DIG DEEP

Reforming National and State Policies to Reduce Inequity of Safely Managed Sanitation in the United States

Presented by DigDeep's
Decentralized Wastewater Innovation Cohort

MARCH 2022

EXECUTIVE SUMMARY

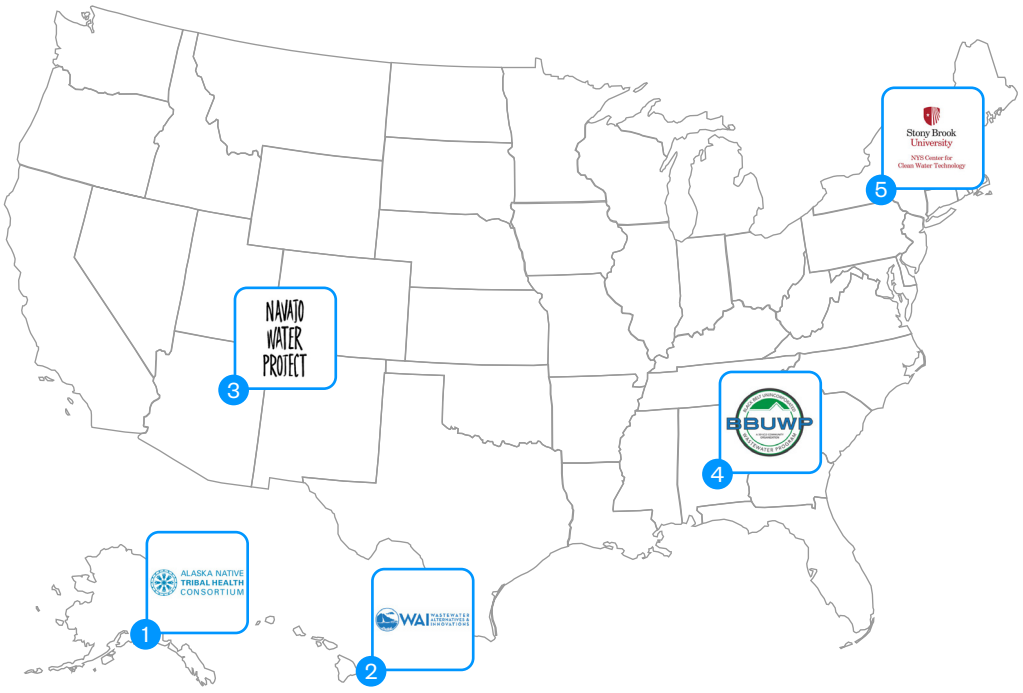
The Decentralized Wastewater Innovation (DWI) Cohort is a nationwide community-driven research initiative by DigDeep Right to Water Project elevating decentralized wastewater challenges, solutions, and policy opportunities. Given the unique intersection of (1) unprecedented federal funding for decentralized and alternative wastewater solutions, (2) the complex landscape of residential infrastructure needs, and (3) the diverse, comprehensive expertise of the DWI Cohort, the Cohort recommends the following policy opportunities for federal agency consideration:

1. Develop an accurate count and map of decentralized wastewater system deficiencies in the US; use this improved data to drive resource allocation to increase the efficiency and impact of federal and state programming.
2. Expand and improve outreach programs to impacted communities and households to reduce access barriers to funding mechanisms.
3. Prioritize regulatory support and funding for alternative technologies to improve access to affordable and effective decentralized wastewater systems.
4. Invest in long-term relationships with impacted communities and households to improve compliance, ensure longevity, deepen cultural integration, and improve public health outcomes.

THE DWI COHORT

DigDeep Right to Water Project (DigDeep) is a human rights non-profit working to ensure that every American has clean, running water and safe access to sanitation forever. Our work to close the Water Gap in the U.S. has taught us that communities facing materially similar water and sanitation challenges around the country often lack the meaningful connection with one another that would enable them to share approaches, compare data, and exchange support and encouragement. For that reason, DigDeep formed a collaborative, community-driven research initiative in late 2020: The Decentralized Wastewater Innovation (DWI) Cohort. The DWI Cohort creates meaningful connections between community organizations piloting innovative solutions to tough decentralized wastewater challenges through facilitated working groups and site exchanges. As cohort members encompass a range of geographies, climates, cultures, problems, and solutions, the DWI Cohort offers a comprehensive perspective on decentralized wastewater in the US. The work of the DWI Cohort is incredibly timely: with unprecedented funding now available in the Infrastructure Investment and Jobs Act (IIJA)—including funding specifically for decentralized systems—the DWI Cohort is committed to supporting federal agency efforts to ensure those resources reach the communities that need them most.

THE 2020-2022 DWI COHORT MEMBER ORGANIZATIONS ARE:



1 **Alaska Native Tribal Health Consortium (ANTHC)**
Anchorage, Alaska

2 **Wastewater Alternatives & Innovations (WAI)**
Honolulu, Hawaii

3 **DigDeep's Navajo Water Project (NWP)**
Navajo Nation

4 **Black Belt Unincorporated Wastewater Program (BBUWP)**
Montgomery, Alabama

5 **New York State Center for Clean Water Technology (NYS-CCWT)**
Stony Brook, New York

BACKGROUND

DECENTRALIZED WASTEWATER IN THE US

More than 2.2 million Americans lack access to basic plumbing (DigDeep & US Water Alliance). In some cases, these Americans live in areas where a centralized wastewater system is not technically or economically feasible. Decentralized wastewater technologies —from traditional septic systems to advanced onsite wastewater treatment systems—are often key to connecting communities with the basic sanitation services they need. Decentralized systems make up approximately 20-25% of all wastewater systems nationwide (USEPA, CDC, and ASCE). These systems have lacked visibility, adequate funding, consistent regulation, and incentives for innovation over the past decades. Federal initiatives such as the US EPA's Decentralized Wastewater Management MOU Partnership and the USDA's Rural Decentralized Water Systems Grant Program have sought to alleviate these issues. Despite progress however, impacted communities still experience significant barriers, including the lack of regulatory, political, and economic support required for decentralized wastewater systems to be successful. For example, differing regulations by state (e.g., application of State Revolving Funds) have created non-uniform access to support for these wastewater systems. Compounding these issues, communities without basic sanitation access face unique obstacles such as water-borne illnesses, environmental contamination, and increased psychological stress (DigDeep & U.S. Water Alliance).

There is an urgent need to rectify the wastewater injustices faced by these communities, especially now that significant federal funding is available to implement solutions. The DWI Cohort is committed to supporting federal agencies in closing the US water and sanitation gap as programs such as those introduced in the IIJA come online.

CURRENT CHALLENGES AND POLICY OPPORTUNITIES

Through more than a year of collaborative discussions, workshops, and site visit exchanges, DWI Cohort members have identified four overarching challenges that hinder access to and the use of decentralized wastewater systems in the US. Each of the four challenges is paired with an example taken directly from on-the-ground experiences of the DWI Cohort members as an actionable policy and/or programmatic opportunity.

CLARIFYING DEFINITIONS

DECENTRALIZED WASTEWATER TREATMENT:

The treatment and disposal of wastewater either on the property of a single-family residence or a small community. Decentralized wastewater treatment systems typically (but not always) serve citizens living in remote or rural areas who, for myriad reasons, cannot be connected to a large municipal centralized wastewater treatment system.

SANITATION:

Whether used in conjunction with the term decentralized or otherwise, sanitation refers to the physical separation of humans from excreta within the household, and the safe discharge of treated wastewater into the surrounding environment.

SAFELY MANAGED SANITATION:

Safely managed sanitation is defined as the use of improved sanitation facilities that are not shared with other households and where excreta are safely disposed of in situ or transported and treated off-site (WHO and UNICEF).

WATER, SANITATION, AND HYGIENE (WASH):

WASH stands for "water, sanitation, and hygiene." Safe drinking-water, sanitation, and hygiene are crucial to human health and well-being. Safe WASH is not only a prerequisite to health, but contributes to livelihoods, school attendance and dignity and helps to create resilient communities living in healthy environments (adopted from WHO).

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CHALLENGE 1:

Nationwide sanitation data are insufficient, resulting in federal funding programs that lack focus and efficiency for impacted communities.

- No national surveys accurately quantify the current number of US households served by decentralized wastewater systems.
- Data on households lacking sanitation access are not collected. A question on the American Community Survey regarding flush toilets was removed from the Census in 2016.
- Available sanitation data, such as results from the American Housing and Community Surveys, are not disaggregated into sanitation system type, functionality, or suitability.
- State-level and regionally specific data are needed to accurately capture sanitation shortfalls that may be the result of geography, local regulations, or political will.

Sanitation data gaps limit resource allocation for US communities in need of decentralized wastewater systems.

- As data are not collected on the extent of household sanitation access, funds and other support cannot be prioritized for the communities that need it most.
- Without consistent and granular data collection, a baseline cannot be developed to track progress once sanitation interventions are implemented.

OPPORTUNITY 1:

By developing an accurate count and map of US households experiencing sanitation deficiencies, impacted communities can be identified and prioritized.

- Create a task force comprising key agencies, impacted communities, and practitioners to advise on data to be collected, implement data collection, and analyze and share results at regular intervals. The task force would support and expand on the USEPA's report to Congress: *The Prevalence Throughout the U.S. of Low- and Moderate-Income Households Without Access to a Treatment Works* and help resolve the report's findings on critical data gaps.
- Upon completing comprehensive data collection, build a prioritized list of communities and households by postal code in need of sanitation support.
- Develop a strategy to identify communities at risk of experiencing sanitation deficiencies in the future (e.g., communities who may lose access due to climate change).

Example: Lowndes County, Alabama

In Lowndes County, Alabama (one of 12 Black Belt counties), sewage from up to 60% of households is routinely discharged directly onto the ground (via failing septic systems or "straight-piping"). While previous surveys have recorded that these households have a usable toilet, they fail to capture the sanitation deficiencies and impacts from "straight-piping," which introduces untreated waste close to homes, pollutes nearby streams and waterways, and creates a public health crisis within communities. The CDC has established criteria for "safe, sanitary, nuisance-free disposal of wastewater," however, these criteria are not considered in current data collection, leaving issues like those experienced in Lowndes County (and the rest of the Alabama Black Belt) undetected in nationwide surveys. As a result, homes in the Black Belt region of Alabama are not prioritized to receive the level of sanitation support they need.

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CHALLENGE 2:

Disadvantaged communities can have difficulty accessing funding mechanisms.

- Many state and federal funding applications (e.g., State Revolving Funds) require administrative, technical, and financial capacities that cannot be met by disadvantaged communities. This bars many communities from beginning pre-qualification processes.
- Eligibility requirements for state-level funding (e.g., State Revolving Funds) can vary considerably from state to state. Thus, there are more application barriers for disadvantaged communities in states with stricter eligibility requirements. This also puts an onerous burden on entities (like Tribal nations) that cross state lines.
- Some programs (e.g., USDA Rural Decentralized Water Systems Grant Program) require not-for-profit entities to serve as an intermediary in administering funds to individual homeowners. This becomes a challenge in regions not serviced by an equipped not-for-profit.
- Some households are unable to pay upfront costs or to repay low-interest loans offered by funding programs, practically barring them from accessing needed support.

OPPORTUNITY 2:

By removing regulatory and eligibility barriers from financing program applications, impacted communities and households can access decentralized wastewater system funding more easily.

- Provide concierge-like service to support under-resourced communities in accessing federal programs with trained, dedicated support specialists and internal systems (i.e., software) to manage the customer journey from application through implementation and reporting.
- Conduct targeted outreach with non-punitive support to connect under-resourced homeowners and communities to the decentralized wastewater funding programs available to them.
- Expand existing programs such as the EPA Technical Assistance for Rural, Small, and Tribal Wastewater Systems program to help support communities lacking the capacity to apply for and execute project funding and assistance programs.
- Apply agency resources to identify efficiencies, eliminate burdensome steps, and reduce upfront costs of application for the largest programs (e.g., Clean Water State Revolving Fund (CWSRF) and USDA-RD) to improve workflows for funding access.
- Develop tools and guidance to prioritize the communities most impacted by climate change.
- Publicize strategies for states and recipients to best utilize CWSRF. This approach would support and expand the work presented to Congress by the USEPA from the AWIA: *The Use by States of Assistance under Section 603(c)(12) of the Federal Water Pollution Control Act*. This will increase the proportion of CWSRF funds reaching decentralized wastewater systems.
- Expand existing programs to allow for the creation and support of onsite maintenance entities or user associations with the ability to collect fees for the ongoing operation, maintenance, and replacement of installed decentralized systems.

Example: Hawaii

The State of Hawaii has mandated that all cesspools must be upgraded, converted, or closed by January 1, 2050 (Hawaii Act 125 [2017]). Based on a study produced for Hawaii's Cesspool Conversion Working Group, each cesspool conversion is estimated to cost as much as $38,000, reaching a cumulative total of $3.4 billion (in 2020 US dollars). The majority of this financial burden will fall on individual homeowners who are ineligible for direct funding through most financing programs. The funding available through the various federal funding mechanisms will be insufficient to cover the cost of the full cesspool conversion. Finally, the study determined that even if each homeowner were given an individual subsidy of $10,000, 85% of the cesspool conversions would still be considered unaffordable using EPA criteria for affordable sanitation (total monthly capital and O&M costs of 2% or less of household income).

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CHALLENGE 3:

Difficult terrain often means costly wastewater treatment. Communities often cannot afford an effective sanitation solution.

- Geographic factors such as impermeable clay soils, permafrost, small lot sizes, rurality, sea water intrusion, extreme weather, climate change, and challenging topography dramatically increase the cost of effective sanitation systems.
- Sanitation solutions that are both affordable and compliant are not available for many homeowners and communities facing these challenges.
- Individuals unable to comply with sanitation regulations due to financial hardship can be penalized or even criminalized, in addition to the adverse effects they are already experiencing.
- Prohibitively high costs of sanitation systems along with penalties for non-compliance create cyclical burdens to the health, wealth, and well-being of under-resourced communities.
- The Closing the Water Access Gap study revealed that water and sanitation challenges disproportionately affect communities of color.

OPPORTUNITY 3:

By increasing support for alternative sanitation technologies and regulatory strategies, communities can access effective, affordable, and appropriate sanitation services in areas where centralized wastewater systems are infeasible.

- According to a 2020 report by NIST, water usage has changed dramatically over the last few decades. New technical information is needed to ensure that household systems are designed, installed, and operated to maximize water and energy efficiency.
- Incentivize or fund outright public and private research that will advance the development of new technologies to serve communities where centralized wastewater systems are infeasible.
- Create a simple online repository for sharing decentralized wastewater best practices that are regionally and culturally appropriate.
- Promote regulatory flexibility to bring a range of affordable, suitable, alternative sanitation technologies into compliance.
- Reduce civil and criminal penalties for household non-compliance in targeted areas and build a system for supportive or proactive outreach.
- Increase grant and loan amounts within existing programs for households facing significant costs related to the implementing environment, such as lot size, soil type, and terrain.
- Expand and support the programs identified in the USEPA Report to Congress from AWIA: *Alternative Decentralized and Centralized Wastewater Treatment Technology* to increase the amount of funding and wastewater technologies; and, in particular, increase the amount of funding and support programs dedicated to supporting sanitation solutions in communities of color.
- Expand funding support for education, training, and curriculum development at the university and vocational level specifically for decentralized wastewater treatment. Develop tools and guidance to prioritize the communities most impacted by climate change.

Example: Alaska Native Communities & Lowndes County, Alabama

Alaskan Native villages face significant obstacles when implementing sanitation interventions. Long winters in sub-zero temperatures, permafrost, retreating shorelines, and remote environments have created a need for regulatory flexibility as well as innovation. Although the work is ongoing, the State of Alaska has embraced affordable and adaptable decentralized wastewater technologies, such as the Portable Alternative Sanitation System (PASS). Additionally, the State of Alaska has tailored regulations to alleviate sanitation obstacles in Alaskan Native Communities, such as allowing for the safe surface discharge of treated waste at the household level. Due to significant poverty and poor soil conditions, Lowndes County, Alabama faces similar challenges to Alaskan Native communities, but with less regulatory flexibility. Without this, communities in Lowndes County are unable to access sanitation technologies that are appropriate, affordable, and compliant.

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CHALLENGE 4:

Traditional wastewater solutions are often an unsustainable, narrow approach to solve a complex set of community concerns.

Sanitation systems implemented in communities can be *inadequate* when:

- Community-identified needs are not understood and followed,
- Technologies are not culturally, geographically, or climatically appropriate, and
- Projects do not consider broader environmental impacts.

Sanitation systems implemented in communities can be *unsustainable* without:

- Responding to projected impacts of climate change,
- Supporting ongoing systems' operations and maintenance, and
- Promoting workforce development within an impacted community.

OPPORTUNITY 4:

By investing in long-term relationships with impacted communities, sanitation projects can be holistic, sustainable, and create a multitude of ancillary benefits.

- Implement regular consultations led by trained staff with impacted communities/households.
- Expand and improve existing resources for teaching and implementing best practices around long-term sustainability of projects, including operations and maintenance needs.
- Through consultations with communities and needs and resource assessments, identify opportunities to leverage sanitation system improvements to create additional 'wins' such as in climate change resiliency, employment and workforce development, and environmental conservation.
- Community-identified needs should be met with comprehensive solutions. Holistic community development evaluation and implementation techniques should be adopted from the international WASH community to address factors such as environmental impacts of projects, sustainability under projected climate change impacts, ongoing system operations and maintenance, and workforce development.

Example:
Navajo Nation

DigDeep's Navajo Water Project is piloting decentralized sanitation solutions in individual homes and communities that will most likely never be reached by a centralized wastewater treatment system. In this project, as with all DigDeep projects, context is critical. More than 30% of households on the Navajo Nation lack access to a piped water supply (Navajo Nation Department of Water Resources). Many families live in areas too remote for centralized water and wastewater systems, often hauling water themselves for their household needs. Water conservation is not only a deeply ingrained mindset for the Navajo Nation, it is also increasingly necessary as droughts become longer and more frequent. People living on the Navajo Nation also experience higher rates of unemployment than the national average (ACS) and plumbers are few and far between. While traditional sanitation solutions, such as flush toilets with septic systems or centralized treatment may meet regulatory compliance and public health goals, they don't necessarily factor in the full context of a rural home on the Navajo Nation. DigDeep sees this wider context not as a challenge but as an opportunity to create cascading benefits. DigDeep is partnering with Navajo Technical University, IAPMO, and local plumbing unions to leverage the installation and maintenance of decentralized wastewater systems to (a) provide homes with improved sanitation access, (b) provide workforce development training, (c) increase employment opportunities, and (d) develop climate change resiliency strategies.

CONCLUSION AND LOOKING FORWARD

With more than 2.2 million Americans lacking access to basic sanitation, urgent and effective wastewater solutions are needed in communities across the US. As federal agencies prepare to deploy IIJA funding for decentralized wastewater, they have a unique opportunity to assess current decentralized wastewater challenges and respond with new solutions. The recommendations offered in this report, compiled by grassroots organizations across the country, provide actionable policy opportunities to help ensure that resources reach the communities that need them most:

- By developing an accurate count and map of US households experiencing sanitation deficiencies, impacted communities can be identified and prioritized.
- By removing regulatory and eligibility barriers from financing program applications, impacted communities and households can access decentralized wastewater system funding more easily.
- By increasing support for alternative sanitation technologies and regulatory strategies, communities can access effective, affordable, and appropriate sanitation services in areas where centralized wastewater systems are infeasible.
- By investing in long-term relationships with impacted communities, sanitation projects can be holistic, sustainable, and create a multitude of ancillary benefits.

To catalyze action on these policy opportunities, the DWI Cohort will share the challenges and opportunities outlined in this brief at the Decentralized Wastewater Federal Roundtable hosted by the USEPA, USDA, and DigDeep on March 31, 2022 with federal agencies including the Departments of Health & Human Services, and the Interior.