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COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM INSTREAM FLOW STANDARDS FOR HONOPOU, HUELO (PUOLUA), HANEHOI, WAIKAMOI, ALO, WAHINEPEE, PUOHOKAMOA, HAIPUAENA, PUNALAU/KOLEA, HONOMANU, NUAAILUA, PIINAAU, PALAUHULU, OHIA (WAIANU), WAIKAMILO, KUALANI, WAILUANUI, WEST WAILUAIKI, EAST WAILUAIKI, KOPILIULA, PUAKAA, WAIOHUE, PAAKEA, WAIAAKA, KAPAULA, HANAWI, and MAKAPIPI STREAMS	CASE NO. CCH-MA13-01 COUNTY OF MAUI, DEPARTMENT OF WATER SUPPLY'S MOTION ON THE SCOPE OF RE-OPENED HEARING; MEMORANDUM IN SUPPORT OF MOTION; DECLARATION OF CALEB P. ROWE; EXHIBITS "1" – "3";; CERTIFICATE OF SERVICE

COUNTY OF MAUI, DEPARTMENT OF WATER SUPPLY'S
MOTION ON THE SCOPE OF RE-OPENED HEARING

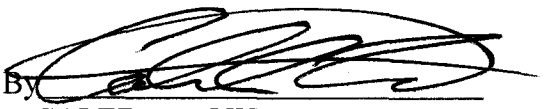
COMES NOW, COUNTY OF MAUI, DEPARTMENT OF WATER SUPPLY ("MDWS"), by and through its attorneys, PATRICK K. WONG, Corporation Counsel, and

CALEB P. ROWE, Deputy Corporation Counsel, and moves this commission for an order on the scope of the re-opened hearing.

This motion is made pursuant to Minute Order Number 20 and is supported by the Memorandum in Support of Motion, the Declaration of Caleb P. Rowe, Exhibits "1"- "3", the pleadings on record, and filed in the above-entitled proceedings, and such further evidence and argument that may be presented at the hearing of this motion.

DATED: Wailuku, Maui, Hawaii, June 9, 2016.

PATRICK K. WONG
Corporation Counsel
Attorney for
COUNTY OF MAUI



By
CALEB P. ROWE
KRISTIN K. TARNSTROM
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COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM INSTREAM FLOW STANDARDS FOR HONOPOU, HUELO (PUOLUA), HANEHOI, WAIKAMOI, ALO, WAHINEPEE, PUOHOKAMOA, HAIPUAENA, PUNALAU/KOLEA, HONOMANU, NUAAILUA, PIINAAU, PALAUHULU, OHIA (WAIANU), WAIKAMILO, KUALANI, WAILUANUI, WEST WAILUAIKI, EAST WAILUAIKI, KOPILIULA, PUAKAA, WAIOHUE, PAAKEA, WAIAAKA, KAPAULA, HANAWI, and MAKAPIPI STREAMS	CASE NO. CCH-MA13-01 MEMORANDUM IN SUPPORT OF MOTION

MEMORANDUM IN SUPPORT OF MOTION

I. INTRODUCTION

On April 1, 2016, the Commission on Water Resource Management ("the Commission") issued Minute Order No. 19, which stated that the Hearings Officer would forward a recommendation to the Commission for immediate restoration of 18 mgd to the subject streams pursuant to the Hearings Officer's recommendation to the Commission. Also, Minute Order No. 19 also set the scope of the reopened hearing to include the following:

a. HC&S/A&B's current and future use of surface waters and the impact on the groundwater sources for its central Maui fields of HC&S's cessation of sugar operations;

b. the impact of HC&S's cessation of sugar operations on Maui Department of Water Supply's use of surface water;

c. Maui County's position on the future use of the central Maui fields; and

d. how EMI is managing the decrease in diversions, how it would manage the interim restorations, and any issues concerning the integrity of the EMI ditch system with the current and any future changes in off stream diversions.

II. ARGUMENT

A. HC&S/A&B's Current and Future Use of Surface Water

As stated in Minute Order No. 18, Hawaiian Commercial and Sugar ("HC&S") announced that it would be ending production of sugar and transitioning to a "diversified agriculture" model. In HC&S *Exceptions to Hearings Officer's Proposed Findings of Fact, Conclusions of Law, & Decision and Order,* dated February 29, 2016, HC&S anticipates needing significantly less water, though they did not specify the extent to which their needs will decrease. In its *Opening Briefs* concerning Surface Water Use Permit Applications (SWUPA) No. 2205 and 2206 in CCH-MA 15-01, however, HC&S identified an intention to convert from sugar to "diversified agriculture, including bioenergy crops, truck crops, orchard crops, and irrigate pasture," and admits that "the amount of irrigation water required will be less than what was required and used for sugar cane cultivation." (See Exhibits "1", p. 2, 4; "2" p. 2, 4). In those briefs, HC&S specifically identifies cultivation of "a mix of bioenergy crops that will be rotated over the course of a few seasons" for the fields watered by the Na Wai Eha streams. Exhibits "1" p. 3; "2" p. 3. Accordingly, HC&S anticipates that this transition will require "approximately 80% to 85% of the water requirements for conventional, biannually-harvested sugarcane." Exhibits "1" pp. 6; "2" p. 7. While this estimation of need is based on HC&S' plan to transition to bioenergy crops for the fields irrigated by the Na Wai Eha Streams, its estimation of an "80%-85%" reduction can be used as a the high benchmark for any diversified agricultural operation, as the Court in In re Water Use Permit Applications, 94 Haw. 97, 162-164, 9 P.3d

409, 474-476 (2000) ("Waiahole I") found that 2,500 gad per acre to be a reasonable amount of water for the purposes of diversified agriculture, compared to the "4,844 gad" identified by the Hearings Officer as the reasonable and beneficial requirements for sugar cane irrigation (See Proposed COL 101), and the 80-85% need of 3,875 – 4,117 gad for bioenergy crops.

The Hearings Officer's proposed FOF and COL determined that HC&S' use of water for irrigation of sugar cane was approximately 140.19 mgd, based on multiplying 4,844 gad per acre by HC&S' 28,941 acre plantation. (COL 101, FOF 346). Based on the 28,941 acre size of irrigated land identified in the Hearings Officer's Proposed FOF and COL, HC&S' reasonable and beneficial use of water based on the needs for diversified agriculture found in Waiahole I would lead to a need of water of approximately 72.35 mgd (2,500 gad X 28,941 acres). Applying the 85% need estimate for bioenergy crop cultivation identified by HC&S in their submissions in CCH-MA 15-01 would lead to a need of water of approximately 119.15 mgd (85% of 140.19 mgd). Accordingly, even using the estimates for transition identified by, and most beneficial to HC&S, the demand for water for irrigation purposes based on transition to diversified agriculture is **at least** 21.04 mgd and up to 67.84 mgd less than the recommendation of the Hearings Officer.

B. Maui Department of Water Supply's Use of Surface Water

Throughout the IIFS contested case hearing, MDWS actively pursued only water needed for current operations of its upcountry system. MDWS also, however, provided evidence and testimony regarding future demands of water both as a result of projected population growth and the upcountry water meter priority list. MDWS did not actively pursue water to accommodate future needs during the IIFS contested case hearing and subsequent filings of the proposed FOF and COL, because MDWS was cognizant that the needs of HC&S and the instream values

pursued by Na Moku and Maui Tomorrow meant there quite simply would not be enough water to meet those demands. However, in light of the Hearing Officer's conclusion that a return of 18 mgd to the streams is sufficient to promote the instream uses promoted by Na Moku and Maui Tomorrow, and the decreased needs of HC&S by between 21.04 mgd and 67.84 mgd as a result of its transition to diversified agriculture, it now appears there is sufficient water to not only accommodate MDWS future needs, but also to return even more water to the streams to promote instream values.

As to the upcountry water meter priority list, MDWS offered evidence that 1,852 applicants were on the priority list, and that processing all of these applications would increase the demand on the MDWS system by 7.5 MGD. See Declaration of David Taylor ¶¶ 20, 21, 22, 23; Exhibit "B-17"; FOF 471-472. In regards to projected population growth, MDWS provided evidence that population is anticipated to grow in the area serviced by the Upcountry System by about 8,424 people, which would in turn increase demand by approximately 1.65 mgd. See Declaration of Michelle McLean ¶ 5; Declaration of David Taylor ¶ 24; Exhibits "B-1"; "B-2" table 5; B-16, table 3; B-18;B-58; FOF 473. Accordingly, MDWS anticipates a need of an additional 9.15 mgd to be able to meet future demands through 2030. Accommodating this need would require less than half of the minimum anticipated decrease in demand for HC&S, as discussed above, and thus would still allow for at least an additional 11.89 mgd above the Hearings Officer's recommendation to be returned to the streams. All of this information was presented in the filings of MDWS, as well as in testimony during the contested case hearing. Accordingly, parties have already had the opportunity to examine this evidence and cross-examine witnesses, and the information can be considered without the need for reopening the evidentiary portion of the hearing.

C. Maui County's Position on the Future use of the central Maui Fields

The lands utilized by HC&S for sugar cane cultivation are zoned as agricultural lands, and the Maui County General Plan 2030 identifies a general policy to "strongly discourage the conversion of productive and important agricultural lands (such as sugar, pineapple, and other produce lands) to rural or urban use." Exhibit "3," p. 7-8, ¶ 7.1.1.f. Accordingly, the County of Maui strongly supports keeping HC&S lands dedicated to agriculture.

For the purposes of MDWS, the Department supports the continued operation of East Maui Irrigation Company ("EMI") to service any continued diversified agriculture within the central Maui fields. MDWS does not currently have the infrastructure that would be necessary to provide water to these fields, regardless of whether they remain in agricultural use, or transition to commercial or residential uses. Furthermore, MDWS currently lacks the financial capacity or the expertise necessary to take over, maintain, or operate the EMI's system should they cease operations, potentially leaving any use of the central Maui fields, as well as over 35,000 upcountry Maui residents who depend on EMI water, without a source of water.

DATED: Wailuku, Maui, Hawaii, June 9, 2016.

PATRICK K. WONG
Corporation Counsel
Attorney for Defendant
COUNTY OF MAUI

By _____
CALEB P. ROWE
KRISTIN K. TARNSTROM
Deputy Corporation Counsel

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM INSTREAM FLOW STANDARDS FOR HONOPOU, HUELO (PUOLUA), HANEHOI, WAIKAMOI, ALO, WAHINEPEE, PUOHOKAMOA, HAIPUAENA, PUNALAU/KOLEA, HONOMANU, NUAAILUA, PIINAAU, PALAUHULU, OHIA (WAIANU), WAIKAMILO, KUALANI, WAILUANUI, WEST WAILUAIKI, EAST WAILUAIKI, KOPILIULA, PUAKAA, WAIOHUE, PAAKEA, WAIAAKA, KAPAULA, HANAWI, and MAKAPIPI STREAMS	CASE NO. CCH-MA13-01 DECLARATION OF CALEB P. ROWE

DECLARATION OF CALEB P. ROWE

I, CALEB P. ROWE, hereby declare:

1. I am a duly appointed Deputy Corporation Counsel and am one of the attorneys representing the County of Maui, Department of Water Supply in the above-entitled matter.

2. I make this declaration upon personal knowledge and am competent to testify as to the matters stated herein.

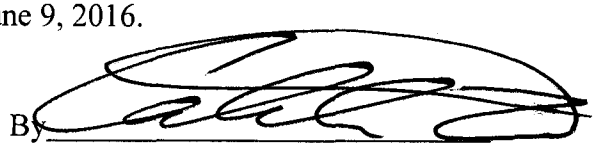
3. Attached hereto as Exhibit "1" is a true and correct copy of "Hawaiian Commercial and Sugar Company's Opening Brief in Support of SWUPA No. 2205," filed with the Commission on Water Resources Management in CCH-MA 15-01 on February 5, 2016.

4. Attached hereto as Exhibit "2" is a true and correct copy of "Hawaiian Commercial and Sugar Company's Opening Brief in Support of SWUPA No. 2206," filed Commission on Water Resources Management in CCH-MA 15-01 on February 5, 2016.

5. Attached hereto is Exhibit "3" is a section titled "Chapter 7: Land Use" of the Maui County General Plan 2030.

I declare under penalty of perjury that the above is true and correct.

DATED: Wailuku, Maui, Hawaii, June 9, 2016.



By _____
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Attorney for HAWAIIAN COMMERCIAL &
SUGAR COMPANY

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

Surface Water Use Permit Applications, Integration of Appurtenant Rights and Amendments to the Interim Instream Flow Standards, Na Wai Eha Surface Water Management Areas of Waihee, Waiehi, Iao and Waikapu Streams, Maui	Case No. CCH-MA 15-01 HAWAIIAN COMMERCIAL & SUGAR COMPANY'S OPENING BRIEF IN SUPPORT OF SWUPA NO. 2205; WITNESS LIST; DIRECT WITNESS STATEMENT OF RICK W. VOLNER, JR.; DIRECT WITNESS STATEMENT OF GARRET HEW; EXHIBIT LIST; AND CERTIFICATE OF SERVICE

HAWAIIAN COMMERCIAL & SUGAR COMPANY'S OPENING BRIEF
IN SUPPORT OF SWUPA NO. 2205

Hawaiian Commercial & Sugar Company ("HC&S") requests a water use permit for 19.48 million gallons per day (mgd) (12-MAV) of Na Wai Eha surface water supplied via the Waiale Reservoir for continued agricultural use on approximately 3,650 acres designated as the Waihee-Hopoi Fields. This request for 19.48 mgd includes an allocation of 17.33 mgd for agricultural irrigation and 2.15 mgd for system losses for

EXHIBIT 1

those portions of the West Maui Ditch System that is operated and controlled by HC&S. (2014 FOF #52; 2014 COL #16)[1]

I. BACKGROUND

HC&S has been engaged in sugar cultivation on Maui since 1870. By 2008, HC&S was the last sugar plantation in Hawai`i. The HC&S plantation consists of over 43,000 acres of land in central Maui, of which about 35,000 are currently under cultivation. By the end of 2016, however, HC&S will cease sugar cane cultivation, thus ending a century and a half of an industry that transformed Hawai`i. Cessation of sugar cane cultivation, however, does not mean the end of agriculture on the Central Maui isthmus. Instead, HC&S is committed to keeping its lands in agriculture by transitioning its sugar lands to diversified agriculture, including bioenergy crops, truck crops, orchard crops, and irrigated pasture.

Although HC&S's lands will largely remain in agriculture, there are some significant differences between the sugar cane and diversified agriculture models, including, but not limited to, water duties and energy generation. Additionally, whereas HC&S itself cultivated and processed the sugar cane on its lands, under the diversified agriculture model, HC&S may farm some of the lands itself, but may also lease some of its lands to other farmers and/or partner with others on different agricultural pursuits.

Diversified Agriculture Plan for Waihee-Hopoi Fields

HC&S's Diversified Agriculture Plan calls for the cultivation of bioenergy crops on the 3,650 acres that comprise the Waihee-Hopoi Fields. "Bioenergy crops" include a

[1] References to Findings of Fact and Conclusions of Law within the Commission on Water Resource Management Order Adopting 1) Hearings Officer's Recommendation on the Mediated Agreement Between the Parties; and 2) Stipulation Re Mediator's Report of Joint Proposed Findings of Fact, Conclusions of Law, Decision and Order in CCH-MA06-01, dated April 17, 2014, shall be cited as "2014 FOF #__" and 2014 COL #__", respectively.

variety of crops that can support biogas or biofuel production, including, but not limited to fuel for jets, marine and land vehicles, and to generate electricity. These bioenergy crops may include, but are not limited to, annual seed crops, such as soybean, safflower, sunflower and canola; perennial oil bearing trees, such as jatropha, kukui and pongamia; and tropical grasses, such as energy canes, banagrass, sorghum, hemp and new hybridized perennial tropical grasses.

The plan is to have a mix of bioenergy crops that will be rotated over the course of a few seasons. It is anticipated, however, that the primary focus for the Waihee-Hopoi Fields will be on tropical grasses to take advantage of the large expanse of contiguous, relatively flat fields that are conducive to the efficient planting and harvesting of these types of crops.

In 2010, HC&S was included in a five-year, $10 million study with the Department of Defense to study biofuel production. As part of this work, HC&S conducted crop and harvest trials on different varieties of energy crops and also conducted anaerobic digestion yield testing on a 6-acre plot. Thus, HC&S has some preliminary experience with the requirements, including water requirements and irrigation practices, for growing some of these energy crops. However, further research and testing is necessary for growing these energy crops on a large scale in Central Maui. Currently, HC&S is capturing cost data, testing farming methods at scale, and refining the economic model based on a 50-acre trial field. Later this year, an additional 500 acres will be planted to validate bioenergy crop density, irrigation layout, per-acre yield in different soil types, water demand, and field-scale costs. Results will be critical to analyzing the economic viability of cultivating different energy crops on HC&S lands.

II. CRITERIA FOR EXISTING USE PERMIT

To obtain a water use permit for existing uses, HC&S must demonstrate that the use (1) was existing as of the effective date of designation and (2) is reasonable-beneficial. HRS § 174C-50(b). Case law further dictates that an analysis of alternative sources is required in determining whether a use is reasonable-beneficial.

A. Existing Use on the Date of Designation

HC&S has been continuously cultivating sugar cane on the Waihee-Hopoi Fields for more than a century. Na Wai Eha surface water was reasonably-beneficially being used to irrigate approximately 3,650 acres within the Waihee-Hopoi Fields on the date of designation of Na Wai Eha as a surface water management area, April 30, 2008. (2014 FOF #44; 2014 COL #12)

Recently, HC&S announced that it would cease sugar cultivation by the end of 2016 and would use its agricultural lands for a variety of other agricultural pursuits. These new agricultural activities on the Waihee-Hopoi Fields will require Na Wai Eha surface water for irrigation purposes; however, the amount of irrigation water required will be less than what was required and used for sugar cane cultivation.

Under the State Water Code, a change in crop is not construed as a change in use. HRS § 174C-3.[2] Thus, notwithstanding the fact that HC&S will be transitioning from sugar cane cultivation to diversified agriculture (more specifically for the Waihee-Hopoi Fields, bioenergy crops) HC&S's use of Na Wai Eha water remains an existing use.[3]

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[2] "Existing agricultural use" means replacing or alternating the cultivation of any agricultural crop with any other agricultural crop, which shall not be construed as a change in use. HRS § 174C-3.

[3] HC&S's circumstances are very similar to circumstances involved in the Waiahole Ditch contested case. There, Oahu Sugar Company was cultivating sugar on lands served by the Waiahole Ditch on the date of

B. Reasonable-Beneficial

"Reasonable-beneficial" is defined in HRS § 174C-3 as follows:

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

1. Quantity Requested

HC&S is requesting an existing use allocation of 19.48 mgd. Of this amount, 17.33 mgd is for irrigation purposes, and 2.15 mgd is for system losses for those portions of the West Maui Ditch System that is operated and controlled by HC&S, including ditches and reservoirs.

HC&S intends to supplement Na Wai Eha surface water with ground water developed by HC&S's Iao Tunnel. (See discussion of alternative sources, below.)

2. Economic and Efficient Utilization

a. Water Duty for Energy Crops

HC&S's Diversified Agriculture Plan calls for the cultivation of bioenergy crops on the 3,650 acres that comprise the Waihee-Hopoi Fields. "Bioenergy crops" includes a variety of crops that can support biogas or biofuel production, including, but not limited to fuel for jets, marine and land vehicles, and to generate electricity. These bioenergy crops may include, but are not limited to, annual seed crops, such as soybean, safflower, sunflower and canola; perennial oil bearing trees, such as jatropha, kukui and pongamia; and tropical grasses, such as energy canes, banagrass, sorghum, hemp and new hybridized perennial tropical grasses.

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designation. However, during the course of the contested case proceedings, Oahu Sugar ceased sugar cultivation, and the lands were being transitioned into diversified agriculture. The Commission treated the water use permit applications for diversified agriculture as "existing use" applications.

The plan is to have a mix of bioenergy crops that will be rotated over the course of a few seasons. It is anticipated, however, that the primary focus for the Waihee-Hopoi Fields will be on tropical grasses to take advantage of the large expanse of contiguous, relatively flat fields that are conducive to the efficient planting and harvesting of these types of crops.

In 2010, HC&S was included in a five-year, $10 million study with the Department of Defense to study biofuel production. As part of this work, HC&S conducted crop and harvest trials on different varieties of energy crops and also conducted anaerobic digestion yield testing on a 6-acre plot. Thus, HC&S has some preliminary experience with the requirements, including water requirements and irrigation practices, for growing some of these energy crops. However, further research and testing is necessary for growing these energy crops on a large scale in Central Maui. Currently, HC&S is capturing cost data, testing farming methods at scale, and refining the economic model based on a 50-acre trial field. Later this year, an additional 500 acres will be planted to validate bioenergy crop density, irrigation layout, per-acre yield in different soil types, water demand, and field-scale costs. Results will be critical to analyzing the economic viability of cultivating different energy crops on HC&S lands.

Based on a preliminary assessment arising out of the DoD study, estimated water requirements for bioenergy tropical grasses, such as energycanes and banagrass, are approximately 80% to 85% of the water requirement for conventional, biannually-harvested sugarcane.

In the Na Wai Eha IIFS proceedings, the Commission found that HC&S's reasonable daily water use requirements for sugar cane cultivation (for sugar

production) on the Waihee-Hopoi Fields was 21.75 mgd (2014 FOF #45) based on a water duty of 5958 gad. (2010 COL #92)[4] Using that as the benchmark, and applying the data from the DoD study, the reasonable water duty for bioenergy tropical grasses is between 4776 gad and 5064 gad. HC&S is requesting an allocation based on the lower (80%) water duty of 4776 gad to be applied over the 3650 acres of the Waihee-Hopoi Fields, or 17.43 mgd. The request for Na Wai Eha surface water is reduced by 0.10 mgd, which will be supplied by ground water developed by HC&S's Iao Tunnel.

Energy crops grown on these lands will continue to be irrigated primarily through the use of drip irrigation. Drip irrigation is the most efficient and cost effective method to apply irrigation and fertigation to crops. In limited cases, micro sprinklers or overhead sprinklers may be used to initiate germination of certain crops, including cover crops.

b. System Losses

HC&S is requesting an allocation of 2.15 mgd of Na Wai Eha surface water for system losses for those portions of the West Maui Ditch System that are owned and controlled by HC&S. This includes approximately 10.51 miles of open, lined and unlined ditches and pipelines and 4 reservoirs.

Evidence presented in the 2010 IIFS contested case included HC&S's estimate that it loses 6-8 mgd through seepage from the Waiale Reservoir, depending on the level of the reservoir, and 3 to 4 mgd from seepage throughout the rest of its ditch and reservoir system. (2010 FOF # 122). To spur HC&S to "aggressively address significant system losses" (2010 Decision and Order at p. 187), the Commission limited

[4] References to Findings of Fact and Conclusions of Law within the Commission on Water Resource Management Findings of Fact, Conclusions of Law, Decision and Order in CCH-MA06-01, dated June 10, 2010, shall be cited as "2010 FOF #__" and 2010 COL #__", respectively.

HC&S's reasonable system losses to 2.0 mgd "for purposes of the restoration of stream flows under an amended IIFS." In response to the supreme court's instruction that the Commission determine the reasonableness of HC&S's system losses, on remand, HC&S presented evidence that HC&S's expected system losses, excluding Waiale Reservoir, could range from 2.15 to 4.20 mgd, applying expected seepage rates obtained from the National Engineering Handbook published by the Soil Conservation Service of the United States Department of Agriculture, and an average daily evaporation rate of 0.40 acre inches. (2014 FOF #52.) Notwithstanding this evidence, and the lack of any contrary evidence, the Commission reaffirmed its conclusion that limited HC&S's system losses to 2.0 mgd "for purposes of restoration of stream flows under the amended IIFS." The Commission went on to provide that "[t]his is without prejudice, however, to the rights of any party and of the Commission to revisit this issue in the context of any proceeding involving a WUPA by HC&S, in which proceeding HC&S will have the burden of justifying its water use in general, including its rate of system losses." (2014 COL #16.)

The SCS-USDA National Engineering Handbook is an appropriate guide for determining reasonable system losses because it provides nationwide acceptable procedures to determine seepage losses with different types of material in a conveyance system. Moreover, the 2.15 mgd request for system losses is at the low end of the range for expected HC&S's system losses. This will ensure that HC&S will diligently address system loss issues that currently exist and as they arise in the future.

In compliance with the Commission's directive in 2010 to put the "highest priority" on addressing leakage from HC&S's unlined Waiale Reservoir (2010 Decision and

Order at p. 187), HC&S analyzed several loss mitigation options for the Waiale Reservoirs, including 1) lining the existing reservoir with either concrete or HDPE, 2) lining a smaller configuration of the reservoir, or 3) bypassing the existing reservoir with a flume through Reservoir 73 and/or a ditch through Reservoir 74. The analysis included, among other things, water levels in the reservoirs under the amended IIFS and storm water runoff into the reservoirs from adjacent developments. Pursuant to the analysis, HC&S determined that bypassing the Waiale reservoirs would be the most cost-effective way of mitigating losses. Although there will be evaporative losses through the bypass ditch and/or flume, such losses will be significantly less than the seepage losses experienced. HC&S's request for an allocation of 2.15 mgd for system losses includes losses through the Waiale reservoirs bypass.

3. Consistent with State and County Land Use Plans

All of the lands that comprise the Waihee-Hopoi Fields are classified as Agriculture under the State land use classification and zoned for agricultural use.

Moreover, a majority of the 3,650 cultivated acres within the Waihee-Hopoi Fields have been designated as Important Agricultural Lands ("IAL") pursuant to Part III, Chapter 205, Hawai`i Revised Statutes. As IAL, HC&S has committed to keep these lands in long-term productive agricultural use, provided that a sufficient supply of water is available to allow for profitable farming. HRS § 205-50(g).

4. In the Public Interest

a. Public Interest in Agriculture

As HC&S transitions from sugar cane cultivation into diversified agriculture, it is committed to maintaining the Waihee-Hopoi Fields in productive agriculture. This

commitment is evidenced by the designation of the majority of these lands as Important Agricultural Lands. As IAL, HC&S has committed to keep these lands in long-term productive agricultural use, provided that a sufficient supply of water is available to allow for profitable farming. HRS § 205-50(g).

Agriculture is clearly in the public interest. Article XI, § 3 of the state constitution states:

> The State shall conserve and protect agricultural lands, promote diversified agriculture, increase agricultural self-sufficiency and assure the availability of agriculturally suitable lands.

Moreover, the State Water Code specifically declares that the use of water for "irrigation and other agricultural uses" is in the public interest. HRS § 174C-2(c).

b. Contributions to Energy Independence

Through Act 97, Session Laws of Hawai`i 2015, the State established a 100 percent renewable energy goal by 2045. HC&S's plan to cultivate bioenergy crops on the 3,650 acres that comprise the Waihee-Hopoi Fields contributes toward meeting that goal. "Bioenergy crops" includes a variety of crops that can support biogas or biofuel production, including, but not limited to fuel for jets, marine and land vehicles, and to generate electricity. These bioenergy crops may include, but are not limited to, annual seed crops, such as soybean, safflower, sunflower and canola; perennial oil bearing trees, such as jatropha, kukui and pongamia; and tropical grasses, such as energy canes, banagrass, sorghum, hemp and new hybridized perennial tropical grasses.

The plan is to have a mix of bioenergy crops that will be rotated over the course of a few seasons. It is anticipated, however, that the primary focus for the

Waihee-Hopoi Fields will be on tropical grasses to take advantage of the large expanse of contiguous, relatively flat fields that are conducive to the efficient planting and harvesting of these types of crops.

Unlike generating power by burning bagasse as a by-product of sugar cane processing, bioenergy crops will be grown to be processed directly into biogas or biofuels. At the current stage of planning, it is not known whether HC&S will be involved in the processing of biofuels or whether biofuel stock grown by HC&S will be sold to a processor, and whether the processing will occur on HC&S land or elsewhere. Ideally, HC&S will be able to utilize some of the biofuel stock that it grows to generate electricity for its own use. Even if this were to happen, it will be several years before the biofuel stock becomes available in sufficient quantities and HC&S would have to renovate or rebuild its power plant to be able to utilize new fuel sources. Until such time, HC&S will rely on its two hydroelectric power plants and MECO to supply electrical power to run the pumps for its wells and other facilities.[5] Although HC&S will not be generating electricity through the burning of bagasse, it will be contributing towards meeting the State's goal of 100 percent renewable energy through the cultivation of energy crops.

c. Economic Importance of Productive Agriculture on HC&S Lands

As a sugar plantation, HC&S was one of the largest employers on Maui, employing approximately 800 full time workers, and EMI employing about 17 workers. (2010 FOF 526.) Each year HC&S spent more than $100 million in the domestic economy, primarily on Maui and generated approximately $250 million annually to the County of Maui and State of Hawai`i economies. (2010 FOF 527)

[5] Hydropower turbines on the East Maui Irrigation system historically produced a maximum of 6 MW of power. The amount of power that can be generated in the future will depend on the IIFS amendments for East Maui streams that are currently pending before the Commission.

Under the diversified agriculture model, employment and spending by HC&S will be reduced; however, it is anticipated that, over time, diversified agriculture on HC&S lands will match sugar's economic importance. Instead of being dependent on the successes of one company growing a single crop, a number of different entities – operating as tenants of HC&S or in partnership with HC&S – and different agricultural ventures will be contributing to the employment of Maui residents and to the County's and State's economies.

Keeping the central Maui isthmus green by assuring the continuance of agriculture is also important to tourism, which is the largest economic sector of the State.

C. Alternative Sources

1. Well No. 7

From 1927 until additional Na Wai Eha water became available in the 1980s, HC&S's primary source of irrigation water for its Waihee-Hopoi Fields was Well No. 7 (USGS No. 16), a brackish water well. (2010 FOF #494) However, HC&S minimized the use of Well No. 7 even when Brewer ceased its sugar operations in the 1980s and the Waihee and Spreckels Ditch flows previously used by Brewer to irrigate its cane fields were allowed to flow uninterrupted into the Waiale Reservoir 24 hours a day rather than being substantially reduced during the day, as was previously the case under the sharing arrangement between HC&S and Brewer. (2010 FOF #263)

After 2010, HC&S spent $1,658,369 to upgrade Well No. 7 by installing a second booster pump (Pump 7D) and a 4,000-foot pipeline extending from the Well No. 7 wellhouse to the Waihe`e Ditch, enabling HC&S to pump a maximum of 18.5 mgd on a

sustained daily basis. (2014 FOF #50). Thus, whereas in 2010 the Commission determined that Well No. 7 is a practicable alternative source of irrigation water at an annual average rate of 9.5 mgd, in 2014, the Commission concluded that "Well No. 7 is a practicable alternative source of irrigation water of up to 18.5 mgd on a sustained daily basis for purposes of the restoration of stream flows under an amended IIFS." The Commission stated, however, "This is without prejudice, however, to the rights of any party and of the Commission to revisit this issue in the context of any proceeding involving a WUPA by HC&S, in which proceeding HC&S will have the burden of justifying its water use in general, including the amount of water that should be deemed available from Well No. 7 as a reasonably practicable alternative to Na Wai Eha stream water." (2014 COL # 14)

Under the Diversified Agriculture Model, it would not be practicable to pump 18.5 mgd from Well No. 7 on a sustained basis because the cost of doing so would make farming the Waihee-Hopoi Fields uneconomical.

As a by-product of sugar cane cultivation, HC&S generated electricity by burning bagasse. Combined with the operation of hydro power turbines on its ditch system, HC&S generated enough electricity to be self-sufficient and have excess power to sell to Maui Electric Company. When sugar cane cultivation and processing ceases at the end of 2016, HC&S's ability to generate electricity, at least in the short-term, will be limited to its hydroelectric facilities.

Although HC&S plans to cultivate energy crops on the Waihee-Hopoi Fields, at the current stage of planning, it is not known whether HC&S will be involved in the processing of biofuels or whether biofuel stock grown by HC&S will be sold to a

processor, and whether the processing will occur on HC&S land or elsewhere. Ideally, HC&S will be able to utilize some of the biofuel stock that it grows to generate electricity for its own use. Even if this were to happen, it will be several years before the biofuel stock becomes available in sufficient quantities and HC&S would have to renovate or rebuild its power plant to be able to utilize new fuel sources. Until such time, HC&S will rely on its two hydroelectric power plants and MECO to supply electrical power to run the pumps for its 15 wells, including Well #7, and other facilities.[6]

It is estimated that it will cost $178 (based on MECO's rate of $0.22 per kwh) to pump 1 million gallons of water from Well No. 7 to the Waihee Ditch. At that rate, annual cost of pumping 18.5 mgd from Well No. 7 would amount to more than $1.2 million. The cost of pumping 9.5 mgd (the Well No. 7 alternative source amount determined by the Commission in its 2010 Decision and Order) amounts to more than $600,000 per year.

As indicated above, HC&S is currently refining the economic model for bioenergy crops and has yet to determine its economic viability on a large scale. During the research and testing phase, when no income is derived from the crops, the cost of pumping 18.5 mgd or 9.5 mgd would be prohibitive. Moreover, until more data is collected to populate the economic model, HC&S would not know what water costs can be borne. Given the current stage of the energy crop industry in Hawai`i and the lack of agronomic data, Well 7 cannot be viewed as a practicable alternative source of irrigation water during the period of transition from sugar to diversified agriculture.

[6] Hydropower turbines on the East Maui Irrigation system historically produced a maximum of 6 MW of power. The amount of power that can be generated in the future will depend on the IIFS amendments for East Maui streams that are currently pending before the Commission.

Moreover, there is a concern that sustained pumping of 18.5 mgd from Well No. 7 under the Diversified Agriculture Model will adversely affect the Kahului Aquifer. The Kahului Aquifer has a sustainable yield of only 3 mgd based on natural recharge (WRPP). The historical ability to pump an average of 21 mgd (2010 FOF 495) is clearly dependent upon irrigation recharge, and as irrigation amounts decrease, aquifer withdrawals should likewise decrease to prevent harm to the aquifer.

Between 1927 and 1985, when HC&S pumped an average of about 21 mgd from Well No. 7, both HC&S and Brewer were cultivating sugar cane, which meant that there was significant irrigation recharge. When Brewer ceased sugar cane cultivation, although there was a decrease in irrigation recharge, there was, concomitantly, a decrease in pumping from Well No. 7. After 2010, HC&S upgraded Well No. 7 facilities and increased pumping to approximately 18.5 mgd, and, at the same time, surface water imports decreased as a result of the amended IIFS. To date, well data shows no significant adverse impact to the aquifer. However, it should be noted that 2014 through 2015 have been relatively wet years, which may have mitigated the impact of increased withdrawals. HC&S continues to monitor head levels and chloride levels in Well No. 7.

Going forward, with less irrigation recharge and less seepage from the Waiale Reservoirs (see discussion on system losses, supra), it is reasonable to anticipate that optimal withdrawal amounts from Well No. 7 will decrease. Without data available at this time to determine what the optimal amount would be, HC&S is relying primarily on economic factors in its analysis of the practicability of using Well No. 7 as an alternative source to Na Wai Eha surface water.

2. Iao Tunnel

HC&S's Iao Tunnel develops ground water which is discharged into the Spreckels Ditch between HC&S's intakes on South Waiehu and Iao Streams. (2010 FOF #155). HC&S has a separate Iao Tunnel (Well No. 5330-02), for which it has an interim WUPA for 0.1 mgd. (2010 FOF #154) Provided that the Commission approves HC&S's request to convert the interim permit to a permanent permit with an allocation of 0.1 mgd,[7] the Iao Tunnel water is a practicable alternative source to Na Wai Eha surface water.

3. Recycled County Wastewater

The County of Maui's Wailuku-Kahului Wastewater Treatment Facility ("WWRF") generates at least 5 mgd of recycled wastewater. (2010 COL 107) HC&S retained ATA to prepare a feasibility report pertaining to the use of reclaimed water produced at the WWRF as an alternative to using Na Wai Eha surface water for agricultural irrigation. (2014 FOF 55) According to the ATA Report, approximately 2.95 mgd of treated effluent could potentially be reliably made available to HC&S 365 days a year from the WWRF upon construction of improvements at an estimated capital cost of approximately $16.9 million and a definitive agreement being reached between HC&S and the County of Maui stating the terms and conditions under which the County would provide, and HC&S would accept, reclaimed wastewater, including allocation of the improvements costs, the quality and quantity of water to be delivered, and the water rate charged by the County. Even if agreement between HC&S and the County could be reached, completion of the necessary infrastructure would not occur until 2020 at the earliest.

[7] In June, 2015, HC&S requested that the interim permit be converted to a permanent permit with an allocation of 0.1 mgd. To date, the Commission has not taken action on this request.

Thus, the Commission concluded in 2014 that it was not a practicable at that time for HC&S to use this reclaimed water as an alternative to using Na Wai Eha surface water for agricultural irrigation. (2014 FOF 55-57, COL # 15)

Since 2014, there has been no progress in discussions between HC&S and the County. Thus, reclaimed water from the WWRF is still not a practicable alternative to using Na Wai Eha surface water for the Waihee-Hopoi Fields.

4. Recycled Process Water from HC&S's Puunene Mill

HC&S utilizes wastewater from its Puunene Mill to irrigate certain fields; however, none of these fields are part of the Waihee-Hopoi Fields. (2010 FOF # 505) Moreover, the Puunene Mill will shut down with the cessation of sugar cultivation. Thus, recycled mill water is not a practicable alternative source for irrigating the Waihee-Hopoi Fields.

5. Desalinization

There are no desalinization plants on Maui. Given the current technology and power costs, it would be cost prohibitive to desalinate water for irrigation of bioenergy crops.

6. Other HC&S Wells

HC&S operates a number of other wells that supplement surface water from the East Maui Irrigation System. These wells (except Well No. 7, discussed above) are not practicable alternative sources to Na Wai Eha water as existing gravity flow dependent infrastructure feed this water to HC&S's eastern fields, not to the Waihee-Hopoi Fields. The cost of constructing the infrastructure to pump water from these brackish wells uphill to the west side fields would be cost-prohibitive to HC&S. Moreover, the parts of

the plantation serviced by the EMI System have historically been water short and cannot afford to lose this secondary ground water source.

IV. CONCLUSION

Based on the foregoing, HC&S respectfully requests a water use permit allocating 19.48 mgd of surface water collected from the Na Wai Eha surface water management area for agricultural irrigation on the Waihee-Hopoi Fields and for system losses through portions of the West Maui Irrigation System that are owned and controlled by HC&S.

DATED: Honolulu, Hawaii, February 5, 2016.

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COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

Surface Water Use Permit Applications, Integration of Appurtenant Rights and Amendments to the Interim Instream Flow Standards, Na Wai Eha Surface Water Management Areas of Waihee, Waiehi, Iao and Waikapu Streams, Maui	)	Case No. CCH-MA 15-01
	)	WITNESS LIST

WITNESS LIST

PARTY: HAWAIIAN COMMERCIAL & SUGAR COMPANY (SWUPA 2205)

NAME/ORGANIZATION/ POSITION	SUBJECT MATTER	EXHIBIT(S) TO BE PRODUCED BY WITNESS
Rick W. Volner, Jr. General Manager, HC&S	HC&S water needs	None
Garrett Hew President, EMI; Water Resources Manager, HC&S	HC&S system losses; alternative sources	None

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

Surface Water Use Permit Applications, Integration of Appurtenant Rights and Amendments to the Interim Instream Flow Standards, Na Wai Eha Surface Water Management Areas of Waihee, Waiehu, Iao and Waikapu Streams, Maui	))))))	Case No. CCH-MA 15-01 SWUPA 2205 DIRECT WITNESS STATEMENT OF RICK W. VOLNER, JR.

WITNESS STATEMENT OF RICK W. VOLNER, JR.

1. My name is Rick W. Volner, Jr. Since April 1, 2011, I have been the General Manager of Hawaiian Commercial & Sugar ("HC&S), but have been with HC&S since 1997. I started as an agricultural engineer; later became Senior Vice President of Agricultural Operations before being promoted to my current position. I am authorized and competent in making this witness statement and do so based on personal knowledge.

2. I previously presented written testimony in the Na Wai Eha IIFS proceedings, both the initial and remand proceedings.

I was also subject to cross-examination in both proceedings.

3. The purpose of this witness statement is to supplement evidence previously provided in the Na Wai Eha IIFS proceedings in support of HC&S's application for a surface water use permit for its Waihee-Hopoi Fields (SWUPA No. 2205). Under this application, HC&S is requesting an existing use allocation 19.48 mgd. Of this amount, 17.33 mgd is for irrigation purposes and 2.15 mgd is for system losses for those portions of the West Maui Ditch System that are operated and controlled by HC&S.

4. The Waihee-Hopoi Fields are part of HC&S's West Maui Fields, which have been cultivated in sugar cane for over a century. These fields were in sugar cane cultivation on April 30, 2008, the date of designation of Na Wai Eha as a surface water management area.

5. HC&S has been engaged in sugar cultivation on Maui since 1870. By 2008, HC&S was the last sugar plantation in Hawai'i. On January 6, 2016, HC&S announced that, after nearly a century and a half of cultivating sugar cane on Maui, it would cease sugar cane cultivation by the end of this year, and will transition its plantation lands to diversified agriculture, including bioenergy crops, truck crops, orchard crops, and irrigated pasture.

6. Whereas HC&S itself cultivated and processed the sugar cane on its own lands, under the diversified agriculture model, HC&S may farm some of the land itself, but may also lease some of its land to other farmers, and/or partner with others on different agricultural pursuits.

7. HC&S's Diversified Agriculture Plan calls for the cultivation of bioenergy crops on the 3,650 acres that comprise the Waihee-Hopoi Fields. This will require the use of Na Wai Eha surface water for irrigation purposes. However, the amount of irrigation water required will be less than what was required and used for sugar cane cultivation.

8. "Bioenergy crops" include a variety of crops that support biogas or biofuels production, including, but not limited to fuel for jets, marine and land vehicles, and to generate electricity. These bioenergy crops may include, but are not limited to, annual seed crops, such as soybean, safflower, sunflower and canola; perennial oil bearing trees, such as jatropha, kukui and pongamia; and tropical grasses, such as energy canes, banagrass, sorghum, hemp and new hybridized perennial tropical grasses.

9. HC&S's plan is to have a mix of bioenergy crops that will be rotated over the course of a few seasons. It is anticipated, however, that the primary focus for the Waihee-Hopoi Fields will be on tropical grasses to take advantage of the large expanse of contiguous, relatively flat fields that are conducive to the efficient planting and harvesting of these types of crops.

10. In 2010, HC&S was included in a five-year, $10 million research project with the Department of Defense to study biofuel production ("DoD Study"). As part of this work, HC&S conducted crop and harvest trials on different varieties of bioenergy crops and also conducted anaerobic digestion yield testing on a 6-acre plot. Thus, HC&S has some preliminary experience with the requirements, including water requirements and irrigation practices, for growing some of these bioenergy crops. However, further research and testing is necessary for growing these energy crops on a large scale in Central Maui.

Currently, HC&S is capturing cost data, testing farming methods at scale, and refining the economic model based on a 50-acre trial field. Later this year, an additional 500 acres will be planted to validate bioenergy crop density, irrigation layout, per-acre yield in different soil types, water demand, and field-scale costs. Results will be critical to analyzing the economic viability of cultivating different energy crops on HC&S lands.

11. Based on a preliminary assessment arising out of the DoD Study, estimated water requirements for bioenergy tropical grasses, such as energycanes

and banagrass, are approximately 80% to 85% of the water requirement for conventional, biannually-harvested sugarcane.

12. In the Na Wai Eha IIFS proceedings, the Commission found that HC&S's reasonable daily water use requirements for sugar cane cultivation (for sugar production) on the Waihee-Hopoi fields was 21.75 mgd based on a water duty of 5958 gad. Using this as the benchmark, and applying the data from the DoD Study, the reasonable water duty for bioenergy tropical grasses is between 4776 gad and 5064 gad. HC&S is requesting an allocation based on the lower (80%) water duty of 4776 gad to be applied over the 3650 acres of the Waihee-Hopoi Fields, or 17.43 mgd. The request for Na Wai Eha surface water is reduced by 0.10 mgd, which will be supplied by ground water developed by HC&S's Iao Tunnel.

13. Energy crops grown on HC&S lands will continue to be irrigated primarily through the use of drip irrigation. Drip irrigation is the most efficient and cost effective method to apply irrigation and fertigation to crops. In limited cases, micro sprinklers or overhead sprinklers may be used to initiate germination of certain crops, including cover crops.

14. In compliance with the Water Commission's directive in 2010 to put the "highest priority" on addressing leakage from HC&S's unlined Waiale Reservoir, HC&S analyzed several loss mitigation options for the Waiale Reservoirs, including 1) lining the existing reservoir with either concrete of HDPE, 2) lining a smaller configuration of the reservoir, or 3) bypassing the existing reservoir with

a flume through Reservoir 73 and/or a ditch through Reservoir 74. The analysis included, among other things, water levels in the reservoirs under the amended IIFS and storm water runoff into the reservoirs from adjacent developments. Pursuant to the analysis, HC&S determined that bypassing the Waiale reservoirs would be the most cost-effective way of mitigating losses. Although there will be evaporative losses through the bypass ditch and/or flume, such losses will be significantly less than the seepage losses experienced. HC&S's request for an allocation of 2.15 mgd for system losses includes losses through the Waiale reservoirs bypass.

15. All of the lands that comprise the Waihee-Hopoi Fields are classified as Agriculture under the State land use classification and zoned for agricultural use.

16. A majority of the 3,650 cultivated acres within the Waihee-Hopoi Fields have been designated as Important Agricultural Lands ("IAL"). As IAL, HC&S has committed to keep these lands in long-term productive agricultural use, provided that a sufficient supply of water is available for profitable farming.

17. Under HC&S's Diversified Agriculture Model, employment and spending by HC&S will be reduced from its time as a sugar plantation. However, the anticipation – and the hope – is that over time, diversified agriculture on HC&S lands will match sugar's economic importance. Instead of being dependent on the successes of one company growing a single crop, a number of different entities – operating as tenants of HC&S or in partnership with HC&S – and different

agricultural ventures will be contributing to the employment of Maui residents and to the County's and the State's economies.

18. Under the Diversified Agriculture Model, at least for the short term, it would not be practicable to pump 18.5 mgd, or even 9.5 mgd, from Well No. 7 on a sustained basis because the cost of doing so would make farming the Waihee-Hopoi Fields uneconomical.

19. As a by-product of sugar cane cultivation, HC&S generated electricity by burning bagasse. Combined with the operation of two hydropower turbines on our East Maui ditch system, HC&S generated enough electricity to be self-sufficient and have excess power to sell to Maui Electric Company ("MECO"). When sugar cane cultivation and processing ceases at the end of 2016, HC&S's ability to generate electricity, at least in the short-term, will be limited to its hydroelectric facilities. Historically, these hydropower turbines produced a maximum of 6 MW of power. However the amount of power that is produced is dependent upon the amount of water in the ditches. With the IIFS amendments for East Maui streams currently pending before the Water Commission, we are not certain that we will be able to continue to generate the same amount of power in the future.

20. It is estimated that it will cost $178 (based on MECO's rate of $0.22 per kwh) to pump 1 million gallons of water from Well No. 7 to the Waihee Ditch. At that rate, the annual cost of pumping 18.5 mgd from Well No. 7 would amount

to more than $1.2 million. The cost of pumping 9.5 mgd amounts to more than $600,000 per year.

21. During the research and testing phase of growing bioenergy crops, when no income is derived from these crops, the cost of pumping 18.5 mgd or 9.5 mgd from Well No. 7 would be cost prohibitive. Moreover, HC&S is still in the process of refining the economic model for bioenergy crops and we have yet to determine its economic viability on a large scale. We need to generate and collect more data to determine what water costs can be borne for bioenergy crops to be economically viable on HC&S lands. Given the current stage of the bioenergy crop industry in Hawai'i and the lack of agronomic data, HC&S cannot rely on Well No. 7 water for irrigation during the period of transition from sugar to diversified agriculture.

22. Unlike generating power by burning bagasse as a by-product of sugar cane processing, bioenergy crops will be grown to be processed directly into biogas or biofuels. At the current stage of planning, it is not known whether HC&S will be involved in the processing of biofuels or whether biofuel stock grown by HC&S will be sold to a processor, and whether the processing will occur on HC&S land or elsewhere. Ideally, HC&S will be able to utilize some of the biofuel stock that it grows to generate electricity for its own use. Even if this were to happen, however, it will be several years before the biofuel stock becomes available in sufficient quantities for HC&S's use. Also, HC&S would have to renovate or rebuild its existing power plant to be able to utilize new fuel sources. Until such

time, HC&S will rely on its two hydroelectric power plants and MECO to supply electrical power to run the pumps for its wells and other facilities.

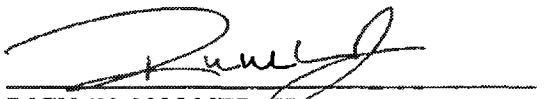
23. Since 2014, there has been no progress in discussions between HC&S and the County regarding the use of reclaimed wastewater from the Wailuku-Kahului Wastewater Treatment Facility.

24. When sugar cane cultivation ceases at the end of this year, the Puunene Mill will shut down. Thus, there will not be any recycled mill water available for irrigation in the future.

25. There are no desalinization plants on Maui. Given the current technology and power costs, it would be cost-prohibitive to desalinate water for irrigation of bioenergy crops.

26. The cost of constructing infrastructure to pump water from brackish water wells that serve the East Maui Fields uphill to the West Maui Fields would be cost-prohibitive to HC&S. Moreover, the HC&S lands serviced by the EMI system have been historically water short, and cannot afford to lose this secondary ground water source.

27. This concludes my written direct testimony.



RICK W. VOLNER, JR.

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

Surface Water Use Permit Applications, Integration of Appurtenant Rights and Amendments to the Interim Instream Flow Standards, Na Wai Eha Surface Water Management Areas of Waihee, Waiehu, Iao and Waikapu Streams, Maui	))))))	Case No. CCH-MA 15-01 SWUPA 2205 DIRECT WITNESS STATEMENT OF GARRET HEW

WITNESS STATEMENT OF GARRET HEW

1. My name is Garret Hew. I am the President of East Maui Irrigation Co., Ltd. ("EMI"), which is a subsidiary of Alexander & Baldwin, LLC ("A&B"). I am also the Water Resources Manager for Hawaiian Commercial & Sugar ("HC&S"), which is the division of A&B that operates A&B's sugar plantation on Maui. I started with HC&S in 1983, and in 1985 began my career with EMI, where I've been ever since. I am authorized and competent in making this witness statement and do so based on personal knowledge.

2. I previously presented both direct and rebuttal testimony in the initial Na Wai Eha IIFS proceedings and in the remand proceedings. I was also subject to cross-examination in both of those proceedings.

3. The purpose of this witness statement is to supplement evidence previously provided in the Na Wai Eha IIFS proceedings in support of HC&S's application for a surface water use permit for its Waihee-Hopoi Fields (SWUPA No. 2205).

4. System Losses. HC&S is requesting an allocation of 2.15 mgd for system losses for those portions of the West Maui Ditch System that are owned and controlled by HC&S. This includes approximately 10.51 miles of open, lined and unlined ditches and pipelines and four reservoirs. The 2.15 mgd of system losses is based on calculations for seepage rates using the National Engineering Handbook, which is published by the Soil Conservation Service of the

US Department of Agriculture, plus an average daily evaporation rate of 0.40 acre-inches. The National Engineering Handbook provides nationwide acceptable procedures for determining seepage losses with different types of material in a water conveyance system. The combined losses for seepage and evaporation for HC&S's ditch and reservoir system, excluding the Waiale Reservoirs, ranges from 2.15 to 4.20 mgd. (See 2014 D&O, FOF # 52.)

For allocation purposes, HC&S selected the low end of the range, because we recognize that system losses are a big concern. Having a low allocation will certainly keep our feet to the fire and make sure that we diligently address system loss issues that currently exist and as they arise in the future.

5: Alternative Source – Iao Tunnel. HC&S has WUP No. 691, which is an interim permit, with an allocation for 100,000 gallons per day from Iao Tunnel. When the interim permit was issued on October 28, 2010, Iao Tunnel was not separately metered so we weren't sure how much water we were collecting from this source. One of the terms of the interim permit is that we would have to measure the amount and, within five years, the Water Commission is supposed to make a final determination of the amount of the allocation. We installed a flow meter in February, 2011 and have been submitting monthly ground water use reports to CWRM. In June, 2015, HC&S requested, by letter, conversion of the interim permit to a full and final permit. We were informed by Commission staff, that this could not be done ministerially, but that the Commission had to take

action on the request. To date, the matter has not been brought before the Commission.

6. Alternative Sources – Well No. 7. Since the 2014 IIFS Decision and Order, HC&S has been pumping approximately 18.5 mgd from Well No. 7. At the same time, surface water imports have decreased as a result of the amended IIFS. So there is the concern that sustained pumping at this level, and the simultaneous decrease in surface water imports, will eventually decrease the amount of water that can safely be withdrawn from the Kahului Aquifer. To date, well data shows no significant adverse impact to the aquifer. However, it should be noted that 2014 through 2015 have been relatively wet years, which may have mitigated the impact of increased withdrawals. HC&S continues to monitor head levels and chloride levels in Well No. 7.

7. Other Brackish Water Wells. In addition to Well No. 7, there are 14 other brackish water wells that supplement surface water from the East Maui Irrigation System for the HC&S plantation. Water from these wells is pumped into gravity flow dependent infrastructure that brings water to HC&S's eastern fields. To bring this water to the Waihee-Hopoi Fields would require the construction of infrastructure to pump water from these wells uphill to the west side fields.

8. This concludes my written direct testimony.

Garret Hew

GARRET HEW

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COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

Surface Water Use Permit Applications, Integration of Appurtenant Rights and Amendments to the Interim Instream Flow Standards, Na Wai Eha Surface Water Management Areas of Waihee, Waiehi, Iao and Waikapu Streams, Maui	)	Case No. CCH-MA 15-01
	)	EXHIBIT LIST

EXHIBIT LIST

PARTY: HAWAIIAN COMMERCIAL & SUGAR COMPANY (SWUPA 2205)

EX. NO.	DESCRIPTION	REFERENCES	REC'D INTO EVIDENCE
NONE			

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

Surface Water Use Permit Applications, Integration of Appurtenant Rights and Amendments to the Interim Instream Flow Standards, Na Wai Eha Surface Water Management Areas of Waihee, Waiehi, Iao and Waikapu Streams, Maui	)))))))	Case No. CCH-MA 15-01 SWUPA 2205 CERTIFICATE OF SERVICE

CERTIFICATE OF SERVICE

The undersigned hereby certifies that, on this date, a true and correct copy of the Hawaiian Commercial & Sugar Company's Opening Brief in Support of SWUPA No. 2205; Witness List; Direct Witness Statement of Rick W. Volner Jr.; Direct Witness Statement of Garret Hew; and Exhibit List were duly served on the following parties by U.S. Mail or electronic service, as indicated below:

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COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

Surface Water Use Permit Applications, Integration of Appurtenant Rights and Amendments to the Interim Instream Flow Standards, Na Wai Eha Surface Water Management Areas of Waihee, Waiehi, Iao and Waikapu Streams, Maui	Case No. CCH-MA 15-01 HAWAIIAN COMMERCIAL & SUGAR COMPANY'S OPENING BRIEF IN SUPPORT OF SWUPA NO. 2206; WITNESS LIST; DIRECT WITNESS STATEMENT OF RICK W. VOLNER, JR.; DIRECT WITNESS STATEMENT OF GARRET HEW; EXHIBIT LIST; AND CERTIFICATE OF SERVICE

HAWAIIAN COMMERCIAL & SUGAR COMPANY'S OPENING BRIEF
IN SUPPORT OF SWUPA NO. 2206

Hawaiian Commercial & Sugar Company ("HC&S") requests a water use permit for 4.84 million gallons per day (mgd) (12-MAV) of Na Wai Eha surface water supplied via the Wailuku Water Company's ("WWC") Iao-Waikapu Ditch for agricultural irrigation on approximately 1,120 acres designated as the Iao-Waikapu Fields.

I. BACKGROUND

HC&S has been engaged in sugar cultivation on Maui since 1870. By 2008, HC&S was the last sugar plantation in Hawai`i. HC&S plantation consists of over

EXHIBIT 2

43,000 acres of land in central Maui, of which about 35,000 are currently under cultivation. By the end of 2016, however, HC&S will cease sugar cane cultivation, thus ending a century and a half of an industry that transformed Hawai'i. Cessation of sugar cane cultivation, however, does not mean the end of agriculture on the Central Maui isthmus. Instead, HC&S is committed to continuing agriculture by transitioning sugar lands to diversified agriculture, including bioenergy crops, truck crops, orchard crops, and irrigated pasture.

Although the HC&S plantation will largely remain in agriculture, there are some significant differences between the sugar cane and diversified agriculture models, including, but not limited to, water requirements and energy generation. Additionally, whereas HC&S itself cultivated and processed the sugar cane on its lands, under the diversified agriculture model, HC&S may farm some of the lands itself, but may also lease some of its lands to other farmers and/or partner with others on different agricultural pursuits.

Diversified Agriculture Plan for Iao-Waikapu Fields

HC&S leases the Iao-Waikapu fields.[1] Historically, the Iao-Waikapu Fields were cultivated by C. Brewer and successor entities. After C. Brewer terminated its sugar operations, HC&S took over cultivation of these fields by leasing them from C. Brewer. HC&S currently leases the Iao-Waikapu Fields from the Atherton Group. 2010 FOF #264.

HC&S's Diversified Agriculture Plan calls for the cultivation of bioenergy crops on the 1,120 acres that comprise the Iao-Waikapu Fields. "Bioenergy crops" includes a

[1] Field 920, which is owned by HC&S, is considered part of the Iao-Waikapu Fields. However, in the IIFS proceeding, the Commission excluded Field 920 from its reasonable-beneficial analysis. Likewise, HC&S is not including Field 920 in calculating the water requirement for the Iao-Waikapu Fields.

variety of crops that can support biogas or biofuel production, including, but not limited to fuel for jets, marine and land vehicles, and to generate electricity. These bioenergy crops may include, but are not limited to, annual seed crops, such as soybean, safflower, sunflower and canola; perennial oil bearing trees, such as jatropha, kukui and pongamia; and tropical grasses, such as energy canes, banagrass, sorghum, hemp and new hybridized perennial tropical grasses.

The plan is to have a mix of bioenergy crops that will be rotated over the course of a few seasons. It is anticipated, however, that the primary focus for the Iao-Waikapu Fields will be on tropical grasses to take advantage of the large expanse of contiguous, relatively flat fields that are conducive to the efficient planting and harvesting of these types of crops.

In 2010, HC&S was included in a five-year, $10 million research project with the Department of Defense to study biofuel production ("DoD Study"). As part of this work, HC&S conducted crop and harvest trials on different varieties of bioenergy crops grown on HC&S land, and also conducted anaerobic digestion yield testing on a 6-acre plot. Thus, HC&S has some preliminary experience with the requirements, including water requirements and irrigation practices, for growing some of these bioenergy crops. However, further research and testing is necessary for growing these energy crops on a large scale in Central Maui. Currently, HC&S is capturing cost data, testing farming methods at scale, and refining the economic model based on a 50-acre trial field. Later this year, an additional 500 acres will be planted to validate bioenergy crop spacing, irrigation layout, per-acre yield in different soil types, water demand, and field-scale

costs. Results will be critical to analyzing the economic viability of cultivating different energy crops on HC&S lands.

II. CRITERIA FOR EXISTING USE PERMIT

To obtain a water use permit for existing uses, HC&S must demonstrate that the use (1) was existing as of the effective date of designation and (2) is reasonable-beneficial. HRS § 174C-50(b). Case law further dictates that an analysis of alternative sources is required in determining whether a use is reasonable-beneficial.

A. Existing Use on the Date of Designation

Historically, the Iao-Waikapu Fields were cultivated by C. Brewer and successor entities. After C. Brewer terminated its sugar operations in 1988, HC&S took over cultivation of these fields by leasing them from C. Brewer. Since then, HC&S has been continuously cultivating sugar cane on the Iao-Waikapu Fields and using Na Wai Eha surface water to irrigate approximately 1,120 acres within the Iao-Waikapu Fields on the date of designation of Na Wai Eha as a surface water management area, April 30, 2008. 2014 COL # 12; 2010 FOF #264, 2010 FOF # 272.

Recently, HC&S announced that it would cease sugar cultivation by the end of 2016 and would use its agricultural lands for a variety of other agricultural pursuits. These new agricultural activities on the Iao-Waikapu Fields will require Na Wai Eha surface water for irrigation purposes; however, the amount of irrigation water required will be less than what was required and used for sugar cane cultivation.

Under the State Water Code, a change in crop is not construed as a change in use. HRS § 174C-3.[2] Thus, notwithstanding the fact that HC&S will be transitioning

[2] "Existing agricultural use" means replacing or alternating the cultivation of any agricultural crop with any other agricultural crop, which shall not be construed as a change in use. HRS § 174C-3.

from sugar cane cultivation to diversified agriculture (more specifically for the Iao-Waikapu Fields, bioenergy crops) HC&S's use of Na Wai Eha water remains an existing use.[3]

B. Reasonable-Beneficial

"Reasonable-beneficial" is defined in HRS § 174C-3 as follows:

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

1. Quantity Requested

HC&S is requesting an existing use allocation of 4.84 mgd for the Iao-Waikapu Fields.

The Iao-Waikapu Fields are irrigated with water from WWC's Reservoir 6. (2010 FOF # 289) Water to irrigate the Iao-Waikapu Fields comes principally from Iao Stream via the Iao-Waikapu Ditch and Waikapu Stream via the South Waikapu Ditch and Waihee Ditch, all of which are operated by WWC. If necessary, water in the Waihee Ditch can be kept in the ditch past the Hopoi chute to supplement the flow from the Iao-Waikapu Ditch. (2010 FOF #166)

2. Economic and Efficient Utilization

a. Water Duty for Energy Crops

HC&S's Diversified Agriculture Plan calls for the cultivation of bioenergy crops on the 1,120 acres that comprise the Iao-Waikapu Fields. "Bioenergy crops" includes a

[3] HC&S's circumstances are very similar to circumstances involved in the Waiahole Ditch contested case. There, Oahu Sugar Company was cultivating sugar on lands served by the Waiahole Ditch on the date of designation. However, during the course of the contested case proceedings, Oahu Sugar ceased sugar cultivation, and the lands were being transitioned into diversified agriculture. The Commission treated the water use permit applications for diversified agriculture as "existing use" applications.

variety of crops that can support biogas or biofuel production, including, but not limited to fuel for jets, marine and land vehicles, and to generate electricity. These bioenergy crops may include, but are not limited to, annual seed crops, such as soybean, safflower, sunflower and canola; perennial oil bearing trees, such as jatropha, kukui and pongamia; and tropical grasses, such as energy canes, banagrass, sorghum, hemp and new hybridized perennial tropical grasses.

The plan is to have a mix of bioenergy crops that will be rotated over the course of a few seasons. It is anticipated, however, that the primary focus for the Iao-Waikapu Fields will be on tropical grasses to take advantage of the large expanse of contiguous, relatively flat fields that are conducive to the efficient planting and harvesting of these types of crops.

In 2010, HC&S was included in a five-year, $10 million research project with the Department of Defense to study biofuel production ("DoD Study"). As part of this work, HC&S conducted crop and harvest trials on different varieties of bioenergy crops grown on HC&S land, and also conducted anaerobic digestion yield testing on a 6-acre plot. Thus, HC&S has some preliminary experience with the requirements, including water requirements and irrigation practices, for growing some of these bioenergy crops. However, further research and testing is necessary for growing these energy crops on a large scale in Central Maui. Currently, HC&S is capturing cost data, testing farming methods at scale, and refining the economic model based on a 50-acre trial field. Later this year, an additional 500 acres will be planted to validate bioenergy crop spacing, irrigation layout, per-acre yield in different soil types, water demand, and field-scale

costs. Results will be critical to analyzing the economic viability of cultivating different energy crops on HC&S lands.

Based on a preliminary assessment arising out of the DoD Study, estimated water requirements for annually-harvested bioenergy tropical grasses, such as energycanes and banagrass, are approximately 80% to 85% of the water requirement for conventional, biannually-harvested sugarcane.

In the Na Wai Eha IIFS proceedings, the Commission found that HC&S's reasonable daily water use requirements for sugar cane cultivation (for sugar production) on the Iao-Waikapu Fields was 6.06 mgd based on a water duty of 5408 gad. (2010 COL #93)[4] Using that as the benchmark, and applying the data from the DoD study, the reasonable water duty for bioenergy tropical grasses is between 4326 gad and 4597 gad. HC&S is requesting an allocation based on the lower (80%) water duty of 4326 gad to be applied over the 1120 acres of the Iao-Waikapu Fields, or 4.84 mgd.

Energy crops grown on these lands will continue to be irrigated primarily through the use of drip irrigation. Drip irrigation is the most efficient and cost effective method to apply irrigation and fertigation to crops. In limited cases, micro sprinklers or overhead sprinklers may be used to initiate germination of certain crops, including cover crops.

3. Consistent with State and County Land Use Plans

All of the lands that comprise the Iao-Waikapu Fields are classified as Agriculture under the State land use classification and zoned for agricultural use.

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[4] References to Findings of Fact and Conclusions of Law within the Commission on Water Resource Management Findings of Fact, Conclusions of Law, Decision and Order in CCH-MA06-01, dated June 10, 2010, shall be cited as "2010 FOF #__" and 2010 COL #__", respectively.

4. In the Public Interest

a. Public Interest in Agriculture

As HC&S transitions from sugar cane cultivation into diversified agriculture, HC&S will continue to lease the Iao-Waikapu Fields to grow bioenergy crops.

Agriculture is clearly in the public interest. Article XI, § 3 of the state constitution states:

> The State shall conserve and protect agricultural lands, promote diversified agriculture, increase agricultural self-sufficiency and assure the availability of agriculturally suitable lands.

Moreover, the State Water Code specifically declares that the use of water for "irrigation and other agricultural uses" is in the public interest. HRS § 174C-2(c).

b. Contributions to Energy Independence

Through Act 97, Session Laws of Hawai'i 2015, the State established a 100 percent renewable energy goal by 2045. HC&S's plan to cultivate bioenergy crops on the 1,120 acres that comprise the Iao-Waikapu Fields contributes toward meeting that goal. "Bioenergy crops" includes a variety of crops that can support biogas or biofuel production, including, but not limited to fuel for jets, marine and land vehicles, and to generate electricity. These bioenergy crops may include, but are not limited to, annual seed crops, such as soybean, safflower, sunflower and canola; perennial oil bearing trees, such as jatropha, kukui and pongamia; and tropical grasses, such as energy canes, banagrass, sorghum, hemp and new hybridized perennial tropical grasses.

The plan is to have a mix of bioenergy crops that will be rotated over the course of a few seasons. It is anticipated, however, that the primary focus for the Iao-Waikapu Fields will be on tropical grasses to take advantage of the large expanse of contiguous,

relatively flat fields that are conducive to the efficient planting and harvesting of these types of crops.

Unlike generating power by burning bagasse as a by-product of sugar cane processing, energy crops will be grown to be processed directly into biofuels. At the current stage of planning, it is not known whether HC&S will be involved in the processing of biofuels or whether biofuel stock grown by HC&S will be sold to a processor, and whether the processing will occur on HC&S land or elsewhere. Ideally, HC&S will be able to utilize some of the biofuel stock that it grows to generate electricity for its own use. Even if this were to happen, it will be several years before the biofuel stock becomes available in sufficient quantities and HC&S would have to renovate or rebuild its power plant to be able to utilize new fuel sources. Until such time, HC&S will rely on its two hydroelectric power plants and MECO to supply electrical power to run the pumps for its wells and other facilities.[5] Although HC&S will not be generating electricity through the burning of bagasse, it will be contributing towards meeting the State's goal of 100 percent renewable energy through the cultivation of energy crops.

c. Economic Importance of Productive Agriculture on HC&S Lands

As a sugar plantation, HC&S was one of the largest employers on Maui, employing approximately 800 full time workers, and EMI employing about 17 workers. (2010 FOF 526.) Each year HC&S spent more than $100 million in the domestic economy, primarily on Maui and generated approximately $250 million annually to the County of Maui and State of Hawai'i economies. (2010 FOF 527)

[5] Hydropower turbines on the East Maui Irrigation system historically produced a maximum of 6 MW of power. The amount of power that can be generated in the future will depend on the IIFS amendments for East Maui streams that are currently pending before the Commission.

Under the diversified agriculture model, employment and spending by HC&S will be reduced; however, it is anticipated that, over time, diversified agriculture on the HC&S lands will match sugar's economic importance. Instead of being dependent on the successes of one company growing a single crop, a number of different entities – operating as tenants of HC&S or in partnership with HC&S – and different agricultural ventures will be contributing to the employment of Maui residents and to the County's and State's economies.

Keeping the central Maui isthmus green by assuring the continuance of agriculture is also important to tourism, which is the largest economic sector of the State.

C. Alternative Sources

1. Well No. 7 and Iao Tunnel

The Iao-Waikapu Fields are all above the Waiale Reservoir, and thus, beyond the reach of HC&S's gravity-based irrigation system, including Well No. 7 and HC&S's Iao Tunnel. (2010 FOF # 155; FOF # 266)

2. Recycled County Wastewater

The County of Maui's Wailuku-Kahului Wastewater Treatment Facility ("WWRF") generates at least 5 mgd of recycled wastewater. (2010 COL 107) HC&S retained ATA to prepare a feasibility report pertaining to the use of reclaimed water produced at the WWRF as an alternative to using Na Wai Eha surface water for agricultural irrigation. (2014 FOF 55) According to the ATA Report, approximately 2.95 mgd of treated effluent could potentially be reliably made available to HC&S 365 days a year from the WWRF upon construction of improvements at an estimated capital cost of approximately

$16.9 million and a definitive agreement being reached between HC&S and the County of Maui stating the terms and conditions under which the County would provide, and HC&S would accept, reclaimed wastewater, including allocation of the improvements costs, the quality and quantity of water to be delivered, and the water rate charged by the County. Even if agreement between HC&S and the County could be reached, completion of the necessary infrastructure would not occur until 2020 at the earliest. Thus, the Commission concluded in 2014 that it was not a practicable at that time for HC&S to use this reclaimed water as an alternative to using Na Wai Eha surface water for agricultural irrigation. (2014 FOF 55-57, COL # 15)

Since 2014, there has been no progress in discussions between HC&S and the County. Thus, reclaimed water from the WWRF is still not a practicable alternative to using Na Wai Eha surface water for the Iao-Waikapu Fields.

4. Recycled Process Water from HC&S's Puunene Mill

HC&S utilizes wastewater from its Puunene Mill to irrigate certain fields. (2010 FOF # 505) However, the Puunene Mill will shut down with the cessation of sugar cultivation. Thus, recycled mill water is not a practicable alternative source for irrigating the Iao-Waikapu Fields.

5. Desalinization

There are no desalinization plants on Maui. Given the current technology and power costs, it would be cost prohibitive to desalinate water for irrigation of energy crops.

6. Other HC&S Wells

HC&S operates a number of other wells that supplement surface water from the East Maui Irrigation System. These wells (except Well No. 7, discussed above) are not practicable alternative sources to Na Wai Eha water as existing gravity flow dependent infrastructure feed this water to HC&S's eastern fields, not to the Iao-Waikapu Fields. The cost of constructing the infrastructure to pump water from these brackish wells uphill to the west side fields would be cost-prohibitive to HC&S. Moreover, the parts of the plantation serviced by the EMI System have been historically water short and cannot afford to lose this secondary ground water source.

IV. CONCLUSION

Based on the foregoing, HC&S respectfully requests a water use permit allocating 4.84 mgd of surface water collected from the Na Wai Eha surface water management area for agricultural irrigation on the Iao-Waikapu Fields.

DATED: Honolulu, Hawaii, February 5, 2016.

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COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

Surface Water Use Permit Applications, Integration of Appurtenant Rights and Amendments to the Interim Instream Flow Standards, Na Wai Eha Surface Water Management Areas of Waihee, Waiehi, Iao and Waikapu Streams, Maui	)	Case No. CCH-MA 15-01 WITNESS LIST

WITNESS LIST

PARTY: HAWAIIAN COMMERCIAL & SUGAR COMPANY (SWUPA 2206)

NAME/ORGANIZATION/ POSITION	SUBJECT MATTER	EXHIBIT(S) TO BE PRODUCED BY WITNESS
Rick W. Volner, Jr. General Manager, HC&S	HC&S water needs	None
Garrett Hew President, EMI; Water Resources Manager, HC&S	HC&S alternative sources	None

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

Surface Water Use Permit Applications, Integration of Appurtenant Rights and Amendments to the Interim Instream Flow Standards, Na Wai Eha Surface Water Management Areas of Waihee, Waiehu, Iao and Waikapu Streams, Maui	))))))	Case No. CCH-MA 15-01 SWUPA 2206 DIRECT WITNESS STATEMENT OF RICK W. VOLNER, JR.

WITNESS STATEMENT OF RICK W. VOLNER, JR.

1. My name is Rick W. Volner, Jr. Since April 1, 2011, I have been the General Manager of Hawaiian Commercial & Sugar ("HC&S), but have been with HC&S since 1997. I started as an agricultural engineer; later became Senior Vice President of Agricultural Operations before being promoted to my current position. I am authorized and competent in making this witness statement and do so based on personal knowledge.

2. I previously presented testimony in the Na Wai Eha IIFS proceedings, both the initial and remand proceedings.

I was also subject to cross-examination in both of those proceedings.

3. The purpose of this witness statement is to supplement evidence previously provided in the Na Wai Eha IIFS proceedings in support of HC&S's application for a surface water use permit for its Iao-Waikapu Fields (SWUPA No. 2206). Under this application, HC&S is requesting an existing use allocation 4.84 mgd of water supplied via the Wailuku Water Company's ("WWC") Iao-Waikapu Ditch for agricultural irrigation on approximately 1,120 acres designated as the Iao-Waikapu Fields.

4. HC&S leases the Iao-Waikapu Fields, which are part of our West Maui Fields. Historically, the Iao-Waikapu Fields were cultivated by C. Brewer and its successor entities. After C. Brewer terminated its sugar operations, HC&S took over cultivation of these fields by leasing them, first from C. Brewer, and currently from the Atherton Group. HC&S was cultivating sugar cane on the

Iao-Waikapu Fields on April 30, 2008, the date of designation for the Na Wai Eha surface water management area.

5. HC&S has been engaged in sugar cultivation on Maui since 1870. By 2008, HC&S was the last sugar plantation in Hawai'i. On January 6, 2016, HC&S announced that, after nearly a century and a half of cultivating sugar cane on Maui, it would cease sugar cane cultivation by the end of this year, and will transition its plantation lands to diversified agriculture, including bioenergy crops, truck crops, orchard crops, and irrigated pasture.

6. Whereas HC&S itself cultivated and processed the sugar cane on its entire plantation, under the diversified agriculture model, HC&S may farm some of the land itself, but may also lease some of its land to other farmers, and/or partner with others on different agricultural pursuits.

7. HC&S's Diversified Agriculture Plan calls for the cultivation of bioenergy crops on the 3,650 acres that comprise the Iao-Waikapu Fields. This will require the use of Na Wai Eha surface water for irrigation purposes. However, the amount of irrigation water required will be less than what was required and used for sugar cane cultivation.

8. "Bioenergy crops" include a variety of crops that support biogas or biofuels production, including, but not limited to fuel for jets, marine and land vehicles, and to generate electricity. These bioenergy crops may include, but are not limited to, annual seed crops, such as soybean, safflower, sunflower and canola; perennial oil bearing trees, such as jatropha, kukui and pongamia; and

tropical grasses, such as energy canes, banagrass, sorghum, hemp and new hybridized perennial tropical grasses.

9. HC&S's plan is to have a mix of bioenergy crops that will be rotated over the course of a few seasons. It is anticipated, however, that the primary focus for the Iao-Waikapu Fields will be on tropical grasses to take advantage of the large expanse of contiguous, relatively flat fields that are conducive to the efficient planting and harvesting of these types of crops.

10. In 2010, HC&S was included in a five-year, $10 million research project with the Department of Defense to study biofuel production ("DoD Study"). As part of this work, HC&S conducted crop and harvest trials on different varieties of bioenergy crops and also conducted anaerobic digestion yield testing on a 6-acre plot. Thus, HC&S has some preliminary experience with the requirements, including water requirements and irrigation practices, for growing some of these bioenergy crops. However, further research and testing is necessary for growing these energy crops on a large scale in Central Maui.

Currently, HC&S is capturing cost data, testing farming methods at scale, and refining the economic model based on a 50-acre trial field. Later this year, an additional 500 acres will be planted to validate bioenergy crop density, irrigation layout, per-acre yield in different soil types, water demand, and field-scale costs. Results will be critical to analyzing the economic viability of cultivating different energy crops on HC&S lands.

11. Based on a preliminary assessment arising out of the DoD Study, estimated water requirements for bioenergy tropical grasses, such as energycanes and banagrass, are approximately 80% to 85% of the water requirement for conventional, biannually-harvested sugarcane.

12. In the Na Wai Eha IIFS proceedings, the Commission found that HC&S's reasonable daily water use requirements for sugar cane cultivation (for sugar production) on the Iao-Waikapu Fields was 6.06 mgd based on a water duty of 5408 gad. Using this as the benchmark, and applying the data from the DoD Study, the reasonable water duty for bioenergy tropical grasses is between 4326 gad and 4597 gad. HC&S is requesting an allocation based on the lower (80%) water duty of 4326 gad to be applied over the 1120 acres of the Iao-Waikapu Fields, or 4.84 mgd.

13. Energy crops grown on the Iao-Waikapu Fields will continue to be irrigated through the use of drip irrigation. Drip irrigation is the most efficient and cost effective method to apply irrigation and fertigation to crops. In limited cases, micro sprinklers or overhead sprinklers may be used to initiate germination of certain crops, including cover crops.

14. All of the lands that comprise the Iao-Waikapu Fields are classified as Agriculture under the State land use classification and zoned for agricultural use.

15. Under HC&S's Diversified Agriculture Model, employment and spending by HC&S will be reduced from its time as a sugar plantation. However, the anticipation – and the hope – is that over time, diversified agriculture on HC&S

lands will match sugar's economic importance. Instead of being dependent on the successes of one company growing a single crop, a number of different entities – operating as tenants of HC&S or in partnership with HC&S – and different agricultural ventures will be contributing to the employment of Maui residents and to the County's and the State's economies.

16. Unlike generating power by burning bagasse as a by-product of sugar cane processing, bioenergy crops will be grown to be processed directly into biogas or biofuels. At the current stage of planning, it is not known whether HC&S will be involved in the processing of biofuels or whether biofuel stock grown by HC&S will be sold to a processor, and whether the processing will occur on HC&S land or elsewhere. Ideally, HC&S will be able to utilize some of the biofuel stock that it grows to generate electricity for its own use. Even if this were to happen, however, it will be several years before the biofuel stock becomes available in sufficient quantities for HC&S's use. Also, HC&S would have to renovate or rebuild its existing power plant to be able to utilize new fuel sources. Until such time, HC&S will rely on its two hydroelectric power plants and MECO to supply electrical power to run the pumps for its wells and other facilities.

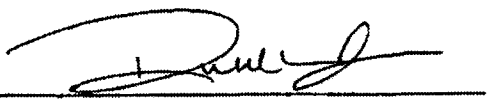
17. Since 2014, there has been no progress in discussions between HC&S and the County regarding the use of reclaimed wastewater from the Wailuku-Kahului Wastewater Treatment Facility.

18. When sugar cane cultivation ceases at the end of this year, the Puunene Mill will shut down. Thus, there will not be any recycled mill water available for irrigation in the future.

19. There are no desalinization plants on Maui. Given the current technology and power costs, it would be cost-prohibitive to desalinate water for irrigation of bioenergy crops.

20. The cost of constructing infrastructure to pump water from brackish water wells that serve the East Maui Fields uphill to the West Maui Fields would be cost-prohibitive to HC&S. Moreover, the HC&S lands serviced by the EMI system have been historically water short, and cannot afford to lose this secondary ground water source.

21. This concludes my written direct testimony.



RICK W. VOLNER, JR.

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

Surface Water Use Permit Applications, Integration of Appurtenant Rights and Amendments to the Interim Instream Flow Standards, Na Wai Eha Surface Water Management Areas of Waihee, Waiehu, Iao and Waikapu Streams, Maui	))))))	Case No. CCH-MA 15-01 SWUPA 2206 DIRECT WITNESS STATEMENT OF GARRET HEW

WITNESS STATEMENT OF GARRET HEW

1. My name is Garret Hew. I am the President of East Maui Irrigation Co., Ltd. ("EMI"), which is a subsidiary of Alexander & Baldwin, LLC ("A&B"). I am also the Water Resources Manager for Hawaiian Commercial & Sugar ("HC&S"), which is the division of A&B that operates A&B's sugar plantation on Maui.

I started with HC&S in 1983, and in 1985 began my career with EMI, where I've been ever since. I am authorized and competent in making this witness statement and do so based on personal knowledge.

2. I previously presented both direct and rebuttal testimony in the initial Na Wai Eha IIFS proceedings and in the remand proceedings. I was also subject to cross-examination in both of those proceedings.

3. The purpose of this witness statement is to supplement evidence previously provided in the Na Wai Eha IIFS proceedings in support of HC&S's application for a surface water use permit for its Iao-Waikapu Fields (SWUPA No. 2206).

4. Alternative Sources. The Iao-Waikapu Fields are all above the Waiale Reservoir, and thus beyond the reach of HC&S's gravity-based irrigation system, including Well No. 7 and HC&S's Iao Tunnel

In addition to Well No. 7, there are 14 other brackish water wells that supplement surface water from the East Maui Irrigation System for the HC&S

plantation. Water from these wells is pumped into gravity flow dependent infrastructure that brings water to HC&S's eastern fields. To bring this water to the Iao-Waikapu Fields would require the construction of infrastructure to pump water from these wells uphill to the west side fields.

5. This concludes my written direct testimony.

GARRET HEW

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COMMISSION ON WATER RESOURCE MANAGEMENT

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Surface Water Use Permit Applications, Integration of Appurtenant Rights and Amendments to the Interim Instream Flow Standards, Na Wai Eha Surface Water Management Areas of Waihee, Waiehi, Iao and Waikapu Streams, Maui	)	Case No. CCH-MA 15-01 EXHIBIT LIST

EXHIBIT LIST

PARTY: HAWAIIAN COMMERCIAL & SUGAR COMPANY (SWUPA 2206)

EX. NO.	DESCRIPTION	REFERENCES	REC'D INTO EVIDENCE
NONE			

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

Surface Water Use Permit Applications, Integration of Appurtenant Rights and Amendments to the Interim Instream Flow Standards, Na Wai Eha Surface Water Management Areas of Waihee, Waiehi, Iao and Waikapu Streams, Maui	)))))))	Case No. CCH-MA 15-01 SWUPA 2206 CERTIFICATE OF SERVICE

CERTIFICATE OF SERVICE

The undersigned hereby certifies that, on this date, a true and correct copy of the Hawaiian Commercial & Sugar Company's Opening Brief in Support of SWUPA No. 2206; Witness List; Direct Witness Statement of Rick W. Volner Jr.; Direct Witness Statement of Garret Hew; and Exhibit List were duly served on the following parties by U.S. Mail or electronic service, as indicated below:

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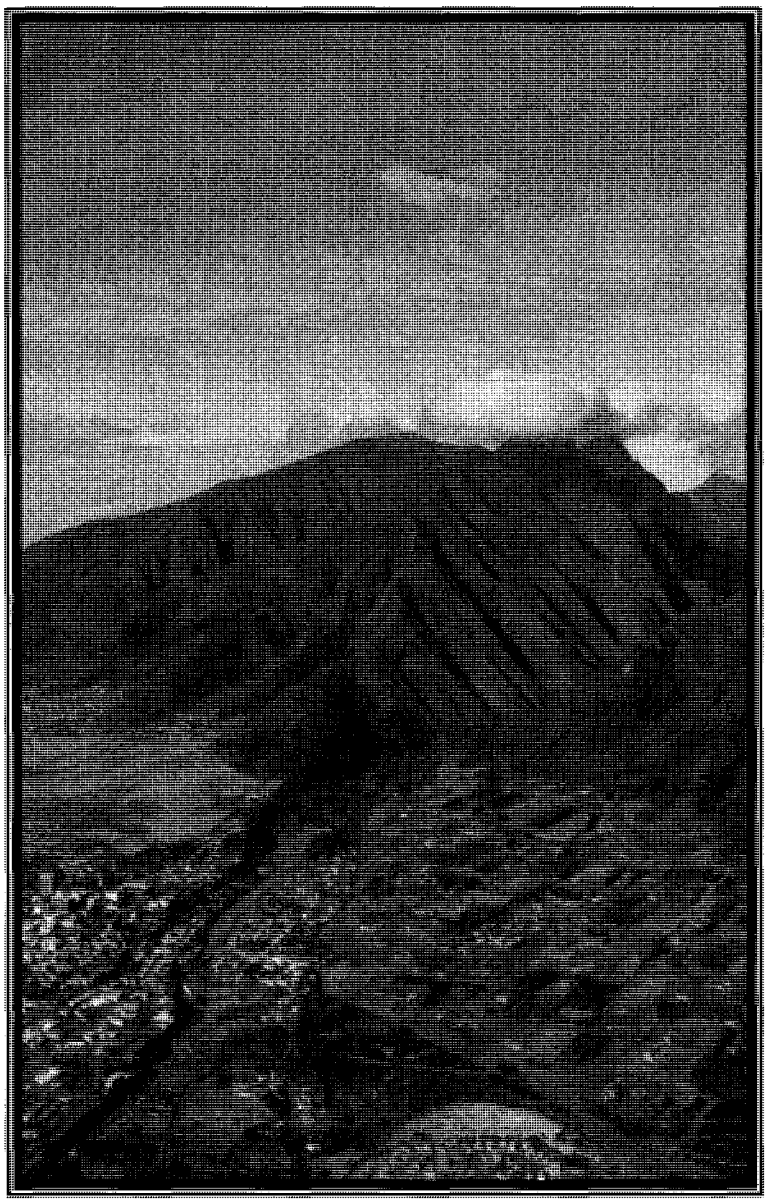
Chapter 7: Land Use

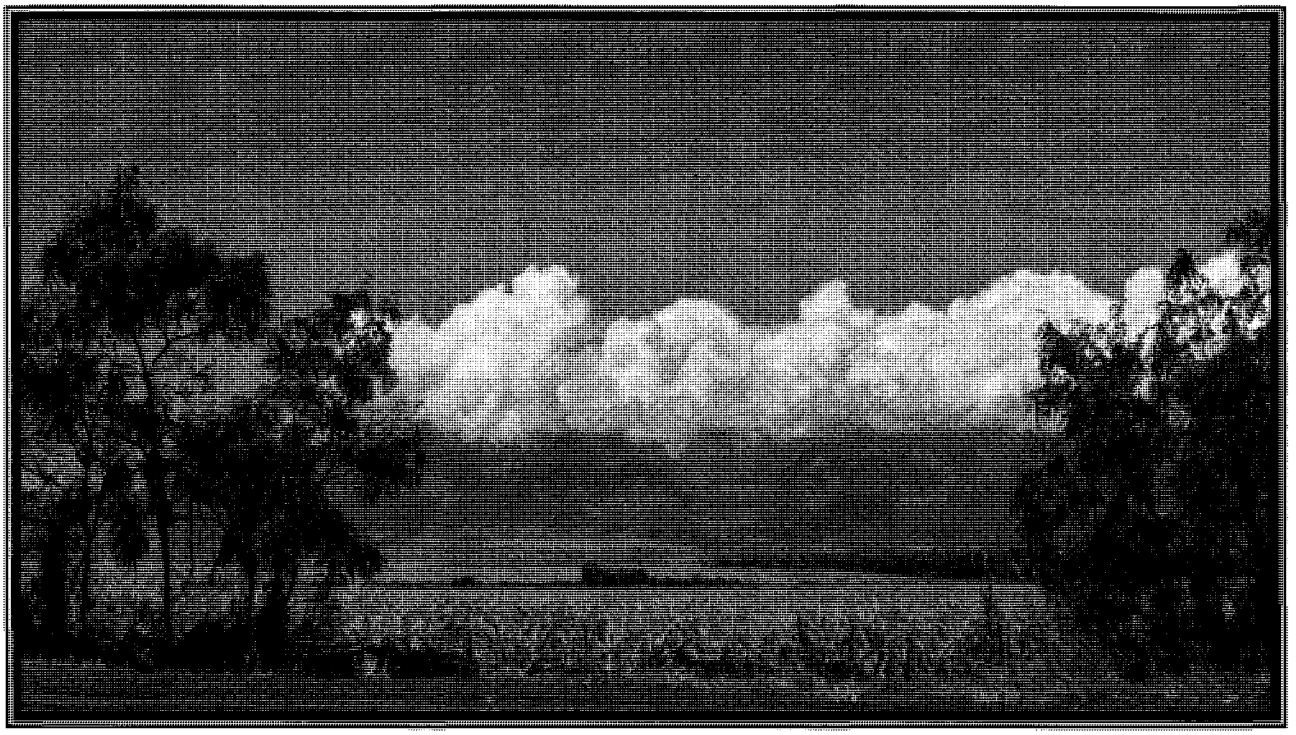
Our place under the sun is brief. Our actions will leave an indelible print on the face of the land. Our obligation spans across the history and future of Maui, to those who came before and those yet to come. We must remember we speak for them, as well as for ourselves, to respect their dreams and their rights as well as our own.



West Maui Mountains and `Īao Valley.

The purpose of the land use chapter is three-fold: to provide an overview of Maui's past and current land use patterns; to explore future land use challenges and opportunities; and to provide policy direction that will enhance Maui's agricultural lands and protect the rural character and scenic beauty of the countryside. Agricultural lands are a necessary link to self-sufficiency and a diverse economy. In addition, the agricultural landscape contributes to our sense of place and is a part of our island heritage. The island's small towns are a treasure to be protected. Residents also desire clean, safe, and livable urban environments that provide a high quality of life.

EXHIBIT 3



Central Maui Sugarcane Fields. Pu`unēnē.

AGRICULTURAL LANDS

Agriculture is deeply rooted in Maui's history and will continue to be an important industry from an economic, social, and environmental perspective. Traditional Hawaiian ahupua`a land divisions had a complete ecological system that included agriculture as a basic component. With the arrival of American and European immigrants in the eighteenth century came a new era of Hawaiian agriculture: sugarcane and pineapple. These industries drove Maui's economy for over 90 years, having long-lasting impacts on the island's people, land, and water. Within the past two decades, Maui has experienced a decline in sugarcane and pineapple production, and an increase in the cultivation and sale of diversified crops. Although Maui's agriculture has evolved over the years, its importance remains constant.

Background Information

This chapter of the MIP draws on a series of technical papers that provide background information and policy direction for the future. The following studies and reports are available at the Maui County Planning Department's Long Range Planning Division:

1. Agricultural Resources Technical Issue Paper, September 2007 (Chris Hart & Partners, Inc.);
2. Rural Areas Technical Issue Paper, December 2007 (Chris Hart & Partners, Inc.);
3. Directed Growth Strategy—Transfer and Purchase of Development Rights Program Implementation Study, November 2007 (Chris Hart & Partners, Inc.);
4. Land Use Forecast, Island of Maui, Maui County General Plan 2030, November 2006 (PlanPacific, Inc.); and
5. Economic Development Issue Paper, PlanPacific, Inc., in association with John M. Knox & Associates, Inc., Tom Dinell, FAICP, and Chris Hart & Partners, Inc., October 2007.

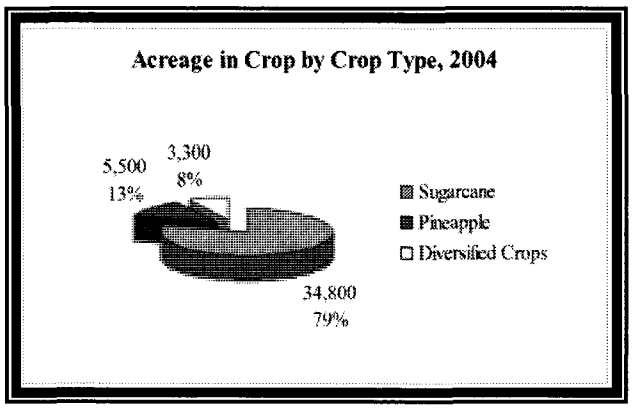


Figure 7-1. Acreage in Crop by Crop Type, 2004.

Vital Component of Economy

Agriculture creates a diversity of jobs, generates tax revenues, and produces a variety of crops for different local and export markets. While agriculture ranks behind tourism and retail business in terms of market value, its contributions to the economy are significant. In 2007, the total value of crop sales in Maui County approached $139 million and the agricultural industry provided 1,700 jobs.[1] Agriculture also benefits Maui's tourism industry by providing green landscapes and enhancing the island's sense of place.

Food and Energy Security

Although Maui has an ideal climate and location for crop production, according to the Hawai'i Business Magazine (April 2005) nearly 90 percent of our State's food is imported. Diversified local food production can help buffer our food supplies by reducing our dependency on imported foods. Moreover, local agriculture can deliver fresher, and more flavorful and nutritious alternatives when compared to many mainland and foreign agricultural products. Energy crops are an emerging agricultural industry that has the potential to significantly increase Maui's energy security and the demand for agricultural land.

Stewardship of Land and Water

Unlike urban development, agriculture protects land use options for future generations. In addition, agriculture gives residents a connection to the land and promotes the stewardship of natural resources.

Open Space Implications

A desirable attribute of agricultural land, whether in active production or not, is that it is considered to be open space, often green and scenic. It thus plays an important role in Maui's beautiful landscape. In 2006, Maui County had over 244,000 acres of land designated for agricultural use within the State Land Use District.[2]

[1] Department of Agriculture (2008). *Statistics of Hawai'i Agriculture.*
[2] State of Hawai'i DBEDT (2008). *The State of Hawai'i Data Book, 2008.*

CHALLENGES AND OPPORTUNITIES

The State and County have enacted zoning laws to protect agricultural resources and promote agricultural activities; nevertheless, there remain numerous challenges within the industry.

Challenges in Agricultural Lands

When additional Urban District lands are needed to accommodate growth, it is almost inevitable that agriculturally zoned land will be converted. It is the "default" zoning or district on the island, and it most often borders our urbanized areas. While providing housing and jobs is desirable and necessary to meet the needs of our residents, there is also a corresponding loss of agricultural land.

Urbanization is not the only factor contributing to the loss of viable agricultural land. Commercial farming is a business venture where the ability to make a profit is a necessity. If the business is not profitable, it will stop operating and the assets will be used differently. Residential development and other factors within the agricultural district contribute to the loss of agricultural land productivity and profitability:

- **Diminished Production Capacity.** Fragmentation of agricultural parcels affects the agricultural production capacity of the land. Noncontiguous and fragmented agricultural parcels offer less economy-of-scale for production and marketing and make it more difficult to justify the cost of agricultural investment. When roads, waterlines, and other infrastructure are introduced into an agricultural area, the expansion of this infrastructure to support more development is likely. Once fragmentation begins, it leads the way to further development of agricultural land.
- **Higher Land Costs to Farmers.** Non-agricultural land uses are viewed by many to be a more profitable investment than agricultural land uses. This perception, coupled with expanding infrastructure, lead to elevated land costs. Those who may consider starting a farming business or expanding their current operation are often unable to afford these higher land costs, thus stifling the viability of agriculture and leaving the land available for urban or rural development.
- **Conflicts with Non-agricultural Land Uses.** Agricultural activities often create noise, odors, dust, and other byproducts that residential neighbors view as nuisances. With encroachment of rural and urban uses adjacent to agricultural land uses, farmers who have operated their farms for decades with few nearby neighbors suddenly find themselves in conflict with new homeowners. This situation may result in higher operating costs for farmers and a higher incidence of further land conversion.
- **Social Changes**. Small farms have traditionally been passed from one generation to the next. As social mores change, commercial farming may be considered by some to be a difficult occupation with an undesirable lifestyle. Where families no longer wish to pursue farming, land may be subdivided and sold.
- **Affordable housing**. Some small farmers desire to pass land on to their children by subdividing and thus providing them with an affordable opportunity for housing. While this directly benefits family members,

fragmenting the original property can result in loss of agricultural productivity as described above. It is more difficult to have a viable farm on a small property than it is on a larger one.

- **Water**. A reliable and inexpensive source of water is particularly important to keep agricultural lands in production. Without it, farmers cannot predictably plant and harvest, and the land may be good for other uses. Other land uses also compete for available source, including urban, cultural, and conservation uses; and new source development has not kept pace with this demand. Finally, where water is available it is often expensive, as it is treated to potable standards.

Agricultural land management can be enhanced through a directed growth strategy that identifies areas appropriate for development, utilizing tools for agricultural protection such as zoning, transfer and purchase of development rights (TDR/PDR), and Conservation Subdivision Design (CSD).

The Agricultural Zoning District (Chapter 19.30A, MCC) requires a distribution of minimum lot sizes that range from two to forty acres for new subdivisions. The required distribution provides a greater diversity of lot sizes, and has decreased fragmentation of agricultural lands. The Agricultural District Ordinance could be reviewed and revised to further decrease fragmentation by considering such tools as decreasing the number of 2-acre lots, or clustering of the 2-acre lots into smaller parcels, or developing CSD provisions as described below.

Many communities have established TDR programs to protect important agricultural lands and direct development to areas suitable for development.

An Agricultural Land Protection Toolbox

> *TDR programs allow landowners to sever the building rights from a particular piece of property and sell them...TDR programs strive for two main goals. First, communities can use TDR programs to preserve open space, agriculture, historic buildings or housing. And TDR programs make such preservation more equitable and politically palatable by compensating landowners who lose the right to develop their property.*[2]

[2] Hanley-Forde, George Homsy, Katherine Lieberknecht, and Remington Stone (2011). *Transfer of Development Rights Programs*. p. 2.

The Farm and Ranch Lands Protection Program, or 2002 Farm Bill, is administered by the Natural Resources Conservation Service, U.S. Department of Agriculture, to help farmers and ranchers keep their land in agriculture through the purchase of conservation easements. Grants from this federal program can be used in conjunction with State Legacy Land Conservation Program grants, or other land preservation funds, to permanently protect agricultural land.

CSD requires the preparation of a detailed site assessment to identify important natural resources, cultural sites, agricultural lands, and open space to be preserved during subdivision. Based upon the assessment, a CSD plan is prepared to minimize environmental impacts, protect agricultural land and open space for future generations, reduce the cost of infrastructure, and preserve the land's natural character. CSD plans are typically required for agricultural subdivisions that exceed a specified number of lots. CSDs should be sparingly used so as not to promote further development of agricultural lands.

Kula agricultural park, Kula.

Encourage Locally-grown Products

The best strategy to protect agricultural lands is to prevent non-agricultural subdivisions and create an environment where agriculture can be profitable (see Chapter 4, Economic Development). Agricultural entrepreneurs require access to support services, affordable and productive agricultural land, and affordable and reliable supplies of irrigation water.

Implementation of the 2009 Maui Agricultural Development Plan will effectuate the following: the implementation of marketing support programs; the expansion of direct marketing opportunities; the identification and implementation of programs to expand access to prime agricultural lands for small- and medium-sized farmers; support for agricultural tourism; the identification of various regulatory and non-

regulatory barriers to industry growth; and transportation of agricultural products to market. The development of additional agricultural parks and the preparation and implementation of the Agricultural Water Plan are of high importance to the viability and growth of agriculture on Maui.

Agricultural parks provide farmers with long-term access to affordable land and water resources to start or expand their operations. Although a considerable amount of agricultural land exists on Maui, much of this land is currently planted in sugar, used for grazing, or owned by developers and investors. For smaller diversified farmers, gaining affordable long-term tenancy to land and water resources can be difficult. Maui's only agricultural park is located in Kula and provides affordable land leases to farmers. The development of additional agricultural parks would facilitate the expansion of diversified agriculture. Additional agricultural parks will be strategically located throughout the island.

Complementing the Agricultural Development Plan, a comprehensive Agricultural Water Plan will be prepared to ensure that farmers continue to have affordable access to water. The report will address the availability and distribution of non-potable water resources to potential users. The plan should compare costs across user groups and develop strategies to ensure that Maui's agricultural water is cost competitive with irrigation water available to farmers statewide.

SUMMARY OF AGRICULTURAL LAND USE ISSUES

Preserving agricultural lands is important for the long term sustainability of Maui. A few agricultural resource protection challenges and opportunities include:

- Reduction of the conversion of prime and productive agricultural lands to non-agricultural uses
- Innovative planning and regulatory tools to reduce the loss of important agricultural lands
- Investment and incentives, from both the public and private sectors, to make agriculture more profitable

GOAL, OBJECTIVES, POLICIES, AND ACTIONS

Goal:

7.1 Maui will have a prosperous agricultural industry and will protect agricultural lands.

Objective:

7.1.1 Significantly reduce the loss of productive agricultural lands.

Policies:

7.1.1.a Allow, where appropriate, the clustering of development on agricultural lands when approved as a CSD plan or similar approval mechanism.

7.1.1.b Require, where appropriate, the review and approval of CSD plans prior to the subdivision of agricultural land.

7.1.1.c Discourage developing or subdividing productive agricultural lands for residential uses in which the residence would be the primary use and any agricultural activities would be secondary uses.

7.1.1.d Consider requirements for public notification and review of the subdivision of agricultural land into four or more lots.

7.1.1.e Focus urban growth, to the extent practicable, away from productive and important agricultural lands.

7.1.1.f Strongly discourage the conversion of productive and important agricultural lands (such as sugar, pineapple, and other produce lands) to rural or urban use, unless justified during the General Plan update, or when other overriding factors are present.

7.1.1.g Further develop the requirements for agricultural assessments found under Section 19.510, MCC.

7.1.1.h Provide incentives for landowners to preserve and protect agricultural lands from development through the use of TDR/PDR, tax credits, easement programs, or similar means.

7.1.1.i Promote the use of U.S.D.A. Farm and Ranch Lands Protection Program grants to fund the acquisition of conservation easements on eligible agricultural lands.

7.1.1.j Require all major developments adjacent to agricultural lands to provide an appropriate and site-specific agricultural protection buffer as part of a required site plan.

7.1.1.k Support and promote the viability of Maui's agricultural businesses through property tax incentives and other programs and subsidies.

7.1.1.l Encourage future community plan efforts to identify lands within the County Agricultural zoning district that are primarily being used for large-lot residential or rural use and consider such lands for reclassification to an appropriate County Rural zone.

Implementing Actions:

7.1.1-Action 1 Implement the Maui Island Directed Growth Strategy.

7.1.1-Action 2 Implement County responsibilities under Acts 183 (2005) and 233 (2008) to designate and establish Important Agricultural Lands (IAL) and the incentives therein.

7.1.1-Action 3 Develop, adopt, and implement TDR and PDR Programs for, productive Agricultural Lands and IALs with a preference given to lands with a current or recent history of productive agricultural uses.

7.1.1-Action 4 Revise the Agricultural District Ordinance to allow for limited clustering and CSD, where appropriate.

7.1.1-Action 5 Revise existing land use regulations to ensure that Prime Agricultural Lands are distinct from rural (primarily residential) land uses.

7.1.1-Action 6 Consider developing or amending regulations to:

(1) Reduce the subdivision of agricultural lands by strengthening applicable zoning and subdivision ordinances, and consider the creation of Agricultural categories to better reflect agricultural uses and land use patterns;

(2) Require public notification and review of the subdivision of agricultural land into four or more lots; and

(3) Require the preparation of a more detailed agricultural impact assessment for changes to the Urban Growth Boundary, Community Plan Amendments, and change in zoning requests of Prime agricultural land as required by Section 19.510, MCC.

7.1.1-Action 7 Utilize farm land trust mechanisms to preserve agricultural lands and family farms.

7.1.1-Action 8 Promote farm profitability by supporting programs or subsidies including:

(1) Low-cost, reliable transportation for export agricultural products;

(2) Hawaii Farm Bureau Federation, Maui County; and farmers cooperatives;

(3) Promotion of locally-grown products to hotels, restaurants, or other segments of the visitor industry;

(4) The expansion of marketing efforts such as Grown on Maui to the mainland or Far East markets;

(5) Development of new or value-added products; and

(6) Property tax incentives for commercial agricultural uses.

Objective:

7.1.2 Reduction of the island's dependence on off-island agricultural products and expansion of export capacity.

Policies:

7.1.2.a Coordinate with the agricultural community, associations/community groups, agricultural landowners, and the State to designate IALs.

7.1.2.b Support an incentive package for productive Agricultural Lands which aims to ensure agricultural viability for small- and commercial-scale agricultural producers.

7.1.2.c Actively look to acquire land and provide infrastructure to expand the agricultural park and establish new agricultural parks.

7.1.2.d Support the designation of a research and development area within agricultural parks to help farmers stay attuned to new technology and research.

7.1.2.e Support local cooperative extension services to facilitate timely technology transfer opportunities.

7.1.2.f Support plans and programs to develop additional sources of water for irrigation purposes.

7.1.2.g Consider appropriate subdivision requirements (gravel roads, above-ground utilities, etc.) in those subdivisions creating Agricultural Parks where lots are limited to agricultural production with no dwellings.

7.1.2.h Support the recommendations, policies, and actions contained within the Maui Agricultural Development Plan, July 2009, when consistent with the MIP.

7.1.2.i Allow water and tax discounts for legitimate farming operations on rural and agricultural land.

7.1.2.j Give priority in delivery and use of agricultural water and agricultural land within County agricultural parks to cultivation of food crops for local consumption.

7.1.2.k Support programs that control pests and diseases that affect agriculture.

7.1.2.l Support the development of training and apprenticeship programs to encourage an adequate supply of agricultural workers.

Implementing Actions:

7.1.2-Action 1 Identify and acquire productive and community Agricultural Lands that are appropriate for the development of agricultural parks and community gardens in each community plan area.

7.1.2-Action 2 Coordinate with the State Department of Agriculture, the development of an Agricultural Water Strategy, and incorporate an agricultural component in the Water Use and Development Plan.

7.1.2-Action 3 Revise the subdivision ordinance to create appropriate subdivision requirements for agricultural parks, and to promote research and development activities.

7.1.2-Action 4 Coordinate with industry stakeholders to develop alternative sources of irrigation water including wastewater reuse, recycled stormwater runoff, and brackish well water.

Objective:

7.1.3 Support and facilitate connectivity between communities.

Policies:

7.1.3.a Evaluate the impact of gated communities on interconnectivity.

7.1.3.b Discourage land use and urban design that impedes interconnectivity between adjacent communities.

Rural Landscape. Kula.

RURAL AREAS

Rural and agricultural lands are intrinsically linked by their physical, economic, and cultural connections. Rural communities and agricultural activities evolved to form a symbiotic relationship: each land use benefits from the other. Rural areas supply agricultural operations with labor, commercial and civic services, and a local market for agricultural goods. Conversely, agricultural areas provide rural communities with employment opportunities, local agricultural products, and a connection to a rural lifestyle. The linkages between rural and agricultural land uses dictate that the consequences of policy decisions for one must consider the implications to the other.

Background Information

Traditional rural lifestyle and settlement patterns are distinct from urban and suburban areas as a result of their strong connection to agricultural land uses. Rural settlement patterns typically consist of small towns, low-density residential development, open space, and an agricultural landscape. Rural towns are often walkable, contain human-scale buildings, cater to the everyday needs of residents, and frequently include an identifiable main street. Expanding out from the town's center, rural roads follow the natural topography of the landscape and residential development gives way to small and large scale farming and ranching operations.

Rural areas commonly possess a more flexible set of standards for infrastructure and public services. Paved roadways, traffic control, trash removal, telecommunications, emergency response, and utilities are provided at a lower-service-level standard. Reduced levels of service are not only a key characteristic of the rural lifestyle, they are important to the aesthetic and environmental objectives in the countryside.

With a mix of natural landscapes and productive agricultural lands, rural areas offer a high concentration of environmental and cultural resources. Streams, wetlands, floodplains, forestlands, steep slopes, and wildlife are common. Cultural resources include a mix of historic structures, archaeological sites, and important cultural lands. Table 7-1 provides a brief overview of the rural land regulatory controls.

Table 7 - 1: State and County Regulatory Controls for Rural Lands

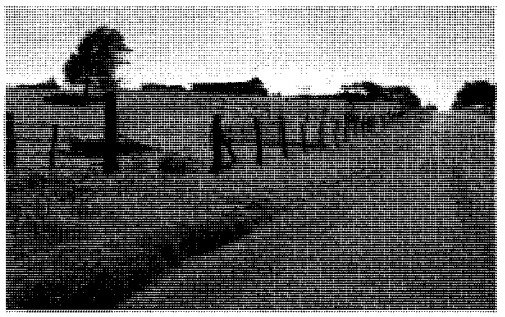
	Regulation	Purpose	Description
State	**Rural District**	The State Land Use Law (Chapter 205, HRS) establishes an overall framework of land use management whereby all lands within the State are classified into one of four Districts: Urban, Rural, Agricultural, and Conservation.	State Rural Districts allow for activities and uses characterized by low-density residential development and small-scale agriculture. The minimum lot size for residential development within the State Rural District is one-half acre.
	Urban District		The State Urban District gives the most regulatory control to the Counties. It is appropriate for use in some rural areas to regulate zoning for small businesses, public and quasi-public uses, as well as a limited amount of house on smaller than one-half acre lots.
County	**Rural District**	County regulatory control over rural lands stems from the County Zoning Ordinance (Chapter 19.29, Maui County Code). The purpose of rural districts is to allow for low density development that preserves the country character of the area, allows for small-scale agricultural operations, and serves as a transition between urban density development and agricultural lands.	Maui County has a variety of districts that vary in lot size, from 0.5 acres to 10 acres or more.
	Other County Zoning Districts	Country Town Business District, Chapter 19.15; Residential Districts, Chapter 19.08; Public Quasi-Public District, Chapter 19.31; M-1 Light Industrial, Chapter 19.24, MCC; and others.	Maui County can use a number of districts normally considered "urban" to maintain the rural character of our small towns, while achieving desired business, public, residential, or other uses.

CHALLENGES AND OPPORTUNITIES

Population growth, development pressures, and decreasing agricultural activities have initiated a shift within Maui's rural landscapes. Originally, Maui's rural areas were a

mix of small country towns, limited residential development, productive agricultural operations, and natural lands. However, in recent decades the character of the landscape, stretching from Ha`ikū to `Ulupalakua and beyond, has experienced a marked increase in lower-density residential sprawl.

Land Use and Planning Management



Rural, large lot residential development pattern, Upcountry.

Standards established by the State and County agricultural and rural districts could do more to protect the character of existing towns, rural resources, lifestyles, and heritage resources. Typical subdivisions utilizing the one-acre and one-half acre minimum lot sizes permitted within the County rural districts are often not compatible with the rural character of the immediate area, but often produce a landscape pattern more appropriately identified as large-lot residential. The County could consider such things as site plan review and open space requirements as a part of their standards.

Implementing a combination of rural planning tools and techniques will help influence the form of future development and mitigate its impact on the rural landscape. Below, two such techniques are summarized.

1. Low Impact Development (LID): Conventional stormwater management focuses on directing all runoff to a centrally located management system. This conventional method alters the hydrologic conditions of an area by reducing the dispersed absorption of stormwater across the landscape and channeling the water to an offsite location. Utilizing LID strategies as an alternative to conventional stormwater management encourages a decrease in land and hydrologic disturbances and the stormwater can be used for agricultural purposes and other uses. LID attempts to mimic predevelopment site hydrology by reducing offsite runoff and ensuring adequate groundwater recharge.

2. Conservation Subdivision Design (CSD): Applying conventional subdivision models to rural lands typically results in low-density residential development sprawl, which alters the natural landscape and can negatively impact community character. CSD offers an alternative approach to regulating the subdivision process on rural lands. This alternative allows for the clustering of development within a portion of a site while the remainder of the land remains undeveloped and protected. Development potential is not taken away from the developer; rather it is concentrated within a smaller portion of the parcel, allowing for the simultaneous preservation of agricultural land, environmental resources, and open space.

Development of Rural Scale Infrastructure

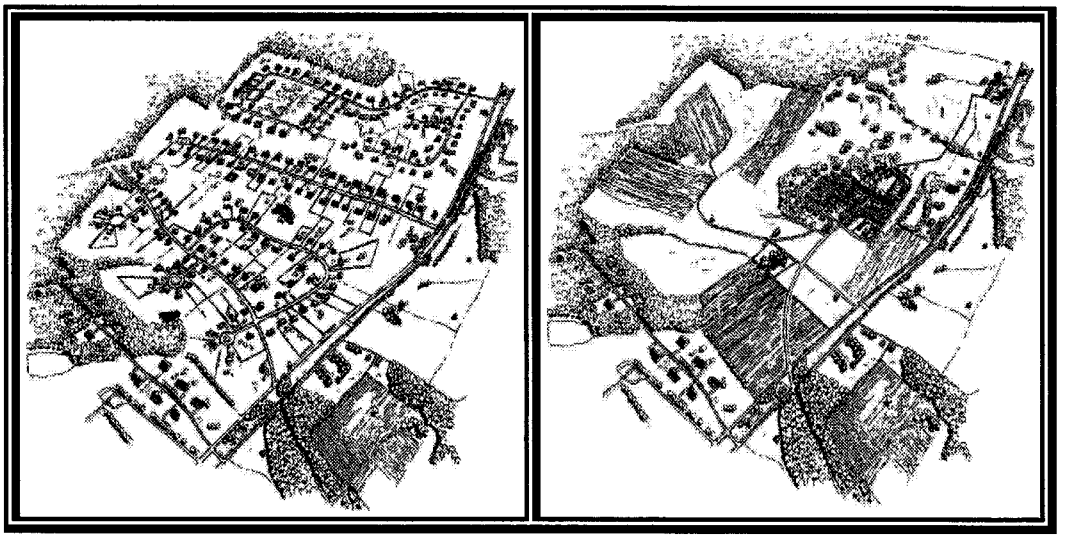


Figure 7 - 2: Conventional Subdivision Design vs. Conservation Subdivision Design. *Source: Arendt, Randall. 1994. Rural By Design. American Planning Association Planners Press. Chicago, Illinois.*

In addition to potential revisions to land use regulations, urban-like infrastructure standards threaten the character of rural areas. The County's minimum road widths and sidewalk and lighting requirements may be inappropriate for rural areas. The urban-like nature of these requirements diminishes the small-scale, rugged country atmosphere. Pavement standards for roads and parking lots may increase flooding and impact the hydrologic balance. Additionally, urban-like infrastructure and public services in rural areas elevate the cost of providing these services to sparsely populated regions.

County infrastructure system and public service standards must reflect the distinct differences that exist between the needs of urban and rural areas. Creating strong policy statements, which will dictate levels-of-service for rural infrastructure, will guide development in rural areas in a manner that complements the character of the countryside. Levels-of-service standards for infrastructure and public services should protect public health and safety, preserve natural resources, and be financially supportable at rural densities; they should not sustain or encourage urban development. In addition, interconnectivity should be encouraged between rural communities using roadways, greenways, and other forms of byways.

Numerous options exist for revising the rural zoning ordinance to improve the management of rural lands and protect rural landscapes. Rural villages and town centers should be allowed to form in rural areas to provide basic goods and services to more remote areas and to offer lifestyle choices. By utilizing the Country Town Business District, and establishing a Country Residential District, future rural development could be focused into compact village centers bounded by open space, ranching, and active agricultural lands.

SUMMARY OF RURAL LAND USE ISSUES

Large portions of the island are rural in identity and lifestyle. Maintaining that identity requires us to address certain challenges and opportunities:

- Low density rural sprawl
- Revision to our land use and planning management
- Development of rural-scale infrastructure in rural areas

GOAL, OBJECTIVES, POLICIES, AND ACTIONS

Goal:

7.2 Maui will have a rural landscape and lifestyle where natural systems, cultural resources and farm lands are protected and development enhances and compliments the viability and character of rural communities.

Objective:

7.2.1 Reduce the proliferation and impact of residential development outside of urban, small town, and rural growth boundaries.

Policies:

7.2.1.a Focus development to areas inside urban, small town, and rural growth boundaries to preserve natural, cultural, and agricultural resources.

7.2.1.b Encourage cluster development with a mandatory buffer requirement/clear edge at the interface of country towns, agricultural uses, and surrounding rural landscapes.

7.2.1.c Encourage or require, where appropriate, CSDs and the use of green spaces/natural separations to protect the character of rural landscapes.

7.2.1.d Encourage basic goods/services in business country towns.

7.2.1.e Allow for mixed uses, including residential uses, within Business Country Town Districts.

7.2.1.f Encourage the use of alternative stormwater management techniques that minimize land disturbance and preserve natural drainage features.

7.2.1.g Encourage green belts, open space buffers, and riparian zones to minimize conflicts between agriculture and residential uses.

7.2.1.h Evaluate the impact of gated communities on inter-connectivity.

Implementing Actions:

7.2.1-Action 1 Coordinate with the State to develop and revise regulations for rural development, within the State Rural District, to encourage creative design and sustainable communities.

7.2.1-Action 2 Revise the Country Town Business District Ordinance to allow mixed uses including small-scale residential uses.

7.2.1-Action 3 Create new Country Town Business zoning sub-districts and design guidelines that reflect the unique character and land use patterns of Maui's Country Towns and that recognize rural villages.

7.2.1-Action 4 Revise subdivision regulations to permit clustering and CSD within the Rural Districts and extend Hawaii Right to Farm Act protections to rural subdivisions.

Objective:

7.2.2 More appropriate service/infrastructure standards to enhance and protect the island's rural character and natural systems.

Policies:

7.2.2.a Minimize impermeable surfaces within rural areas.

7.2.2.b Protect and support the character, economic viability, and historic integrity of Maui's small towns.

7.2.2.c Use infrastructure, public service, and design standards that are appropriate to rural areas.

7.2.2.d Discourage land use and urban design that impede interconnectivity between adjacent communities.

Implementing Actions:

7.2.2-Action 1 Develop and adopt regulations to establish rural infrastructure and public facility LOS standards.

7.2.2-Action 2 Revise stormwater management regulations to allow for LID techniques and potential irrigation uses.

7.2.2-Action 3 Develop and adopt appropriate procedures and standards for the public to review development in County rural zones.

7.2.2-Action 4 Amend Chapter 19.36B, MCC, as it relates to pavement and parking requirements in rural areas.

Vineyard Street. Wailuku.

URBAN AREAS

Urban areas are characterized by a convergence of housing, jobs, civic activities, commercial services, and shopping. Less than five percent of Maui's lands are within the State Urban District. Prudent planning and managed development within these areas will determine future growth. The character, design, and timing of future growth within Maui's urban areas will have significant consequences for agricultural lands, rural communities, natural resources, and overall quality of life. Sustainable urban development will be accomplished by supporting infill development, enabling mixed-use development, assuring mobility (especially including alternate modes of transportation) and circulation, and clearly defining town edges. As a result, the MIP will promote vibrant and sustainable communities, economize on infrastructure, and protect open space.

Background Information

Existing urban, rural, and agricultural landscapes are a result of major transformations in the island's economy, technology, demographics, and population.[3] Over the last half century, Maui's settlement patterns have become significantly more centralized due, in part, to the mechanization of plantation agriculture and rapid population growth, both of which helped to supply workers for the tourism and resort development industries.

Maui's existing urban communities are characterized by a mix of commercial, industrial, civic, and residential land uses that support our economy and lifestyle. According to the U.S. Census Bureau, 2010 Census, Maui's urban communities and their populations are as listed in Table 7-2.

Table 7-2: Maui's Primary Urban Communities

Town	2010 Population
• **Wailuku**	• 15,313
• **Kahului**	• 26,337
• **Kīhei**	• 20,881
• **Lahaina**	• 11,704
• **Kā`anapali**	• 1,045
• **Nāpili-Honokōwai**	• 7,261
• **Kapalua**	• 353
• **Pukalani**	• 7,574

The three primary urban centers on Maui, measured by the regional distribution of commercial jobs, are Wailuku-Kahului (44 percent), Kīhei-Mākena (18 percent), and West Maui (28 percent). Together, these three communities represent 90 percent of all commercial jobs. The island's primary commercial airport, harbor facility, and hospital are located in Kahului. Kahului also supports the island's primary industrial zones, large retail centers, and shopping malls. The island's civic center is located in nearby Wailuku. Kīhei-Mākena and West Maui hold the island's major resort destination areas.

CHALLENGES AND OPPORTUNITIES

There are challenges and opportunities that transcend Maui's urban communities. Key issues include:

- Building compact, efficient and pleasant communities that meet the affordable housing needs of island residents;
- Fostering self-sufficient, sustainable communities that respect the island's "sense-of-place";
- Ensuring the development process is transparent and efficient; and
- Adequately protecting natural and cultural resources within Urban areas.

Maui's future urban growth will take place in four different physical forms: 1) as infill development; 2) within urban expansion areas; 3) as new towns and settlements; and 4) as orderly infill and expansion of existing country towns and villages. Each development pattern has benefits and costs that will determine the extent and location of their use.

Infill Development

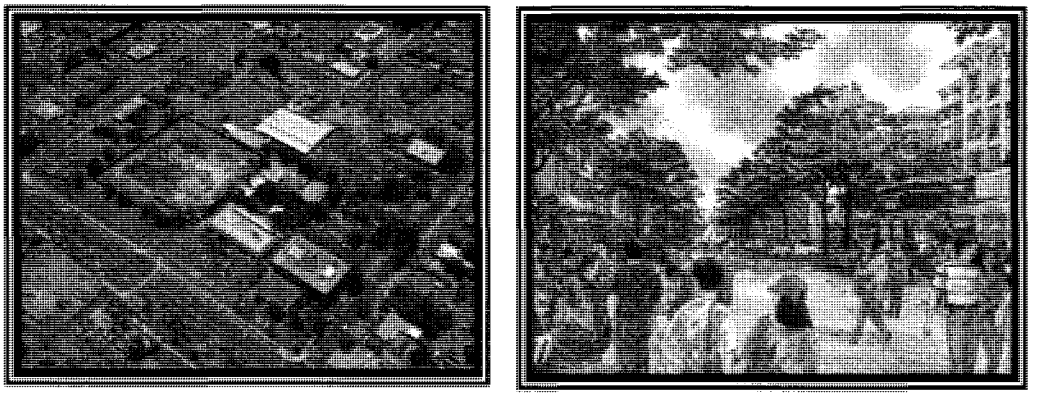
In *The Next American Metropolis* (1993), Peter Calthorpe states: "infill and redevelopment should always be a central part of a region's growth policy. It represents the best utilization of our existing infrastructure and the best opportunity to preserve open space."[4]

[3] Maui Island Plan (2006). *Maui Island History: Lessons from the Past – A Guide to the Future.*

[4] The Next American Metropolis. Peter Calthorpe. 1993. p. 31.

Compact, Efficient, Human-scale Communities

Infill development offers an alternative to conventional development patterns that extend the perimeter of an urban area. Infill development focuses growth into already urbanized areas and creatively utilizes vacant or underdeveloped property. Many of the most successful infill projects provide a mix of uses, are designed to be pedestrian-oriented, and incorporate alternative modes of transportation. The benefits of such projects can be the provision of housing near job centers and transit, increased support for businesses, utilization of established public infrastructure and services, and preservation of urban-fringe natural areas and agricultural land. Infill development can also revitalize a struggling urban area, enhance daily convenience for residents, and foster a sense of place. As illustrated in the following pictures, successful infill development can transform an underused shopping center into a vibrant urban village.



Infill development of an underutilized shopping center allows for creative and beneficial recycling of land.

There are numerous infill opportunities on Maui. Throughout the island's urban areas, particularly in Kahului, Wailuku, Lahaina, and Kīhei, vacant or underutilized lots could be developed to meet community needs. Future growth can be focused inward to enhance community identity, provide affordable housing, promote convenient access to transit and services, and protect natural areas and agricultural lands.

Urban Expansion

Development within urban expansion areas represents one alternative for accommodating future growth on Maui. Urban expansion generally involves the conversion of urban fringe agricultural lands to urban use. These lands typically lie in the path of development, are proximate to existing urban infrastructure and services, and offer favorable topography, which makes development cost-efficient. When developed in a manner that promotes pedestrian and vehicular connectivity, open space, and compact mixed-use development, urban expansion can help strengthen the character and vibrancy of the community.

While urban expansion is oftentimes the most efficient and cost-effective means of accommodating growth, it should be done carefully to prevent sprawl. The location and character of potential urban expansion should be closely scrutinized to prevent land use patterns that consume valuable farmland and open space, and blur the separation between existing communities.

Key areas on Maui, including lands abutting Kahului, Waikapū, Lahaina, and northeast Kīhei, provide opportunities for expanding outward from current urban

settlement. With innovative design and appropriate scale, these urban expansion areas can enhance community identity and address some of Maui's housing needs.

New Towns

Creating new towns in appropriate locations can offer several advantages: 1) protect the unique identity and character of the island's towns by directing growth away from, rather than adjacent to, existing communities; 2) provide flexibility through the master planning process to design for mixed land uses, interconnectivity, and greenways; and 3) mitigate against sprawl conditions by defining a strong urban boundary and permanently preserving abutting agricultural lands.

While there are many advantages associated with new town development, it can be prohibitively expensive to create a new community. High infrastructure costs associated with new towns can require the development of larger communities to generate the economy-of-scale necessary to make a project feasible. High infrastructure costs may also discourage the development of affordable housing. Additionally, unless developed in response to a primary supporting industry, new towns often become bedroom communities, thus requiring long commutes to employment, and placing considerable strain on nearby public facilities and regional roadways. The development of new towns in remote locations can also facilitate urban sprawl, and impact important environmental and agricultural resources. The Hawai'i State Plan notes that new urban lands should be adjacent to existing urban lands. In *The Next American Metropolis* (1993), nationally recognized planner Peter Calthorpe states: "new towns should only be planned if a region's growth is too large to be directed to infill and adjacent New Growth Areas."[5]

Due to the potential challenges, new towns should be carefully analyzed to compare the benefits and costs of new towns to alternative forms of growth. The impact of new towns should be assessed in terms of environmental impact, infrastructure costs and agricultural land conversion. If a new town is created, the physical extent of the town should be defined with clear edges and an urban core should be planned to provide the new community with a distinct identity. Land uses within the new town should be mixed to promote self-sufficiency and a jobs/housing balance.

Country Town Infill and Expansion

Existing country towns and villages also have the ability to absorb future growth. The potential for these areas to grow must be weighed carefully against the impacts that both infill and moderate expansion will have on their unique sense of place. In addition, growth and expansion should be carefully reviewed for housing balance, commercial and service availability, and infrastructure impacts.

All four forms of future growth should avoid steep slopes, wetlands, riparian areas, native species habitat, and other environmentally important lands. Many of these areas are separated from existing development and infrastructure and are highly sensitive to disturbance.

The design of the built urban environment will greatly influence the sustainability of all communities and the overall quality of life. The following urban design and physical form principles will play a significant role in shaping growth on Maui:

- Defining town edges and greenbelts;

[5] The Next American Metropolis. Peter Calthorpe. 1993. p. 71.

- Enabling mixed-use, livable communities;
- Facilitating a jobs/housing balance;
- Assuring mobility and circulation, emphasizing alternate modes of transportation; and
- Designing pedestrian-oriented streets.

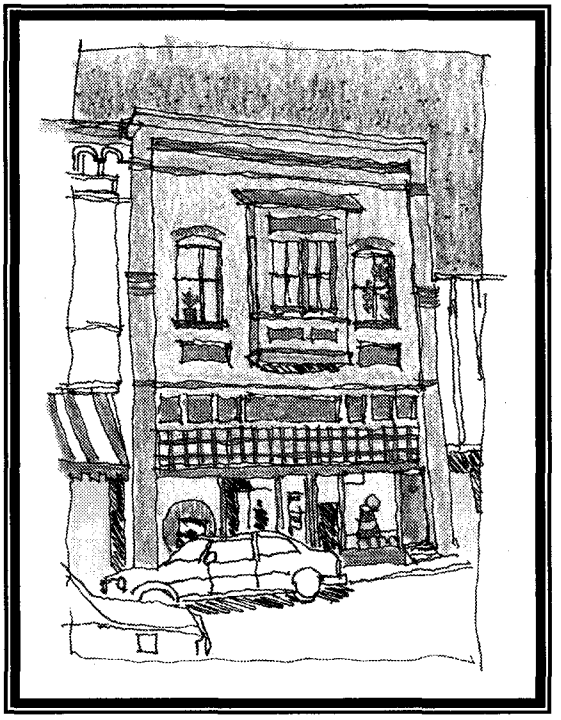
Clearly defining the edges of Maui's towns is essential to guide and shape future growth. As towns expand outward they can grow into other towns and the entire region can become one large urban mass, compromising the unique identity of each individual town and community as a whole.

Maui is home to a number of large and small towns, each with its own history and character. As these towns grow it will be critical to define the physical limits of each town, and restrict growth outside of these limits, to maintain a sense of identity for each individual community while protecting agricultural land, natural resources, and recreation areas.

Respect the Island's "Sense of Place"

The majority of Maui's future growth will be directed into already urbanized areas or proximate to existing urban areas. Therefore, quality design and composition of Maui's urban centers will be vital for ensuring walkable, bikeable, livable communities.

During the public planning events WalkStory & PlanStory and other recent design charettes, Maui residents expressed a preference for focusing future growth in existing towns and increasing population densities in appropriate locations as the best way to accommodate growth. The support for urban living was based on neighborhoods that are attractive, safe, user-friendly, and have convenient access to parks and green space. Maximizing livability is vital to making "urban living" an accepted and desired lifestyle on Maui.



Mixed-use communities bring together our everyday needs into a setting which is scaled to the pedestrian

The first step in promoting the livability of an urban area is to enable mixed-use commercial, retail, employment, civic, recreational, and educational uses into a pedestrian-scaled community. The mix of uses creates an integrated and multidimensional built-environment that reflects our way of life. Rather than creating an automobile-dependent lifestyle, mixed-use communities bring together our everyday needs into a setting that is scaled to the pedestrian. Mixed-use communities also provide for mixed housing types, lot sizes, and incomes to promote sustainable, walkable, bikeable, livable communities.

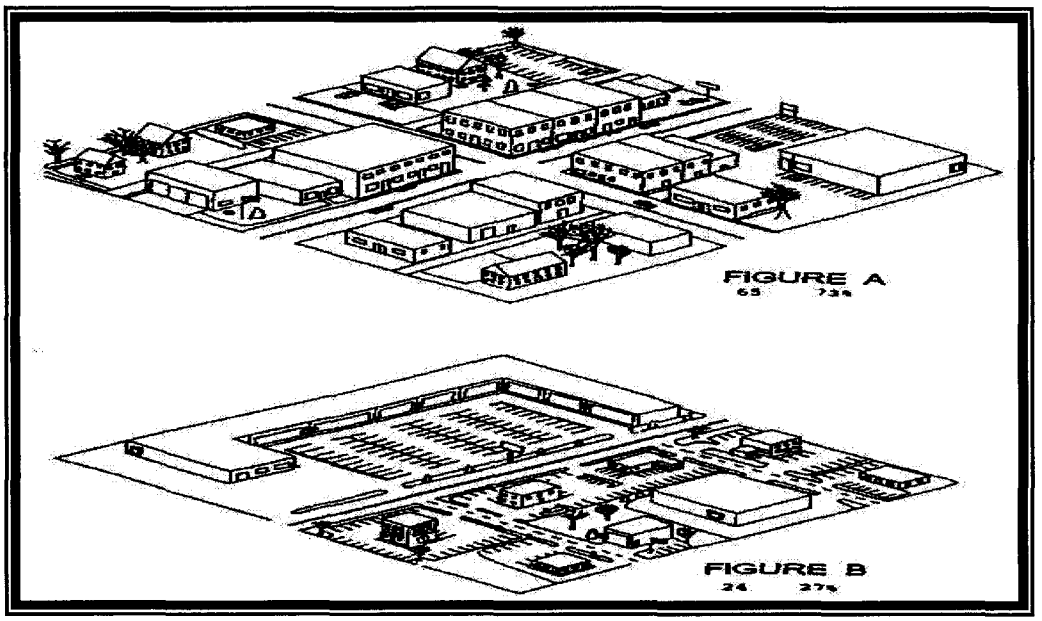
Jobs/housing balance is a measure of the harmony between employment and dwelling

units in a specific area. Striving for this balance by providing housing close to jobs can have many benefits for a community and region, including reduced congestion and commute times, reduction of carbon dioxide emissions, increased opportunities to use alternative modes of transportation, support of a more compact urban form, and reduced costs for infrastructure and services.

Self-Sufficient, Sustainable Communities

Assuring mobility and circulation within and between Maui's urban areas is an important component of promoting rich urban design and human-scale form. Land use patterns and transportation have a very close relationship – land use decisions affect transportation planning, and transportation planning affects land use patterns. Coordination must exist between transportation and land use planning decisions so they are complimentary rather than contradictory. When designing new communities, expanding current communities, or increasing density in existing communities, ensuring mobility and circulation must be a top priority. Providing for efficient movement of all levels of transportation – automobile, public transit, bike, and pedestrian – is essential to assuring the livability of a community. Parking management is also an important part of assuring mobility and circulation within Maui's urban areas. The development pattern depicted in Figure A is efficient and conducive to pedestrian mobility, while the development pattern in Figure B is shaped by large-surface parking lots that dominate the built environment and inhibit pedestrian mobility.

Street connectivity and parking management are key elements of promoting good urban design.



Source: Arendt, Randall. 1994. Rural By Design. American Planning Association Planners Press. Chicago, Illinois.

Current parking requirements often result in large surface parking lots dominating urban landscapes. To effectively address the storage of automobiles in urban areas a comprehensive parking management strategy and revision of parking standards to reduce requirements for mixed-use projects, allow for joint-use parking, and payment of cash-in-lieu fees to support centralized parking would have a mitigating effect.

The layout and design of streets has a significant impact on the character, form, and

livability of communities. As Allan Jacobs, author of *Great Streets,* eloquently stated:

> *"It is not surprising that, given their multiple roles in urban life, streets require and use vast amounts of land. In the United States, from 25 to 35 percent of a city's developed land is likely to be in public right-of-way, mostly streets. If we can develop and design streets so that they are wonderful, fulfilling places to be, community building places, attractive public places for all people of cities and neighborhoods, then we will have successfully designed about 1/3 of the city directly and will have an immense impact on the rest."*

Streets are one of the most basic elements of urban form – they play a significant role in shaping the framework and character of neighborhoods. Inappropriate street design can encourage speeding, limit pedestrian mobility, and degrade the aesthetic quality of the built environment. Well-designed streets generally have the following characteristics:

- Proper proportion and width;
- Relationship to adjoining buildings and setbacks;
- Shade;
- Sidewalks;
- Street trees;
- Lighting;
- On-street parking;
- Parking at rear of building; and
- Bike paths, bike lanes, and greenways.

The County's principal role in the management of the visitor industry involves regulation of land uses, including the location and number of visitor units and resort real estate, the management of commercial attractions for visitors, and the perpetuation of local culture by reviewing new project proposals for cultural sensitivity. The County also provides roads, parks, police and fire protection, and other services that benefit the visitor industry.[6]

SUMMARY OF URBAN LAND USE ISSUES

- Compact, efficient, human-scale communities
- Self-sufficient, sustainable communities
- Transparent planning process

[6] Plan Pacific, Inc. (October 2007). *Economic Development Issue Paper.*

GOAL, OBJECTIVES, POLICIES, AND ACTIONS

Goal:

7.3 Maui will have livable human-scale urban communities, an efficient and sustainable land use pattern, and sufficient housing and services for Maui residents.

Objective:

7.3.1 Facilitate and support a more compact, efficient, human-scale urban development pattern.

Policies:

7.3.1.a Ensure higher-density compact urban communities, infill, and redevelopment of underutilized urban lots within Urban Growth Boundaries.

7.3.1.b Maintain a distinct separation between communities, such as but not limited to, Wailuku and Waikapū; Wailuku and Waihe`e; Pukalani and Makawao; Pukalani and Kula; Makawao and Hāli`imaile; Lahaina and Kā`anapali; Kīhei and Mā`alaea; and Mā`alaea and Waikapū, to protect the character and identity of Maui's communities.

7.3.1.c Strengthen evaluation requirements for new urban expansion, new towns, and major urban infill projects within urban growth areas. Tailor submittal requirements to reflect the impact or scale of different projects.

7.3.1.d Ensure future amendments to urban growth boundaries achieve the following: (1) provide a beneficial extension of the existing community; (2) are in areas where it is cost-effective to provide and operate infrastructure/public service facilities; and (3) do not promote automobile-oriented land use patterns.

7.3.1.e Evaluate the impact of gated communities on inter-connectivity.

7.3.1.f Encourage the development and implementation of neighborhood design standards that are environmentally friendly, such as LEED for Neighborhood Development (LEED – ND) standards.

7.3.1.g Discourage future pyramid zoning within the industrial zoning districts, while allowing accessory commercial uses and grandfathering existing uses.

7.3.1.h Promote agriculture by encouraging community gardening, community-supported agricultural programs, and farmers markets within and adjacent to urban areas.

7.3.1.i Discourage land use and urban design that impedes inter-connectivity between adjacent communities.

Implementing Actions:

7.3.1-Action 1 Establish minimum-density requirements and design standards within urban areas to support higher densities, infill development, and efficient land use patterns.

7.3.1-Action 2 Update zoning and development regulations to achieve the following:

(1) Facilitate environmentally friendly projects (LEED – ND);

(2) Revise the application and reporting requirements in Title 19, Maui County Code (MCC), to strengthen evaluation requirements and establish design guidelines for new urban expansion, new towns, and major projects within UGBs;

(3) Discourage future pyramid zoning within the industrial zoning districts, while allowing ancillary commercial uses; and

(4) Consider the establishment of a new zoning category that strictly defines and limits uses for heavy industrial areas.

Objective:

7.3.2 Facilitate more self-sufficient and sustainable communities.

Policies:

7.3.2.a When developing new communities, provide sufficient lands for commercial, appropriate industrial, educational, spiritual, and non-profit uses to serve the daily needs of community residents.

7.3.2.b Site community facilities such as schools, parks, libraries, and community centers within walking and biking distance of residences.

7.3.2.c Facilitate self-sufficient communities and shorten commutes by:

(1) Directing residential development to job-rich areas;

(2) Allowing for appropriate commercial development and community services to shorten commutes; and

(3) Allowing home occupations or home-based businesses that are compatible with surrounding neighborhoods and lifestyles.

7.3.2.d Ensure, where appropriate, that affordable employee housing and multi-modal transportation opportunities are located near major employment centers.

7.3.2.e Discourage the establishment of bedroom communities where long commutes are required to employment centers.

7.3.2.f Facilitate the development of housing by focusing projects in locations where land and infrastructure costs facilitate the development of affordably-priced housing.

7.3.2.g Provide incentives to facilitate the development of multifamily housing.

7.3.2.h Encourage the placement of rental housing projects in the same areas as for-sale housing to facilitate mixed-income communities.

7.3.2.i Develop communities that provide sufficient parks, schools, libraries, and other essential public facilities and services to serve resident needs.

7.3.2.j Promote agriculture by encouraging community gardening, edible landscaping, community-supported agricultural programs, and farmers markets within and adjacent to urban areas.

Implementing Actions:

7.3.2-Action 1 Develop and adopt a TDR Ordinance and a formal TDR program, and identify receiving areas within urban growth boundaries.

7.3.2-Action 2 Amend the zoning ordinance to:

(1) Reduce minimum lot sizes in urban areas;

(2) Encourage a mix of single-family and multifamily lots within the same development; and

(3) Facilitate the establishment of mixed-use towns/village centers.

7.3.2-Action 3 Update regulations to promote community gardens and edible landscapes.

7.3.2-Action 4 Consider standards to regulate the location, design, and massing of big-box retail stores.

7.3.2-Action 5 Amend the Maui County Code (MCC) to reduce parking requirements, where appropriate, in mixed-use projects, encourage joint-use parking, and allow for the use of innovative methods to meet peak parking needs.

7.3.2-Action 6 Revise the zoning ordinance to allow for mixed-use development that is appropriate and in character with the existing community.

Objective:

7.3.3 Strengthen the island's sense of place.

Policies:

7.3.3.a Protect and enhance the unique architectural and landscape characteristics of each community.

7.3.3.b Encourage Hawaiian architecture and tropical building designs.

7.3.3.c Support the continued revitalization of historic country towns, Wailuku Town, and Kahului's commercial core and harbor-front without displacing traditional, cultural, recreational and customary uses.

7.3.3.d Strongly encourage the preservation of buildings, structures, and sites of historic significance.

7.3.3.e Require community input through Design Workshops for major new urban expansion, new towns, and major urban infill projects.

7.3.3.f Require design enhancement, landscaping, and integration of park and rides, bicycle parking areas, and mass-transit infrastructure to mitigate the effect of parking lots and structured parking on the urban landscape.

7.3.3.g Ensure that safe and attractive public spaces (e.g., plazas, parks, town/village squares) are provided throughout the island's urban areas.

Implementing Actions:

7.3.3-Action 1 Implement the Wailuku Redevelopment Plan, and subsequent updates, and formulate plans for other appropriate areas.

7.3.3-Action 2 Develop and adopt regulations to require Urban Design Review Board review of all major urban expansion, new towns, and urban infill, and redevelopment projects.

7.3.3-Action 3 Prepare general Urban Design Guidelines for Central, South, and West Maui.

7.3.3-Action 4 As part of the Community Plan updates, prepare streetscape, pedestrian/bikeway/transit circulation, redevelopment and infill, and greenway infrastructure and master plan elements.

7.3.3-Action 5 Develop community planning processes to establish standards and priorities for streetscape beautification, public amenities, pedestrian and bicycle circulation, parking, redevelopment target areas, transit amenities, and sense of place and building form/design guidelines.

Objective:

7.3.4 Strengthen planning and management for the visitor industry to protect resident quality of life and enhance the visitor experience.

Policies:

7.3.4.a Discourage the conversion of hotel units to timeshares and fractional ownership.

7.3.4.b Monitor and manage the amount of, and impacts from, timeshares and fractional ownership.

7.3.4.c Manage short-term rentals and bed-and-breakfast homes through a permitting and regulatory process in accordance with adopted ordinances and community plan policies.

7.3.4.d Limit large-scale resort development to the four existing resort destination areas of Wailea, Mākena, Kapalua and Kā`anapali. "Large Scale Resort" is defined as complexes that include multiple accommodation facilities, activity businesses, retail complexes, and other amenities.

Implementing Action:

7.3.4-Action 1 Define and map the Resort Destination Areas of Wailea, Mākena , Kapalua, and Kā`anapali.

Objective:

7.3.5 Ensure that Maui's planning and development review process becomes more transparent, efficient, and innovative.

Policies:

7.3.5.a Encourage greater community involvement in land use planning and decision making.

7.3.5.b Establish a predictable and timely development review process that facilitates the approval of projects that meet planning and regulatory requirements.

7.3.5.c Increase inter-agency coordination between the Department of Planning and all State and County agencies responsible for infrastructure and public facilities provision, particularly as it relates to the mitigation of long-term cumulative impacts resulting from development projects.

7.3.5.d Provide greater certainty and transparency in the development review process.

7.3.5.e Expand and maintain land use and geographic information system databases for improved decisions, and make data and products available to the public.

Implementing Actions:

7.3.5-Action 1 Develop and adopt regulations that: (a) mandate early consultation with communities affected by planning and land use activities; and (b) establish efficient and realistic review timelines.

7.3.5-Action 2 Update the MIP and Community Plan land use designations and zoning maps with each update of the General Plan.

7.3.5-Action 3 Evaluate the establishment of time limitations on unused development entitlements for projects which have not commenced within a reasonable time period.

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM INSTREAM FLOW STANDARDS FORHONOPOU, HUELO (PUOLUA), HANEHOI, WAIKAMOI, ALO, WAHINEPEE, PUOHOKAMOA, HAIPUAENA, PUNALAU/KOLEA, HONOMANU, NUAAILUA, PIINAAU, PALAUHULU, OHIA (WAIANU), WAIKAMILO, KUALANI, WAILUANUI, WEST WAILUAIKI, EAST WAILUAIKI, KOPILIULA, PUAKAA, WAIOHUE, PAAKEA, WAIAAKA, KAPAULA, HANAWI, and MAKAPIPI STREAMS	CASE NO. CCH-MA13-01 CERTIFICATE OF SERVICE

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on this date a true and correct copy of the foregoing document was duly served, via email to the following, with hard copies to follow U.S mail, postage prepaid, upon the following individuals as follows:

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