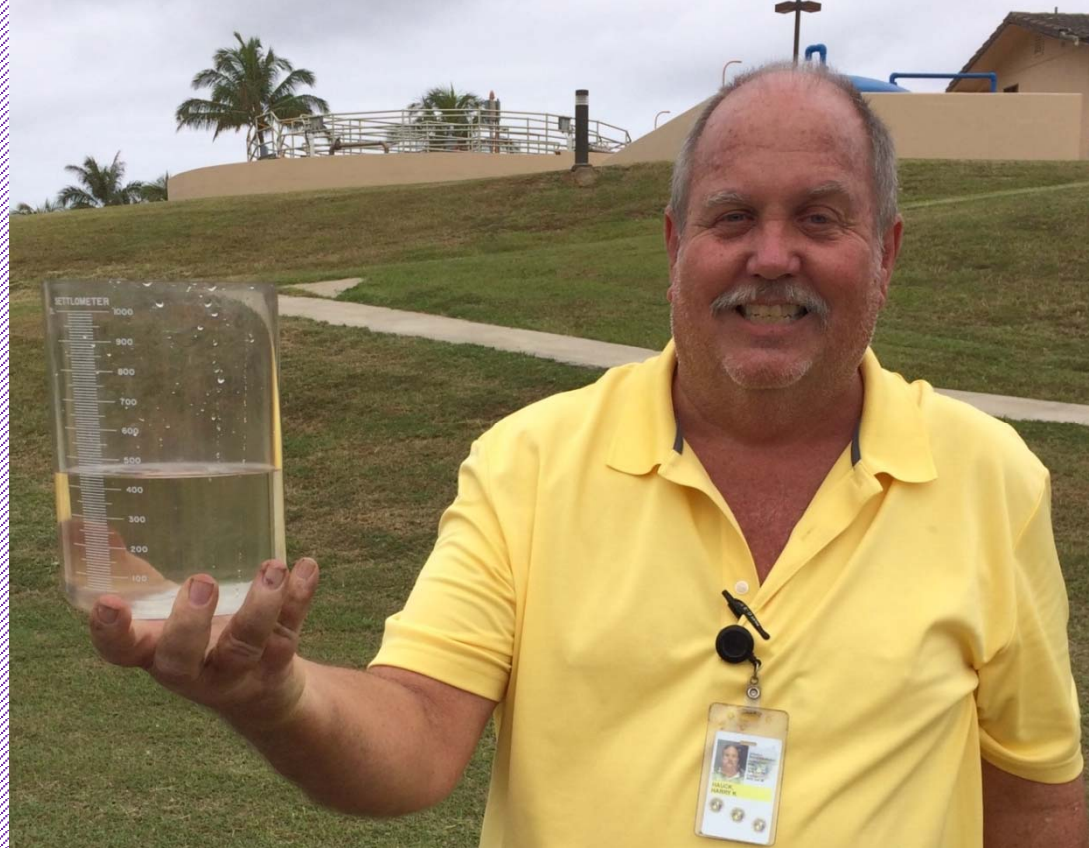


Recycled Water Use in Hawaii



Pacific Water Conference – Feb 2018
DOH Wastewater Branch

Overview

RW Data

**Reuse
Goal**

**County
Updates**

**New RW
Users**

**Rule
Changes**

Enforcement

BMPS

**Crops &
Food**

RW DATA COLLECTION



Since 2015 - WWTPs report



Amount SUPPLIED for use



Not the volume produced



Mahalo to operators!

Maui County Operators/Managers

NAME	PLANT(S)
Frank Rodrigues	Manele Bay, Makena Resort
Lem Bacalso	Lanai Auxiliary
John Kadowaki	Pukalani
Sal Marino	Midway Center
Albert Hahn & Scott Rollins	Wailuku, Kihei, Lahaina, Kaunakakai, & Lanai

Kauai County Operators/Managers

NAME	PLANT(S)
Ryan Saiki	Hyatt Kauai, Poipu
Eric Moriguchi	Lihue
Mario Mararagan	Wailua
Peter Honjo	Waimea
Herman Santos	Lihue-Puhi
Brad Suizu	Princeville

Hawaii County Operators/Managers

NAME	PLANT
Keary Shaw	Kalahuiipuaa
David Thomas	Kohanaiki
Stephen Green	Waikoloa
Brian Lamb	Keahole Airport
Dexter Alpiche	South Kohala
Paul Balberde	Waimea Parker Ranch
Jon Kawamura	Heeia
Napua Springer	Kaiser-Kona

Oahu Operators/Managers

NAME	PLANT(S)
Shantelle Clark	Turtle Bay Resort, Waiawa Correctional Facility
Jeff Tyau	Laie
Shane Lee	Kunia
Aureana Nguyen	Kaneohe MC Base
Catherine Soriano	Honouliuli
Jan Reyes	Schofield

2016 LIHUE-PUHI R-1

<i>MONTH</i>	<i>MIL GAL</i>
---------------------	-----------------------

Jan	11.3
-----	------

Feb	11.0
-----	------

Mar	12.0
-----	------

Apr	11.3
-----	------

May	11.7
-----	------

Jun	11.6
-----	------

Jul	12.2
-----	------

Aug	12.4
-----	------

Sep	11.6
-----	------

Oct	12.0
-----	------

Nov	11.7
-----	------

Dec	13.0
-----	------

<i>TOTAL</i>	141.8
---------------------	--------------

0.4 mgd



Factors Affecting RW Supplied for Use

Weather – demand for RW

Equipment Malfunctions

Diversion of Off-Spec Water

RW Use in State of Hawaii

Year	RW Use (mgd)	% Increase
2015	16.3	n/a
2016	17.2	5.5%
2017	18.3	6.4%

County % Population %RW Use of State

County	Population	RW Use
Oahu	69%	61%
Maui	12%	21%
Kauai	5%	11%
Hawaii	14%	6%

Type of RW Supplied

RW

2015

2017

R-1

87%

89%

R-2

13%

11%

R-3

.3%

0.3%

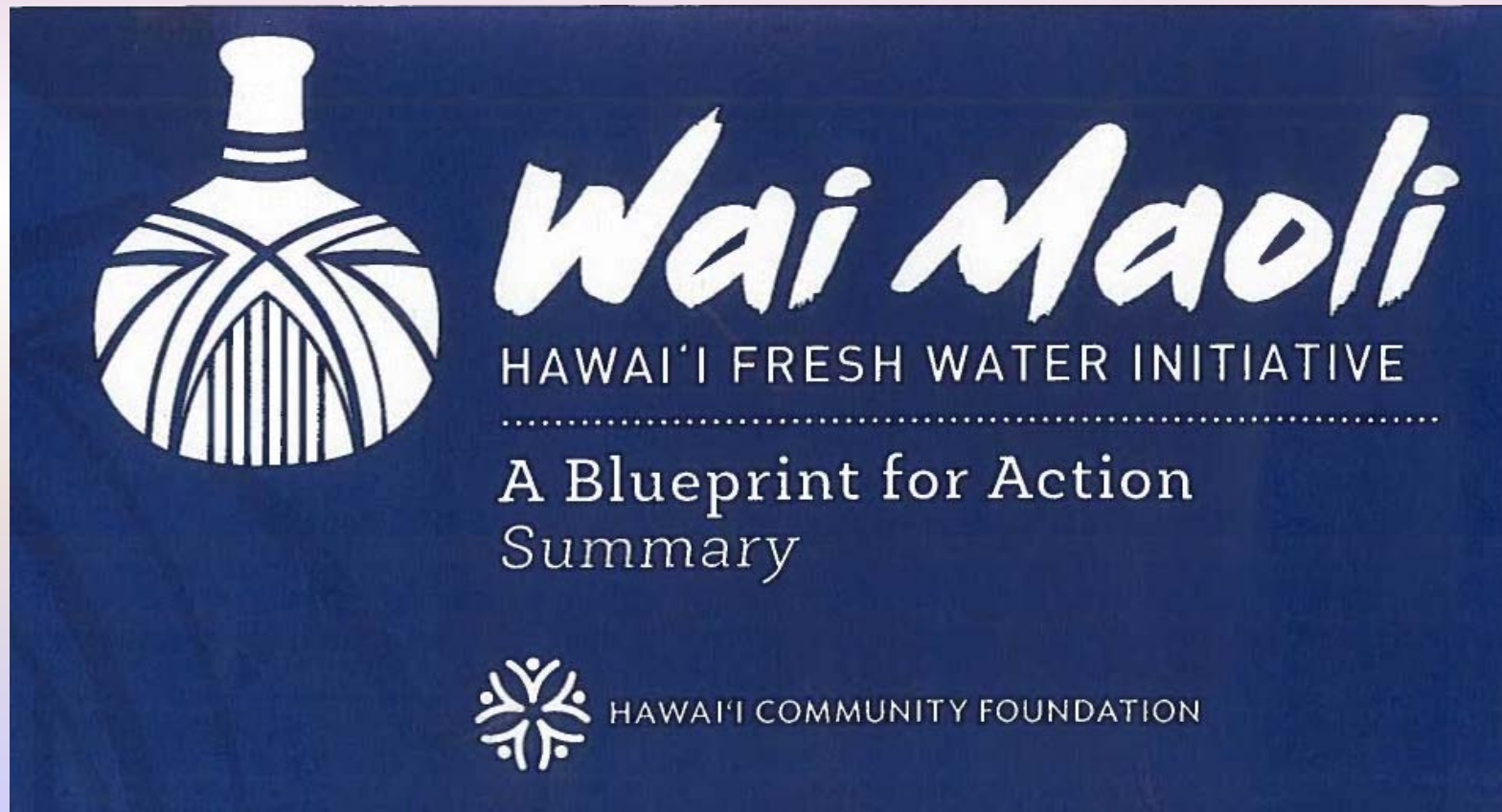
Recycled Water Goals



Reuse Goal for Hawaii

30 mgd by 2030

Add 1 mgd per year for next 13 years



Fresh Water Council's Strategies

1

Revisit Graywater Guidelines

2

Decentralized water treatment

3

**Reuse infrastructure,
dual plumbing**

County Updates

Courtesy of:

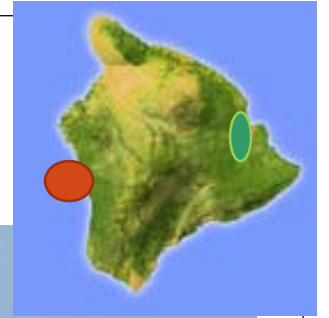
Scott Rollins, Al Hahn – Maui

Jason Kagimoto – Kauai

Curtis Bailey – Hawaii County

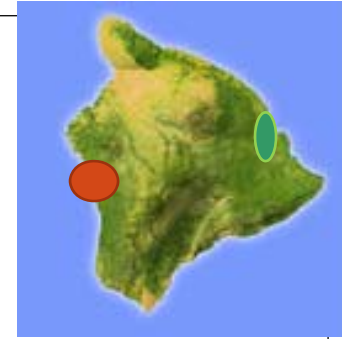
Barry Usagawa – Oahu BWS

HAWAII COUNTY – Kealakehe



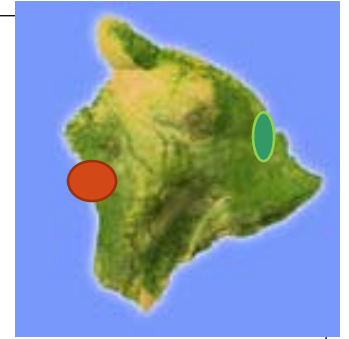
- **R-1 plant by Apr 2020**
- **1.8 mgd, Cost: \$54 million**
- **EIS process underway**
- **Design to start ~ March 2018**

Potential R-1 Users



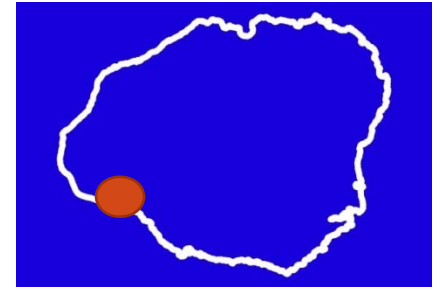
- **Old Kona Airport Park**
- **Queen Liliuokalani Children's Ctr**
- **Honokaa Harbor**

R-1 distribution line



- **Queen Kaahumanu widening**
- **County distribution line installed so no need to excavate twice**
- **Line N of plant to Kohanaiki GC**

KAUAI COUNTY -Waimea R-2 Plant



- **Design: .7 mgd; Actual: ~.2 mgd**
- **Working on turbidity issues**
- **Goal: Produce R-1**

Potential Waimea R-1 Users

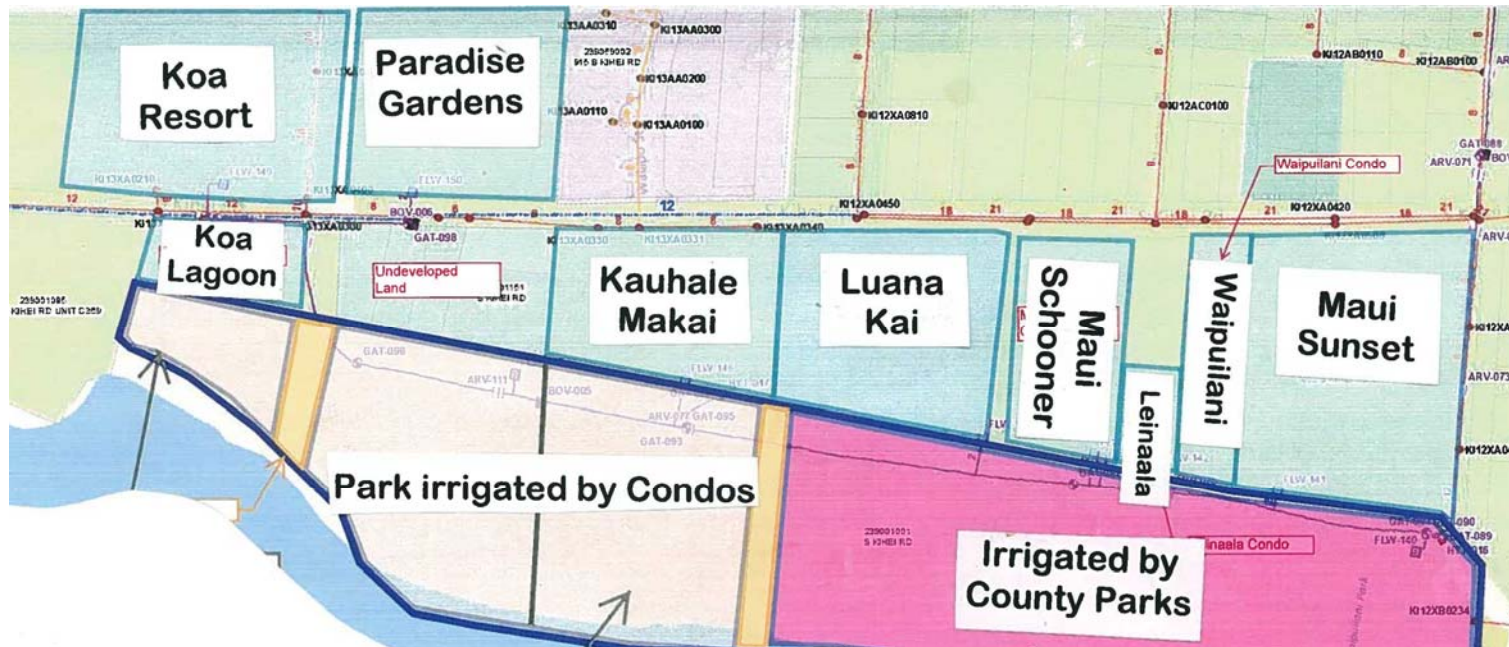


- **Sports fields, school, hospital, church cemetery.**

MAUI COUNTY – Kihei

1.6 mgd supplied in 2017

- **R-1 for condominiums**



- Second 1 mil gal tank ~ May 2018
- **Add'l tank & lines → 3.6 mgd**

MAUI COUNTY: Lahaina



1.6 mgd supplied in 2017

- **Siting 1 mil gal storage tank to serve 5 more resorts**



Kaanapali 36-hole GC uses 1 mgd R-1

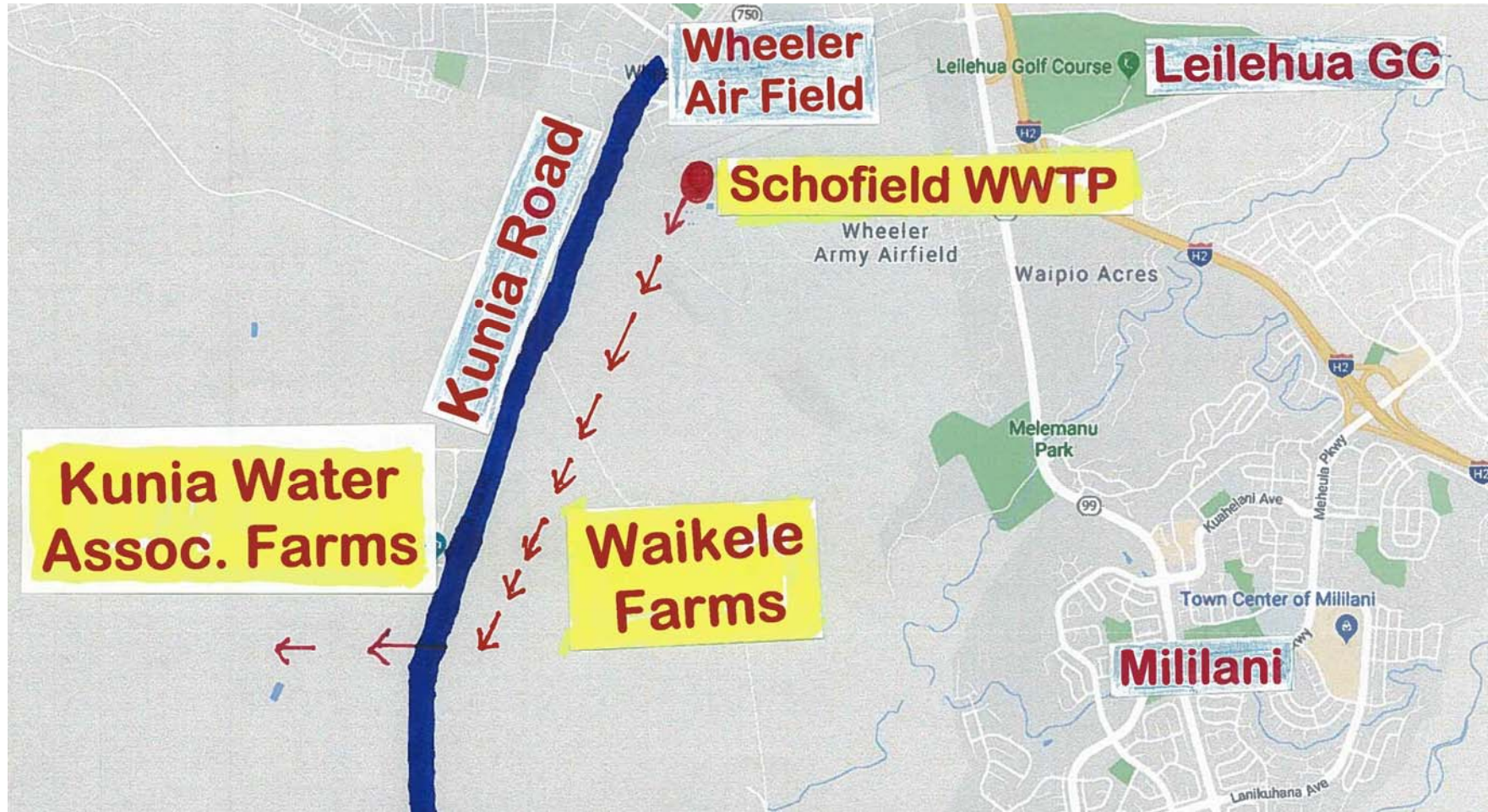
MAUI: Makena Resort



- **R-1 not used – under renovation
(~ 28,000 mgd used in 2016)**

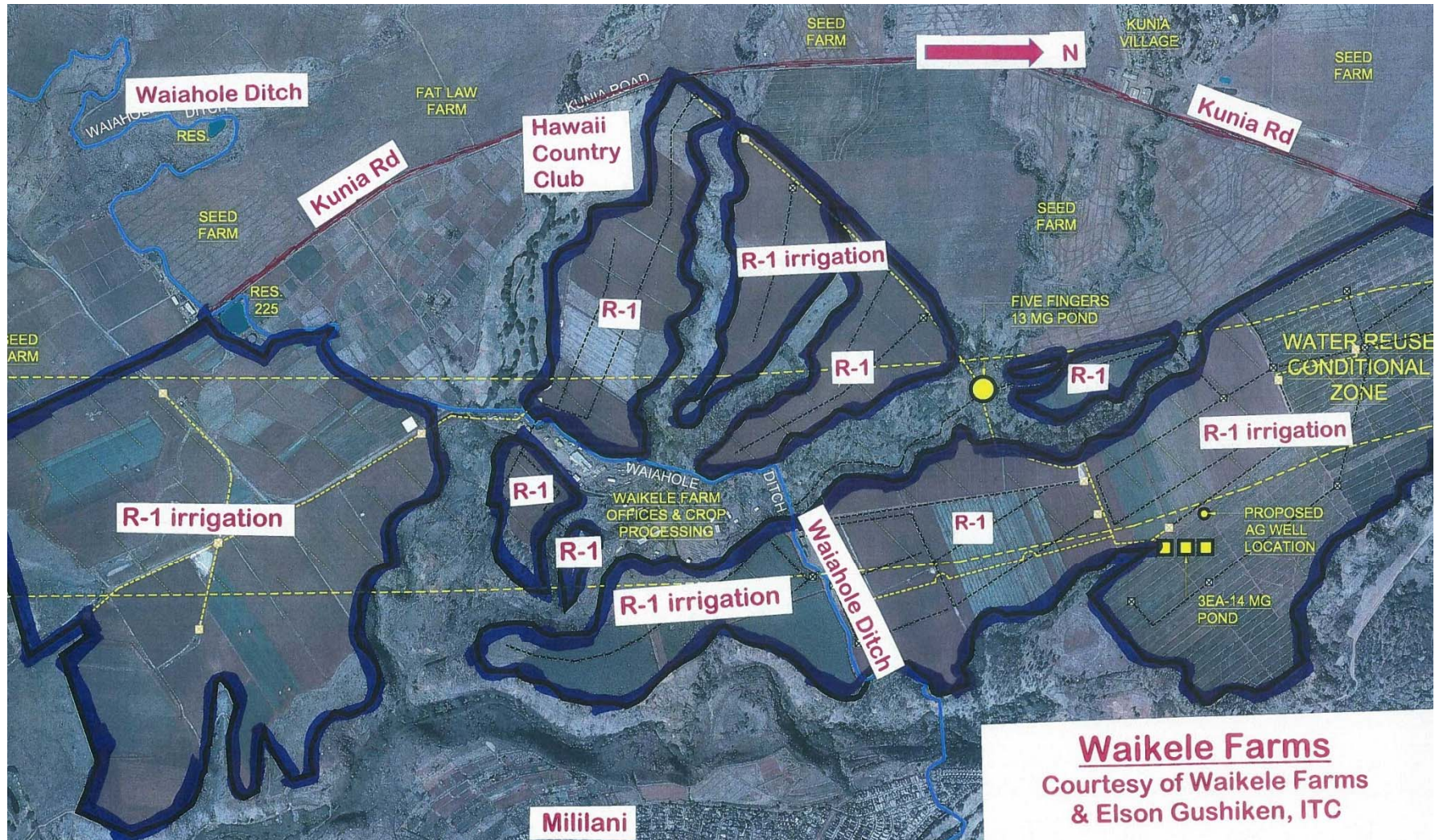


OAHU: Waikele & KWA Farms



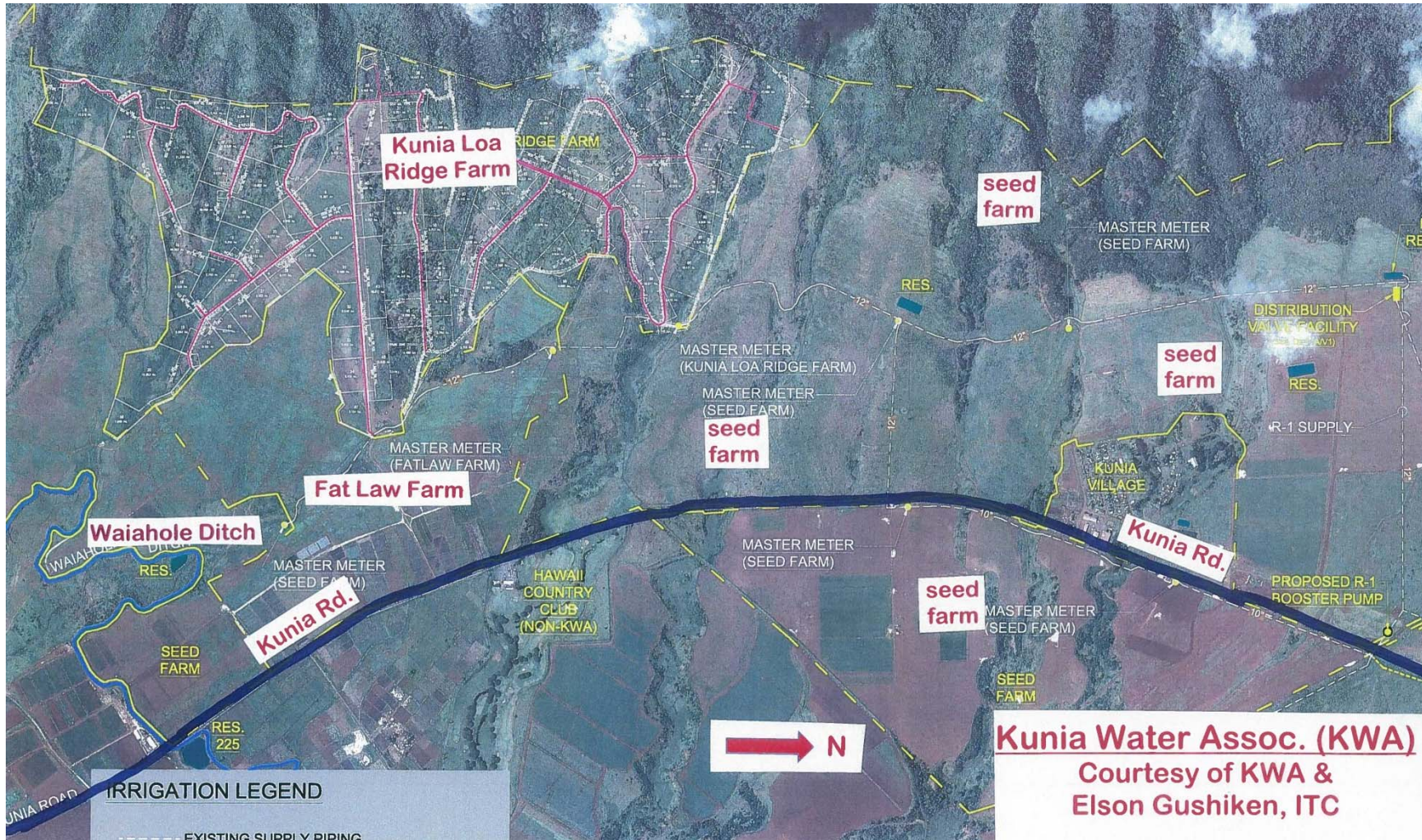
TOTAL: 5,500 acres, 2.3 MGD R-1

OAHU: Waikele Farms



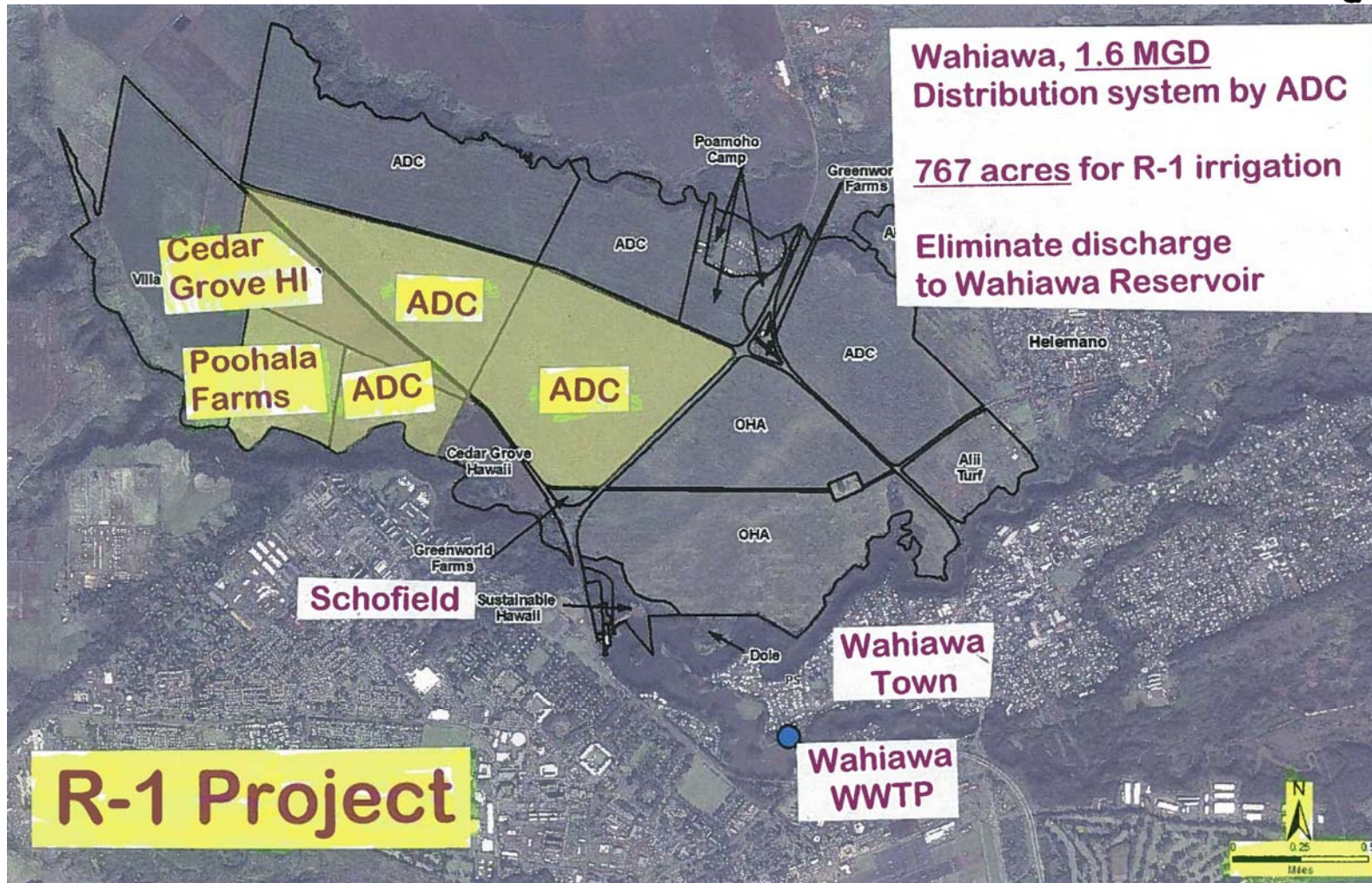
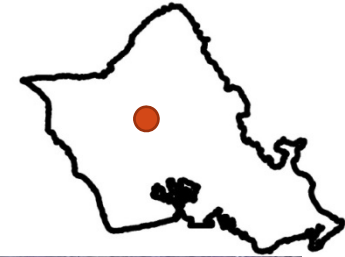
2,800 acres, 1.15 MGD R-1

OAHU: Kunia Water Assoc.



2,700 acres, 1.15 MGD R-1

OAHU: Wahiawa



Wahiawa, 1.6 MGD
Distribution system by ADC

767 acres for R-1 irrigation

Eliminate discharge
to Wahiawa Reservoir

R-1 Project

Wahiawa
Town

Wahiawa
WWTP

Schofield

Cedar
Grove HI

Poohala
Farms

ADC

ADC

ADC

ADC

ADC

ADC

ADC

OHA

OHA

Dole

PS

Poamoho
Camp

Greenwor
Farms

Helemano

Aili
Turf

Cedar Grove
Hawaii

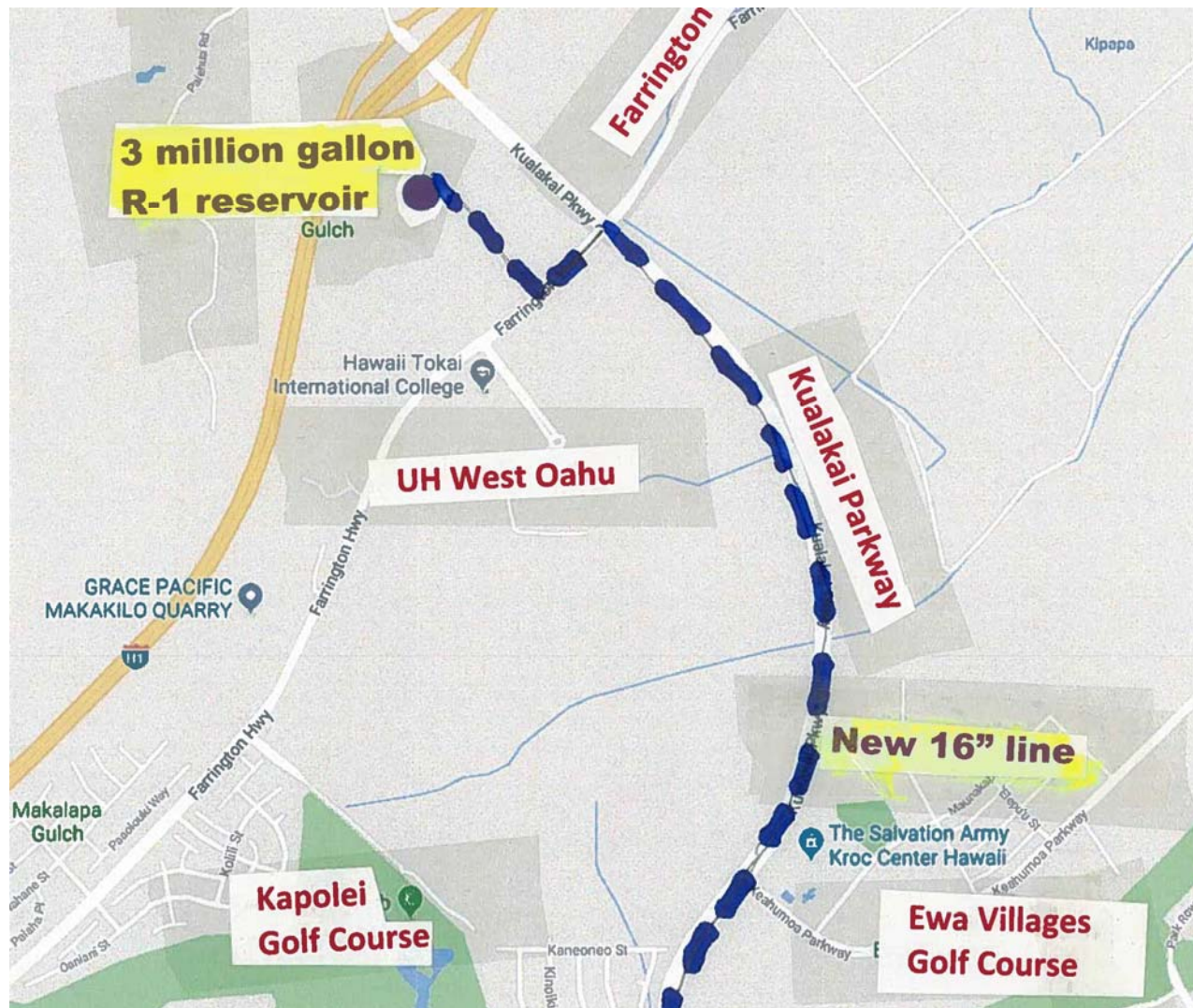
Greenworld
Farms

Sustainable
Hawaii

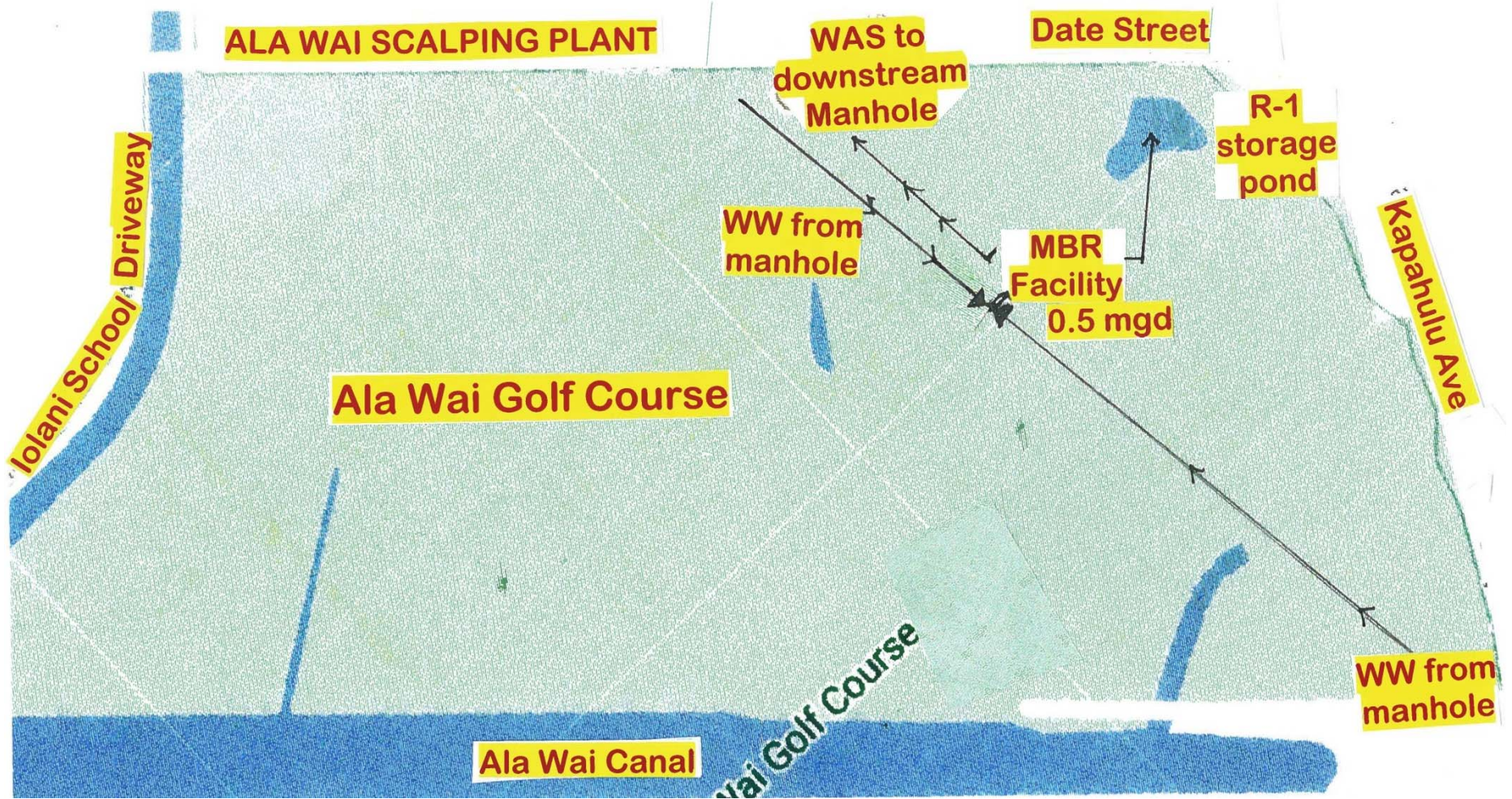
Villa



OAHU: E Kapolei 3.0 MG R-1 Reservoir, 10,800 LF 16" line



OAHU: Ala Wai Golf Course Scalping Plant



OAHU: Ala Wai GC Plant



Feasibility study

**WW chloride
study**

**Public outreach to
neighborhood
boards**

**Draft EA in Feb
2018**



**Recent
RW Users
(2016 & on)**

MAUI - Kihei

<u>Approval</u>	<u>Project</u>	<u>Acres</u>	<u>GPD</u>
04/27/16	Waipuilani Condo	0.4	1,300
08/03/16	Leinaala Condo	0.2	640
09/21/16	Kihei Bikeway Ph 2	1.0	3,600
04/20/17	Paradise Gardens	2.6	21,000
06/05/17	Luana Kai Condo	1.6	6,200
01/16/18	Maui Schooner	1.0	4,120
01/16/18	Koa Resort	2.6	10,280
	TOTAL	9.4	47,140

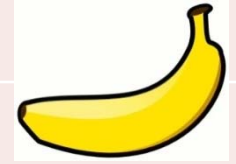
Crops & Food

CROPS GROWN WITH RECYCLED WATER

FARM



CROPS

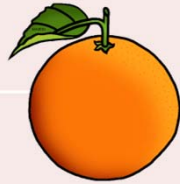


Laie

Thai basil, bananas

Waiawa Correctional Facility

citrus, banana trees, Christmas trees



Waikele

bananas, cabbage, won bok, watermelon



Kunia Water Assoc

avocado, sugar, taro, won bok, bananas



Kunia Loa Ridge

orchards, trees, flowers



Dole ditch

pineapple, papaya, coffee, cacao, mango

Best Management Practices

RW Best Management

**Minimize
public
exposure**

**Component
ID**

**Warning
signs**

Training

**RW manager
routine
checks**

Component Identification

Identify:

- **Pipes, valves, valve covers, pumps, backflow devices**
- **Manhole covers, fire hydrants, sprinkler heads**



Component ID



- **Paint purple (Pantone 512)**
- **Label, tag “Recycled Water”**

Warning Signs

~8.5" x 11"

Written
w/ Icon

Spacing
~ 250 ft

Post around
impoundments

On RW
trucks



Replace damaged/obscured warning signs.



Train Workers, Employees

- **Don't drink RW**
- **Minimize contact; wash w/ soap & DW if contact occurs**
- **RW component identification**
- **No standard hose bibs allowed**

Recycled Water Manager



- **Designated by owner**
- **Good knowledge of RW systems**
- **Maintain system & schedule**
- **Log maintenance work**
- **Implement BMPs**

Enforcement

Field Citations

First Violation: \$200

Second Violation: \$500

**Third Violation: Formal
enforcement action possible.
Fines up to \$25,000 per day.**

R-1 spill - \$200



Changes to Hawaii Administrative Rules

Plant Monitoring & Reports

§11-62-28 Required monitoring (eg: DO, pH, etc.) Keep data onsite for at least 2 years. (reduced from 5)

§11-62-62(b) Quarterly sludge pumping report submittal no longer required. Maintain records onsite for 2 years but no need to submit.

Required Reports

Semi-Annual BOD/TSS

Jan – Jun data: Due Jul 30

Jul – Dec data: Due Jan 30

Sludge pumping report NOT reqd.

RW Plants:

Annual RW supplied for use: Feb 19

Independent Lab

§11-62-06(d) Effluent testing for private wastewater systems shall be performed by an independent lab. Tabulate results and submit the independent lab's data results. (BOD/TSS)

Submitting Reports

Via Email:

wwb@doh.hawaii.gov

Via Mail:

**2827 Waimano Home Rd. # 207
Pearl City, HI 96782**

Other parameters

RW data on CI residual, turbidity, UV dose, UV transmittance need not be submitted. Keep 2 years worth of data on site.

Data to be reviewed during inspections.

Questions?

<http://health.hawaii.gov/wastewater>

(808) 586-4294

april.matsumura@doh.hawaii.gov

New address:

**2827 Waimano Home Rd #207
Pearl City, HI 96782**