

Smart Septic Strategies: Data Integration to Manage Hidden Infrastructure Threats to Our Homes and Communities

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Residential septic systems are a key component of the wastewater infrastructure systems in the US. Therefore, it is crucial that we develop more robust and accurate means to understand how the systems function, their impacts on the natural environment, and the regulatory mechanisms needed to protect public health and environmental quality.

- Nationwide, almost 30% of homes are served by septic systems.
- Septic systems functionality mainly is directly dependent on household water use.
- Malfunctions and failures of this hidden infrastructure have crucial impacts on public health, as well as pose threats to water quality and recreation.
- We establish relationships among household water use, septic system functioning, environmental conditions, and public health outcomes to support sustainable infrastructure.
- We support communities in decision making, management, and policy to address public health and water quality threats.

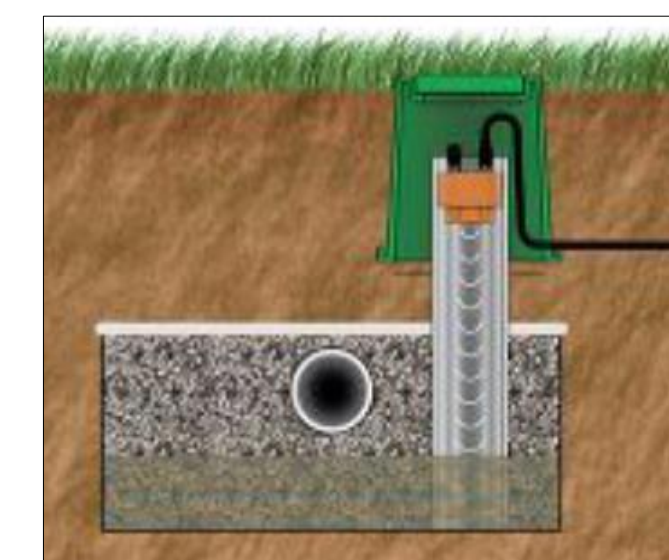
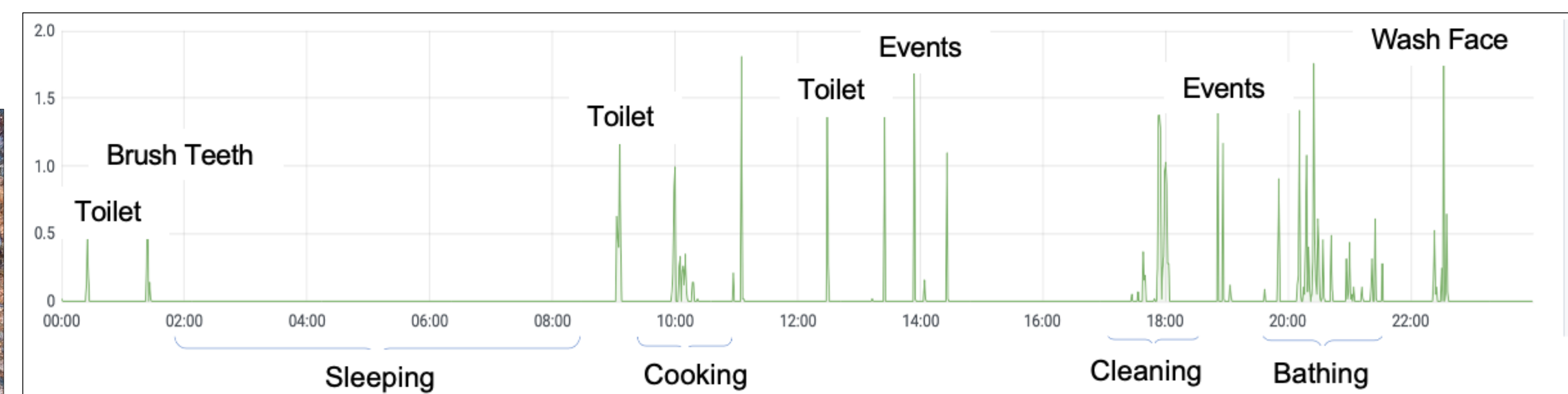
Project activities to date:

- High resolution monitoring of water-use data.
- Installation of “Septic Sitter” *in-situ* monitoring systems.
- Household level surveys.
- Initiated communication with community partners (primarily Athens-Clarke County and Gwinnett County in Georgia).

The outcome of this project will benefit:

- Individual homeowners by providing them with decision support systems for informed management of residential water infrastructure systems.
- Local and state governments officials by improving decision making and resource allocation in addressing pollution from septic systems.

These tools and technologies will result in long term planning and informed decision making for sustainable water infrastructure to reduce public health risks and environmental impacts through decreased ground and surface water pathogens and pollution.



The expected outcome is improved understanding of interconnections among water use and septic system performance, reduced health risks, cleaner water, and improved planning for sustainable water infrastructure.

Planned activities: 1. Design of a continuous surface water quality data monitoring network, 2. Automated infra-red detection of failing septic systems, 3. Install more septic sensors and continue smart septic *in-situ* monitoring, and 4. Engagement with local governments and regional water management planning authorities.