



KEKAHA AGRICULTURE ASSOCIATION

A NON-PROFIT AGRICULTURAL COOPERATIVE
Est. 2003

DITCH SYSTEM IMPROVEMENTS: AN UPDATE

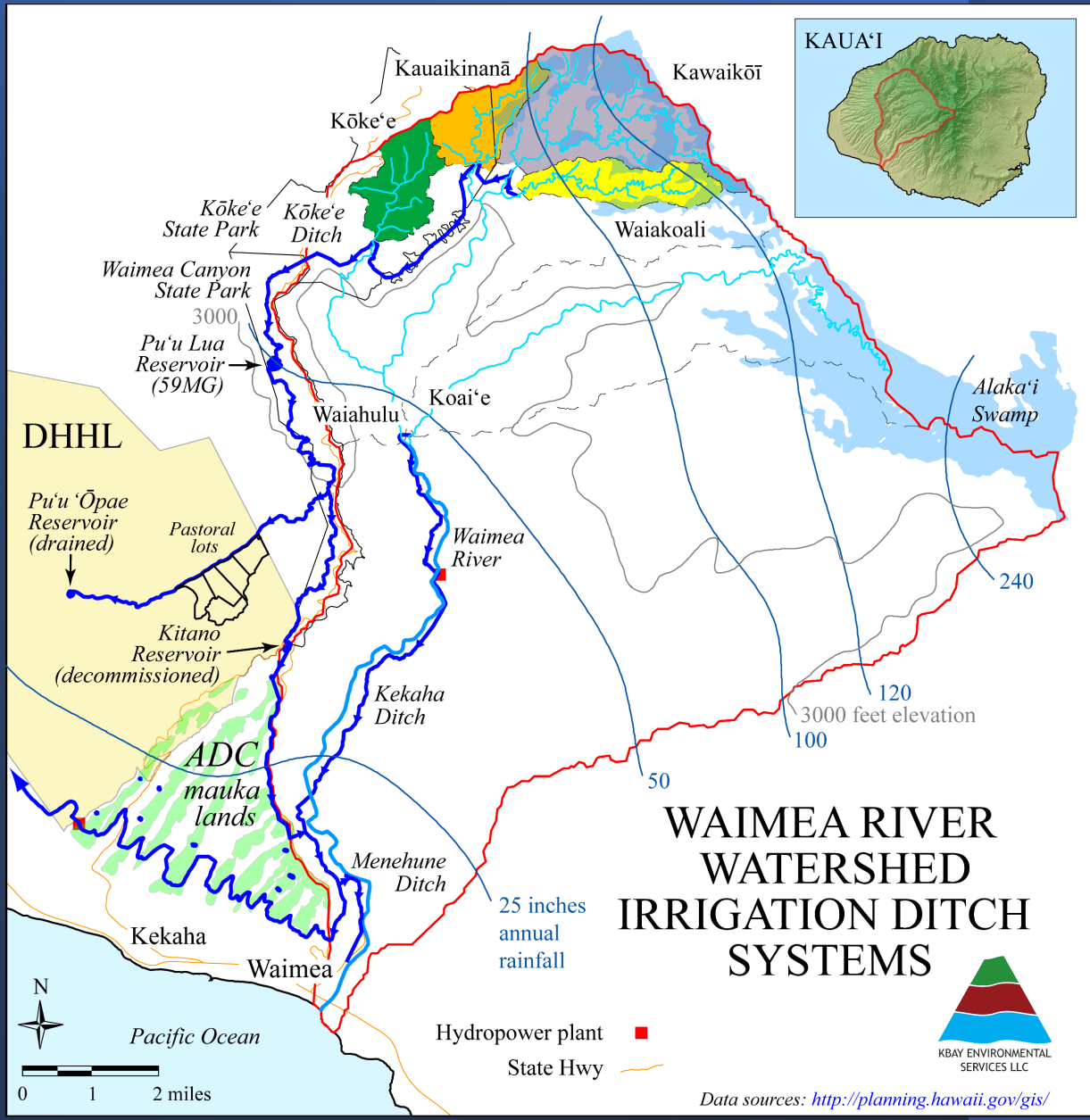
Prepared by

**Kekaha Agriculture
Association**

for

**The Commission On Water
Resource Management**

April 21st, 2026



Data sources: <http://planning.hawaii.gov/gis/>



WWA Phase 1: IIFS

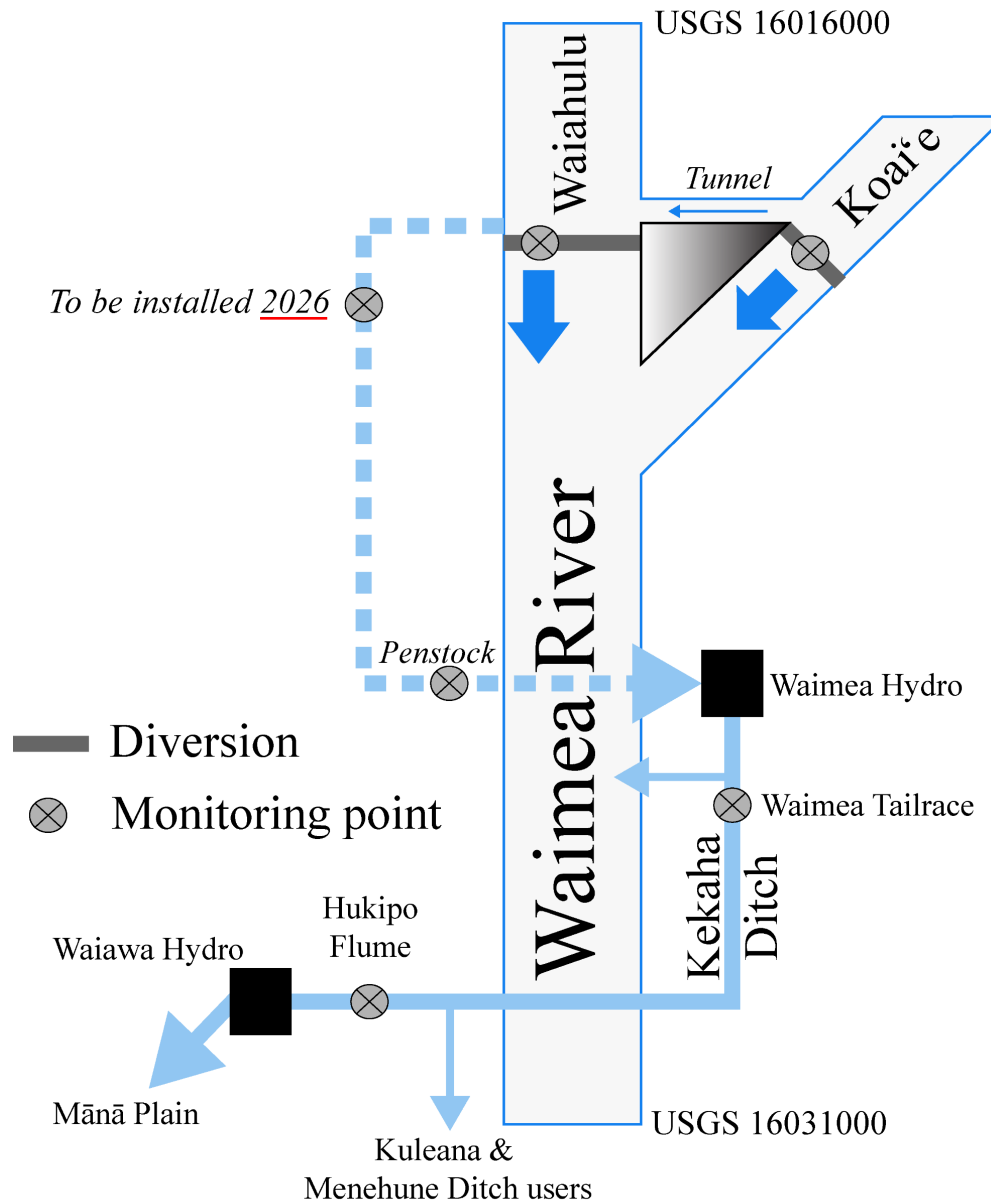
Kekaha Ditch Irrigation System

1. The IIFS for the Waimea Stream below the Waiahulu Diversion will be 8 mgd.
2. The IIFS for the Waimea Stream at USGS 16031000 will be 25 mgd with a minimum flow at all times through the Kekaha Ditch of 6 mgd measured at the Hukipo Flume.

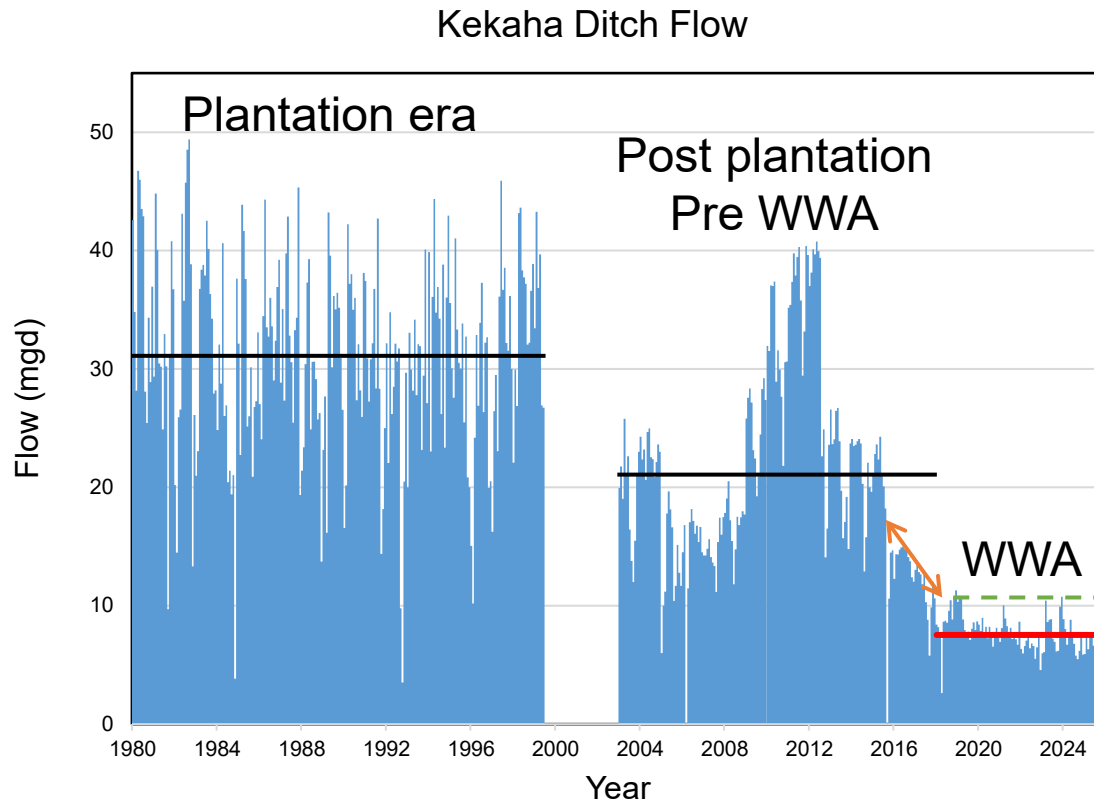
WWA Phase 1: Monitoring

Kekaha Ditch Irrigation System

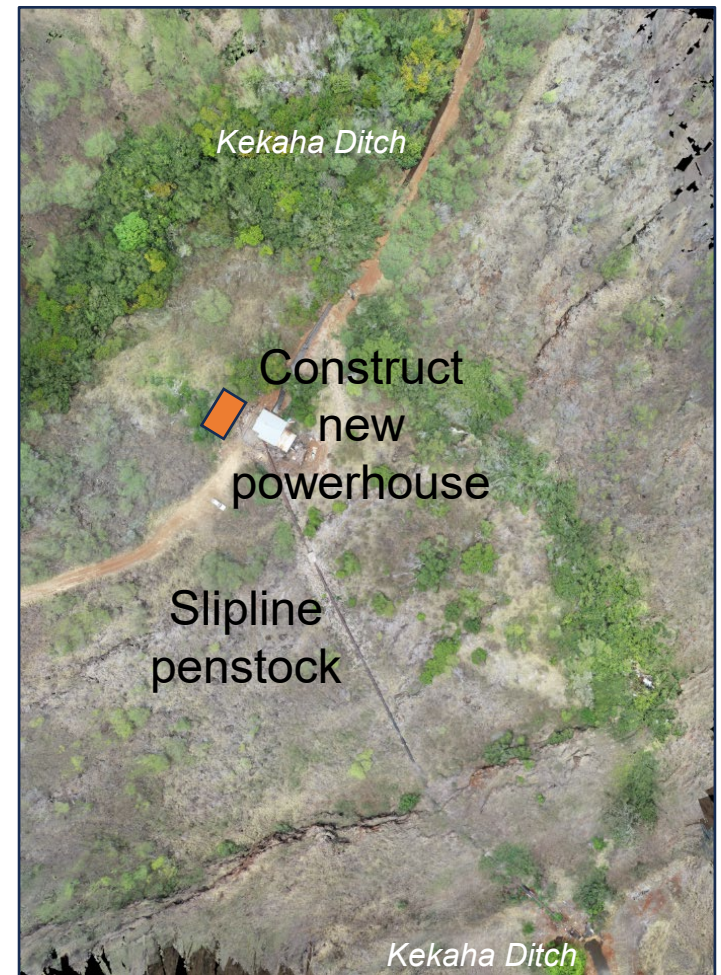
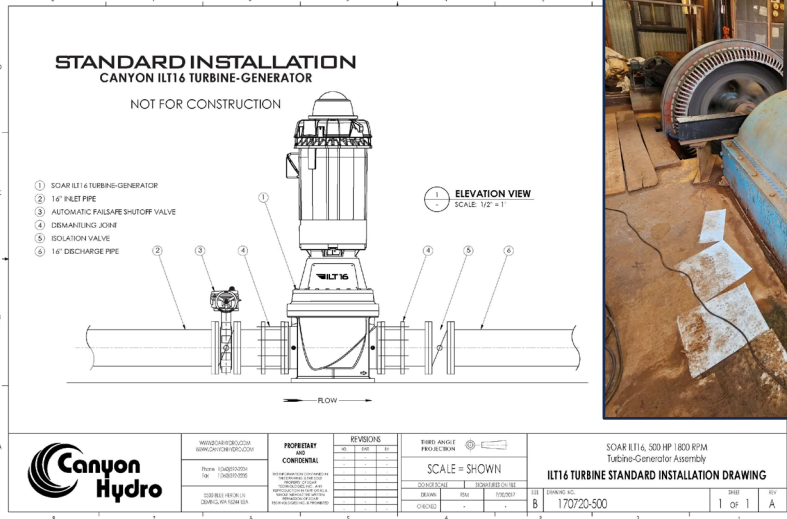
- Monitoring stations will be put in place to measure the amount of water coming into the ditches and the amount of water going into the streams below the diversions on a continuous real-time basis.
- ADC (or its licensee KAA) will install and maintain monitoring equipment for the following streams:
 - Waiahulu
 - Koai'e
 - Waimea at the mauka hydroelectric plant



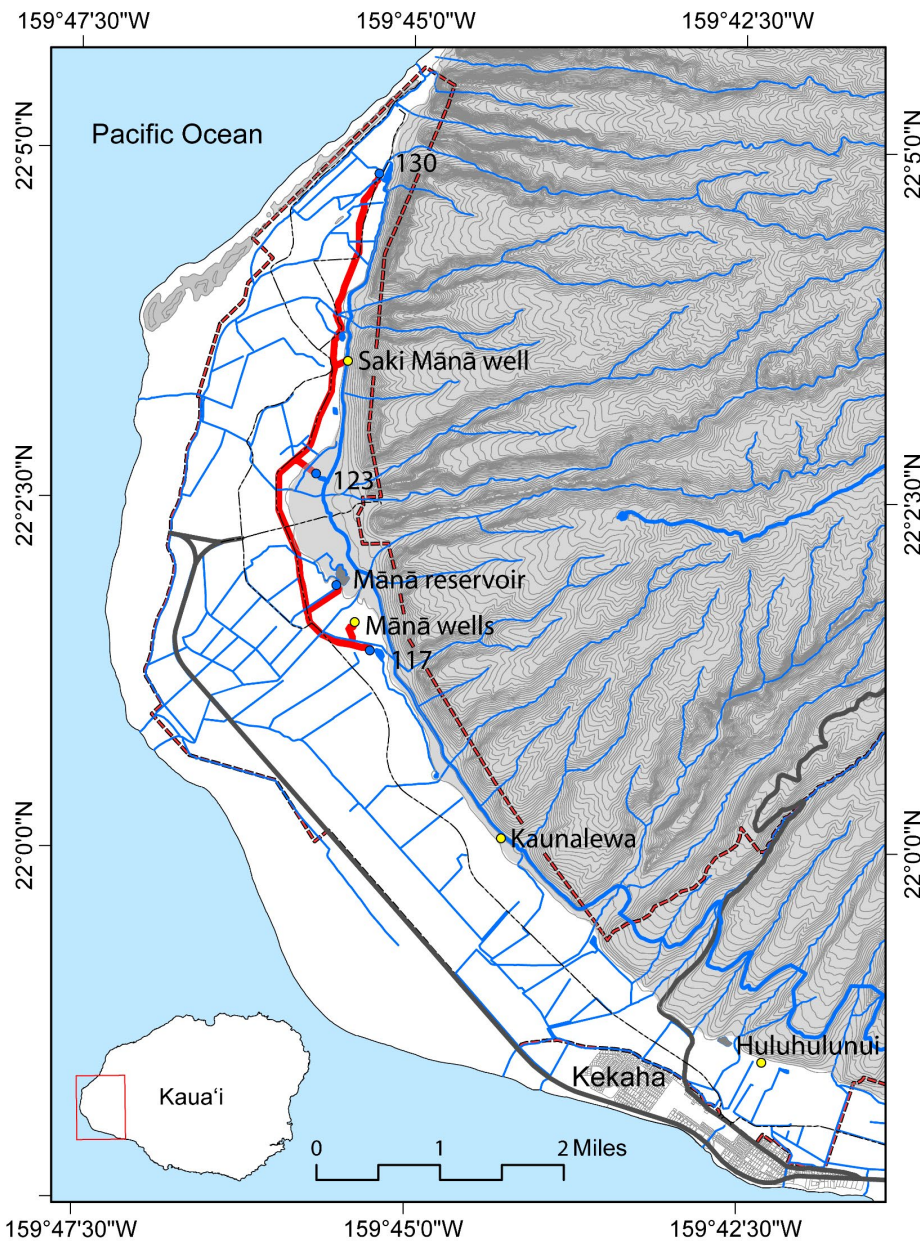
Accomplishment



Ongoing Improvements



Waiawa Re-Power



Pressurized System

- 5 miles of pressurized pipeline
- Pipeline connects with existing infrastructure
- HDPE pipe on-site
- Installation \$1.25M

Ongoing Improvements

WWA Phase 1: IIFS

Kōke'e Ditch Irrigation System

1. The existing natural flow in the Kōke'e Stream is permitted to flow past the Kōke'e Ditch.
2. For the Kauaikinanā, Kawaikōī, and Waiakoali streams, the IIFS below each diversion is the following:

Kōke'e	Natural flow
Kauaikinanā	0.7 mgd
Kawaikōī	4.9 mgd
Waiakoali	1.4 mgd

WWA Phase 1: Monitoring

Kōke'e Ditch Irrigation System

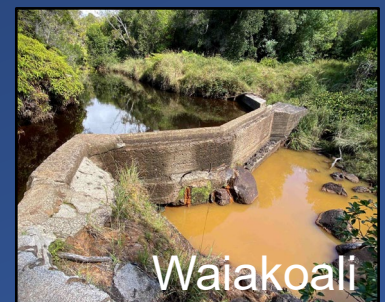
- If the KIUC project does not proceed, ADC (or its licensee KAA) will assume responsibility for the monitoring equipment at the following locations:
 - Waiakoali
 - Kawaikōī
 - Kauaikinanā
 - Kōke'e
- **November 2024:** KIUC settlement of **\$775k**; KAA undertook to install the monitoring equipment and controls (\$238.2k spent to date)



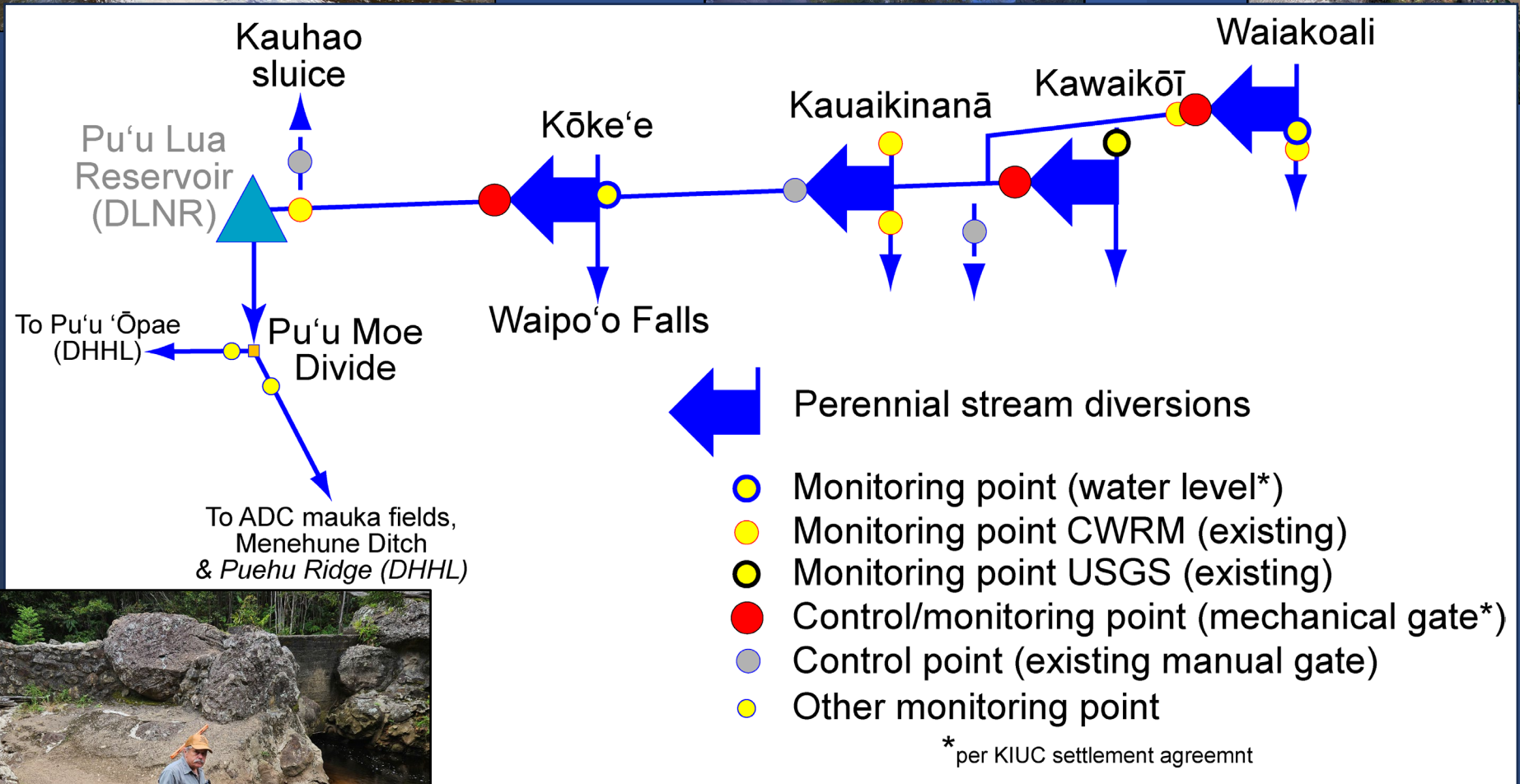
Kōke'e



Kauaikinanā



Waiakoali



Kawaikōi

To transponder

Remotely controlled gate (\$45k)

Controls water level in pool and amount of water released to stream and ditch.

2026

Gates to be installed down-ditch from **Waiakoali Kawaikōi** and **Kōke'e** diversions (and, if funds permit, at tunnel entrance down-ditch from Kauaikinanā diversion).

Water level sensor



Control box

Waiahulu

– Solar panel provides power to control box and transponder (battery backup)

Transponder

Receives signal from gate operator* and transmits water level in pool and gate height in real time to ADC's cloud-based SCADA platform.

(*Gates will eventually be programed to respond automatically to changes in water level.)



Equipment needs to function in normal conditions, as well as in adverse conditions

Waiahulu



Critical Infrastructure Funding Request

Capital improvements to support system operations



The bypass ditch is unlined and hydraulically inefficient.



The water level in and releases from Pu'u Lua reservoir cannot be controlled because the discharge valve is inoperable.

Lead Entity	Works	Cost
Land	Replace Pu'u Lua discharge gate	\$ 393,424
KAA	Replace 'Black Pipe' flume	\$ 371,155
DHHL	Install DHHL backup water tank	\$ 222,693
KAA	Refurbish Pu'u Lua inlet & bypass gates	\$ 185,578
KAA	Slipline bypass ditch	\$ 417,549
ADC	Restore mauka field basins' capacity	\$ 148,462
KAA	Install monitoring devices in Pu'u Lua	\$ 37,116
ADC	Install HDPE pipe Pu'u Moe to DHHL Bdy	\$ 1,113,465
WTCG	Install HDPE pipe DHHL Bdy to Pu'u 'Ōpae	\$ 2,087,747
CAA/DOFAW	Improve road Puu Moe to Pu'u 'Ōpae	\$ 222,693
KAA	Reconfigure Pu'u Moe Divide	\$ 118,770
KAA	Water supply to Waimea Cyn Dr fire buffer	\$ 1,484,620
ADC	Water supply to Field 635	\$ 1,855,775
Land	Backup supply to Menehune ditch	\$ 742,310
	Subtotal	\$ 9,401,357
	Engineering & Planning	
ADC/Land	Pu'u Lua Transfer to ADC	
ADC/Land	Pu'u Lua Safe Capacity 90% Plans	
DHHL	Pu'u 'Ōpae Safe Capacity 30% Plans	
ADC	Kitano - New Reservoir 30% Plans	
WWA	Water Management / Agency Draft Ops Plan	
	Subtotal	\$ 1,484,620
	Total*	\$ 10,885,977

* includes GET, 10% contingency, 10% administration



The inlet/bypass gates are essential to reservoir and ditch operations during low-flow periods, but are in disrepair



There is no distributed source of water available for wildfire suppression on ADC's mauka lands

Challenges

- Providing water to users when Kōke'e streams are below the Phase 1 IIFs
 - During dry periods the hydrological functionality of the ditch system can be maintained if the ditch continues to be wetted by a flow of 1 mgd, as measured at CWRM's gauge immediately up-ditch from Pu'u Lua Reservoir.
 - WWA provides for an operating protocol that permits agricultural and other beneficial uses to co-exist with the streams by allowing for a minimum flow of water to maintain the Kōke'e Ditch system to the extent necessary to ensure its ongoing structural integrity.

Long-Term Needs

- Implement repairs to Pu'u Lua Dam and secure a permit to impound ~250 MG of water.
- Work to reduce seepage loss in all sections of Kōke'e Ditch by installing pipe, liners, and/or sealants in critical locations.
- Conduct a regional water demand assessment to determine how much water users require under existing and future land uses – ADC, DHHL to develop water use plans.

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