

# PUAKŌ FOR REEFS

## Executive Summary

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### From Cesspools to Coral Reefs: Hawai'i's Statewide Crisis and One Community's Replicable Blueprint to Solve It

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*Hanau ka 'Uku-ko'ako'a, hanau kana, he 'Ako'ako'a, puka —*

Born was the coral polyp, born was the coral, came forth.

— Kumulipo, Hawaiian creation chant, line 15



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## A STATEWIDE CRISIS — AND A NATION'S CORAL HERITAGE — A REEF AT THE EDGE

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Coral reefs are not background. They are foundation. Hawai'i is home to 70% of all U.S. coral reefs — a national treasure sustaining Native Hawaiian fisheries, protecting shorelines from storm surge, anchoring the tourism economy, and providing joy to families every single day.

Puakō reef tells that story in full. They called it the Gold Coast. The waters off Puakō, on Hawai'i Island's South Kohala Coast, once teemed with Yellow Tang so dense they turned the sea gold. Coral blanketed 70% of the reef. Ancient Hawaiian families fished here for generations — and still do. Today, that same reef is 93% gone — reduced to a ghostly 7% coral cover, its color leached away by the slow, invisible tide of cesspool wastewater.

Lau'ipala – Guardians of the Reef  
Also known as Yellow Tangs



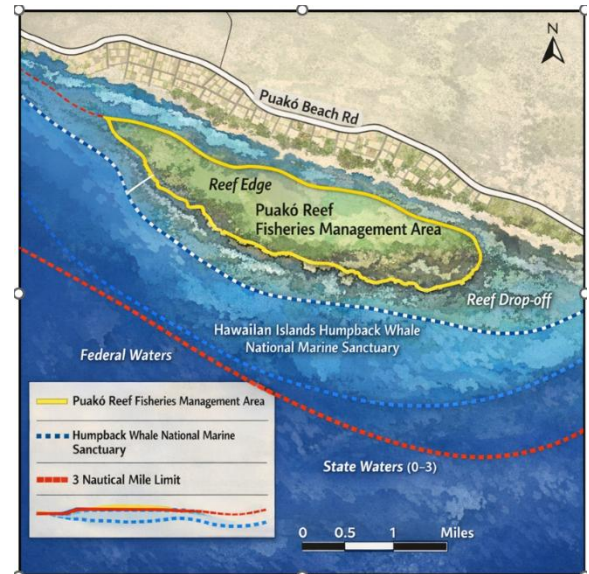
Scientists have drawn a line: when coverage falls below 5%, collapse becomes irreversible.

**We are not a decade away from coral collapse. We are at the edge.**

This same wastewater flows directly into federally, state, and county protected marine areas, actively undermining the conservation these designations were created to uphold:

- Humpback Whale National Marine Sanctuary
- Waialea Bay Marine Life Conservation District
- Puakō Bay Fishery Management Area
- Puakō-Anaehoomalu Fishery Replenishment Area

Puakō is not alone. This is a statewide crisis. Hawai‘i’s 80,000 cesspools dump 53 million gallons of raw sewage into fresh and coastal waters every year. A decade ago, the State mandated cesspool replacement by 2050 — a \$1.5 billion undertaking — and identified fourteen Priority I communities, nine of them coastal, requiring the most urgent action. Since the mandate was issued, not one community-wide sewer solution has been implemented.



## THE CHALLENGE: THREE WALLS EVERY COMMUNITY HITS

The only real solution is a sewer — fully removing wastewater from the ground and piping it to a treatment facility. Yet every community attempting this hits the same three walls:

- Wall 1: A state mandate that came without adequate financing mechanisms.
- Wall 2: Counties willing to help but unable to bear the enormous cost alone.
- Wall 3: No established process for an existing neighborhood to build a sewer.

Sewers get built for new developments. Established coastal communities like Puakō have no roadmap and no path to funding — and so, most never even begin.

## THE RESPONSE: PUAKŌ BEGAN ANYWAY

For a decade, the Puakō Community Association organized residents, commissioned science, and pushed for solutions. Four years ago, community members founded Puakō for Reefs — a nonprofit created solely to build a full, replicable cesspool-to-sewer solution for Puakō and communities like it across the state.



Harmless green dye scientists flushed down Puakō toilets, with cesspools, septic tanks and aerobic systems ALL arriving on the shoreline within 2 and 48 hours.

Working entirely on volunteer time and donated money — without a single dollar of government funding — Puakō for Reefs assembled:

- **25 years of science** and three independent engineering studies
- A **complete sewer system design**
- A **signed MOU** with Hawai‘i County
- **\$2.5 million** raised from the community
- **80% resident support**, if affordable



### THE DESIGN: Low pressure system connecting to American Water Plant

Puakō is a one road community on the South Kohala coast. (Map 1 in appendix.) Over 50% of the land area is owned by the state. (Map 2 appendix)

Two independent engineering studies (Aqua Engineering and JPE Engineering) and a Basis of Design Report (Carollo Engineering) evaluated the available options and concluded that a low-pressure collection system is the most economical and viable approach for Puakō's conditions: low-elevation terrain, coastal lava ground, and a treatment facility already operating nearby. This finding supports Hawai‘i Counties Cesspool Conversion Task Force Report for the Puakō area. (All reports available upon request)

The collection system will connect to the existing American Water Plant at the Mauna Lani Resort bordering Puakō to the south. The system is designed to expand to include homes and the State park in Wailea Bay, as well as the planned University of Hawaii Marine Research facility in Puakō. Four collection routes were evaluated and route 2 was chosen. (Yellow line in map 3 appendix)

**No other community in Hawai‘i is this ready.**

### THE PLAN: FOUR PHASES AND THREE YEARS TO A FUNCTIONING SEWER

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Three steps remain before the project is fully shovel-ready. Project Gant Chart in Appendix.

#### **Phase 1 — Problem Definition, Solution Development & Community Support**

**COMPLETE.** Thirteen years of groundwork done.

#### **Phase 2 — Final Documentation, Entitlements, Permits & Financing**

2026–2027. Funded by this federal earmark and philanthropy. Delivers shovel-ready status. **In Progress**

#### **Phase 3 — Construction**

2027–2029. Funded by philanthropic Program Related Investment, repaid by county bond.

#### **Phase 4 — Connection & Operations**

2029. Dedicated to County. Thirty-year capital lease begins.

On the County front, Puakō for Reefs meets monthly with the mayor and his team, working to finalize design, legal, and permitting requirements and establish the Community Facilities District — all grounded in the signed MOU. On the community front, the Kalaimoku Group, a Hawai‘i-based outreach organization, is building broad support across Hawai‘i Island and working toward the 65% community approval required by County process.

## THE MODEL: GLOBAL FRAMEWORK FOR LOCAL CRISIS

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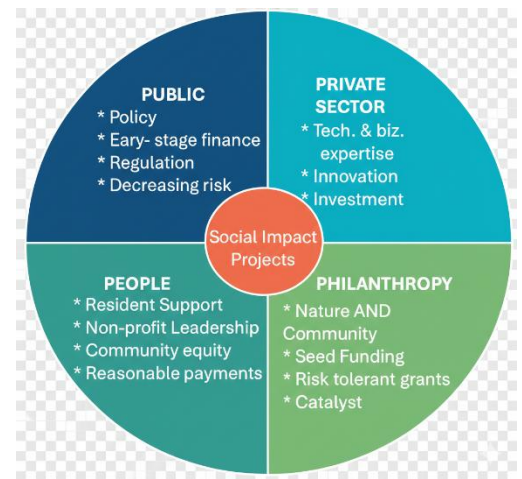
Funding has been the missing piece — the most confounding one. Until now.

The World Economic Forum's Public-Private-Philanthropic Partnership model, used globally through their Giving to Amplify Earth Action program, was designed precisely for environmental challenges too large for any single sector to solve alone — among them ocean plastic pollution and the deforestation of the Amazon rainforest. Puakō for Reefs is bringing that model to Hawai‘i for the first time, with community as a fourth pillar.

This 4P model only works with the full commitment of every sector:

- The State to help finance the mandate it set.
- Counties to accept their infrastructure responsibility and share in the cost.
- Communities to organize, advocate, and commit to paying for proper waste treatment.
- Private and philanthropic partners to bring capital and expertise.
- The Federal government provides the catalytic investment that unlocks every other partner.

Puakō for Reefs is actively working with organizations in all four sectors and aligning them around this model.



## THE RESULT: ONE REEF SAVED. A BLUEPRINT FOR THE REST.

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The result will be the first community-led cesspool-to-sewer project of its kind in Hawai‘i — one that also closes the digital divide, bringing high-speed broadband to rural coastal communities that have gone without both for too long.

Built from the start to be replicated, it becomes a blueprint the other thirteen Priority I communities — and many Priority II communities — can use immediately. The statewide cesspool crisis has a \$1.5 billion price tag. This project proves the path to solving it.

**Shovel-ready within one year.**

**Construction completed within two more.**

Cesspool waste permanently removed from four protected marine areas.

Puakō reef given the chance to recover.

A replicable blueprint delivered to Hawai‘i's nine other Priority I coastal communities.

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**This is not a problem without a solution. It is a solution without sufficient funding.**

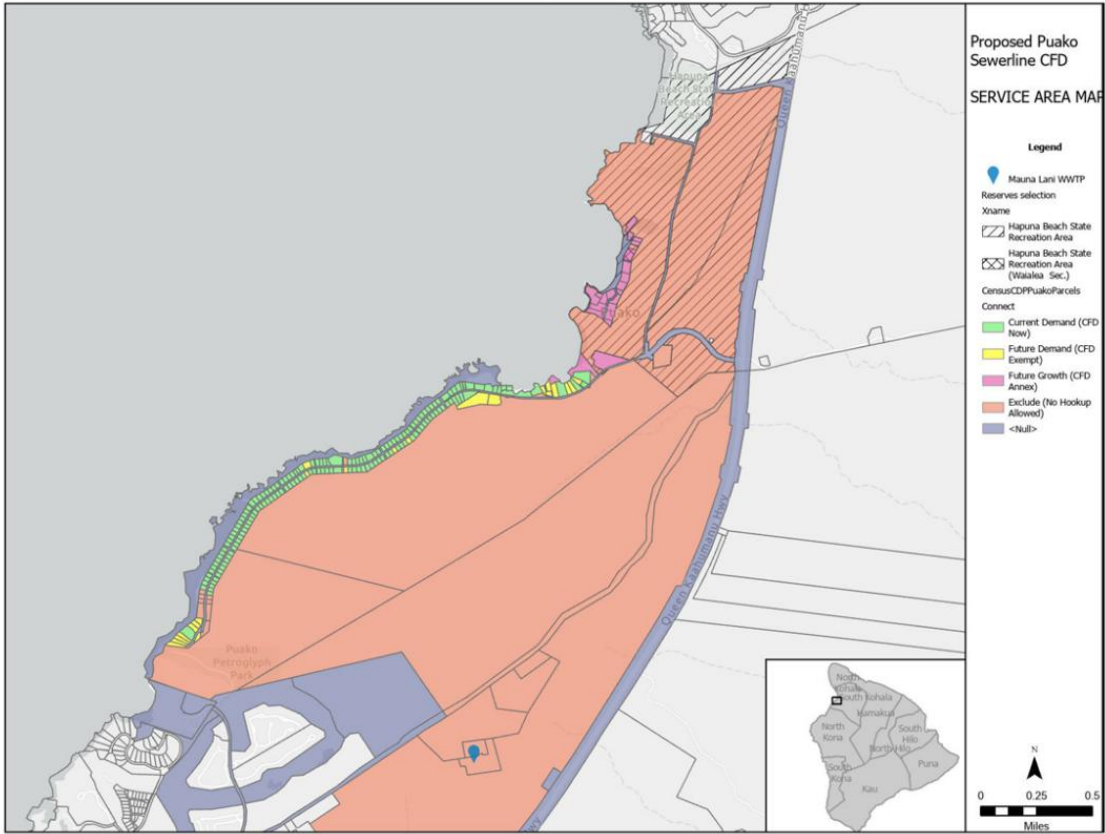
The question is not whether to solve this problem. It is whether to solve it now, together — or later, when the reefs are gone and the cost is far greater.

**The time is now.**

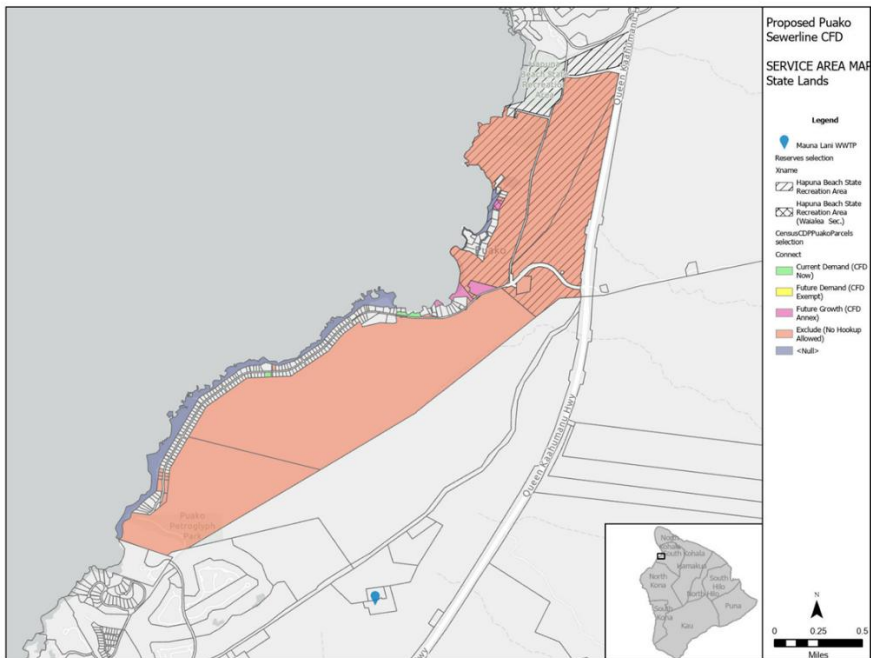
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Puakō for Reefs | [puakoforreefs.org](http://puakoforreefs.org) | Puakō, Hawai'i

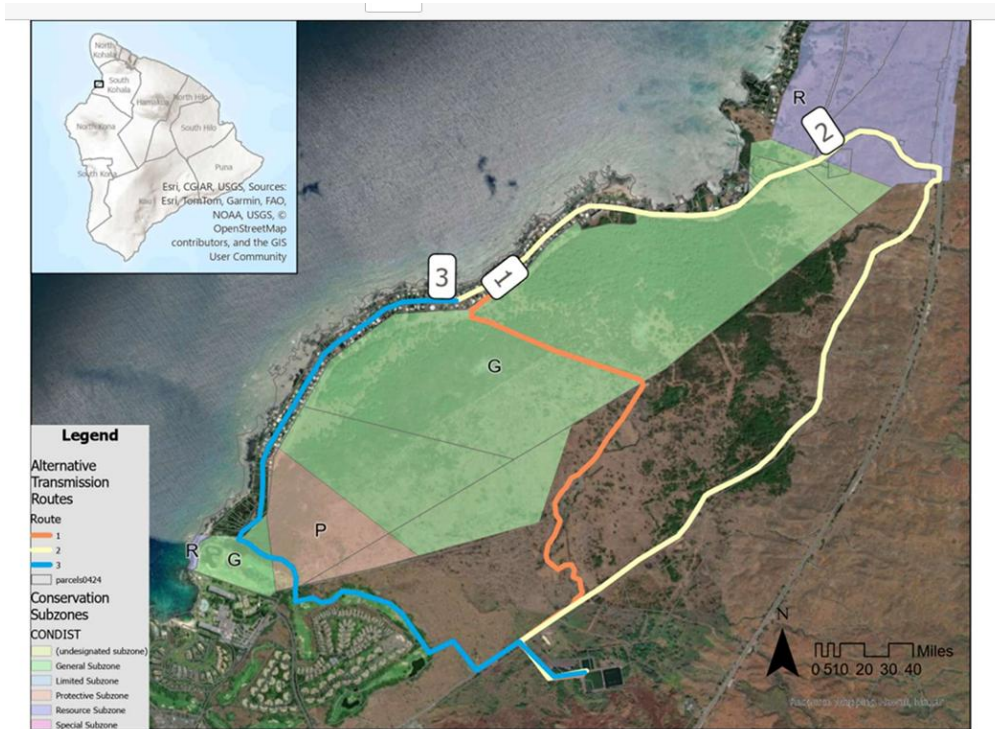
# Map 1: Service Area for Puakō Sewer



# Map 2: State Lands in Puakō



# Map 3: Collection Routes Evaluated in Puakō



## Table 1: Sewer Project Timeline

### Puakō Sewer Project: Project Timeline

Timeline shows the full scope of community-led effort since 2011. Project is approximately 80% complete. Construction begins January 2028.

Project Progress:		2011-2023													75%	2024-2029				
Phase	Task	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Foundation	Scientific evidence	2011							2018											
Foundation	Environmental impact studies					2015						2021								
Foundation	Basis of Design report								2018				2022							
Foundation	Preliminary Engineering Design										2021				2024					
Foundation	Early community buy-in	2011											2022							
Design	Financial modeling												2022		2024					
Design	System design												2022		2024					
Design	County buy-in													2023	2024					
Active Work	Community outreach														2024					
Active Work	County coordination														2024					
Active Work	Securing 4P funding commitments														2024					
Final Steps	Final community approval																2026			
Final Steps	Final legal framework																2026			
Final Steps	Final engineering & compliance																2026			
Final Steps	Permitting																	2027		
Final Steps	Construction Puako main line and transmission line																		2028	2029

Legend:   
■ Complete (done)   
■ In Progress (active)   
■ Pending   
▼ Current date (2026)

**Table 2: Project Proposed Budget and Timeline**

Timeline	Cost	Source of Funding	Activities	Status
<b>Phase 1</b>		<b>Problem Definition,</b>	<b>Solution feasibility, Community Engagement</b>	
2013-2026				
	\$2.5M	Puakō Community Donations	Science, Feasibility, Due Diligence, Planning, Community Engagement	Complete
<b>Phase 2</b>		<b>Documentation Prep</b>	<b>For Shovel Ready</b>	
2026-2027				
	\$500K	Federal Earmark	Preparation of Construction Documentation and award contract	Progress
	\$250K	Federal Earmark	Obtain Entitlements and Permits	Progress
	\$100K	Federal Earmark	Community Facilities District Formation	Progress
	\$150K	Federal Earmark	Secure 4P Financing Model	
	\$43K	Philanthropy: Foundation Donation	Secure Final Community Approval: hired Hawaii based community outreach group to lead the process. Kalaimoku Group	Progress
	\$100K	State	Pay portion of costs associated with State owned land in Puakō through Green Fees Fund.	Progress
	\$450K	State	Re-establish Cesspool Conversion Fund to help Community members connect to sewer. (\$5,000 for 90 cesspool owners)	Progress
<b>Phase 3</b>		<b>Construction</b>		
2028-2029				
	\$10M	Philanthropy Program Related Investment	Construction costs bridge loan, paid upfront to be repaid by County bond once construction is complete (2 years).	Planned
	\$1M	Private Investment	Supplementary Bridge loan <i>if needed</i> for upfront costs, to be repaid by bond.	Planned
	\$11M	County	General Bond <b>which will NOT impact its debt limit</b> , to repay all construction costs.	Planned
<b>Phase 4</b>		<b>Hook ups and</b>	<b>Operations</b>	
2029- and on				
	\$2M	Philanthropy Grant Fund	Established to pay for connection costs for homeowners on a needs basis	Planned
	Monthly fee	People	Ongoing operations and Maintenance of Collection system, paid to owner of collection system: County or private entity	Planned
	Property tax	People	To repay construction costs through bond issue.	Planned