A photograph of a suspension bridge over a river, with a dark semi-transparent overlay containing white text. The bridge has a metal railing and cables. The background shows a river and lush green trees under a blue sky with some clouds.

TEMPLE UNIVERSITY  
ENGINEERS  
WITHOUT BORDERS,  
NUEVA JERUSALEN  
PROJECT



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**TEMPLE UNIVERSITY  
ENGINEERS WITHOUT BORDERS MISSION**

We aim to build a better world through engineering projects that empower communities to meet their basic human needs.



CANVA STORIES F20

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CANVA STORIES Z850

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# Our Chapter's Approach



## 01 Local Outreach

Work with community gardens and local nonprofits in the Greater Philadelphia region to help **enhance the support they provide to the local community.**



## 02 International Collaboration

Collaborate with international communities to develop optimal solutions to their most pressing issues.



## 03 Empower Next Generation of Engineers

Cultivate a fun and inclusive community where students can gain hands on experience and work with professional engineers to solve real world problems.





# Nueva Jerusalem Community

**Indigenous Kichwan community of 300,  
located in Napo, Ecuador**

- Lack access to reliable sanitation facilities
- Mostly subsistence farmers
- Health concerns amongst infants and seniors
- Severe coliform and heavy metal contamination



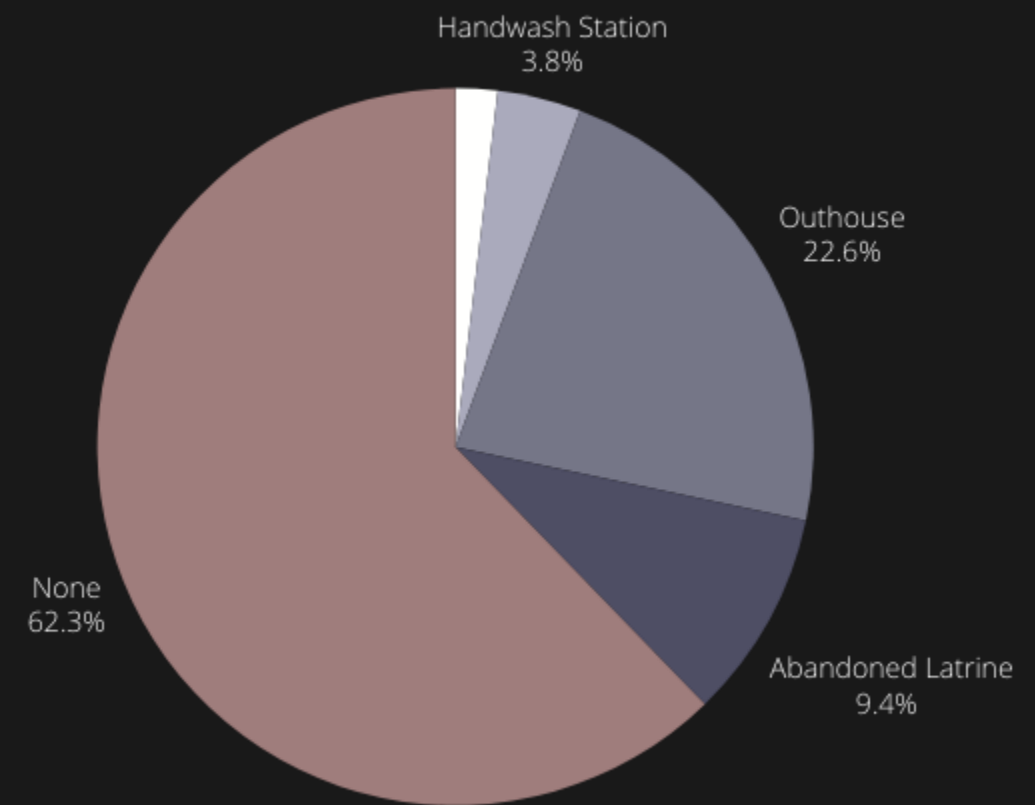


# Nueva Jerusalem Sanitation Project

## OBJECTIVE

Reduce water contamination and improve the community's public health by constructing reliable latrines and handwash stations.

Current Access to Sanitation Facilities





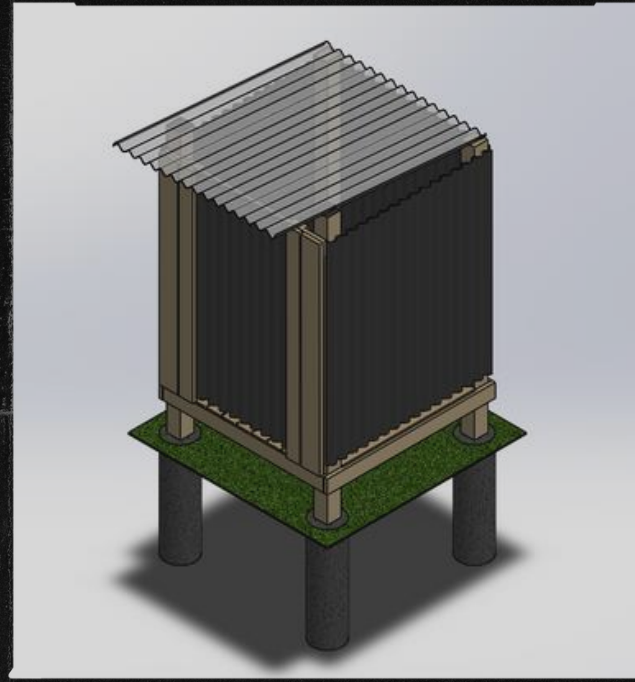
# Sanitation Project Timeline



## Assessment

(05.25.23 - 05.31.23)

Built relationships with community members and local NGO, surveyed the households, and tested water and soil samples



## Pilot Implementation

(05.23.24 - 06.03.24)

Will construct 8 pilot prototypes, to then monitor the community response and system effectiveness



## Full Implementation

(05.25 - 06.25)

After improvements to the pilot system design, will install concrete latrine systems in all 52 households



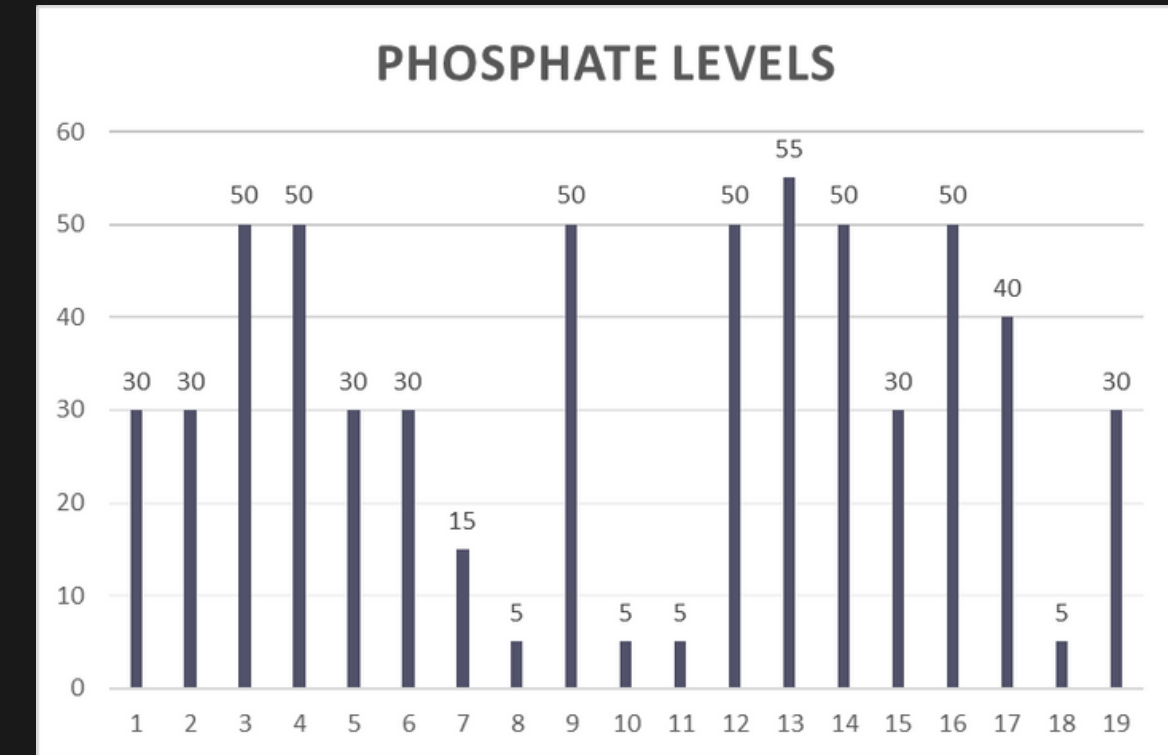
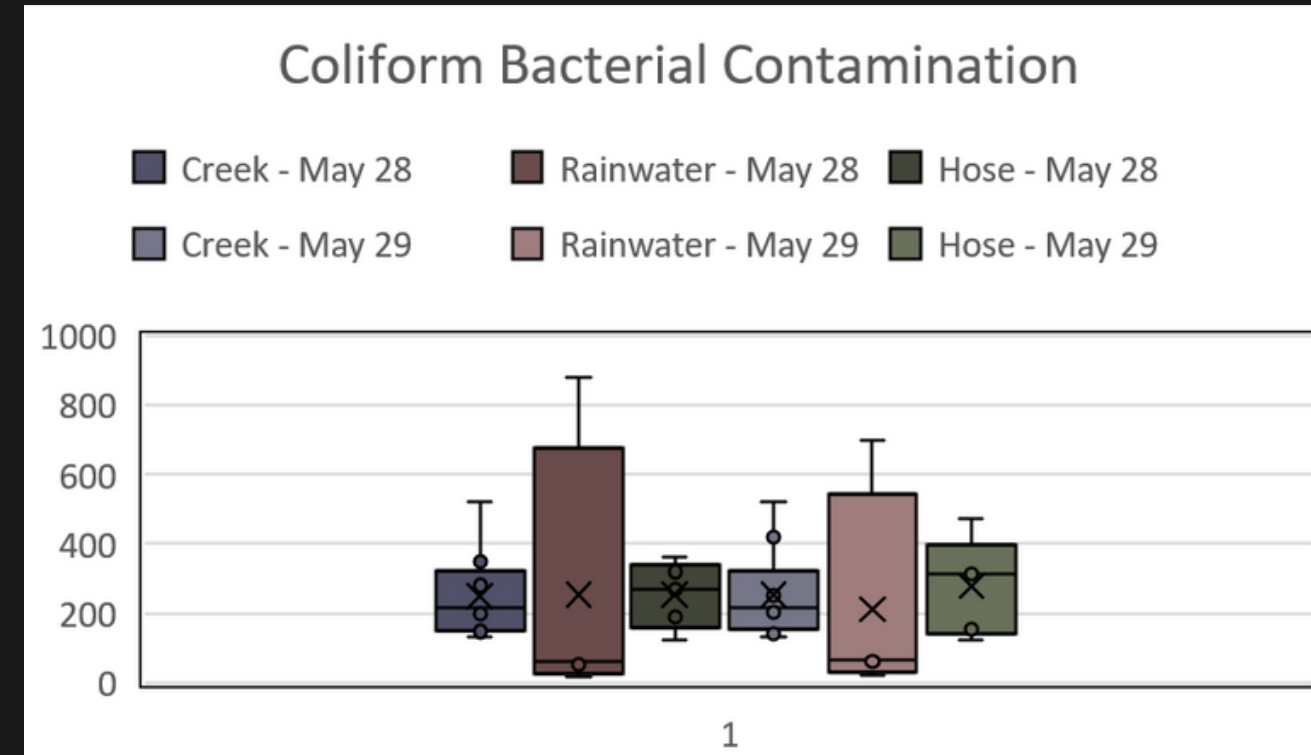
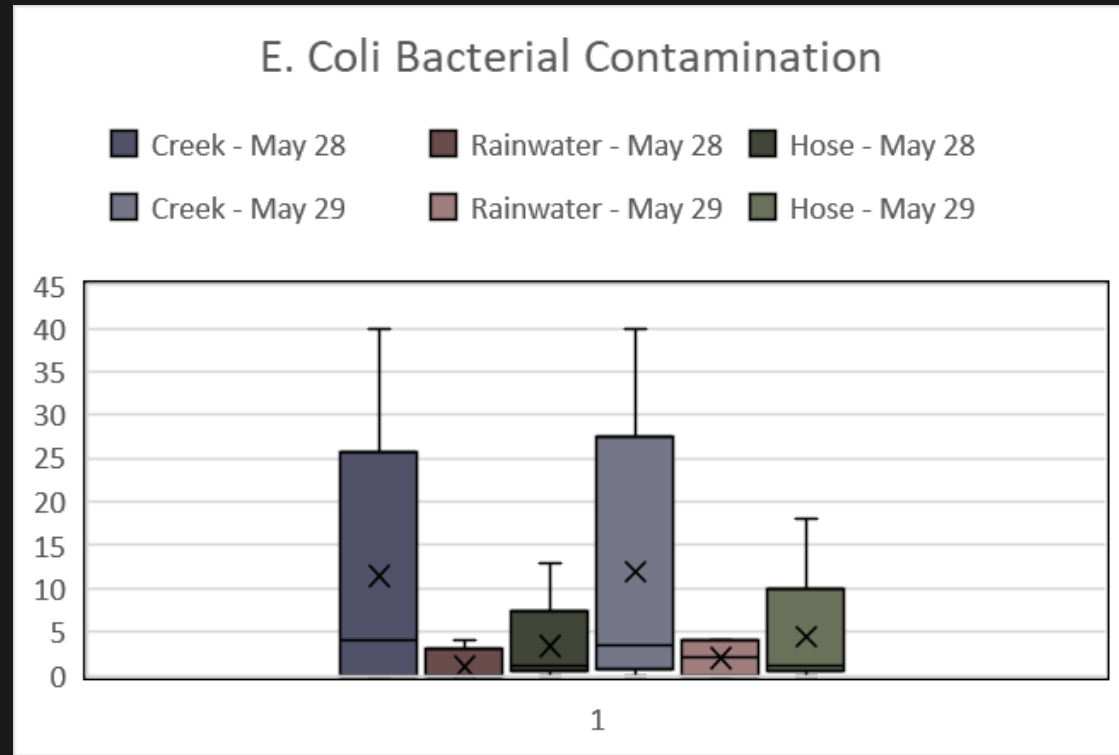
## Monitoring

(05.26 - 06.26)

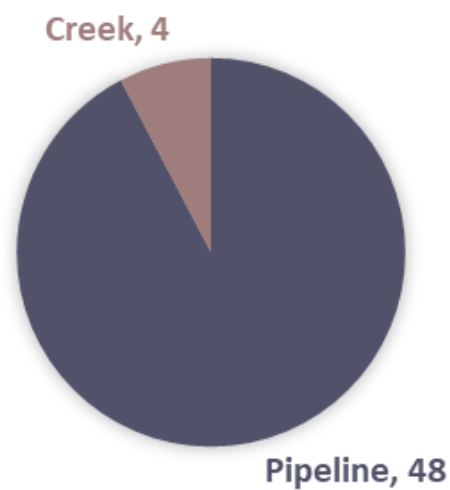
Performing repairs and maintenance while collecting data for environmental analysis and system evaluation



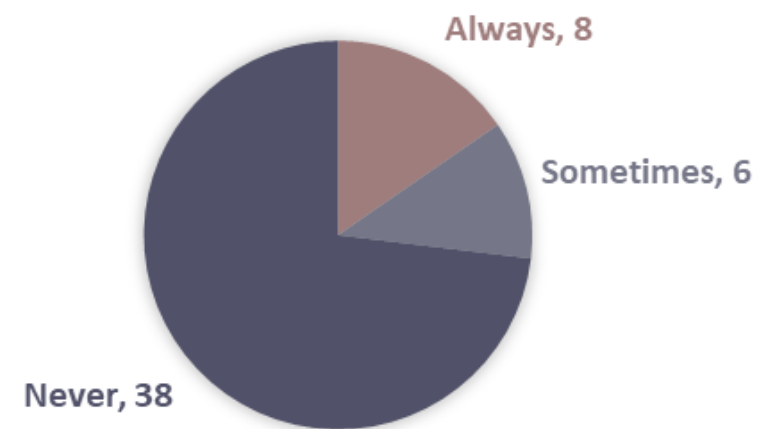
# Water Quality Within the Community



### PRIMARY WATER SOURCE



### USE OF FILTERED WATER



Severe bacterial contamination in creek and pipeline water sources, in addition to high phosphate levels. Majority of the community consumes pipeline water and a few consume water from the creek.



# Lessons Learned

## Data Collection

- Demographic data can be challenging to collect and the community did not have any historical data

## Operations and Management Training

- Community members do not currently have the technical knowledge to operate the proposed latrine systems

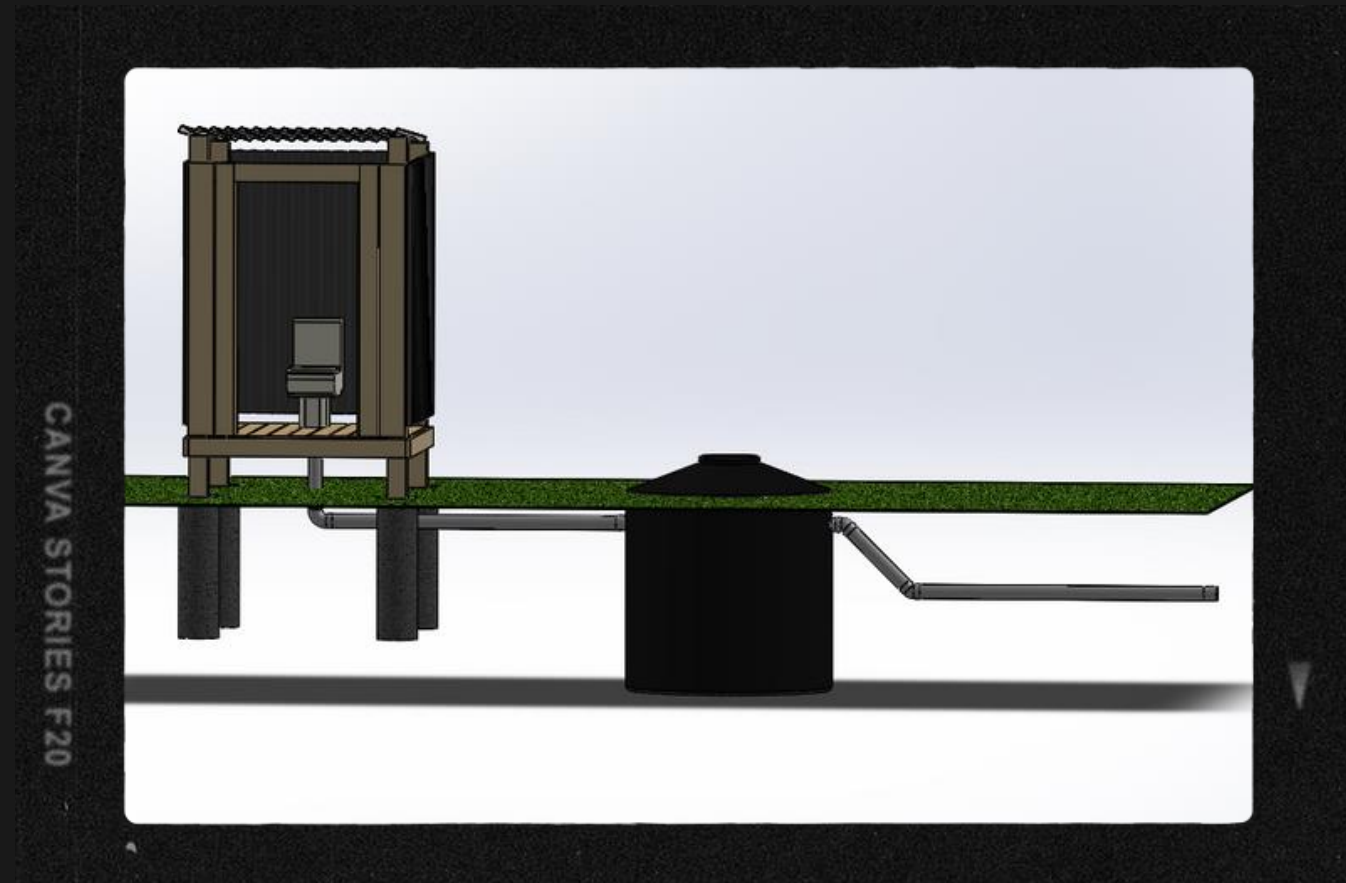
## Communication

- Being a Spanish-speaking community, we require translators to communicate with the community efficiently





# Pilot Implementation Systems



## Biodigester Latrine

- Operates on the user-end as a simple latrine
  - Plumbing connects a toilet bowl to a waste-collection tank
- The waste-collection tank contains limestone
  - works to break down the waste
  - introduces and sustains waste-consuming microbes
- Waste should be pumped out once every 3-5 years

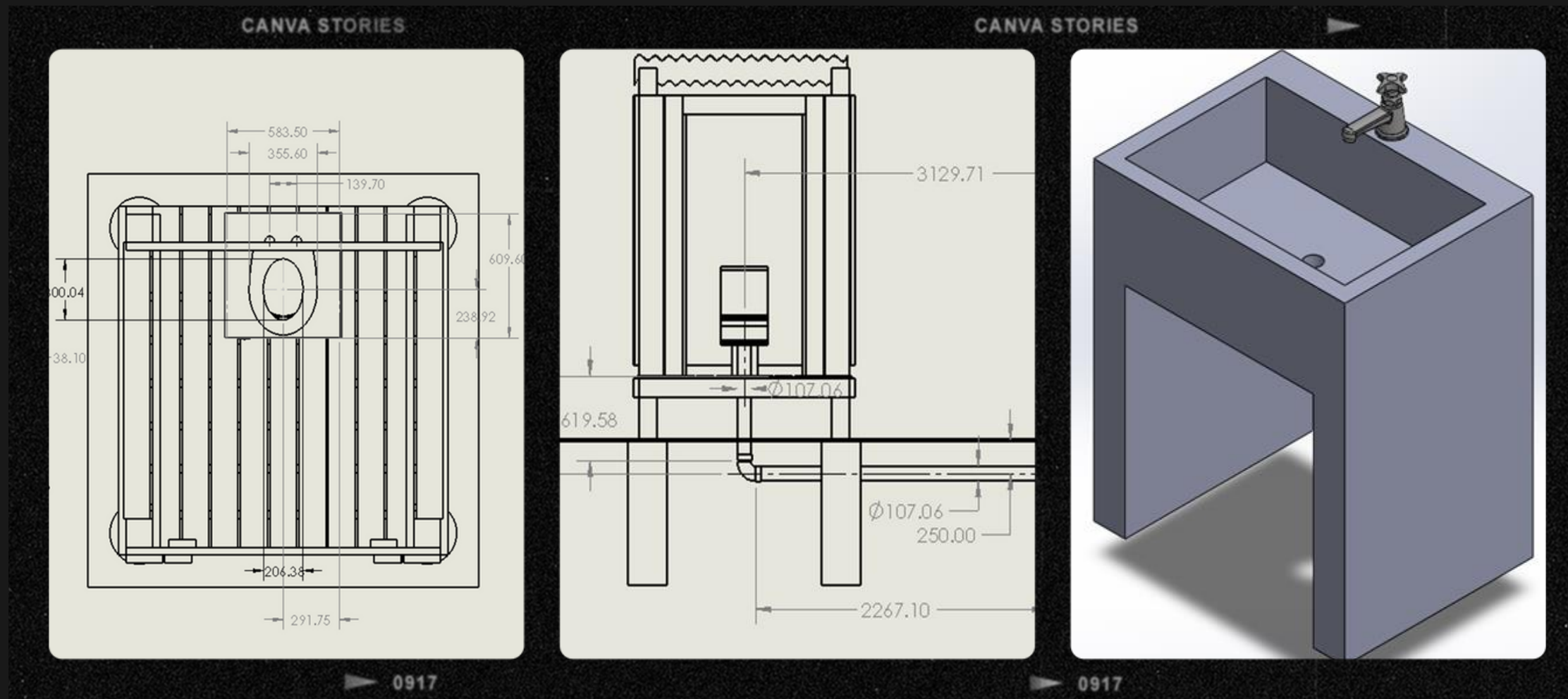


## Compost Latrine

- Waste is collected and added to a separate compost pile
- User must throw a small amount of damp organic cover material over the excrement
- Takes 12 months to fully compost the waste, after which the compost can be used as fertilizer



# Cost of Pilot Implementation



**Compost Latrine**

\$784

**Biodigester Latrine**

\$ 1,082

**Handwash Station**

\$98

	Quantity	Total
Compost	4	\$ 3,136
Biodigester	4	\$ 4,328
Sink	8	\$ 784
	<b>TOTAL</b>	<b>\$ 8,248</b>





Thank you all for your time!



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