The Sanitation Facilities Construction Program
of the Indian Health Service

Public Law 86-121

Annual Report for 2004

INDIAN HEALTH SERVICE · PHS · 1955

U.S. Public Health Service
Department of Health and Human Services

This Annual Report for Fiscal Year 2004 was produced by the Indian Health Service Sanitation Facilities Construction Program to make available frequently requested information about the Program. Additional information can be obtained by writing to the following address:

Indian Health Service
Sanitation Facilities Construction Program
12300 Twinbrook Parkway
Room 610, Twinbrook Metro Plaza
Rockville, MD 20852

We wish to acknowledge Kevin Chadwick, Curt Huskins, Michael Stover, David Englestad, Sandy Redsteer, Dan Davis, Mark Calkins, Ross Schroeder, Kelly Titensor, Patrick Craney, and Randy Willard for their contribution to this year's "year in review" section. Additional appreciation to Matthew Dixon, Dave Koski, Kelly Leseman, Mitch Constant, Barry Jarvis, George Pringle, Chris Brady, Terry Curley, Tom Heintzman, Dan Baer, and Kenneth Grant for additional photographs throughout the report. 1

Editors: Carol L. Rogers, P.E., Ramsey Hawasly, P.E., Steve Aoyama, P.E., and James H. Ludington, P.E. 1
Website: www.dsfc.ihs.gov 1

The Sanitation Facilities Construction Program
Annual Report for 2004

Table of Contents

Preface

The Indian Health Service (IHS) Sanitation Facilities Construction (SFC) Program continues to identify and report the sanitation needs of American Indians and Alaska Natives, while carrying out a Program to meet those needs in cooperation with tribal governments. Those needs are summarized in this report as well as some of the accomplishments of the Program during the reported fiscal year. The Program's continuing challenges include improving community water supplies, waste water treatment systems, and solid waste disposal facilities in culturally diverse and oftentimes remote areas—from Alaska to Florida and from Maine to California. The projects highlighted in this report illustrate typical SFC Program efforts in addressing these specific challenges.

Since the passage of Public Law 86-121 in 1959, the SFC Program has worked in partnership with tribal governments to construct essential sanitation facilities. As a result of more than four decades of cooperative efforts, many tribes have developed the administrative and technical capability to construct their own sanitation facilities with engineering support from IHS. The majority of all the SFC Program's construction work was accomplished by tribes, tribal organizations, or Indian-owned construction firms. As in previous years, a number of tribes continue to assume responsibility for their respective SFC Programs, while the IHS SFC Program managers continue to work with tribes and others to support the tribal Self-Governance/Self-Determination decision making process under the authority of Public Law 93-638, the Indian Self-Determination and Education Assistance Act, as amended. One goal of the SFC Program is to make available program information in a more open, accurate, and efficient way. This report, prepared annually since 1993, is one means of achieving that goal.

The Sanitation Facilities Construction Program

Introduction

On July 31, 1959, President Dwight D. Eisenhower signed Public Law (P.L.) 86-121. Under this Act, the Surgeon General is authorized to construct essential sanitation facilities for American Indian and Alaska Native homes and communities. Since 1959, over 265,000 homes have been provided sanitation facilities, and this achievement has had a significant impact on the health of Native Americans. The gastroenteric and post-neonatal death rates among the Indian people have been reduced significantly, primarily because of the increased prevalence of safe drinking water supplies and sanitary waste disposal systems.

The authority vested in the Surgeon General by P.L. 86-121 was transferred to the Secretary, Health, Education, and Welfare (HEW), by Reorganization Plan No. 3 of 1966. The Secretary of HEW was re-designated Secretary of Health and Human Services by Section 509(b) of P.L. 96-88 in 1979. The authority was delegated to the Director, IHS, by the Reorganization Order of January 4, 1988 (52 FR 47053), which elevated the IHS to a Public Health Service (PHS) Agency.

The Sanitation Facilities Construction (SFC) Program is unusual among Federal programs because Indian Health Service (IHS) personnel work cooperatively, as close partners, with tribes in providing essential sanitation facilities to Indian communities and Alaska villages. Enhancing tribal capabilities and building partnerships based on mutual respect are the major keys to the success of the SFC Program.

Protecting the health of and preventing disease among American Indian and Alaska Native populations are primary IHS objectives. In the clinical environment, physicians, dentists, nurses, and other medical care providers work to restore the health of ill patients. However, preventing illness is clearly the most effective way to improve health status. Improving the environment in which people live and assisting them to interact positively with that environment will result in significantly healthier populations. Providing sanitation facilities and better quality housing are environmental improvements that have proven track records in that regard.

The SFC Program Mission

Today, as it has for over 45 years, the SFC Program continues to provide assistance to the American Indian and Alaska Native people in eliminating sanitation facility deficiencies in Indian homes and communities.

The IHS mission is to raise the health status of American Indian and Alaska Native people to the highest possible level. To carry out its mission, the IHS provides comprehensive primary and preventive health services. The SFC Program is the IHS' environmental engineering component. It provides technical and financial assistance to Indian tribes and Alaska Native villages (tribes) for cooperative development and continued operation of safe water, wastewater, and solid waste systems and related support facilities. In partnership with the tribes, the SFC Program:

Figure 1: Construction of a septic system, 1960's.

1. *Develops and maintains an inventory of sanitation deficiencies in Indian and Alaska Native communities for use by IHS and to inform Congress.*
2. *Provides environmental engineering assistance with utility master planning and sanitary surveys.*
3. *Develops multi-agency funded sanitation projects; accomplishes interagency coordination; assists with grant applications; and leverages IHS funds.*
4. *Provides funding for water supply and waste disposal facilities.*
5. *Provides professional engineering design and/or construction services for water supply and waste disposal facilities.*
6. *Provides technical consultation and training to improve the operation and maintenance of tribally owned water supply and waste disposal systems.*
7. *Advocates for tribes during the development of policies, regulations, and programs.*
8. *Assists tribes with sanitation facility emergencies.*

Tribal Involvement

The SFC Program employs a cooperative approach for providing sanitation facilities to American Indian and Alaska Native communities. During fiscal year (FY) 2004, tribes, tribal organizations, or Indian-owned construction firms administered approximately $92 million in construction funds (approximately 67% of all SFC construction expenditures). Many tribes participated by contributing labor, materials, and administrative support to projects.

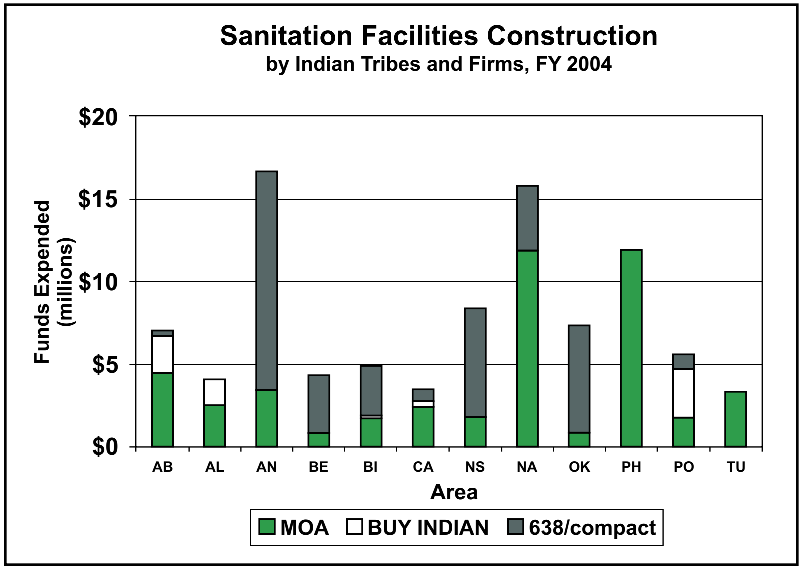


Figure 2: Funds expended by Indian and Alaska Native tribes and Indian-owned firms in FY 2004, by IHS Area.

Figure 3: Plants installed for serpentine wetlands in Whiteriver, Arizona.

Each sanitation facilities construction project is initiated at the request of a tribe or tribal organization. Consultation with the tribal government is maintained throughout every phase of the construction process, from preliminary design to project completion. Operation and maintenance of these facilities by the American Indian and Alaska Native people, with ongoing technical assistance from the IHS, ensures the long-term health benefits associated with improved sanitation conditions. In addition to construction work, a number of tribes assumed responsibility for the administration of their own SFC Program. Under Titles I and V of P.L. 93-638, the Indian Self-Determination and Education Assistance Act, as amended, tribes from the

Anchorage, Billings, California, Nashville, Oklahoma City, and Phoenix Areas are managing their own SFC Program through Self-Governance compacts. (Table 1).

The IHS SFC Program seeks the advice and recommendations of the national Facilities Appropriation Advisory Board and Area-specific Tribal Advisory Committees. These groups review program policies and guidelines and provide input on the future direction of the SFC Program.

Figure 4: Bear at solid waste site in Alaska.

TABLE 1
Tribes That Managed the SFC Program in FY 2004 Under Title I or V of P.L. 93-638, as Amended

IHS Area	Tribe
Anchorage	Alaska Native Tribal Health Consortium
Billings	Confederated Tribes of Salish & Kootenai (Flathead)
	Rocky Boys (Chippewa-Cree)
California	Hoopa Valley Tribe
Nashville	Chitmacha Tribe of Louisiana
	Mississippi Band of Choctaw Indians
	St. Regis Mohawk
	Eastern Band of Cherokee
Navajo	*Navajo Nation
Oklahoma City	Cherokee Nation of Oklahoma
	Absentee Shawnee Tribe of Oklahoma
	Choctaw Nation of Oklahoma
	Chickasaw Nation of Oklahoma
	Wyandotte Tribe of Oklahoma
	*Modoc Tribe of Oklahoma
	The Seminole Nation of Oklahoma (in Chickasaw Compact)
Phoenix	Ely Shoshone Tribe
	*Gila River Pima-Maricopa Indian Community
	Yerington

* Title I

“The Year” in Review

In FY 2004, over $93 million was appropriated for the construction of sanitation facilities. In addition to those appropriated funds, the SFC Program received more than $46.5 million in contributions from other Federal agencies including the Environmental Protection Agency (EPA) and from non-Federal sources such as tribes and State agencies. With these contributions, the SFC Program’s construction budget for the fiscal year totaled more than $139 million.

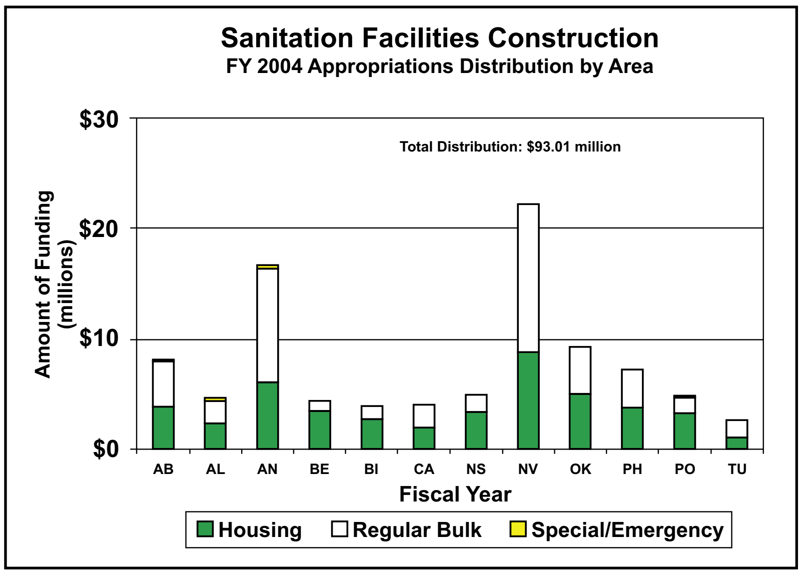


Figure 5: Distribution of SFC Project appropriations, by Area, for FY 2004.

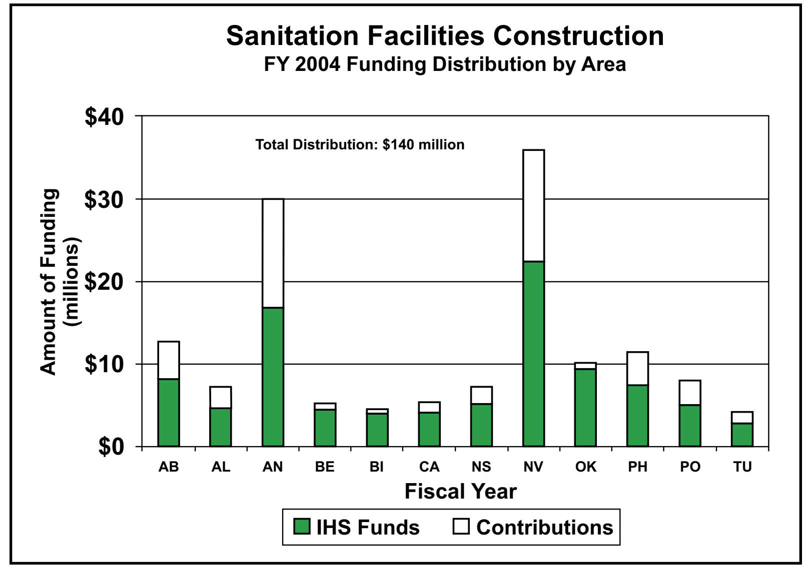


Figure 6: Total distribution of SFC Project funds in FY 2004, including all contributions and HUD funds.

Using the appropriated and contributed funds, the SFC Program initiated 371 projects to provide essential sanitation facilities to an estimated 2,548 new and like-new homes, 2,391 first service existing homes, and 19,989 existing homes. Included among the new housing units receiving facilities were 5 HUD-sponsored units, 112 Bureau of Indian Affairs-Home Improvement Program (BIA-HIP) sponsored units, and 2,431 units constructed by tribes, individuals, and other entities. In FY 2004, the SFC Program provided sanitation facilities to a total of 24,928 homes. These statistics are summarized in Table 2 on the following page.

TABLE 2
IHS Sanitation Facilities Construction Program Statistics for FY 2004

SFC Program Budget:

IHS SFC Appropriation =	$	93,014,717
HUD Contributions (Housing + CDBG*) =	$	445,960
Other Contributions =	$	46,009,001
Total Funding in FY 2004 =	$	139,469,678
Total IHS SFC Appropriations since 1959 =	$	2 billion

SFC Projects:

Number of Projects Undertaken in 2004 =	371
Total Number of Projects Undertaken since 1959 =	11,948

Homes Provided Sanitation Facilities in FY 2004:

• Number of New and Like-New Homes Served	
HUD-sponsored Homes =	5
BIA-sponsored Homes =	112
Tribal and Other Homes =	2,431
Subtotal	2,548
• Number of Existing First Service Homes Served =	2,391
• Number of Previously Served Homes Provided Upgraded Sanitation Facilities =	19,989
Total Number of Homes Served in 2004 =	24,928

*CDBG-HUD Community Development Block Grant program

Homes Provided Sanitation Facilities since 1959:

• Number of New and Like-New Homes	
HUD-sponsored Homes =	61,389
BIA-sponsored Homes =	22,699
Tribal and Other Homes =	74,119
Subtotal	158,207
• Number of First Service Existing Homes =	107,339
Total Number of Homes Served =	265,606

Sanitation Deficiency System (SDS) Information:

Total Estimated Cost of Sanitation Deficiencies =	$1.861 billion
Total Estimated Cost of Feasible Projects =	$916 billion
Total Number of Projects/Phases Identified =	2,885
Number of Feasible Projects Identified =	2,134
Estimated Total Number of Existing Homes Without Potable Water =	36,047
Estimated Total Number of Homes That Lack Either a Safe Water Supply or Sewage Disposal System, or Both (Deficiency Levels 4 and 5) =	40,299

Figure 7: Moose complicate trench work on a sanitation project in Alaska.

Six sanitation facilities construction projects are highlighted on the following pages. These projects represent a small fraction of the total construction workload undertaken by the SFC Program. They were selected to illustrate typical cooperative efforts undertaken by the IHS, the tribes, and other Federal and State agencies to provide safe water supply, sanitary sewage disposal, and solid waste facilities for American Indian and Alaska Native homes and communities.

Figure 8: Cleaning an oxidation ditch in Penobscot, Maine.

South Grand River and Wakpala Rural Water Transmission Lines Standing Rock Reservation, South Dakota

This project was developed to construct a water transmission main from the Wakpala rural water system to serve rural homes. Dozens of existing homes in an area without ground water have had to haul their drinking water. These existing homes are in an isolated area of the Standing Rock Reservation south of the Grand River.

Figure 9: Directional drilling under the Grand River Arm of Lake Oahe.

This project also allowed the Tribe to expand the Grand River entertainment facility. This facility had been operating for years on a large cistern system. Plans were developed for construction of a hotel at the site, but an adequate supply of water was not available until this project was completed.

Figure 10: New 300,000-gallon stainless steel reservoir.

The rural water system was extended to the Indian Memorial Recreation Area at the request of the U.S. Army Corps of Engineers to allow the Corps to abandon their small surface water treatment facility.

The Tribe applied for and received a Corps of Engineers regulatory permit for the pipeline crossings of three tributary arms of Lake Oahe. An Environmental Assessment was completed by the IHS, which resulted in a Finding of No Significant Impact (FONSI).

This was a complex and challenging engineering project. The project involved the installation of approximately 15 miles of large diameter pipe across rugged terrain; under-crossing of the Grand River Arm of Lake Oahe; and a new hilltop reservoir to maintain adequate storage capacity and pressure for this new pressure zone. Pipeline connections were made to the existing reservoir at Wakpala and to the proposed elevated tank at the Grand River entertainment facility.

The water main crossing of the Grand River Arm of Lake Oahe was a major construction obstacle to the pipeline construction. The construction method chosen was the use of high-tech directional drilling equipment for the installation of 14-inch HDPE to cross under the reservoir. By crossing at the abandoned Spur Line Railroad Bridge, most of the pipeline could be installed with standard excavation equipment in the earthen embankments. This reduced the cost of river-crossing construction by only having to directional drill in the area of the steel truss bridge spanning the original river channel.

In order to provide adequate water pressure to homes at higher elevations in the system, the existing 60,000-gallon glass-coated bolted steel standpipe was replaced with a 300,000-gallon stainless steel reservoir constructed on a hilltop. The foundation was designed so that the storage capacity (height) of the reservoir can be increased in the future without modification. A water-level sensing vault with radio telemetry controls was installed adjacent to the new reservoir to start/stop the clear well high service pumps at the water treatment plant.

With the new reservoir at a higher elevation, the clear well pumps and motor control equipment at the treatment plant had to be replaced to meet the changes in hydraulic conditions in the system.

For the improvement of water flow to the community of Wakpala, and for future rural water delivery to the Kenel community to the North, approximately 3 miles of 8-inch water main were installed.

The connection of the new 8-inch waterline to the existing 60,000-gallon buried concrete reservoir, and the installation of a new control valve, provides automatic and accurate level control.

Funds totaling $2.2 million were made available for this work from IHS and from the Standing Rock Sioux Tribe. The Tribal share came from Casino funds and from monies received from the Bureau of Reclamation for Municipal, Rural, and Industrial (MR&I) water improvements.

The work was advertised and administered by the Tribal MR&I Program. Construction of Phase II is scheduled for the summer 2004.

Figure 11: Waterline installation.

Hon Dah-McNary Regional Wastewater Treatment Facility
White Mountain Apache Tribe, Arizona

In 2002, the Phoenix Area Indian Health Service (IHS) and the White Mountain Apache Tribe initiated planning activities to alleviate wastewater disposal problems in the communities of McNary and Hon Dah on the Fort Apache Indian Reservation. The Reservation is located in the White Mountains of eastern Arizona.

In the community of McNary, an existing conventional lagoon treatment system serving 150 homes and an elementary school was overloaded and, at times, did not meet the National Pollution Discharge Elimination System (NPDES) requirements. In the 80-home community of Hon Dah, many individual septic systems were failing as a result of poor soils and shallow bedrock. In addition, many of the lots within the Hon Dah area could not be developed without wastewater treatment improvements.

In planning the construction of the regional wastewater treatment system, the IHS was instrumental in brokering funding relationships among five funding sources for a viable treatment facility that would meet both the current and future needs of the Tribe. Funding was secured from USDA Rural Development, the Environmental Protection Agency (EPA), the White Mountain Apache Housing Authority, the White Mountain Apache Tribe, and the IHS to construct a $2.9-million, 35-acre, 400,000-gallon per day wastewater treatment facility.

The completed treatment facility consists of four fermentation pit/outer ponds, each with a capacity of 2.5 million gallons, followed by four channels of constructed wetlands, each 3,600 feet in length. An ultraviolet (UV) radiation disinfection unit was also incorporated into the design to ensure the elimination of microbacteria from the discharged treatment effluent.

Figure 12: Installation of geosynthetic clay liner in a fermentation pond.

The design of the fermentation pits and outer ponds was based upon the principles of the Advanced Integrated Waste Pond System (AIWPS). The fermentation pits/outer ponds were lined with a geosynthetic clay liner (GCL), and the constructed wetland channels were lined with bentonite clay mixed and compacted with native soils. Bulrush and cattails were planted in the wetlands to absorb nutrients from the wastewater. In addition, an effluent discharge bypass was incorporated into the system that allows the treated discharge to be diverted to a stock pond. The pond was constructed from a borrow pit adjacent to the treatment site.

Figure 13: IHS engineers and technicians coordinate construction activities with the contractor as a sewer pipe is installed.

Figure 14: Installation of wetland plants.

The pond supports cattail growth and is accessible to the public. Pollen from the cattails is culturally significant to the White Mountain Apache people and is used in the Apache sunrise dances and other tribal rituals.

Construction of the treatment facility began in October 2002 and was completed in October 2004. The fermentation pits and outer ponds were allowed to fill and ripen prior to discharging into the wetlands and, in the summer and fall of 2004, the wetlands were planted with the assistance of tribal community service volunteers and IHS engineering and technician staff from Whiteriver, Hopi, and Pinetop-Lakeside. The development of this project from planning to construction, and eventual operation of the system, demonstrated the benefit of partnering relationships among the Federal agencies and the tribal communities. The partnering relationships were essential for the success of this large-scale project.

Figure 15: Overview of constructed fermentation pits/outer ponds to the upper left, constructed wetland channels to the right, and discharge outfall to the lower left.

Supai Village Water System Improvements Havasupai Indian Reservation, Arizona

Supai Village is located at the bottom of Havasu Canyon, a southwestern branch of the Grand Canyon in Northern Arizona. Only accessible by foot, horse, or helicopter, Supai is the most isolated Indian community in the southwest Area. The Village is the tribal center of the Havasupai Reservation. Havasupai, meaning People-Of-The Blue-Green-Waters, is famous for the four waterfalls near the Village.

In August 2000, the Tribe requested assistance from the IHS for improving its water supply facilities. At that time, the existing water supply system was not reliable, and the condition of the system would continue to deteriorate if improvements were not made soon.

Figure 16: New 108,000-gallon water storage reservoir.

IHS Project PH 01-B62 was funded in July 2001 for water system improvements and a new 108,000-gallon water reservoir. The new reservoir was constructed next to the existing water reservoir, doubling the community's storage capacity. Due to the close proximity of village homes to the reservoir site, chemical expansion in drilled holes was used to break the rock on the site. A bolted panel tank was constructed because of the expense and difficulty of conveying materials and construction equipment into the village.

Figure 17: Construction of a new tank foundation.

The project, completed in November 2003, also upgraded the water treatment building including the installation of anti-scale, chlorination, and fluoridation equipment. Household fixture leaks were corrected with the replacement of bathroom and kitchen fixtures, hose bibs, and hot water heaters. Well upgrades included new electrical controls, and emergency repair parts.

Wastewater Collection and Disposal Facilities
Gu Vo Village, Tohono O'odham Nation
Pima County, Arizona

The community of Gu Vo is located in the Gu Vo District, one of eleven districts within the Tohono O'odham Nation in southwest Arizona. Gu Vo is located about 120 miles west of Tucson in the flat Barajita Valley with the Gu Vo hills bordering the north and south sides of the community. At an elevation of 2,100 ft. Gu Vo lies along Bureau of Indian Affairs (BIA) Highway Route 1 and is about 6 miles east of the Ajo mountains. The local terrain is relatively flat with creosote brush, bursage, locoweed, and occasional stands of mesquite vegetation. There are 80 homes in this community with an approximate population of 352 people.

Figure 18: Lagoon excavation.

This project provided community wastewater service to 55 homes. New services were provided to 18 new or improved homes for which the Tribe constructed bathroom additions or replaced existing homes with new modular units. Most of these homes were using pit privies for wastewater disposal. Failing septic tank-drainfield systems were eliminated at an additional 37 existing homes. Septic tank systems in this area are considered to be a temporary solution to the village's

Figure 19: Anchor trench installation.

The United States Environmental Protection Agency (EPA) funded the projects through the EPA Tribal Border Infrastructure Program. The Nation applied to USEPA in 1996 for funds to address the deficiencies in Gu Vo and identified IHS as the implementation agency. EPA notified the Nation in November 1997 that the project was approved for funding. Funds were actually received from EPA in July 2000.

The IHS engineering staff in Tucson, Arizona, engineered and provided project management for this project. The Tohono O'odham Utility Authority provided contract administration and daily construction inspection services. This project consisted of installing 3,500 ft. of 3" High Density Polyethylene (HDPE) force main, 19,000 ft of 8" PVC gravity sewer main, 40 manholes, a sewage lift station, a 2-acre HDPE-lined lagoon system, and 10,800 ft. of 4" PVC sewer service line and 55 sewer service connections. Project construction began on January 16, 2004, and was completed on September 29, 2004. The total construction project cost was $1,096,000.

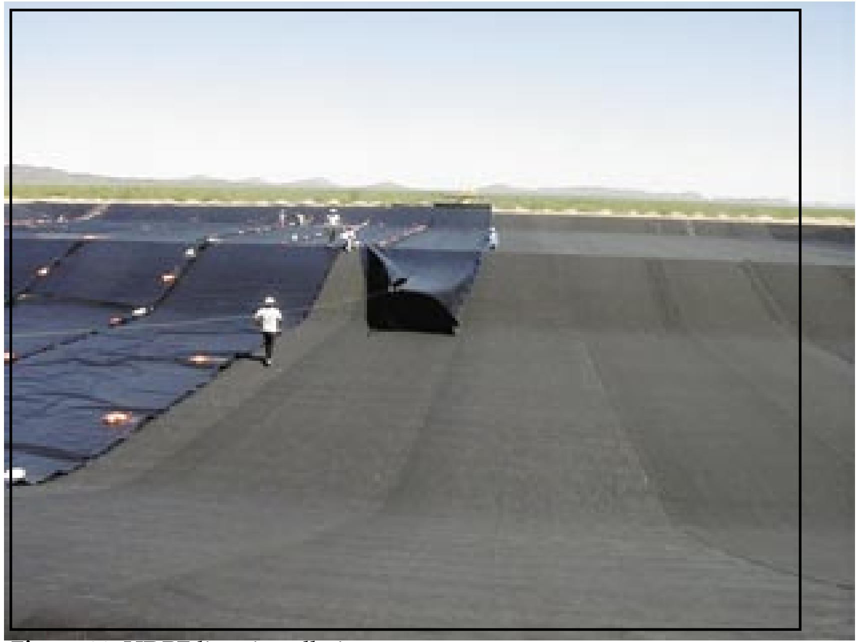


Figure 20: HDPE liner installation.


Figure 21: Completed lagoon.

Hickiwan/Vaya Chin/San Simon Regional Water System Project
Tohono O'odham Nation, Arizona

The Tohono O'odham Nation (TON) comprises some 2.9 million acres of land located in the Sonoran Desert of south central Arizona. The communities of Hickiwan, Vaya Chin, and San Simon are located in the west central portion of the Tohono O'odham Nation. The combined communities consist of over 150 homes, two schools, a newly constructed Tribal Headstart Building, a Tribal Recreational Facility currently under construction, and the IHS/TON Joint Venture Westside Health Clinic, which is also currently under construction.

All community water systems on the TON are operated and maintained by the Tohono O'odham Utility Authority (TOUA). The existing water sources that supplied the Hickiwan and San Simon water systems did not meet Safe Drinking Water Act (SDWA) standards for nitrates. Originally, the IHS funded separate projects independently addressing the water quality issues in each community. Hickiwan was to be connected to the Vaya Chin water system with a 9-mile waterline connection, while San Simon was originally funded for a new well field 9 miles northeast of the village.

A decision was made to combine the projects and create one large regional Hickiwan/Vaya Chin/San Simon water system because of many factors. First, the water quantity and quality at the new well field for San Simon was an "unknown." Hydrogeological maps of the area indicated a strong probability of sufficient water quantity, but quality was unknown. Secondly, Vaya Chin has an abundant amount of high-quality water. Previous testing of the Vaya Chin water source indicated a potential sustained production in excess of 700 gallons per minute.

Figure 22: Fusing HDPE pipe.

Thirdly, the number of wells under TOUA maintenance for these communities would decrease from 5 to 2 upon completion of the regional water system. Fourthly, the Hickiwan and Pisinimo Districts of the TON created an economic corridor for future development paralleling Arizona State Highway 86. The regional water system would not only better meet the existing needs, but would also provide plenty of capacity for future growth. Fifthly, the IHS/TON Joint Venture Westside Health Clinic site was selected, and the regional water system would provide the water source for this new facility. Finally, after numerous district and tribal meetings, the TON decided that the regional water system was a better solution to address the existing deficiencies, and also it provided for much-needed infrastructure to support future growth.

Figure 23: Laying HDPE pipe.

Figure 24: Sewerline trench.

The TON contributed over $1 million to the IHS to upgrade a portion of the regional pipeline from the 6-inch to 10-inch water main, and to provide for a 400,000-gallon elevated water storage tank to support the Westside Health Clinic and future potential growth.

Construction of the Hickiwan/Vaya Chin/San Simon Regional Water System began in September 2002. The total water system consisted of 22 miles of water main and took nearly 1½ years to complete. All water mains on this project were welded HDPE pipe. This project was well suited for this pipe material because of the long runs between villages across undisturbed desert, and the large number of wash crossings involved.

This project marked the first time the Tucson Area utilized HDPE material for water mains; and it proved to be very successful. The 22 miles of pipeline were installed for $1.5 million.

The total cost of the regional water system, including the 125,000-gallon ground storage tank outside Hickiwan, pipeline upgrades in Hickiwan, and the 400,000-gallon elevated storage tank at the Westside Health Clinic site, is nearly $3 million ($1 million of which was contributed to the IHS by the TON).

This project accomplished the goal of providing high-quality drinking water to the communities of Hickiwan and San Simon. It also provided increased water pressure to the Vaya Chin community and, through tribal contributions, was able to be designed and constructed to provide for on-going and future development on the TON. Water treatment considerations were avoided and the number of production wells was consolidated, thereby reducing TOUA's long-term O&M burden. This project is a shining example of what can be accomplished through IHS/tribal cooperation, a little ingenuity, and lots of hard work.

Squaxin Island Community Water System Improvements, Phase I
Squaxin Island Reservation, Washington

The Squaxin Island Reservation is located in western Washington near Puget Sound in southern Mason County approximately 16 miles northwest of Olympia. The Tribe's land base consists of multiple properties with a combined area of almost 2,300 acres. They include the original Squaxin Island, between Peale Passage and Squaxin Passage in Puget Sound, and the Squaxin Island Indian Community near Kamilche, Washington. These lands are located in Mason County and Thurston County. There are no permanent residents on Squaxin Island, so the Indian Community near Kamilche is most commonly referred to as the Reservation.

Figure 25: Water main trench.

It was determined that the expanding needs of the tribe would soon exceed the capacity of the existing water system. The existing wells are within 100 ft. of septic drainfields, and the Kamilche storage tank is severely undersized and deteriorating. This project therefore includes water source development, water transmission main, a pump station, and additional water storage. The estimated entire project cost to design and construct the water system facilities is $1,965,000.

Figure 26: Hydrant installation.

Phase 1 includes the construction water main extensions and will be completed in fall 2004. Phase 2 will be constructed in 2005 and will consist of a new well field, storage tank, and pumphouse. Upon completion of these facilities, the Tribe will have a new water supply system capable of serving all of the existing housing and planned new housing for the next 20 years.

It was necessary to coordinate this project with two existing projects. First, the Mason County planned to widen and realign the Old Olympic Highway. Second, the Tribe planned to install a sewer force main and water reuse line, which will serve the casino.

Figure 27: Railroad crossing casing.

The Mason County project required much cooperation with utilities and contractors. The utilities include Qwest, Mason County PUD (Public Utility District), Hood Canal Communications, and the Tribe's water department.

This project has several funding sources and partners. These include the Squaxin Island Tribe, Environmental Protection Agency, USDA Rural Development, the Southern Puget Sound Inter-Tribal Housing Authority (SPSITHA), and the IHS.

Figure 28: 8″ PVC water main installation.

Figure 29: 8″ PVC water main installation.

Sanitation Facilities and Health

Protecting the health of and preventing disease among American Indian and Alaska Native populations are primary IHS objectives. In the Indian Health Care Improvement Act (P.L. 94-437, as amended), the Congress declared that "...it is in the interest of the United States that all Indian communities and Indian homes, new and existing, be provided with safe and adequate water supply systems and sanitary sewage waste disposal systems as soon as possible." Citing this policy, the Congress reaffirmed the primary responsibility and authority of the IHS "...to provide the necessary sanitation facilities..." as authorized under P.L. 86-121.

Figure 30: Wastewater treatment plant aerators construction in Penobscot Nation, Indian Island, Maine.

A Report to Congress by the Comptroller General, dated March 11, 1974, noted that American Indian and Alaska Native families living in homes with satisfactory environmental conditions placed fewer demands on IHS' primary health care delivery system; i.e., those with satisfactory environmental conditions in their homes required approximately one fourth the medical services as those with unsatisfactory environmental conditions.

Figure 31: Foundation construction on a wastewater treatment plant in Penobscot Nation, Indian Island, Maine.

The IHS considers the provision of sanitation facilities to be a logical extension of its primary health care delivery efforts. The availability of essential sanitation facilities is critical to breaking the chain of waterborne communicable disease episodes. Properly designed and operated facilities can reduce the incidence of disease by eliminating waterborne bacteria, viruses, and parasites which cause such illnesses as salmonellosis, typhoid fever, cholera, and giardiosis. In addition, many other communicable diseases, including hepatitis A, shigella, and impetigo are associated with the limited hand washing and bathing practices often found in households lacking adequate water supplies. This is particularly true for families that haul water.

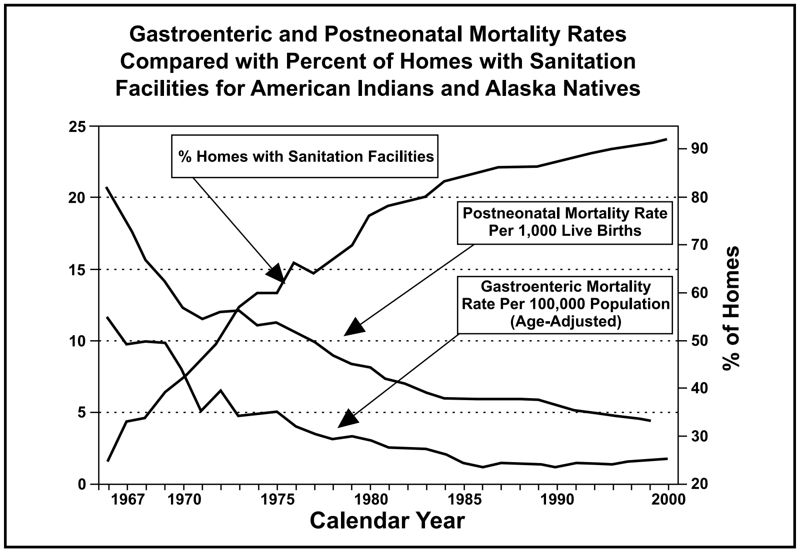


Figure 32: Graph of gastroenteric and postneonatal death rates versus the percent of Indian homes with potable water.

The availability of adequate sanitation facilities has value beyond disease intervention. Safe drinking water supplies and adequate waste disposal facilities are essential preconditions for most health promotion and disease prevention efforts. Consistently and optimally fluoridated drinking water, which can virtually eliminate tooth decay among children, is an example of this public health principle. Efforts by other public health specialists, such as nutritionists and alcoholism counselors, are enhanced if safe drinking water is readily available. Lack of indoor plumbing (sanitation facilities) is a significant risk factor for falls, which are a leading cause of injury-related deaths for elders. Home health care nursing services are much more effective when safe water and adequate wastewater disposal systems are in place.

Several diseases are readily transmitted by contaminated water supplies, and those of greatest importance are infectious hepatitis; typhoid, cholera, and paratyphoid fevers; and dysenteries. In 1955, more than 80% of American Indians and Alaska Natives were living in homes without essential sanitation facilities. The age-adjusted gastrointestinal disease death rate for American Indians and Alaska Natives was 15.4 per 100,000 population. This rate was 4.3 times higher than that for all other races in the United States. In 1995, by contrast, the age-adjusted gastrointestinal disease death rate had decreased significantly to 1.7 per 100,000. A major factor in this significant gastrointestinal disease rate reduction is the SFC Program's efforts to construct water supply and waste disposal facilities. The 1995 rate is still 40% higher than the rate for all races in the United States.

The SFC Program is a significant contributor to the improved health status of American Indians and Alaska Natives as clearly indicated by the decrease in the gastrointestinal disease death rate and concurrent increase in life expectancy.

Program Operations

The SFC Program is part of the IHS Office of Environmental Health and Engineering. The SFC Program's activities are supported by engineers, sanitarians, engineering technicians, clerical staff, and skilled construction workers.

There is an SFC Program in each of the 12 IHS Area Offices. The Program's Headquarters component, located in Rockville, Maryland, assists the Area Offices by establishing policies, providing guidance to ensure consistent and equitable program implementation nationwide, and interfacing with other Federal agencies.

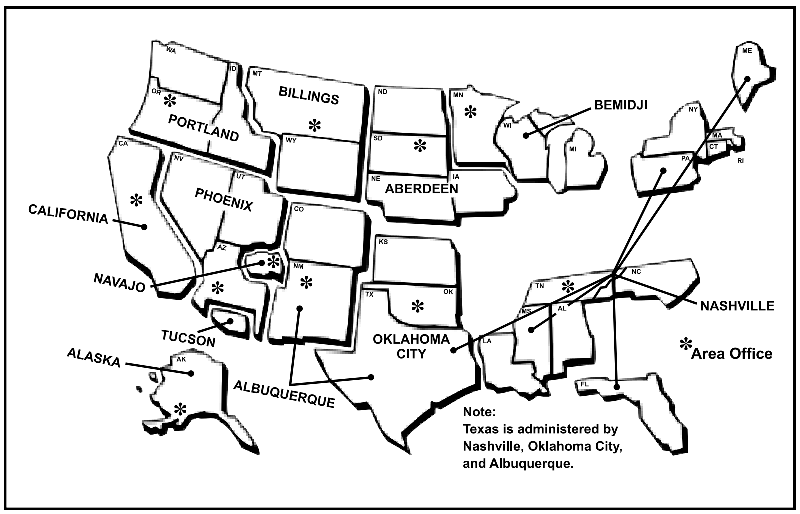


Figure 33: Location of Indian Health Service Area Offices.

The SFC Program works cooperatively with tribes and tribal organizations, with tribal housing authorities, and with many governmental agencies, such as HUD, BIA, EPA, and USDA Rural Utility Service toward achieving its sanitation facilities construction objectives. An example are funds that are transferred by HUD to the IHS for sanitation facilities construction in support of new and renovated HUD homes, typically made available to the SFC Program through tribal entities and Indian housing authorities. Agreements among the tribes, Indian housing authorities, the IHS, and HUD enable the transfer of HUD funds to the SFC Program for construction of necessary water and sewer facilities. Congress authorized the IHS to accept the HUD contributions.

Figure 34: Bridge crossing installation of 10” ductile iron pipeline, California.

Similar agreements among the tribes, the IHS, and the EPA Indian Set-Aside Grants (ISA) Program enable the EPA to contribute the ISA wastewater funds to the SFC Program. States do not have jurisdiction on trust lands and, except for Alaska, provide relatively little assistance to Indian tribes and reservations for the construction of sanitation facilities. The State of Alaska, through its Village Safe Water program, participates in many jointly funded IHS construction projects in Alaska Native communities.

The SFC Program's efforts to provide sanitation facilities for American Indian and Alaska Native homes and communities benefits more than 562 Federally recognized tribes and tribal organizations located in 35 States.

Sanitation facilities are provided, at the request of tribes, bands, or groups, for homes owned and occupied by American Indians and Alaska Natives who are eligible for assistance. Provision of water, wastewater, and solid waste facilities for commercial and industrial purposes is not authorized under P.L. 86-121; therefore, such needs are not addressed by the SFC Program.

Eligible sanitation facilities projects that are approved for implementation are classified under one of the following categories: 1) projects to assist new (non-HUD funded) and like-new Indian housing (Housing Support Projects); 2) projects to serve existing homes and communities (Regular Projects); and 3) special/emergency projects.

Figure 35: Cross-section of Arctic pipe used for Alaska construction projects.

Figure 36: Waterline repair project in Toksook, Alaska.

Housing Support Projects provide sanitation facilities for new homes and homes in like-new condition for eligible Indian and Alaska Native families. These projects typically serve Indian homes being constructed or rehabilitated by the BIA-HIP, tribes, individual homeowners, or other nonprofit organizations.

Figure 37: Welding on a watersphere in Cocopah, Arizona

Regular Projects provide sanitation facilities for existing Indian homes and communities. The SFC Program has established a Sanitation Deficiency System (SDS) for identifying and prioritizing projects to serve homes and communities with unmet water, sewer, and solid waste needs. This system is updated annually, and the information and funding requirements are submitted each year to the Congress in accordance with Indian Health Care Improvement Act requirements. A summary of the inventory of sanitation deficiencies is presented in the following pages.

Figure 38: Engineer Kelly Leseman conducting an electro-magnetic survey at a potential water tank site.

Special/Emergency Projects provide sanitation facilities for special studies and emergency situations. Emergency projects typically involve community sanitation facilities which have undergone, or are expected to experience, sudden widespread failure that will directly affect the public health. Funding for special/emergency projects is very limited, and all projects must be approved by the SFC Program Headquarters Office. The average project funding level is $20,000 to $50,000.

In addition to providing direct services for the construction of sanitation facilities, the SFC Program provides technical assistance on many issues related to construction and operation and maintenance of sanitation facilities.

Technical assistance, such as reviews of engineering plans and specifications for on-site sanitation facilities for new home construction, is routinely provided to tribes and Indian housing authorities. Technical reviews of feasibility studies and grant proposals are also routinely provided to tribes by the SFC Program for a wide range of civil and sanitation facilities engineering projects related to Indian Housing. The amount or degree of technical assistance provided depends on available resources.

Figure 39: Road bore for a waterline extension, Winnebago, Nebraska.

Upon project completion, the facilities constructed under the SFC Program are owned and operated by the tribe, individual homeowner, or other responsible non-Federal entity. The IHS provides technical assistance to the owners of the new sanitation facilities and provides training on proper operation and maintenance of the new facilities. Homeowners who receive individual sanitation facilities are instructed on the proper operation and maintenance of their newly installed wells and/or septic systems, and tribal operators are instructed on the correct operation and maintenance of community water and sewer facilities. The latter may include training in proper operation and maintenance of chlorination and fluoridation equipment, pumps and motor control systems for community water supply facilities, and proper operation and maintenance of sewage collection systems, lift stations, and wastewater treatment facilities.

The SFC Program also provides technical assistance to tribes in the development of tribal utility organizations for operation, maintenance, and management of community water and sewer facilities. This assistance may include development of rate structures to determine appropriate customer water and sewer fees.

As additional and more stringent environmental regulations regarding safe drinking water, sewage treatment and disposal, and solid waste disposal are issued, the IHS will continue providing technical support and consultation on environmentally related public health issues to American Indian and Alaska Native tribes and to individual homeowners.

Sanitation Deficiencies

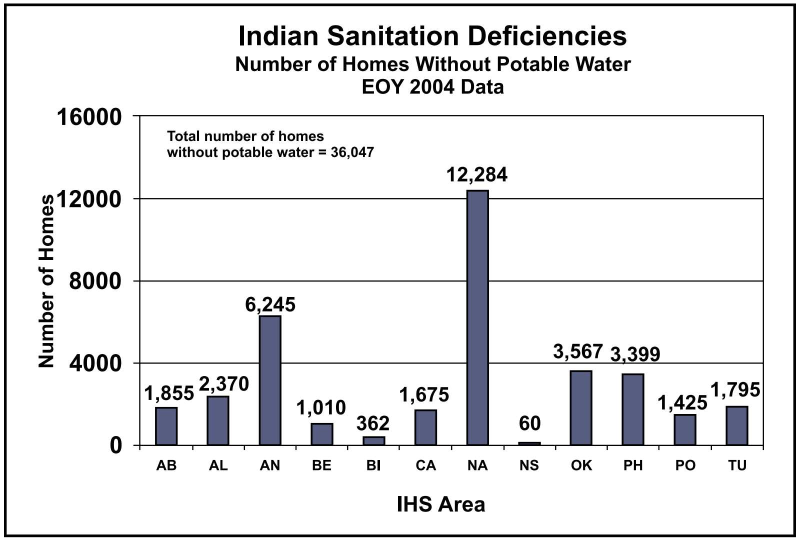


Figure 40: Number of Indian homes without potable water, by Area.

The Indian Health Care Improvement Act (IHCIA) requires the IHS to have a funding plan to provide safe water supply and sewage and solid waste disposal facilities to existing American Indian and Alaska Native homes and communities, and to new and renovated homes. In accordance with those requirements, the SFC Program annually estimates the total need to provide safe and adequate sanitation facilities for American Indian and Alaska Native homes and communities.

Sanitation deficiencies are reported as proposed projects or project phases. The current inventory of sanitation deficiencies identified more than 2,885 sanitation facilities construction projects or project phases at an estimated cost of $1.86 billion. These projects represent all unmet needs eligible for IHS funding. However, some projects are prohibitively expensive to construct and/or operate and are considered to be economically infeasible. Currently, 2,134 of the identified projects are considered to be economically feasible with an estimated cost of $916 million.

In an effort to reflect the relative impact on health of various water supply, sewage disposal, and solid waste deficiencies to be addressed, sanitation deficiency levels are determined for each project or project phase. The IHCIA defines the following deficiency levels:

Level I: The deficiency level describing an Indian tribe or community with a sanitation system that complies with all applicable water supply and pollution control laws, and in which the deficiencies relate to routine replacement, repair, or maintenance needs.

Level II: The deficiency level that describes an Indian tribe or community with a sanitation system that complies with all applicable water supply and pollution control laws, and in which the deficiencies relate to capital improvements that are necessary to improve the facilities in order to meet the needs of such tribe or community for domestic sanitation facilities.

Level III: The deficiency level that describes an Indian tribe or community with a sanitation system that has an inadequate or partial water supply and a sewage disposal facility that does not comply with applicable water supply and pollution control laws, or has no solid waste disposal.

Level IV: The deficiency level that describes an Indian tribe or community with a sanitation system which lacks either a safe water supply system or a sewage disposal system.

Level V: The deficiency level that describes an Indian tribe or community that lacks a safe water supply and a sewage disposal system.

The deficiency level assigned to a project is determined by the deficiencies of existing facilities. Projects are divided into phases, as appropriate, to provide logically independent and functional projects that can be funded in one year and which generally address one level of deficiency. Each proposed project or project phase will not necessarily bring the facilities for a community or tribe to level I deficiency or better. However, the combination of all projects reported will bring all facilities to deficiency level I or better.

For several years, the IHS has stated that 7.5% of AI/AN homes were without potable (safe and reliable) water. Based on end of year 2003 data, it is estimated that approximately 12% of AI/AN homes are without a safe and reliable water supply. This increase in the number of AI/AN homes lacking safe water is due to inflation, population growth, the age and condition of the existing infrastructure, high numbers of new and like-new housing, and new environmental regulations including the new Arsenic and Surface Water Treatment rules promulgated by the EPA. The new arsenic rule accounts for most of this increase because it has caused approximately 65 communities with nearly 13,000 homes to now be classified as deficiency level 4 for water as defined in IHCIA at 25 U.S.C. 1632. In order to meet the IHS strategic goal of raising the percentage of AI/AN homes with safe water to 94% by 2010, a significantly larger increase in sanitation project and staff funding is required.

These deficiencies represent an enormous challenge, especially because the resources to meet them are finite. Existing sanitation facilities require upgrading while efforts continue towards providing services to many yet unserved and mostly isolated homes.

Figure 41: ANTHC Superintendent Al Gieske and local resident Matthew Bereskin install an ocean outfall line.

Figure 42: Engineer technician Tom Campbell and COSTEP Karla Secrist survey an 8-inch sewer main extension in California.

In cooperation with the Office of Management and Budget (OMB), a Common Measure was developed during 2001 with the Rural Utility Service (RUS), the Bureau of Reclamation (BOR), the EPA, and the IHS to allow direct comparisons between rural water programs within the Federal government.The Common Measures agreed upon were the number of connections and the population served per million dollars of total project cost. It was recognized that BOR and the IHS are direct service programs to a specific population, and the EPA and RUS are grant/loan programs that can leverage funding with both of these programs, mostly providing strictly upgraded services. The data are reported as east and west, excluding Alaska. The IHS compared favorably having provided 174 and 212 (east and west) services per million dollars compared with the BOR which provided 24 services per million dollars.

The Program Assessment Rating Tool (PART) is an OMB initiative performed on the SFC Program in 2002. The PART rates a program's purpose, design, strategic planning, program management, and program results. The SFC Program scored 80%, which is a very acceptable score. A weakness of the SFC Program is that it has not had an independent Program review since 1974, and there has not been a recent benefit cost analysis on the value of sanitation facilities for AI/AN homes. The SFC Program is working with other parts of the Department of Health and Human Services on an independent evaluation of the Program that is scheduled to be completed in 2005.

Figure 43: Engineer David Harvey gives Fallon tribal officials a tour of the new arsenic removal plant.

Tables 3 through 8 and corresponding charts illustrate the type, geographic location, and associated costs of the sanitation deficiencies.

TABLE 3 Number of Homes at Each Deficiency Level by Area						
AREA	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	TOTAL
AB	2,123	3,060	13,210	1,748	347	20,488
AL	1,082	4,843	5,997	2,520	29	14,471
AN	7,945	2,929	4,141	987	5,905	21,907
BE	11,879	6,141	3,695	1,110	29	22,854
BI	259	4,146	8,469	1,051	16	13,941
CA	606	3,254	2,778	1,634	487	8,759
NA	10,620	7,083	25,547	3,557	9,106	55,913
NS	2,746	4,563	6,333	607	5	14,254
OK	63,440	2,643	20,973	3,504	829	91,389
PH	5,769	6,725	9,034	3,047	464	25,039
PO	1,220	6,669	4,234	1,486	11	13,620
TU	0	1,192	1,937	834	986	4,949
TOTAL	107,689	53,248	106,348	22,085	18,214	307,584

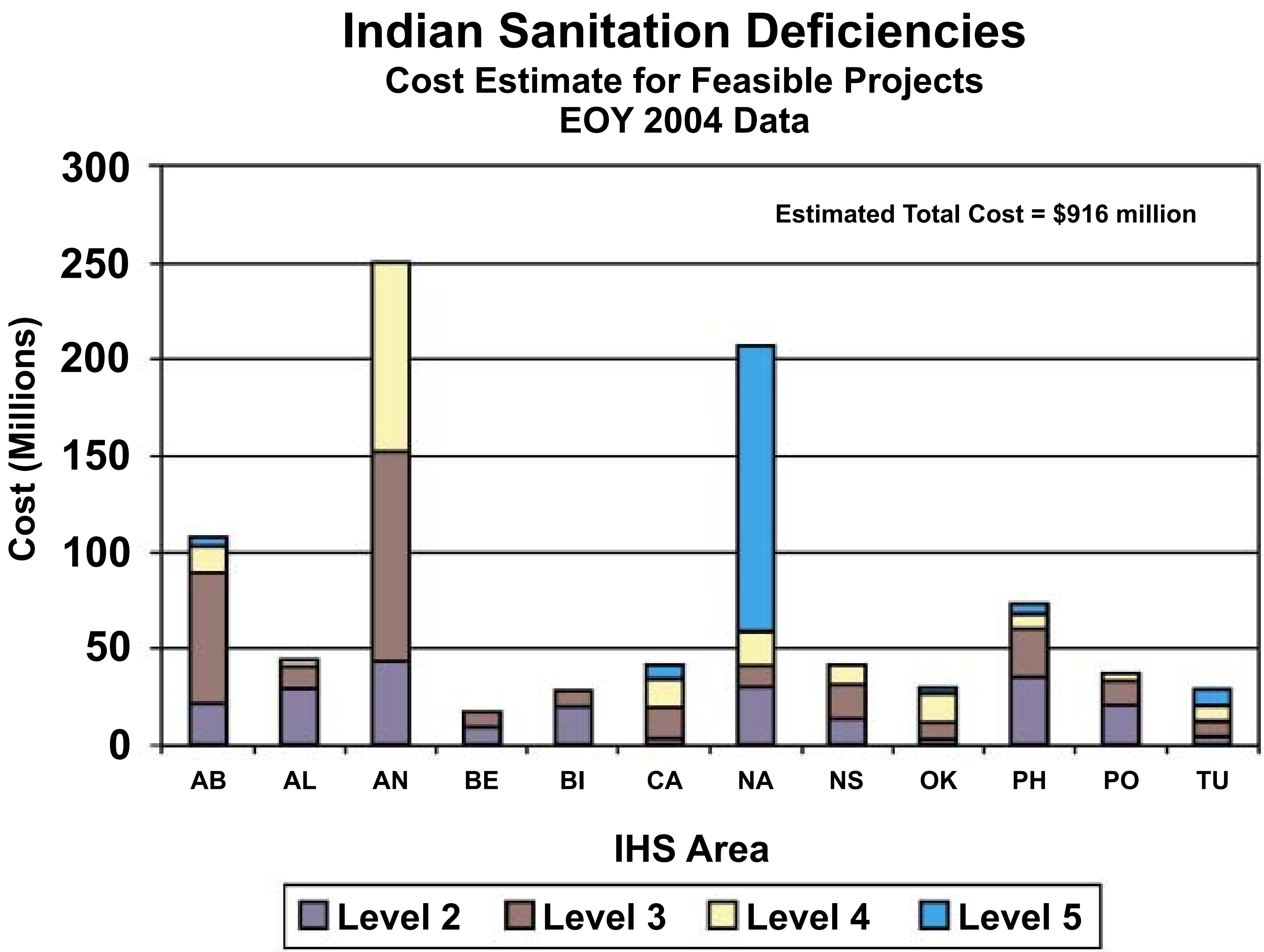
TABLE 4 Number of Homes Requiring Assistance by Type of Facility				
AREA	WATER	SEWER	SOLID WASTE	ELIGIBLE HOMES
AB	13,036	8,447	10,054	31,537
AL	13,012	10,035	2,407	25,454
AN	12,132	11,335	5,470	28,937
BE	7,921	4,829	3,559	16,309
BI	9,779	7,096	9,242	26,117
CA	6,971	6,716	6,215	19,902
NA	27,955	14,555	34,553	77,063
NS	9,438	10,841	7,654	27,933
OK	10,211	4,231	19,728	34,170
PH	16,167	9,106	6,997	32,270
PO	5,795	4,807	8,959	19,561
TU	4,944	3,014	4,223	12,181
TOTAL	137,361	95,012	119,061	351,434

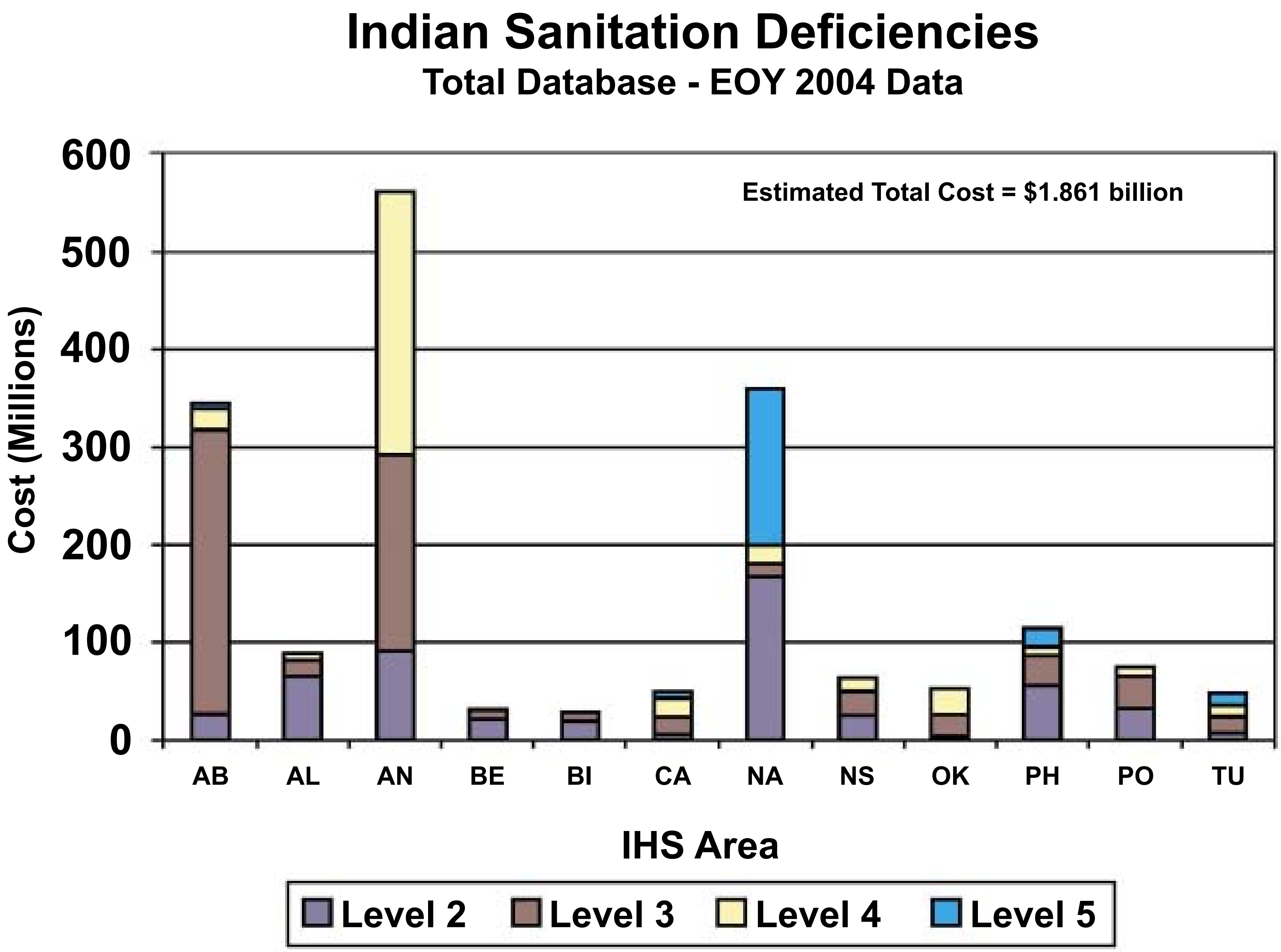
TABLE 5 Project Cost by Deficiency Level Feasible Projects						
AREA	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	TOTAL
AB	$0	$20,543,000	$68,306,500	$13,959,600	$4,860,500	$107,669,600
AL	$0	$29,074,630	$11,322,000	$2,948,621	$0	$43,345,251
AN	$0	$42,542,743	$109,179,453	$99,273,405	$0	$250,995,601
BE	$0	$8,929,530	$7,279,580	$1,150,720	$0	$17,359,830
BI	$0	$19,851,850	$8,760,410	$147,415	$0	$28,759,675
CA	$0	$3,388,450	$16,973,744	$14,707,449	$7,160,000	$42,229,643
NA	$0	$30,446,062	$11,531,855	$17,776,515	$148,412,288	$208,166,720
NS	$0	$14,621,500	$17,275,190	$10,899,858	$72,000	$42,868,548
OK	$0	$2,467,692	$10,374,894	$15,503,396	$1,831,000	$30,176,982
PH	$0	$36,856,504	$24,936,103	$7,557,318	$5,299,500	$74,649,425
PO	$0	$22,117,200	$12,646,300	$4,472,300	$0	$39,235,800
TU	$0	$5,637,900	$8,208,000	$8,342,700	$8,332,900	$30,521,500
TOTAL	$0	$236,477,061	$306,794,029	$196,739,297	$175,968,188	$915,978,575

TABLE 6 Project Cost by Deficiency Level Total Database						
AREA	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	TOTAL
AB	$887,000	$26,355,000	$293,492,500	$20,267,600	$5,151,500	$346,153,600
AL	$3,878,700	$65,341,130	$17,134,448	$7,285,987	$63,000	$93,703,265
AN	$17,212,370	$92,111,014	$200,480,383	$270,546,809	$1,177,240	$581,527,816
BE	$227,375	$22,498,430	$8,349,222	$1,687,720	$0	$32,762,747
BI	$229,500	$20,196,850	$9,200,410	$147,415	$0	$29,774,175
CA	$108,000	$3,798,950	$20,735,119	$19,646,449	$7,160,000	$51,448,518
NA	$2,511,580	$168,670,883	$12,496,908	$19,388,177	$160,276,583	$363,344,131
NS	$0	$26,241,100	$25,924,230	$12,822,858	$72,000	$65,060,188
OK	$0	$2,738,692	$25,299,894	$24,691,552	$1,831,000	$54,561,138
PH	$235,000	$58,285,216	$29,926,624	$9,105,818	$18,987,184	$116,539,842
PO	$112,700	$34,616,700	$34,615,700	$7,041,227	$0	$76,386,327
TU	$0	$7,888,900	$16,802,500	$12,686,700	$12,369,900	$49,748,000
TOTAL	$25,402,225	$528,742,865	$694,457,938	$405,318,312	$207,088,407	$1,861,009,747

TABLE 7 Cost Estimates by Type of Needed Facility by IHS Area Feasible Projects					
AREA	WATER	SEWER	SOLID WASTE	O&M	TOTALS
AN	$82,579,000	$14,331,100	$10,374,500	$385,000	$107,669,600
BE	$31,770,791	$10,116,310	$1,394,000	$64,150	$43,345,251
BI	$123,898,930	$90,849,650	$36,189,021	$58,000	$250,995,601
CA	$9,746,340	$6,218,970	$1,394,520	$0	$17,359,830
NA	$17,499,065	$8,833,510	$2,427,100	$0	$28,759,675
NS	$18,186,220	$20,494,223	$3,517,200	$32,000	$42,229,643
OK	$136,430,309	$63,690,286	$8,046,125	$0	$208,166,720
PH	$18,712,550	$20,042,338	$3,687,460	$426,200	$42,868,548
PO	$20,089,243	$5,969,139	$4,118,600	$0	$30,176,982
TU	$41,648,213	$26,667,112	$6,284,100	$50,000	$74,649,425
AB	$22,603,100	$8,661,500	$7,937,200	$34,000	$39,235,800
AL	$19,052,500	$9,667,800	$1,593,700	$207,500	$30,521,500
TOTAL	$542,216,261	$285,541,938	$86,963,526	$1,256,850	$915,978,575

TABLE 8 Cost Estimates by Type of Needed Facility by IHS Area Total Database					
AREA	WATER	SEWER	SOLID WASTE	O&M	TOTALS
AB	$312,169,000	$22,394,100	$11,205,500	$385,000	$346,153,600
AL	$52,444,861	$39,084,254	$2,110,000	$64,150	$93,703,265
AN	$284,057,779	$217,136,843	$80,275,194	$58,000	$581,527,816
BE	$15,894,640	$15,006,545	$1,861,562	$0	$32,762,747
BI	$17,863,565	$9,403,510	$2,507,100	$0	$29,774,175
CA	$22,780,095	$24,856,223	$3,775,200	$37,000	$51,448,518
NA	$277,556,853	$75,629,653	$10,157,625	$0	$363,344,131
NS	$24,509,750	$36,379,278	$3,729,460	$441,700	$65,060,188
OK	$39,373,299	$11,069,239	$4,118,600	$0	$54,561,138
PH	$56,791,113	$53,082,629	$6,394,100	$272,000	$116,539,842
PO	$45,382,627	$21,019,500	$9,921,200	$63,000	$76,386,327
TU	$29,222,200	$16,648,300	$3,296,900	$580,600	$49,748,000
TOTAL	$1,178,045,782	$541,710,074	$139,352,441	$1,901,450	$1,861,009,747

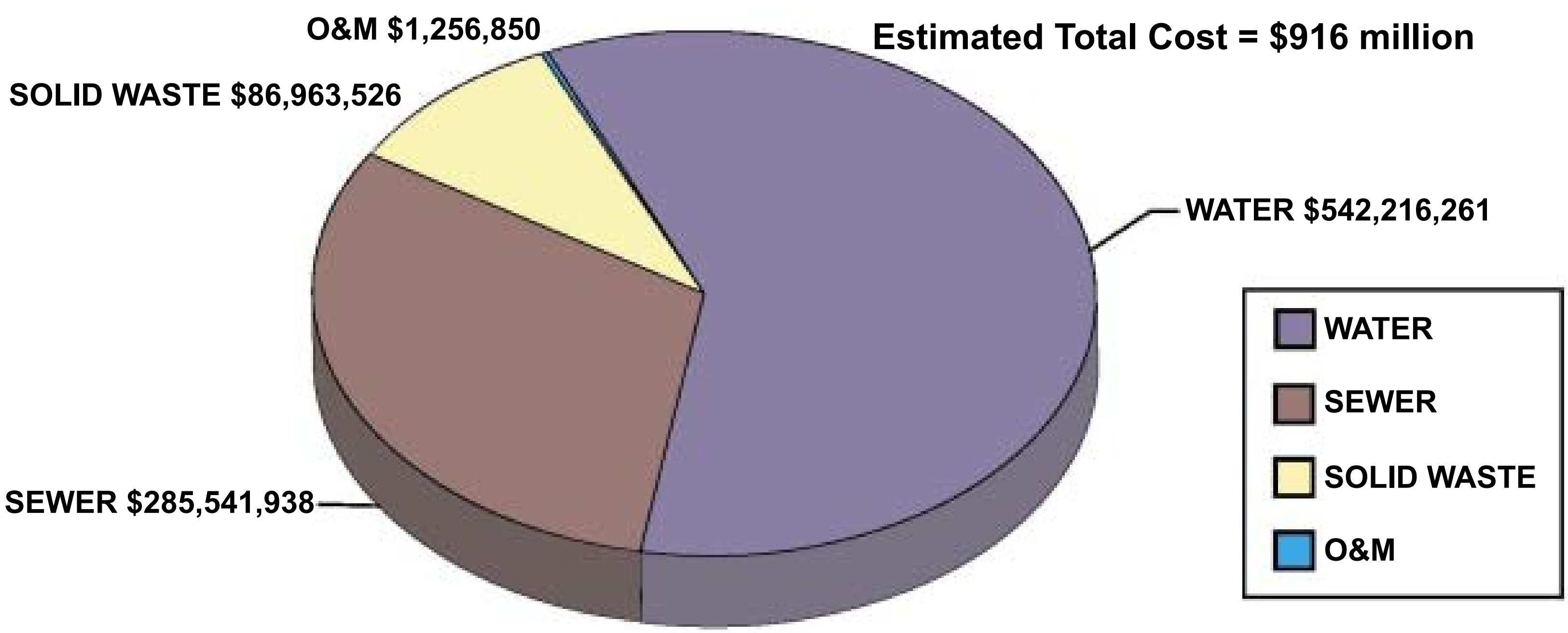

Indian Sanitation Deficiencies
Cost Estimate for Feasible Projects
EOY 2004 Data
Estimated Total Cost = $916 million
Cost (Millions)
300
250
200
150
100
50
0
AB
AL
AN
BE
BI
CA
NA
NS
OK
PH
PO
TU
IHS Area
Level 2
Level 3
Level 4
Level 5



Indian Sanitation Deficiencies
Total Database - EOY 2004 Data
Estimated Total Cost = $1.861 billion
Cost (Millions)
600
500
400
300
200
100
0
AB
AL
AN
BE
BI
CA
NA
NS
OK
PH
PO
TU
IHS Area
Level 2
Level 3
Level 4
Level 5

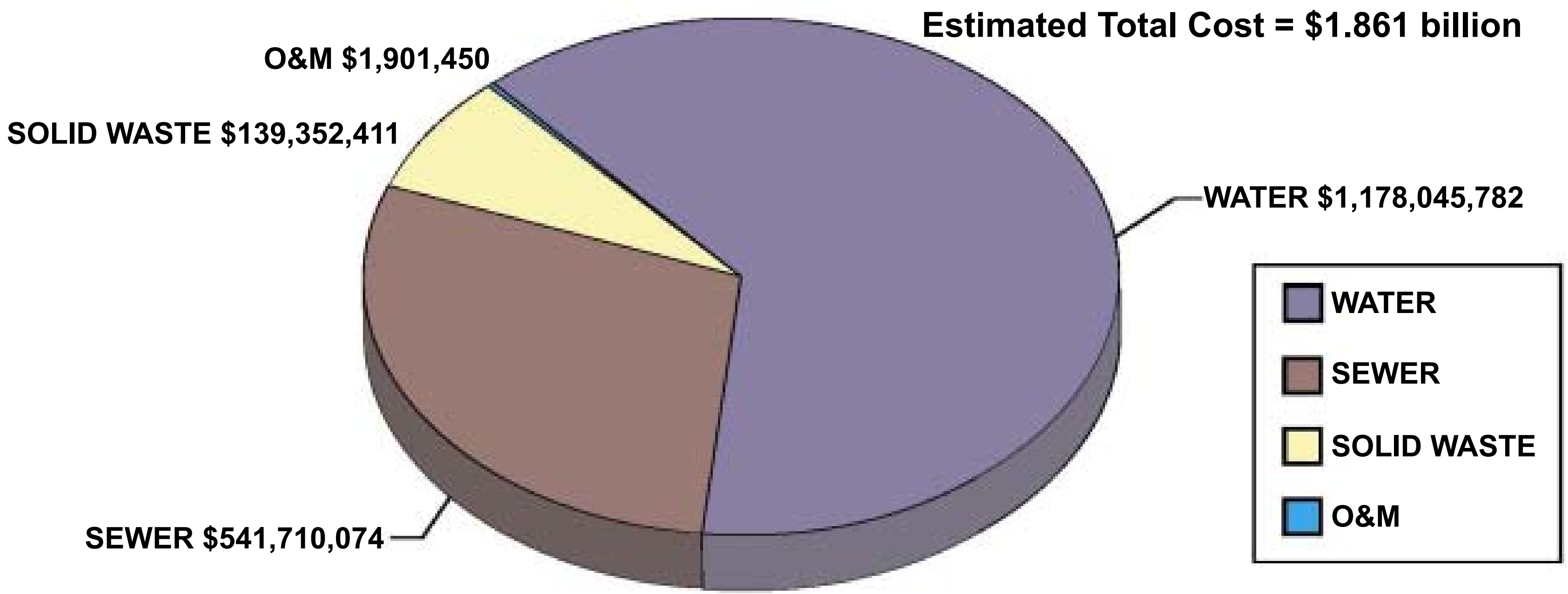
Current 10-Year Funding Plan to Address Indian Sanitation Deficiencies

Cost Estimates by Type of Facilities
EOY 2004 Data - Economically Feasible Projects



Cost Estimates by Type of Facilities

EOY 2004 Data - Total Database



The Challenge Ahead

The ultimate goal of the SFC Program is to provide adequate water and sewer facilities for all existing Indian homes. However, despite current funding levels, there are numerous factors that will continue to create additional sanitation facility needs in the future. These factors include population growth and the corresponding additional need for homes. The number of Indian families is increasing faster than new homes are being constructed, making it especially difficult to meet critical sanitation needs in many Indian communities.

Another factor is the need to upgrade or replace existing sanitation facilities when their useful design life is reached; the IHS began providing water and sewer systems to American Indian and Alaska Native communities over 45 years ago. This factor becomes increasingly critical as the reliability decreases and the cost of operating and maintaining older sanitation facilities increase. Despite an IHS emphasis on designing systems that are simple and economical to operate and maintain, the reliability of most community water and sewer systems in Indian country needs to be improved. The aging water and infrastructure needs are documented by the EPA, the General Accounting Office, and the American Water Works Association.

More stringent environmental standards and more difficult site conditions will challenge the SFC Program as it endeavors to provide needed sanitation facilities in years to come. Standards for public water supply systems, solid waste disposal facilities, and sewage treatment facilities are continually being modified by legislation and regulation.

The impact of these changes is generally the most severe on small utility systems such as those serving American Indians and Alaska Natives. As a result of more stringent regulations, small systems will cost more to build and operate.

In the future, the technical and managerial skills of IHS and tribal staff to design, construct, and operate needed sanitation facilities in an environment with more fiscal and regulatory challenges will be tested. A true partnership among Tribes, Congress, and the IHS is needed if we are to meet these challenges successfully.

Figure 44: Yankton Sioux Tribe receives $600,000 from a USDA-Rural Development grant to expand/develop the Tribe's solid waste program.

IHS Area SFC Program Directory

Aberdeen Area/DSFC
115 4th Avenue, Southeast 1
Aberdeen, SD 57401 1
Ph. (605) 226-7451 1

Anchorage Area/DSFC 1
1901 South Bragaw Street, Suite 200 1
Anchorage, AK 99508-5928 1
Ph. (907) 729-3540 1

Albuquerque Area/DSFC 1
5300 Homestead Road, N.E. 1
Albuquerque, NM 87110 1
Ph. (505) 248-4595 1

Bemidji Area/DSFC 1
104 Minnesota Avenue, NW 1
Bemidji, MN 56601 1
Ph. (218) 444-0504 1

Billings Area/DSFC 1
2900 4th Avenue N 1
Billings, MT 59101 1
Ph. (406) 247-7096 1

California Area/DSFC 1
650 Capitol Mall, Suite 7100 1
Sacramento, CA 95814 1
Ph. (916) 930-3945 1

Nashville Area/DSFC 1
711 Stewarts Ferry Pike 1
Nashville, TN 37214-2634 1
Ph. (615) 467-1586 1

Navajo Area/DSFC
P.O. Box 9020 1
Window Rock, AZ 86515 1
Ph. (928) 871-5851 1

Oklahoma City Area/DSFC 1
3625 NW 56th Street, Five Corporate Plaza 1
Oklahoma City, OK 73112 1
Ph. (405) 951-3882 1

Phoenix Area/DSFC 1
Two Renaissance Square 1
40 North Central Avenue, Suite 600 1
Phoenix, AZ 85004 1
Ph. (602) 364-5068 1

Portland Area/DSFC
1220 SW 3rd Avenue, Room 476 1
Portland, OR 97204-2892 1
Ph. (503) 326-2001 1

Tucson Area Indian Health Service 1
7900 South J Stock Road 1
Tucson, AZ 85746-2508 1
Ph. (520) 295-2580 1

DEPARTMENT OF
HEALTH AND HUMAN SERVICES

Indian Health Service
Office of Environmental Health & Engineering
Division of Sanitation Facilities Construction
12300 Twinbrook Parkway
Suite 610
Rockville, MD 20852