

"Water is Life": Water Access in the Navajo Nation



Images from Canva



Abbie Brekke
Teegan Nordstrom
Taylor Billey
Leonela Nelson



Traditional Navajo Rug

Image from Canva

Table of Contents

01	Introduction	3
02	Systems Thinking Tools	5
03	The Power to Create Change	8
04	COVID-19 and The Navajo Nation	9
05	Water Service Request Process	10
06	Legislative Incompetence	12
07	Water Access Data Gap	13
08	Solutions Landscape	14
09	Gaps & Levers	17
10	Key Insights & Lessons Learned	20

Introduction

Background

Access to water is something that most citizens in the United States of America take for granted. For the people of the Navajo Nation, water takes on a very important cultural role, and **yet many people are without safe and reliable access to water.**

Navajo creation stories reveal that the Navajo People (Diné- what the people call themselves) resided in the Southwest within the Four Sacred Mountains. In 1863, the U.S. Army invaded Navajo land and forced the Diné to walk 300 miles to Fort Sumner, New Mexico, where they were imprisoned (1). This became known as the **Long Walk**. In June of 1868, the Navajo people could return to their homeland after the **Treaty of 1868, which established the Navajo Reservation.** In the 1920s, the Navajo government began to form (1). The government became more sophisticated and adopted the 3-branch U.S. Government system in 1991. The Navajo Nation Code (laws) and Navajo Nation Bill of Rights were established in the early 1980s and are **still used today to govern tribal policies (1).** Historical trauma and adapting to a Western way of life have had a lasting impact on the Diné people, further complicating water access.

The Navajo Nation region is characterized by an arid climate. The **current drought has affected the region since 1999** and its effects have been exacerbated by desertification from livestock overgrazing and effects of climate change i.e., decreased rain and snowfall, declining surface waters and streamflow, and increased winds (2).



Image from Wikipedia, June 2022

The Navajo Nation Map

- 27,000 square miles
- Spans across 3 states
- Larger than 10 US states (1)
- 270,000 people living on the nation

The Navajo Nation Flag

- Adopted in May 1968
- The dark orange-tan shape in the middle represents the geography of the Nation between the Four Sacred Mountains



Image from Wikipedia, June 2022

Introduction

Positionality & Intersectionality

We are a team of four with two undergraduate students, both white, one American and one Canadian; and two graduate students, **both enrolled members of the Navajo Nation**. Pascua Yaqui/Chicana scholar M. Duarte asserts that positionality “requires researchers to identify their own degrees of privilege through factors of race, class, educational attainment, income, ability, gender, and citizenship” (3). The two non-Indigenous members of our team recognize that their perspective on this issue is through a lens of colonialism. With the help of the two Indigenous team members, we approached the issue to listen, understand, and reconcile with the history of injustice that Indigenous peoples have faced for centuries.

Methods

Our research consisted of interviews, lectures, literature reviews, and consulting community-led initiatives' websites. We interviewed individuals who work directly with Navajo water access. In addition, we interviewed individuals who are involved with rural Indigenous water access in Canada. Our goal was to apply diverse perspectives on water access while **being mindful not to stereotype or assimilate Indigenous cultures**.

Systems Thinking Tools

To develop a better understanding of the structures that allow the water access issue to persist, we used the following systems thinking tools:

Iceberg Model
Causal Loop Diagram
Stakeholders Map

Systems Thinking Tools

Iceberg Model

The "Iceberg Model" helped us distinguish events and underlying structures. The model identifies the deeply rooted mental models that perpetuate the issue.

Events

- A large number of homes do not have piped water.
- Lack of accurate data about water access.
- COVID-19 heightened isolation among families and obtaining safe water.
- The Navajo Nation's climate and geography presents challenges to water access.
- Non-Indigenous persons question why Navajo Nation residents do not leave their land.

Behavior Problems

- An emphasis on washing hands during Covid-19 magnified how important sanitary and piped water is.
- Unclean and unsafe water basins lead to higher infectious disease rates.
- Indigenous issues remain a low priority for the US government.
- Band-aid solutions implemented to temporarily "solve" problems, e.g., water bottles supplied by the Bureau of Indian Affairs [BIA].
- Rising temperatures result in an even drier climate; harsh weather makes it difficult to raise livestock and grow crops.
- Lack of awareness about the Navajo Nation's culture cause a gap in understanding the cultural meaning of the surrounding land

System Structures

- Funding via CARES Act provided to Navajo Nation as issue became magnified.
- Little regard for tribal sovereignty; policies not culturally sensitive or appropriate.
- Lack of meaningful collaboration to create possible long-term solutions.
- Hydrosolar panels are ineffective in sandy/windy/cold climates; harsh weather amplified by climate change (higher incidence of sand and dust storms).
- Western education system neglects the critical importance of tribal culture, community, and needs.

Mental Models

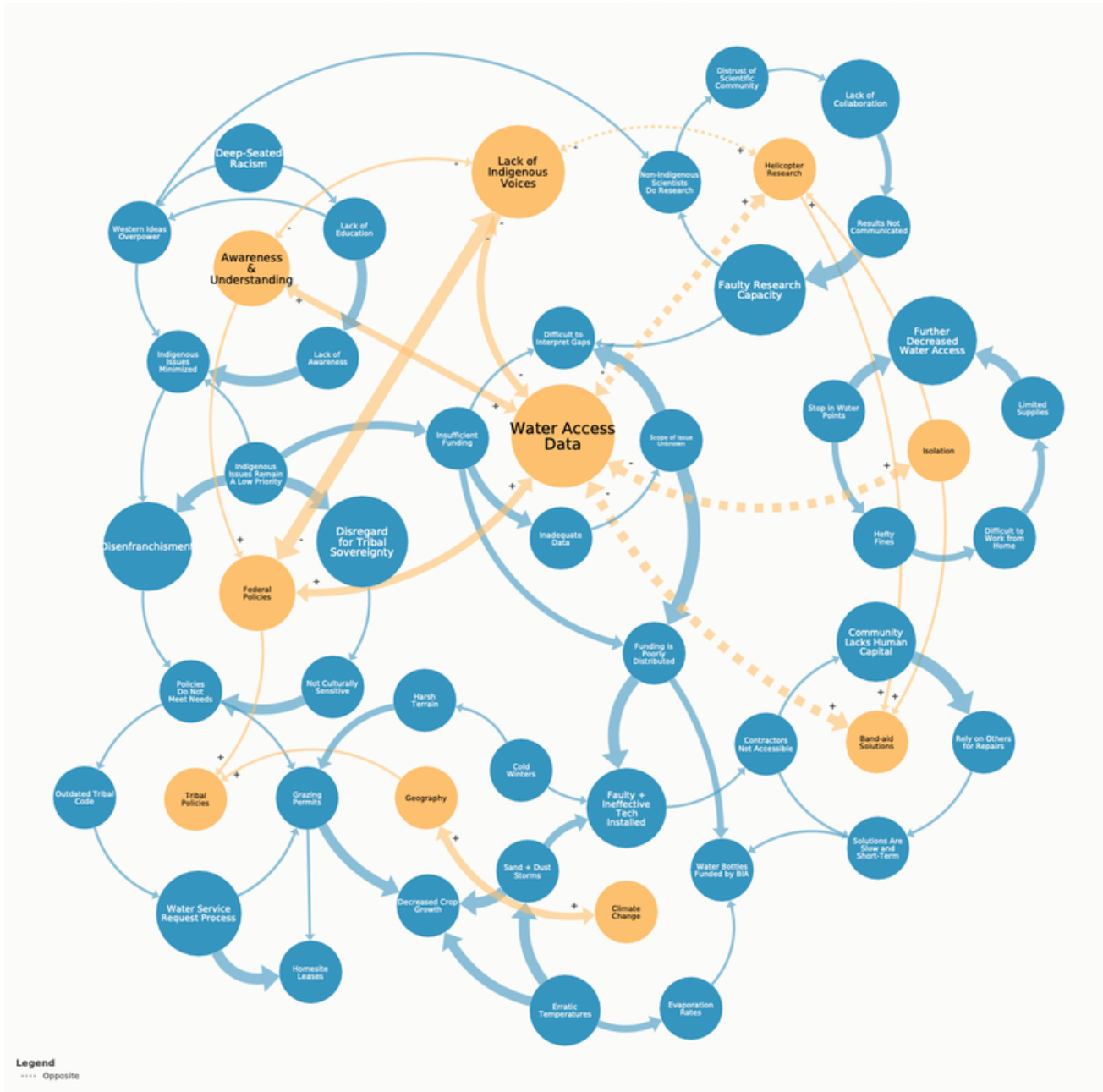
- Deep rooted racism towards Indigenous persons stem from a history of misunderstanding and apathy towards Indigenous issues.
- Lack of education and collaboration in regards to research and discussions in schools result in misunderstanding of the issue.
- Lack of trust within the US government from hundreds of years of oppression beginning with settler colonialism.
- False belief of Western ideas will fix all issues while disregarding the needs of tribal culture and communities.

Image from Canva

Systems Thinking Tools

Causal Loop Diagram

Having identified the behaviors, patterns, system structures, mental models, and stakeholders, we generated a causal loop diagram detailing the underlying causes of the events we observed.



[Link to Systems Map- Kumu](#)

Systems Thinking Tools

Stakeholders Map

Next, we evaluated the entities that play a role within the system. We also identified those with the most power to enact change and evaluated what those changes may look like.



The Power to Create Change



Utah Senator Mitt Romney (left), U.S. Interior Secretary Deb Haaland (middle) and President of the Navajo Nation Jonathan Nez (right) coming together to finalize a water rights settlement (4). It is necessary for state, federal, and tribal entities to work together in unison to create lasting change.

Who	What	How
U.S Government	<ul style="list-style-type: none"> • Awareness of Indigenous issues • Cultural competency 	More collaboration and inclusion of Indigenous perspectives and targeting more sustainable solutions that are culturally appropriate
Educators & Non-Profits	<ul style="list-style-type: none"> • Community support and involvement • Awareness of water barriers and other related factors 	Initiatives to increase community participation in the water sector and informing members through education and empowerment
Navajo Tribal Utility Authority [NTUA]	<ul style="list-style-type: none"> • Communication about water safety • Accountability for providing water systems • Timely maintenance 	De-monopolizing the current system to promote better regulation and to improve water access

COVID-19 and The Navajo Nation

The Struggle to Fight A Virus with Limited Water Access

Pre-COVID-19 pandemic, little was known about Diné people's struggles to access a clean, reliable water source. An article published by The New York Times and segments on NBC's The Today Show helped bring awareness to the water struggles on the Navajo Nation (5, 6). Being told to 'wash your hands frequently' suddenly **became a luxury** when some tribal members did not have access to piped water but had to haul water instead. **Every drop was precious** to sustain all the household's needs, including cooking, drinking, watering plants, and livestock. In May 2020, the Navajo Nation became the **epicenter of the COVID-19 pandemic**, forcing the tribal government to take drastic measures to protect its people (7). Strict lockdowns resulted in local businesses shutting down, limiting capacity inside essential businesses, moving students to remote learning, and halting all tribal services for over a year on the Navajo Nation. These restrictions further impacted those who were water insecure at another level because now tribal watering points were closed, stores were closed, driving during lockdown hours resulted in high fines, water delivery services were interrupted, and shortages of bottled water or other watering points all **enhanced water access struggles** (7).

"Early in the pandemic, Navajo Nation was 3rd in the U.S. for rates of COVID-19 infection, behind only New York and New Jersey," (8).

Dr. Karletta Chief,
University of Arizona,
2022

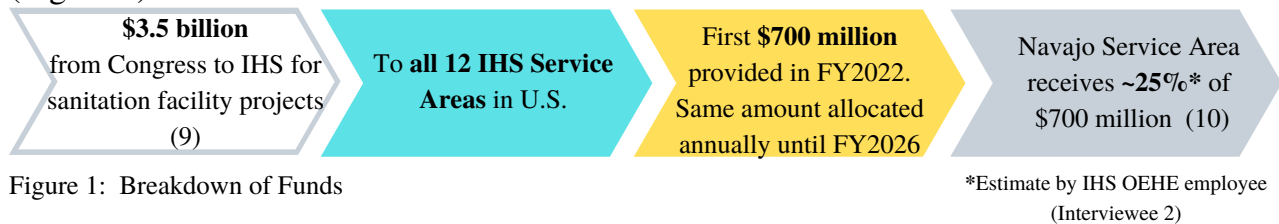


Image from The Verge. June 2020

Water Service Request Process

Background

A critical root cause of the water access gap on the Navajo Nation is the **lengthy process** for tribal members to request and receive sanitation services. Service requests include installing a waterline, interior plumbing, septic tank, or a cistern. The type of service request and out-of-pocket costs determine which stakeholders to approach to start the process. The Indian Health Service (IHS) takes a bulk of requests due to emergency funds allocated by Congress (Figure 1).



This water service request process requires the **involvement and collaboration of various stakeholders** to plan, approve, and implement the sanitation project (Figure 2).

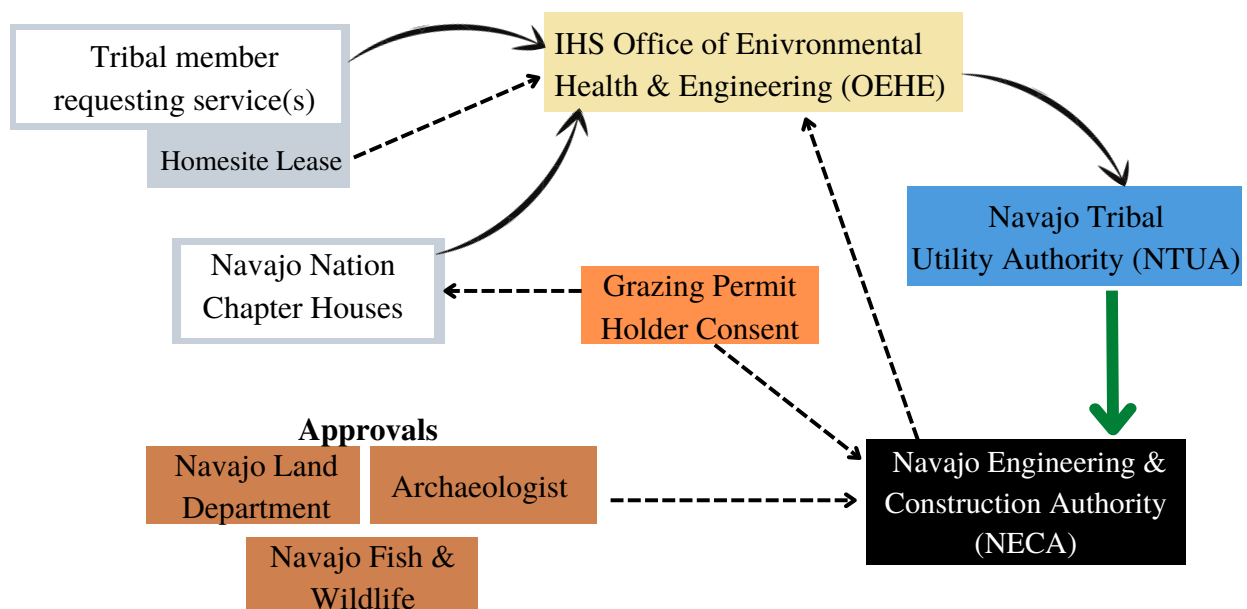


Figure 2: Key Stakeholders

Water Service Request Process

Homesite Lease Requirement

A systemic barrier for many tribal members seeking a water access line is whether they have a homesite lease. A homesite lease is **required to establish a residential area** on the Navajo Nation. If a tribal member does not have a homesite lease, IHS OEHE **cannot place the individual on the waiting list to receive services** until the lease is acquired. This is another lengthy process, contingent upon the requested having a Certificate of Indian Blood and paying fees to gain multiple approvals, similar to Figure 1 (10).

Approvals

IHS OEHE rates the home for water and sewage access by deficiency level to prioritize IHS resources and funds (11). IHS places a \$110,000 cap on project cost estimate (10). If a project estimate exceeds this cap, the request is placed on a waiting list. The reality is that **this request might not ever be met** or may take several years or even decades.

IHS OEHE project plans are submitted for tribal approval (Figure 1.) According to an IHS OEHE employee, they believe these tribal approvals take the longest in the overall process (10). Navajo Tribal Utility Authority (NTUA) requirements also add another challenge. If project plans and designs calculate water pressure <20 lbs, NTUA will deny the project plans until the minimum 20 lb water pressure is met. Ultimately, **home location largely determines the feasibility** for IHS and NTUA to accept a project and handoff to NECA for construction. The **more remote the location, the more difficult** and expensive it is to make a water line connection or add pumps for higher altitude homes. The length and multiple requirements of this water service request process highlight key underlying drivers of the water access gap on the Navajo Nation.



Waiting for water: On the Navajo Nation, long lines, scarce resources, a cry for solutions

Image from azcentral. July 2020

Legislative Incompetence

Awareness & Understanding of Indigenous Issues

In 2015, a study conducted by researchers at Pennsylvania State University found that within schools, 87 percent of Indigenous topics are only in the pre-1900 context (12). The lack of education regarding all Indigenous cultures directly relates to the **lack of awareness**. Without this critical information about America's history, lawmakers are not equipped with the knowledge to make **necessary changes within U.S. law**. Thus, Indigenous topics are minimized, such as a lawsuit that took 60 years to resolve, dating back to 1877 when the US violated the Treaty of Laramie of 1868, now owing roughly \$1 billion in damages (13). **Native American funding is typically placed on the bottom of the funding spectrum**, often receiving the "leftovers." Stipulations in this funding results in short-term solutions like water bottles provided by the Bureau of Indian Affairs (14).

Policies

Federal policies strongly correlate back to the historical injustices Indigenous communities have faced. In 1871, Congress recognized treaties put forth by tribal communities. However, in 1903 the Supreme Court ruled to have total power over all Indigenous affairs (13). Over 500 uranium mines were abandoned after the Cold War ended, and **nearly 30 years later, only around half of the mines have been cleared up**. The **lack of urgency** shows that culturally appropriate actions are a low priority for the U.S. government. Acts such as the Clean Water Act urge the Environmental Protection Agency (EPA) to ensure that water points are not contaminated by uranium and other harmful substances. However, **not all water points are EPA certified**; thus, safety is not guaranteed for those who drink that water (14). Funding is also a critical aspect of policies as, typically, tribal communities are the last to receive funding.

Federal water rights in the Utah portion of the Navajo Nation were recently awarded to the Diné people on **May 27th, 2022 after 18 years of negotiation** (15). This historic agreement will give **drinking water access to 40 percent Utah Diné** by allowing them to draw the water from aquifers, rivers or Lake Powell along with \$218 million for water infrastructure (15). The US government placed Dine people on this reservation in 1868 but it took **154 years for local tribal members to acquire rights** to 81,500 acre-feet of water for current and future use (15). Water rights for other parts of the Navajo Nation is very complex due to jurisdiction.

Water Access Data Gap

Insufficient Measurement

The US Water Alliance found that **federal data does not accurately measure the water access gap**. Moreover, there is a pattern of disenfranchised communities in the US being completely left out of data collection efforts (16).

An estimated **30% of people on the Navajo Nation lack access to running water**, but local Navajo authorities estimate that the actual number could be much higher (16).

Not everyone holds the same values or ideals for water access. Tyrell Descheny, @cowboy_woolboy on TikTok, made a video showing his family's process of collecting water from the local windmill, saying, "I prefer it over tap water" (17). **People may prefer not having piped water** for various reasons, whether it be to protect the land from pipe laying or to protect a more traditional way of life. Other people may need a more accessible option, like piped water or a solar-generated cistern system. **Without accurate data and surveying, the situation is unclear.**

Helicopter Research

The Cherokee Nation Institutional Review Board defines helicopter research as "Any investigation within the community in which a researcher collects data, leaves to disseminate it, and never again has contact with the tribe" (18). Researchers who conduct helicopter research **do not adequately collaborate** with local investigators or community members, making the study **inaccurate and harmful**. Dr. Karletta Chief, a hydrologist at the University of Arizona, noted that water system engineers working on the Navajo Nation are guilty of helicopter research, mentioning that they were **"dropping off technologies without involving the community"** (8).

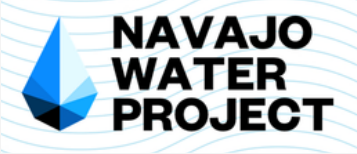



Band-Aid Solutions

Reese Cuddy, the Research Associate at Johns Hopkins University, described the "SOURCE Hydropanels" implemented in hundreds of homes across the Navajo Nation. They **often require Wi-Fi or cell service**, which is a barrier for some. Also, the panels often break due to sand getting into the parts, and during the winter, the temperature is too low for the panels to even function (14).

Another example was when Navajo Nation received **COVID-19 relief funds**. Organizations were pleased to receive this money, but the **data gap creates uncertainty** around how to best implement funding. This led to cases of bottled water being distributed to Navajo communities (14)– **hardly a long-term solution**.

Solutions Landscape

Community Initiatives

Who	Scope of Work
 	<ul style="list-style-type: none"> • Non-profit, community-led • Installs off-grid, cistern-based home water systems. Uses solar power to provide hot and cold running water • Indigenous-led Navajo Water Project team to ensure cisterns are filled • Water Life Fund through DigDeep for community-led water projects on the Navajo Nation
<p>Navajo Nation WACG</p> <p>Water Access Coordination Group</p>	<ul style="list-style-type: none"> • Consists of tribal government departments, IHS, non-profits, universities • Identifies, acquires, prioritizes, and uses available resources to increase access to quality water for tribal homes (19) • Uses available data to identify and design interventions • Hauled Safe Water Assessment Program (HSWAP) <ul style="list-style-type: none"> ◦ Safe Water Collection and Safe Water Storage programs
	<ul style="list-style-type: none"> • Tribal members/experts to guide projects • Built and distributed handwashing stations during COVID-19 pandemic • Drinking water delivery during COVID-19 pandemic • Collaborated with SOURCE to install hydropanels for Navajo elders • Part of WACG and assists with HSWAP program • Diné Hydration Project: Increasing Water Intake in Early Childhood
<p>Water Warriors United</p> 	<ul style="list-style-type: none"> • Grassroots Navajo initiative, volunteer-based • Delivers water to remote Navajo tribal members without piped water • Prioritizes elders • Travels across all of the Navajo Nation - no limitation

Solutions Landscape

Federal Initiatives

The U.S. water sector faces many challenges when it comes to supplying water to its citizens, particularly those in suburban and rural areas. As a solution, there are over **3,300 water cooperatives in the U.S. (20)**. Rather than private, profit-driven companies, cooperatives are not-for-profit and are granted tax exempt status under IRC section 501(c) (12). They **must provide water and wastewater services at cost**, and each customer is a member-owner of the cooperative. Each member has a say in who gets elected to the board of directors, which is responsible for planning, establishing policies, and providing general oversight (20).



Image from Canva

A successful water cooperative is the **Mni Wašté Water Company**, which operates in the Cheyenne River Reservation in South Dakota. A group of determined tribal members set out to provide better water access to their community, and with the help of the United States Department of Agriculture, the Indian Health Service, and the Cheyenne River Sioux Tribe, a successful water cooperative was established and now **serves 14,000 members (21)**.



TRI-COUNTY
MNI Waste Water Company

Image from Tri-County Mni Wašté Water Company 2004



SD Water Pipelines- Image from USDA 2017

Solutions Landscape

Canadian Initiatives

We spoke with representatives of two nonprofits that collaborate with Indigenous communities in Canada: **True North Aid**, which works primarily with communities in the far north, and **Water First**, which is headquartered in Ontario. The focus of many Canadian initiatives surrounds **education, collaboration, and training**. The goals of these initiatives are to build local expertise so that communities can address issues independently.



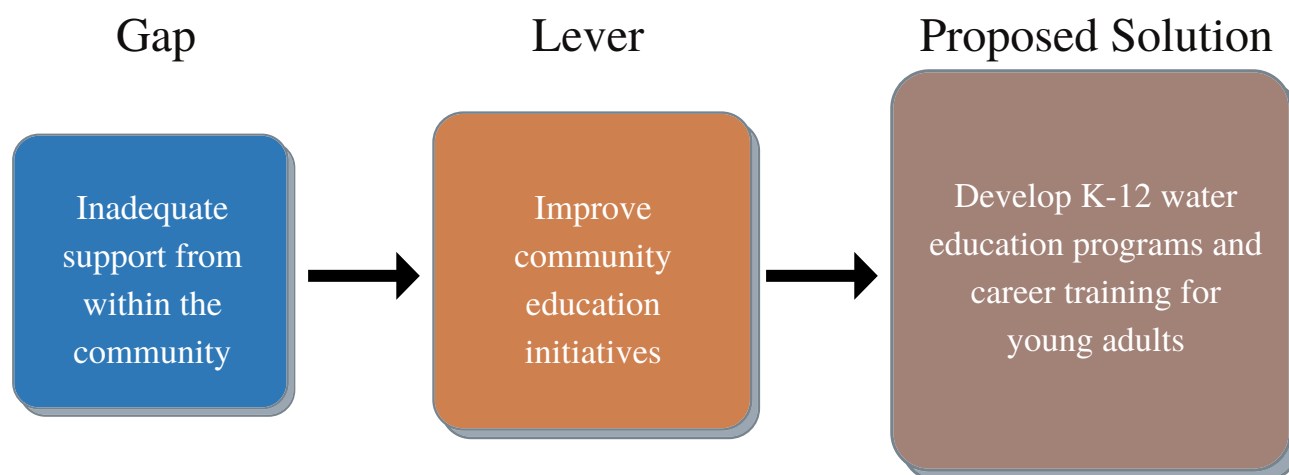
Images from Canva

Ami Gopal, director of communications and development at Water First, noted that it is “**inspiring** to see individuals receive training and watch their **confidence increase**, as well as their **passion for the community** post-graduation,” (22).

<i>Water First Program</i>	<i>Education/Training</i>	<i>Result</i>
K-12 Water Workshops	<ul style="list-style-type: none">• Hands-on STEM learning• Older students complete a larger project• Younger grades are introduced to water sciences	Students gain knowledge about water systems and "see a place for themselves in the water sciences"
Drinking Water Internship	<ul style="list-style-type: none">• 15 months of paid water systems training• Many hours of experience working in the field	Graduates are qualified to work as water plant operators
Environmental Water Training	<ul style="list-style-type: none">• Paid skills training in areas of environmental concern (ex. chemical testing)• Complete a project for their community	Graduates typically continue to do environmental water conservation work for their communities

Gaps & Levers

Education



The overreliance on external entities to install, repair, and consult on water systems is a barrier to progress. It results in solutions that are **not sustainable** and **does not allow for efficient or effective** water systems management.

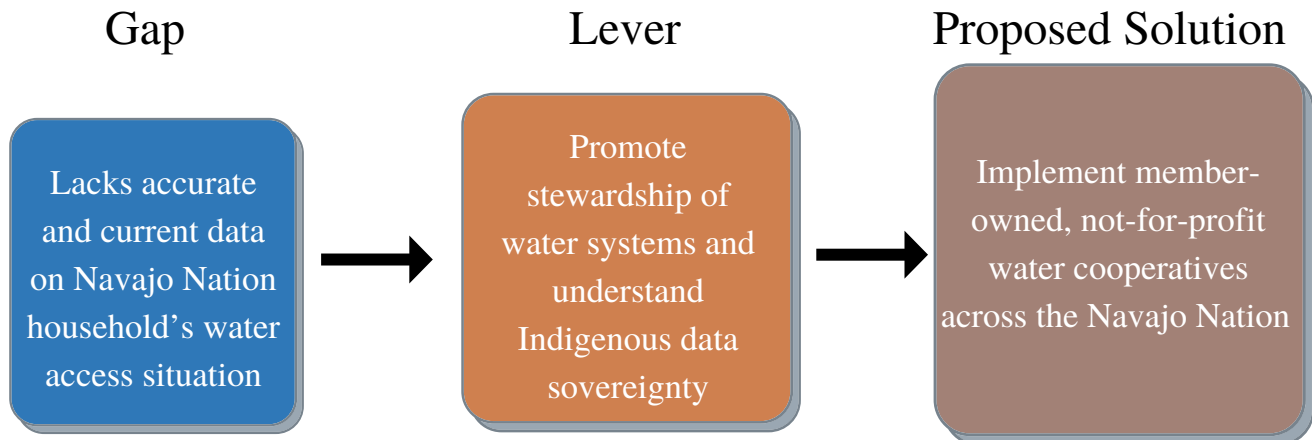
As explained by the USAID 5Rs Framework, suitable systems interventions should “promote local leadership and local ownership of systems change,” (23). With this in mind, it becomes paramount that members of the Navajo Nation are **empowered to take on water systems challenges themselves** and be provided with the needed support to do so feasibly.

Needed interventions →

- Work closely with the NTUA and with communities on an individual level to develop an educational curriculum that is catered to the specific needs of the community:
 - K-12 programs that **enhance students' knowledge** of water-related topics such as water science, environmental water systems, municipal water systems, and the general importance of reliable water access for health and hygiene
 - Job training for young Indigenous adults so that they may work on water systems **within their community**, both in environmental water sciences and in the water operating systems field

Gaps & Levers

Funding and Data



With single projects costing hundreds of thousands or upwards of a million dollars, the cost of supplying water to every home on the Navajo Nation is **too high for the federal government or a private company** to undertake and turn a profit. Thus, many people are foregoing the possibility of piping water to homes. Other solutions, such as cistern systems and hydro-solar panels, are put in place, but these systems bring their own challenges. Large-scale investments would be needed to properly address the Navajo Nation water access gap.

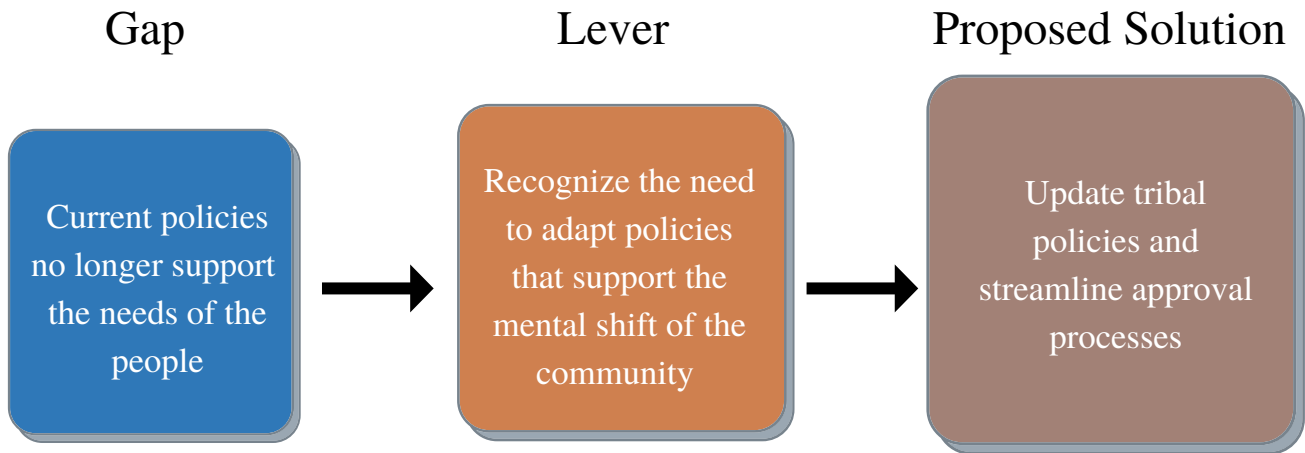
Research initiatives are often framed as research “on” instead of “with” Indigenous communities. Therefore, subsequent research and data **do not accurately frame and measure** the health status of Indigenous peoples. Indigenous data sovereignty is “the right of a nation to govern the collection, ownership, and application of its own data” (24). **“Data as story”** implies there is a responsibility to tell the story accurately as “Indigenous data sovereignty is about listening to our relatives” (24). Research and data collection initiatives rooted in these concepts will **bring visibility** to Navajo household needs, support community water governance, and improve relationships between tribal, non-profit, and institutional stakeholders to **streamline water access initiatives** and potentially access additional funding.

Needed interventions →

- Water cooperatives throughout the Navajo Nation
- Encourage cooperative members to disclose information about water quality, water pressure, and any difficulties with water access
- Cooperatives then serve as a **data hub** for the Nation, helping to streamline future projects and better understand the needs of the community

Gaps & Levers

Tribal Policies



Barriers such as a lengthy paper application process, communication between agencies, having a one-size-fits-all approach, and even being on ‘good terms’ with your neighbors can be **reduced or eliminated if current tribal policies are updated**. Outdated Navajo Nation Codes that influenced the establishment of many tribal agencies and processes are **stuck in the decade they were written in**. Little is being done to update the process to fit the current needs of the people.

Needed interventions →

- **Eliminate** required signatures on grazing permits
- Streamline the application in an online, accessible format
- Improve communication channels **between stakeholders**
- Be more flexible and realistic to community needs

Key Insights & Lessons Learned

The two members of our team that had no lived experience with water access issues were surprised to learn how pervasive the problem was, especially in a resource-rich and well-developed country such as the United States. The idea that many people in the U.S. do not have access to water, a basic human right, was astonishing. It highlighted the **history of injustice that Indigenous people continue to face in the present day**. We discovered that the issue is very complex and rooted much deeper than we would have expected to find.

The two Diné team members further understood the deeply rooted impacts of colonization, such as lateral oppression. The processes initially intended to promote tribal sovereignty do more harm than good because they originated from Western views. This creates an imbalance with Traditional teachings while trying to move forward. We ask ourselves; how do we (Diné people) be **better relatives and live in Hózhó “Beauty” to raise the health status and wellbeing of our communities?** Finding meaningful solutions is more critical than ever to help the next generation.

As a group, we realized that the **issue is very nuanced**, and the most important ideas moving forward will be **communication, collaboration, listening, and understanding**. Self-determination and tribal sovereignty must be at the core of any and every action taken to address the water access issue. We also feel that **awareness is a critical piece of the solution**. We understand to an even greater degree after completing this project that knowledge about tribal culture is incredibly disparate in North America, and closing this gap is imperative to facilitate growth and progress into the future.



Image from Canva