.939	3.939	0.842	0.865	1.020	1.030
<b>Total Non-Potable Demand</b>	<b>18.129</b>	<b>18.129</b>	<b>11.177</b>	<b>11.528</b>	<b>13.896</b>	<b>14.044</b>
<b>TOTAL DEMAND</b>	<b>27.400</b>	<b>27.56</b>	<b>21.996</b>	<b>24.123</b>	<b>27.969</b>	<b>29.598</b>
<b>Potable Surface Water Supply</b>	<b>3.299</b>	<b>3.299</b>	<b>3.500</b>	<b>2.460</b>	<b>2.460</b>	<b>2.460</b>
Honokōhau Ditch	1.536	1.536	1.700	1.700	1.700	1.700
Kanaha Stream	1.763	1.763	1.800	0.760	0.760	0.760
<b>Potable Groundwater Supply</b>	<b>5.972</b>	<b>6.153</b>	<b>7.319</b>	<b>10.135</b>	<b>11.613</b>	<b>13.094</b>
Honokōhau Aquifer	0.000	0.000	0.000	0.000	0.000	0.000
Honolua Aquifer	2.566	2.747	3.440	4.100	4.300	4.300
Honokowai Aquifer***	3.003	3.003	3.696	3.700	3.800	4.000
Launiupoko Aquifer	0.360	0.360	0.360	2.040	3.240	4.540
Olowalu Aquifer	0.036	0.036	0.036	0.370	0.370	0.370
Ukumehame Aquifer	0.007	0.007	0.007	0.110	0.110	0.110
<b>Total Potable Supply</b>	<b>9.271</b>	<b>9.452</b>	<b>10.819</b>	<b>12.595</b>	<b>14.073</b>	<b>15.554</b>
<b>Non-potable Surface Water</b>	<b>16.839</b>	<b>16.83</b>	<b>7.181</b>	<b>2.642</b>	<b>4.787</b>	<b>4.854</b>
Honokōhau Ditch	6.247	6.247	2.097	2.298	4.443	4.510
Honokowai Stream	5.450	5.450	4.740	0 - 4.74	0 - 4.74	0 - 4.74
Kahoma Stream	0.416	0.416	0 - 0.257	0 - 0.257	0 - 0.257	0 - 0.257
Kanaha Stream	0.040	0.040	0.040	0.040	0.040	0.040
Launiupoko Stream	0.405	0.405	0.304	0.304	0.304	0.304
Kaua`ula Stream	2.610	2.610	0 - 0.277	0 - 0.277	0 - 0.277	0 - 0.277
Olowalu Stream	1.622	1.622	0 - 0.337	0 - 0.337	0 - 0.337	0 - 0.337
Ukumehame Stream	0.049	0.049	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33
<b>Non-Potable Groundwater Supply</b>	<b>0.000</b>	<b>0.000</b>	<b>1.863</b>	<b>5.067</b>	<b>2.650</b>	<b>2.320</b>
Honolua Aquifer	0.000	0.000	0.000	0.000	0.000	0.000
Honokowai Aquifer	0.000	0.000	0.000	3.101	1.090	0.867
Launiupoko Aquifer	0.000	0.000	1.477	1.511	1.097	0.982
Olowalu Aquifer	0.000	0.000	0.337	0.342	0.347	0.352
Ukumehame Aquifer	0.000	0.000	0.049	0.114	0.116	0.119
Recycled R-1****	1.330	1.330	1.330	3.000	5.230	5.230
Conservation 8% per capita	0.000	0.000	0.820	0.820	1.229	1.639
<b>Total Non-Potable Supply</b>	<b>18.169</b>	<b>18.16</b>	<b>11.194</b>	<b>11.528</b>	<b>13.896</b>	<b>14.044</b>
<b>TOTAL SUPPLY</b>	<b>27.440</b>	<b>27.62</b>	<b>22.013</b>	<b>24.123</b>	<b>27.969</b>	<b>29.598</b>

- 4.10 County and Public Testimony
- 4.10.1.1 January Commission Meeting
- 4.10.1.2 County’s Comments

The County’s responses to the Chairperson’s consultation letter can be found in **Appendix B**. Staff addressed the County’s responses in its staff submittal for Agenda item A-2 of the Commission meeting on January 18, 2022. See Table **XX**.

County’s Comments/Questions	Staff Response
<i>How is tunnel discharge accounted for in relation to sustainable yield?</i>	<ul style="list-style-type: none"> <li>• “Ground water means any water found beneath the surface of the earth, whether in perched supply, dike-confined, flowing, or percolating in underground channels or streams, under artesian pressure or not, or otherwise.” HRS § 174C-3. Tunnels in Honokōwai and Launiupoko tap into high level ground water that would otherwise discharge naturally as spring sources or discharge into the basal lens. As such, these tunnels, as developed sources of ground water, are counted against sustainable yield.</li> </ul>
<p><i>Do not support designation for entire aquifer sector because some aquifer systems included in this initiative have no basis for designation as set forth in the State Water Code. Honokōwai aquifer may exceed sustainable yield and support investigations to consider designation of Honokōwai Aquifer System only.</i></p>	<ul style="list-style-type: none"> <li>• Given the uncertainty of rainfall recharge due to the climate crisis, the Commission is recommending to proactively designate both ground and surface water management areas based on the data and analysis presented above and following the precautionary principle. Precautionary Principle: The Commission’s duties under the constitution and Code embody the precautionary principle, which holds that scientific uncertainty should not be a basis for postponing effective measures to prevent environmental degradation. Rather, the Commission as a trustee has a duty to take anticipatory action to prevent harm to public resources. At minimum, “the absence of firm scientific proof should not tie the Commission’s hands in adopting reasonable measures designed to further the public interest.”<sup>79</sup></li> <li>• The irrigation ditch systems in the Lahaina aquifer sector cross multiple aquifer systems and surface water hydrologic units. (See Figure 4) In <i>Waiāhole I</i>, the Hawai‘i Supreme Court also held that the Commission can consolidate the regulation of a single system because it comports with the Commission’s function of comprehensive water planning and management.<sup>80</sup> The Court ruled that the areas covered by the ditch system are to be considered hydrologically controllable irrespective of hydrologic units under HRS § 174C-50 (h) which deems uses between existing users as</li> </ul>

<sup>79</sup> *Waiāhole I*, at 154, 155.

<sup>80</sup> *Waiāhole I*, at 174.

	<p>competing when water is drawn from a hydrologically controllable area.<sup>81</sup></p> <ul style="list-style-type: none"> <li>• In <i>Waiāhole I</i>, the Court acknowledged the direct interrelationship between ground and surface waters and held that the designation of Windward O‘ahu as a ground water management area subjected both ground and surface water diversions from the designated area to the statutory permit requirement.<sup>82</sup></li> </ul>
<p><i>Designation undermines current efforts in Maui WUDP and West Maui Community Plan to engage public, private purveyors, and county agencies in land use and water planning integration.</i></p>	<ul style="list-style-type: none"> <li>• We acknowledge MDWS’s significant effort, time and commitment spent in producing a comprehensive Maui Island Water Use and Development Plan (MIWUDP) and understand that the Maui County Council is currently reviewing the MIWUDP through its public hearing process and receiving public input on the WUDP. We also acknowledge MDWS’s close coordination with Commission Staff, the Maui Planning Department, and the community throughout this planning process. We encourage MDWS to continue its approval process for the MIWUDP while continuing to consult with Commission staff. Designation of Lahaina Sector as a ground and surface water management area will compliment and strengthen MDWS plans for future water development instead of undermining them, while ensuring the protection of public trust purposes and resources for future generations.</li> <li>• The State Water Code requires all counties to develop WUDP regardless of water management area designation. In fact, designation of a water management area and its subsequent Water Use Permit Application (“WUPA”) process fosters more public and private participation including notice and public hearing requirements. A Water Use Permit is issued to reasonable and beneficial uses of water and will ensure even greater consistency and integration between land use and water resource availability. Moreover, the Hawai‘i Supreme Court held in <i>Ko‘olau Ag</i> that there is no judicial review of the Commission’s decision to designate aquifers as water management areas because the rights of individual water users are fully protected in the permitting process. The Court further noted that water management area designations do not affect the interests of any potential water users; the impact of such a designation is only that the user’s water source is subject to the Commission’s regulation, which does not, in and of itself, affect the user’s water rights.<sup>83</sup></li> </ul>

<sup>81</sup> *Id.*

<sup>82</sup> *Waiāhole I*, at 173.

<sup>83</sup> *Ko‘olau Agricultural Co., Ltd. v. Comm’n on Water Res. Mgmt* (“Ko‘olau Ag.”), 83 Hawai‘i 484, 493 (1994).

<p><i>Based on cooperative studies with USGS to address threats of salt water intrusion and climate change impacts, Maui DWS plans to distribute pumpage throughout Launiupoko aquifer.</i></p>	<ul style="list-style-type: none"> <li>• While DWS can space pumpage through Launiupoko to minimize salt water intrusion in their wells, there are additional private wells that are being developed that may have impacts on other existing wells, including Maui DWS, and the larger aquifer as a whole. As such, designation will provide CWRM, as a regulator, the ability to determine the proper spacing of all wells to protect the aquifer and other legally permitted water uses.</li> </ul>
<p><i>Utilize groundwater models and monitoring data to ensure adequate pump distributions vs. designation.</i></p>	<ul style="list-style-type: none"> <li>• In addition to the pumpage data that’s discussed above, the Commission only receives chloride data from 20 of 66 wells that report in the Lahaina district and water level data from its sole deep monitoring well. Based on that data and estimated future reduction in recharge, there is already indication of potential threats to water resources and increased management is important.</li> </ul>
<p><i>Request to defer SWMA proceedings until IIFS can be adopted for other priority streams. Balancing reasonable and beneficial in-stream and off-stream uses via water use permitting of both surface and groundwater resources will provide better data in determining the most appropriate IIFS.</i></p>	<ul style="list-style-type: none"> <li>• The surface water conflicts in this region have been persistent for decades. Setting of IIFS and managing surface water use permits are not mutually exclusive and are handled by different staff. Commission staff anticipate completing all IIFS for relevant streams in the Lahaina district in the coming year, but deferral of designation is not dependent on establishment of an IIFS, as these are interim in nature and are meant to be iterative based on continuous evaluation and balancing of instream and off-stream needs.</li> </ul>

#### 4.10.1.3 Public Written and Oral Testimony

The public written and oral testimony on the informational item B-2 “Designation of Lahaina Aquifer Sector, Maui as a Surface Water and Ground Water Management Area” of the Commission’s January 18 Agenda can be found in [Appendix D](#). The staff submittal on action item B-4 of the Commission’s February Agenda, excerpt below, provides a summary of the received written and oral testimony with staff’s responses.<sup>84</sup> See [Appendix E](#).

<sup>84</sup> <https://files.hawaii.gov/dlnr/cwrmm/submittal/2022/sb20220215B4.pdf>

## SUMMARY OF TESTIMONY:

### **Serious disputes over surface and ground water**

The written and oral testimony of community members in the Lahaina Aquifer Sector Area unanimously referenced serious disputes over water and requested designation as proactive management. Testimony by the Hui Nā Mamo Aloha ‘Āina o Honokōhau, Nā Pāpa‘i Wawae ‘Ula‘ula, the West Maui Preservation Association, the Sierra Club Maui Group, and the Hui o Nā Wai ‘Ehā also offered specific examples of conflicts over water. The concerns raised are that established IIFS are not being met, water continues to be diverted and prioritized for off stream uses while protected instream uses and Kuleana families do not have sufficient amounts of water.

West Maui Preservation Association’s written testimony outlines the historic and ongoing conflicts over water use in Ukumehame, Olowalu, Launiupoko, Kaua‘ula, Kahoma, Kanahā, and Honokōhau while highlighting conflicts over surface and groundwater in the Launiupoko aquifer that are part of a proceeding before the Public Utilities Commission (PUC).

#### *Staff response:*

The community member’s testimony resembles what staff has experienced in the numerous informal and formal complaints in the past decades. To holistically address these serious disputes, staff recommends designating the whole Lahaina Aquifer Sector Area as a surface and ground water management area. The Hawaii Supreme Court held that the Commission is the “primary guardian of public rights under the trust. Haw. Const. art. XI, section 7. As such, the Commission must not relegate itself to the role of a mere “umpire passively calling balls and strikes for adversaries appearing before it, but instead must take the initiative in considering, protecting, and advancing public rights in the resource at every stage of the planning and decision making process.”<sup>85</sup>

Staff notes that CWRM is not a party in the proceeding before the PUC regarding Launiupoko Irrigation Company’s (LIC), LLC request for a rate increase, but has provided extensive public comment to the PUC on LIC’s off stream uses, staff’s data that indicate LIC’s non-compliance with the IIFS for Kaua‘ula stream, and a new pump installation at the Lahaina A/B skimming well (State Well No. 6-5240-002). See Exhibit 1 January Staff Submittal’s Exhibit 1 CWRM Public Comment to PUC December 17, 2021.

### **Enhanced protection of the resource and public trust uses**

Community members voiced grave concern over the lack of available stream water and streamflow to cultivate lo‘i kalo and to exercise traditional and customary Native Hawaiian practices that rely on water in its natural state, mauka to makai flow, and healthy native stream fauna.

---

<sup>85</sup> *Waiāhole I*, 94 Hawai‘i at 143, 9 Pd.3 at 455.

With regard to groundwater, oral testimony of community members and the Hui Nā Mamo Aloha ‘Āina o Honokōhau, the West Maui Preservation Association, the Sierra Club Maui Group, the Hui o Nā Wai ‘Ehā all stated concern over rising chloride levels in wells, lack of water use reporting of wells, and increased pumping while recharge is uncertain due to the climate crisis.

DHHL’s written testimony outlined the benefits of designation for its beneficiaries; the increased legal protection of its surface and groundwater reservations by administrative rule and the requirement that water use permits are subject to the rights of DHHL. Additionally, DHHL’s oral testimony also pointed out that the Commission’s ability to regulate groundwater is limited to three factors, namely the existence/location of a well, its depth, and the amount of water that can be pumped.

*Staff response:*

WMA designation expands the tools available to the Commission to proactively protect water resources and regulate reasonable and beneficial uses of water, including public trust uses. The water use permit application process requires water users to disclose the purposes and amounts of their uses, which then are subject to the Commission’s determination as to how to protect public trust uses affected by it.

The Hawai‘i Supreme Court has recognized four public trust purposes; the maintenance of water in its natural state, domestic water uses, water for the Department of Hawaiian Home Lands, and water use in the exercise of traditional and customary Native Hawaiian rights.<sup>86</sup> Private commercial uses are not protected by the public trust and are subject to a “higher level of scrutiny.”<sup>87</sup>

Staff recognizes that while the depth and instantaneous pump capacity (gallons per minute) are dictated by the Well Construction and Pump Installation Standards approved by the Commission, management of well location and amount of water use on a daily basis (gallons per day) can only be regulated in a designated WMA.

### **Constitutional duty to protect before crisis develops**

DHHL’s written testimony highlights the Commission’s constitutional duty to protect the public trust resource water before a crisis develops citing to the 1978 Constitutional Committee Report 77, pages 688-689, “[a]ccordingly, your Committee concluded that the Constitution should specify that the State holds the water resources in trust, with the responsibilities of a trustee to actively protect, control and regulate the development of water resources in the State. This concept implies not only the power to protect the resources but the responsibility to do so long before any crisis develops.”

*Staff response:*

---

<sup>86</sup> See *Kauai Springs, Inc. v. Planning Comm’n of Kaua‘i*, 133 Hawai‘i 141, 172, 324 P.3d 951, 982 (2014).

<sup>87</sup> *Id.*

Staff’s research on the legislative history of the Water Code found a similar intent in the House Committee Report No. 348 on House Bill 35, that became Act 45 of the Session Laws of Hawai‘i and established HRS Chapter 174C in 1987, “[t]o ensure that the availability of this precious resource will meet the present and future needs of the people, your Committee is of the opinion that the water code should serve as a tool and an incentive for planning the wise use of Hawaii’s water resources, rather than as a water crisis and shortage management mechanism.”

### **Scientifically proven facts**

Wainee Land and Homes LLC (“Wainee”) sent its written testimony on the day of the Commission meeting on January 18, 2022, at 11:27am. Wainee asserts that the Commission has a ‘duty to designate based on “scientifically proven facts”’ citing *In re Water Use Permit Applications*, 94 Hawai‘i at 155, 9 Pd.3 at 467 (2000) “[T]he Code contemplates the designation of the standards based ... on scientifically proven facts[.]”

#### *Staff response:*

This quote refers to the setting of interim instream flow standards (IIFS) and not the designation of water management areas. The full quote is “[n]or does present inability to fulfill the instream use protection framework render the statute’s directives any less mandatory. In requiring the Commission to establish instream flow standards at an early planning stage, the Code contemplates the designation of the standards based not only on scientifically proven facts, but also on future predictions, generalized assumptions, and policy judgments.” This sentence includes footnote 60 of the opinion which also points to the standard for designation that is actually applicable here “[...] cf. HRS § 174C–41(a) (requiring the Commission to designate water management areas “[w]hen it can be *reasonably determined*, after conducting scientific investigations and research, that water resources in an area may be threatened” (emphasis added)). [...]”

### **Precautionary Principle**

Wainee denounced “the Commission’s reliance on a “purported “climate crisis” and “Precautionary Principle.” Maui DWS also criticized the Commission’s approach as “overzealous” and “too cautions” in its oral testimony.<sup>88</sup> Importantly, this testimony by Maui DWS’ former Director was made at the January 18, 2022 Commission meeting before the Maui Board of Water Supply took an official position supporting designation on February 20, 2022.

#### *Staff response:*

The Commission’s duties under the constitution and Water Code embody the precautionary principle, which holds that scientific uncertainty should not be a basis for postponing effective measures to prevent environmental degradation.<sup>89</sup> Rather, the Commission as a trustee has a duty to take anticipatory action to prevent harm to public resources. “[A]t minimum, the absence of firm scientific proof should not tie the Commission’s hands in adopting reasonable measures

---

<sup>88</sup> Oral testimony by Jeff Pearson on behalf of Maui DWS.

<sup>89</sup> *Waiāhole I*, 94 Hawai‘i at 154, 9 Pd.3 at 466.

designed to further the public interest.”<sup>90</sup> In endorsing the precautionary principle, the Hawai‘i Supreme Court rejected the requirement of scientific certainty before acting to protect public trust purposes, noting that to do so will often allow for only reactive, not preventive regulation.

**Maui County’s Water Use and Development Plan cannot substitute designation**

Testimony by the Sierra Club Maui Group, Hui o Nā Wai ‘Ehā, DHHL, West Maui Preservation Association and several individuals pointed out that the Maui Water Use and Development (WUDP) cannot function as a substitute for designation. There are four other private water companies besides Maui DWS whose well placement, pumping and water use the WUDP cannot regulate. Only the Commission has the authority to do so in a designated WMA.

Individual testimony shared that public participation in the planning process was for “damage control” to the impacts on public trust uses such as traditional and customary Native Hawaiian practices. Another concern is that MDWS cannot ensure the protection of protected public trust instream uses, especially when the County themselves is not compliant with the IIFS set for Kanahā and has not returned streamflow.

*Staff response:*

A WUDP is a plan and guidance document unlike the enforceable water use permitting regime of the Water Code that ensures due process rights. In its Draft WUDP, Maui County also recognizes its limitations to regulate and plan for use of the other private water companies as these systems are not interconnected and each is independently operated and maintained.<sup>91</sup> “The private public water systems were requested to provide demand projections but most did not supply information.”<sup>92</sup> Maui DWS’s water use only accounts for 35 percent of the municipal groundwater use and 15 percent of municipal surface water use.<sup>93</sup> There are six municipal water systems using either surface water, groundwater or both in the Lahaina Aquifer sector area, with “public water systems” as defined by the Department of Health (DOH) (systems serving more than 25 people or 15 service connections). See Table XX. The location of the public water systems is shown in Figure XX.

Additionally, Hawaii Water Service Company, Launiupoko Irrigation Company, LLC (LIC), and Olowalu Water Company provide non-potable water to their respective service areas and are regulated by the Public Utilities Commission (PUC). The non-potable water source is stream water. Staff has data that indicate that LIC has not been compliant with the IIFS for Kaua‘ula stream, Olowalu Water Company has not been compliant with the IIFS for Olowalu stream, and that Maui DWS has not been compliant with the IIFS for Kanahā stream. These potential violations of the IIFS will be addressed in forthcoming Commission meetings.

---

<sup>90</sup> *Id.* at 155.

<sup>91</sup> See Maui WUDP Draft under 19.5.1. Water Use by Type, Municipal Use at page 34 of the Lahaina Aquifer Sector Area.

<sup>92</sup> Maui WUDP Draft under 19.6.4 Population Growth Based Water Demand Projections (20-Year), Private Public Water Systems Demand Projections at page 63 of the Lahaina Aquifer Sector Area.

<sup>93</sup> Maui WUDP Draft under 19.5.1. Water Use by Type, Municipal Use at page 34 of the Lahaina Aquifer Sector Area.

### **Climate uncertainty and the Sustainable Yield**

DHHL’s oral testimony cautioned that the “sustainable yield (SY) as calculated is the maximum amount of groundwater that can sustainably be withdrawn for future withdrawal, if wells are optimally placed, if recharge is evenly distributed, if wells are at the same depth and pump at the same rate, and recharge does not change over time.”<sup>94</sup> In the calculation of the current SY numbers for the aquifers in the Lahaina Aquifer Sector Area climate change has not been considered as explicitly stated in Appendix F of the Water Resource and Protection Plan (WRPP) of 2019.

#### *Staff response:*

The WRPP does recognize that further investigation in the rate of natural recharge for SY is needed. “Climate change and data from the last 25 years should also be included into recharge analysis.”<sup>95</sup> As referenced by U.S. Geological Survey’s presentation at the Commission’s meeting on January 18, 2022 Item A1, island-wide recharge is expected to decrease for the mid-century and dry-climate scenarios on the islands of Kaua’i, Oahu, Moloka’i, Lana’i, Maui, and Hawai’i. Reduction in recharge in the Lahaina Aquifer Sector area range between 6.8-67.0 %.

### **Need for comprehensive approach**

Testimony by the Sierra Club Maui, Hui o Nā Wai ‘Ehā, DHHL, West Maui Preservation Association and several individuals lauded the Commission’s comprehensive approach and intent to designate both surface and ground water WMA for all aquifer and hydrologic units in the Lahaina Aquifer Sector Area.

The Sierra Club Maui Group highlighted that only designating Honokōwai and Launiupoko Aquifer would not protect the aquifer because there are no geographical barriers in the Lahaina Aquifer Sector Area and the aquifer is a thin as it does not hold recharge in place as the ‘Īao aquifer.<sup>96</sup>

DHHL’s oral testimony specifically provided an example for the need to designate adjacent aquifers; in 2004, shortly after the Commission decided against the designation of the Waihe‘e aquifer, which borders the designated ‘Īao aquifer, a new well construction permit application was received with the well location being right next to the aquifer boundary.<sup>97</sup>

#### *Staff response:*

At the 2004 February Commission meeting, the Commission rescinded automatic triggers for the designation of Waihe‘e aquifer set in November 2002 and limited the amount of MDWS’s pumpage from the Waihe‘e aquifer from 4.5 mgd to 4 mgd via a memorandum of agreement

---

<sup>94</sup> Oral testimony by Dr. Jonathan Likeke Scheuer on behalf of DHHL.

<sup>95</sup> Appendix F, WRPP (2019) at page 68.

<sup>96</sup> Oral testimony by Lucienne DeNaie on behalf of the Sierra Club Maui Group.

<sup>97</sup> Oral testimony by Dr. Jonathan Likeke Scheuer on behalf of DHHL.

(MOA)<sup>98</sup>, which then MDWS Deputy Director Jeff Pearson was a part of.<sup>99</sup> Only three months after the Commission's attempt to limit the amount withdrawn from Waihe'e aquifer, Commission was obligated to approve the new well construction and pump installation permit (WCPIP) of Koolau Cattle Company (Randy Betsill), Waihee Equestrian well (Well No. 5731-06), at its May 2004 meeting because the Waihe'e aquifer was not a designated WMA and the Commission did not have authority to deny this permit request due to correlative rights of the applicant.<sup>100</sup> In the same year Koolau Cattle Company applied for an additional WCPIP, Waihee Equestrian II well (Well No. 5731-07). This permit did not come before the Commission due to the Commission's delegation of WCPIP to the chairperson in 1997 to issue WCPIP administratively; the first application was brought to Commission to highlight issues with MDWS MOA and the recent history of the Waihe'e aquifer system. To date four additional wells have been drilled in the Waihe'e aquifer with two pending completion approval.

Staff recognizes the limitations from only designating the 'Īao aquifer as a "*lesson learned*" and strongly recommends including adjacent aquifers for proactive and comprehensive management, especially due to decline in recharge because of the climate crisis.

Additionally, staff would like to highlight that the ditch systems in the Lahaina Aquifer Sector Area cross multiple aquifer systems and surface water hydrologic units. (See Figure 2) *In Waiāhole I*, the Hawai'i Supreme Court also held that the Commission can consolidate the regulation of a single system because it comports with the Commission's function of comprehensive water planning and management.<sup>101</sup> The Court ruled that the areas covered by the ditch system are to be considered hydrologically controllable irrespective of hydrologic units under HRS § 174C-50 (h) which deems uses between existing users as competing when water is drawn from a hydrologically controllable area.<sup>102</sup>

### **E ho'i ka nani i Moku'ula**

West Maui Preservation Association's oral testimony highlighted Maui Komohana's (West Maui) rich cultural history. E ho'i ka nani i Moku'ula (Return the beauty to Moku'ula) is the first in the series of mele (song) first published in Hawaiian newspapers in the 1860's that describes sacred springs, fishponds and Hawaiian royalty at Moku'ula in Lahaina. Moku'ula has been covered up because the water resources were depleted. Designation can be a tool to return to this beauty and carve out a better future by "extolling the past through traditional and customary Native Hawaiian practices."<sup>103</sup> Kūpuna have managed surface and ground water comprehensively without drawing artificial lines and boundaries.

*Staff response:*

---

<sup>98</sup> While minutes reflect an MOA, staff have been unable to locate any MOA document in CWRM files.

<sup>99</sup> See Minutes for CWRM Meeting, February 18, 2004, at pages 3-7,

<https://files.hawaii.gov/dlnr/cwrmm/minute/2004/mn20040218.pdf>

<sup>100</sup>

See Minutes for CWRM Meeting, May 19, 2004, at pages 5-8,

<https://files.hawaii.gov/dlnr/cwrmm/minute/2004/mn20040519.pdf>

<sup>101</sup> *Waiāhole I*, 94 Hawai'i at 174, 9 P.3d. at 486.

<sup>102</sup> *Id.*

<sup>103</sup> Oral testimony by U'ilani Tanigawa Lum on behalf of the West Maui Preservation Association.

We appreciate sharing of traditional ecological knowledge and lived experiences as a data set. This data will assist the Commission in decision making and helps to ensure that the Commission is meeting its duty of protecting traditional and customary Native Hawaiian rights under the State Constitution and HRS § 174C-101 “Native Hawaiian water rights”.

#### 4.10.2 February Commission Meeting

Table XX and XX provide summaries of the written and oral testimony received for agenda item B-4 of the Commission’s February agenda. See Appendix E.

**Table XX.** Summary of Written Testimony CWRM Meeting February 2022

Sector	Name	Position	Comment
Hawaii Water Service	Anthony Carrasco, General Manager		<ul style="list-style-type: none"> <li>• Owner and operator of the Kaanapali Water System which has nine wells in the Aquifer System; Owner and operator of the Kapalua Water System in the Honolulu Aquifer System; Contract with Maui Land and Pineapple Company to operate and maintain the Honokōhau Ditch System which originates in the Honokōhau Aquifer System.</li> <li>• Requests the following information supporting the groundwater mountain that able to be public:               <ol style="list-style-type: none"> <li>1) Actual measurement data of the tunnel discharge rates, including how many measurements were made, the dates of these measurements and how the time-varying rates of discharge were accounted for</li> <li>2) A list of wells and the respective potential uses which comprise the “entitled/authorized planned use” for each Aquifer System</li> <li>3) A list of wells and uses which comprise “other well capacity” and a justification of the inclusion in the comparison of each aquifer system’s existing and planned pumpage versus its sustainable yield</li> </ol> </li> <li>• If “other permitted well capacity” is not included only Honokōwai Aquifer System exceeds 90% criterion for designation</li> <li>• Impact on and effect on neighboring aquifers is very modest at best</li> <li>• Data from the DMW at Mahinahina indicates that the Aquifer System has been</li> </ul>

			<p>quite stable, data does not portray an aquifer that has been degraded over the eight-year period since 2013.</p> <ul style="list-style-type: none"> <li>• Time of designation process will delay Hawaii Water from moving forward new sources of supply; this delay will translate into additional significant costs</li> </ul>
<b>Public</b>	Fay McFarlane	Support	<ul style="list-style-type: none"> <li>• Experienced drought and declining stream flows; dual designation of SW and GW is best tool to address the challenges of new climate reality</li> <li>• Cites Water Code and believes “regulation is necessary to preserve diminishing groundwater supply for future needs” HRS § 174C-44 (3). Important to secure our water future now for the generations to come.</li> <li>• Well-researched staff submittal highlights many of the water challenges our community is facing, including water harm to ground water quantity and quality by saltwater intrusion, climate uncertainty due to prolonged drought and declining rainfall, as well as the connection between ground and surface water resources.</li> <li>• More numeric IIFSs have encouraged new well construction. Maui DWS has not notified CWRM of the new wells they have been planning in areas of severe water conflict.</li> <li>• Designation allows CWRM to manage well placement and to protect the long-term health of our precious ground water.</li> <li>• Public Trust requires preservation of Kānaka Maoli cultural practices, but these practices have been harmed and will continue to be harmed without additional protective action by this Commission. The ability of Maui Komohana to maintain ancestral traditions and lifeways is at risk.</li> <li>• Major conflicts over water use in our community, is that kalo farmers, whose water use is a protected public trust purpose, receive their water at the mercy of plantation water systems and the developers who currently operate them</li> </ul>

			<ul style="list-style-type: none"> <li>• Competition over declining water resources in our area has already led to conflicts over water, only expected to get worse</li> <li>• Designation helps Commission with balancing requests for water and ensure that public trust purposes, such as water for kalo, have priority as not all current uses of water are beneficial.</li> <li>• Without adequate water, our lāhui are unable to continue Kānaka Maoli practices that define who Kānaka are as a people and that made Lāhainā the “Venice of the Pacific.”</li> <li>• County has proven it cannot manage the wai and Maui DWS has recently admitted to the county water board that the County is in the “position of begging” private corporations/landowners for help. Some of those private entities are culpable for water violations and have initiated aggressive conflicts with kuleana families with appurtenant water rights. This situation and the County's conflicted position is untenable</li> <li>• References Waiāhole opinion and that “the lack of full scientific certainty should not be a basis for postponing effective measures to prevent environmental degradation”</li> </ul>
<b>Public</b>	Uilani Kapu	Support	<ul style="list-style-type: none"> <li>• Designation and permitting process is critical to address water availability issues caused by climate change, evidenced by decreasing rainfall and stream flows</li> <li>• Designation needed to protect and restore traditional and customary Native Hawaiian rights and practices</li> </ul>
<b>Na‘aikane Maui</b>	Ke‘eaumoku Kapu	Support	<ul style="list-style-type: none"> <li>• Resident of Lahaina, ‘ohana has stewarded ‘āina kuleana in Kaua‘ula Valley since time immemorial, provided LCA and RP</li> <li>• Waited 20 years for recommendation to designate</li> <li>• Even though IIFS are set, there is still conflict and companies are taking all the water</li> <li>• Raised issues multiple times, even though his ‘ohana has kuleana rights to the water, there are many days w/o water also for domestic uses like bathing</li> </ul>

			<ul style="list-style-type: none"> <li>• Concerned about pocket rot for his kalo crop because intakes aren't cleaned and managed, has to call water company manager for issues with intake</li> <li>• Kuleana users have the first right to water, but always need to wait</li> </ul> <p>Serious conflicts over water use in Kaua'ula and across West Maui, historic and on going</p>
<b>Public</b>	MJ Palau-McDonald	Support	<ul style="list-style-type: none"> <li>• Designating the Lahaina Aquifer sector as a Surface Water and Ground Water Management Area is not only consistent with, but also likely required by, the precautionary principle and other Public Trust provisions given your Commission's findings</li> <li>• Only CWRM has the authority to enforce IIFS and SY</li> <li>• Native Hawaiian community members throughout Maui Komohana remain cut off from freshwater resources, despite the fact that their traditional and customary practices, appurtenant rights, and domestic water uses are protected Public Trust purposes</li> <li>• Cites to 1978 Constitutional Convention, that framers of Hawai'i's Public Trust envisioned your agency having "<i>not only the power to protect the resources but the responsibility to do so long before any crisis develops.</i>"</li> <li>• USGS presentation at the January 18th Commission Meeting shows that Maui Komohana's freshwater resources will only grow scarcer as climate impacts worsen, creating a dire situation if proactive steps are not taken now</li> <li>• Designation provides for an integrated approach to surface- and groundwater management that will more equitably distribute freshwater resources and enable the Commission to proactively plan for the future</li> </ul>
<b>Public</b>	Pā'anaakalā Tanaka	Support	<ul style="list-style-type: none"> <li>• Experienced drought and declining stream flows; dual designation of SW and GW is best tool to address the challenges of new climate reality</li> </ul>

			<ul style="list-style-type: none"> <li>• Cites Water Code and believes “regulation is necessary to preserve diminishing groundwater supply for future needs” HRS § 174C-44 (3).</li> <li>• Well-researched staff submittal highlights many of the water challenges our community is facing, including water harm to ground water quantity and quality by saltwater intrusion, climate uncertainty due to prolonged drought and declining rainfall, as well as the connection between ground and surface water resources.</li> <li>• More numeric IIFSs have encouraged new well construction.</li> <li>• Cites Serious disputes; kalo farmers, whose water use is a protected public trust purpose, receive their water at the mercy of plantation water systems and the developers who currently operate them</li> <li>• Urges Commission to follow Precautionary Principle</li> <li>• Designation helps Commission balance requests for water and ensure that public trust purposes, such as water for kalo, have priority. Has keiki who are also farming kalo alongside on kuleana land. Because of wai (water) from Kahoma stream able to maintain this practice that is vital to identity as Hawaiians.</li> <li>• Without the water we have no kalo (taro), we lose that ‘ai (food) that feeds us physically and connects us spiritually to our Native Hawaiian ancestors.</li> <li>• Designation is necessary to ensure any hope for the future that my children and their descendants will always be able to sustain those connections.</li> </ul>
<b>Public</b>	Lauren Palakiko	Support	<ul style="list-style-type: none"> <li>• The IIFS was mandated on March 20, 2018, however there was ever a time when the LIC had released the mandated 3.36 mgd. In fact, we have only seen the amount of water in the river decline since then</li> <li>• Sometime before 2019 would have been proactive to designate Lahaina as a WMA. It is now beyond crucial for our native</li> </ul>

			practices, farming and island’s ecosystem to do so.
<b>Public</b>	Charlene Rowland	Support	<ul style="list-style-type: none"> <li>• Experienced drought and declining stream flows; dual designation of SW and GW is best tool to address the challenges of new climate reality</li> <li>• Cites Water Code and believes “regulation is necessary to preserve diminishing groundwater supply for future needs” HRS § 174C-44 (3).</li> <li>• Well-researched staff submittal highlights many of the water challenges our community is facing, including water harm to ground water quantity and quality by saltwater intrusion, climate uncertainty due to prolonged drought and declining rainfall, as well as the connection between ground and surface water resources.</li> <li>• More numeric IIFSs have encouraged new well construction.</li> <li>• Cites serious disputes; kalo farmers, whose water use is a protected public trust purpose, receive their water at the mercy of plantation water systems and the developers who currently operate them</li> <li>• Urges Commission to follow Precautionary Principle</li> </ul>
<b>Public</b>	Charlie Palakiko	Support	<ul style="list-style-type: none"> <li>• Kuleana landowner of Kaua‘ula Valley. Him and his family have been raising kalo on this land for over 30 years; restarted family patches in the mid-80s, fed patches with water from holes for years because there was no water in the stream</li> <li>• In 30-years ‘auwai was restored and stream running by negotiating with West Maui Land</li> <li>• Since then, water has dropped drastically from reaching the muliwai, to now a dry stream; killing many stream life such as all ‘o‘opu, ‘ōpae and prawns and also affecting kalo patches. As of today, water to patches is extremely low causing dirt to show in them</li> <li>• Called West Maui Land and was told water is being pinched because LIC’s water was running low. Was told the siphon 100 gpm</li> </ul>

			<p>which is equivalent to a little over 1,000,000 gallons a day. This is not enough, and it's been getting worse</p> <ul style="list-style-type: none"> <li>• LIC is not complying with the IIFS, which requires LIC to release 2,000,000 gallons at the dam</li> <li>• Cannot expand lo'i because of decreasing water flow, a standstill for the last 2-1/2 years</li> <li>• Need designation of WMA to have a third party to fairly manage the developer's water they're taking</li> <li>• Provided photos of dried up muliwai in June 2019 and patches today showing dirt because the stream is so low.</li> </ul>
<b>Maui Chair</b>	<b>BWS</b>	Dean K. Frampton	<p>Reservations</p> <ul style="list-style-type: none"> <li>• Describes vote on January 20, 2022 BWS meeting. At the time of the vote, only five BWS members were present. Four members were in support of the designation. As Chair, was not in support of the motion, and expressed reservations based on the following reasons: <ol style="list-style-type: none"> <li>1) CWRM has admittedly had challenges keeping up with well-reporting;</li> <li>2) CWRM has admittedly had challenges with monitoring and enforcing the IIFS;</li> <li>3) In light of the two issues above, it is questionable if CWRM has the resources and capacity available to properly manage the Lahaina Aquifer Sector; and</li> <li>4) In its December 28, 2021 letter to CWRM, the County of Maui Department of Water Supply noted designation is "premature and inconsistent with our Water Use Development Plan."</li> </ol> </li> <li>• A four-to-one vote would have stalled the motion; did not want to prevent the Board members in attendance from providing input on the matter, voted in favor of the motion.</li> </ul>

**Table XX.** Summary of Oral Testimony CWRM Meeting February 15, 2022

Sector	Name	Position	Comment
<b>County Council Member</b>	Tamara Paltin	Support	<ul style="list-style-type: none"> <li>• Designation sorely needed for GW and SW</li> <li>• Climate change has drastic impact, reducing rainfall, creating drought conditions</li> <li>• Serious concern for long term water resources, need for more wastewater reuse</li> <li>• Need to act quickly, people in West Maui do not want to wait for all triggers to be met, want to be proactive in resource protection</li> <li>• 289 low-income units being built right now, 1000 units at Pulelehua received approvals</li> <li>• Lesson from Nā Wai ‘Ehā: GW withdrawals in one aquifer affect the neighboring aquifers, best way to protect resource is to designate all of the proposed areas and manage together</li> <li>• No piecemeal designation that will only encourage jumping the boundary lines</li> <li>• CWRM is the best entity to oversee the responsible use of water to ensure the public trust</li> <li>• Precautionary principle supports that where there's scientific uncertainty you should choose in favor of protecting the resource</li> <li>• Rights of kuleana user deserve to finally be protected, because they have the highest rights to water and have the least access to water</li> </ul>
<b>DHHL</b>	Jonathan Likeke Scheuer, Ph.D.	Support	<ul style="list-style-type: none"> <li>• Designation of GW and SW areas enhances the Commission's ability to defend DHHL’s rights in the resource going forward</li> </ul>
<b>Public</b>	Ke‘eaumoku Kapu	Support	<ul style="list-style-type: none"> <li>• Resident of Lahaina, ‘ohana has stewarded ‘āina kuleana in Kaua‘ula Valley since time immemorial (LCA, RP provided in written testimony)</li> <li>• Waited 20 years for recommendation to designate</li> <li>• Even though IIFS are set, there is still conflict and companies are taking all the water</li> <li>• Raised issues multiple times, even though his ‘ohana has kuleana rights to the water, there are many days w/o water also for domestic uses like bathing</li> <li>• Concerned about pocket rot for his kalo crop because intakes aren’t cleaned and managed, has to call water company manager for issues with intake</li> <li>• Kuleana users have the first right to water, but always need to wait</li> </ul>

			<ul style="list-style-type: none"> <li>• Serious conflicts over water use in Kaua‘ula and across West Maui, historic and on going</li> </ul>
<b>Hui Nā Mamo Aloha ‘Āina o Honokōhau</b>	Karyn Kanekoa	Support	<ul style="list-style-type: none"> <li>• Hui Nā Mamo Aloha ‘Āina o Honokōhau is a 501 C-3 nonprofit made up of one Honokōhau Valley residents and lineal descendants committed to protecting the wai and restoring lo‘i throughout Honokōhau valley</li> <li>• When it comes to protecting and managing wai there is no such thing as being too cautious or prudent</li> <li>• Experienced deadly, decreasing rainfall and drought in recent years, anticipated declines in rainfall based on future projections will negatively affect the groundwater recharge and stream flow, resulting in less water availability, therefore, putting kalo cultivation and stream life at risk</li> <li>• Designation is the best tool to address these challenges</li> <li>• With ongoing serious disputes over water issues or water use in West Maui community, Hui supports designation because it is necessary for proactive management of their water resources</li> <li>• Use of water for kalo cultivation is a protected trust use which is supposed to have the highest protection under the law</li> <li>• The designation of the whole Lahaina aquifer sector from ‘Ukumehame to Honokōhau as a surface and groundwater management area, will help the Commission balance requests for water and ensure that public trust uses, and native Hawaiian rights and practices are protected</li> <li>• Leaving Honokōhau aquifer out of the management area wouldn't make sense; Hui members know firsthand from living there and farming kalo, that designation is necessary in Honokōhau in order to ensure that they will have wai in our stream for generations to come, and that our mo‘opuna and hanauna e hiki mai ‘ana will never be forced to stop farming kalo because of lack of water in the stream</li> </ul>
<b>Public</b>	Lauren Palakiko	Support	<ul style="list-style-type: none"> <li>• Resident of Kaua‘ula Valley, born and raised right across the street from where the muliwai, wife of a kalo farmer</li> <li>• Mauka to makai connectivity is imperative to our native ecosystem, Kaua‘ula Stream was filled with life such as or ‘o‘opu, ‘ōpae, prawns and more, was enough water coming down, that the muliwai was</li> </ul>

			<p>running so much that the GM at Puamana was able to cultivate his own lo'i until about 2014-15</p> <ul style="list-style-type: none"> <li>• 2019 muliwai dried up for the first time, besides after rainstorms, it has not run since then</li> <li>• Past summer was really hard on the lo'i, used to get 1,400 gpm and that was extremely low for Kaua'ula stream and lo'i; then LIC started running it at 1,200 gpm. Dave Minami, who is the previous LIC Water Manager advised to email Peter Martin to see if there are any changes that could be made; Peter responded that CWRM's decision was for them to give Palakikos 1,000 gpm. Now, LIC is running syphon at 800 gpm. The mud in patches is showing, the water temperature may be rising which all could be leading to rot and loss of crops.</li> <li>• Designation is beyond crucial now for Native practices for farming and ecosystem</li> </ul>
<b>Public</b>	Charlie Palakiko	Support	<ul style="list-style-type: none"> <li>• Kuleana landowner of Kaua'ula Valley. Him and his family have been raising kalo on this land for over 30 years; restarted family patches in the mid-80s, fed patches with water from holes for years because there was no water in the stream</li> <li>• In 30-years 'auwai was restored and stream running by negotiating with West Maui Land</li> <li>• Since then, water has dropped drastically from reaching the muliwai, to now a dry stream; killing many stream life such as all 'o'opu, 'ōpae and prawns and also affecting kalo patches. As of today, water to patches is extremely low causing dirt to show in them</li> <li>• Called West Maui Land and was told water is being pinched because LIC's water was running low. Was told the siphon 100 gpm which is equivalent to a little over 1,000,000 gallons a day. This is not enough, and it's been getting worse</li> <li>• LIC is not complying with the IIFS, which requires LIC to release 2,000,000 gallons at the dam</li> <li>• Cannot expand lo'i because of decreasing water flow, a standstill for the last 2-1/2 years</li> <li>• Need designation of WMA to have a third party to fairly manage the developer's water they're taking</li> </ul>
<b>Public</b>	Madison Palau-McDonald	Support	<ul style="list-style-type: none"> <li>• Working with community members in Maui Komohana who are directly impacted by CWRM decision</li> </ul>

			<ul style="list-style-type: none"> <li>• strong support for designation today; designation provides the best opportunity to protect and preserve resources in our new climate reality.</li> <li>• Failing to designate will perpetuate the status quo; IIFS will continue to go unmet, well reporting will remain a struggle and municipal and commercial uses will continue to benefit at the expense of protected public trust purposes like an appurtenant rights, traditional and customary practices, and domestic uses.</li> <li>• As a Native Hawaiian, heartbroken to see community members denied their rights protected under Hawai‘i’s Constitution and the Water Code. As a law student, grateful that designation will give your CWRM the tools to address these issues in an integrated and comprehensive manner that will ensure that water resources are equitably and sustainably stewarded. Maui County cannot do this alone</li> <li>• Urges CWRM to fulfill its fiduciary duty under our public trust and vote to designate</li> </ul>
<b>Public</b>	Erik Meade	Support	<ul style="list-style-type: none"> <li>• Law student at William S. Richardson; praises Commissioners and staff for taking the initiative to move this issue forward.</li> <li>• CWRM has built an excellent record that provides more than reasonable basis for designation that coupled with the Supreme Court's recognition that the precautionary principle is an inherent attribute of the public trust domain, further supports designation.</li> <li>• Overwhelming community sentiment is that you've met legal criteria and that the community members feel it's vital.</li> <li>• Urges CWRM to stand with the community and its staff and to designate.</li> </ul>
<b>West Maui Preservation Association</b>	Bianca Isaki, Ph.D., Esq.	Support	<ul style="list-style-type: none"> <li>• Submitted written testimony to January 18th meeting in strong support of designation</li> <li>• Climate change is here. There's a long-term drought in West Maui. Kaua‘ula Stream is drier than even before the IIFS were amended in March 2018.</li> <li>• Diverters are now turning to well-drilling to substitute for stream diversion. Three of the private wells that supply the gentleman's estate in Launiupoko had pump installations in 2020 after the March 2018 IFS Designation.</li> </ul>

			<ul style="list-style-type: none"> <li>• On January 26, 2021, LIC reported curtailment of private wells number 3 due to rising chlorides. This well is fairly high up mauka at 751 feet in elevation. Those 3 wells have a combined 1,100 gallon per minute pumping capacity.</li> <li>• In the absence of designation there aren't institutional mechanisms that will prevent these well owners from pumping up to installed pump capacity. Institutional mechanisms are needed to counteract existing use and development pressures to pump more from these private wells.</li> <li>• In Kaua'ula and Launiupoko, communities fought several attempts to stall even more developments, Makila Kai, Makila Farms, Polanui.</li> <li>• Concerned that well owners who can increase pumpage will do so or at least imprudently announced plans to do so, is a real concern. This is a long way around to think we agree with the recommendation to examine permitted well capacity as your staff have recommended and considering designation.</li> <li>• WMPA supporters in Kaua'ula also learned that the West Maui Land Company and the County are planning to install yet another well that hasn't been considered and recently examined a site on the north side of Kaua'ula stream, north of the Dizon kuleana</li> </ul>
<b>Public</b>	William Wood	Support	<ul style="list-style-type: none"> <li>• Honokōhau Valley residents, supports designation of the Lahaina Aquifer sector as both ground and surface water management areas.</li> <li>• Living in Honokōhau Valley, firsthand knowledge of the mismanagement of water use by both MLP and the County of Maui Department of Water Supply</li> <li>• E.g., the County had a bridge in Honokōhau Valley that was used to hold water lines above the river. It was originally built by MLP and Jerry McDonald. It was then taken over by the county Department of Water Supply in 2000. The bridge failed in 2018. The County was well aware that the bridge had failed, and the bridge system was obstructing the width of the river. (Provides photos showing bridge laying in the river-wall to wall and one of the bridges in the stream) In 2018 after the bridge failed the County was aware of this, but nothing was done. During the tropical storm Olivia there was a big flood that came through and a lot of large logs came</li> </ul>

			<p>down and got stuck on this bridge eventually building up a big dam before it broke free sending catastrophic flooding below which destroyed land, homes and lo'i. After the flood, Ayrton Strauch came up to take a look at the area and help us clarify what exactly had happened. After tropical storm Olivia, the flow in the stream was greatly diminished and we repeatedly tried to contact MLP to restore the water flow but did not receive a response.</p> <ul style="list-style-type: none"> <li>• Meanwhile MLP was wasting the water which was overflowing into the sea at Honokao'o, documented in the 2019 wastewater complaint.</li> <li>• "We are on a little island in the middle of the Pacific, and we should not allow so many straws to take from our cup treating this valuable resource as a commodity to be bought or sold."</li> <li>• When looking at who is in opposition of protecting West Maui's aquifers, faces of developers looking for foreign money and the people that are responsible for selling the water for those developments.</li> <li>• Designation assures that the use of our precious resources will be reasonable and beneficial for the future of our small island.</li> </ul>
<p><b>Public</b></p>	<p>Kanoelani Steward</p>	<p>Support</p>	<ul style="list-style-type: none"> <li>• West Maui community member, supports the designation of the Lahaina aquifer sector as a surface water and groundwater management area</li> <li>• As stated in the staff's submittal this designation is a way to proactively manage water disputes over surface and groundwater in the Lahaina Aquifer sector, especially since there are established IIFS that are not being met in West Maui which essential shows that off-stream uses are being prioritized over instream uses.</li> <li>• Designation is another layer of legal protection to regulate reasonable and beneficial uses of water.</li> <li>• The Commission has a constitutional duty and as stated in HRS Chapter 174-C, the Commission is to ensure the availability of this precious resource will meet the present and future needs of the people.</li> <li>• The climate crisis of the future is uncertain which will directly impact and affect our water sources. The future housing that is planned for the Lahaina aquifer sector will also directly impact and affect our water sources.</li> </ul>

			<ul style="list-style-type: none"> <li>• The current water disputes are already affecting our native Hawaiian practices.</li> <li>• Therefore, designation can only benefit the present and future needs of the people of West Maui.</li> <li>• In the staff submittal the Maui Department of Water Supply said that the move to designate is being too cautious. “However, I strongly disagree as do many of us community members as designation is a proactive move that can put our public trust resources and environmental protection at the forefront of regulation.”</li> <li>• Designation is an important tool to manage water use as it will ensure that all water use in our area is consistent with the public interest.</li> </ul>
<b>Public</b>	Sanna Kauhane	Support	<ul style="list-style-type: none"> <li>• Strong support of this designation, crucial that this surface and groundwater designation happens for all of West Maui as a whole, rather than singling out certain problem areas for sole designation, such as simply the Honokōwai system or the Launiupoko system.</li> <li>• Surface and groundwater here in West Maui are hydrologically very clearly integrated. So much so that it is difficult to draw boundary lines between systems. It would be careless to move forward without managing all of our surface and groundwater together holistically.</li> <li>• The recent implementations of IIFS have been somewhat helpful to restoring stream flow; but we are now seeing groundwater being taxed more heavily. Increased enforcement of IIFSs will only shift the burden further to groundwater withdrawals which will return full circle to further impact our groundwater dependent ecosystems, stream flow and coastal discharge.</li> <li>• Designation will ensure that our region will be managed collectively as a whole, so that we can avoid simply shifting the weight around from one aquifer system to another which could prove catastrophic for future generations to come. Two of our aquifer systems are being threatened</li> <li>• Urges CWRM to take this proactive responsible step</li> </ul>
<b>Public</b>	Kalama‘ehu Takahashi	Support	<ul style="list-style-type: none"> <li>• Support designation of GW and SW areas because this process serves a holistic and proactive approach towards protecting this precious resource from development as well as climate change; ensuring accountability across the board, particularly those of</li> </ul>

			<p>the land irrigation companies that have historically mismanage this resource as seen in Wood’s testimony.</p> <ul style="list-style-type: none"> <li>• Until today, water companies are still gatekeeping these resources; ultimately denying the kuleana landholders as well as other kalo farmers who want to revive these practices such as the Hui Nā Mamo Aloha ‘Āina o Honokōhau.</li> <li>• There have been years and years of struggle for wai and has severely affected not only the appurtenant right to farm kalo as kuleana landholders, but also their basic necessities to live under ‘āina kulāiwi, which all should have the right to as Hawaiians.</li> <li>• “There are also housing developments up and coming unless we have a way to hold current developers accountable for the impact on the resource, we’re basically drinking the streams dry and all these resources dry.”</li> <li>• Cites a quote by Jeff Pearson referring back to the January 18th meeting saying “there’s not a lot of water here in West Maui and we are right near the edged in what we provide for our customers in West Maui.” To deny the scarcity of this resource is also to deny the claims for necessity of water and needs for this type of measures to be taken.</li> <li>• The January 18th staff submittal references the Launiupoko and Honokōwai aquifers of the sustainable yield on page 7 of that submittal says that Launiupoko will be within 115% of the sustainable yield and Honokōwai will be within the 170% range of the sustainable yield, cannot move forward and rely on these unsustainable, criminal practices of mismanagement of this resource for communities and our future</li> <li>• Wants to ground truth one of the testimonies earlier. “I had the opportunity to visit Kaua’ula to harvest kalo for our ceremony relating to Makahiki and I would like to say that the water was in fact, very low, and the water did feel warm and so I see this I see this water issue not only talking about our appurtenant rights and for subsistence practice such as farming kalo; but also something that could jeopardize the cultural religious future and the relationship to these resources.”</li> </ul>
<b>Public</b>	Kekai Keahi	Support	<ul style="list-style-type: none"> <li>• Family is from the ahupua‘a of Panaewa in the valleys of Kanahā and Kahoma.</li> </ul>

			<ul style="list-style-type: none"> <li>• Designation is super important on the West Side; e.g. in Kahoma, there are two developers. First, West Maui Land shut the water off to Kahoma Stream and dried the entire river. Almost 80% of all of the species were lost that community fought long and hard to restore in that stream because they wanted to fill up the reservoir, and that was that was brought before Ayron Strauch. The second was because Kamehameha Schools owns the land, they gave management duties to West Maui Land to handle the intake and after one of those storms, they didn't get back to the intake to clean it out and dried up the river that time also. The designation would help us out in that in that area.</li> <li>• Second, looking at Kanahā, we got the Waipuka and Kanahā wells and the salinity and chloride levels in those wells from way back they discovered chloride levels way beyond the 250 parts per million that was set by Federal Government.</li> <li>• This led to the complete dewatering of Kanahā Stream to dilute this water they were drawing from the well; so, it was happening way back, and the County knew of this. The problem is we're looking at the County government is the ones to make sure that our public trust is taken care of but they're the ones that turn the blind eye to the to the problem and created another problem by diverting Kanahā Stream.</li> <li>• “Recently in the past few years, there have been these drought situations which I never did remember having when I was growing up. We got to pull back and if we use over a certain amount, we get fined.”</li> <li>• There are private systems like Launiupoko and Ka‘ānapali Resort, that don’t experience these drought conditions as they continue to water their golf courses, to fill their swimming pools, the hotels continue to have their guests take showers and do whatever they want; “it's like a free for all, while the community have to go on water restriction and the risk of being penalized for using an excessive amount of water during drought conditions.”</li> <li>• Water is a public trust and belongs to everybody. If because you’re a private water company, doesn't mean that you don't fall under these drought condition measures and that's what we experience all the time.</li> </ul>
--	--	--	--

			<ul style="list-style-type: none"> <li>• Lines dividing the Lahaina sector in the different aquifers are fictitious, “we cannot look at those lines as this area has this much amount in sustainable yield and then this sector is on this aquifer, is okay? This is the proverbial straw in the cup that we've been using to exhaustion to describe the situation here.”</li> <li>• The County does not support designation for the entire aquifer sector because some aquifer systems included in this initiative have no basis for designation. We're looking at triggers and what will trigger a designation. “In my opinion, we’re beyond the triggers. The gun is already fired. We just trying to find out where the bullet is going to hit? We do not wait and go up to the to the very edge of a cliff to say, stop! - I can see the cliff from far ahead and say I am not getting any closer before I fall off. We cannot do that.”</li> <li>• “The County and its developers are saying by this designation happening, it's going to completely stop development and people are not going to have a chance to own their homes, which is false and just scare tactics. It’s sad to know that the county who's supposed to protect this water resource for us is fighting against us, the public.”</li> </ul>
<b>Public</b>	Blossom Feiteira	Support	<ul style="list-style-type: none"> <li>• Lifelong resident of Maui, Native Hawaiian practitioner born and raised in Lahaina.</li> <li>• Supports the designation of the Lahaina sector surface and groundwater management area.</li> <li>• Issues and challenges of kuleana farmers, native practitioners, insufficient monitoring of the IIFS are very true and it's been ongoing and been a struggle in West Maui for many of the local families and Native Hawaiians on West Maui.</li> <li>• Designation of West Maui is also very important in terms of the maintenance and of future restoration of significant historic sites in Lahaina. The Mokuhinia complex is a Nationally Registered Historic site with the Department of Interior, sits right in the middle of Lahaina Town. The diversion of water, since 1890 has significantly impacted this area to the point where in 1905, they buried the pond due to stagnated water.</li> <li>• The other impact that happened along the shoreline is that the streams of Kaua‘ula and Kahoma that fed into the Mokuhinia Pond, also provided for a</li> </ul>

			<p>muliwai to be established that fed the Pō‘alima of Pakala, Makila, and Polanui, the shoreline across West Maui.</p> <ul style="list-style-type: none"> <li>• At a time when the muliwai was fully functioning, you had a very diverse and vibrant shoreline ecosystem that had different varieties of limu, varieties of fish species, and it was considered to be by the kupuna of Lahaina, their nursery. The tiger sharks would come in once a year to spawn in that area, and it was the baby sharks that fed through that ecosystem that fronted Moku‘ula and Mokuhinia. With the diversion of water, we saw immediately a degradation of the ecosystem, less fish, less limu, warmer waters, and overall degradation of the environment that led the kupuna oftentimes to kapu that place for no fishing and gathering because it just simply wasn't there.</li> <li>• The County of Maui is currently in the process of finalizing their archaeological inventory survey and are preparing an RP for the restoration project known as the Moku‘ula project.</li> <li>• Designation is so important in bringing back Mokuhinia pond. Without it, it can never happen. Stagnant water is not a good thing. The less water that comes off the streams and the underground aquifer system, clearly would have a major impact on this very significant site.</li> </ul>
<b>Public</b>	Archie Kalepa	Support	<ul style="list-style-type: none"> <li>• Shares hands-on perspective starting with Kahoma Stream, stream was dry for over 130 years. Worked hard along with CWRM to open up that stream from mauka to makai. It has been an educational process, changes in the stream from the ‘o‘opu coming back to allowing families to plant kalo in that valley again</li> <li>• Water running in the stream is helping the aquifers</li> <li>• Important to maintain instream surface water management because of both cultural, environmental, historical importance, and being faced with climate change</li> <li>• Very important to have mauka to makai flow in all streams, limu are dying because there's no fresh water for the limu to spawn, our aquifers are dry, there's not enough water to sustain current communities in West Maui</li> <li>• Encourage CWRM to protect the surface water management system for all of West Maui so that we may have a future. 9-generations plus from Lahaina</li> </ul>

			and hopes his kids can stay home and not have to leave because there's no water for them to use when they become community leaders in this place that we love and call home, West Maui.
<b>Hui o Nā Wai 'Ehā</b>	Hōkūao Pellegrino	Support	<ul style="list-style-type: none"> <li>• Strongly supports the designation for both groundwater and surface water management for West Maui</li> <li>• Ability of staff to go above and beyond to take care of IIFS without a contested case; shows Commission is committed to protecting both GW and SW areas, mahalo to staff for their ability to be proactive in their approach</li> <li>• Community that is ready to act, collaborate, and to work with all parties</li> <li>• Community deserves the highest and best protection and insurance that the descendants of these individuals, kuleana users and the Native Hawaiian families who have been there for generations, continue to not just live but thrive, cultivate and sustain the community they reside</li> <li>• Mahalo to commissioners as well for taking this upon you; it's a huge kuleana for all of you and you have an entire community much bigger than Nā Wai 'Ehā that stands alongside and behind you to help support this implementation process</li> </ul>
<b>'Aha Moku o Maui</b>	Fay McFarlane	Support	<ul style="list-style-type: none"> <li>• Private wells and DWS are not included in the WUDP</li> <li>• Encountered private contractor and consultant of Maui DWS in Kaua'ula in week prior to meeting who was hired to dig a new well that hasn't been noticed to CWRM yet, could not provide information on pump size or alternative sites</li> <li>• Highlight unpermitted LIC wells on p. 12 of staff submittal</li> <li>• Other private water companies do not report water use accurately</li> <li>• Designation is only way to go; DWS has painted this as a home rule issue, but if it was working, we wouldn't be in the situation that we're in now</li> </ul>
<b>Sierra Club Maui</b>	Clare Apana	Support	<ul style="list-style-type: none"> <li>• Support of designation and will continue support</li> <li>• Consider impact of wells on kuleana water users, as stakeholders in the aquifer kuleana water users should be given the right to have prior informed consent for any well</li> </ul>

<b>Public</b>	Joyclynn Costa	Support	<ul style="list-style-type: none"> <li>• Kuleana users have suffered both from diminishing and extinguishing of their rights for too many years</li> </ul>
---------------	----------------	---------	--

#### 4.10.3 Public Hearing

Additional testimony received at the Public Hearing will be inserted here.

### 5. ANALYSIS

#### 5.1 CONSTITUTIONAL DUTY

Even though the Commission fulfilled its primary duty to establish interim IFS in the Lahaina ASA, public trust uses are threatened or remain unfulfilled. For example, community members voiced grave concern over the lack of available stream water and streamflow to cultivate lo'i kalo and to exercise traditional and customary Native Hawaiian practices that rely on water in its natural state, mauka to makai flow, and healthy native stream fauna.

The non-potable water needs of 2 mgd for current and foreseeable development and use of Hawaiian Home Lands as set forth in section 221 of the Hawaiian Homes Commission Act may be impacted by other off-stream non-potable uses in Kapalua and Kā'anapali.

DHHL's written testimony outlined the benefits of designation for its beneficiaries; the increased legal protection of its surface and groundwater reservations by administrative rule and the requirement that water use permits are subject to the rights of DHHL. Additionally, DHHL's oral testimony also pointed out that the Commission's ability to regulate groundwater in non water management areas is limited to three factors, namely the existence/location of a well, its depth, and the amount of water that can be pumped. While the depth and instantaneous pump capacity (gallons per minute) are dictated by the Well Construction and Pump Installation Standards approved by the Commission, management of well location and amount of water use on a daily basis (gallons per day) can only be regulated in a designated WMA.

Designation expands the tools available to the Commission to proactively protect water resources and regulate reasonable and beneficial uses of water, including public trust purposes. The water use permit application process requires water users to disclose the purposes and amounts of their uses, which then are subject to the Commission's determination as to how to protect public trust uses affected by it.

Moreover, Maui DWS's assertion that its WUDP should substitute for designation cannot account for the fact that the Commission is the primary guardian of the public trust resources and uses and only the Commission has the authority to regulate well placement, pumping and water use. A WUDP is a plan and guidance document unlike the enforceable water use permitting regime of the Water Code that ensures due process rights. In its WUDP, Maui County also recognizes its limitations to regulate and plan for use of the other private water companies as these systems are not interconnected and each is independently operated and maintained.<sup>104</sup> "The private public water

---

<sup>104</sup> See Maui WUDP Draft under 19.5.1. Water Use by Type, Municipal Use at page 34 of the Lahaina Aquifer Sector Area.

systems were requested to provide demand projections but most did not supply information.”<sup>105</sup> Maui DWS’s water use only accounts for 35 percent of the municipal groundwater use and 15 percent of municipal surface water use.<sup>106</sup> There are six municipal water systems using either surface water, groundwater or both in the Lahaina Aquifer sector area, with “public water systems” as defined by the Department of Health (DOH) (systems serving more than 25 people or 15 service connections). See Table xx. The location of the public water systems is shown in Figure XX. Additionally, public testimony raised the concern that Maui DWS cannot ensure the protection of protected public trust instream uses, especially when the County themselves is not compliant with the interim IFS set for Kanahā Stream and has not returned streamflow.

## 5.2 PRECAUTIONARY PRINCIPLE

The precautionary principle requires that *scientific uncertainty “should not be a basis for postponing effective measures to prevent environmental degradation.”*<sup>107</sup> Rather, the Commission as a trustee has a *duty to take anticipatory action to prevent harm to public resources. “[A]t minimum, the absence of firm scientific proof should not tie the Commission’s hands in adopting reasonable measures designed to further the public interest.”*<sup>108</sup>

As referenced by U.S. Geological Survey’s presentation at the Commission’s meeting on January 18, 2022 Item A1, island-wide recharge is expected to decrease for the mid-century and dry-climate scenarios on the islands of Kaua’i, Oahu, Moloka’i, Lana’i, Maui, and Hawai’i. Reduction in recharge in the Lahaina ASA range between 6.8-67.0 %.

DHHL’s written testimony highlights the Commission’s constitutional duty to protect to protect water as a public trust resource before a crisis develops citing to the 1978 Constitutional Committee Report 77, pages 688-689, “[a]ccordingly, your Committee concluded that the Constitution should specify that the State holds the water resources in trust, with the responsibilities of a trustee to actively protect, control and regulate the development of water resources in the State. This concept implies not only the power to protect the resources but the responsibility to do so long before any crisis develops.” This comports with research on the legislative history of the Water Code found a similar intent in the House Committee Report No. 348 on House Bill 35, that became Act 45 of the Session Laws of Hawai’i and established HRS Chapter 174C in 1987, “[t]o ensure that the availability of this precious resource will meet the present and future needs of the people, your Committee is of the opinion that the water code should serve as a tool and an incentive for planning the wise use of Hawaii’s water resources, rather than as a water crisis and shortage management mechanism.”

Additionally, DHHL’s oral testimony cautioned that the “sustainable yield (SY) as calculated is the maximum amount of groundwater that can sustainably be withdrawn for future withdrawal, if wells are optimally placed, if recharge is evenly distributed, if wells are at the same

---

<sup>105</sup> Maui WUDP Draft under 19.6.4 Population Growth Based Water Demand Projections (20-Year), Private Public Water Systems Demand Projections at page 63 of the Lahaina Aquifer Sector Area.

<sup>106</sup> Maui WUDP Draft under 19.5.1. Water Use by Type, Municipal Use at page 34 of the Lahaina Aquifer Sector Area.

<sup>107</sup> *Waiāhole I*, 94 Hawai’i at 154, 9 P.3d at 466.

<sup>108</sup> *Id.* at 155.

depth and pump at the same rate, and recharge does not change over time.” In the calculation of the current SY numbers for the aquifers in the Lahaina Aquifer Sector Area climate change has not been considered. The WRPP does recognize that further investigation in the rate of natural recharge for SY is needed. “Climate change and data from the last 25 years should also be included into recharge analysis.”<sup>109</sup>

Given the data limitations, the time to act and take preventive measures to guarantee resource availability for future generations is now. It can be reasonably determined that there may be a risk for the resource and the Precautionary Principle guides the Commission to err on the side of caution and to protect the resource with the enhanced management tools of the designation of a surface and ground water management area. Designation of a water management area will also require analysis and use of alternative water sources for non-potable uses, which may lead to a faster adoption of R-1 water use and infrastructure expansion.

### 5.3 STATE WATER CODE REQUIREMENTS

The State Water Code, HRS chapter 174C, part IV, Regulation of Water Use, proclaims that the Commission *shall* designate an area once a *reasonable determination* is made – based on scientific investigation and research – that water resources in an area are threatened by existing or proposed withdrawals or diversions of water. If determined, the Commission shall designate the area for the purpose of establishing administrative control over the withdrawals and diversions of ground and surface waters in the area to ensure reasonable-beneficial use of the water resources in the public interest. HRS § 174C-41(a). (Emphasis added)

#### 5.3.1 Surface Water Designation Criteria

Below are the criteria to be considered in designating an area for surface water use regulation along with staff discussion and conclusion.

##### 5.3.1.1 HRS § 174C-45 (1)

*Whether regulation is necessary to preserve the diminishing surface water supply for future needs, as evidenced by excessively declining surface water levels, not related to rainfall variations, or increasing or proposed diversions of surface waters to levels which may detrimentally affect existing instream uses or prior existing off stream uses. HRS § 174C-45 (1).*

Discussion:

Subsection (1) can be divided into two parts. The first part deals with the situation where there is evidence of excessively declining surface water levels not related to rainfall variations. The second part concerns increasing or proposed diversions of surface water levels which may detrimentally affect existing instream uses or prior existing off stream uses. “Existing instream

---

<sup>109</sup> Appendix F, WRPP (2019) at page 68.

uses”, for the Lahaina ASA, would be those instream uses existing when the interim instream flow standards were set.

As referenced by U.S. Geological Survey’s presentation at the Commission’s meeting on January 18, 2022 Item A1, island-wide recharge is expected to decrease for the mid-century and dry-climate scenarios on the islands of Kaua’i, Oahu, Moloka’i, Lāna’i, Maui, and Hawai’i. Reduction in recharge in the Lahaina Aquifer Sector area range between 6.8-67.0%. The recharge is comprised of rainfall. The rainfall data for the past decades documents a constant decline of rainfall, which is not just a rainfall variation. Thus, the surface water levels are excessively declining.

As for the second part of HRS § 174C-45 (1) there are no increasing or proposed diversions of surface water present in the whole Lahaina ASA. The Commission has set numeric interim IFS for Honokōhau, Honolulu, Kahoma, Kanahā, Kaua’ula, Launiupoko, Olowalu, and Ukumehame stream, which lowered the amount that was previously diverted, except for Launiupoko streams.

Conclusion:

**Criterion are met.**

#### 5.3.1.2 HRS § 174C-45 (2)

*Whether the diversions of stream waters are reducing the capacity of the stream to assimilate pollutants to an extent which adversely affects public health or existing instream uses. HRS § 174C-45 (2).*

Discussion:

The Department of Health has not yet responded to the Commission’s inquiry by the time of publication of this Draft.

Conclusion:

**The Commission cannot make a determination if this criteria is met.**

#### 5.3.1.3 HRS § 174C-45 (3)

*Serious disputes respecting the use of surface water resources are occurring. HRS § 174C-45 (3).*

Discussion:

Conflicts among water users, stakeholders, and the protection of instream values have persisted for generations. See, e.g., *Horner v. Kumuli ‘ili ‘i*, 10 Haw. 174 (1895). Starting in 2018, the Commission amended interim instream flow standards for nine perennial streams in the Lahaina District (Table XX). However, subsequent reductions in the availability of water to meet

off-stream demand continue to strain existing water uses, including kuleana tenants and traditional and customary practitioners, and have led to additional conflicts. A number of informal (e.g., phone calls, letters, emails) and five formal complaints have been filed with the Commission regarding the lack of streamflow, the waste of diverted surface water, the delivery of water, and issues with diversion management from Honokōhau, Honokōwai, Kahoma, Kanahā, Kaua‘ula, Launiupoko, Olowalu, and Ukumehame since 2018. In 2021 alone, Commission staff have fielded complaints for Honokōhau, Kahoma, Kanahā, Kaua‘ula, Olowalu, and Ukumehame streams. The latest formal complaint was filed in December 2021 regarding waste of water in Kaua‘ula.

At the Commission’s January and February 2022 meetings, the written and oral testimony of community members in the Lahaina Aquifer Sector Area unanimously referenced serious disputes over water and requested designation as proactive management. Testimony by the Hui Nā Mamo Aloha ‘Āina o Honokōhau, Nā Pāpa‘i Wawae ‘Ula‘ula, the West Maui Preservation Association, the Sierra Club Maui Group, and the Hui o Nā Wai ‘Ehā also evidence conflicts over water. The concerns raised include that established IIFS are not being met, water continues to be diverted and prioritized for off stream uses while protected instream uses and Kuleana families do not have sufficient amounts of water.

West Maui Preservation Association’s written testimony outlined the historic and ongoing conflicts over water use in Ukumehame, Olowalu, Launiupoko, Kaua‘ula, Kahoma, Kanahā, and Honokōhau while highlighting conflicts over surface and groundwater in the Launiupoko Aquifer that are part of a Docket before the Public Utilities Commission (PUC). In this Docket, LIC requests a rate increase to offset the cost of pumping groundwater, which LIC asserts is required to substitute the reduced available surface water for offstream uses. The Commission is not a party in the Docket, but staff has provided extensive public comment to the PUC on LIC’s off stream uses, staff’s data that indicate LIC’s non-compliance with the IIFS for Kaua‘ula stream and Notice of Alleged Violation (NOAV), and a new pump installation at the Lahaina A/B skimming well (State Well No. 6-5240-002). See **Appendix M** CWRM Public Comment to PUC December 17, 2021, and April 12, 2022.

Of the seven surface water hydrologic units in West Maui, six support lo‘i kalo production downstream of former plantation diversions, and many of these streams provide excellent habitat for a number of native aquatic fauna.

In Ukumehame, the original ‘auwai was replaced by the plantation diversion and open ditch system, which has now been converted to pipelines. Two lo‘i complexes are currently reliant on the operation of the plantation diversion for the delivery for water. In Olowalu, 12 lo‘i managed by Olowalu Cultural Preserve are reliant on the operation of the former plantation diversion for the delivery of water. In Kaua‘ula, the former Pi‘ilani ‘auwai was replaced by Kaua‘ula Ditch and the hydropower penstock. Kuleana users who used the ‘auwai are now reliant on the operation of the plantation diversion for the delivery of water. Cultural practices along Kahoma and Kanahā streams are impacted by the operation of former plantation diversions which, despite the establishment of interim IFS, continue to impede cultural practices. As previously discussed, Kanahā stream is relied upon by the Maui DWS as a source of drinking water supply, while lands riparian to the stream continue to support agriculture. These uses are in direct conflict with the maintenance of stream flow for natural and cultural values. The former plantation diversions in Honokōwai remove water

in excess of the current agricultural needs, impeding traditional and customary practices downstream. In Honokōhau, the former plantation diversion also removes water in excess of non-instream uses, with negative impacts to natural, cultural, and domestic uses in the stream. In some hydrologic units, households rely on the stream for domestic uses as well.

The latest conflict over LIC's operation of the diversion in Kaua'ula Stream that Kuleana tenants rely on as their only water source for their domestic uses and T&C practices was heard at the Commission April 19, 2022 meeting. See [Appendix N](#).

Conclusion:

**Criteria is met.**

### 5.3.2 Ground Water Designation Criteria

Below are the criteria to be considered in designating an area for ground water use regulation along with staff discussion and conclusion.

#### 5.3.2.1 HRS § 174C-44 (1)

*Whether an increase in water use or authorized planned use may cause the maximum rate of withdrawal from the ground water source to reach ninety percent of the sustainable yield. HRS § 174C-44 (1).*

Discussion:

Current and authorized planned uses of the Honokōwai and Launiupoko Aquifer Systems either exceed or approach 90% of sustainable yields and threaten the aquifer due to saltwater intrusion of the freshwater lens.

Conclusion:

**Criteria is met.**

#### 5.3.2.2 HRS § 174C-44 (2)

*There is an actual or threatened water quality degradation as determined by the department of health. HRS § 174C-44 (2).*

Discussion:

The Department of Health has not yet responded to the Commission's inquiry by the time of publication of this Draft.

Conclusion:

**The Commission cannot make a determination if this criteria is met.**

5.3.2.3 HRS § 174C-44 (3)

*Whether regulation is necessary to preserve the diminishing ground water supply for future needs, as evidenced by excessively declining ground water levels. HRS § 174C-44 (3)*

Discussion:

As referenced by U.S. Geological Survey's presentation at the Commission's meeting on January 18, 2022 Item A1, island-wide recharge is expected to decrease for the mid-century and dry-climate scenarios on the islands of Kaua'i, Oahu, Moloka'i, Lāna'i, Maui, and Hawai'i. Reduction in recharge in the Lahaina Aquifer Sector area range between 6.8-67.0 %.

This reduction in recharge will most likely lead to diminishing ground water supply for future needs. Currently, there is no evidence for excessively declining ground water levels, but there may be a rise in the transition zone. The data is limited due to the fact that the Commission only has one deep monitoring well in the Lahaina ASA.

Conclusion:

**Criteria is met.**

5.3.2.4 HRS § 174C-44 (4)

*Whether the rates, times, spatial patterns, or depths of existing withdrawals of ground water are endangering the stability or optimum development of the ground water body due to upconing or encroachment of saltwater. HRS § 174C-44 (4)*

Discussion:

There is evidence that the current withdrawal rates of some wells are causing chlorides to increase from their initial chlorides when the wells were first developed. Most of these wells are spatially located in areas that pull water from the thin basal aquifer that sits above salt water, so the increased chlorides indicate some level of upconing and encroachment of saltwater. As indicated in the reported chloride data relative to pumpage, the time of pumpage is managed to an extent to manage increases in chlorides.

Conclusion:

**The Commission cannot make a determination if this criteria is met.**

5.3.2.5 HRS § 174C-44 (5)

*Whether the chloride contents of existing wells are increasing to levels which materially reduce the value of their existing uses. HRS § 174C-44 (5)*

Discussion:

Based on the 19 wells reporting chlorides in the Honolulu, Honokōwai, and Launiupoko hydrologic units, the chloride content of some of these existing wells has increased to levels, surpassing 250 ppm, the maximum for safe drinking water as determined by the US EPA and Department of Health. This has led wells to be either discontinued completely or the pumping rate managed to such a degree as to materially reduce the value of their existing use.

Conclusion:

**Criteria is met.**

5.3.2.6 HRS § 174C-44 (6)

*Whether excessive preventable waste of ground water is occurring. HRS § 174C-44 (6)*

Discussion:

At this time, investigations are ongoing whether there has been excessive waste.

Conclusion:

**Criteria not met.**

5.3.2.7 HRS § 174C-44 (7)

*Serious disputes respecting the use of ground water resources are occurring. HRS § 174C-44 (7)*

Discussion:

Conflicts among surface water users also has direct implications for groundwater use. The Maui DWS drinking water supply is dependent on blending surface water and groundwater sources to meet current and future demand as well as limiting the chloride content of water supply to potable standards<sup>110</sup>. Management decisions that affect one source (e.g., an interim IFS) are likely to have consequences for other sources (e.g., groundwater pumpage). Further, streams in West Maui have strong interactions with the groundwater<sup>111</sup>. Dike-impounded water may overflow directly to a stream at the ground surface where stream erosion has breached dike compartments. Once breached to the water table, the percentage of overall contribution to total stream flow depends on the head of the stored water, how deep the stream has cut into the high-level reservoir, the permeability of the lavas between dikes, the size of the compartments as well as connections to other compartments, and the amount of recharge into the breached compartment. Surface water and ground water interactions

---

<sup>110</sup> Maui WUDP 2019 Draft, p. 74.

<sup>111</sup> Cheng, C.L. 2014. Low-flow characteristics of streams in the Lahaina District, West Maui, Hawai'i. U.S. Geological Survey Scientific Investigations Report 2014-5087.

in these aquifers are assumed to have a one-to-one relationship for management purposes<sup>112</sup>. Streams that intersect the water table of the dike-impounded ground water body are commonly perennial because they are continually recharged by the ground water body.<sup>113</sup> A stream that receives ground water discharge is called a “gaining” stream. In general, the flow increases as one moves downstream within dike zones. The development of a system to capture dike-impounded ground water can affect natural springs and reduce the amount of spring flow that feeds the perennial streams in the upper reaches, resulting in diminished streamflow. An example of where such streamflow impacts have occurred is in the Windward O‘ahu watersheds affected by the Waiāhole Ditch system of tunnels and ditches.<sup>114</sup>

The current PUC Docket, 2020-0089, regarding LIC’s rate increase request involves a dispute over the use of ground water in the Launiupoko aquifer to substitute stream flow from Kaua‘ula Stream.

Conclusion:

**Criteria is met.**

#### 5.3.2.8 HRS § 174C-44 (8)

*Whether water development projects that have received any federal, state, or county approval may result, in the opinion of the Commission, in one of the above conditions. HRS § 174C-44 (8)*

Discussion:

The wells referenced as “other permitted well capacity” have received a WCPIP from the Commission and in the completion stage of construction/pump installation. The majority of these wells are not included in the County’s authorized planned use calculations due to the factor that most of these wells are either drilled by individual homeowners and/or for non-potable purposes.

The potential full usage of these wells when run at maximum capacity for twenty-four hours needs to be included in the calculation of the existing and planned use under HRS § 174C-44 (1).

Conclusion:

**Criteria is met.**

---

<sup>112</sup> State of Hawaii Water Resource Protection Plan. Adopted July 2019. Appendix F. Inventory and Assessment of Resources, p. 17. [http://files.hawaii.gov/dlnr/cwrm/planning/wrpp2019update/WRPP\\_AppF\\_201907.pdf](http://files.hawaii.gov/dlnr/cwrm/planning/wrpp2019update/WRPP_AppF_201907.pdf)

<sup>113</sup> Oki, D.S. 2003. Surface Water in Hawaii. U.S. Geological Survey Fact Sheet 045-03, 6 p.

<sup>114</sup> Izuka, S.K., and Gingerich, S.B. 1998. Groundwater in the Southern Lihue Basin, Kauai, Hawaii. U.S. Geological Survey Water-Resources Investigations Report 98-4031, 71 p.

## 5.4 CASE LAW REQUIREMENTS

### *Waiāhole I:*

- *Commission can consolidate the regulation of a single system because it comports with the Commission’s function of comprehensive water planning and management.*<sup>115</sup> *The Court ruled that the areas covered by the ditch system are to be considered hydrologically controllable irrespective of hydrologic units under HRS § 174C-50 (h) which deems uses between existing users as competing when water is drawn from a hydrologically controllable area.*<sup>116</sup>
- *Direct interrelationship between ground and surface waters.*<sup>117</sup>

The Honokōhau ditch system crosses multiple surface and ground water hydrologic units, namely Honokōhau, Honolulu, Honokahua, Kahana, Honokōwai, and Wahikuli. See Figure XX. Honokōhau Stream water is diverted to provide for non-potable needs in these units and to supplement potable needs that the underlying groundwater units of Honokōwai and Honolulu cannot provide.

The ditch system also transfers development tunnel water from Kahoma across the ground water hydrologic unit boundary between Launiupoko and Honokōwai. A crossover between surface water hydrologic units also exists between Kahoma and Kaua‘ula and Kaua‘ula and Launiupoko.

Streams in West Maui have strong interactions with the groundwater. Surface water and ground water interactions in these aquifers are assumed to have a one-to-one relationship for management purposes. To accomplish a comprehensive water resource management, designation of all hydrologic units, surface and ground is warranted.

Public testimony lauded this comprehensive approach and intent to designate both surface and ground water WMA for all aquifer and hydrologic units in the Lahaina Aquifer Sector Area. Additionally, multiple testimony highlighted that only designating Honokōwai and Launiupoko Aquifer would not protect the aquifer because there are no geographical barriers (arbitrary) in the Lahaina Aquifer Sector Area and the aquifer is a thin as it does not hold recharge in place as the ‘Īao aquifer.

DHHL’s oral testimony specifically provided an example for the need to designate adjacent aquifers; in 2004, shortly after the Commission decided against the designation of the Waihe‘e aquifer, which borders the designated ‘Īao aquifer, a new well construction permit application was received with the well location being right next to the aquifer boundary.<sup>118</sup>

---

<sup>115</sup> *Waiāhole I*, 94 Hawai‘i at 174, 9 P.3d. at 486.

<sup>116</sup> *Id.*

<sup>117</sup> *Waiāhole I*, 94 Hawai‘i at 173, 9 Pd.3 at 485.

<sup>118</sup> Oral testimony by Dr. Jonathan Likeke Scheuer on behalf of DHHL.

This example describes the 2004 February Commission meeting, where the Commission rescinded automatic triggers for the designation of Waihe‘e aquifer that were set in November 2002 and limited the amount of MDWS’s pumpage from the Waihe‘e aquifer from 4.5 mgd to 4 mgd via a memorandum of agreement (MOA).<sup>119</sup> Only three months after the Commission’s attempt to limit the amount withdrawn from Waihe‘e aquifer due to concerns about well spacing and stress on the aquifer, the Commission approved the new well construction and pump installation permit (WCPIP) of Koolau Cattle Company (Randy Betsill), Waihee Equestrian well (Well No. 5731-06), at its May 2004 meeting because the Waihe‘e aquifer was not a designated WMA and the Commission staff believed that it lacked the authority to deny this permit request due to applicant’s correlative rights.<sup>120</sup> In the same year, Koolau Cattle Company applied for an additional WCPIP, Waihee Equestrian II well (Well No. 5731-07). This permit did not come before the Commission due to the Commission’s delegation of WCPIP to the chairperson in 1997 to issue WCPIP administratively; the first application was brought to Commission to highlight issues with MDWS MOA and the recent history of the Waihe‘e aquifer system. To date, four additional wells have been drilled in the Waihe‘e aquifer with two pending completion approval.

The limitations of only designating the ‘Īao aquifer serve as a “*lesson learned*” and further justify including adjacent aquifers for proactive and comprehensive management, especially due to decline in recharge because of the climate crisis.

The case law requirements established by the Hawai‘i Supreme Court are met.

## 6. CONCLUSION

It can be reasonably determined that water resources in the Lahaina ASA may be threatened by existing and proposed withdrawals. The Commission must designate the Lahaina ASA for the purpose of establishing administrative control over the withdrawals and diversions of ground and surface waters in the Lahaina ASA to ensure reasonable-beneficial use of the water resources and protection of public trust uses.

---

<sup>119</sup> While minutes reflect an MOA, staff have been unable to locate any MOA document in CWRM files.

<sup>120</sup> See Minutes for CWRM Meeting, May 19, 2004, at pages 5-8, <https://files.hawaii.gov/dlnr/cwrp/minute/2004/mn20040519.pdf>

## REFERENCES

To be developed.

DRAFT

## APPENDIX

<b>Appendix</b>	<b>Content</b>
<b>A</b>	<b>Compilation of Instream Flow Standard Assessment Report in Lahaina ASA</b>  IFSAR Ukumehame IFSAR Olowalu IFSAR Launiupoko IFSAR Kaua‘ula IFSAR Kahoma IFSAR Honokōwai IFSAR Honolulu IFSAR Honokōhau
<b>B</b>	<b>Communication with Maui County Council, Board of Water Supply, and Mayor</b>  CWRM Letter from Chairperson to Maui County Council, County Board of Water Supply, and County Mayor November 29, 2021  Response from County Council December 7, 2021 December 16, 2021  CWRM Reply to County Council December 17, 2021  County Council Response December 29, 2021
<b>C</b>	<b>Maui Department of Water Supply Response</b> December 28, 2021
<b>D</b>	<b>January 18, 2022 Commission Meeting</b>  Staff Submittal A-2 Testimony A-2 Minutes
<b>E</b>	<b>February 15, 2022 Commission Meeting</b>  Staff Submittal B-4 Testimony B-4

Minutes

**F Maui County Council Resolution 22-73**

**G Public Notice in Honolulu Star-Advertiser**

**H Notice of Alleged Violation of Interim IFS Kaua‘ula Stream - LIC**

**I Notice of Alleged Violation of Interim IFS Olowalu Stream -  
Olowalu Water Company**

**J U.S. Geological Survey Presentation**

January 18, 2022 Commission Meeting, A-1 Presentation by U.S. Geological Survey “Estimated Groundwater Recharge for Mid-Century and End-of-Century Climate Projections, Islands of Kaua‘i, O‘ahu, Moloka‘i, Lāna‘i, Maui, and Hawai‘i”

**K CWRM Letter to Waivee Land and Homes re Lahaina Shaft-Pump  
A and B**

April 20, 2022

**L Maui County Planning Department Maps**

Kapalua - North Lahaina Development Projects

South Lahaina – Ukumehame Development Projects

**M CWRM Public Comments to PUC**

December 17, 2021

April 8, 2022

**N April 19, 2022 Commission Meeting**

Staff Submittal C-4

Testimony