Kaelepulu Stormwater Improvements Proposal

Stormwater Branch, DFM

Community Input

April 6, 2025

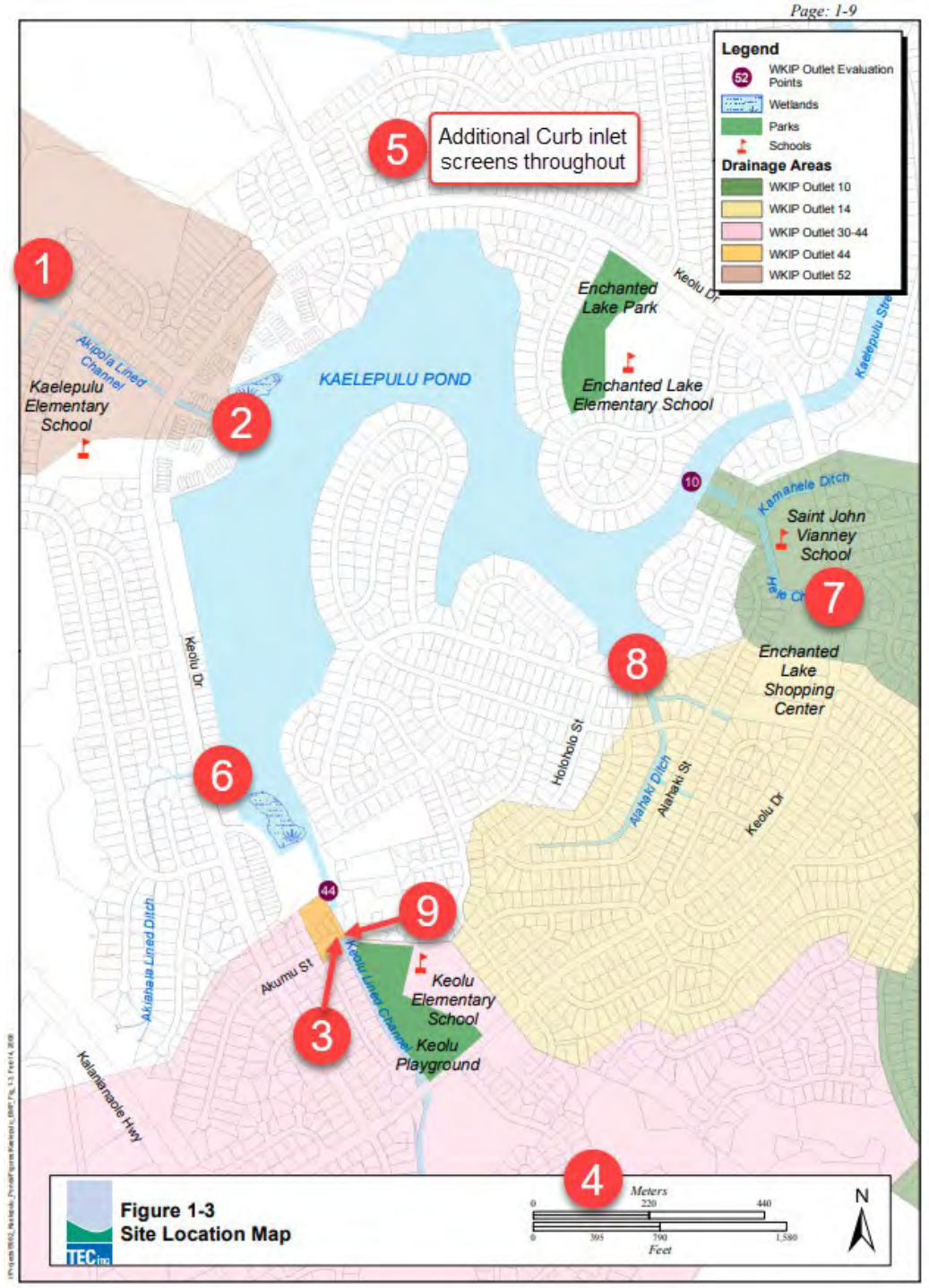
Why are we here?

- Significant sediment, trash, and greenwaste from stormwater pollute the pond and bay with every large storm
- Community has been asking for improvements for decades
- Councilmember Esther Kia‘āina appropriated $2,000,000 for improvements to stormwater management
- Proposed project site was not asked for and will have little impact
- Community wants public funds to be spent effectively

Stormwater photos from 6” storm on Jan. 30, 2025

Project locations

1. City Proposed: Rain Garden and Hydrodynamic separator at Akiohala Street
2. Trash and sediment capture structure at Akipola Channel outfall (WKIP 52)
3. Akumu Street Hydrodynamic separator (WKIP 43)
4. New Berm at Kaopa Basin (WKIP 30-35)
5. More curb inlet screens and trash collection boxes
6. Trash and sediment capture structure at Akiahala Lined Ditch (WKIP 47)
7. Trash and sediment capture structure at Hele Channel Bridge (WKIP10)
8. Trash and sediment capture structure at Alahaki Ditch (WKIP 14)
9. Trash and sediment capture structure at Keolu Lined Channel outfall (WKIP 30-44)

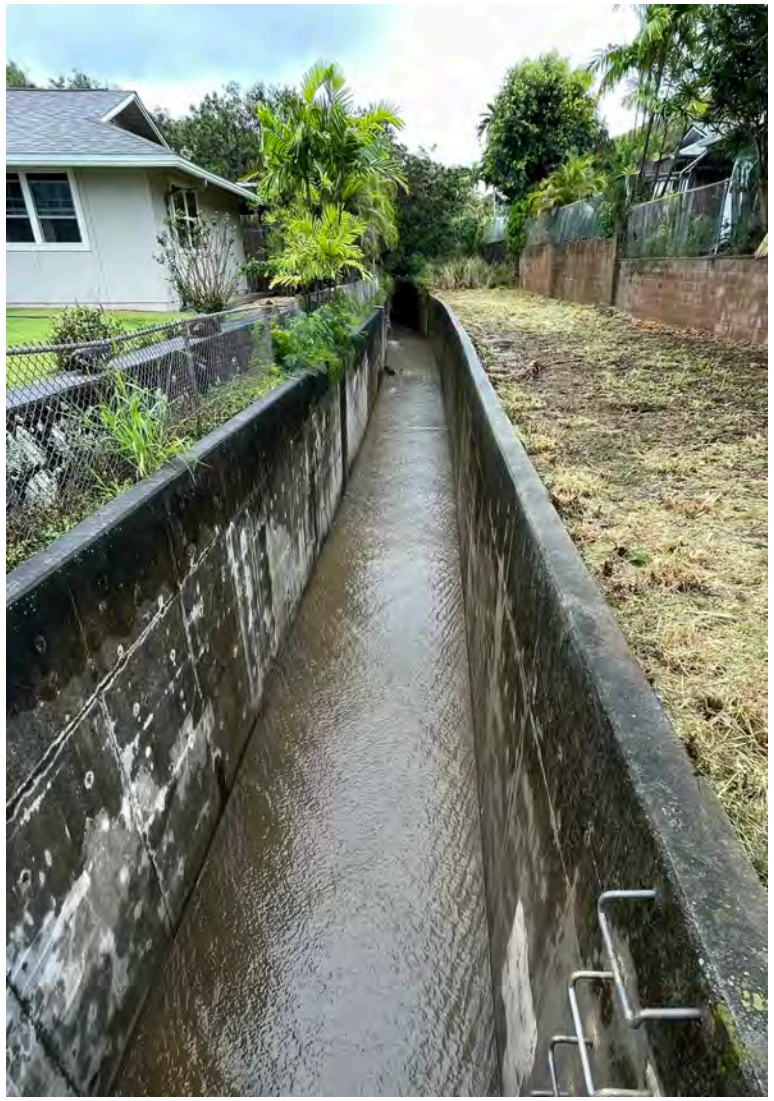


Akiohala Rain Garden & Hydrodynamic separator

- Only cleans 9 acres
- Site was chosen as a result of runoff in 2015 from a construction site that is no longer a problem
- Stormwater from this site is significantly cleaner other proposed areas
- Biofiltration curb extension (Rain Garden) is located at the base of stable vegetated slope + needs community maintenance commitment

Akiohala Runoff/Debris

Very little sediment or trash in runoff, occasional branches and greenwaste



Stormwater photos from 6” storm on Jan. 30, 2025

Trash and sediment capture structure at Akipola Channel outfall

- We appreciate the city is proposing a trash collection system like this
- This location was only called out as an alternative to the hydrodynamic separator location in Project #1 that was too far upslope for any impact
- There is not significant flow of stormwater through this channel
- Because of low impact due to the relatively clean runoff, this project is not a high priority

Akumu Hydrodynamic separator

- Will clean pollutants from 53 acres
- Significant waterflow and sediment comes from across Kalanianaole Highway in Norfolk and also from eroded dirt bike and offroad vehicle trails on slopes of Olomana
- Asphalt, organic matter and soil eroded from the stormwater drainage area regularly fills the current manhole cleanout
- Limited impacts to public during construction and maintenance on the dead-end portion of Akumu Street
- Can be monitored for effectiveness

New Berm at Kaopa Basin

- Would remove pollutants from 250+ acres of runoff — much of the sediment is from slopes of Olomana where there is ongoing development and major land clearing
- Significant stormwater flows into this basin due to heavier rainfall in the mountains
- Will restore original function of Kaopa basin as a settling basin to remove sediment from water before it flows to Kaelepulu Pond and Kailua Bay
- Will improve water quality via infiltration into groundwater – a stated goal of Stormwater Management
- Can be built on City-owned land with very little ongoing maintenance

Kaopa Basin Runoff/Debris

Extreme flows of stormwater heavy with sediment and other pollutants

Stormwater photos from 6” storm on Jan. 30, 2025

Additional curb inlet screens and trash collection boxes

- Proven to be effective in Enchanted Lake
- Install retention baskets in all the storm drains that empty into Kaelepulu Pond. We currently have 35 baskets installed, and we have a total of 110 drains with screens
- There are hundreds more curb inlets where screens and baskets could be added
- They need to be emptied more frequently than current done to maximize their effectiveness
- Project has already been planned and permitted, but only partially implemented

Trash and sediment capture structure at Akiahala Lined Ditch

- Drains ~50 acres of residential, agriculture land, highway shoulders, undeveloped land on both sides of Kalanianaole Highway, and on the slopes of Olomana
- Pollutants that need to be removed include urban trash, yard waste, sediment, road gravel, large rocks, construction gravel, and stones

Akiahala Lined Ditch Trash and Debris

Stormwater brings both greenwaste and significant gravel – the gravel peninsula in the center image and the two metal pipes washed down in a single recent storm

Trash and sediment capture structure at Hele Channel Bridge

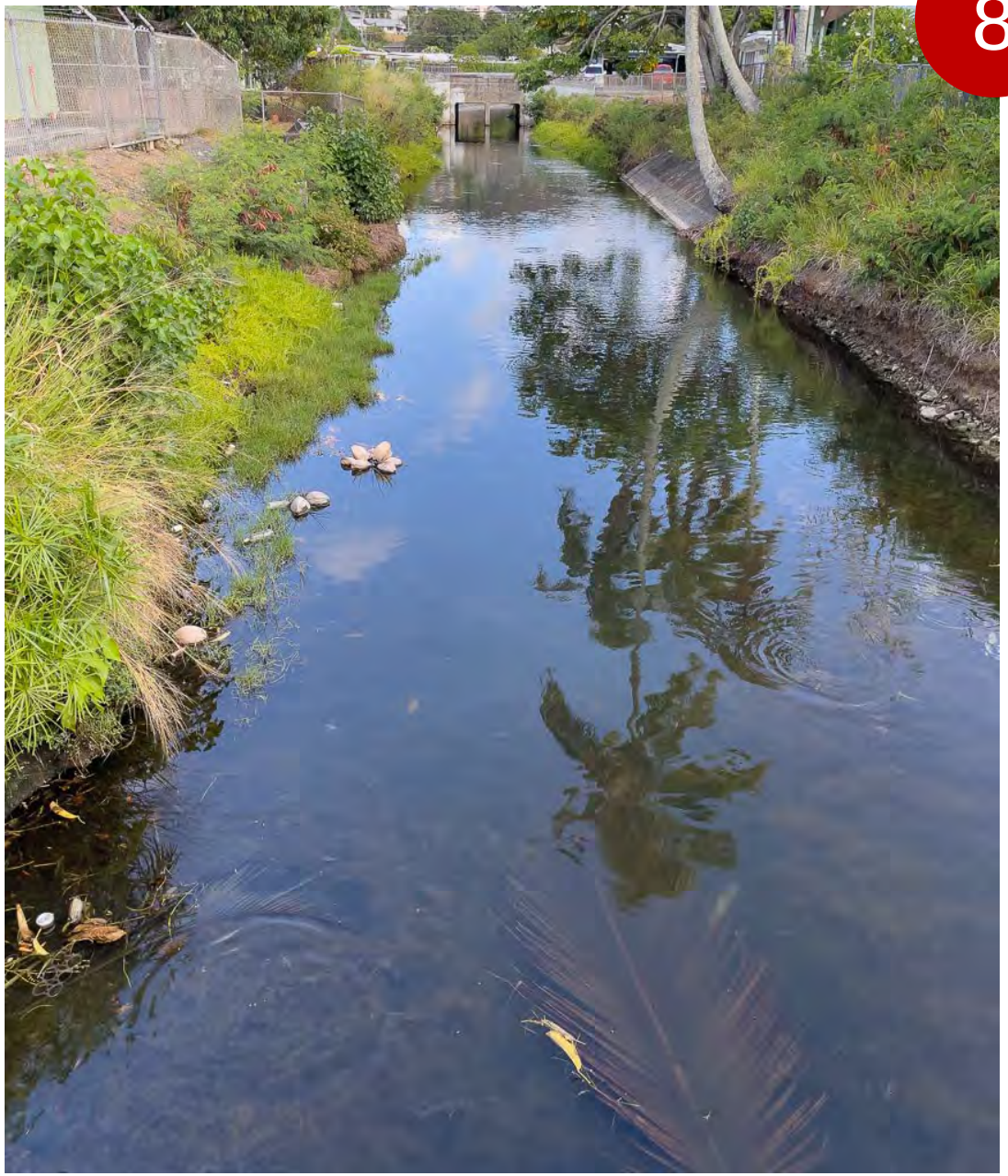
- Stormwater from 260 acres of urban and residential areas, some on steep slopes
- Trash and larger sediment capture structure is needed (grate or screens, with or without net)
- Maintenance to remove debris after storms
- Accessible from overpass at Keolu Drive

Hele Channel Trash and Debris

Stormwater brings sediment, greenwaste, trash, road gravel and other urban pollutants that wash directly into the Kaelepulu channel

Trash and sediment capture structure at Alahaki Ditch

- Stormwater from 87.4 acres of densely populated residential areas, some on steep slopes
- This is an earthen ditch and stormwater from it is heavy with urban trash, coconuts, palm fronds, and greenwaste
- City 2008 BMP study recommended Hydrothane Trashracks for this location

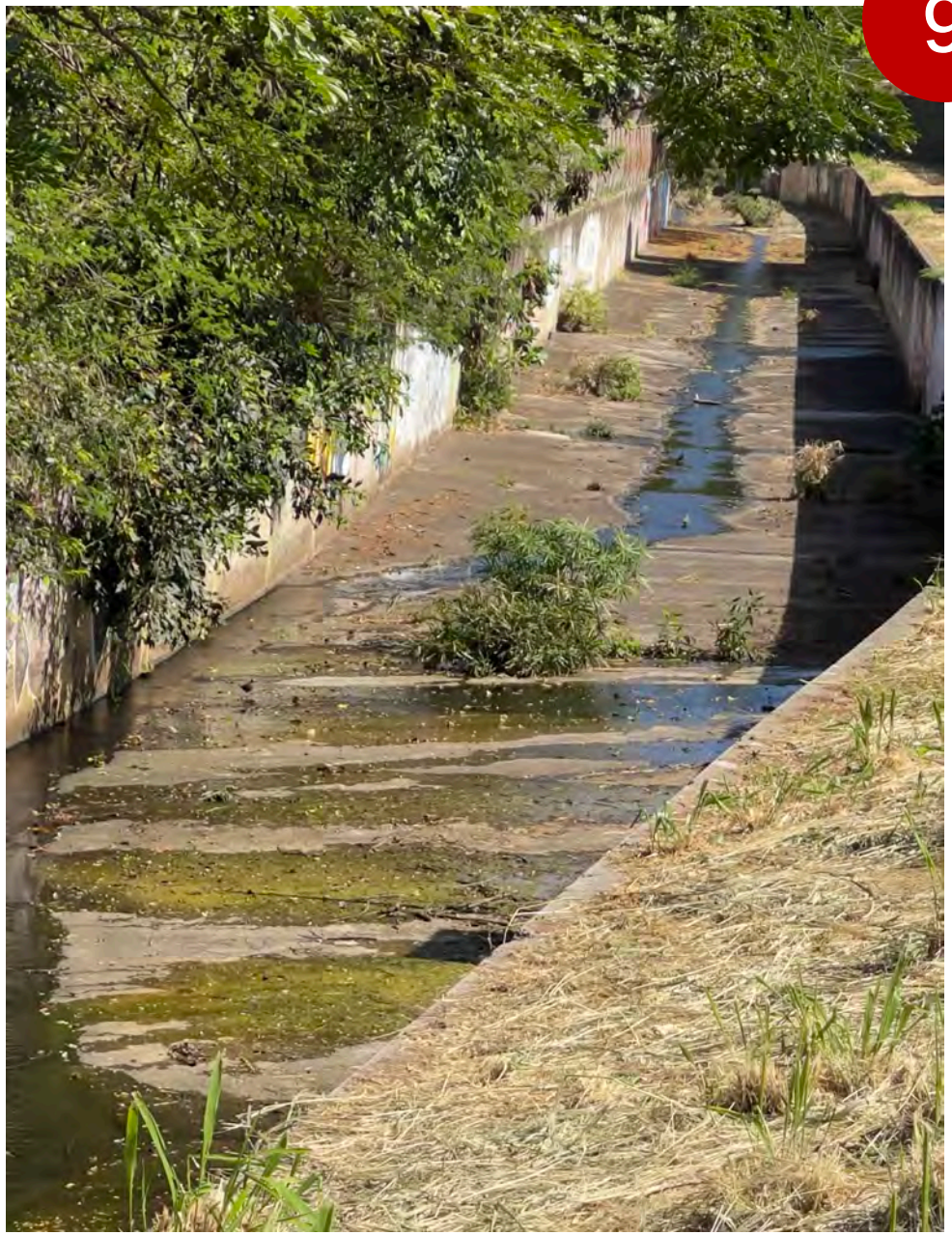


Alahaki Ditch Trash and Debris

Typical trash pulled out of the lake after a storm

Trash and sediment capture structure at Keolu Lined Channel outfall

- Stormwater from 425 acres of urban, school, playground, and residential areas, some on steep slopes
- Trash and larger sediment capture structure (grate or screens, with net)
- Maintenance to removal debris after storm
- Accessible from dead end of Akumu Street



Keolu Lined Channel Trash and Debris

Stormwater brings sediment, greenwaste, trash, balls, spray paint cans, road gravel and other urban pollutants that dump directly into the Kaelepulu Wetland, and then flow to the lake

	Comparison of Projects	Timeframe	Maintenance	Effective	Cost to benefit	Improved acres
1	Original Proposed: Rain Garden – 2 acres and Hydrodynamic separator – 7 acres		*			9
2	Trash and sediment capture structure at Akipola Channel outfall (WKIP 52)			**		138
3	Akumu Street Hydrodynamic separator (WKIP 43)					53
4	New Berm at Kaopa Basin (WKIP 30-35)					250+
5	More curb inlet screens and trash collection boxes					NA
6	Trash and sediment capture structure at Akiahala Lined Ditch (WKIP 47)					~50
7	Trash and sediment capture structure at Hele Channel Bridge (WKIP10)					260
8	Trash and sediment capture structure at Alahaki Ditch (WKIP 14)					87.4
9	Trash and sediment capture structure at Keolu Lined Channel outfall (WKIP 30-44)					425

*Rain garden rated red due to reliance on community volunteers to maintain

** From observations of Akipola Channel, it gets a fraction of the pollutants that the other channels do