

**EVALUATION OF THE  
U.S. ARMY CORPS OF ENGINEERS'  
WATER AND SANITATION PROJECT  
IN THE VILLAGE OF BUCKLAND, ALASKA  
PHASE 2**

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# EXECUTIVE SUMMARY

## EVALUATION OF THE U.S. ARMY CORPS OF ENGINEERS'

### WATER AND SANITATION PROJECT IN THE VILLAGE OF BUCKLAND, ALASKA

The U.S. Army Corps of Engineers is the lead agency for a multi-year sanitation pilot project in the village of Buckland, in Alaska's Northwest Arctic Borough. This report evaluates just the planning and the phase one design activities of that pilot project. The Environmental Protection Agency hired the Institute of Social and Economic Research (ISER) to do this evaluation.

#### Background

Providing safe drinking water and sewage disposal for rural communities has been and continues to be a major public policy goal in Alaska. The federal and state governments have spent more than \$1 billion building sewer and water facilities in rural Alaska in the past several decades, but many unsafe and inadequate water and sewer systems remain.

A wide range of government agencies and Native organizations have been involved in rural sanitation projects, but until recently one notable exception was the U.S. Army Corps of Engineers. The corps has regulatory authority over and provides technical expertise for water-related projects across Alaska—for example, oil, gas, and mining activities that affect wetlands. But historically it has not been involved in providing sanitation systems in rural Alaska. That changed in 1997, when Congress asked the corps to apply its expertise with cold region design, construction, and operation of water and sewer facilities to projects in rural Alaska.

The Buckland project is the corps' first such project. Planning began in 1998 and the phase one design started in 2000. As of this evaluation, in early 2003, construction of the sanitation project had not yet begun. The project team includes not only the corps but also its contractors URS Corporation and Larsen Consulting Group.

#### Methods

As a framework for this evaluation, we chose themes identified in the Rural Sanitation 2005 Action Plan, adopted by the Governor's Council on Rural Sanitation in 1998. We then developed research questions to help us examine each theme. We interviewed Buckland city and tribal government representatives and Northwest Arctic Borough officials and community residents, as well as non-local agency representatives and consultants and contractors who worked on the project. We also reviewed meeting notes and a wide range of project documents.

#### Themes and Findings

The themes and the corresponding research questions we developed are listed below, along with our findings about each.

**Partnership.** *Did the corps effectively form partnerships with local, regional, state, and federal agencies involved in providing rural water and sewer systems?*

Coordinating different levels of bureaucracy at the federal and state levels while moving the project forward has been a challenge. This coordination has been extensive and

difficult, since the federal, state, and regional agencies, local governments, and community members involved have varying interests. One project team member noted that the project team had underestimated the difficulty of this coordination.

People we interviewed stressed that the most successful partnership of the Buckland project was the superb collaboration between the City of Buckland and the Buckland IRA (Indian Reorganization Act) Council. The corps supported and encouraged this working relationship, requiring joint city and IRA resolutions for the project. The Northwest Arctic Borough, NANA Corporation and Maniilaq (the non-profit arm of NANA) were also part of this positive partnership. Overall, informants told us there were strong and weak points in the partnerships among all the agencies, organizations, and community residents involved in the project.

**Capacity development.** *Did the corps work in partnership with local governments and residents to improve Buckland's capacity—considering the unique needs, resources, and expectations of the community? Did the project include resources for activities not related to construction, such as planning, training, technical assistance, and developing and sustaining the capacity to operate and maintain systems? For example, did the corps hold workshops to help residents understand the importance of sanitation; methods and technologies; affordability; effort; need to pay bills; need for a well-trained operator and manager; and available programs?*

We found differing opinions about the existing capacity of the community of Buckland and whether the Corps of Engineers tried to improve this capacity. In this phase, the corps made few direct efforts to develop community capacity. It did work closely with the community, primarily helping the community complete tasks.

The corps also encouraged residents to take responsibility for their water and sewer bills, by discussing the need for payment with community elders and attempting to show them that the system will not be sustainable unless all residents pay their bills.

The corps reported that lack of funds “hampered” any efforts to “develop a program training mechanism” in this phase of the program. The community has obtained funds from the Denali Commission to pay for electrical or plumbing training for three people. Buckland also requested and received \$60,000 from the state’s Village Safe Water (VSW) program to hire a project coordinator to help the city government fulfill its project responsibilities. The city did not hire a project coordinator, but was using the VSW funding for travel expenses related to the project. The Northwest Arctic Borough’s federal lobbyist is serving as coordinator for the City of Buckland.

When the project is completed, Buckland will take ownership of the water and sewer system, including a new bridge that will connect the community with the new water treatment plant and sewage lagoon. The Alaska Department of Transportation and Public Facilities will be responsible for major repairs, but the city will be responsible for minor repairs and maintenance of the bridge. A key informant pointed out that the city currently has no method to pay for this maintenance, nor is it clear that the city has the capacity to do such work.

The corps had not as of late 2002 determined what the user fees for the system will be. According to early estimates of the design team, the system might cost households about \$146 per month. This would be a very substantial cost for households that typically have low cash incomes and rely heavily on subsistence. Many rural utilities across Alaska have trouble paying the costs of operating and maintaining piped water and sewer systems.

It seems evident that Buckland residents do not understand how expensive the new system will be, since they talk about the difficulty of paying for less expensive utilities but note their enthusiasm about the new water and sewer services. As one resident said:

*It costs \$30.00 a month for the [flush and haul] service. This is a lot of money. [But], I am looking forward to the new water and sewer system being installed.*

Building community capacity is a long-term process that is critical to a water and sewer system project. It is a community-wide process, ranging from city officials to children in the community. Building community capacity is not helping communities complete tasks, but rather teaching communities how to solve problems and acquire skills.

**Local Involvement.** *Did the corps involve, empower, and defer to the community in decision-making? In the planning phase, did the community have the information and the time to effectively consider questions of technology, requirements for operations and maintenance, management, finance, administration, and force accounting?*

The Corps of Engineers' philosophy for the Buckland project has been to involve the community and find out what residents wanted rather than to impose a system on the community. This philosophy was evident in the extensive community involvement in the early stages of the project design phase. Several people we interviewed noted that the community involvement in the Buckland project was a model approach that could be used by others. Many also indicated that this project has been village-led.

However, a project team member noted that as the design phase progressed and addressed the technical aspects of the system, it felt as if the team was leading the community along rather than implementing the community's decisions. The project team did not always allow adequate time for the community to review design options. The corps noted:

*After the utility facility and master plan, the community's role became one of review rather than input—is it acceptable vs. what do you want.*

The corps' process involved the community and fostered a sense of community ownership of the project at the start of the design phase. That sentiment dwindled as the project became more technically oriented and as the start of construction was delayed. The corps' local involvement in the early stage was good, but it wasn't able to start construction in a timely way.

In many ways, the corps used a model approach for local involvement. The process of planning the project from the bottom up, with local involvement being the most important aspect of the initial design phase, is unusual—and the community welcomed it.

## Local Hire

Local training and local hire for this project are important aspects of local involvement and major concerns of the community. The City of Buckland, the Buckland IRA, and the Northwest Arctic Borough have made local hire a priority and a mandate for the project. The corps does not do force accounting—a system under which a government agency not only pays for construction materials but also directly supervises the construction, rather than hiring a contractor. This method generally enables the local community to hire workers for projects and therefore facilitates local hire. But the corps uses the design/bid method for construction contracting, under which the hiring authority remains with each individual contractor—who may or may not hire locally.

The corps does attempt to encourage the use of small and disadvantaged businesses, through requirements in its request-for-proposal selection criteria. Contractors must demonstrate in their proposals how they will meet this obligation. The corps can negotiate contracts and may also use the U.S. Small Business Administration's 8(a) Business Development Program to hire contractors. The 8(a) program is designed to "help socially and economically disadvantaged entrepreneurs gain access to new economic opportunities," according to the brochure of the Small Business Administration's Minority Enterprise Program. The details of how the corps implements the 8(a) process are not clear. Therefore, we don't know how well this process would promote local hire.

**Accountability.** *Does the resulting system design and project implementation provide the best service possible to rural residents? Is it responsive to customer concerns and priorities? Is the resulting system design and project implementation a cost effective use of public resources?*

As previously noted, the corps worked closely with the community during the initial portion of the design phase. A key informant told us that the corps included discussions about future expansion of the community, to help ensure that the system would be designed to meet future demand.

The corps' effort to involve the community is an indication of its desire to be accountable to the community and provide residents with a system that is their own. Officials of the City of Buckland said they are satisfied with the process, but would like more project fiscal information from the corps. The community is responsible for funding a portion of the project, and it has an interest in monitoring whether available funds will be adequate for completing the project.

Community members were pleased at the beginning of the design process, but are becoming frustrated with the lack of progress toward construction. City officials talked to us about this lack of progress and the community's desire to have construction begin. They said the community's patience is wearing out. Overall, the corps has worked well with the community of Buckland but it hasn't been able to get construction started in a timely way. People we interviewed said they preferred the corps' process for implementing water and sewer projects over the approach taken by the federal Indian Health Service and the state Village Safe Water program.

**Other Themes.** *What other issues and themes emerge from the record?*

### Institutional Constraints

All the key informants commented in one way or another about institutional constraints at the Corps of Engineers and said these impeded the Buckland project. The main institutional constraints they described were inadequate staffing, excessive and lengthy review processes, and a complex bureaucratic process.

*Inadequate Staffing:* Key informants often commented that the corps' project manager had been over-extended throughout the project. Internal restructuring changes at the corps hurt the Buckland project. The project manager was given the responsibilities of more than one position at the corps, leaving even less time for the Buckland project.

As a result of the internal changes and the lack of staff support, the project has been implemented incrementally and the larger project organization has been neglected. Important foundations such as communication and contractor relations were not well developed.

*Lengthy Review Processes:* The corps held its contractors to strict deadlines, yet failed to meet its own deadlines for reviewing within 30 days—which in turn delayed contractors trying to complete scheduled tasks. For example, the delay in the review of the 35 percent design delayed the delivery of the 95 percent and 100 percent design submittals. Overall, the corps' inability to meet its own deadlines caused delays for the project and contributed to a lack of partnership between the corps and its contractors.

*Administrative Process:* The bureaucratic process employed by the Corps of Engineers contributed to delays and complicated the project. Corps headquarters was not always sensitive to the needs of the project and of the local community. The corps also had difficulty coordinating its governing regulations with those of other agencies.

The corps' structure lacks some of the flexibility necessary to facilitate working in rural Alaska on water and sewer projects. The original timeframe for designing the system and having it under construction in two years was not realistic. Other delays—due to lengthy approval times from headquarters for corps expenditures and constraints on travel to rural communities—complicated the project. The corps also had little flexibility with subcontracts.

Right now, the Buckland project is an isolated, one-time project for the corps. There is no program in place at the corps to provide water and sewer projects for rural Alaska in the future. This lack of structure is an impediment to the current project. In the absence of a corps program to support the project, there have been inefficiencies and delays due to insufficient staffing, funding, and administrative support. Ongoing relationships with other agencies are also compromised by the corps' lack of programmatic support. Other agencies see the corps' involvement with sanitation projects as just short-term.

### Corps of Engineers' Philosophy

Key informants indicated that the Corps of Engineers' business philosophy is unusual among agencies implementing water and sewer projects in Alaska. The corps did not limit the project to addressing just current water and sewer needs. The planning process

included community expansion, flood control, transportation, and other issues the community identified as important. The corps began by working with the community to develop a community master plan and a utility facilities plan. This process identified community values through community involvement. It was only after this community involvement that the design of the water and sewer system began.

It is unusual for water and sewer projects in rural Alaska to address community development so broadly. The corps has worked closely with the community and listened to residents' needs. The community has been a partner in the project and has been held accountable for its role, as have all project partners.

The community and others involved with the project have appreciated the corps' approach—which has been that the project is part of long-term community development, rather than a short-term fix to the community's water and sewer issues.

### Communication

Communication was impaired by the lack of corps staff assigned to the Buckland project. The community often felt it wasn't receiving timely information, because the local leaders were busy and the corps did not have the time to ensure that current information was passed along.

Because of its increased workload, the corps did not update the Northwest Arctic Borough, the community, and others on a regular basis. Communication between the corps, Larsen Consulting Group, and the community of Buckland needed improvement throughout the project. The community wanted more fiscal information from the corps. The Village Safe Water (VSW) program would like to have been involved in the project earlier; it was not involved until the 95-percent-design review stage. The corps acknowledged that if VSW had been involved from the beginning, it might have avoided some of the issues it is now facing.

### Corps of Engineers' Capacity

The corps has worked throughout rural Alaska on many successful projects, but the Buckland project is the corps' first water and sewer project in rural Alaska. This project came to the corps from Congress with a very aggressive schedule, calling for the design to be completed and construction to be underway within two years. This was not a realistic schedule for a project of this magnitude in rural Alaska; it did not incorporate the time needed to develop community involvement and long-term community capacity.

The corps lacked the capacity to implement the Buckland project in a timely manner. Its process was effective, but its execution slow. It could not insure that problems were taken care of quickly, and project delays resulted. The corps could not anticipate all the delays it has encountered. It lacked experience with rural sanitation projects, and it did not seek out those who did have such experience.

The corps has the capacity to address the needs of the village as a whole and implement the water and sewer system within those needs. The village expansion, road, and other issues identified beyond those specific to water and sewer systems exemplify that capacity.

Key informants told us that the process the corps used was fine up until the lack of progress during the latter part of the design phase. Almost everyone we talked to was impressed by the corps' process, but said it needs to do a better job executing the steps in that process.

### **Causes and Consequences of Delays**

The corps has experienced both avoidable and unavoidable delays in the Buckland project so far. Unavoidable delays—such as taking time to do community coordination—offer benefits that outweigh the costs of the delay. Avoidable delays, on the other hand, don't add to the quality of the project and merely delay its implementation.

Many factors contributed to delays, and few delays were quantifiable or attributable to just one source. The Corps of Engineers, the community of Buckland, and other project partners have all contributed to delays, due to the inherently integrated nature of the Buckland project. More staffing, stronger partnerships with other agencies, more efficient community input, better communication between project partners, more experience, fewer institutional constraints, and greater community capacity would have helped the corps speed up project implementation.

It is difficult to say exactly how much the project is delayed overall. No agency tracked individual delays to determine how they affected the project timeline. One estimate is that as of late 2002 the Buckland project was approximately 16 months behind the original but unrealistic schedule.

A significant consequence of the delays is that community involvement and interest is waning. In fact, while this evaluation was in the review process, the City of Buckland notified the Corps of Engineers that it no longer wanted to work with the corps on the project and asked the state Village Safe Water program whether it could take over the construction phase. But program officials said they could not guarantee funding for the piped water and sewer system the community wants. As of spring 2003, a local informant told us the city was informally planning to continue working with the corps.

### **Conclusions**

The Corps of Engineers used innovative techniques in the planning and phase one design of the water and sewer project in Buckland Alaska. The project has a forward-thinking focus and is being designed to meet both the current and the future needs of the Buckland community. Critics say the project design is overly complex and expensive. It is, however, a worthy effort to try new technologies and designs to determine if they are cost-effective and superior to the alternatives.

Institutional constraints within the corps have hindered it from efficiently implementing the project. The community welcomed the corps' focus on local involvement. Although pleased with the process, everyone involved thought the execution lacked efficiency and timeliness to maintain community and agency support. The process was good, but the implementation has simply taken too long. Community support for the project diminished as community members became frustrated with the lack of progress.

The delays and obstacles the corps has experienced on this project so far are not unique. Other agencies working on similar projects experience many of the same kinds of problems. The corps' institutional constraints are its greatest disadvantage—and its emphasis on local involvement is its greatest advantage—in implementing water and sewer projects in rural Alaska.

The Corps of Engineers has valuable planning and community involvement skills, a broad view of service provision, and a fresh vantage point to apply to water and sewer projects in Alaska. A partnership between state agencies—with their depth of field experience—and the corps would enhance the effort to bring safe water and sanitation to rural Alaska.

Such a partnership would only be viable with increased staffing and programmatic support at the corps. A community liaison would be a valuable addition to the corps' projects. The liaison would serve as a bridge between the corps and community and project partners and allow the project manager to better focus on project management and efficiency. If the corps improved its institutional support, it could better address the long-term nature of water and sewer projects; the importance of community capacity; and the creation of local jobs. These changes would enable it to better apply its community-based philosophy that the residents of Buckland and their local governments welcomed during project planning.

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## INTRODUCTION

Providing drinking water and sewage disposal has been and continues to be a major public policy issue across the state of Alaska.<sup>1</sup> Over \$1 billion of capital infrastructure for sewer and water facilities has been built in rural Alaska over the past few decades.<sup>2</sup> Despite progress, inadequate sewer systems and unsafe water supplies remain serious problems in rural Alaska.

Many of the physical challenges present in rural Alaska will persist regardless of funding levels. Those include permafrost, low soil permeability, and freezing temperatures. To some degree, those challenges can be overcome with money, technology, and effort, though it is expected that over the long-term, the funding and effort levels will stabilize and probably decline. Other issues—such as community capacity and inter-agency cooperation—are highly variable among and within communities and institutions and change over time.

As with any social program that has significant funding, an “institutional landscape” exists for providing sanitation services in rural Alaska. Some of the primary government agencies and associated organizations involved with rural sanitation in Alaska include the U.S. Environmental Protection Agency; the U.S. Department of Agriculture’s Rural Development Program; the Alaska Native Tribal Health Consortium; the Alaska Native Health Board; the State of Alaska’s Village Safe Water Program; the State of Alaska’s Rural Utility Business Advisors Program; the State of Alaska’s Remote Maintenance Workers Program; tribal, city, and borough governments; and others. Also, many engineering and consulting firms in Anchorage, Fairbanks, and elsewhere in Alaska have management expertise for technical water resources in arctic environments.

One government agency has been notably missing from this alphabet soup of project participants: the U.S. Army Corps of Engineers. The corps has regulatory authority over—and technical expertise in—numerous water-related projects across Alaska, such as oil, gas and mining activities that affect wetlands. But historically it has not been involved in providing sanitation services to communities in rural Alaska.

In 1997, Congress asked the U.S. Army Corps of Engineers to lend its expertise with cold regions design, construction, and operation of facilities to sanitation projects in rural Alaska. The corps is now the lead agency in a multi-year sanitation pilot project in the village of Buckland, in Alaska's Northwest Arctic Borough.

Congress asked EPA to prepare a report on the “capabilities of the U.S. Army Corps of Engineers to work with EPA to address rural sanitation and water supply problems in rural Alaska.” Congress asked that the report address the “cost-effectiveness and advisability of creating a working partnership between the Corps of Engineers, the EPA, and the State of Alaska to address rural sanitation and water supply problems.”

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<sup>1</sup> Colt et al., Efficient Management, Maintenance and Operation of Rural Alaska Utilities, Review Draft. Prepared for U.S. Department of Agriculture, Rural Development. Anchorage: Institute of Social and Economic Research. See also Haley, et al, 2000. Rural Sanitation Facilities Operation and Maintenance Demonstration Project: Final Report. Prepared for Alaska Native Health Board, Anchorage, AK, and US EPA, Alaska Region.

<sup>2</sup> Governor’s Council on Rural Sanitation, 1998. Rural Sanitation 2005 Action Plan. Available from the Council, care of Department of Environmental Conservation, FC&O, 410 Willoughby Avenue, Suite 102, Juneau, AK. February. Also, Miller, Nina, and Joe Sarcone, 2000. Ibid.

EPA hired ISER to conduct the evaluation. The present scope of research is limited to project development activities of the corps through the pre-construction phase.

## METHODOLOGY

The goal of this research is to evaluate the corps' contribution as a partner in improving rural sanitation in Alaska. Our goal is to generate—based on customer and peer feedback—realistic recommendations to guide policy makers and future project managers interested in replicating the successes and avoiding the problems identified in the Buckland project. Of particular interest is the multi-agency initiative: along with the corps and EPA, this project involves the City of Buckland, the Buckland Tribal Government (IRA Council), the Northwest Arctic Borough, the Denali Commission, and several private firms providing technical design and construction services. If successful, this project will serve as a model for inter-agency cooperation.

In addition to satisfying the directive from Congress (cited above), this research is the first objective third-party evaluation of the planning, design, and construction of a water and sewer project in rural Alaska. The methodology we have developed can provide a framework for future, comparable evaluation studies of other agencies carrying out sanitation project in Alaska. If EPA should decide to further evaluate the Buckland project during and after construction, this report will provide the framework and baseline for that more comprehensive analysis.

We use an extended case study approach for this research. An extended case study<sup>3</sup> uses a combination of methods and qualitative research techniques to describe and evaluate a particular situation from multiple perspectives. By triangulating with multiple methods, we minimize researcher bias and reliability problems associated with the individual techniques. In this report, our interviews and meeting notes, together with the project documents we collected, allow us to integrate the multiple perspectives of participants on various aspects of the project.

Extended case study methods are well-suited to examining connections and outcomes among cultures, economies, institutions, and physical environments. Alaska Natives have a rich history of storytelling as a means of transferring and retaining information. Agencies rely on written feasibility studies, project plans, and completion reports to describe construction and management of sanitation facilities. The extended case study approach incorporates both these methods of transferring knowledge.

An evaluation requires a frame of reference. In the course of negotiating the study approach and eliciting the cooperation of all the agencies involved, EPA decided—and ISER agreed—that we would not directly compare the corps' performance to that of any other agency or project. Instead, the framework we use consists of five themes derived primarily from the Rural Sanitation 2005 Action Plan, adopted by the Governor's Council on Rural Sanitation in 1998. These themes and corresponding research questions are:

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<sup>3</sup> For a detailed discussion of the extended case study approach, and how it fits into standard case study methods, see Burawoy (1992), "The Extended Case Method," in *Ethnography Unbound*, Burawoy et al., eds. Berkeley: University of California Press, and also Yin (1994), *Case Study Research: Design and Methods*, Thousand Oaks, CA: Sage Publications.

1. Partnership. Did the corps effectively form partnerships with other local, regional, state and federal agencies involved in rural water and sewer?
2. Capacity development. Did the corps work in partnership with local governments and residents to improve their capacity, considering the unique needs, resources, and expectations of the individual community? Did the project include resources for non-construction activities such as planning, training, technical assistance, and developing and sustaining the capacity to operate and maintain systems? For example, did the corps conduct workshops to help residents understand the importance of sanitation; methods and technologies; affordability; effort; importance of paying; need for a well-trained operator and manager; and available programs?
3. Local Involvement. Did the corps involve, empower, and defer to the community in decision-making? In the planning phase, did the community have the information and the time to effectively consider questions of technology; requirements for operations and maintenance; management, finance, and administration; and force accounting?
4. Accountability. Does the resulting system design and project implementation provide the best service possible to rural residents? Is it responsive to customer concerns and priorities? Is the resulting system design and project implementation a cost-effective use of public resources?
5. Other themes. What other issues and themes emerge from the record?

These themes and questions guided our analysis of the data we collected. But some of the research questions cannot be fully or fairly analyzed at this pre-construction phase of the project. For example, it is premature to evaluate local participation in the construction of the facility, how well the finished system will serve rural residents, or how cost-effective it will prove to be.

Our study tasks were:

- collecting and reviewing relevant project documents, including the corps' Sanitation Master Plan for Buckland, meeting minutes where available, interagency communications, tribal and city resolutions, and other archival information
- conducting semi-structured, open-ended informal interviews between the researchers and project participants, including residents of Buckland, community leaders, corps and other federal and state agency personnel involved in the project, and others
- attending meetings and other events, including public meetings in Buckland with project personnel and the local community, and also quality assurance/quality control meetings in Anchorage with the corps' technical staff and consultants
- grouping the interview and other data into themes and issues for additional research, discussion, and evaluation

- synthesizing all the above data into the findings and recommendations contained in this report.

The product of this evaluation is a narrative account of the project history and evaluation findings on the five themes and research questions.

## **Description of the data collected**

### ***Interviews***

We interviewed eight residents of Buckland in April 2000. In February and March 2001, we interviewed (by telephone) five key project leaders representing the City of Buckland, the Buckland Tribal Council, the corps, and consultants.

Interviews with key informants included the following questions:

1. What is your general impression of the project at this time?
2. What might be improved upon?
3. Is there anything in the process that may have become a model that might be used in other projects?
4. What future issues do you think might arise?
5. What institutional collaboration has taken place?
6. What alternative technologies have resulted from the project?
7. Has this been a village-led project?
8. Comments?

From May to September 2002 we conducted follow-up conversations with key personnel at the Corps of Engineers, City of Buckland, Buckland Tribal Council, Larsen Consulting Group, Northwest Arctic Borough, Alaska Native Tribal Health Consortium, Village Safe Water program, U.S. Department of Agriculture's Rural Development, the Alaska Department of Transportation and Public Facilities, and URS Corporation. These conversations were to help us reassess the status of the project and the corps' progress to date. The interview questions generally followed the research questions set out in the above methodology section. (See Appendix D for sample interview questions.)

### ***Meetings***

Researchers made four trips to Buckland to attend community meetings at which project partners presented significant project information. A researcher also periodically attended the (ongoing) bi-weekly quality assurance/quality control meetings held in Anchorage; these were primarily for technical and project management staff and coordination. We reviewed all meeting agendas and minutes. As of this report, 19 meetings have occurred and 18 of those are documented and filed in the project bibliography. Also, the corps conducted a regional "Listening Session" in Anchorage in May 2000; a researcher attended, in part to assess the corps' outreach efforts and participation levels among rural Alaskans. Two rural residents attended this one-time meeting. The corps distributed notes from this meeting; these are included in the project file.

***Project Documents***

We reviewed a variety of project-related documents , including the corps' Sanitation Master Plan for Buckland, interagency communications, tribal and city resolutions, the State of Alaska Rural Sanitation 2005 Action Plan developed and adopted by the Governor's Council on Rural Sanitation, and other archival information.

## NARRATIVE OF THE CASE

### Community of Buckland (Nunatchiaq)<sup>4</sup>

About 400 people live in Buckland, an Inupiaq Eskimo village on the west bank of the Buckland River, 75 miles southeast of Kotzebue in the Northwest Arctic Borough. There are approximately 89 homes with an average household size of 4.83 people.

**Figure 1: Northwest Alaska Regional Map, Buckland Alaska**



Buckland has long, cold winters and cool summers, with temperatures ranging from 60 degrees below zero to as much as 80 degrees above. It receives an average of 9 inches of precipitation per year. The community's major means of transportation are planes, small boats, barges and snow machines; there are no roads outside the village.

A second-class city government was incorporated in 1966; Buckland also has a federally recognized IRA council. The regional Native corporation—formed under the 1971 Alaska Native Claims Settlement Act—is NANA.

Subsistence activities are an important part of the economy. Most wage jobs are with the school, the city, the health clinic, and stores. Some mining also occurs in the area.

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<sup>4</sup> Community information primarily compiled from the State of Alaska's Department of Community and Economic Development's Community Profile Database located on its Web page ([www.dced.state.ak.us](http://www.dced.state.ak.us)).

Buckland does not have a piped water and sewer system. Water is pumped from the Buckland River, filtered and chlorinated in the washeteria building, and stored in a 100,000-gallon tank (Fig. 2). The washeteria is the central watering point for the entire community. It contains showers, washing machines, and dryers, as well as a water spigot residents can use to get water for their homes (Fig. 3). Some have water delivered to home tanks, but most haul their own. No homes have running water.

**Figure 2: Buckland Washeteria<sup>5</sup>**



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<sup>5</sup> Image provided by EPA, Alaska Region

**Figure 3: Buckland residents hauling water and laundry from the washeteria<sup>6</sup>**



Most residents use honey buckets—a five-gallon plastic bucket with a plastic liner and toilet seat on top, used for human waste storage and disposal. Approximately 36 homes use the flush/haul system.<sup>7</sup> The flush/haul system flushes human waste into a storage tank at a home, the tank is pumped clean periodically, and the sewage is hauled to the community sewage lagoon. The city pumps flush/haul waste tanks and will haul honey buckets to the sewage lagoon. The flush/haul system was put in homes between 1993 and 1996.<sup>8</sup> The flush/haul system has been problematic on the south side of town and freezes and fails during the winter. A master plan was recently completed and major improvements are underway.

The school has full plumbing, and the health clinic has piped water and flush toilets. The city employs operators for the water system, washeteria, and sewage system. People dispose of refuse in dumpsters, which the city hauls to the landfill.

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<sup>6</sup> Image provided by EPA, Alaska Region

<sup>7</sup> Larsen Consulting Group, Inc July 1999 City of Buckland Utility Facilities Plan, prepared for the U.S. Army Corps of Engineers

<sup>8</sup> Steve Colt. 2000. Cost Analysis of Selected Flush Haul Water and Wastewater Systems in Rural Alaska, Institute of Social and Economic Research, University of Alaska Anchorage.

## The Buckland Project

The Corps of Engineers is the lead agency on a project that will install piped, potable drinking water and a technologically advanced gravity sewer system in all homes in Buckland (Fig. 4). The project is expected to cost approximately \$25 million.

**Figure 4: Buckland, Alaska<sup>9</sup>**



### *Key Players*

#### Residents of Buckland

In the course of the project, the project team (consisting of the corps and its contractors) consulted Buckland residents at three community meetings; it also made ongoing requests for information. An average of twenty people attended the community meetings in Buckland. The residents provided the project team with information on gravel site locations, storage and staging areas, grave site locations, existing utility services, system design and routing options, and community safety concerns.

#### City of Buckland

The mayor of Buckland, Willie Thomas, and his staff were key participants in the project. Mayor Thomas facilitated the exchange of information among the community, the borough, and the project team. The city staff was responsible for acquiring data on gravesite locations, coordinating community meetings, and providing descriptions of existing services and information on land ownership and easements. The City of Buckland acted as liaison between the project team and the

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<sup>9</sup> Image provided by EPA, Alaska Region

community. It also provided review comments on the system design to the Corps of Engineers.

#### Buckland IRA Council

Percy Ballot, former president of the IRA council, and the rest of the IRA council worked jointly with the city government to pass several resolutions facilitating the design and construction of the water and sewer system. Council members also provided review comments on the system design to the Corps of Engineers. The IRA council also served as a liaison between the community and the corps.

#### Northwest Arctic Borough

Willie Goodwin, lands specialist, and Tom Bolen, rural services coordinator for the Northwest Arctic Borough, worked with the City of Buckland and the Corps of Engineers on a variety of issues. The borough also provided funding as well as management expertise regarding land issues. It assisted with local capacity development and conducted the house-to-house utility survey. Wendy Mulder, a Northwest Arctic Borough consultant, also helped the City of Buckland procure funding and develop local capacity.

#### U.S. Army Corps of Engineers' Project Manager

Dave Williams is the corps' project manager for the Buckland project. The corps has supplied management, implementation, and technical expertise for the project, as well as substantial funding. Williams is responsible for the overall management and progress of the project and will manage corps staff, various subcontractors, and consultants from the planning phase through construction of Buckland's water and sewer system. Williams is the key contact for the community and the IRA and city governments.

#### Larsen Consulting Group's Project Engineer

Larsen Consulting Group was hired to complete the design of the Buckland water and sewer system. Monique Garbowicz has been the consultant's Buckland project engineer and key contact for the project so far. Larsen Consulting Group has been involved with the Buckland project from the early planning phase, when it prepared the Buckland Utility Facilities Master Plan and the Sanitation Master Plan for the Corps of Engineers.

#### URS Corporation

The URS Corporation (previously Dames and Moore) was involved in the initial planning of the Buckland project and was the primary consultant to the Larsen Consulting Group in preparing both the Community Master Plan and the Sanitation Master Plan. URS was employed to facilitate community involvement and act as a liaison between the community of Buckland and the project team. URS developed the Public Involvement Plan for the project and organized and conducted community meetings to obtain input and present information to the community. Jon Isaacs, an urban planner, and Lisa Loy, an environmental planner, were the key contacts for URS.

## Others Involved

A variety of other entities have been involved in the Buckland project. The EPA, Denali Commission, U.S. Department of Agriculture's Rural Development, Alaska Native Tribal Health Consortium (ANTHC), Village Safe Water (VSW) program, Alaska Department of Transportation and Public Facilities, and the Maniilaq Association have provided funding. ANTHC and VSW have provided design review comments and the Department of Environmental Conservation has been involved in regulatory and permitting items. The BIA is considering a funding request for roads and is involved in land issues related to the project. The Alaska Department of Fish and Game, U.S. Coast Guard, National Marine Fisheries Service, and Alaska Industrial Development and Export Authority have been peripherally involved in the project.

## *History*

The project began in 1997 when the Corps of Engineers approached the Northwest Arctic Borough with a proposal to build a water and sewer system in one of the borough's 11 communities (see Appendix A for a project and funding chronology). After consulting with all the communities and conducting environmental assessments and evaluations, the borough assembly voted to select Buckland for the new water and sewer system.

In May 1998, the corps contracted with Larsen Consulting Group (LCG), to complete a Community Master Plan and a Utilities Facilities Plan for Buckland. LCG retained the services of Dames and Moore (which has now been acquired by URS Corporation) to assist with the Community Master Plan. Other companies were contracted to evaluate the hydrological and electrical aspects.

The master plan identifies many community priorities and other issues, including land ownership, existing utility services and community facilities, economic and demographic details, and options for future expansion of the community. It is notable that a completely new water and sewer system does not appear prominently in the list of community priorities—although related issues of concern such as flood and erosion control, bridge access across the river, and community expansion were clearly identified.

These community-identified needs and the geography of the area have guided the project. Buckland is in an eroding alluvial plane along the Buckland River. As a result of these erosion problems, the sewage lagoon and water treatment facility have been relocated to higher non-eroding ground on the opposite side of the river from the current community center. The corps designed the project to minimize adverse effects on the community and environment.

Although not detailed in the master plan, the new water and sewer system will require, among other things, construction of a bridge spanning the Buckland River; relocation of residences; increased electric load capabilities; monthly fees for sewer, water, and electricity; establishment of legal easements and rights-of-way for future piping; a new water treatment facility; and a new sewage lagoon. The corps is the lead agency in this implementation effort. Other project partners include the City of

Buckland, the Buckland Tribal Council (IRA Council), NANA Corporation, Maniilaq Association, the Northwest Arctic Borough, Larsen Consulting Group, URS Corporation, and others.

The project consists of seven phases: (1) planning phase: community plans and pre-design meetings; (2) phase one: design; (3) phase two: construction of main facilities; (4) phase three: bridge and road construction; (5) phase four: main town distribution; (6) phase five: south town distribution; and (7) phase six: house plumbing. This evaluation looks only at the planning and phase one design activities.

The Northwest Arctic Borough, the Native Village of Buckland, and the City of Buckland passed several resolutions in 1999 to support further work on the water and sewer project (see Appendix B). By the spring of 2000, the project team had met with the community of Buckland and issues regarding the implementation of the project were being identified as the design phase of the project started.

Table 1 outlines the key events in the project timeline. The Community Master Plan and Utilities Facilities Plan took approximately two years to complete during the planning phase of the project. Construction has been delayed due to a combination of factors, including outstanding land, funding, and design issues. The City of Buckland is responsible for securing the necessary site control for the water and sewer project. Complicated land issues including Native allotments, inaccurate surveys, inefficient community land planning and layout, and the location of the water treatment plant and sewer lagoon on the opposite side of the Buckland River from the community have made securing site control difficult. There have been funding delays for the bridge component of the project, and funding for later project phases has been obtained before earlier phase funding, causing complications. The corps's design review process has been slow and has delayed the project at each review stage.

**Table 1: Project Timeline Highlights**

<b>1997</b>	Corp approaches NWAB with proposal to build a water and sewer project in one of the eleven borough communities.
<b>1997</b>	NWAB assembly selects Buckland for corp pilot water and sewer project.
<b>1998 May</b>	Corp contracted with LCG to complete a Community Master Plan and a Utilities Facilities Plan.
<b>2000 April</b>	Start design phase of the project.
<b>2000 August</b>	Notice to Proceed to 95% design signed.
<b>2001 April</b>	Permitting and lands issues are affecting project schedule and funding.
<b>2002 June</b>	Final design submittal received, comment and review process taking place.
<b>2003</b>	Projected start of construction

2001 began with a presentation from the corps to the community of Buckland on the 95 percent design phase. The year continued with additional design work; community review of the draft environmental assessment; advertisement of the request for proposals for the bridge design; further identification of land, funding, and scheduling issues; and city agreement that the power plant should be moved next to the treatment plant.

The corps received the final 100 percent design submittal in June 2002. During the summer of 2002, the corps began evaluating 100 percent design review comments and developing the specification package for the request for proposals to begin the construction phase. Land issues continue to be resolved and general project logistics are ongoing.

At the time of this evaluation—in early 2003—the corps’ request for proposals for construction of the water and sewer system had not been released, and no contractors had been hired. Construction was projected to start by the winter of 2003.

**Funding**

Table 2 illustrates the main sources of funding for the Buckland project.

**Table 2: Funding Chronology Highlights**

<u>Planning Phase</u>	
1997:	Original funding provided by Senator Steven's efforts (specific amount unknown)
1998:	Master plan, utility study and treatment system plan funding (specific amounts unknown)
<u>Design Phase</u>	
2000 October/November:	USDA \$3,000,000 grant to be issued.
2001 February:	\$884,000 of ANTHC funding available for project. \$2000/house allocated for HUD houses for bathroom additions. \$197,000 for bridge available from Fairbanks DOT; total cost of bridge estimated at \$9,000,000.
2001 April:	\$3.25 million in State funding is available for lagoon and water treatment plant.
2002 July:	Funding for construction of downtown water systems should be received within 10-14 months of water treatment plant and sewage treatment plant funding.
Total funding that will be available for project (including bridge construction) is approximately <b>\$25-28 million</b> .	

## EVALUATION FINDINGS

We drew the following findings primarily from interviews of Buckland residents, Buckland city and IRA council officials, members of state and federal agencies, and private consulting firms. The findings are presented by evaluation theme. It should be noted that this organization is for convenience only. The themes should not be seen as compartmentalized facets of the Buckland project, but rather as complementary components. The differences between themes are often subtle, and many times information we gathered was applicable to more than one theme.

### **Partnership: Did the corps effectively partner with other local, regional, state and federal agencies involved in rural water and sewer?**

Coordinating different levels of bureaucracy at the federal and state levels while moving the project forward has been a challenge. This coordination has been extensive and difficult, considering the varying interests of the federal, state and regional agencies, local governments, and community members involved. A project team member noted that the team had underestimated the difficulty of this coordination.

Despite these challenges, most of those interviewed said that Dave Williams, Buckland project manager for the corps, has made an excellent effort throughout the project to foster relationships with the state and federal agencies and city and tribal governments involved in the project and with the community of Buckland.

*Collaboration has been extraordinary. The collaboration between the NWAB, the Native Corporation, COE, the IRA and the City of Buckland has been the key to its [the Buckland project] success.*

Other observers noted that the corps' relationship with its contractors at times lacked the flexibility necessary to efficiently implement such a complex project. The corps' bureaucratic system did not allow contractors the autonomy necessary to act efficiently. The need for strict compliance with contract language inhibited timely completion of tasks and at times caused adversarial relationships between the corps and its contractors. The corps had contractual disputes with project team members; the people we interviewed did not specify the details of these issues.

As a result of the extensive administrative bureaucracy in place, the corps did not foster a team partnership with its contractors. The corps required compliance with contractual deadlines that even the corps could not meet. For example, the corps enforced contractor design submittal deadlines, yet it repeatedly failed to meet its 30-day review comment timeframes, thereby hurting the contractor's ability to meet future deadlines.

In the initial stages of the project the corps' relationship with VSW and ANTHC was tenuous. The corps was perceived as arrogant and naïve. The corps only began involving VSW at the 95 percent submittal stage of the design process. But VSW was pleased the corps was receptive to its design comments and willing to pass them on to the design consultant. The corps needed to involve VSW and ANTHC earlier in

the project, to develop stronger partnerships and to enable these agencies to be aware of the reasoning behind design decisions.

The partnership component key informants stressed the most was the superb collaboration and partnership of the City of Buckland and the Buckland IRA council. This relationship received repeated compliments by those interviewed. The corps supported and encouraged this working relationship, requiring joint city and IRA resolutions for the project. The Northwest Arctic Borough, NANA Corporation, and Maniilaq were also part of this positive relationship. One interviewee noted:

*The [NWAB] involvement has enabled a certain amount of trust to be established in the project.*

Although people we interviewed commended the partnerships formed throughout the project, they also noted that there were deficiencies in collaboration.

*Agencies were not totally in line with each other...they need to think about the project and the people they are doing it for [rather than their own self interests].*

**Capacity development: Did the corps work in partnership with local governments and residents to improve their capacity, considering the unique needs, resources, and expectations of the individual community? Did the project include resources for non-construction activities such as planning, training, technical assistance and developing and sustaining the capacity to operate and maintain systems? For example, did the corps conduct workshops to help residents understand the importance of sanitation; technologies; affordability; effort; importance of paying, need for a well-trained operator and manager; available programs?**

We found differing opinions about the existing capacity of the community of Buckland and how well the Corps of Engineers strived to improve this capacity. This difference of opinion is illustrated in the following excerpts from interviews.

*The community is surprisingly functional, the borough has supported village development, and understanding the system and facilities as a whole was done well. The corps did a good job with financial, administrative and technical development, [it] had a structure in place.*

*Delays have been due to a lack of capacity on the local level . . . the village does not have the experience or capacity to manage or construct the project on its own. The corps has a lot of planning expertise and technical and organizational ability but this is not being passed on to the community. There has been no direct hard-core effort to build capacity—it takes a long time to build capacity. People will let stuff slide unless you hold them to it and there hasn't been much effort by the corps to do this.*

There were also mixed reviews about whether the corps has held the community accountable for its tasks on the project. The corps has helped define the role and responsibilities of the community of Buckland. Some of these responsibilities fell on

the community simply because they were items that could not be funded with project dollars—including the easements necessary for construction of the system. The resolution of right-of-way issues has been the cause of considerable delay. Although it is the city's responsibility to resolve these issues, the corps has a vested interest in the community's capacity to complete these tasks so the overall project is successful. Delays due to site control have had a major impact on the project. Maniilaq and the Northwest Arctic Borough have been involved to help with these issues. The corps has helped the community with this and other issues by asking the borough to help.

*Other federal and state funded projects totally circumvent borough knowledge or involvement. This puts more responsibility and burden on the village community, usually with negative results.*

The corps hasn't so far made many direct efforts to develop community capacity. Rather, it has primarily helped the community complete tasks. A key informant noted that community responsibilities were not as clearly defined as they should have been, and that had led to delays in the project. The city also noted that its responsibilities for funding were not clearly identified up front, and that requests for funds from the city were made with little notice.

The Corps of Engineers has worked closely with the community of Buckland during this project. Corps contractors spoke with high-school students during the planning phase about the importance of the project. Contractors also went door-to-door and spoke with community members. Through this process the corps discussed the need for the project and was able to help people understand its importance.

The corps has encouraged local responsibility for water and sewer bills by discussing this issue with community elders, attempting to explain why the system will not be sustainable unless all resident pay their bills. Elders can have a great influence on others, leading by example and paying their bills. A key informant observed that

*Mr. Williams has done a very good job of being a liaison between the project partners and has kept the issues moving. With the community, he has determined their boundaries, responsibilities and tasks and has followed through with the people of the community. He has demonstrated more patience with the them—community residents—than he has with private sector entities.*

The community obtained funding from the Denali Commission for three people to participate in electrical or plumbing training. Buckland also requested and received \$60,000 from VSW to hire a project coordinator to help the City of Buckland fulfill its responsibilities to the project. But the city didn't hire a project coordinator; instead it is using the money to pay travel expenses related to the project. The NWAB is having its federal lobbyist act as coordinator for the City of Buckland.

Another VSW grant to Buckland required that the city administrator or clerk be trained in the use of a computerized accounting system. The city administrator said in August 2002 that she had not had any accounting training and that she "could use it." Buckland's need for capacity development to enable residents to be informed

participants in the project is also demonstrated by the following comment discussing local involvement:

*We chose the type of system, the design is different, we just go with it, the mechanics of the design—we don't understand it real good, [but] Dave Williams [corps project manager] discusses the design changes with us.*

As the project design became more technically oriented, the community's role became more of review than of input. This raises the concern that the residents may not understand the system sufficiently to be sure it meets their needs.

The community will take ownership of the water and sewer system and the bridge when the project is completed. The city will be responsible for minor repairs and maintenance of the bridge and the Alaska Department of Transportation will be responsible for major repairs. A key informant noted that there are currently no local mechanisms in place to fund maintenance, and it is unknown whether the community has the capacity to do this work.

Increasingly stringent drinking water quality standards are making water treatment systems more complex to operate and maintain. This is placing additional burdens on communities, since the local capacity to operate and maintain the systems is not increasing at the same rate as the complexity. A state rural maintenance worker said straightforwardly:

*Buckland doesn't have the capacity to manage this.*

Some people we talked with were also concerned that because this project has been so high profile, it is being over-designed—to avoid the risk of failure from design flaws and to meet the difficulties associated with locating the water treatment plant and sewage lagoon across the river from Buckland. That location dictates an increased need for heating the system to avoid freeze-up in the system as water and sewage is transported to and from the community.

As a result, the cost to build, operate and maintain the system—and the complexity of the system—are increasing. Some people fear that an overly complex system may increase the likelihood of failure due to inadequate operation and maintenance.

*The proposed intake structure, heat generation building, elaborate interior light system, telecommunication system in the water treatment plant, and complex chlorination system that [the informant] had never seen before are just some of the elaborate technology involved in the project.*

The corps reported that it had been “hampered by funds with regard to a plan to develop a program training mechanism.” Due to the limited funding, the corps has not implemented an ongoing maintenance capability for the community. Community lack of capacity often results from residents already having many responsibilities before tasks for water and sewer projects are added. People who wear multiple hats and have many tasks and responsibilities don't have time to take on more.

*[It is] unfair to have these ideals to fix sanitation in a vacuum over night, need to help people accept it, embrace it and want to keep it moving. . . . It has to be important to them, you can't expect an entire cultural leap based on an idea if [they're] not reminded of it every day---you forget easily.*

Building community capacity is a long-term process that is critical to a water and sewer system project. It is a community wide process, ranging from city officials to children. Building community capacity is not helping a community complete tasks, but rather teaching a community how to solve problems and acquire necessary skills.

**Local Involvement: Did the corps involve, empower and defer to the community in decision-making? In the planning phase, did the community have the information and the time to effectively consider questions of technology, requirements for operations and maintenance, management, finance, and administration, and force accounting?**

*The COE has a more friendly approach than others.*

The Corps of Engineers' philosophy for the Buckland project has been to involve the community and find out what residents wanted rather than impose a system on the community. This philosophy was implemented in the extensive community involvement in the early stages of the design phase. Several people we interviewed noted that the community involvement in the Buckland project was a model approach that could be used by others. Many also indicated that this project has been a village-led project.

*The corps supports [the] community 100 percent, what the community wanted was what the master plan was to reflect. [There were] no pre-set constraints or ideas for the project. [The] design process identified community values.*

*Money spent on planning for a project this size, and involving the residents of the community in the process, is money well spent.*

There was good turn-out at the community meetings for the project. Different people came to different meetings, and as a result a variety of people have been involved in the process. As was noted in the previous section, the corps' contractors spoke with students at the high school and went door-to-door speaking with community members to facilitate community involvement. A key informant pointed out that everyday life can be an obstacle to participation. There is often work that needs to be done on a daily basis, taking precedence over attending a community meeting.

*When you go door-to-door telling people about the community meeting and you find people butchering caribou in their living room to feed their family, this needs to be done now so it doesn't spoil and they have food for the winter—so they can't make the community meeting.*

*[When] whales come in, everyone leaves town.*

The timing of community meetings and information gathering is critical. People must be available to participate. Dave Williams said that the corps tried to gather

information during the summer, but found it difficult because people were out doing subsistence activities.

A project team member noted that as the design phase progressed and addressed the technical aspects of the system it felt as if the team was leading the community along rather than implementing the community's decisions. The corps reported:

*After the utility facility and master plan, the community's role became one of review rather than input---is it acceptable vs. what do you want.*

The corps' process involved the community and fostered a sense of community ownership for the project in the beginning of the design phase. This sentiment dwindled as the project became more technically oriented and as delays pushed back the start of construction. The corps' local involvement process has been good but timely implementation of the project has been lacking.

*To keep intensity [of community support] up we need to start [construction] this winter; intensity of involvement has been great— indicates internal feeling for the need.*

The project team did not always allow adequate time for the community to review design options. The community was given only 24 hours to review and decide on a preferred routing option for the system. The process used to present the routing options was a top-down process, where the design team presented limited options and expected the community to quickly choose its preferred option. The community needed more time to determine what option was best. There was a significant delay in the process because the project team did not work with the community from the outset nor allow time for the community decision-making process. This is further discussed in the Other Themes section of this report.

*I would like to have information provided to the public in advance of any meetings regarding the project that are here [in Buckland] or in other places like Anchorage and would like to be invited to any city meetings regarding the project. We're not always represented.*

*Community input was slow at times. It would have been an improvement if more timely input could have been received.*

The project team attempted to keep the community abreast of the project by creating a project Web site. But the site was too costly to maintain and it was difficult to access in Buckland. Due to a minimal number and slow and unreliable Internet connections, it took hours to download individual project drawings. This was not practical and the Web site was abandoned early in the design phase.

In many ways, the corps has a model approach to local involvement. The process of planning the project from the bottom up, with local involvement being the most important aspect of the initial design phase is unusual, and the community welcomed it. This process must, however, recognize that day-to-day life of the community will always take precedence over the project. The way of life of a community will not

pause nor will it speed up solely for one project. The project must adapt to work within the constraints of community life if it is to be as successful as possible.

*When residents participate in the planning, they can take ownership of the project more readily because they were involved in the planning process.*

### **Local Hire**

Local training and local hire for the project is very important to the community. The City of Buckland, Buckland IRA, and Northwest Arctic Borough have made local hire a priority and a mandate for the project. The corps does not do force accounting; rather, it uses the design/bid method for construction contracting. Force accounting generally enables the local community to hire workers for projects and therefore facilitates local hire. The design/bid approach does not give the community this ability and therefore may not facilitate local hire. In the design bid approach, the hiring authority remains with each individual contractor, who may or may not hire locally.

The corps attempts to encourage the use of small and disadvantaged businesses through requirements in its request-for-proposal selection criteria. Contractors must demonstrate in their proposals how they will meet this obligation. The corps can negotiate contracts and may also use the U.S. Small Business Administration's 8(a) Business Development Program to hire contractors. The 8(a) program has been designed to "help socially and economically disadvantaged entrepreneurs gain access to new economic opportunities" (Small Business Administration, Minority Enterprise Programs brochure). The details of how the corps implements the 8(a) process are not clear. Therefore, we don't know how well this will provide for local hire. According to the corps:

*The term "local-hire" is illegal for use on government funded contracts. The term local preference, referencing Alaska residents, is a clause required by statute on [the] corps' contracts. There is no legal mechanism to prefer the hiring of people resident in one town over those that reside in another, if both are residents of Alaska.*

### **Accountability: Does the resulting system design and project implementation provide the best service possible to rural residents? Is it responsive to customer concerns and priorities? Is the resulting system design and project implementation a cost effective use of public resources?**

As previously noted, the corps worked closely with the community during the initial portion of the design phase of the project. A key informant told us that the corps' process to include the community in discussions about future community expansion helped to ensure the system was more tailored to the future demands on the system. The system would be able to grow with the community and serve it well into the future.

*Involving the community in the anticipated future expansion of the village helped determine the location and design of a sewer and water system that better meets the community's needs.*

The corps' effort to involve the community is an indication of its desire to be accountable to the residents and provide them with a system that is their own. The City of Buckland indicated that it is satisfied with the process, but would like more project fiscal information periodically from the corps.

Residents were pleased in the beginning of the design process but are becoming frustrated with the lack of progress toward construction. The city commented on the lack of progress and the desire of the community to have construction begin. The community's patience is wearing out. A community member noted:

*We're anxious, it's slowly moving along. The community is generally impatient---doesn't seem like it will ever get done.*

Overall the corps has worked well with the community, but it has lacked the ability to implement the project in a timely fashion.

The corps began the Buckland project by telling residents not to worry about the costs and focus on what type of system they wanted. There were people involved in the project who criticized that approach, indicating that the community might not have understood that costs could become a limiting factor in the future.

*In the end, the residents will not get what they want completely, and may feel that the corps has not kept its promises.*

A number of people we talked with said they preferred the corps' method over that of the Indian Health Service and Village Safe Water program when implementing water and sewer projects.

*This [corps'] method is at the opposite extreme of some of the Indian Health Service or State of Alaska Village Safe Water projects that have used the—"we've designed and constructed a project for you, hope you like it," approach.*

It is not evident from the record if the community of Buckland has a clear understanding of the need for operations and maintenance of the system and how it will address that requirement.

*Operations and maintenance of the water and sewer system and what that means to the people of Buckland will be a cultural hurdle they must overcome for them to enjoy long-term project success.*

The corps has not determined what the user fees for the system will be. According to early estimates of the design team, the system may cost approximately \$146 for a household per month. From the interviews we conducted, it appears that the community does not have a clear understanding of what the household cost for the system will be. The mayor indicated that costs could be as low as \$65-\$70/household per month and as high as \$150-\$160/household per month. One community member we spoke with indicated concern with the cost of the system. The important issue here is that it was also indicated that the current cost of electricity, at 37 cents per kwh, is difficult for residents to pay.

It seems evident that Buckland residents do not understand how expensive the new system will be, since they talk about the difficulty of paying for less expensive utilities but note their enthusiasm about the new water and sewer services.

*It costs \$30.00 a month for the [flush and haul] service. This is a lot of money. [But], I am looking forward to the new water and sewer system being installed.*

Key informants also indicated that the system is overly complex. This excessive complexity increases the cost of operations and maintenance and increases the knowledge required to run the system. This places additional burdens on the community, to have both the capacity to generate additional revenue and to train system operators.

*O&M problems will be spendy, more difficult, more complex, [it's] very elaborate and expensive technology. [The] design is meeting the [water quality] standards but not keeping it as simple as possible.*

The higher drinking water quality standards being implemented by the federal government are increasing the technology required for water and sewer systems. This is also increasing the complexity of the systems and therefore the difficulty and costs of operating and maintaining the systems. This is a worry for rural Alaska.

*Have a pretty decent design. System is complex--- not sure they can build it for what they say they can. We're concerned that the O&M won't be simple enough.*

The corps reports that the system, as designed, will be able to meet the final drinking water quality standards. The system can be run manually to meet the current standards and will need to use the automated controls being provided with the system to meet the final standards. The use of the automated controls will require additional training for system operators.

## **Other themes: What other issues and themes emerge from the record?**

### ***Institutional Constraints***

A number of people said that the institutional constraints at the Corps of Engineers impeded the process for the Buckland project. All the key informants made reference to this in some fashion. The main institutional constraints that exist are: inadequate staffing, excessive and lengthy review processes, and the corps' bureaucratic process.

### **Inadequate Staffing**

Key informants, when discussing delays in the project, often commented that the corps' project manager has been over extended throughout the project. The corps is a large agency with many resources. If it wants to implement large-scale water and sewer project in rural Alaska, it needs to allocate the required resources for the project.

*The corps is short staffed and key people have too many projects.*

Internal restructuring changes at the corps also hurt the Buckland project. The project manager was given responsibilities for more than one position at the corps, leaving even less time for the Buckland project.

*The corps' project manager is on a crisis-by-crisis schedule.*

*There aren't enough bodies in the corps for the number of projects it has.*

As a result of the internal changes and the lack of staff support, the project has been implemented incrementally and the larger project organization has been neglected. Important foundations such as communication and contractor relations were not developed to their fullest potential.

*Need a [second] manager to focus the project to make it move forward at the rate it should---this is mostly in the last 6 months.*

The corps recognizes that this is a high-profile project with implications for future work in Alaska. Due to the limited staffing, however, the corps has not had the time to be concerned with the reputation it is building with this project. There has been no time to be concerned with the details of project management, let alone public relations and agency image.

*The corps has a lot on the line and they don't seem to be very concerned about it.*

#### Lengthy Review Processes

The COE held its contractors to strict deadlines, yet failed to meet its own review comment deadlines. A variety of corps specialists were used for the design review process. A key informant said the review process was too detailed and the specialists slowed it down greatly. Review periods were scheduled for 30 days and the corps did not meet this schedule, which had a snowball affect. As the review of the 35 percent design was delayed, this delayed the delivery of the subsequent submittals.

*The 95 percent [design] submittal was in June and the notice to proceed for design was after September/October. The 100 percent design submittal was delivered in mid May 2002—as of the end of July, no comments from the Corps of Engineers have been received.*

The corps' strict contractor deadlines, combined with its inability to meet its own deadlines, caused delays for the project and contributed to a lack of partnership between the corps and its contractors. These delays also resulted in costs to the contracting firms due to a delayed timeframe.

*Response rates take way too long—6 months at the 95 percent due to internal comment and review at COE.*

#### Administrative Process

The bureaucratic process employed by the Corps of Engineers was a contributing factor to delays and a complicating factor for the project. Corps headquarters was not

always sensitive to the needs of the project and of the local community. This was observed by several informants.

The corps conducted listening sessions across the country to gather public input on water resource needs and issues. Regional sessions were held in 12 locations and 2 national meetings were conducted. A regional meeting was held in Anchorage. The national schedule for the meetings dictated when the Anchorage meeting was conducted. The Buckland project manager and the community of Buckland requested that the meeting be held during the Alaska Federation of Natives conference in October. This would have allowed people from rural Alaska, in Anchorage for the conference, to participate in the corps' listening session. This would have provided the greatest participation by rural Alaskans, who could share local knowledge on water resource needs and issues.

But the federal fiscal year ends September 30, and the corps' Pacific District Office dictated that the meeting be completed by the end of the federal fiscal year. As a result, only three people from rural Alaska attended. The national agenda driving the process greatly diminished the value of the session. An attendee at the listening session noted an additional barrier to attendance for rural community members:

*This is being held during fall hunting season.*

The corps structure lacks some of the flexibility necessary to facilitate working on rural Alaska water and sewer projects. The original schedule for designing the system and having it under construction in two years was not realistic. Other delays due to lengthy approval times for corps expenditures, and constraints on travel to rural communities, complicated the project. The corps had little flexibility with subcontracts. Good-faith work done by subcontractors—work necessary for the project— was not paid for, due to complications in contract stipulations and work approval protocols. The corps also had difficulty coordinating its governing regulations with those of other agencies. This was an issue for the coordination of the bridge component of the project. The corps and Alaska DOT/PF encountered an impassible barrier about liability language and who would control bridge funds. Each agency has its own rules to follow and ADOT/PF did not want the corps negotiating the building of the bridge with ADOT/PF funds. As a result, ADOT/PF is in charge of bridge construction as a separate yet coordinated project.

The Buckland project is an isolated, one-time project for the corps. There is no program in place at the corps to provide these services to rural Alaska in the future. This is an impediment to the current project. Without a corps program in place to support the project, insufficient staffing, funding and administrative support create inefficiencies and delays.

*[The] corps cannot develop an infrastructure in rural Alaska. Without continued funding, the corps is unable to develop a cadre of people to work with on a regular basis, which reduces effectiveness. This loss of effectiveness becomes evident when the corps is unable to re-program funds for the next fiscal year.*

On-going relationships with other agencies are also compromised by this lack of programmatic support. Other agencies view the corps' involvement as short-term. Although the corps has authority to conduct this work in rural Alaska under the Water and Resources Development Act (WRDA), it has not received any funding under this act to do so. Because the WRDA is an authorization law, it approves projects, studies, and programs, as well as authorizing appropriations, but it does not appropriate funds (Corps Fact sheet, February 1, 2000).

*Unless the corps' doing this work in Alaska becomes a priority for the corps' administration, it won't become a program in Alaska.*

### **COE Philosophy**

Key informants indicated that the Corps of Engineers' business philosophy is not usual for agencies implementing water and sewer projects in Alaska. The corps did not limit the project to addressing only current water and sewer needs. The planning process included community expansion, flood control issues, transportation and other issues identified by the community as important. The project began by working with the community of Buckland to develop a community master plan and a utilities facilities plan. This process identified community values through community involvement. It was only after these community identified baseline concepts were developed that the design of the water and sewer system began.

*Unusual that the corps recognized the bigger picture of community growth. The corps worked a lot with future community expansion—bridge, roads, etc.*

*Very participatory approach—goes back to beginning when COE contacted NWAB so NWAB could select the appropriate community for the project.*

It is not usual for water and sewer projects in rural Alaska to address community development with such a holistic and extensive planning approach. The corps has worked closely with the community and listened to its needs. The community has been a partner in the project and has been held accountable for its role, as have all project partners.

*Culture for the corps is not that planning is lip service—culture drives the actual effort that goes into the planning and involvement process.*

The community and others involved with the project have appreciated the corps' approach. The project is viewed as a long-term facet of community development rather than a short-term fix to the community's water and sewer issues.

*“[We] were able to discuss the bigger picture and what the future holds to do this infrastructure planning---it was big picture thinking.*

This approach has come with a greater need for funding than what it may have required had it not had a long-range focus. A key informant noted that the Buckland project has per capita costs approximately 36 times as much as prior water and sewer projects in the region.

As previously noted, a typical project does not address nearly the number of issues as the Buckland project has considered.

*Spending money up front on planning results in less spending in the long term because planning considers and deals with costly problems that could otherwise go unresolved.*

### **Communication**

Communication was directly affected by the lack of staff assigned to the Buckland project. A key informant said:

*Lack of communication toward the end of the design phase is due to too much work [for the corps]---end up relying on village leaders to relay information and they are too busy also.*

The community was not receiving timely information because the local leaders were busy and the corps did not have the time to ensure that information was passed along. After the planning stages of the project and in the beginning of the design phase quality assurance/quality control (QA/QC) meetings were held. Generally, project team members and a Buckland and NWAB representative participated in these meetings either in person or by teleconference. Once there were no new technical issues to present, the QA/QC meetings were ended.

*QA/QC meetings were fabulous for communication—once ended it was very difficult to stay informed.*

Due to increased corps workloads, no alternative communication mechanism was implemented once the QA/QC meetings ended in May 2001. The NWAB, the community, and others have not been updated on a regular basis since that time. There has been a need for improved communication between the corps, Larsen Consulting Group, and the community of Buckland throughout the project. The community wanted more fiscal information in general from the corps. VSW would like to have been involved in the project earlier; it was not involved until the 95 percent design review stage in approximately fall 2001. The corps acknowledged that if VSW had been involved from the beginning it might have precluded some of the issues the corps is facing now.

*Would have been beneficial to have meetings every 4-6 weeks; conference calls would even have been good. It would have been a time sink but would have increased communication. We could have avoided some of our current problems—[these are the] lessons learned.*

Poorly defined participant roles and miscommunication were also noted. Key informants noted the need to clearly define, at the beginning of the project, the roles of all the project partners, and a range for the total cost of the project. Miscommunication regarding the bridge resulted in a gross underestimate of the cost. This led to funding and project management complications.

*Lack of communication is directly tied to the lack of progress.*

## ***Corps Capacity***

The corps has worked throughout rural Alaska on many successful projects. The Buckland project is the corps' first opportunity to implement a water and sewer project in rural Alaska. This project came to the corps from Congress with a very aggressive schedule that called for the design to be completed and construction to be underway within two years. This was not a realistic timeframe for a project of this magnitude in rural Alaska. This aggressive timeframe is not conducive to the time needed to develop effective community involvement and long-term community capacity.

The corps has lacked the capacity to implement the Buckland project in a timely manner. Its process has been effective but its execution slow. There have been a variety of reasons for this, including a lack of staffing and other issues previously mentioned. The corps has continually had problems meeting review comment deadlines and as a result the project schedule has been delayed. Funding has not always been secured in a timely fashion. At times, funds have been secured for the latter phases of the project before earlier phase funds have been secured. Securing matching funds has also caused delays.

*If all the funding for the project had been available at the beginning of project, construction delays may have not occurred.*

The corps underestimated the efforts needed for surveying and site control issues. Acquiring the necessary rights-of-way and securing site control have been ongoing challenges throughout the Buckland project. The corps has not had the capacity to ensure these matters have been taken care of in a timely manner and as a result these issues have caused project delays. It has not been the corps' responsibility to take care of the land issues; it is the City of Buckland's responsibility. However, the corps has not ensured that this process works efficiently. There have been a variety of issues, which are not directly the corps' responsibility and have no project funds allocated to them, which will affect the project. The corps requires right-of-ways and easements for project work prior to the letting of a construction contract. Resolution of land and property issues is necessary prior to construction. It is the corps' responsibility to ensure that all matters that will affect the project, whether directly or indirectly, are resolved in a timely and appropriate manner.

*COE does not have a comprehensive approach to the structure of the project—such as with the surveys---it's a band-aid approach---not a comprehensive approach.*

The corps did not anticipate all the delays it has encountered. It did not have the prior experience to anticipate the delays, nor did it seek out those who did. One key informant described the corps' original attitude:

*The corps' original attitude was---we've done big projects in rural Alaska, VSW and ANTHC have a checkered past, get out of the way and let us show how it's done.*

People we talked with said the corps' project manager made this project work.

*He gave it his all and had there been another person in his place it may not have gone as well—the corps did a good job assigning the project manager—familiar with the villages and had a complete grasp of the technical aspects of the project.*

*The corps' project manager has experience in the villages—he has the intent, vision and technical capability.*

Key informants questioned whether the corps has provided the necessary oversight of subcontractors and other project partners. The system design has not adhered to the City of Buckland Water Treatment Study, completed by CE2 engineers, Inc. in 2001.

*[The] design is meeting the standards but not keeping it as simple as possible—drifting toward overkill so system won't fail due to their design—ultraconservative because visibility is high.*

One informant said that the corps lacks the experience and knowledge to judge when a design is elaborate and when it is appropriate. Others commented that the project has incorporated “good concepts, but has been pretty slow.”

The water intake structure for the project has been widely recognized by project participants as an innovative technology. The inclusion of a continuous flow sewage lagoon rather than one that is dumped twice a year has also been an innovative technique included in the project.

The corps has the capacity to address the needs of the village as a whole and implement the water and sewer system within those needs. The village expansion, roads, and other issues outside those specific to water and sewer that have been addressed exemplify this.

*Other agencies don't necessarily have the latitude and funding to look at the big picture issues such as flooding and erosion problems. VSW is limited strictly to water and sewer, this project goes way beyond that, the corps has more capacity overall.*

Many people we interviewed said that the corps' process was fine until progress faltered in the latter part of the design phase. Almost everyone we interviewed has been impressed by the corps' process, but feel the corps needs to do a better job executing the steps in the process.

*This has been a high maintenance project [for the corps] because of its uniqueness and its visibility. [The corps] has had to hold people more accountable. Both the NWAB and the Maniilaq Association have been stabilizing influences on the project.*

### **Causes and Consequences of Delays**

In a project this size delays are normal. What is important is whether the delays are avoidable or unavoidable. The corps experienced both types of delays in the Buckland project. Unavoidable delays can actually improve the outcome of the project. For example, it is not desirable to rush the community's decision-making

merely to stick to an arbitrary schedule. Community coordination can delay a project but the community involvement will outweigh the cost of the delay. Sometimes, things simply take time. On the other hand, avoidable delays merely hold the project back, without any benefits.

Many factors have contributed to project delays. Very few delays have been quantifiable and attributable to any one source. The Corps of Engineers, the community of Buckland, and other project partners all contributed to avoidable and unavoidable delays. This is due to the inherently integrated nature of the Buckland project. More staffing, stronger partnerships with other agencies, more efficient community input, better communication among project partners, more experience, fewer institutional constraints and greater community capacity would have helped the corps improve project implementation.

The most significant delay—approximately 6 to 8 months—occurred because of the need to coordinate construction of the bridge. There was miscommunication between the corps and the Alaska Department of Transportation, and the regulatory structures of the two agencies are different. The Department of Transportation is funding and building the bridge as a separate yet coordinated project. This is one example of the challenge the corps has faced, in coordinating multiple agencies and multiple project pieces; that difficulty coordination has contributed significantly to project delays.

We could find little information about the causes and consequences of funding delays. Key informants indicated that the corps' delay in delivering environmental and engineering information, and the corps' stepwise process for securing funding, contributed to funding delays.

The lack of staffing at the COE contributed significantly and continuously to project delays. There were simply not enough people to take care of all the tasks necessary to keep a project of this magnitude in rural Alaska on schedule. The lack of programmatic support from corps headquarters—as signified by inadequate staffing levels—as well as the lack of institutionalization of the corps' water and sewer work as a regular part of its mission, have also delayed the project. Lack of institutionalization led to inefficiencies in the corps' ability to partner with other agencies and to manage and procure project funds.

*Delays could have been avoided—if Dave [the corps' project manager] had more support.*

A significant consequence of project delays is that community involvement and interest is waning. Maintaining community support and involvement is critical.

*Currently there is a lack of enthusiasm for the project from the people of Buckland. People want to see action fast and construction delays are causing local interest to lag, which causes less involvement by the people. The community is upset it is taking so long. To keep intensity [of community support] up need to start this winter; [up to this point] intensity of involvement [from the community] has been great—indicates internal feeling for the need.*

It is difficult to say exactly how delayed the project is overall. Everyone has his or her own perception of the delays. No agency has tracked delays individually to determine how they have affected the overall timeline. It is estimated that the Buckland project is approximately sixteen months behind the original but unrealistic schedule.



## CONCLUSIONS

### **Partnership: Did the corps effectively establish partnerships with other local, regional, state and federal agencies involved in rural water and sewer?**

The Corps of Engineers formed partnerships with a variety of local, regional, state, and federal agencies to implement the Buckland project. Those include the state Village Safe Water program, the Alaska Native Tribal Health Consortium, the state Rural Maintenance Worker Program, the Alaska Department of Transportation and Public Facilities, the Northwest Arctic Borough, Maniilaq Association, the City of Buckland, the Buckland IRA Council, and the community of Buckland. The corps also worked with other agencies, such as the Denali Commission, the U.S. Department of Agriculture's Rural Development program, and the BIA on project funding issues.

The corps' partnering efforts, which began with the Northwest Arctic Borough, were an asset to the project. The corps' inadequate staffing for the Buckland project, however, hindered its ability to fully form partnerships with other organizations. Communication between the corps and other agencies was not consistently maintained throughout the project. Communication between agencies diminished significantly after the Quality Control and Quality Assurance meetings ended. Teleconferences or other means were not implemented to maintain communication. Also, programs such as Village Safe Water were invited to participate in the project far too late. The corps did not work closely with Village Safe Water representatives until the 95percent design stage of the process. Both Village Safe Water and the Alaska Native Tribal Health Consortium would have been valuable partners early in the process and could have helped better prepare the corps for what to expect.

*The corps didn't do its homework and consult VSW and ANTHC.*

The corps made initial contact with the Northwest Arctic Borough. The Rural Maintenance Worker program and the City of Buckland were among the first entities to be involved in the project. The corps' involvement of regional agencies is not common for rural water and sewer projects, and it proved a significant asset. The borough helped provide local support and capacity development and reinforced the importance of the project at the regional and local levels. However, the corps could have strengthened these working relationships through consistent communication and early involvement of each agency and project partner.

**Capacity development: Did the corps work in partnership with local governments and residents to improve their capacity, considering the needs, resources, and expectations of the individual community? Did the project include resources for non-construction related activities such as planning, training, technical assistance and developing and sustaining the capacity to operate and maintain systems? For example, did they conduct workshops to help residents understand: the importance of sanitation; methods and technologies; affordability; effort; importance of paying, need for a well-trained operator and manager, available programs?**

The corps' local capacity development efforts were hindered by a lack of funding and internal support from the corps. The corps' project manager understands the importance of local capacity development and is striving for "a plan to develop a program training mechanism and an ongoing maintenance capability for the community." This goal hasn't been realized due to limited funding, staffing, and institutional support. Increasing such support would help improve local capacity and assign it the priority it deserves.

In general, the corps helped the community execute tasks rather than develop capacity throughout the project. The corps did communicate the importance of the project to the community by involving children and elders. Project partners discussed the project with children in the school. They also spoke with elders about their role in the project and how they could demonstrate the importance of paying monthly utility bills. This involvement of local residents to guide the project was a significant strength of the corps process.

It is unknown what capacity will be developed during the construction phases. The city has noted the need for accounting training and the RMW has emphasized the need for training for operations and maintenance of the system. Without this training the system will not have a promising future.

**Local Involvement: Did the corps involve, empower and defer to the community in decision-making? In the planning phase, did the community have the information and the time to effectively consider questions of technology, requirements for operations and maintenance, management, finance, administration, and force accounting?**

The corps involved the local community early in the project development. The Community Master Plan and Utility Facility Plan developed at the beginning of the Buckland project were founded on community input. The corps put community needs and input before the agency's desires. The corps did not begin the project with preconceived ideas about what system would be built, how it would be designed, or what it would include. This emphasis on local participation and community vestment in the project using a bottom-up approach was a key part of the corps' process.

The corps did an excellent job of including the community during the early part of the design phase. But in later design phases, dealing with the more technical aspects of the project, the community's role became one of review rather than input. The corps did not have the staff to ensure that the community had a thorough understanding of

the technical aspects of the system. Thus the corps' inadequate staffing, once again affected the project.

The community was not always given adequate time to review the project design. For example, the community was given only 24 hours to review routing options for the system. This was an unrealistically short time for community input. The community did not provide comments until they had evaluated the options thoroughly. This process took over a month. The community felt rushed at times, as though the design team was imposing its schedule and ideas on the community. When we considered the project as a whole, however, this specific episode appeared to be the exception rather than the rule. Local key informants and others told us this has been a village-led project for the most part. The corps could, however, have done a better job of embracing the philosophy to work with the community at its own pace, from the top down in the corps management hierarchy.

The corps had not, as of late 2002, determined what the cost of operating and maintaining the system will be. Therefore, the cost per household for the system is not known. According to early estimates of the design team, the system may cost approximately \$146 for a household per month. The city government and residents want more financial information from the corps. The community in late 2002 did not know how much it will have to pay for the system, nor has it always known how much funding was required from the city at different project phases. The corps needed to do a better job informing the community of the costs of the project.

The community wants local jobs during project construction. The City of Buckland, the Buckland IRA, and the Northwest Arctic Borough have made local hire a priority and a mandate for the project. The corps does not do force accounting, a method which lends itself to local hire. The corps can use Section 8(a) hiring and negotiated contracts.

But the corps cannot legally require contractors to hire locally. It will require contractors to demonstrate how they will incorporate the use of small and disadvantaged businesses. This in no way insures that local jobs will be created—and it is a significant weakness in the corps' process. According to the corps:

*The term 'local-hire' is illegal for use on government funded contracts. The term local preference, referencing Alaska residents, is a clause required by statute on corps' contracts. There is no legal mechanism to prefer the hiring of people resident in one town over those that reside in another, if both are residents of Alaska.*

The corps was able to draw on the community to define the project. As a result, the project has included elements not typically included in rural water and sewer projects. Elements such as erosion control and roads have been incorporated to facilitate future community expansion. The Buckland project was not intended to be a short-term fix for water and sewer problems in Buckland, but rather a long-term component of the community as it changes over time—this was a significant contribution of the corps.

**Accountability: Does the resulting system design and project implementation provide the best service possible to rural residents? Is it responsive to customer concerns and priorities? Is the resulting system design and project implementation a cost effective use of public resources?**

The project has been implemented in close consultation with the community of Buckland. The corps used community input to direct the process during the planning phase and initial stages of the design phase. As the design became more technically oriented, the community's role shifted from input to just review. This raises the concern that the community may not understand the system sufficiently to be sure it meets their needs. It is premature for this evaluation to ascertain if the system completely addresses customer concerns and priorities. This should be evaluated after we know what the system costs customers and how well it functions.

Key informants indicated that the system design is more complicated and costly than necessary. As a result, system operation and maintenance—which the City of Buckland will be responsible for—will be more difficult and costly. The increased complexity will result in additional training needs and place more burden on the community to develop greater community capacity. The corps incorporated innovative technology in the system, such as the water intake system on the bridge and a continuous flow sewage lagoon. It is not clear if the criticism of the system design is based on actual design evaluation or unfamiliarity with design components. Higher government drinking-water quality standards are also forcing systems to become more complex, requiring more operations and maintenance capacity in communities. To allow for the discovery of new suitable water and sewer services, it is worthwhile to expand the scope of water and sewer systems by trying new processes and technologies.

**Other themes: What other issues and themes emerge from the record?**

When we reviewed the project record, several themes emerged. They include the corps' institutional constraints, communication process, philosophy, and capacity. The various components of these themes acted as advantages and disadvantages for the corps in implementing the Buckland project.

*Loved this planning job, it was extremely rewarding, sad it's gotten a reputation [of being too slow]; great deal of fun and very successful and think the community was pleased with the process.*

The institutional constraints that exist within the Corps of Engineers were a significant disadvantage. These constraints were apparent at the outset, when Congress dictated a very aggressive schedule for the project. This was not a realistic schedule and did not allow the time necessary for effective community involvement and long-term community capacity development.

So far, this is a one-time project for the corps, making it difficult for the corps to build a water and sanitation project infrastructure in rural Alaska. It is difficult to develop long-term partnerships with other agencies and a repertoire of people to work with for effective and efficient project management and implementation.

*This is a one off project---would be better as a program with a given amount of money to do such projects; too many inefficiencies not as a program.*

The corps' inability to re-program funds for the next fiscal year illustrates this loss of effectiveness. The approval process for the expenditures of funds is lengthy. Water and sewer development work does not appear to be a priority of the corps' administration—it has not received the appropriate level of staffing required for a project of this size and nature in rural Alaska.

The lack of staffing on the project hindered communication throughout the project, and corps communication with other agencies and the community diminished over time. The corps did not allocate resources for teleconferences or other means of maintaining communication among the project partners and other key entities.

The corps' lack of history implementing water and sewer projects in rural Alaska has also hindered its ability to efficiently implement the project. The corps was not able to foresee obstacles and anticipate delays. A stronger partnership with other agencies, as the result of the support from a corps program, would help to better prepare the corps in the future. In light of the difficult relations with other agencies from the outset, the corps has created effective partnerships with many agencies and organizations and the community of Buckland.

*[The corps] developed relationships with VSW, [but] no ongoing program to maintain these relationships. Other agencies look at the corps as short-term.*

The corps has not developed a mechanism to increase the number of local jobs during construction of the water and sewer project. Local involvement must start at the beginning and continue through the last phase of construction. This will provide the best basis for community support and investment in the project. The community must feel vested in the system and a part of its development, design, and construction.

The corps has a model approach to local involvement, working hand in hand with community residents from elders to schoolchildren. The community drove the Buckland process from the outset. But institutional constraints hindered that involvement in the latter stages of the design phase. Nonetheless, the corps' philosophy has been innovative and the community welcomed it. This philosophy should be more widely used and further developed to enhance water and sewer project implementation in rural Alaska.

### **Concluding Remarks**

The Corps of Engineers has demonstrated innovative techniques in implementing the water and sewer project in Buckland. The project has a forward-looking focus and is being designed to meet the current and future needs of the Buckland community. Critics say the project design is overly complex and expensive. It is, however, a worthy effort to try new technologies and designs to determine if they are cost effective and superior to the alternatives.

Institutional constraints within the corps hinder it from reaching its full potential. The community welcomed the corps' local involvement process. Although pleased with the process, everyone involved thought the execution lacked efficiency and timeliness to maintain community and agency support. The process was good but the implementation has simply taken too long. Community support for the project has diminished as community members became more frustrated with the lack of progress.

The delays and obstacles the corps experienced are not been unique. Other agencies working on similar projects experience many of the same issues. The corps' institutional constraints are its greatest disadvantage and its emphasis on local involvement is its greatest advantage to implementing water and sewer projects in rural Alaska. Table 3 summarizes the strengths and weaknesses of the Corps.

**Table 3: COE Strengths and Weaknesses**

<b>Strengths</b>
<p><b><i>Local Involvement</i></b></p> <ul style="list-style-type: none"> <li>Extensive Local Involvement</li> <li>Initial coordination with Northwest Arctic Borough</li> <li>Community Master Plan and Utility Facilities Plan based on community input</li> <li>Development of Public Involvement Plan</li> </ul> <p><b><i>Corp Philosophy</i></b></p> <ul style="list-style-type: none"> <li>Broad project scope extending beyond water and sewer issues</li> <li>Innovative use of technology</li> </ul>
<b>Weaknesses</b>
<p><b><i>Institutional Constraints</i></b></p> <ul style="list-style-type: none"> <li>Little future investment in water and sewer development</li> <li>Incompatibility of COE regulations with other agencies</li> <li>Short-term agency partnerships</li> <li>Insufficient staffing</li> <li>Excessive internal delays</li> <li>Extensive bureaucracy</li> <li>Extensive review times</li> </ul> <p><b><i>Capacity</i></b></p> <ul style="list-style-type: none"> <li>Little anticipation of delays</li> <li>General lack of prior experience</li> </ul> <p><b><i>Communication</i></b></p> <ul style="list-style-type: none"> <li>Poor dissemination of fiscal details</li> <li>Project partners not kept abreast of progress</li> </ul>

The Corps of Engineers has valuable planning and community involvement skills, a broad view of service provision, and a fresh vantage point to apply to water and sewer projects in Alaska. A partnership effort between state agencies, with their depth of field experience, and the corps would enhance the effort to resolve rural sanitation and water supply problems in Alaska.

This partnership would only be viable with increased staffing levels and programmatic support at the corps. A corps community liaison would be a valuable addition to the corps' projects. The liaison would serve as a bridge between the corps, community, and project partners and allow the project manager to better focus on project management and efficiency. Institutional support addressing the long-term nature of water and sewer projects, and the importance of community capacity and the creation of local jobs, would add to the community-based project philosophy the corps used in Buckland.

### **EPILOGUE: RECENT EVENTS**

During fall 2002, while this draft evaluation was undergoing review, the community of Buckland became further dissatisfied with the length of time it was taking to begin construction of the water and sewer system. In late November, the City of Buckland informed the Corps of Engineers it did not want to continue working with the corps. The city asked the corps was to complete the design phase of the project and then provide all design information to the city.

City officials then spoke with the state Village Safe Water program about VSW taking over management responsibilities for project construction. The program manager for Village Safe Water and other staff members traveled to Buckland January 30 and 31, 2003. They spoke with the mayor and other members of the city government and inspected the existing houses and water and sewer facilities in the community. They attended a public meeting, where they presented the VSW program to the community. They also told the community that they could not guarantee they would be able to build a piped water and sewer system in Buckland due to funding, feasibility, and sustainability constraints. The community discussed how to proceed and what possible options might be available to them through Village Safe Water. VSW requested that the community inform them of their intentions by the end of February 2003.

A key informant told us in March 2003 that the city did not feel it could disregard the needs of the community, nor could it afford to abandon the extensive time, effort, and funds that have already gone into the project and the design materials that have been developed. The key informant indicated that, as of the time of release of this report, the community was informally planning to continue working with the Corps of Engineers.



## APPENDIX A: PROJECT AND FUNDING CHRONOLOGIES

### Project Chronology

#### 1997

- U.S. Army Corps of Engineers, approaches Northwest Arctic Borough (NWAB) with proposal to build a water and sewer project in one of the eleven borough communities  
After consulting with all of the borough's communities and conducting environmental assessments and evaluations the NWAB assembly, by a vote, selects Buckland to be the recipient of COE's services.

#### 1998

- May 1998: COE contracted with Larsen Consulting Group, LCG, to complete a Community Master Plan and a Facilities Plan for the community of Buckland. LCG retained the services of Dames and Moore to assist with the Community Master Plan and Public Involvement Plan

#### 1999

- To support further work, the NWAB, the Native Village of Buckland and the City of Buckland passed the following resolutions:
  - February: Resolution (98-10) The NWAB Assembly requesting COE to determine the feasibility of environmental infrastructure improvements in the communities of NWAB
  - March: Joint Resolution (99-01) of the Native Village of Buckland and the City of Buckland requesting support of the Village expansion area, known as the north side of Buckland River
  - March: Joint Resolution (99-02) of the Native Village of Buckland and the City of Buckland requesting support of the Drafts Goals and Objectives for the Buckland Community Master Plan
  - March: Joint Resolution (99-03) of the Native Village of Buckland and the City of Buckland to support the building of bridges across the Buckland River
  - April: Joint Resolution (99-08) of the Native Village of Buckland and the City of Buckland to support the selection of water and sewer alternatives
  - April: ISER staff attends Buckland Community Meeting and conducts interviews
  - July: Community Master Plan and Utility Facilities Plan completed

## 2000

- March: Right-of-Way issues become apparent
- April: Start design phase of the project
- April: Community meeting to update community on the status of the project
- April: Project Team coordinates with NWAB, city government, utility operators and school administrators
- May: Electrical and mechanical systems condition survey conducted
- May: Coordination with NANA begins
- May: Potential need to move houses arises
- June: COE's presentation to the Community of Buckland of how the water and sewer system was being designed at its 35% phase
- June: Draft Public Involvement Plan completed
- August: Notice to Proceed to 95% design signed
- August: City works on locating graves and existing structures
- August: Coordination with community calendar of events begins
- August: Planning for listening session begins
- September: COE invites 481 community and organization representatives to a listening session in Anchorage to listen to their concerns and to identify issues relevant to COE's role in Alaska
- October: Conduct community meeting with Maniilaq regarding land issues
- November: Water treatment plant drawings submitted to Buckland Mayor and the Northwest Arctic Borough Rural Services Coordinator for review
- ▼ November: Environmental assessment agency coordination begins

## 2001

- January: City of Buckland Water Treatment System Study completed by CE2 Engineers, Inc. for Larsen Consulting Group, Inc.
- January: COE presentation to Buckland on how the water and sewer system was being designed at its 95% phase
- January: Community accepts design for water intake structure and routing options
- February: Final draft environmental assessment completed
- February: DOT wants bridge design and hydrology done by DOT bridge design section
- ▼

- March: Design is 75-80% complete
- March: IRA Council and Northwest Arctic Borough to review draft environmental assessment
- March: House to house survey of existing service connections conducted by NWAB and City of Buckland
- March: Community input on haul road location requested
- March: Power consumption estimates completed
- March: COE assists community draft of Utility Agreement
- March: COE requests preparation of drawings and a discussion of impact of bridge funding and design issues on project design and construction
- April: Delays have impacted the project schedule and constructability is affecting funding
- April: Permitting and lands issues are impeding the funding progress
- April: The Cost Share Agreement drives the analysis for local funding requirements. COE will do a total cost estimate of local funding requirements
- May: Bridge Design Request for Proposal for the bridge design has been advertised
- May: City agrees power plant is to be moved to new location next to treatment plant
- May: unresolved issues include:
  - Community identification of preferred storage/staging areas
  - Community identification of homes/buildings to receive utility service connections
  - Community identification of homes to receive in-house plumbing
  - Community resolution of lands issues, BIA easements, and NANA land transfer
- December: COE and Larsen Consulting Group are reviewing comments received from the 95% design phase meeting

## 2002

- June: Final design submittal received, comment and review process taking place
- July: Specification package being developed for the request for proposal to start work on construction
- July: COE working with Department of Transportation on environmental assessment
- July: Easements and rights of way issues slowly being resolved
- July: Start of construction estimated for winter of 2003

## Funding Chronology

### 2000

- April: City trying to secure funding for power plant upgrades
- May: BIA scheduled to inform city of initial road funding
- October/November: USDA \$3,000,000 grant to be issued
- ▼ November: Costs are already over budget for north side of Buckland River

### 2001

- February: \$884,000 of ANTHC funding available for project, includes funding for downtown water and sewer piping as well as funding for home improvements (approx. 23 homes)
- February: \$2000/house allocated for HUD houses for bathroom additions
- February: \$197,000 of funding for bridge available from Fairbanks DOT; total cost of bridge estimated at \$9,000,000
- April: \$3.25 million in State funding is available for lagoon and water treatment plant
- April: 95% design cost estimates are needed to further the funding process—this is vital to the funding progress
- April: COE to request additional funding from Congress
- April: NWAB intended to assemble a proposal for funding from the Denali Commission to cover costs for all items that fall outside of the project's funding scope---as of July 2002 this was not completed
- ▼

### 2002

- Funding for construction of downtown water systems should be received within 10-14 months of water treatment plant and sewage treatment plant funding
- Total funding that will be available for project (including bridge construction) is approximately \$25-28 million
- ▼

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## Appendix B: Bibliography

### Reports:

- A) September 1992 Final Report of Sanitation Facilities Construction for City of Buckland, Alaska. Prepared by U.S. Department of Health and Human Services, Public Health Services, Health Services Administration, Indian Health Service, Alaska Area Native Health Service, Office of Environmental Health and Engineering, Anchorage, Alaska.
- B) April 23, 1999 DRAFT Revision #1 City of Buckland Sanitation Master Plan. Prepared by Larsen Consulting Group for U.S. Army Corps of Engineers.
- C) July 1999 City of Buckland Utilities Facilities Plan. Prepared by Larsen Consulting Group for U.S. Army Corps of Engineers.
- D) February 17, 1998 State of Alaska Rural Sanitation 2005 Action Plan - Developed and Adopted by the Governor's Council on Rural Sanitation.
- E) US Army Corps Of Engineers Listening Session, Anchorage, AK. February 2001.
- F) May 2000 Draft Public Involvement Plan, City of Buckland, Utility Facilities Design. Prepared for the US Army Corps of Engineers, Alaska District and the City of Buckland by URS Corporation/Dames and Moore.
- G) Sarcone, Joe. Establishing Trust at the Interface of the U.S. Government with Tribes. Final Draft August 3, 2001. Contact Information: Joe Sarcone, Rural Sanitation Coordinator, Alaska Operations Office, U.S. Environmental Protection Agency Region 10.

### Larsen Consulting Group Quality Assurance/Quality Control Meeting Agendas and Minutes

- 1. March 16, 2000 Agenda/Minutes
- 2. March 30, 2000 Agenda/Minutes
- 3. April 13, 2000 Meeting Minutes
- 4. April 27, 2000 Agenda/Minutes
- 5. May 11, 2000 Agenda/Minutes
- 6. June 8, 2000 Agenda/Minutes/Geothermal Evaluation
- 7. July 6, 2000 Agenda/Minutes
- 8. August 17, 2000 Agenda/Minutes
- 9. August 31, 2000 Agenda/Minutes
- 10. October 5, 2000 Agenda/Minutes
- 11. October 19, 2000 Agenda/Minutes
- 12. November 9, 2000 Agenda/Minutes
- 13. November 30, 2000 Agenda - Meeting Cancelled
- 14. December 21, 2000 Agenda/Minutes
- 15. January 11, 2001 Agenda/Minutes
- 16. February 8, 2001 Agenda/Minutes
- 17. March 8, 2001 Agenda/Minutes
- 18. April 5, 2001 Agenda/Minutes

19. May 3, 2001 Agenda/Minutes

Buckland Trip Reports

1. April 6, 2000 Community meeting including notes from a Northwest Arctic Borough (NWAB) meeting, interviews with Buckland officials and residents, interviews with COE's Mr. Dave Williams and EPA's Mr. Joe Sarcone
2. June 2000 Thirty-Five percent design presentation meeting
3. January 2001 Community meeting
4. July 2001 Ninety-Five percent design presentation meeting

Interviews conducted April 6, 2000.

- 1) 4 Buckland Officials
- 2) 4 Buckland Residents
- 3) EPA
- 4) Northwest Arctic Borough
- 5) COE
- 6) ADOT/PF engineer

Other Interviews

- 1) 2 Buckland Officials, January 5, 2001
- 2) Agency Personnel
  - a) NWAB, January 4th & 5th, 2001
  - b) Larsen Consulting Group, February 23, 2001
  - c) 2 URS Corporation employees, February 23, 2001
  - d) COE, January 5, 2001

Follow-up Interviews conducted May-September 2002.

- 1) 4 Buckland Officials
- 2) Agency Personnel
  - a) COE, July 17, 2002
  - b) 2 URS Corporation employees, July 2002
  - c) Larsen Consulting Group, July 2002
  - d) Northwest Arctic Borough, July 2002
  - e) ANTHC engineer, September 2002
  - f) Village Safe Water Remote Maintenance Worker Program, July 2002
  - g) ADOT/PF engineer, May 2002
  - h) Village Safe Water engineer, July 2002
  - i) USDA Rural Development, August 2002

Tribal Resolutions:

- 1) A Resolution (98-10) of the Northwest Arctic Borough Assembly requesting the U.S. Army Corps of Engineers to determine the feasibility of environmental infrastructure improvements in the communities of the Northwest Arctic Borough. (DATED: February 24, 1999)
- 2) A Joint resolution (99-01) of the Native Village of Buckland and the City of Buckland requesting support of Village expansion area, known as the northside of the Buckland River. (DATED: March 18, 1999)

- 3) A Joint resolution (99-02) of the Native Village of Buckland and the City of Buckland requesting support of the Draft Goals and Objectives for the Buckland Community Master Plan. (DATED: March 18, 1999)
- 4) A Joint resolution (99-03) of the Native Village of Buckland and the City of Buckland to support the building of bridges across the Buckland River. (DATED: March 18, 1999)
- 5) A Joint resolution (99-08) of the Native Village of Buckland and the City of Buckland to support the selection of water and sewer alternatives. (DATED: April 13, 1999)

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## **APPENDIX C: TRIP REPORT SUMMARY**

To monitor outreach efforts by the Army Corps of Engineers, COE, three trips were made to Buckland Alaska to attend Community Meetings that provided significant project information to the residents. The meetings are also part of the vehicle for the residents to provide input and to comment on the proposed details of the project. The three meetings occurred on April 6, June 1, 2000 and on January 4, 2001. To report on these recent efforts by the COE, the following summary details the trips and the meetings.

Average number of residents attending: 20

Project Partners Presenting: Mr. Dave Williams, Project Manager, Army Corps of Engineers; Ms. Monique Garbowicz, Lead Project Engineer, Larsen Consulting Group, Mr. John Warren, Engineer, Larsen Consulting Group, Mr. Jon Isaacs, Urban Planner, URS Corporation, Ms. Lisa Loy, Environmental Planner, URS Corporation

Providing technical assistance and guidance: Mr. Tom Bolen, Village Projects Coordinator, Northwest Arctic Borough, Mr. Willie Goodwin, Lands Consultant, Northwest Inupiat Housing Authority, Mr. Yiyuk Henry, Rights Protection Specialist, Maniilaq Association

Average length of each meeting: Three hours

### **April 6, 2000**

At the April 6, 2000 Community Meeting COE introduced the project Team members who provided an overview of the Community Master Plan, gave an update of the project schedule, explained the need for establishing rights of ways and easements for the proposed piped utilities - which are to be granted by the existing property owners, who the major funding sources are and suggested strategies for obtaining other project funding, and when the project team will return to Buckland for the 35% design phase presentation scheduled for May, 2000.

Interviews were conducted with eight residents before and after the Community Meeting. Some of the concerns identified were: how the proposed aboveground utility pipes might obstruct pathways used by elderly people, the proposed household cost of \$146/month for the utility fees, local hire on the proposed project, and the safety of the drinking water and its effects on the health of the residents.

### **June 1, 2000**

The 35% design phase of the proposed project was presented to the residents attending this meeting in the form of schematics drawn to depict where the water and sewer utility facility and pipes will be placed in the Community. During the April Community Meeting, residents asked if a three-dimensional model could be presented but was told it was expensive to build and it was premature, at this phase, to realistically portray the actual layout of the system. To answer a question from a resident regarding when actual construction would begin, Mr. Williams, COE Project Manager, stated the following conditions must be met before construction can begin:

1. State of Alaska must approve the complete design
2. City of Buckland and COE must agree on project cost
3. Land issues of rights of ways and easements must be resolved
4. An identification and determination of additional funding sources must be made

Further discussion of the land issues was a major part of the meeting because if left unresolved, the project could not be built. The meeting ended with the schematics being left in the Community for comment and an indication by COE to return an updated project schedule to the Community.

#### **January 4, 2001**

Identification of pending funding issues, environmental questions such as 'Is there any wildlife in the area that might be affected by construction?' were asked by the environmental planner as part of an environmental assessment for funding agencies, and requests for Community input on the lands issues were the main topics of discussion at this meeting. Community input on the lands issues was critical because plans and specifications must be completed for funding disbursements to proceed. A request by Mr. Dave Williams, COE, to the residents was made to begin a letter writing campaign to funding agencies to complete funding for the project ended the meeting.

## APPENDIX D: SAMPLE QUESTIONS FOR KEY INFORMANT INTERVIEWS

JULY 2002

1. Please tell me about the project to date?
2. Partnership. Did the Corps effectively partner with other local, regional, state and federal agencies involved in rural water and sewer?
  - a) What types of partnerships has the Corps developed for this project?
  - b) Any of these in the past year?
  - c) Would you consider any of these out of the ordinary?
  - d) Who has been involved in the project?
  - e) How has your involvement with the Corps changed over the life of the project?
  - f) What were your company's main functions to date?
3. Capacity development. Did the Corps work in partnership with local governments and residents to improve their capacity, considering the unique needs, resources, and expectations of each individual community? Did the project include resources for non-construction related activities such as planning, training, technical assistance and developing and sustaining the capacity to operate and maintain systems? (For example, did they conduct workshops to help residents understand: the importance of sanitation; methods and technologies; affordability; effort; importance of paying, need for a well-trained operator and manager, available programs?)
  - a) How has the Corps improved the capacity of the local government or residents?
  - b) Has the Corps provided resources for planning, training, technical assistance and developing and sustaining the capacity to operate and maintain systems?
  - c) How has the Corps improved the community's understanding of the importance of sanitation; methods and technologies; affordability; effort; importance of paying, need for a well-trained operator and manager, available programs?
4. Local Involvement. Did the Corps involve, empower and defer to the community in decision-making? In the planning phase, did the community have the information and the time to effectively consider questions of technology, requirements for operations and maintenance, management, finance, and administration, and force accounting?
  - a) How would you describe local involvement in the project the first year?
  - b) The past year?

- c) Has the community been genuinely involved? or has the Corps merely executed a plan to build the system with questions along the way?
5. Accountability. Does the resulting system design and project implementation provide the best service possible to rural residents? Is it responsive to customer concerns and priorities? Is the resulting system design and project implementation a cost effective use of public resources?
    - a) Is the system what the community wants?
    - b) Will the community be able to operate and maintain the system?
    - c) Was the Corps concerned with these issues? How or how not?
  6. Other
    - a) What is the current status of the project?
    - b) What is your opinion of the progress to date?
    - c) What have been the major causes of delays?
    - d) How do think these could have been avoided?
    - e) How has communication been over the past year since the QA/QC meetings stopped?
    - f) Is the community pleased so far?
  7. Please tell me about how the project is going in your opinion?
  8. Are the types of delays the COE has experienced common for water and sewer projects or unique to this project?
  9. Would this size (budget and extent) project be typical of an ANTHC or VSW project?
  10. Who would have implemented this project if the COE hadn't?
  11. Is having the COE implement these types of projects in rural Alaska a plus or minus for rural Alaska?
  12. How many more community meetings are scheduled?
  13. What have been the key sources of funding, how much and when?
  14. What have the milestones of the project been to date?
  15. What would you have changed?