

IT Committee

From: Eric Nakagawa <Eric.Nakagawa@co.maui.hi.us>
Sent: Monday, January 31, 2022 9:08 AM
To: IT Committee
Subject: IT-36 Wastewater Infrastructure Needs
Attachments: 2022.01.31 Infrastructure Committee.pdf

Aloha Chair and Members,

Attached is a presentation for the subject project for your information.

Thanks,
Eric Nakagawa, P.E.
Director

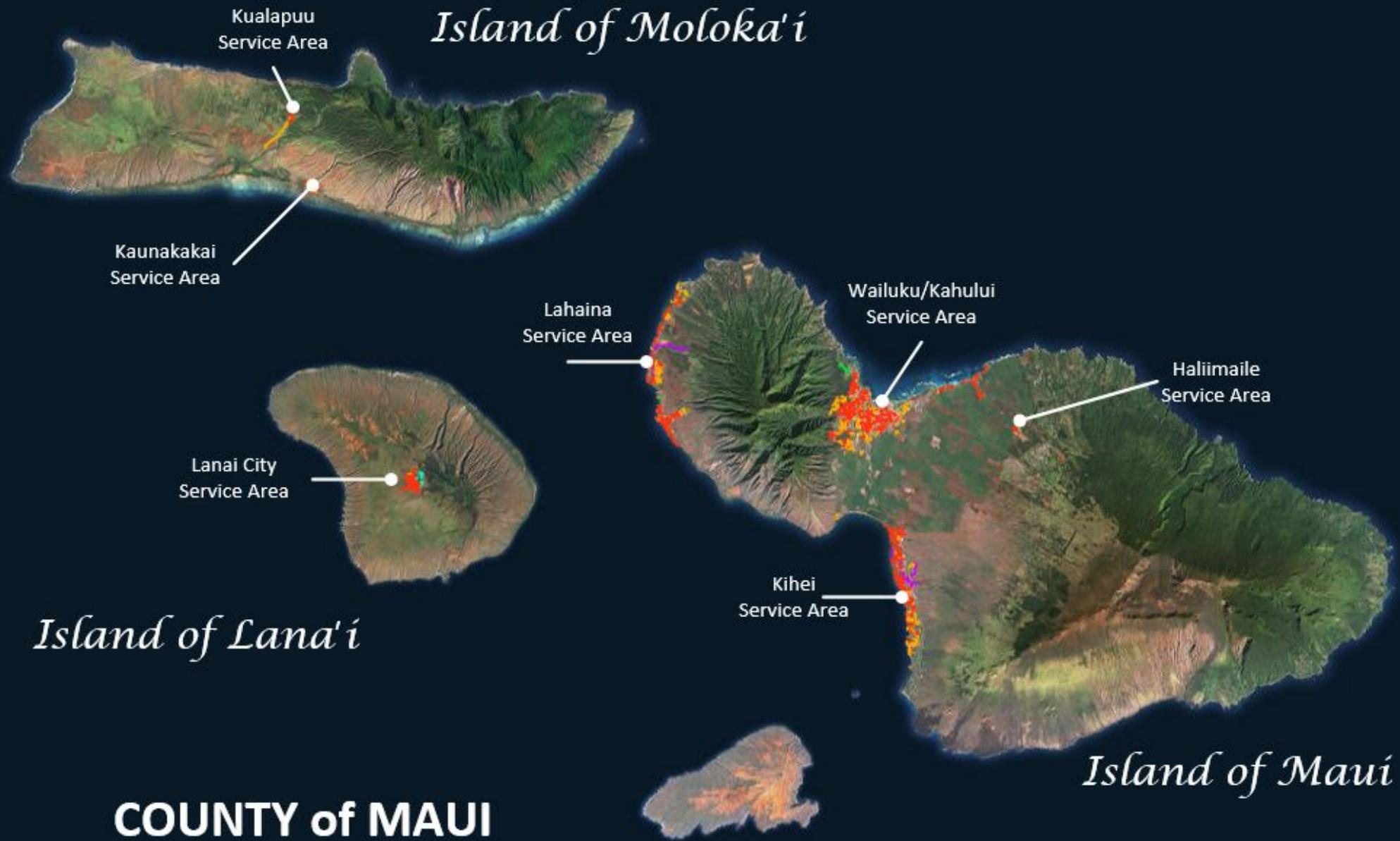
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COUNTY OF MAUI WASTEWATER INFRASTRUCTURE

Infrastructure and Transportation Committee

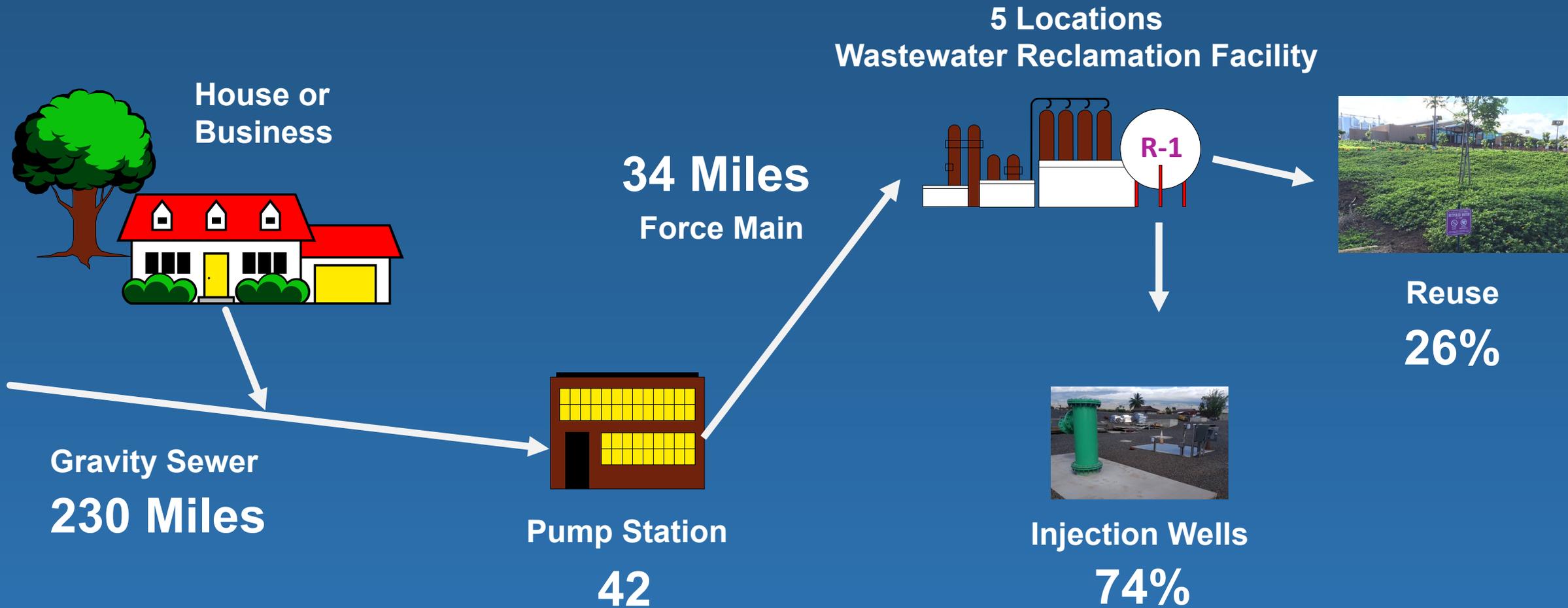
January 31, 2022



**COUNTY of MAUI
SEWER SERVICE AREAS**



Where does my sewage go?



LAHAINA CAPITAL IMPROVEMENT PROJECTS

West Maui Recycled Water Expansion

Honokowai Reservoir Improvements FY2022 (\$6 M)

Force Main FY2022 (\$7M)

Effluent Pump Station FY2021 (\$10+M)

Lahaina WWRF R-1 Process Expansion FY2022 (\$10.5M)

Napili 5 & 6 Force Main and Pump Station (\$8 M) (completed in 2021)

Napili 4 Force Main FY2020 (\$2M) Pump Station FY2021 (\$4.2 M)

Napili 3 Force Main FY2020 (\$2M) Pump Station FY2022 (\$4.4 M)

Napili 2 Force Main FY2024 (\$1.2M) Pump Station FY2023 (\$4.4 M)

Napili 1 Force Main FY2025 (\$4.0M) Pump Station FY2024 (\$6.1 M)

Honoapiilani Hwy. Lateral Installation FY2024 (\$1M)

Monokowai R-1 Extension FY2027 (\$4.3M)

Kaanapali Trunk Sewer Replacement FY2022 (\$3.4 M)

Kaanapali Resort R-1 Expansion FY2024 (\$8.5M)

Lahaina 3 Force Main FY2026 (\$3.3 M)

Lahaina 5 & 6 Pump Stations FY2028-9 (\$3 M)

Cannery Trunk Sewer Upgrade FY2027 (\$6 M)

LEGEND

Gravity Sewer

County of Maui

Private

DHHL

Force Main

County of Maui

Private

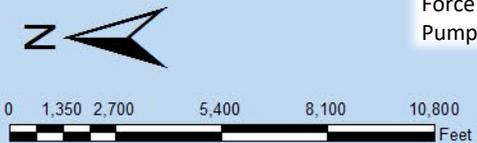
DHHL

Sanitary Sewer Pumps

County of Maui

Private

Lahaina WWRF



5 years:

\$ 0.0M SLR

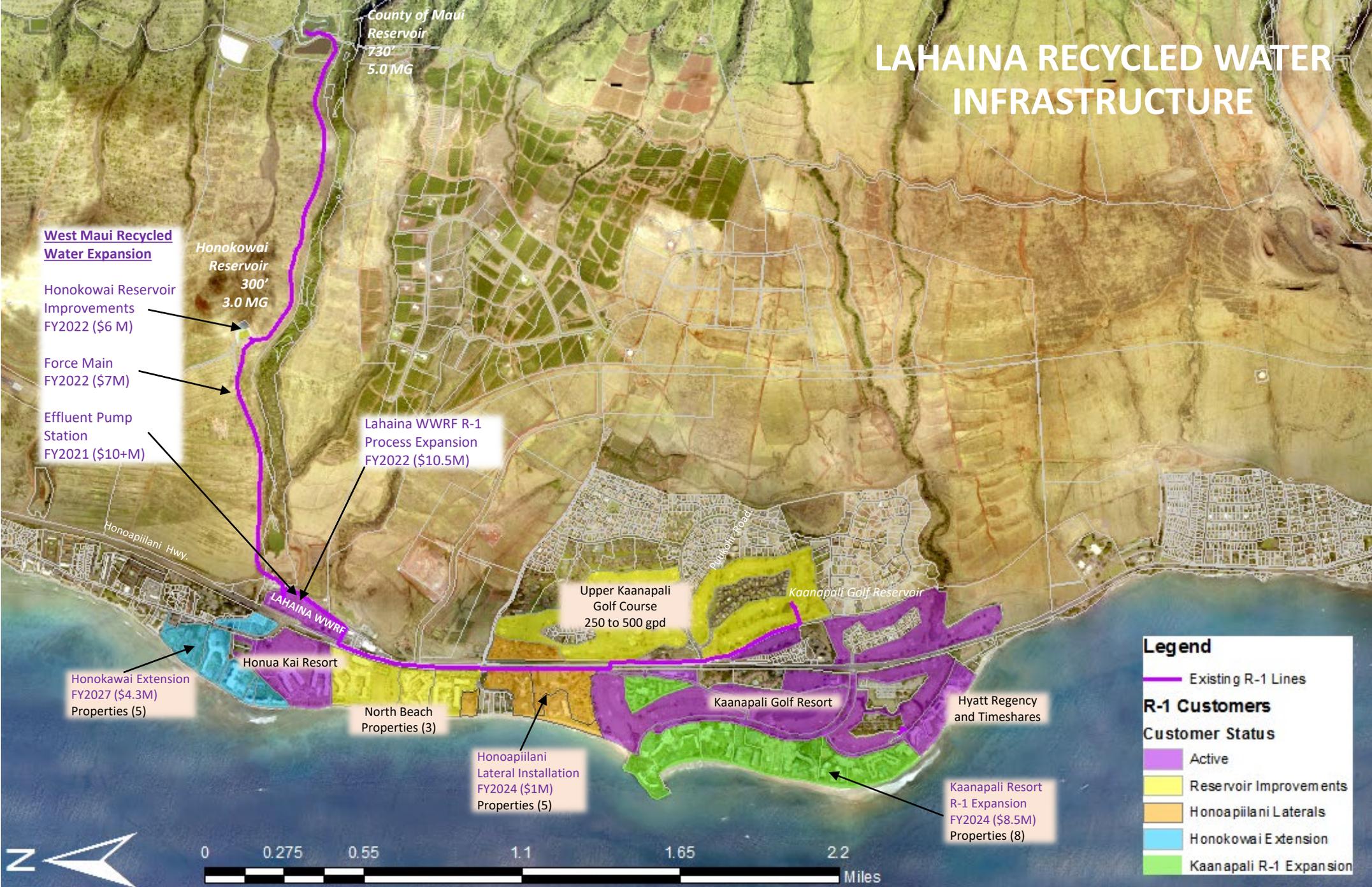
\$47.3M R1

\$52.0M Must do

\$ 0.0M Expansion

\$99.3M Total

LAHAINA RECYCLED WATER INFRASTRUCTURE



LAHAINA WWRF:

Design Flow
9.0 mgd

Average
Daily Flow

3.7 mgd

Recycled
Water
Customers

4

Average
Daily Reuse

1.0 to 1.8
mgd

25 to 50%

Legend

- Existing R-1 Lines

R-1 Customers

Customer Status

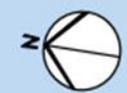
- Active
- Reservoir Improvements
- Honoapiilani Laterals
- Honokowai Extension
- Kaanapali R-1 Expansion

KIHEI SEWER SERVICE AREA



Legend

Gravity Sewer	Pump Stations
Ownership	Ownership
— County of Maui	■ County
— DHHL	■ DHHL
— Private	■ Private
Force Mains	■ Treatment Facility
Ownership	
— County	
— DHHL	
— DOT	
— Private	



KIHEI CAPITAL IMPROVEMENT PROJECTS

LEGEND

FY Construction

- 2021 —
- 2022 —
- 2023 —
- 2024 —
- 2025 —
- 2026 —
- 2027 —
- 2028 —
- 2029 —

Pump Stations

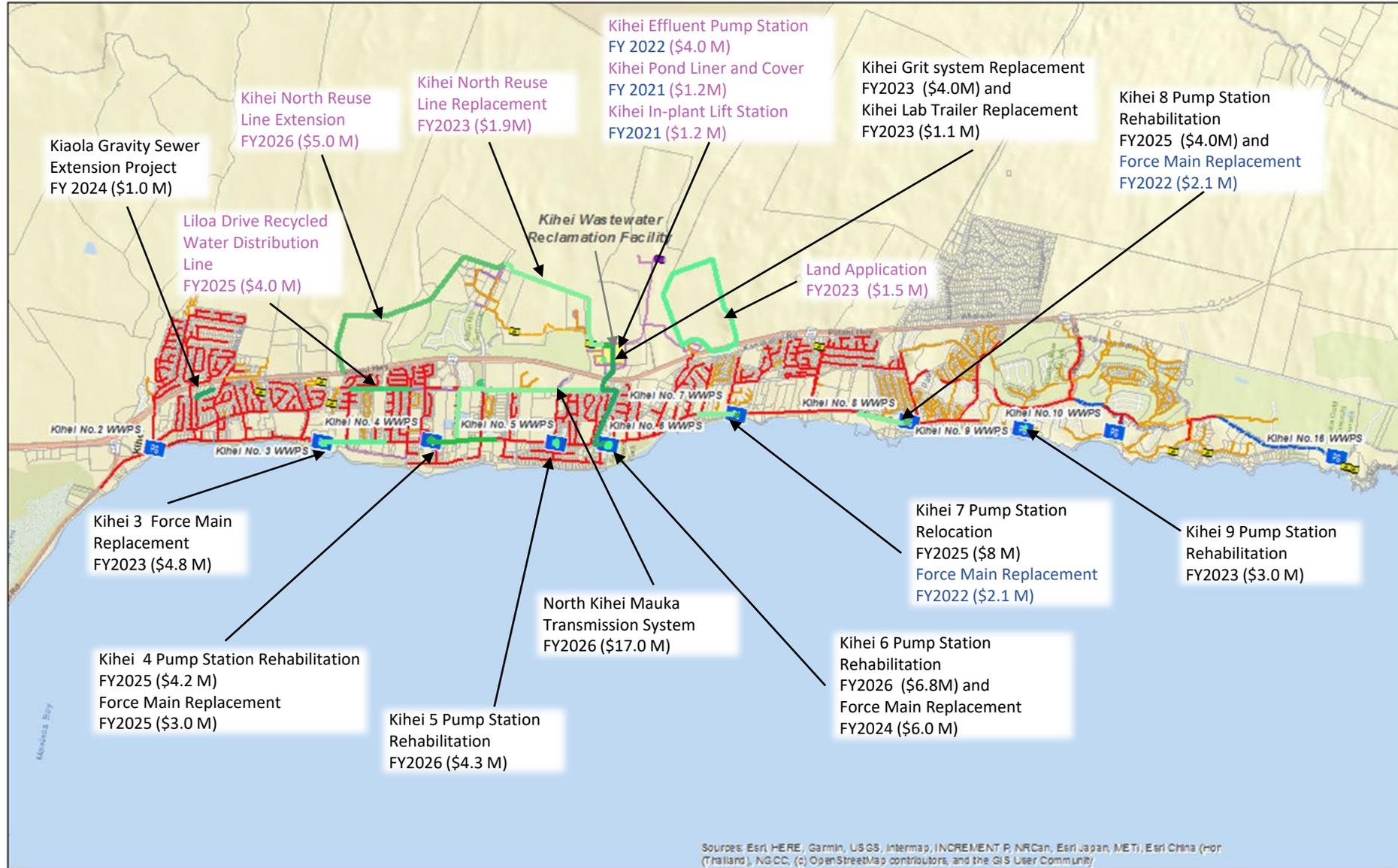
- County of Maui
- Private

Gravity Sewer

- County of Maui
- Private
- DHHL
- Recycled Water
- Recycled Water Storage

Force Main

- County of Maui
- Private
- DHHL



5 years:

\$17.0M SLR

\$18.8M R1

\$53.4M Must do

\$ 1.0M Expansion

\$90.2M Total



Sources: Esri HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hk), Esri China (Tailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



1:44,936

October 26, 2021

KIHEI RECYCLED WATER SYSTEM

EXISTING

LEGEND

Recycled Water Users

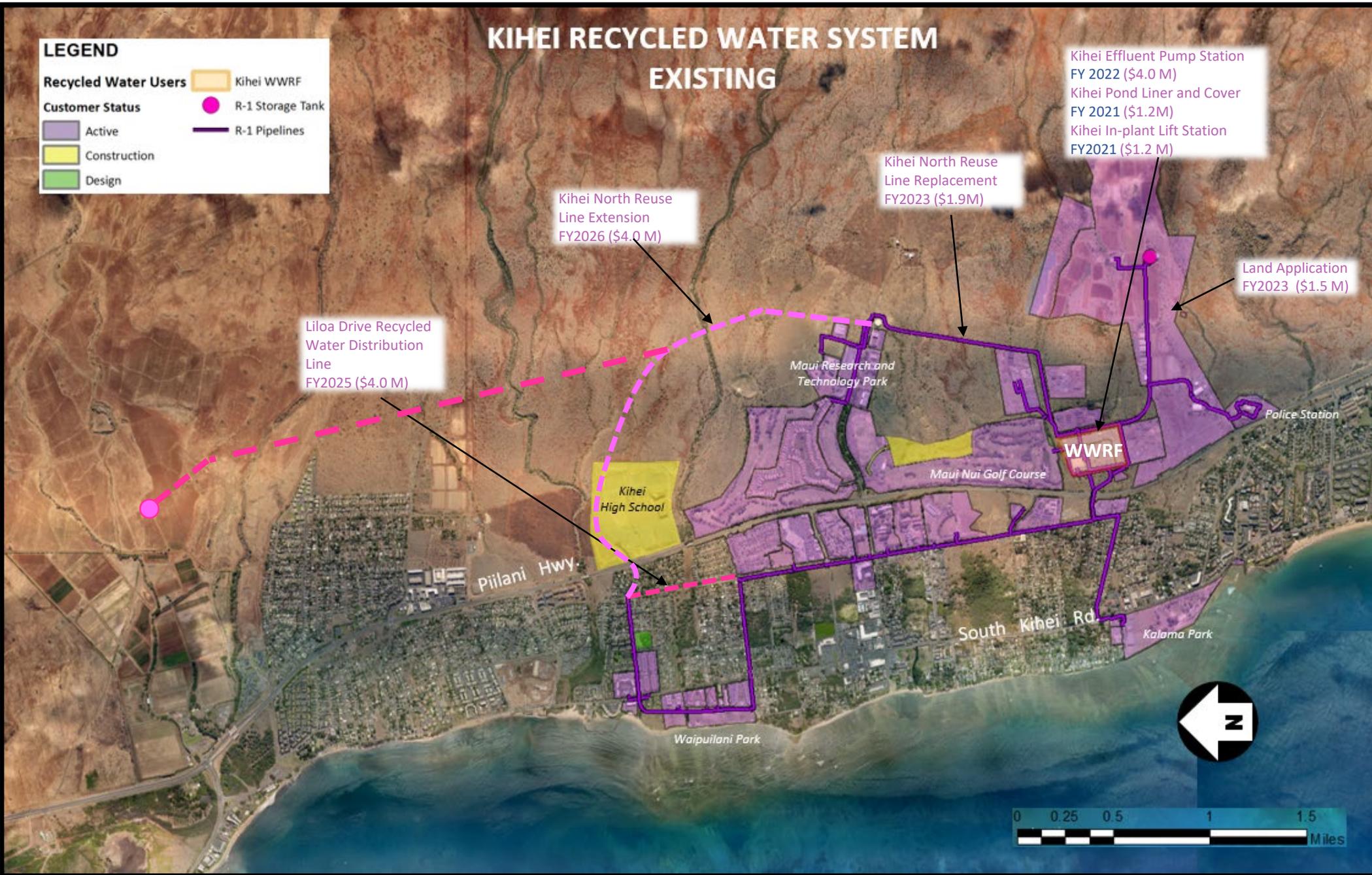
- Kihei WWRF

Customer Status

- R-1 Storage Tank
- Active
- Construction
- Design

R-1 Pipelines

- R-1 Pipelines



KIHEI WWRF:

Original Design Flow
8.0 mgd

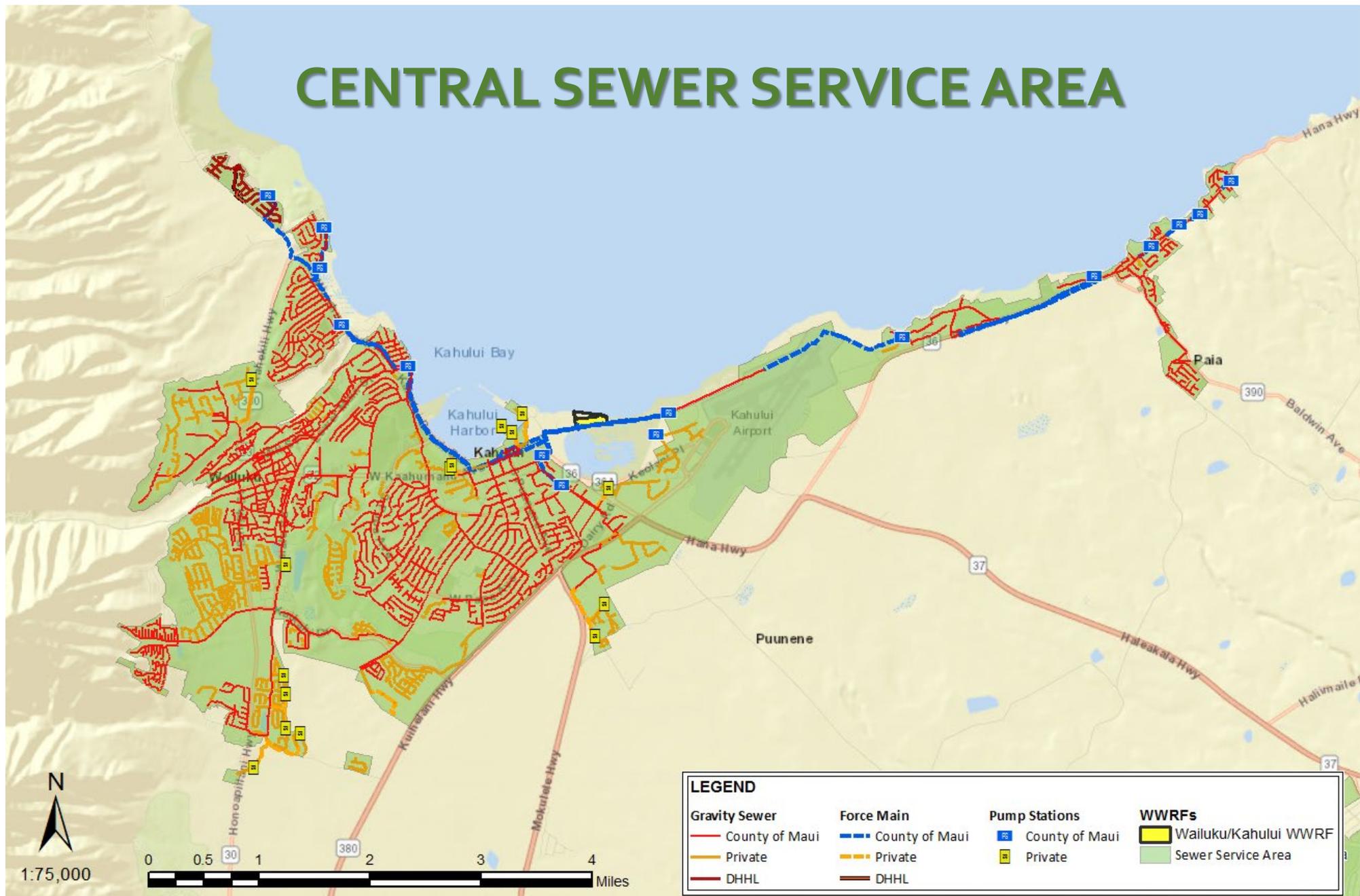
Average Daily Plant Flow
3.7 mgd

Recycled Water Customers
40

Average Daily Reuse
1.8 mgd

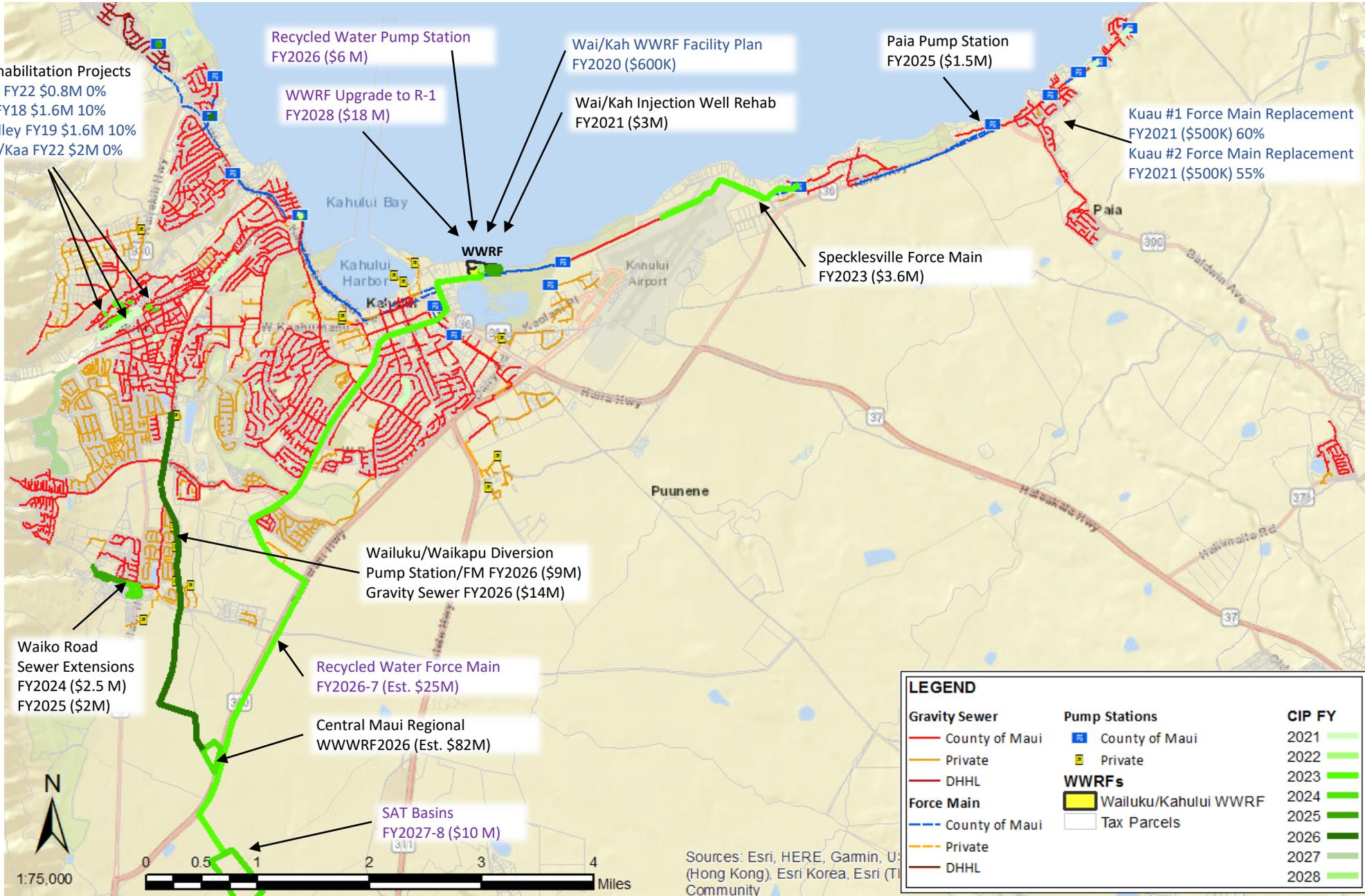
50%

CENTRAL SEWER SERVICE AREA



SEWER CAPITAL IMPROVEMENT PROJECTS

Sewer Rehabilitation Projects
 Liko Place FY22 \$0.8M 0%
 Oahu St. FY18 \$1.6M 10%
 Happy Valley FY19 \$1.6M 10%
 Mokuhau/Kaa FY22 \$2M 0%

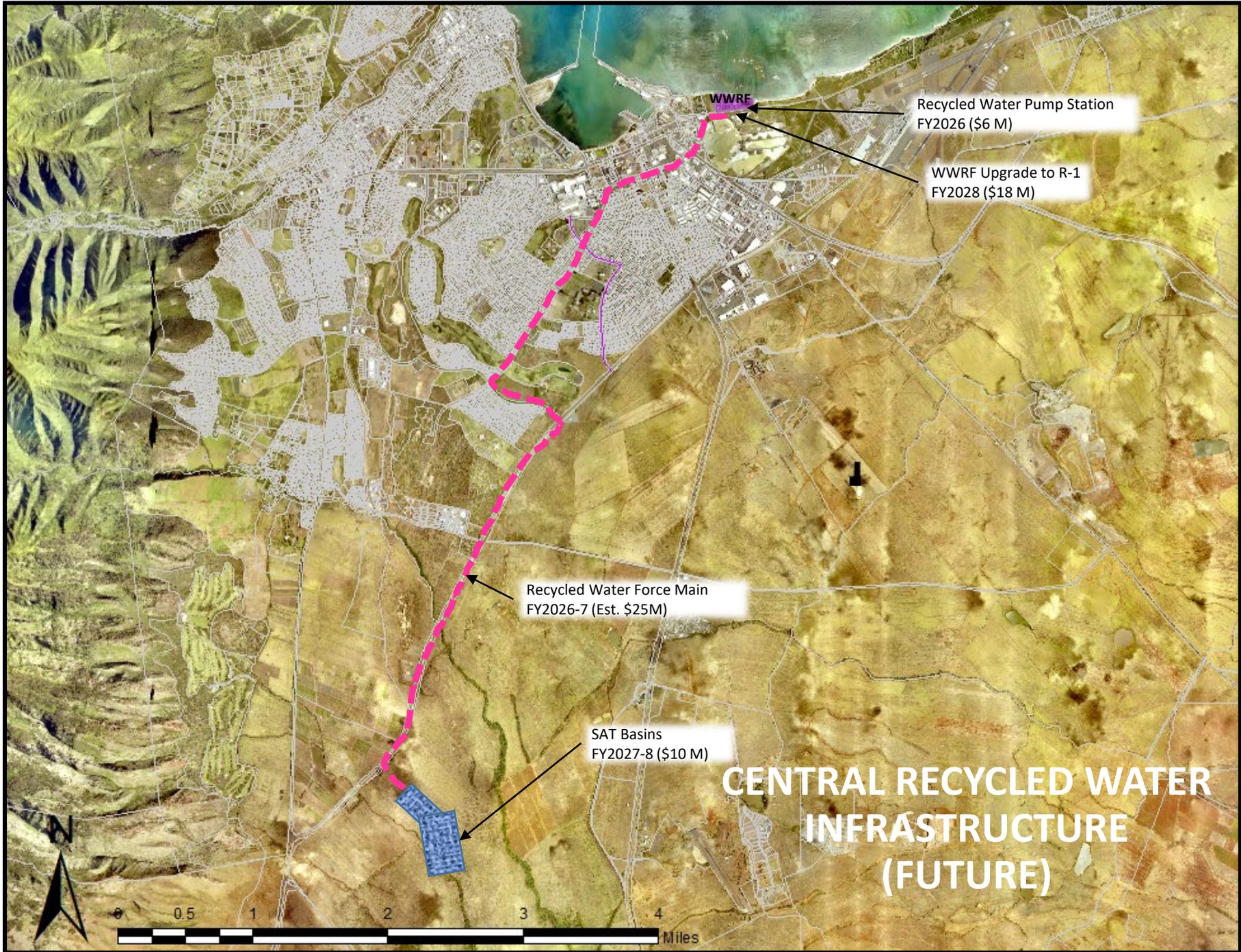


5 years:
 \$ 1.5M SLR
 \$ 59.0M R1
 \$ 14.2M Must do
 \$109.5M Expansion
 \$184.2M Total

LEGEND

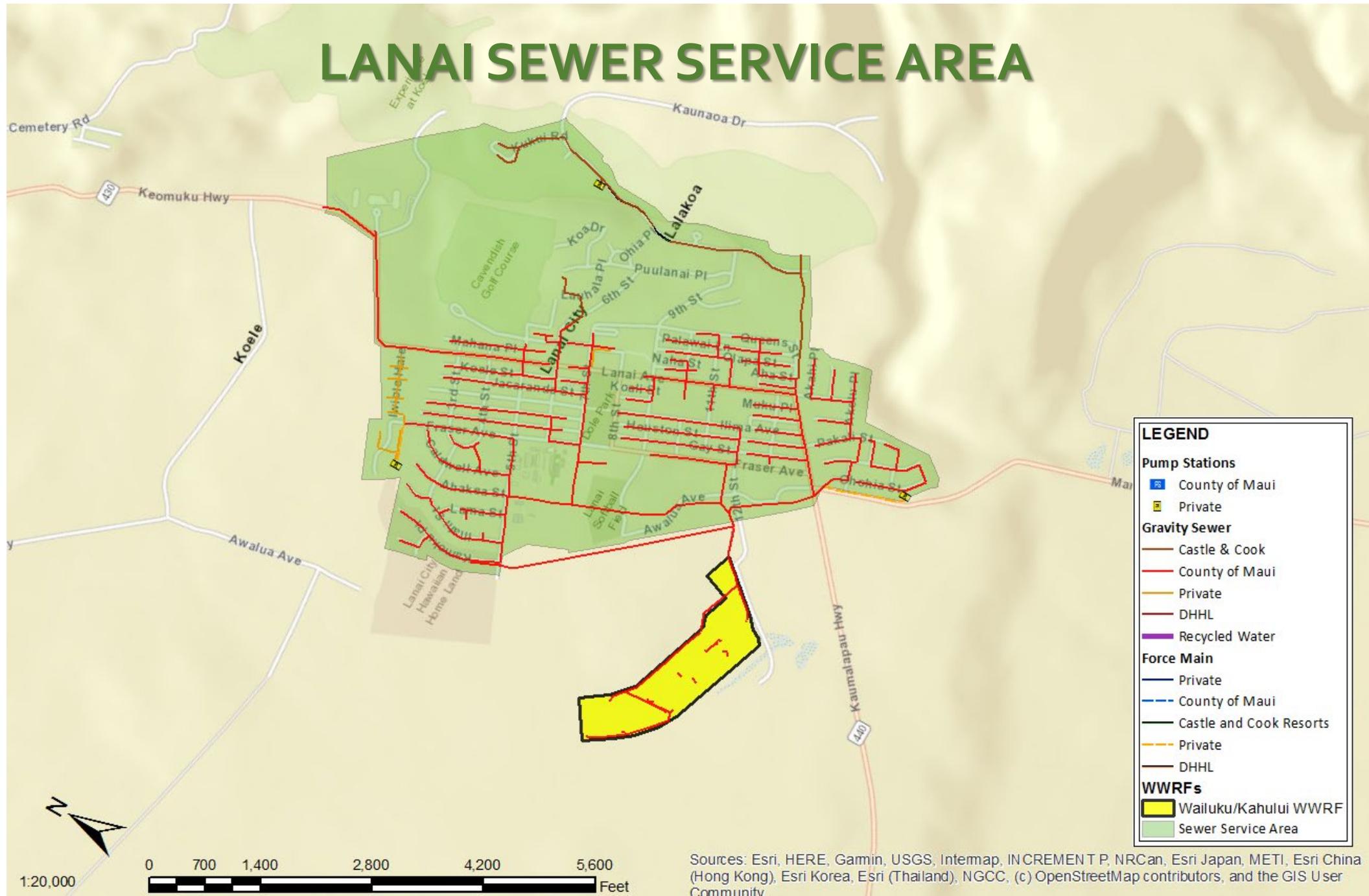
Gravity Sewer	Pump Stations	CIP FY
County of Maui	County of Maui	2021
Private	Private	2022
DHHL		2023
Force Main	WWRfs	2024
County of Maui	Wailuku/Kahului WWRf	2025
Private	Tax Parcels	2026
DHHL		2027
		2028

Sources: Esri, HERE, Gamin, U: (Hong Kong), Esri Korea, Esri (T Community



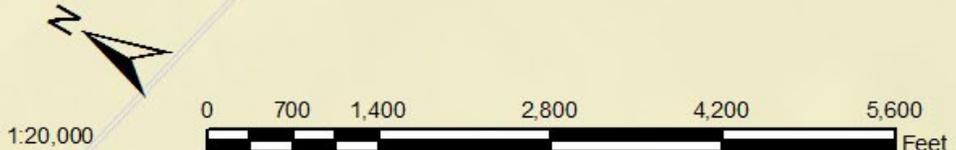
Wailuku/ Kahului WWRF:
Original Design Flow
7.9 mgd
Average Daily Flow
5.6 mgd
Recycled Water Customers
1
Average Daily Reuse
0.3 mgd
6%

LANAI SEWER SERVICE AREA



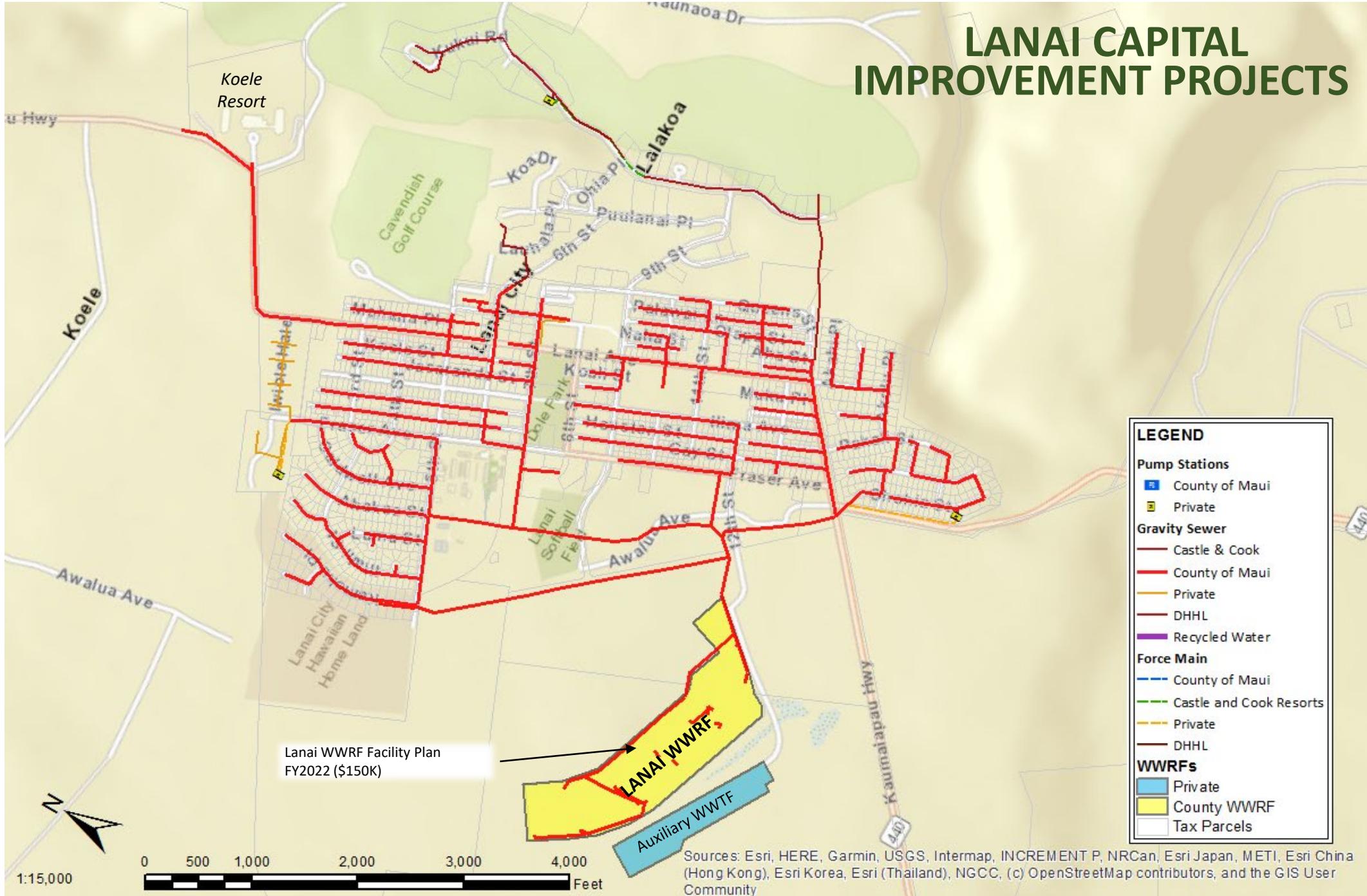
LEGEND

- Pump Stations**
 - County of Maui
 - Private
- Gravity Sewer**
 - Castle & Cook
 - County of Maui
 - Private
 - DHHL
 - Recycled Water
- Force Main**
 - Private
 - County of Maui
 - Castle and Cook Resorts
 - Private
 - DHHL
- WWRFs**
 - Wailuku/Kahului WWRF
 - Sewer Service Area



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

LANAI CAPITAL IMPROVEMENT PROJECTS



Lanai WWRF Facility Plan
FY2022 (\$150K)

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

LANAI WWRF



Lanai
WWRF:

Original
Design Flow
0.500 mgd

Average
Daily Flow
0.350 mgd

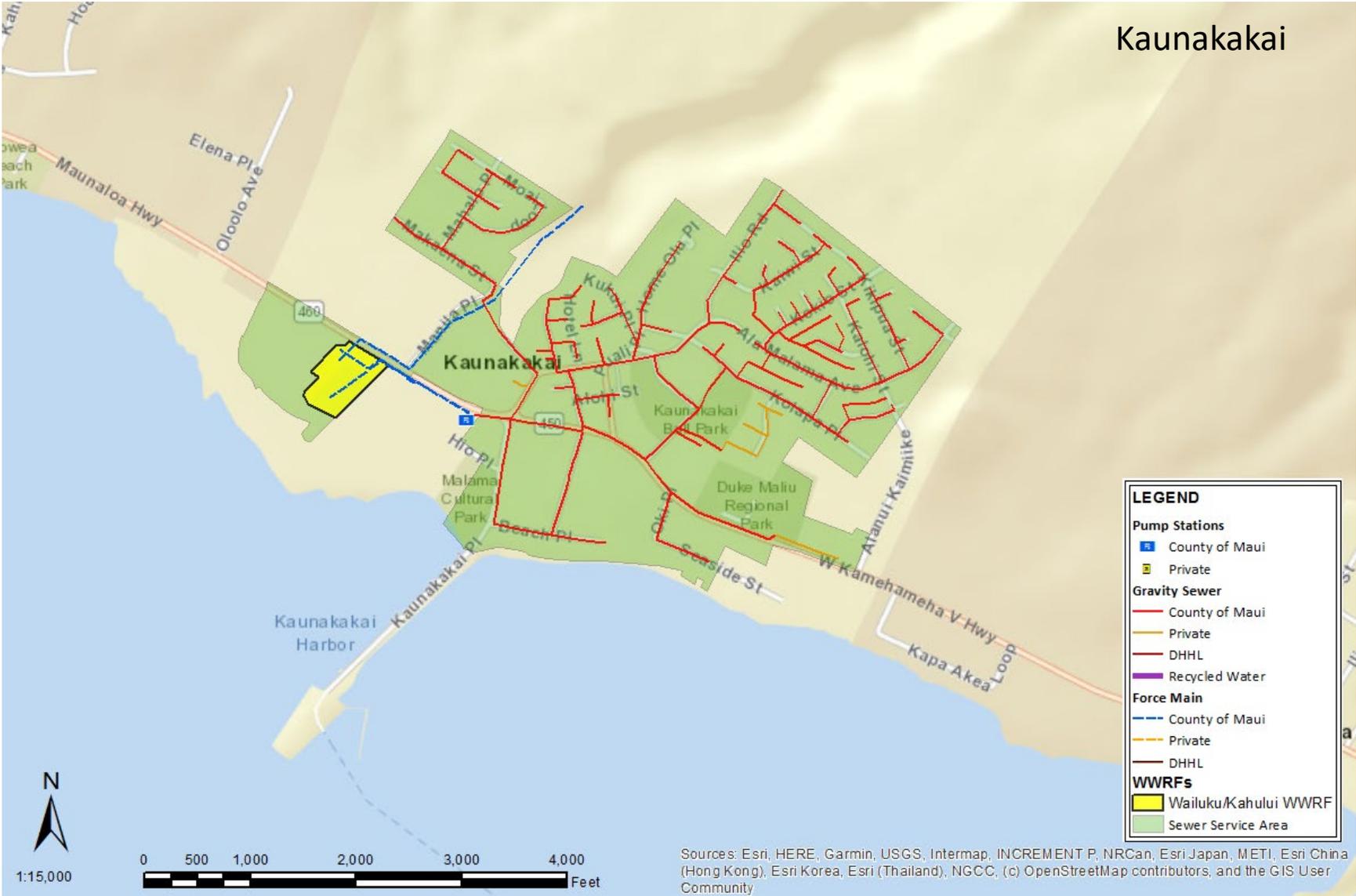
Recycled
Water
Customers
1

Average
Daily Reuse
0.06 mgd
15%

MOLOKAI SEWER SERVICE AREA

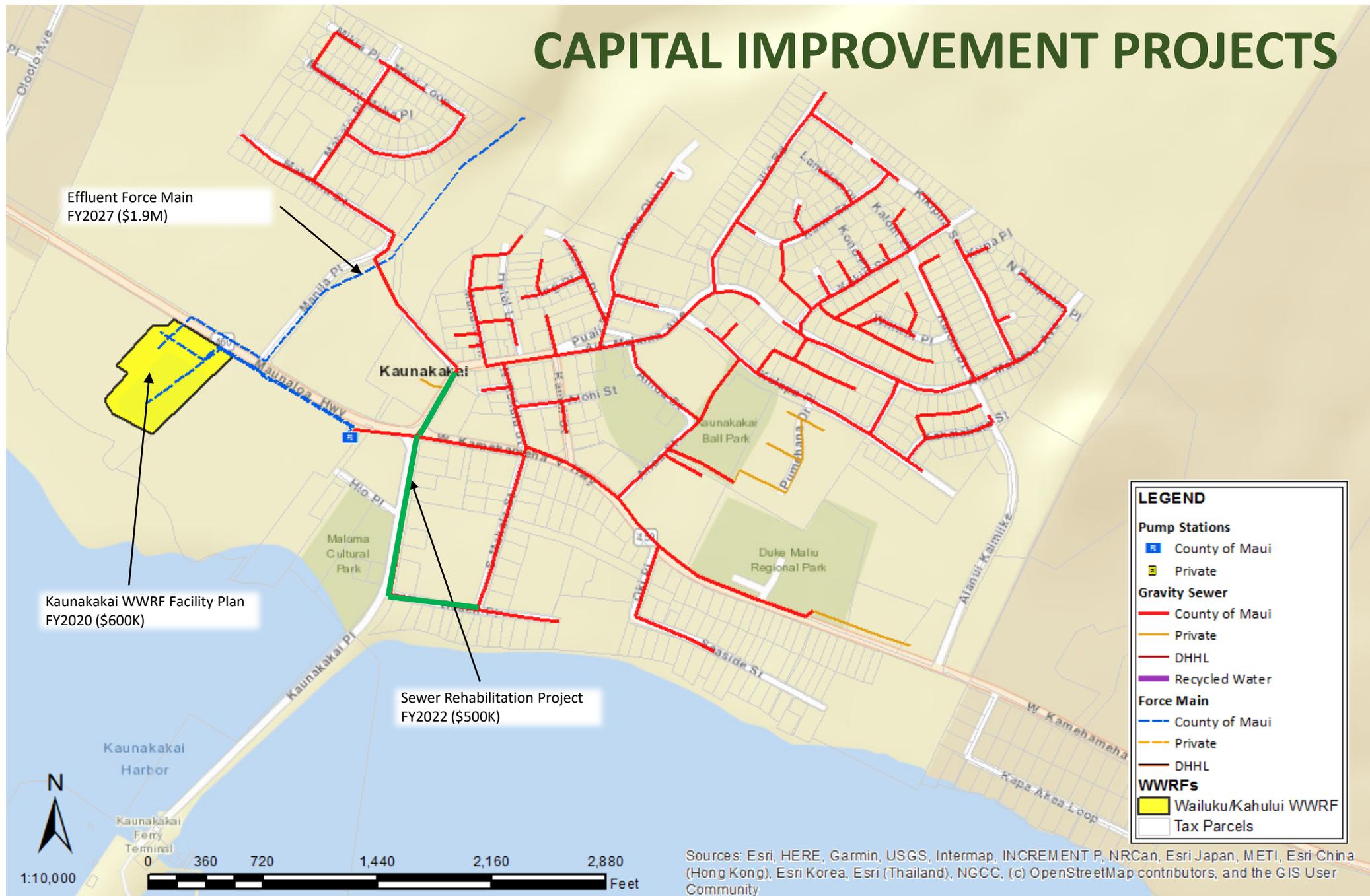


LOCATION MAP



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

CAPITAL IMPROVEMENT PROJECTS



Effluent Force Main
FY2027 (\$1.9M)

Kaunakakai WWRF Facility Plan
FY2020 (\$600K)

Sewer Rehabilitation Project
FY2022 (\$500K)

LEGEND

Pump Stations

- County of Maui
- Private

Gravity Sewer

- County of Maui
- Private
- DHHL
- Recycled Water

Force Main

- County of Maui
- Private
- DHHL

WWRFs

- Wailuku/Kahului WWRF
- Tax Parcels

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

KAUNAKAKAI WWRF



Kaunakakai WWRF:

Original Design Flow
0.300 mgd

Average Daily Flow
0.280 mgd

Recycled Water Customers
1

Average Daily Reuse
0.01 mgd

5%

“Global Performance Measures

- Reliability of existing facilities over the long term at the lowest possible cost (99.9978%)
- Increase in volume of reclaimed water
- Expand sewer system to non-sewered areas
- Improve quality of treated effluent

Future Plans and Challenges Facing WWRD

- Aging Infrastructure and Equipment
- Changing/Stricter Regulatory Requirements
- Increase Use of Resources
- Staff shortages/employment pool
- Sea Level Rise Mitigation
- Funding, Balancing CIP vs. Sewer Rates

Future Plans and Challenges Facing WWRD

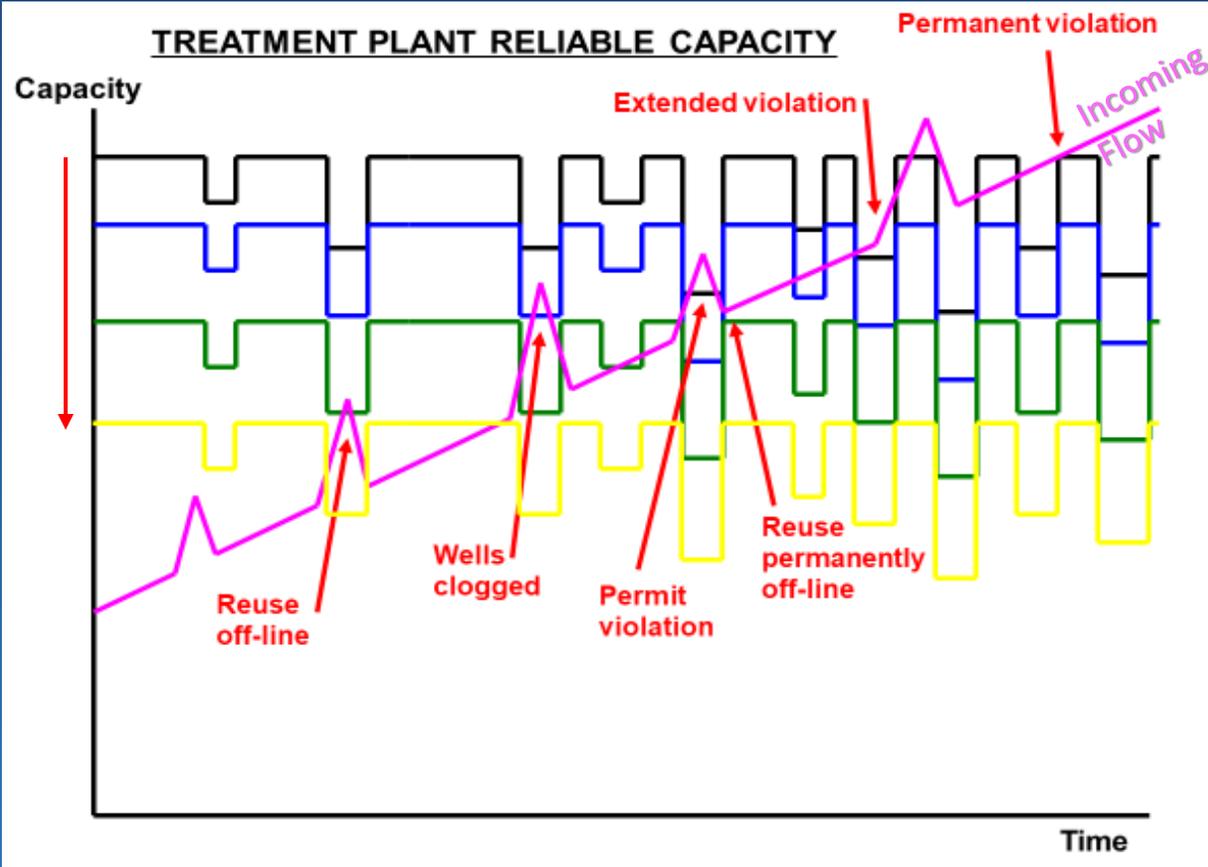
- Aging Infrastructure and Equipment
 - Old pipes, pumps, valves, electronics, etc.
 - Infiltration and Inflow (I&I) *-Pipes*
 - More Concentrated Wastewater *-Plants*

All leading to less capacity and a less reliable system or more risk of spills. *-“must do”*

Projects

Future Plans and Challenges Facing WWRD

- Changing/Stricter Regulatory Requirements



Permit Requirements
Well Performance

Recycled Water

Stricter Requirements

- Meaning more funding goes towards “**must do**” projects instead of Recycled Water, Expansion, SLR, etc.

Future Plans and Challenges Facing WWRD

- Funding, Balancing CIP vs. Sewer Rates

Wastewater Division 6 year CIP Plan

Sewer Rate Increase 3% 3% 3% 5% 5% 5%

WASTEWATER RECLAMATION DIVISION PROPOSED SIX YEAR CIP PLAN COSTS (FY 2022)

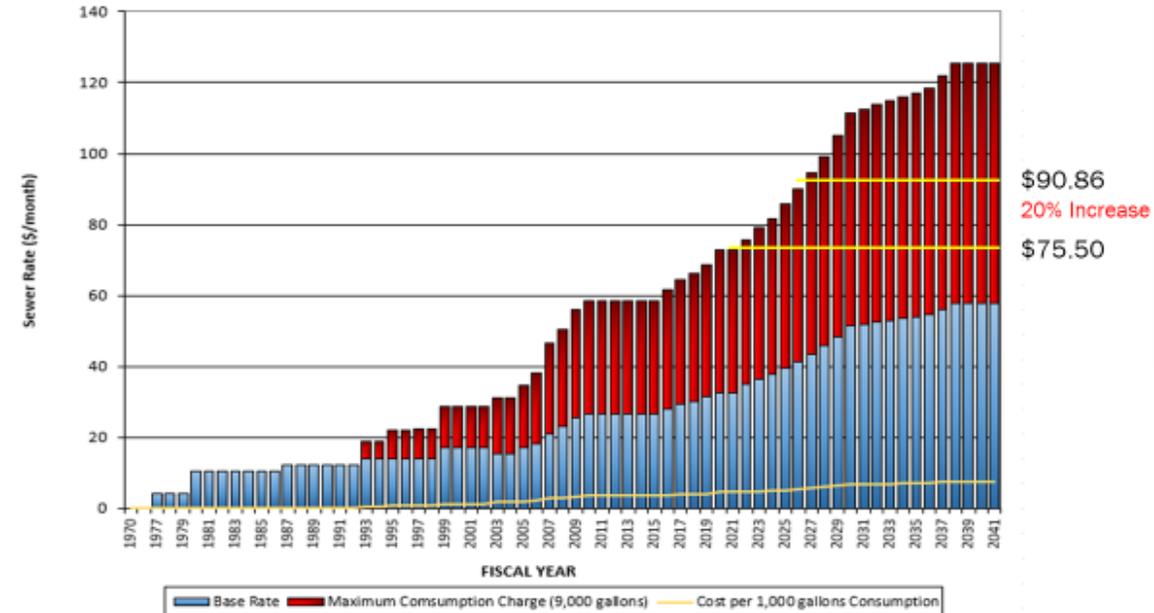
Priority	CIP No.	Project	FISCAL YEAR					
			2022	2023	2024	2025	2026	2027
Operating & Type	1	SRF Loans	\$ 12,900,000	\$ 13,500,000	\$ 14,500,000	\$ 14,900,000	\$ 12,100,000	\$ 9,500,000
	2	Bonds	\$ 20,450,000	\$ 43,800,000	\$ 58,200,000	\$ 47,000,000	\$ 49,000,000	\$ 17,800,000
	3	Cash	\$ 14,500,000	\$ 10,450,000	\$ 15,500,000	\$ 13,150,000	\$ 13,500,000	\$ 11,900,000
	4	General Fund	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	5	Other	\$ 3,500,000	\$ -	\$ 30,000,000	\$ -	\$ -	\$ -
		TOTAL	\$ 51,350,000	\$ 68,050,000	\$ 108,000,000	\$ 65,050,000	\$ 74,600,000	\$ 39,200,000
Project Type	1	General Plan Expansion Projects	\$ 2,500,000	\$ 1,500,000	\$ 2,000,000	\$ 2,000,000	\$ 1,500,000	\$ 1,500,000
	2	SLR Projects	\$ 17,400,000	\$ 20,800,000	\$ 18,400,000	\$ 19,300,000	\$ 23,000,000	\$ 11,400,000
	3	Expansion of Services	\$ 2,250,000	\$ 1,150,000	\$ 44,750,000	\$ 23,300,000	\$ 48,200,000	\$ 8,500,000
	4	Expansion of Reuse	\$ 23,500,000	\$ 27,600,000	\$ 8,850,000	\$ 8,400,000	\$ 3,300,000	\$ 35,800,000
	5	General Plan Expansion Projects	\$ -	\$ 4,000,000	\$ 6,000,000	\$ 5,000,000	\$ 800,000	\$ -
	6	Agency Condition/Request/Requirement	\$ -	\$ 10,000,000	\$ 15,000,000	\$ 5,000,000	\$ -	\$ -
	TOTAL	\$ 50,650,000	\$ 68,050,000	\$ 108,000,000	\$ 65,050,000	\$ 74,600,000	\$ 39,200,000	

CIP Coordinator Priorities:
 1 Priority 1: Replacement of existing infrastructure which is already unsafe or failing; absolutely required for compliance with federal or state law and/or legal settlements.
 2 Priority 2: New or upgraded infrastructure required for compliance with state or federal law and/or legal settlements.
 3 Priority 3: Replacement of existing infrastructure which is predicted to become unsafe or failing; reduces risk but not absolutely required for compliance with federal or state law and/or legal settlements.
 4 Priority 4: New or upgraded infrastructure which is a major improvement to quality of life, health, safety, efficiency or cost savings.
 5 Priority 5: New or upgraded infrastructure which is a minor improvement to quality of life, health, safety, efficiency or cost savings.

Project:	Total Costs	Percentage
• Must Do Projects	\$168,550,000	42%
• Expansion of Services	\$134,150,000	33%
• Expansion of Reuse	\$85,450,000	21%
• SLR Projects	\$17,400,000	4%
Total	\$405,550,000	100%

Projected Increase to Sewer Rates

HISTORY OF MAUI SEWER RATES (Maximum Billing Single-Family Residence)



Policies Going Forward

- New Developments Build Their Own Treatment Facilities ?
- Who Should Pay for Capacity Upgrades?
- Who Should Construct Capacity Upgrades?
- Assessment Fee Districts to Repay County for Expansion?
- Impact Fees Imposed so Funding will be Available to Construct Infrastructure?
- Affordable Housing Fund to Repay Waiver of Assessment Fees?

THANK YOU