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Standards of Waihe'e, Waiehu, 'Iao, & Waikapū Streams Contested Case Hearing BRIEF; EXHIBITS "C-R20"-"C-R21"; **CERTIFICATE OF SERVICE** 

## JOINT SUPPLEMENTAL RESPONSIVE BRIEF

Petitioners Hui o Nā Wai 'Ehā and Maui Tomorrow Foundation, Inc. (the

"Community Groups") and Intervenor Office of Hawaiian Affairs ("OHA"), pursuant to Minute

Order 29, respectfully submit their joint supplemental responsive brief to the Supplemental

Opening Brief ("SOB") filed by Hawaiian Commercial and Sugar Company ("HC&S"),

regarding the feasibility of using recycled water from the County of Maui's ("County's")

Wailuku-Kahului Wastewater Reclamation Facility ("W-K Plant") as an alternative to diverting

Nā Wai 'Ehā waters.

## I. INTRODUCTION

The Hawai'i Supreme Court specifically held the Commission failed in its public trust duties in rejecting the use of recycled water "based solely on the current lack of infrastructure." *In re 'Iao Ground Water Mgm't Area Contested Case Hr'g* ("*Nā Wai 'Ehā*"), 128 Hawai'i 228, 262, 287 P.3d 129, 163 (2012). For years, the Community Groups and OHA have been emphasizing the availability of such resources for nonpotable uses. Now more than ever, the need to productively use, rather than waste, recycled water has gained broad recognition by the public, as well as this Commission. This need becomes only more compelling and unavoidable in this case given the increased attention to the impacts of nearshore underground disposal, and the assertions by offstream users of the costs and impacts from reduced water supplies.

Since the previous contested case hearing, the Community Groups and OHA have pointed out that HC&S's long-standing use of recycled water from Maui Land and Pine ("MLP") through existing delivery infrastructure ("HC&S-MLP pipeline") provided a valuable avenue to extend such use to the recycled water supply from the County's W-K Plant that is currently being dumped and wasted.<sup>1</sup> Instead, HC&S and the Commission majority erroneously assumed that HC&S should be entitled to receive additional streamflows to replace the recycled water from MLP. Now, attention is (re)focusing on the development of infrastructure to transport recycled water from the W-K Plant plant to Kahului, where it can connect to the HC&S-MLP pipeline. *See, e.g.,* Central Maui Recycled Water Verification Study dated December, 2010 ("Verification Study"), Exhibit C-R 20; 2013 Update of the Hawaii Water Reuse Survey and Report ("CWRM Report"), excerpted at Exhibit C-R 21.

<sup>&</sup>lt;sup>1</sup> <u>See</u> Exh. C-77; Tr. 1/30/08 (Volner), pp. 29 (l. 16) to p. 30 (l. 15), 135 (l. 8) to 136 (l. 4) (background on the existing infrastructure).

#### II. <u>BACKGROUND</u>

To recap the record, the water from the W-K Plant is R-2 (near R-1) quality, which "is acceptable for a wide range of uses presently active in central Maui. There are no technical or regulatory issues preventing the use of R-2 water by one or more of the users who submitted written testimony." Schwarm WT 10/26/07, ¶ 6.) *See also* Tr. 1/25/08 (Parabicoli), p. 138 (II. 2-4) ("R2 historically has been the quality that has been used throughout the state for many years."). This includes golf courses, which have used recycled water on Maui for "many years," and "landscaping or agricultural subdivision[s]." <u>Id.</u> at 137 (I. 8) to 138 (I. 10), 150 (II. 7-12). Chloride levels in such water are below drinking water standards, and any nutrients remaining after treatment "add[] value as a fertilizer." *Id.* at 149 (I. 18) to 150 (I. 6), 157 (I. 16) to 158 (I. 4), 138 (II. 13-21). *See also* Santiago WT 10/26/07, ¶ 16 (pointing out the benefits of recycled nutrients for seed cane, "which is essentially like growing grass").

County official Steve Parabicoli emphasized that he is "sure [HC&S] could use" water from the W-K plant. Tr. 1/25/08, p. 149 (ll. 13-17). As he explained, recycled water:

is a long-term insurance policy for water resources, because it's dr[ought] proof.... [W]astewater never stops flowing in the treatment plant. It's always available.... [I]t can free up other types of water that are being used for either potable purposes or other valuable uses, whether they be stream restoration, agricultural, cultural practices.

*Id.* at 153 (l. 15) to 154 (l. 8).

This Commission, based on the recent CWRM Report, shares this understanding. The CWRM Report specifically recognized that "[t]he benefits of a large agricultural user such as HC&S substituting recycled water for at least a portion of the diverted stream water it uses are significant." Exh. C-R 21 at 5-18. "[T]he use of recycled water would greatly benefit the large sugar cane fields, which primarily use stream water for irrigation. Doing so could potentially

help restore stream flows, recharge aquifers and make more stream water available for other uses." *Id.* at 5-10. *See also id.* at 5-18 (Streamflow restoration "may also significantly increase groundwater recharge of freshwater aquifers. This fact could be important for designated aquifers such as Maui's Iao Aquifer that has been threatened in recent years due to over pumping and insufficient recharge rates.").

The CWRM Report further recognized the option of connecting the W-K Plant to the HC&S-MLP pipeline. *See id.* at 4-6. The "main benefit is that recycled water could be used to irrigate HC&S's seed cane rather than stream water." *Id.* However, [u]p to this point, the [County] has not developed a recycled water distribution system in central Maui mainly because of available and affordable brackish groundwater and stream water." *Id.* at 4-5; *accord* Verification Study (Exh. CR-20) at 4.

Despite the heightened recognition of recycled water as a misallocated and wasted resource, and the existing HC&S-MLP pipeline that considerably reduces the infrastructure cost of connecting the W-K Plant to HC&S's seed cane fields, HC&S predictably "concludes," "after reviewing" the January 22, 2014 Feasibility Report for HC&S Use of Reclaimed Water from Wailuku-Kahului Wastewater Reclamation Facility ("ATA Report", Exh. E-R 31), "that the reuse of treated effluent from the [W-K Plant] cannot be deemed to be a reasonably practicable alternative to the use of surface water at the current time." HC&S SOB at 2. In actuality, HC&S made a cynically calculated decision not to obtain the information HC&S itself claims is required to evaluate the feasibility of recycled water.

## III. <u>HC&S's DELIBERATE INACTION DOES NOT RENDER RECYCLED WATER</u> <u>IMPRACTICABLE</u>

As the Commission and the Hawai'i Supreme Court made clear, in this day and age, recycled water can no longer be discarded into injection wells rather than being put to use

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because "available and affordable . . . stream water" obviates the need to develop a distribution system. CWRM Report (Exh. C-R21) at 4-5. In its Final D&O, the Commission indicated its intention to "forc[e] all parties to address critical water issues which have been avoided for far too long," and specifically, that "[1]arger diverters facing ongoing and growing needs, including the County, should explore joint development of reclamation and water recycling in order to address their needs without returning to these streams." Final D&O, p. 194. And, as the Hawai'i Supreme Court held, "the current lack of infrastructure" to deliver treated wastewater from the W-K Plant to HC&S's fields does not justify rejecting recycled water use as a practicable alternative to diverting Nā Wai 'Ehā streamflows. *Nā Wai 'Ehā*, 128 Hawai'i at 262, 287 P.3d at 163. HC&S provides no basis for the Commission to reach such a conclusion, and certainly not with the level of "openness, diligence, and foresight" demanded by the Court in the stewardship of public trust resources. *Id.* 

There is no question that constructing infrastructure to deliver treated wastewater to HC&S's seed cane fields requires the cooperation and participation of the County, which owns and operates the W-K Plant. However, there is no indication HC&S and the County have even discussed the joint development of delivery infrastructure since the Hawai'i Supreme Court remanded for consideration of that issue in August 2012. In the County's defense, it was likely blindsided by HC&S's sudden professed willingness to use R-2 recycled water. During the parties' discussions "off and on over the past 20 years," ATA Report (Exh. E-R 31), Appendix A, Letter from Eric Nakagawa ("Nakagawa Letter") at 1, HC&S had indicated unwillingness to do so. R-2 water was used on sugar cane for years on Maui and Oahu and is allowed by DOH regulations, but "HC&S has indicated a preference" of the largest potential user of recycled water

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from the W-K Plant, the County clearly assumed it would need to upgrade the W-K Plant to produce R-1 water; it retained a consultant to evaluate the required improvements and is currently awaiting that evaluation. Nakagawa Letter at 1. It is thus not surprising the County did not affirmatively engage HC&S in discussions of jointly developing infrastructure to deliver R-2 water, given that it learned only months ago, through ATA rather than HC&S, that HC&S may have changed its mind about using R-2 water.

HC&S has no similar excuse. It claims that, "[u]ntil the terms under which the County would provide, and HC&S would receive, reclaimed water are finalized, *the practicability of HC&S using reclaimed water as an alternative to Nā Wai 'Ehā surface water cannot be properly analyzed.*" [Second] Declaration of Rick W. Volner, Jr., ¶7 (emphasis added). Yet, HC&S has made no apparent attempt to discuss those terms with the County, and in 2010, after the Final D&O was issued, it was still indicating its "preference" for R-1 water. Verification Study (Exh. C-R 20) at 1. Even after the Hawai'i Supreme Court remanded the case in August 2012 with a mandate to consider the feasibility of using recycled wastewater from the W-K Plant, HC&S *still* did not approach the County regarding its willingness to use R-2 water; instead, it waited more than a year to engage ATA and made *no* attempt to discuss terms with the County, and then claimed that the feasibility of using reclaimed water "cannot be properly analyzed" until those terms are finalized. In other words, HC&S hoped, by its own inaction, to preclude the Commission from fulfilling the Court's mandate.

From the information HC&S *has* provided through the ATA Report, it appears that its own failure to engage the County in *bona fide* discussions regarding joint development is the *only* impediment to feasibly using R-2 treated wastewater from the W-K Plant to irrigate its seed cane fields. The ATA Report confirmed that treated effluent from the W-K Plant is of "excellent

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quality," *id.* at 3, and that the current average daily flow is 4.40 mgd, with a minimum flow of 3.2 mgd, *id.* at  $4.^2$  Given HC&S's current irrigation requirement of 4,504 gad for seed cane, *see* Ex. E-R 29, the average output of the W-K Plant would be sufficient to irrigate 977 of the 1,445 acres HC&S uses for seed cane. Based on the location of HC&S's seed cane fields, contamination of existing or potential potable groundwater sources is not a concern, *id.* at 10, and HC&S plans to use subsurface drip irrigation, *id.* at 12, so the potential concerns with spray application of R-2 water, such as the need for a buffer zone, are inapplicable.

The estimated cost of constructing the distribution system is obviously not negligible (particularly given that ATA has inflated it by forty percent for administrative costs and "contingencies"), but certainly not prohibitive either.<sup>3</sup> The County will consider funding "some or all" of the necessary improvements if there are other customers for the water in addition to HC&S, Nakagawa Letter at 3, but HC&S is being coy about the amount of R-2 water it will use. The ATA Report was based on HC&S's use of only 2.95 mgd of the 4.40 mgd produced by the W-K Plant, *id.* at 36, which is the amount HC&S now appears to contemplate, Volner Decl., ¶ 7, and it appears there was no response to the County's request for additional information regarding

 $<sup>^{2}</sup>$  The ATA Report is based on HC&S's use of 2.95 mgd, which is the minimum average daily flow (3.2 mgd) less the amount used by the County (0.25 mgd). ATA Report at 36. Nothing would limit HC&S to that amount.

<sup>&</sup>lt;sup>3</sup> There may be opportunities to significantly reduce the cost below ATA's estimate. For example, the County has been replacing the force mains from the Wailuku and Kahului pumping stations to the W-K Plant. *See* Appendix A to ATA Report, "Minutes of Meeting," # 8. If, as the County originally anticipated, the existing force mains are not retained as backup force mains, *id.*, and could be "repurposed" for recycled water delivery, it would eliminate the need for what appears to be about 80% of the new 16" pipe required to connect the W-K Plant with the HC&S-MLP pipeline. *Compare* Figure 1-1 to Verification Study with Ex. 1 to ATA Report. The record is not clear, however, whether the existing force main will be available. *See, e.g.*, Nakagawa Letter at 4, #11.b., *compare* ATA Report, Minutes of Meeting, #8. Another potential cost savings could result from the use of a portion of the existing overflow basin at the W-K Plant, rather than constructing a new tank. Nakagawa Letter at 5, #11.f.

how much R-2 water HC&S would use, *see* Nakagawa Letter at 5, #11.g. On the other hand, HC&S contends that, "under the conceptual approach evaluated by ATA, *where HC&S would be the sole user of the treated effluent*," the County could not say "at this time" whether it would be able to fund any of the capital improvements. Volner Decl., ¶ 7 (emphasis added). HC&S cannot have it both ways, and there are several other potential users that could make use of the treated wastewater. Verification Study (Exh. C-R 20) at 9.<sup>4</sup> In any event, there are numerous funding sources which have not yet been explored,<sup>5</sup> but that cannot happen until HC&S starts clearly and seriously communicating with the County.

Assuming there are additional users for the water, the County also expects to absorb the long term pumping and maintenance costs, charging HC&S only the rate approved by the County Council – currently \$0.15/thousand gallons. Nakagawa Letter at 3. While that rate is far cheaper than what other farmers pay for water, it appears HC&S may not even have to pay that nominal amount. Maui's mandatory recycled water use ordinance, Maui County Code Chapter 20.30, includes an "Avoided Cost" clause that requires the County to match the cost of alternative sources of non-potable water. This would reduce HC&S's rate for recycled water even further, which would enable it to more quickly recoup any contributions to infrastructure that it provides.

In sum, it appears the biggest obstacle to the use of R-2 water from the W-K Plant as an alternative to diverted Nā Wai 'Ehā streamflows to irrigate its seed cane fields is HC&S's unwillingness to move beyond its 19th-century mindset that stream diversions are cheaper and

<sup>&</sup>lt;sup>4</sup> These include not only the potential users the Verification Study identifies in Kahului, but also potential users in the area at the end of the HC&S-MLP pipeline.

<sup>&</sup>lt;sup>5</sup> The CWRM Report identifies numerous funding opportunities, *id.* at 6-1 to 6-9, including its recommended "primary funding mechanism" of the State Revolving Fund, under which water reuse projects have a "priority" and "preference," *id.* at 5-22, 6-2 to 6-3.

more convenient. There is no other way to explain its failure to even engage in serious discussions with the County to obtain the information it believes is necessary for the Commission to "properly analyze" the practicability of that alternative.

#### IV. <u>CONCLUSION</u>

HC&S obviously requires more motivation before it will provide the information it claims is required to meaningfully evaluate the feasibility of reclaimed water use on its seed cane fields (and additional incentive may also benefit the County<sup>6</sup>). The Community Groups and OHA recommend that the Commission order a strict timetable for HC&S to develop with the County a plan for delivering recycled water from the W-K Plant to HC&S, which must include, in addition to a cost estimate, the parties' "agreements regarding, among other things, cost sharing, the volume of treated effluent that would be made available to HC&S, whether treated effluent would also be made available to other users, access to and ownership of the transmission pipelines, delivery requirements, and the rates at which the County will sell the treated effluent to HC&S." Volner Decl., ¶6. To insure that HC&S does not continue to thwart the Commission by sitting on its hands, the Commission's decision and order in the remand contested case should also include a provision automatically increasing the aggregate IIFS, in one or more increments up to 4.4 mgd while the delays continue, unless and until a plan is provided that will allow the Commission to evaluate the feasibility of recycled water as an alternative water source. At that time, the IIFS increase(s) would end, and the contested case

<sup>&</sup>lt;sup>6</sup> It appears that the County is finding the political will to become "a water reuse leader in Hawai'i" for reasons such as the hazards of environmental liability and litigation, if not yet for the benefits such as the increased aquifer recharge from streamflow restoration. CWRM Report (Exh. C-R 21) at 3-3.

hearing would resume for the specific purpose of completing that evaluation mandated by the

Hawai'i Supreme Court.

Dated: Honolulu, Hawai'i, February 25, 2014.

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## **Central Maui Recycled Water**

## **Verification Study**



<u>Prepared for</u>: County of Maui, County Council

<u>Prepared by:</u> Department of Environmental Management, Wastewater Reclamation Division

Department of Water Supply Water Resource Planning Division

December, 2010

**EXHIBIT C-R20** 

## Central Maui Recycled Water Verification Study

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## **CHAPTER 1 – INTRODUCTION**

This study was prepared as required by a fiscal year 2011 budget provision that stated:

"Provided, that prior to expending funds the Department of Environmental Management shall work with the Department of Water Supply and private entities on a new verification study that provides the Council with future alternatives for the transmission and optimization of R-1 recycled water from the Kahului Wastewater Reclamation Facility (WWRF) in order to provide a source of irrigation water for existing and planned future projects, and to provide alternatives to the use of injection wells. The Department of Environmental Management shall transmit a status report regarding this matter to the Council by January 1, 2011."

This study includes data on the current status of R-2 recycled water usage in the Central Maui area, as well as, information regarding developing planned and future projects.

#### Background

The Kahului WWRF serves the Central Maui area from Waiehu to Kuau (Figure 1-1). The current dry weather flow capacity is 7.9 million gallons per day (mgd). Currently, all of the wastewater processed by the facility is treated to R-2 recycled water standards meaning that there are restrictions on its uses and applications. Key restrictions on the use of R-2 water via spray irrigation are that R-2 water can only used at night and there must be 500 foot buffer zones between the area being spray irrigated and adjacent properties or roadways. In order for the recycled water from the Kahului WWRF to be utilized in the urban environment such as for spray irrigation at commercial properties, the facility would need to undergo an upgrade to enable it to produce R-1 water. An R-1 upgrade at Kahului WWRF would improve the facility's capability of consistently producing recycled water that meets or exceeds regulatory standards. It also allows greater flexibility of use for R-1 water customers.

While the Hawaii Department of Health (DOH) has approved the use of R-2 water for sugar cane irrigation, HC&S has indicated their preference for R-1 water due to its user flexibility and concerns about workers coming in direct contact with the recycled water.

The current average dry weather wastewater flow to the Kahului WWRF is 4.40 mgd. The volume of R-2 water reused from the facility ranges from 3 to 7% of the incoming wastewater flow. The daily average of R-2 water used is 0.2 mgd with most of the recycled water utilized within the Kahului WWRF for landscape irrigation and industrial uses. Some of the R-2 water is sold to construction companies that use it for dust control.

## KAHULUI WASTEWATER RECLAMATION FACILITY



The County of Maui's Wastewater Reclamation Division (WWRD) developed its water reuse program to proactively supplement Maui's limited water supplies and to reduce the use of injection wells for effluent disposal. To support this program, the County established an ordinance (Chapter 20.30 of the Maui County Code) that requires commercial properties to utilize recycled water for irrigation purposes if it is available.

Currently, the water reuse program saves over 400 million gallons of potable water each year. The WWRD has developed R-1 water distribution systems in South and West Maui. In Central Maui however, a recycled water distribution system has not been developed. This is because the majority of commercial properties that could potentially be provided with recycled water currently utilize inexpensive non-potable water for their irrigation needs. Non-potable water sources used at these properties are brackish water wells or ditch water.

The water reuse program is currently funded through a combination of recycled water fees and sewer user fees. To make the R-1 water competitive with other conventional water sources, sewer user fees pay for approximately 75% of program costs while recycled water fees account for the remaining 25%. These costs include debt service and operation/maintenance expenses. Fees for recycled water service are set in the County's annual budget. The recycled water consumer classes with respective rates for fiscal year 2011 are shown in **Table 1-1**.

Consumer Class Rate (\$ per 1,000 gallons)						
Major Agriculture	0.15					
Agriculture	0.33					
All Others	1.28					

Table 1-1: Recycled Water Consumer Classes and Rates

Chapter 20.30 also has included an "Avoided Cost" clause that allows the consumers to pay the same rate that they pay for their respective non-potable water sources if that rate is less than the County's current consumer class recycled water rate.

#### **Objectives**

The purpose of this report is to identify and evaluate options for (1) upgrading the Kahului WWRF to R-1 water capability and (2) identify the location of a recycled water distribution system in the Central Maui area. These actions would allow R-1 recycled water to replace current or projected future potable and/or non-potable waters used at commercial properties and reduce the use of injection wells for effluent disposal.

#### **Report Outline**

The remainder of this report includes the following chapters:

- Chapter 2 provides a discussion on the required infrastructure and an estimated cost to upgrade the Kahului WWRF to R-1 water capability.
- Chapter 3 identifies options for developing a recycled water distribution system from the Kahului WWRF to various areas in the Central Maui region. Each option

that is identified lists commercial properties that could be served, the peak volume of recycled water that each property requires and the estimated cost for developing the required infrastructure to deliver the recycled water to these properties.

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• Chapter 4 provides a summary of these opportunities.

## CHAPTER 2 – KAHULUI WWRF R-1 WATER UPGRADE

The purpose of this chapter is to provide a cost estimate to upgrade the Kahului WWRF to R-1 water capability. As explained in Chapter 1 of this report, the Kahului WWRF currently produces R-2 recycled water. While R-2 water may be used for spray or drip irrigation of some agricultural crops, it has limited potential for landscape irrigation at commercial properties as most properties utilize spray irrigation and the Hawaii DOH requires 500 foot buffer zones for R-2 water applied via spray irrigation. Thus, an R-1 upgrade would be required at the Kahului WWRF if the recycled water from the facility was to be distributed to Central Maui commercial properties for landscape irrigation. While an R-1 upgrade would not be required if the recycled water was distributed to HC&S for irrigation of sugar cane or other crops, it would still be desirable since it would significantly increase the reliability of recycled water service as well as provide HC&S with more flexibility when utilizing the recycled water. With R-1 water, no buffer zones would be required and workers would be more at ease when coming in direct contact with this highly treated recycled water. In addition, HC&S has stated that the most desirable location to use the recycled water would be in the vicinity of Maui Lani towards Maalaea where seed cane is cultivated. The recycled water distribution system could be designed and constructed so that it provides R-1 water to commercial properties for landscape irrigation and then provides whatever excess R-1 water is left over to HC&S where it could be used for seed cane irrigation.

R-1 water is recycled water that is at all times oxidized, filtered, and then exposed to a high level of disinfection. Coagulation capability is required to remove excess solids, if present, from the recycled water prior to filtration and continuous turbidity monitoring is also required to insure that the turbidity of the recycled water is low enough to insure satisfactory disinfection. The Kahului WWRF utilizes activated sludge to achieve oxidation and the facility has existing traveling bridge sand filters that while approved for the production of R-1 water, are limited because the loading rate to these filters can not exceed 2 gallons per minute per square foot. The existing filter basins could be retrofitted with a coagulation system and another type of filter with a higher loading rate. Therefore, the equipment that would need to be installed to upgrade the Kahului WWRF to R-1 water capability includes a coagulation system, a filtration system, a turbidity monitoring system, an automatic diversion system for use when R-1 turbidity standards are not met and an ultra violet disinfection system.

Based on the above R-1 water equipment requirements, the budgetary construction cost estimates to upgrade the Kahului WWRF to R-1 water capability are shown below in Table 4-1. The R-1 water capacity after the upgrade would be 6.0 mgd. The addition of a third UV channel could increase the R-1 capacity to the facility's hydraulic and treatment capacity of 7.9 mgd.

Equipment	Number of Required Units	Cost Estimate
Coagulation System	1	\$300,000
Filtration System	1	\$1,600,000
<b>Turbidity Monitoring System</b>	2	\$25,000
Diversion System	1	\$240,000
UV Disinfection System	2	\$2,800,000
Budget Construction Cost Estimate		\$4,965,000

Table 2-1: Budgetary Cost Estimate - Kahului WWRF R-1 Water Upgrade

## CHAPTER 3 – RECYCLED WATER DISTRIBUTION SYSTEM OPTIONS

There are essentially three options for developing a recycled water distribution system in the Central Maui area. Figure 3-1 shows the locations for the potential R-1 water distribution systems and the properties that they would serve. All options include constructing R-1 storage and pumping at the Kahului WWRF as well as offsite elevated storage to create the required pressure for adequate R-1 water delivery. Appendix "A" provides a detailed explanation on how the cost estimates for each option were determined. The options are:

- Option 1: Develop a distribution system from the Kahului WWRF to Maui Lani where R-1 water could be used for landscape irrigation at commercial properties in the Kaahumanu Avenue vicinity. This option will create pressure through elevated storage and must be constructed before Options 2 and 3 are considered.
- Option 2: Develop a distribution system from the Kahului WWRF to Kanaha Beach Park and the Kahului Airport where R-1 water could be used for landscape irrigation.
- Option 3: Develop a distribution system from the Kahului WWRF to HC&S where R-1 water could be used for agricultural irrigation. This option could connect to an existing non-potable water distribution system previously constructed and utilized by Maui Land & Pineapple Company to deliver cannery wastewater to HC&S where it was used for seed cane irrigation.

## Discussion of Options

# Option 1: Develop Distribution System from Kahului WWRF to Maui Lani.

The distribution system would include a 1 MG storage tank and pumping station at the Kahului WWRF and have approximately 18,500 linear feet (3.5 miles) of R-1 water transmission pipe line. This line would extend from the Kahului WWRF up Kaahumanu Avenue to the Maui Lani development where an additional 1 MG storage tank and booster pump station would be located. Construction cost for installing the R-1 water pipe line will be high due to existing utilities, traffic and groundwater mitigation. Hotels, County parks and Maui UH College are just some of the commercial properties that could be provided with R-1 water with this alternative. Many of these properties utilize good quality brackish ground water for landscape irrigation thus potable water displacement will not be significant with this option. **Table 3-1** lists the projects that could be provided with R-1 water and the estimated construction cost associated with this option.

Property	Estimated Peak R- 1 Demand (GPD)	Estimated Cost (\$)	
Ho'Aloha Park	12,630		
First Hawaiian Bank	4,000	· · · · · · · · · · · · · · · · · · ·	
Maui Seaside Hotel	15,800		
Maui Beach Hotel*	19,850		
Boys & Girls Club of Maui	32,500		
Maui UH College*	94,730		
Maui Botanical Gardens	18,950	ea	
War Memorial Complex*	63,150		
Ke`Opulani Park*	360,000		
Ka`ahumanu Avenue Median	25,260		
Ka`ahumanu Center	44,200		
Kaiser Permanente Wailuku	6,000		
Maui Police Department	6,000		
Kaiser Permanente Maui Lani	6,000		
Baldwin High School	20,000		
Dunes at Maui Lani Golf Course*	1,100,000		
Maui Lani Park & Common Areas**	170,500		
Total Option 1	1,999,570	\$24,022,000	

## Table 3-1: Option 1 - Properties Served

\*Currently utilizes brackish water.

\*\* Future project with planned use of brackish water

# Option 2: Develop Distribution System from Kahului WWRF to Kanaha Beach Park and Kahului Airport.

This option should be developed only after the core distribution components identified in Option 1 are completed. R-1 water storage both at the Kahului WWRF and at the elevated location in the vicinity of the Maui Lani Development is required before Option 2 is feasible. This option consisting of approximately 7,800 linear feet of pipe line would extend from the Kahului WWRF to the Kanaha Beach Park and Kahului Airport entrance road area. **Table 3-2** lists the projects that could be provided with R-1 water and the estimated construction cost with Option 2.

Property	Estimated Peak R-1 Demand (GPD)	Estimated Cost (\$)
Kanaha Beach Park	157,900	
Kahului Airport & Access Road	67,000	
Total Option 2	224,900	\$3,972,000

#### Table 3-2: Option 2 - Properties Served

## Option 3: Connect to Existing Non-Potable Water Distribution System to Provide R-1 Water to HC&S and Other Commercial Properties

An advantage of this option is that two parallel existing non-potable water transmission lines approximately 20,000 feet long that were previously constructed and utilized by Maui Land & Pineapple Company (ML&P) to deliver an average flow of 1 MGD and a peak flow of 1.8 MGD of cannery wastewater to Hawaiian Commercial & Sugar Company (HC&S) are available for use. HC&S has stated that recycled water would be best utilized for seed cane irrigation. Seed cane is grown in the area between Maui Lani and Maalaea and the existing ML&P pipe lines discharge to a lined 0.5 MG reservoir owned by HC&S in the vicinity where seed cane is grown. HC&S representatives have stated that while this reservoir is usable, it is not in the best location for distribution of water to all of their seed cane designated growing areas. Further evaluation would need to be conducted to determine which other reservoirs and ditch systems would be suitable to distribute recycled water particularly if more than 1.8 MGD of R-1 water was required by HC&S. Nevertheless, this system is in place and offers an opportunity for the County of Maui to add an important segment of a recycled water distribution system. It also allows HC&S to use an alternative source of water that will at least partially help offset the water shortages associated with recent surface water reductions mandated by the Hawaii Department of Land and Natural Resources Commission on Water Resources Management.

The ML&P pipe lines will have adequate capacity to deliver R-1 water to HC&S as well as other commercial properties along the distribution system alignment where the R-1 water could be used for landscape irrigation. The existing MLP pipe lines would need to be connected to the R-1 transmission line constructed along Kaahumanu Avenue in Option 1 by installing approximately 1,300 feet of transmission line along South Kane Street. A pressure sustaining control valve and level monitoring system would need to be installed at the HC&S receiving reservoir. Negotiations would need to take place at the appropriate time to finalize the purchase price of this system. The projects that could be provided with R-1 water in Option 3 are listed in **Table 3-3**. All the projects listed with the exception of HC&S utilize potable water for irrigation.

Property	Estimated Peak R-1 Demand (GPD)	Estimated Cost (\$)
HC&S Seed Cane*	1,800,000	
Kahului Elementary School	25,000	
Maui High School	100,000	
Kahului CC & Park	50,000	
Hale Mahaolu	10,000	
Total Option 3	1,985,000	\$1,850,000

#### Table 3-3: Option 3 - Properties Served

\*Currently uses non potable ditch water.

## **Option 3A: Develop a Dedicated Distribution System to HC&S**

An abbreviated version of Option 3 would be to create a dedicated system that would only serve HC&S by constructing only enough R-1 pipe line along Kaahumanu Avenue to reach the existing ML&P pipe lines. While this option would eliminate the high cost of extending a pipe line up Kaahumanu Avenue to Maui Lani as well as the elevated 1.0 MG R-1 storage tank and booster station, it takes away critical core distribution capability from the distribution system. R-1 water would be pumped from the Kahului WWRF directly to the HC&S reservoir and once the reservoir was full, the pumps would shut down. The main disadvantage to this approach is that the distribution system would only be pressurized while R-1 water is being pumped to the HC&S reservoir. This scenario would not allow the distribution system to effectively serve any other commercial properties due to a lack of consistent service pressure within the distribution system.

Property	Estimated Peak R-1 Demand (GPD)	Estimated Cost (\$)
HC&S Seed Cane*	1,800,000	
Total Option 3A	1,800,000	\$11,380,000

#### Table 3-4: Option 3A - Property Served

\* Currently uses non-potable ditch water.



## CENTRAL MAUI POTENTIAL R-1 RECYCLED WATER EXPANSION OPTIONS

## CHAPTER 4 – SUMMARY OF R-1 WATER DISTRIBUTION SYSTEM DEVELOPMENT OPPORTUNITIES

The objectives of the County of Maui's water reuse program are to displace current or projected future potable water that is used for irrigation at commercial properties and reduce the use of injection wells for effluent disposal. As stated earlier in this report, many of the properties that could potentially utilize recycled water for irrigation in the Central Maui area are already utilizing non-potable water sources. These sources are typically brackish ground water and in the case of HC&S, ditch water from Maui's streams. With full construction of the three options described in Chapter 3, an approximate total of 4.2 MGD of R-1 recycled water could be used during peak irrigation periods at the various properties served by the R-1 distribution system. Of this volume, approximately 0.6 MGD of potable water could be displaced by R-1 water. The use of injection wells could be reduced by up to 95% of the current wastewater influent flow rate to the Kahului WWRF during peak irrigation periods.

Implementation of water reuse from the Kahului WWRF will be costly. The facility must first be upgraded to R-1 water capability at a cost of approximately \$5 million. R-1 quality recycled water will provide users with greater flexibility in its use and applications due to its higher quality and improved reliability than R-2 quality recycled water. The most expensive cost will be constructing the core components of a functional water distribution system. Recycled water storage, pumping and pipe lines all must be developed as the Kahului WWRF has none of these critical distribution system components in place at this time. Elevated storage as discussed in the Option 1 segment of this report is necessary to create the pressure that will allow even distribution of recycled water throughout the distribution system. Thus, Option 1 must be constructed and in operation before Options 2 and 3 can be considered for implementation.

Other points to consider are:

- 1) Wastewater flows to the Kahului WWRF will gradually increase over time as more development takes place. This will result in more recycled water being available for reuse as well as more effluent that will need to be disposed of. Expansions to the Kahului WWRF's R-1 capacity and distribution systems discussed in this report would be required so that the recycled water could be provided to additional commercial properties in the Central Maui area.
- 2) Irrigation demands decrease significantly during the cooler, winter months. This fact will result in excess recycled water being available during the winter season. This means that while the use of injection wells for effluent disposal may be reduced through water reuse, there may always be some excess recycled water; especially during the winter season; that may need to be disposed of into the injection wells.
- 3) HC&S may have the ability to use more than the 1.8 mgd of recycled water from the Kahului WWRF stated in Chapter 3. The two 14 inch lines mentioned in Chapter 3 have the ability to transport several million gallons of recycled water per day. However, HC&S use of recycled water is dependent on several issues including:
  - a. Seed cane is the best use of recycled water because nitrogen present in the recycled water can reduce sugar yields in mature cane if the recycled

water is used at 100% concentration. While blending recycled water with ditch water can reduce nitrogen levels, blending may not be an easy task for HC&S due to constraints of its existing distribution system.

- b. Some of the distribution systems owned by HC&S are considered Hawaii State waterways. The Department of Health does not permit recycled water of any quality to enter State waterways. This fact limits the use of recycled water by HC&S to areas where it has distribution systems that would be dedicated only to recycled water.
- c. HC&S qualifies for the "Avoided Cost" clause in the County of Maui's mandatory recycled water use ordinance (Chapter 20.30 of the Maui County Code). The County of Maui is required to match the cost of the ditch water that is used to irrigate sugar cane. This fact means that revenue from the sale of recycled water to HC&S will be minimal.
- d. Many companies and businesses are facing economic stress. The County of Maui should carefully evaluate business viability before committing large capital expenditures for recycled water distribution.

Table 4-1 summarizes the options discussed in this report. Included is the cost, gallons of potable water displaced, cost per gallon displaced and general comments about each option.

Comments	<ul> <li>Impacts seventeen (17) projects.</li> <li>Includes core distribution system components that must be constructed before Options 2 &amp;</li> </ul>	<ul> <li>are reasible.</li> <li>Most of the projects have existing non-potable water irrigation sources.</li> </ul>	<ul> <li>Impacts two (2) projects.</li> <li>Option 1 must be constructed before this</li> </ul>	option is feasible.	Impacts five (5) projects.     Option 1 must be constructed before this	<ul> <li>Option is reastore.</li> <li>Cost is dependent upon negotiated price for ML&amp;P non-potable pipe lines.</li> </ul>	<ul> <li>Impacts one (1) project.</li> <li>Core distribution system not constructed</li> </ul>	
Cost/Gallon Potable Water Displaced/Day Cost/Total R-1 Gallons/Day	\$151.49 (\$125.55)*	\$14.50 (\$120.37)*	\$39.74 (\$17.66)*	\$39.74 (\$17.66)*	\$36.84 (\$10.00)*	\$3.43 (\$0.93)*	n/a n/a	\$9.09 (\$6.32)*
Gallons of Potable Water Displaced/Day Total R-1 Gallons/Day	191,340	0/0'888'1	224,900	224,900	185,000	1,985,000	0	1,800,000
Distribution System Improvements Only	\$24,022,000		\$3,972,000		\$1,850,000		\$11,380,000	
Distribution System and R-1 Upgrade Improvements	\$28,987,000		\$8,937,000		\$6,815,000		\$16,365,000	
Description	Kahului WWRF to Maui Lani		Kahului WWRF to Kahului	Airport	Kahului WWRF to ML&P Svstem to	HC&S	Dedicated System to	HC&S
Option	-		2		с М		e S	

Table 4-1: Option Summary of Potable Water Displacement

(cost/gallon for distribution system improvements only)

<u>Notes</u>

a. Costs are for CIP construction only. No operational/maintenance/finance costs are included.
 b. Plant upgrade to R-1 capability required prior to development of options. (Approximate cost is \$5 million).
 c. Detailed estimates can be found in Appendix "A".
 d. R-1 upgrade improvements only need to be competed once.

## **APPENDIX "A" – COST ESTIMATES**

## Kahului WWRF R-1 Water Upgrade Cost Estimate

ltem No.	Description	Quantity	Unit	Cost/Unit	Cost
1	Coagulation System	1	ea.	\$300,000	\$300,000
2	Filtration System	1	ea.	\$1,600,000	\$1,600,000
3	Turbidity Monitoring System	2	ea.	\$12,500	\$25,000
4	Diversion System	1	ea.	\$240,000	\$240,000
5	UV Disinfection System	2	ea.	\$1,400,000	\$2,800,000
TOTA	L R-1 UPGRADE COS	T			\$4,965,000

## **Option 1 Cost Estimate**

ltem No.	Description	Quantity	Unit	Cost/Unit	Cost
1	Pipe	12,800	LF	\$1,000	\$12,800,000
2	Pipe	5,625	LF	\$500	\$2,812,500
3	R-1 lateral/meter	17	ea.	\$30,000	\$510,000
4	1 MG Storage Tanks	2	ea.	\$2,650,000	\$5,300,000
5	Land Purchase	1	acre	\$1,000,000	\$1,000,000
6	Pump Station	2	ea.	\$800,000	\$1,600,000
TOTA	LOPTION 1 COST	-			\$24,022,500

## **Option 2 Cost Estimate**

ltem No.	Description	Quantity	Unit	Cost/Unit	Cost
1	Pipe	7,825	LF	\$500,000	\$3,912,500
2	R-1 lateral/meter	2	ea.	\$30,000	\$60,000
ΤΟΤΑΙ	OPTION 2 COST				\$3,972,500

## **Option 3 Cost Estimate**

ltem No.	Description	Quantity	Unit	Cost/Unit	Cost
1	Pipe	1,300	LF	\$500,000	\$650,000
2	Pipe (ML&P)	20,000	LF	\$50*	\$1,000,000
3	R-1 lateral/meter	5	ea.	\$30,000	\$150,000
4	Pressure Sustaining Valve	1	ea.	\$50,000	\$50,000
TOTAL	OPTION 3 COST				\$1 850 000

\*Cost information obtained through preliminary verbal discussion with ML&P.

## **Option 3a Cost Estimate**

ltem No.	Description	Quantity	Unit	Cost/Unit	Cost
1	Pipe	6,250	LF	\$1,000	\$6,250,000
2	Pipe	1,300	LF	\$500	\$650,000
3	Pipe (ML&P)	20,000	LF	\$50*	\$1,000,000
4	R-1 lateral/meter	1	ea.	\$30,000	\$30,000
5	1 MG Storage Tank	1	ea.	\$2,650,000	\$2,650,000
6	Pump Station	1	ea.	\$800,000	\$800,000
TOTA	OPTION 3a COST				\$11,380,000

1

\*Cost information obtained through preliminary verbal discussion with ML&P.

# 2013 Update of the Hawaii Water Reuse Survey and Report



Prepared For Department of Land and Natural Resources Commission on Water Resource Management

JULY 2013





**EXHIBIT C-R21** 

## 2013 UPDATE OF THE HAWAII WATER REUSE SURVEY AND REPORT

State of Hawaii

**Prepared For:** 

Commission on Water Resource Management Kalanimoku Building, Room 227 1151 Punchbowl Street Honolulu, Hawaii 96813

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July 2013

## EXECUTIVE SUMMARY

Water reuse is well established in Hawaii and it continues to play an important role in sustaining our State's water resources. There are numerous benefits associated with water reuse including preservation of water supplies and the reduction of wastewater effluent disposal practices that may be detrimental to the environment. Despite these benefits, the annual volume of recycled water beneficially reused in Hawaii has not substantially increased since 2004, when the original Water Reuse Survey and Report was developed. Nearly nine years later, this report provides an update by describing current recycled water usage, opportunities, and challenges in Hawaii.

Various qualities of recycled water identified by the Department of Health are produced at municipal and private wastewater reclamation facilities for reuse throughout Hawaii's counties. The County of Maui's Wastewater Reclamation Division and the City and County of Honolulu, Board of Water Supply are the most progressive municipal agencies with regards to water reuse and have invested heavily in their programs. Both agencies have near and long-term plans to expand their programs. The County of Kauai also has made significant strides in recent years by upgrading two of its wastewater reclamation facilities to tertiary treatment capability and by implementing a plan to develop a recycled water distribution system. Water reuse on the island of Hawaii occurs primarily at private resort areas.

	County of Maui	City and County of Honolulu	County of Kauai	County of Hawaii
R-1 (mad)	3.03	6.54	1.72	0.71
R-2 (mad)	0.05	1.48	1.29	0.60
R-3 (mgd)	< 0.01	0	0	0
R-O (mgd)	0	1.74	0	0
TOTAL	3.08	9.76	3.01	1.31

Table 1: Recycled Water Use by County

Traditionally, golf course irrigation has been the most common application for recycled water; however, the realm of applications has diversified over the years and continues to have more potential for growth. The number of landscape irrigation projects in urban areas has greatly increased since 2004 with the availability of higher quality recycled water. Use of recycled water in industry has also grown. Agricultural irrigation with recycled water is ongoing but limited; however, this application has great potential for expansion, since large volumes of water are needed to irrigate crops. In order to boost Hawaii's self-sufficiency by locally growing more produce, the State legislature has committed funding for U.S. Department of Agriculture projects. Recycled water has received attention in the State of Hawaii's 2013 Legislative session where House Resolution No. 187 and House Concurrent Resolution No. 232 (Appendix B) were introduced, which would establish a task

force to study and make recommendations on the reuse of R-1 water for agricultural purposes in Central Oahu.

Use	Quantity (mgd)
Golf Course	12.35
Industrial	1.74
Agricultural	1.56
Landscaping	1.06
Other (e.g., construction, composting, etc.)	0.35

Table 2: Statewide Recycled Water Use by Application

Obstacles exist that can delay or prevent water reuse projects from being implemented, but they are not insurmountable. Public acceptance is a critical component for the success of all water reuse projects and it is highly recommended that a proactive and concerted effort be placed on educating the community, politicians, administration officials, and local farmers about the safety of recycled water and the reasons why water reuse projects need to be developed.

The price of recycled water should be set to encourage its use; it should not be more expensive than other water sources. The cost to construct water reuse projects is significant, but there are several funding sources that can be tapped. Priority is now being placed on reserving low interest State Revolving Fund monies for water reuse projects. The Reclamation Wastewater and Groundwater Study and Facilities Act of 1992 Program can contribute significantly to funding water reuse projects. Also, the Bureau of Reclamation's Title XVI Program can provide financial and technical assistance to eligible reuse projects in Hawaii. Since water reuse addresses effluent supply and disposal issues, a broad customer base could be tapped to pay for operation, maintenance and debt service associated with water reuse projects. These customers could include sewer users, potable water users, property tax payers, the visitor industry, and new developments. Some new developments are already being required to contribute to water reuse project improvements. The designation of a water reuse program coordinator can focus efforts toward identifying and implementing new water reuse initiatives.

Discussions at the November 2012 Hawaii Water Reuse Conference strongly suggest the outlook of Hawaii's recycled water industry (producers, users and regulators) is as positive as ever. In addition to documenting current usage, this updated report identifies challenges and provides recommendations to advance recycled water usage in Hawaii.

## 3.2. County Government Water Reuse Program Descriptions

This section will provide detailed descriptions of the County-run water reuse programs (see Section 3.3 for discussions about privately-run programs and projects). The County of Maui and the City and County of Honolulu have invested heavily towards the development of their water reuse programs, and both programs have been in place for several years. The County of Kauai does not have as structured a water reuse program as these two counties. However, in recent years, the KDVM has upgraded two of its facilities to R-1 water capability and is planning to develop an R-1 water distribution system in southwest Kauai. The County of Hawaii does not have a structured water reuse program; the HWD is currently responsible for matters involving water reuse.

## 3.2.1. The County of Maui's Water Reuse Program

The MWWRD is considered to be a water reuse leader in Hawaii. In 1990, Maui County developed a proactive plan to reuse millions of gallons of highquality recycled water produced at its wastewater reclamation facilities. The vast majority of this water resource had been disposed into injection wells. To lay the foundation for the County's program, the following key components were initiated: water reuse feasibility studies, a community-based rate study, creation of a Water Recycling Program Coordinator position, upgrades to the County's Kihei (South Maui) and Lahaina (West Maui) wastewater reclamation facilities to R-1 tertiary treatment capability, passage of an ordinance which mandated the use of recycled water at commercial properties, adoption of rules for recycled water service, and the creation of a recycled water rate structure which recovers monies spent on distribution system development from both recycled water and sewer users.

## Program Development

The initial reason for the development of Maui County's water reuse program was related to effluent disposal. The EPA and local environmental groups expressed concern that injection wells may contribute nutrients that cause algae blooms in coastal waters. In 1995, the EPA placed a limitation on the amount of effluent that could be disposed into injection wells at the County's Lahaina WWRF. This played a major role in the passage of a bill that led to the mandatory recycled water use ordinance on Maui: Chapter 20.30 *Use of Reclaimed Water* of the Maui County Code was established in 1995, and it requires improved commercial properties within 100 ft of the County's recycled water distribution system to connect to the system and utilize recycled water for irrigation purposes (Maui County, 1996, 1997 & 1998). The effluent disposal concern resulted in designation of the MVWRD as the County's only agency to fund, develop, and operate the County of Maui's water reuse program. As a result, sewer user fees are the major source of funds used to pay for expenses associated with the production and delivery of

discussions with County of Maui officials in 2011 and expressed interest in using R-1 water to irrigate biofuel crops. Methane would be produced through anaerobic digestion and used for the production of alternative energy. This power could be sold to Maui Electric Company for resale to the public or for direct use by the MWWRD's Lahaina WWRF. Approximately 800 acres of land owned by the DHHL and formerly used for pineapple cultivation would be used for this agricultural operation. Anaergia Services estimates it could utilize up to 3 mgd of R-1 water. This is a significant volume as the facility's average flow in 2012 was 3.8 mgd. Should this project be implemented, the MVWRD will need to first meet its commitments to current and near-future recycled water customers, then provide the balance of available R-1 water from the Lahaina WWRF to Anaergia Services.

The salinity of R-1 water from the Lahaina WWRF is too high for growing corn. To address this challenge, Anaergia Services plans to utilize a R-O process to remove excess salts. In addition to corn crops, other feed stocks include food wastes, fats, oils and grease, and biosolids from the Lahaina WWRF. Anaergia Services would be provided with a lateral from the future 1.0 MG R-1 storage tank and would pump water to a higher reservoir and fields at its own expense.

If implemented, this project would sustain west Maui in many ways: alternative energy would be produced with locally grown crops and local waste streams; jobs could be created; and a substantial volume of R-1 water would be used, thereby greatly reducing the need for injection well effluent disposal. This project may also result in postponing west Maui expansion projects that are more expensive to construct and would utilize lower volumes of R-1 water.

## 4.1.1.3. Potential Central Maui System Expansion

Up to this point, the MWWRD has not developed a recycled water distribution system in central Maui mainly because of available and affordable brackish groundwater and stream water. In addition, the Wailuku-Kahului WWRF is an R-2 facility and would need to be upgraded to R-1. However, the MWWRD is now planning for an R-1 and distribution system upgrade. The project will be designed in 2016 and constructed in 2018. Funding approval of these capital improvement projects must be obtained from the County administration and County Council.

As mentioned earlier in this chapter, the MWWRD prepared a study to evaluate the feasibility of an R-1 upgrade. Potential end users include the Dunes at Maui Lani Golf Course, County of Maui parks, the University of Hawaii Maui College, hotels, the Kahului Airport, local schools, and seed cane fields. The MWWRD hired a consultant to evaluate water reuse opportunities from the Wailuku-Kahului WWRF and future decentralized wastewater systems. This evaluation is expected to be completed in late 2013.

The Wailuku-Kahului WWRF is located on the northern coast of Maui and is subject to salt air corrosion and tsunamis. The MWWRD has invested heavily to address these issues. These challenges have prompted discussions with private companies that yielded the proposal to construction of a new WWRF further inland. These companies have proposed that the MWWRD enter into a long-term agreement that will require the MWWRD to pay for the new facility and all related wastewater collection and distribution improvements over 20 to 30 years with sewer user fees. The proposed location of the facility would be close to agricultural areas currently farmed by Hawaii Commercial & Sugar Company (HC&S) to reduce the distribution system requirements. To date, the County of Maui has not made a decision on this proposal.

Should the County of Maui decide to keep the facility in its current location, there is one potential expansion opportunity that could result in a significant benefit to central Maui's fresh water aquifers. This opportunity is described in the following section.

Potential Expansion: Utilize Existing Non-Potable Water Distribution System to Provide R-1 Water to HC&S and Other Commercial Properties Maui Land & Pineapple Company (MLP) constructed two 10-inch high density polyethylene (HDPE) pipe lines to provide reclaimed wastewater from its Kahului cannery to HC&S where it was used for seed cane irrigation. The cannery is no longer in operation since MLP ceased cultivating pineapple; thus, the distribution system is not being utilized at this time. These pipe lines are 20,000 ft in length and connect to a reservoir that currently stores stream water. HC&S uses approximately 1.8 mgd of stream water to irrigate seed cane in this region.

The MWWRD could upgrade the Wailuku-Kahului WWRF to R-1 and construct a pipe line to the cannery site. The pipe line could then be connected to the existing MLP lines. The main benefit is that recycled water could be used to irrigate HC&S's seed cane rather than stream water. While the use of R-2 water for sugar cane irrigation is allowed by DOH regulations, HC&S has indicated a preference for R-1 water to address potential safety concerns of workers who would come in direct contact with the recycled water. The 1.8 mgd of stream water could be left in the central Maui streams and potentially help recharge the lao and

Waihee aquifers. Nearby properties could utilize an additional 0.2 mgd of R-1 water. Additional end users include Kahului Elementary School, Maui High School, the Kahului Community Center and Park, and the Hale Mahaolu senior housing project. All properties currently utilize potable water for landscape irrigation; they also use spray irrigation systems, which are required by DOH regulations to use R-1 quality water.

Mutual cooperation is needed between multiple parties to insure success, and HC&S must support the use of recycled water. MLP must agree to sell the existing HDPE pipe lines to the County of Maui at a reasonable price. The County of Maui must upgrade the Wailuku-Kahului WWRF. Finally, the County of Maui must also act in accordance with the "Avoided Cost" clause in Chapter 20.30 of the Maui County Code, thus allowing HC&S to obtain R-1 water at a cost that does not exceed the price it currently pays for stream water.

# 4.1.2. Potential Water Reuse Opportunities at Private Maui County Developments

There are a number of planned developments that are not near existing County of Maui wastewater infrastructure. These developments will need to construct their own wastewater reclamation facilities or invest in wastewater collection and R-1 distribution system improvements. Below are descriptions of a few future planned developments on Maui.

#### The Villages of Leialii

The Villages of Leialii is a planned affordable housing project in west Maui under the authority of the Hawaii Housing Finance and Development Corporation. It encompasses 1,000 acres of State land. The Environmental Impact Statement for the project was accepted by Governor Neil Abercrombie in December 2012 and the first phase of the project is scheduled to commence in 2016. Single-family and multi-family residential housing, neighborhood parks, a mixed-use town center and two elementary schools are proposed for the project.

Two options are being evaluated for the treatment and reuse of the development's wastewater. One option calls for the construction of sewer infrastructure to send the wastewater to the Lahaina WWRF. Recycled water distribution infrastructure would also need to be built to convey R-1 water back to the development where it could be used to irrigate common areas and open spaces. Another option is to construct a small decentralized WWRF for landscape irrigation within the project's boundaries. Up to 1.25 mgd of recycled water could be available for reuse at this planned development (Belt Collins Hawaii LLC, 2012).

local markets in the State sell imported produce irrigated by recycled water. One issue that must be addressed for this application is that a concerted public outreach program must be launched to ensure the support of the farming community in regards to using recycled water on their crops. The main concern expressed by farmers is that the general public may be hesitant to purchase food crops that have been in direct contact with recycled water due to the fear that pathogens or other harmful constituents may be present in the recycled water. As a result, some agricultural customers have restricted use of recycled water to ornamental, seed, or orchard crops.

This concern may be compounded by new regulations concerning food safety that would require farmers to monitor the quality of their water. In January 2012 the United States Food and Drug Administration (FDA) released two of five proposed draft rules tied to the Food Safety Modernization Act (FSMA) (Satran, 2013). The new regulations may result in new restrictions or reporting requirements for irrigation water sources.

Currently, there is limited use of recycled water for agricultural irrigation in the State. However, there are irrigation projects that have great potential for replacing or supplementing their existing water sources with recycled water. On Maui, the use of recycled water would greatly benefit the large sugar cane fields, which primarily use stream water for irrigation. Doing so could potentially help restore stream flows, recharge aquifers and make more stream water available for other uses.

## 5.2. Public Support

An important consideration for all water reuse projects is public support. The lack of public support can be a monumental barrier for the implementation of water reuse projects. Water reuse programs that do not have a sustained educational component run the risk of public opposition and may be doomed for failure. The former Public Education Officer with the IRWD aptly stated the need for public education in the 1998 text book: <u>Wastewater Reclamation and Reuse</u>. "People's perceptions and attitudes are forces that can mean the difference between success or failure – survival or extinction. This is a reality that must be recognized in the planning and implementation of every water reuse program." (Asano, 1998).

The MWWRD and the HBWS have the two most progressive water reuse programs in the State. Both agencies realized that public acceptance was critical for their water reuse programs to succeed and have invested substantial time and resources towards proactive public education and community involvement. Both agencies give presentations and tours of water recycling facilities to politicians, schools, the general public, community organizations, environmental groups, and new/potential recycled water users.

# 5.6.2. DOH Regulations Pertaining to Discharge of Recycled Water to State Waters

Recycled water is commonly used on the U.S. mainland and in foreign countries for recharging natural wetlands and for in-stream flow restoration. In fact, the federal Bureau of Reclamation encourages the use of recycled water for these purposes. In Hawaii, this type of application of recycled water has historically not been allowed as it is considered an unauthorized discharge to State Waters. Section 11-54-04 <u>Basic water quality criteria applicable to all waters</u>, subpart (a) states that all waters shall be free of substances attributable to domestic, industrial, or other controllable sources of pollutants, including substances or conditions or combinations thereof in concentrations which produce undesirable aquatic life Additionally, Title 11-54, HAR establishes water quality standards for parameters like nitrogen and phosphorous and a prohibition of waste discharges to certain types of water bodies. To allow discharges of recycled water to some water bodies, revisions to Title 11-54 will be required. (HAR 11-4).

A significant hurdle that lies within Title 11-54, HAR is that the discharge of recycled water to irrigation ditches may be prohibited if the irrigation ditches inevitably overflow into State Waters. For example, HC&S on the island of Maui utilizes ditches to convey irrigation water (primarily diverted stream water) to its cane fields. Many of these ditches are considered State Waters since they have the potential of flowing to natural steams, gulches, or the ocean. So, while the MWWRD has viewed sugarcane irrigation as a potential use for recycled water generated at its existing or future Wailuku-Kahului WWRF, HC&S is concerned that Section 11-54-04 will be an obstacle.

However, Title 11-54 was amended in October, 2012 and Section 11-54-5.1 pertains to flowing waters and reads: "All flowing waters in classes 1 and 2 in which water quality exceeds the standards specified in this chapter shall not be lowered in quality unless it has been affirmatively demonstrated to the director that the change is justifiable as a result of important economic or social development and will not interfere with or become injurious to any assigned uses made of, or presently in, those waters" (HAR 11-54).

This section could be the basis of allowing recycled water to be introduced into irrigation ditches that are considered State Waters. The benefits of a large agricultural user such as HC&S substituting recycled water for at least a portion of the diverted stream water it uses are significant. Stream flows could be restored, which may also significantly increase groundwater recharge of freshwater aquifers (Oki, 2010). This fact could be important for designated aquifers such as Maui's lao Aquifer that has been threatened in recent years due to over pumping and insufficient recharge rates.

#### 5.8.2. Recommendations

- 1. Water reuse programs should designate a program coordinator to champion water reuse and implement water reuse initiatives.
- 2. All recycled water purveyors should implement a proactive public education program to promote that recycled water is a safe and viable water resource. Public education programs must be sustained throughout the duration of the water reuse program.
- 3. Political support is required for acquiring funding for water reuse projects. Politicians including County administrative officials, County council members and State legislators must be educated to gain their support.
- 4. Since agricultural irrigation with recycled water has such great potential in Hawaii, local farmers must be educated on the benefits and safety aspects associated with recycled water irrigation. Mainland farmers who utilize recycled water for direct contact irrigation of food crops should be consulted and brought to Hawaii to share information with local farmers. (These mainland food crops, irrigated with recycled water, are shipped to Hawaii and are common items sold in our grocery stores.)
- 5. Municipal recycled water purveyors should utilize SRFs as a primary funding mechanism for the design and construction of recycled water facilities since the DOH has placed a priority for such facilities to receive SRF support. Other funding sources such as the BOR Title XVI program should be explored.
- 6. County Planning Commissions should require new developments to contribute funding to create or improve recycled water facilities. When possible, a specific formula shall be used to calculate fair share contributions.
- 7. Since water reuse addresses water supply and wastewater treatment and disposal issues, a broad customer base – beyond just the recycled water users – should help fund the recycled water program. This customer base could include the recycled water users, potable water users, sewer users, property taxes, the visitor industry and new developments.
- 8. The price of recycled water should be set to encourage its use. Recycled water should not be more expensive than other water sources, particularly drinking water. Subsidies (such as from potable water users or sewer users) can assist in keeping the price of recycled water competitive with competing water sources.

9. Recycled water purveyors who have constructed distribution systems must dedicate a trained staff to properly operate and maintain the distribution infrastructure.

## 6. FEDERAL FUNDING OPPORTUNITIES

6.1. Federal Funding Sources Recommended for Recycled Water Distribution Construction

# 6.1.1. Bureau of Reclamation, Title XVI, Waste Reclamation and Water Reuse

Title XVI gives the Secretary of the Interior the ability to undertake programs to investigate and identify opportunities for the reclamation and reuse of wastewater and naturally impaired ground and surface water. The act authorizes the Bureau's wastewater reclamation and reuse projects, allowing the participation in numerous reuse projects and feasibility studies and providing a program for Federal participation via cost sharing of specific water reuse projects.

To be eligible to receive Federal funding via Title XVI, a project must take place in the seventeen Western States or Hawaii. Projects also require an appraisal investigation and feasibility report to be completed by the Secretary of the Interior, who must also determine if the non-Federal project sponsor is financially capable of funding its share of the project. A cost-sharing agreement must also be approved by the Secretary of the Interior with the non-Federal sponsor, committing the sponsor to annually funding its appropriate share of the project's construction costs. Construction funds may only be supplied for projects specifically authorized by Congress, where the Bureau typically makes funding recommendations on authorized construction projects in the President's annual budget request.

The program gives partial grants with construction costs shared between the Federal government and local, non-Federal project sponsors; the Federal share is limited to 25% of the total project cost with a maximum of \$20 million per project, dispersed through non-reimbursable grants with an average of \$2.1 million. A maximum Federal share of up to 50% of the total demonstration project may be authorized if the Secretary determines that the project is not feasible without such funding. In all cases, the non-Federal project cost.

Projects proposed for Title XVI funding must be used for the following purposes: water for municipal and industrial water supplies (non-potable and indirect potable uses), irrigation, groundwater recharge, fish and wildlife enhancement, and outdoor recreation. Funding may also be used for water quality improvement features, should such improvements be required to allow reuse.

For further information, contact the U.S. Department of the Interior, Bureau of Reclamation at:

https://www.cfda.gov/index?s=program&mode=form&tab=step1&id=b0164f8e a66d74b230b480615150d085 (USDOI, 2013)

#### 6.1.2. Clean Water State Revolving Fund Loan Program

The Clean Water SRF programs, co-funded by the federal government (80%) and state governments (20%), provide funding for water quality protection projects such as wastewater treatment, nonpoint source pollution control, watershed and estuary management, and gray water recycling through low or no-interest loans. These loans can fund 100% of a project's cost and provide flexible repayment terms for up to 20 years. The repaid funds are then recycled back into the fund to other water quality projects. The Clean Water SRF annually provides approximately \$5 billion in water quality project funding at a 0.75% interest rate in seven different types of assistance: making loans, buying or refinancing existing local debt obligations, guaranteeing or purchasing insurance for local debt obligations, guaranteeing SRF debt obligations, providing loan guarantees for sub-state revolving funds, earning interest of fund accounts, and supporting reasonable costs of administering the SRF. States cannot use the SRF as a source of grants because projects that receive SRF funding are publicly-owned.

The Clean Water Act of 1987 sets standards for performance levels of municipal sewage treatment plants to prevent the release of harmful waste into surface waters; to assist municipalities with achieving those performance levels, it also authorizes the Clean Water SRF to fund point source, nonpoint source, and estuary projects. The SRF program provides assistance in constructing publicly-owned municipal WWTPs, implementing nonpoint pollution management programs, and developing and implementing management plans under the National Estuary Program. In Hawaii, the Clean Water SRF is administered by the Grants Management Section within the DOH Environmental Resources Office.

Eligible recipients for Clean Water SRF funding are any municipality, intermunicipality, interstate, or state agencies. Projects and activities eligible for funding are those needed for constructing or upgrading publicly-owned municipal WWTPs, including devices and systems used in the storage, treatment, recycling, and reclamation of municipal sewage. This encompasses construction or upgrading of treatment plants as well as construction of new collector sewers, interceptor sewers or storm sewers and projects to correct existing problem of sewer system rehabilitation, infiltration/inflow, and combined sewer overflows. The DOH has indicated that preference for SRF loans will be given to projects that contribute to sustainability such as water reuse projects. Operations and maintenance activities are ineligible for funding.

For more information:

<u>http://hawaii.gov/health/environmental/water/sdwb/dwsrf/dwsrf.html</u> or <u>http://water.epa.gov/grants\_funding/cwsrf/cwsrf\_index.cfm</u>. (USEPA, 2013) The Grants Management Section may also be contacted at (808) 586-4294.

## 6.1.3. Rural Utilities Service for Water and Waste Disposal Programs

The Rural Utilities Service Program of the U.S. Department of Agriculture (USDA) provides funding for basic human amenities and to alleviate health hazards and promote the growth of the rural areas of the nation by meeting needs for new and improved rural water and/or waste disposal facilities, including costs of distribution lines and well-pumping. Funds may be used for the installation, repair, improvement, or expansion of rural water and waste disposal facilities, including the collection and treatment of sanitary waste, storm water, and solid wastes. The USDA provides funding through loans and grants for water and waste disposal - loans are the Department's preferred option, while grants are only offered when necessary to reduce the average annual user charge to a reasonable level. Funding of this program was authorized by the Consolidated Farm and Rural Development Act, Section 306, Public Law 92-419, 7 U.S.C. 1926.

Loans and grants are offered to develop storage, treatment, purification, or distribution of water or collection, treatment, or disposal of waste in low-income rural areas. These loans are either offered by or are guaranteed by the USDA for up to 90% of the value when offered by non-Federal lenders and are repayable in 40 years or the life span of the facility, whichever is less. In FY 2011, the Rural Utilities Service Program authorized loans totaling \$1 billion, grants for \$379 million, and guaranteed loans totaling \$32 million; the average assistance totaled approximately \$2 million.

Organizations eligible for Rural Utilities Service Program funding include municipalities, counties, and other subdivisions of a state; associations, cooperatives, and organizations operated on a non-profit basis; tribal agencies and other authorities; and associations, cooperatives, and Indian tribes that are Federally-recognized. USDA's loans and grant programs are limited to communities with a population of no more than 10,000 with poverty and intermediate rate incomes. Loans and grants given through this program are meant to allow communities to meet health and sanitary standards set by the Clean Water Act and Safe Drinking Water Act. For additional information, look up the Gillibrand Water and Wastewater Funding Report, <u>http://www.gillibrand.senate.gov/download/?id=e504c042-6a6d-4365-950b-6606bc7c50aa</u> (Gillibrand, 2012)

## 6.1.4. Army Corps of Engineers Environmental Infrastructure

Beginning in 1992, Congress has authorized the Army Corps of Engineers (USACE) to assist rural and small communities with design and construction of infrastructure for both wastewater and drinking water, as well as projects for surface water protection and development. 75% of a project's total costs are financed federally by Congress while the remainder must be provided by the non-Federal or local sponsors. The specifics of how the USACE manages the non-Federal portion vary from project to project.

Environmental infrastructure projects are not typical missions for the USACE, so no clear eligibility requirements are defined. Congress normally authorizes USACE assistance for projects in a specific location, such as a small city, or a defined geographic location, such as a state or county. Projects are only approved if there is authorization for the work in the specified location and the activity to be undertaken is covered by the authorization.

Contact Information: <u>http://www.usace.army.mil/CEMP/iis/Pages/Home.aspx</u>, referenced in the Gillibrand Report (Gillibrand, 2012), (917) 780-8209

## 6.1.5. Public Works and Development Facilities Program

This program, also known as the Public Works and Economic Development Program (PWED), provides assistance to distressed communities to help attract new industry, encourage business expansion, diversify local economics, and generate and maintain long-term private sector jobs. Projects funded by the program include water and sewer facilities primarily to serve industry and commerce, access roads to industrial parks and sites, port improvements, business incubator facilities, technology infrastructure, development activities, export programs, brown fields sustainable redevelopment, aquaculture facilities, and other infrastructure projects. Activities allowed in these projects include demolition; renovation and construction of public facilities; provision of water or sewer infrastructure; and the development of storm water control mechanisms, such as retention ponds, as part of an industrial park.

Funding for this project has been authorized by the Economic Development Administration Reform Act (Public Law 105-393), which replaces and amends the Public Works and Economic Development Act of 1965 that previously funded the program. PWED assistance totals no more than 50% of the project's total cost. In FY 2004, the program's funding level was set at \$232 million without the need for matching funding, whereas in FY 2009, FY 2010 and FY 2011, funding levels were set at \$240 million, \$133.28 million, and \$158 million, respectively, with 50% fund matching required. FY 2012's funding level has not yet been determined at the time of the writing of this report. Organizations eligible for funding under the act include community and watershed groups; non-profit groups; educational institutions; private landowners; conservation districts; water and wastewater utilities; local governments; and state, territorial, and tribal agencies. All projects proposed must be consistent with an approved regional Comprehensive Economic Development Strategy. Qualified projects must fill a pressing need of the area and be intended to improve opportunities for the creation of businesses, create long-term employment, and benefit long-term unemployed or underemployed persons and low-income families. Projects must also be consistent with the economic development plans of the area.

Additional Information: contact U.S. Department of Commerce, Economic Development Administration: <u>www.cfda.gov</u> program 11.300 or call (202) 482-5628. Catalog of Federal Funding Sources for Watershed Protection: <u>http://cfpub.epa.gov/fedfund/program.cfm?prog\_num=51</u> (USEPA, 2013)

## 6.1.6. Community Development Block Grant Program

The Community Development Block Grant (CDBG) program, sponsored by the Department of Housing and Urban Development, is a flexible program intended to help develop communities by providing housing and a suitable living environment by expanding economic opportunities, especially for persons with low and moderate income rates, and providing resources to address a wide range of unique community development needs. Organizations that receive assistance may direct actions toward neighborhood revitalization, economic development, and provision of improved community facilities and services, with specific activities including acquisition of property; relocation and demolition; public services; and provision of public facilities and rehabilitation of structures: improvements, such as new or improved water and sewer facilities.

The program's funding is authorized by the Housing and Community Development Act of 1974, Title 1, with the funding level for FY 2004 set at \$4.3 million. Since then, the budget has fluctuated - the highest was \$4.45 million in FY 2010, while the current FY 2012 funding level is \$3 million with matching funds not required. Organizations eligible for CDBG program assistance include community and watershed groups, non-profit groups, educational institutions, private landowners, water and wastewater utilities, local governments, and state and territorial agencies. Additional information: Department of Housing and Urban Development at (202) 708-3587 or <u>www.hud.gov/offices/cpd/communitydevelopment/</u> programs (Gillibrand, 2012)

## 6.2. Federal Funding Sources Recommended for Individual Water Reuse Projects

#### 6.2.1. USDA Environmental Quality Incentive Program

The Environmental Quality Incentive Program (EQIP), under the USDA Natural Resources Conservation Service, is a voluntary conservation program that provides financial, technical, and educational assistance to agricultural producers (farmers and ranchers) through contracts up to ten years in length. These contracts provide financial assistance for planning and implementing conservation practices that address natural resource concerns as well as opportunities to improve soil, water, plant, animal, air, and related resources on agricultural land and non-industrial private forestland. 60% of the EQIP is targeted to livestock-related natural resource concerns, while the remainder is dedicated to more general conservation priorities. The EQIP is most available where significant natural resource concerns and objectives are present.

Funding for the EQIP was authorized by the Food, Agriculture, Conservation and Trade Act of 1996. For FY 2004, the project funded \$832 million in contracts, with required matching funding amounts between 25% and 50%. In FY 2011, the EQIP funded approximately \$865 million in contracts. Those eligible for EQIP participation include owners of land in agricultural or forest productions and persons who are engaged in livestock, agricultural, or forest productions on eligible land that have a natural resource concern on the land, such as businesses, community and watershed groups, non-profit groups, educational institutions, private landowners, water and wastewater utilities, state and territorial agencies, and tribal agencies.

For more information and how to apply for EQIP assistance, contact the U.S. Department of Agriculture's Natural Resources Conservation Service at (202) 720-1840 or visit their website at: <u>http://www.nrcs.usda.gov/wps/portal/nrcs/</u> main/national/programs/financial/eqip (USDOA, 2013)

#### 6.2.2. Coral Reef Conservation Fund

The National Fish and Wildlife Foundation's Coral Reef Conservation Fund supports the restoration of damaged reef systems and reduces and prevents damage of reefs and associated habitats (i.e., sea grass beds, mangroves, etc.) through both "on-the-water" and "up-the-watershed" projects, as well as projects that build public-private partnerships to pursue these goals. Projects may address causes of coral reef degradation from inland areas to coastal watersheds to the reefs themselves and surrounding marine environment. In regards to how this program applies to wastewater reclamation, there are concerns that nutrients returned to the ecosystem could be contributing to the growth of invasive algae that can slow the development of coral reefs. Recycling wastewater allows the nutrients in recycled water to play a beneficial role rather than a detrimental one when associated with effluent disposal.

Funding for this program was authorized by the Coral Reef Conservation Act of 2000. Funding levels for FY 2003 were set at \$900,000 in grants, while for FY 2012 the total amount of all awards were not to exceed \$500,000, with the majority of awards falling between \$20,000 and \$70,000. All proposed projects must include matching funds from the non-Federal project partners at a minimum ratio of 1:1, though ratios of 2:1 are preferred.

For further information, call (202) 857-0166, or you can visit either <u>www.nfwf.org/coralreef/</u> or <u>http://cfpub.epa.gov/fedfund</u> (USEPA, 2013)

### 6.2.3. Clean Water Act Section 319: Nonpoint Source Management Program

The Clean Water Act of 1987 amendments established Section 319 (Nonpoint Source Management Program) to address the need for greater Federal leadership in focusing state and local nonpoint source efforts. States, territories, and Native American tribes may receive grants from Section 319 to support a wide variety of activities such as technical assistance, financial assistance, education, training, technology transfer, demonstration projects, and monitoring to assess the success of specific nonpoint source implementation projects.

Section 319 is sponsored by the EPA and administered by the CWB. In Hawaii, the Section 319 program is able to offer grants with 25% fund matching that may be fulfilled with cash or with the value of in-kind services.

Grants from this source of funding were utilized by the Hawaii Water Environment Association in 2000 to administer a statewide educational outreach program to gain support for water reuse projects; the educational video "Water Recycling in Hawaii" was produced as part of this effort. In 2003, Haleakala Ranch on Maui also utilized this program for the development of its sedimentation control project utilizing R-1 recycled water.

For additional information, call the CWB at (808) 586-4309, http://hawaii.gov/health/environmental/water/cleanwater/prc/index.html (USDOA, 2013) or visit the EPA's website at <u>http://www.epa.gov/owow\_keep/NPS/ cwact.html</u> (USEPA, 2013)

## 6.2.4. Coastal Services Center Cooperative Agreements

The National Oceanic and Atmospheric Administration (NOAA) directs the conservation and management of coastal resources via a variety of programs. The Coastal Services Center (CSC) is established within NOAA to support the environmental, social, and economic well-being of the coast by linking people with information and technology to assist in conservation efforts. The goal of the CSC is to be a resource to those who manage and care for the nation's coasts. In FY 2004, the CSC supported efforts and activities in the following areas: landscape characterization and restoration, coastal remote sensing, information resources, Pacific Services Center, and integrated ocean observing systems. Much like the Coral Reef Conservation Fund, the connection between the CSC and wastewater reclamation is the concern that nutrient additions can have detrimental effects on aquatic ecosystems like the coastal areas the CSC seeks to protect.

Funding levels for this program fluctuate greatly and are awarded as grants: FY 2004 - \$3 million, FY 2009 - \$25 million, FY 2011 - \$0.5 million, and FY 2012 - estimated \$10.4 million. Awards ranged from as low as \$40,000 to as high as \$3.5 million; as they are grants, there is no matching funding required. Eligible organizations include businesses, community and watershed groups, non-profit groups, educational institutions, conservation districts, water and wastewater utilities, local governments, state and territorial agencies, and tribal agencies.

For more information, call (843) 740-1222 or go to <u>www.csc.noaa.gov</u>, search for Cooperative Agreements or go to <u>http://cfpub.epa.gov/fedfund</u> /program.cfm?prog\_num=13 (USEPA, 2013)

#### 6.3. Federal Funding Recommended for Water Reuse Education

#### 6.3.1. Environmental Education Grant

The Environmental Education Grant Program, under the EPA, strives to promote environmental education, environmental stewardship and the development of knowledgeable and responsible students, teachers, and citizens. This grant program provides financial support for projects that design, demonstrate, and/or disseminate environmental education practices as well as target techniques specified by the EPA. Two rounds of environmental education grants are expected to be awarded by the EPA from the ten regional offices. Funding levels for this grant program remain relatively stable; funding was \$3.4 million for FY 2009 and 2010 and an estimate of funding is \$3.5 million for FY 2012. Typical awards were between \$15,000 and \$100,000. While this is a grant program, a 25% non-federal matching fund is required for any project receiving financial assistance in this manner, which may be provided in cash or by in-kind contributions and other non-cash support. Organizations eligible for funding include non-profit groups, educational institutions, state and territorial agencies, and tribal agencies.

For more information, go to <u>http://cfpub.epa.gov/fedfund/</u> <u>search2.cfm?prog\_num=25</u> (6.4) or <u>www.cfda.gov</u> (Search on program 66.951)

## COMMISSION ON WATER RESOURCE MANAGEMENT

### STATE OF HAWAI'I

'Iao Ground Water Management Area High-Level Source Water Use Permit Applications and Petition to Amend Interim Instream Flow Standards of Waihe'e, Waiehu, 'Iao, & Waikapū Streams Contested Case Hearing

- 41 · \*

Case No. CCH-MA06-01

**CERTIFICATE OF SERVICE** 

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## **CERTIFICATE OF SERVICE**

I HEREBY CERTIFY that on this date I caused a true and correct copy of the

foregoing to be served on the following persons by facsimile, hand-delivery or U.S. mail,

postage prepaid (as indicated below) to their respective addresses:

	HAND- DELIVERED	FAXED	MAILED
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