Impacts of scheduled desludging on quality of water and wastewater in Wai city, India

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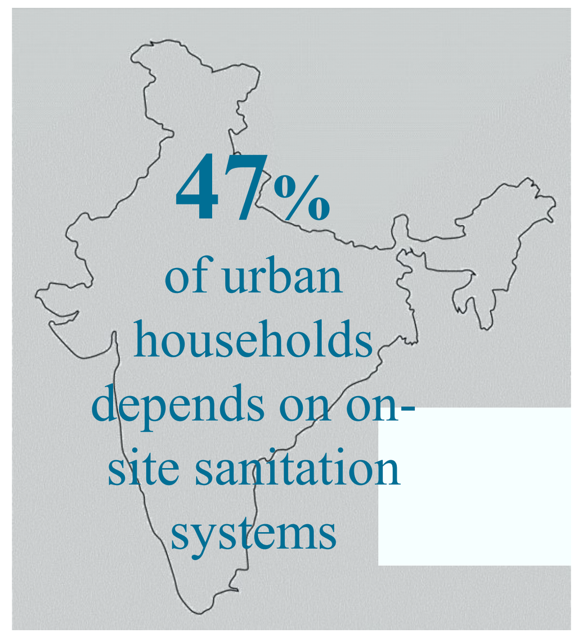
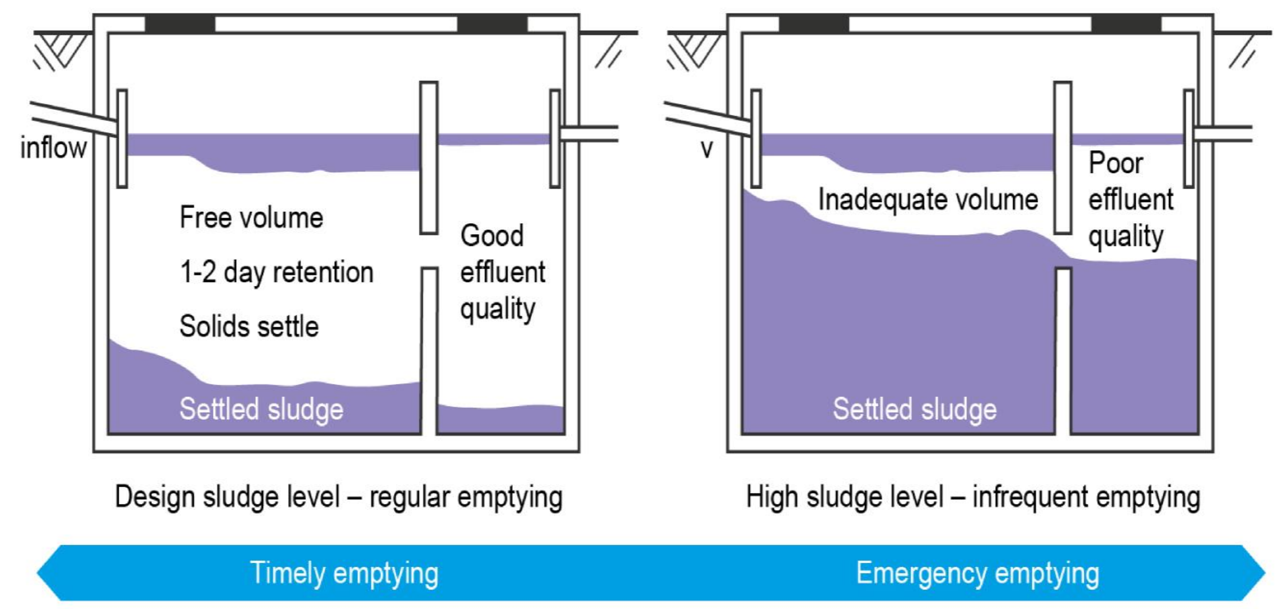
Introduction



Recent programs by GOI
focus on safe management of sanitation to meet the sanitation target of SDG 6.2

As per Joint Monitoring Programme
"Stored temporarily and then emptied and treated off-site" is classifies as a safely managed system

Need for Regular Desludging of Septic Tanks

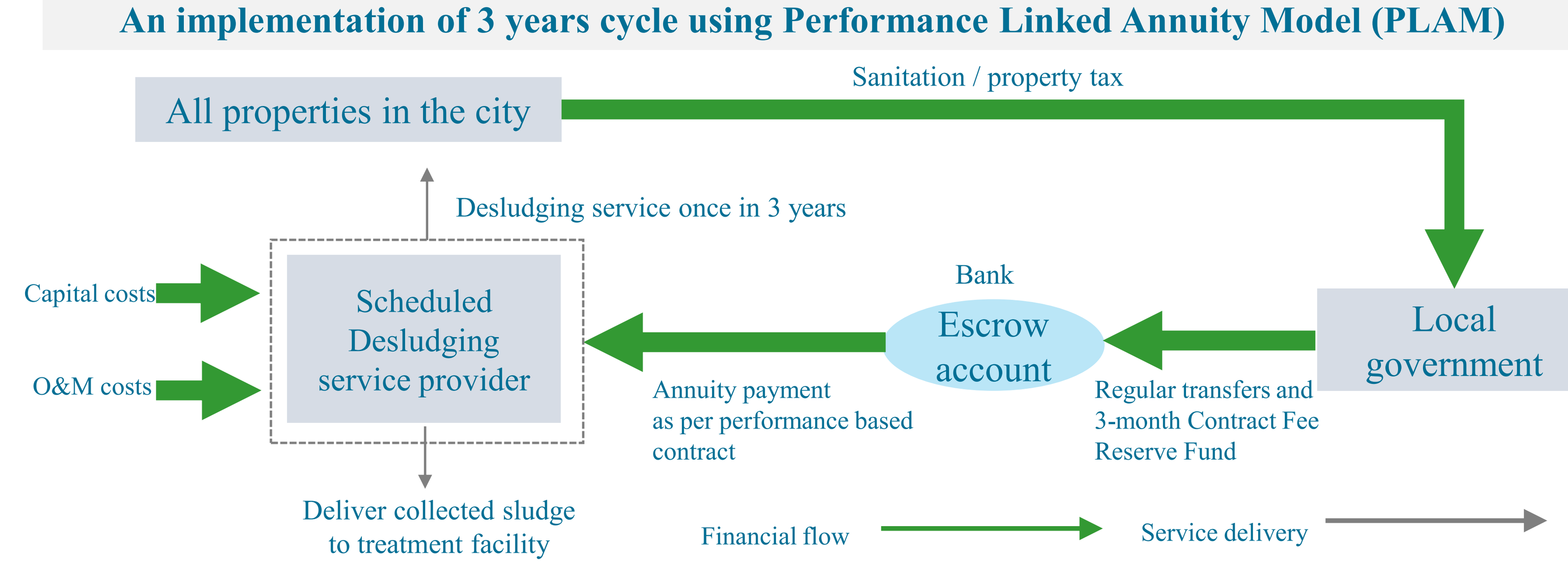


Source: Mills, 2013 as cited in ISF-UTS & SNV, p 8, 2019

Desludging every 2-3 years for septic tanks to function well
Standard frequency norms for many countries is 2-5 years

Methodology

An implementation of 3 years cycle using Performance Linked Annuity Model (PLAM)



43,000 Population

Toilets connected to Septic Tanks. Septic tanks connected to drains

City divided in 3 zones. Each zone covered in one year

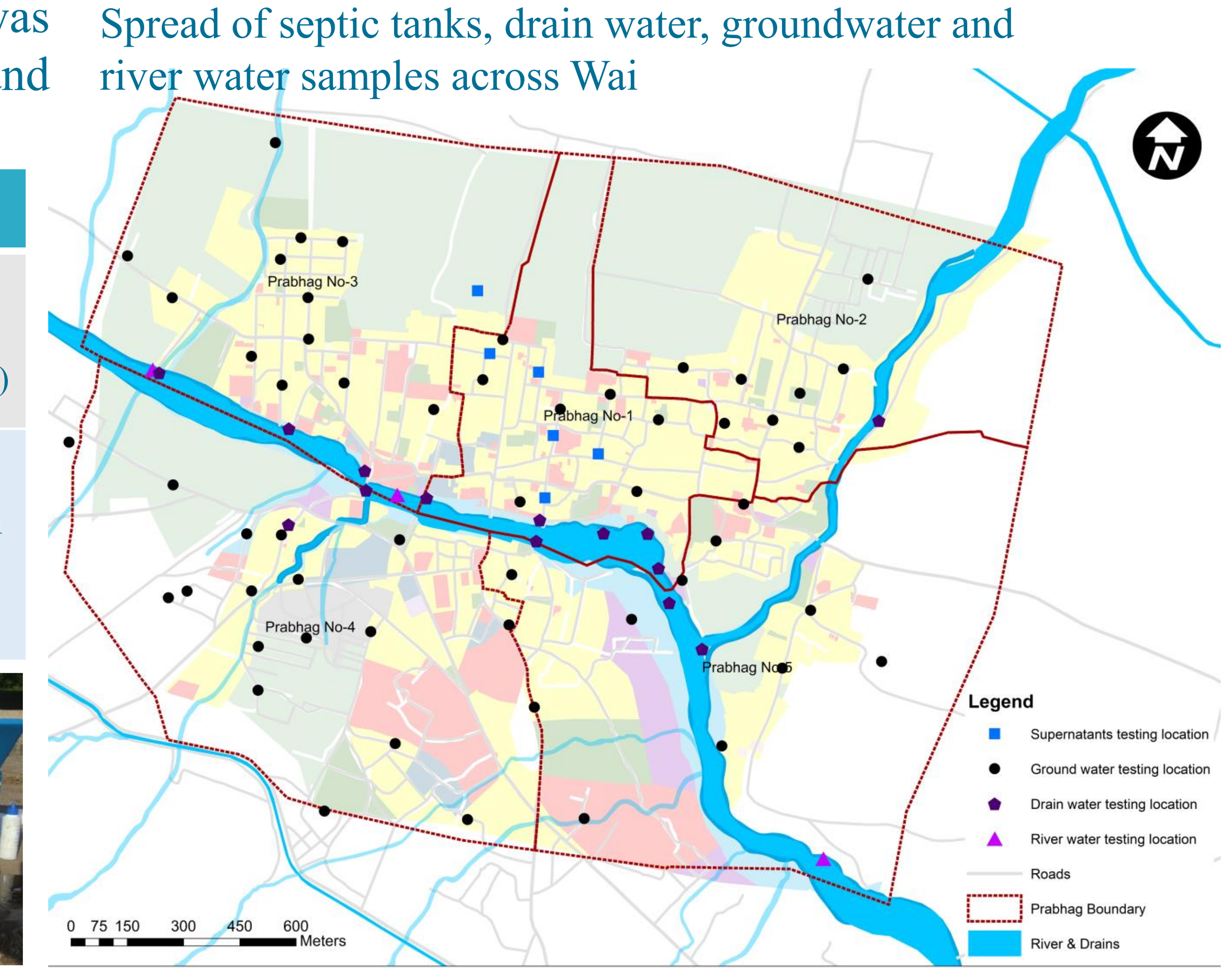
Benefits of scheduled desludging

- Equitable and inclusive services
- No manual labour
- Behavior change
- Equitable and affordable pricing
- Infrastructure optimization
- Environmental benefits

A water quality monitoring plan was conducted for three years to understand impact of scheduled desludging

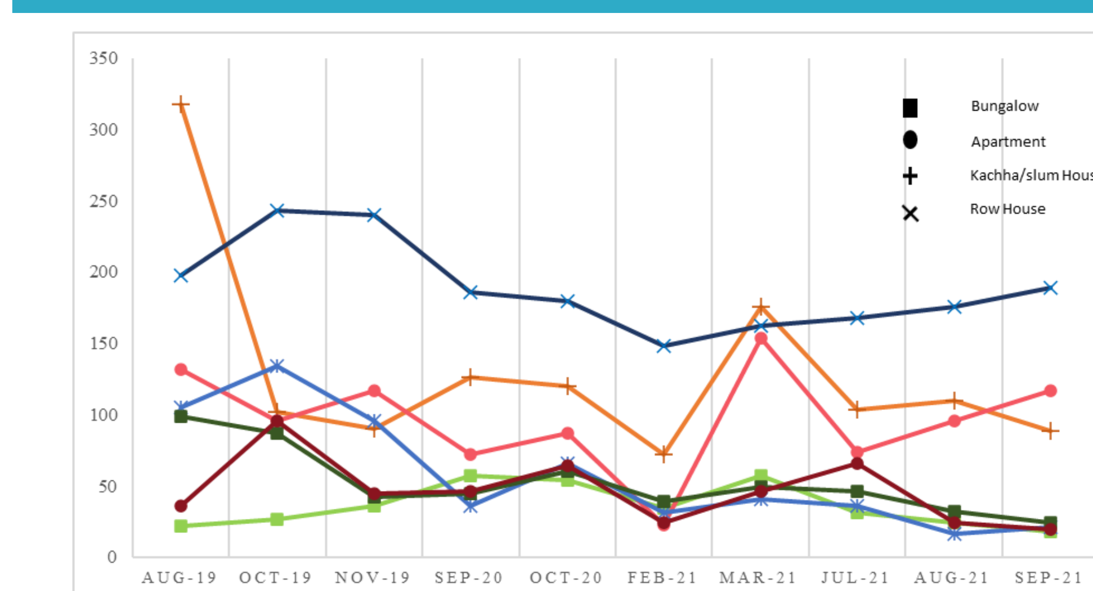
Samples	No.	Frequency
Septic tank effluents	7	Before desludging and after desludging (Monthly)
Drain water	17	Before and after monsoon for three years
River water	4	
Groundwater	60	

Spread of septic tanks, drain water, groundwater and river water samples across Wai



Impacts

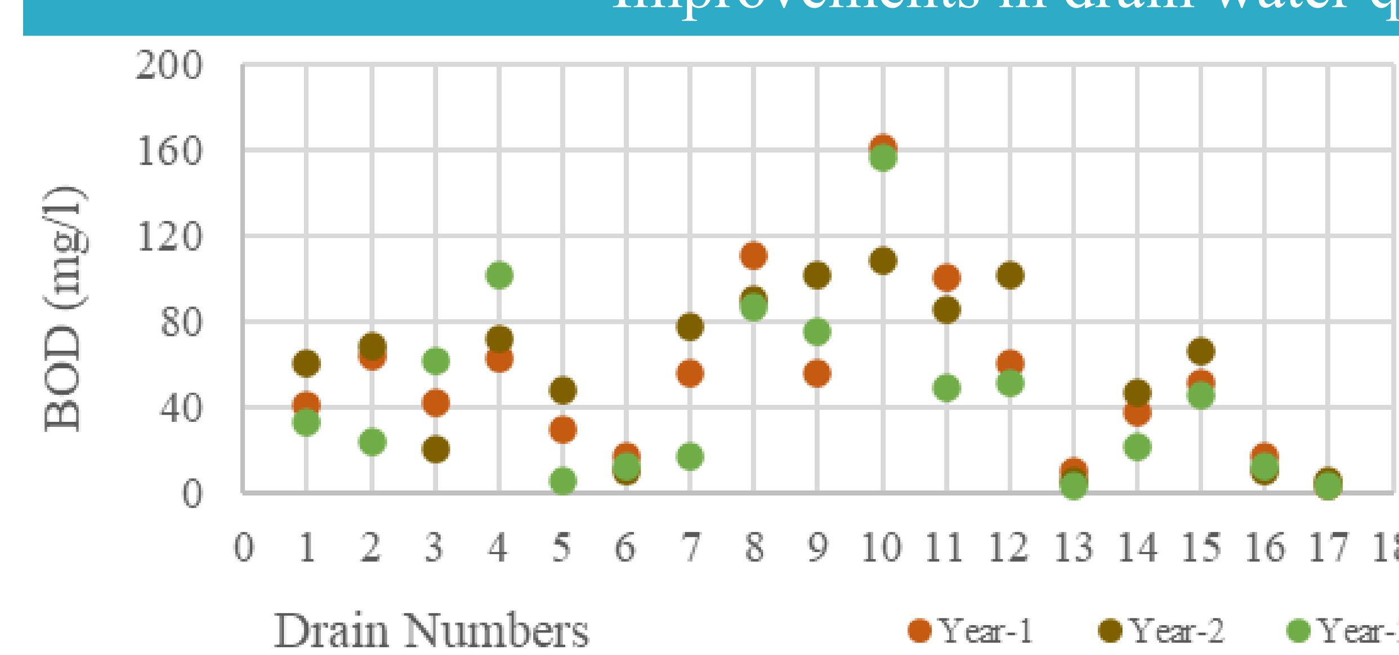
Improvements in performance of septic tank after desludging



Graph showing values of BOD (mg/l) of supernatant from septic tanks- before and after desludging

- The increase in retention time for the influent post desludging is one of the major factors for reduction in the suspended solids.
- The overall trend is decline in the BOD levels of effluent form septic tank
- The variations can be attributed to house types, access and availability of water, inlet quality of influent.

Improvements in drain water quality



Graph showing value of BOD (mg/l) in drains across three years

- The quality of water in drains has improved progressively during scheduled desludging.
- 80% of drain samples showed reduction in organic load, nutrients and pathogen content as more septic tanks were desludged

Improvements in River water and Ground water quality

- River water and ground water saw the presence of faecal coliforms
- The quality of river water has seen a little reduction in the presence of faecal coliforms at downstream
- While the ground water samples also showed improvement in it's quality
- Future regular cycles will help in improving the quality of river water.

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