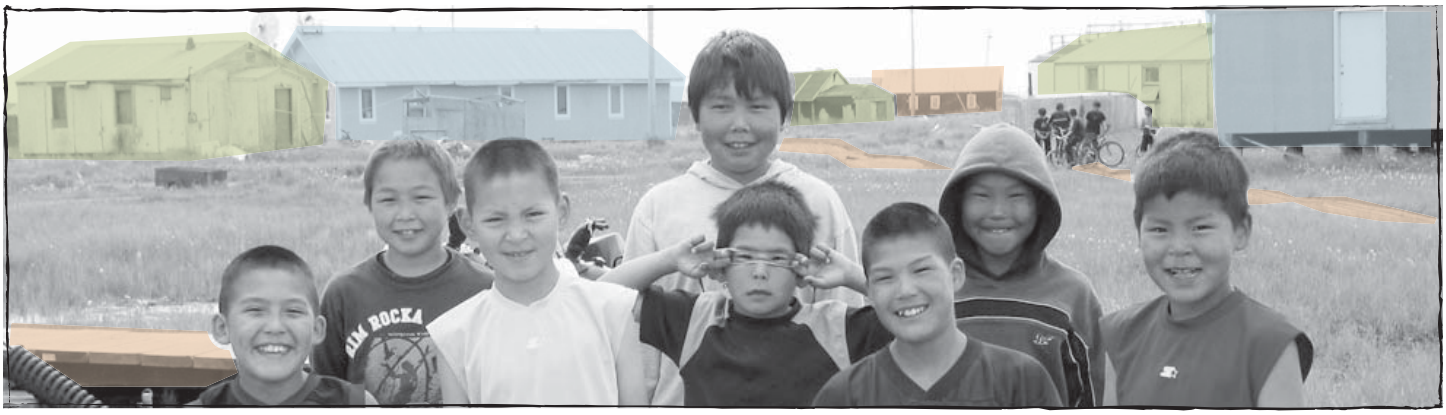
MERTARVIK

**Nunaullemteggun ikayuqulluta tamamta,
assirluta aknirtenritellerkamtenun,
nuggtarllemtenun ciunerkamteni**

*a community that builds together
for the safe and healthy future of Newtok*



Relocation Report :: Newtok to Mertarvik

RELOCATION REPORT:: Newtok to Mertarvik
FINAL DRAFT ISSUED FOR REVIEW

by the Community of Newtok and the Newtok Planning Group, August 2011.

Prepared by by Agnew::Beck Consulting with PDC Engineers and USKH Inc.

for the State of Alaska
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Cover photo and above photo of Newtok children by PDC Engineers.
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Executive Summary

This report presents work to date towards the development of a Strategic Management Plan (SMP) for the relocation of the village of Newtok to a new site at Mertarvik. Newtok is a growing 350-person coastal village fronting on the Ninglick River in western Alaska. The Ninglick River is rapidly eroding and consuming community land and facilities as it advances. The most recent prediction from 2007 is that the river could reach the school by 2017 and several houses in between even sooner.

In general, this project's scope of work spans two phases. Phase 1, the focus of this report, covers the identification of issues, review of baseline data and the preparation of background planning information. Phase 2 focuses on the development of the guiding principles and overall framework for relocation and the production of a SMP, which will be issued later this year. However, this Phase 1 report previews the beginnings of the SMP, hence the title Relocation Report.

Before summarizing this report's main conclusions, it is important to pause and examine the broader questions raised by the situation facing Newtok.

Erosion, Flooding, Thawing Permafrost and the Impact of Climate Change

A growing body of evidence indicates that climate change is a contributing factor to the erosion threatening many Alaskan communities. In addition to Newtok, five other rural Alaskan communities (Kivalina, Koyukuk, Shaktoolik, Shismaref, and Unalakleet) face "imminent threats of loss of life, loss of infrastructure, loss of public and private property, or health epidemics caused by coastal erosion, thawing permafrost and flooding," according to a 2009 recommendations report by the Immediate Action Workgroup, an advisory group of the Climate Change Sub-Cabinet, which advises the State of Alaska's Office of the Governor.

More than 150 predominantly Alaska Native communities face some potential impacts by climate change. (Communities are listed in the 2008 Governor's Report on the Climate Change Sub-Cabinet.)

- The broad question: How can the work accomplished to date on climate change in Alaska be used to assist Newtok with their relocation efforts?

Governmental Coordination

Responding to the issues of imminently threatened communities requires the coordination of a complex network of organizations, agencies and elected officials. While the agencies and individuals working on this project have done a remarkable job of coordinating their efforts, this success is more testimony to skills at side-stepping bureaucratic constraints than evidence of a well-organized government structure. As was described by Larry Hartig, Commissioner of the Alaska Department of Environmental Conservation, with regard to climate change: "We are constructing the track as we go. We're trying to find the track and putting it in front of the train." Lack of a cohesive national and state framework for addressing the issues of imminently threatened villages places the burden on these communities to juggle agencies and funding streams and cobble together solutions to problems that literally threaten the survival of whole communities.

- The broad questions: How can the state and federal government most efficiently and effectively work together to respond to the needs of communities threatened by erosion, flooding, thawing permafrost and climate change-related impacts?
- What sources of technical skill, permitting expertise and funding are available to assist communities hardest hit by these issues and how can they be organized in an efficient and effective way to systematically prioritize and address these issues?

Rural Transformation

Over the last several decades, many rural Alaska villages developed with little thought about economic development and the long-term costs for energy, transportation, water and sewer, freight delivery, air access, and other community infrastructure. In many ways, Newtok's relocation to Mertarvik presents a unique opportunity to create a new model for a sustainable Alaska Native Village based on current technology and the lessons learned from past decades of community development activity. The challenge is creating and pursuing this vision while respecting the urgency of the situation that Newtok faces and the potential repercussions of not moving quickly enough. The key to developing a successful plan for the relocation is striking a balance between these two at times competing pressures. The risk of focusing solely on expediency is recreating Metarvik in the image of the unsustainable communities that have been the result of well-intended agency involvement for 50 years. The benefits of balancing urgency with the creation of a new model for rural sustainability would be realized for years to come by Newtok's future generations and serve as an example for other communities in the state. While climate change is an extremely serious problem, it could have the positive impact of forcing a new paradigm in community sustainability.

- The broad question: Can this current challenge be a catalyst that helps communities become more self-sufficient and prosperous even as the costs of energy, access and construction continue to rise and options for external funding continue to decline?

Below is a summary of this report's major conclusions and some initial insights into the questions above.

Importance of Local Leadership and External Support

"One thing that we gain from pioneering is continuing and honoring our values. If we rely on the western society's way of life, that's forgetting who I am. We need to go back to our way of life. We have to start somewhere." – Newtok Traditional Council Member

The relocation process will not succeed without support and leadership both within and outside the community. As noted in the report: "In many ways, Newtok has compensated for the lack of a single lead agency, serving as both the glue and the director of efforts to date." Closely tied to this conclusion is the need to bridge cultural and language gaps and fully engage the community in decision-making processes from the start. This is essential to "getting it right" and saves time, money, and effort.

Importance of "Pioneering" and Incremental Progress

Rather than aiming for a wholesale move of the entire village, the move from Newtok to Mertarvik will occur over a period of time through a process that is more incremental and organic in nature. With initial infrastructure in place, the "pioneering" phase will begin. During the pioneering phase, a few families will make the initial move before basic services are in place to establish a new community. The village views pioneering as an opportunity to educate its young people about the core values and traditional ways of life that define the people of Newtok: "One thing that we gain from pioneering is continuing and honoring our values. If we rely on the western society's way of life, that's forgetting who I am. We need to go back to our way of life. We have to start somewhere." The Newtok Traditional Council hopes that seeing family and friends successfully accomplish the transition from Newtok to Mertarvik will inspire and motivate others to move and, in doing so, boost funder confidence for needed infrastructure and services.

Minimal Environmental Impacts and Regulatory Requirements

The relocation of an entire village could easily become permanently stuck in a tangle of environmental review and permits. While the move to Mertarvik raises environmental issues that require careful attention and a range of associated agency approvals, the work of the Newtok Planning Group (NPG) has kept this process from crippling the relocation. Key to this success has been selection of the right site, and proactive engagement with environmental and permitting agencies. Removing regulatory barriers under the right circumstances would reduce the cost and time associated with relocating villages facing imminent threats to health, safety and property due to climate change.

Matching Needs to a Realistic View of Available Resources

A successful move will require substantial capital investments coupled with a frugal, cost-saving approach that harkens back to Alaska's traditions of hard work and ingenuity. Newtok has found that capital improvements require both legislative and

traditional agency support. According to one NPG member we interviewed, "Seed money from the legislature has been key for getting Mertarvik moving. Agencies could not have funded the ground laying work … The key to relocation is figuring out how to tap every agency's traditional funding sources that can be tapped." As work at Mertarvik moves beyond setting in place initial infrastructure, more agencies are likely to become involved. Housing will drive relocation time lines. Determining how to meet the housing need is the biggest challenge the community faces.

Need for a Widely Supported, Community-based Strategic Management Plan

Newtok's experience shows that although relocating a village takes time, it can be done. Essential to completing this process is a clear, widely supported strategic management plan – which is the goal of this project. We learned from the Newtok Traditional Council and community members during our recent site visit, how the process of relocating a village can strengthen a community's relationships and core values. The process can enhance the skills and capacity of residents and spark a return to the subsistence lifestyle that is so important to the past and the future of Newtok's people and culture. We also heard a plan for how the community will drive the relocation efforts and define its own destiny. In the words of one Traditional Council member: "The erosion isn't waiting for any one agency – we need to start the pioneering."

Relocation Phases

As outlined in more detail in the report, while there has been good progress to date, much more remains to be done. Relocation efforts are expected to span four phases:

1. Uplluteng "Getting Ready"

Village population 0

2. Upagluteng "Pioneering"

Upagluteng refers to the traditional practice of moving with the seasons; village population ~25 to 100

3. Nass'paluteng "Transition"

Nass'paluteng refers to periods of transition; village population > 100 people

4: Piciurlluni "Final Stage"

Piciurlluni means "We made it!" in Yup'ik; village population 350 or more

This report marks another small but important step in the process leading to a successful and sustainable relocation of Newtok. We hope the information contained here can shed helpful light on issues beyond the village of Newtok and its new home across the river in Mertarvik.

Introduction and Purpose

Introduction and Purpose

Since its formation in May 2006, the Newtok Planning Group (NPG) has recommended and sought funding for the development of a strategic management plan to guide the community of Newtok's relocation efforts and ensure that any potential environmental impacts are minimized. In 2010, the Alaska Department of Commerce, Community, and Economic Development successfully secured funding from the federal Coastal Impact Assistance Program for the creation of the Mertarvik Strategic Management Plan. In January 2011, Agnew::Beck Consulting in partnership with PDC Engineers and USKH Inc. were hired to spearhead the effort.

A top priority during Phase I was working with the community to develop a shared vision and framework for the relocation.

The primary goal of the project is to develop a Strategic Management Plan (SMP) that outlines the community's vision, guiding principles, strategies, and time lines for relocation. The SMP will guide all relocation planning from a high-level perspective to accomplish the community's vision for their new home and mitigate the potential impacts of these activities to the surrounding Yukon Delta National Wildlife Refuge. The project's scope of work spans two phases. Phase 1 focuses on identification of issues, review of baseline data, and the production of the a Background Planning Report. Phase 2 focuses on the development of the guiding principles and overall framework for relocation and the production of a Strategic Management Plan.

During the project kickoff meeting with the NPG, the team solicited feedback about the relocation efforts to date, what was working well, what was not, what concerns existed, and what the project needed to accomplish. Since that meeting, the project team completed interviews with 36 stakeholders and topic experts, reviewed existing baseline data, held two meetings with Newtok's Traditional Council, and facilitated a community-wide meeting about the relocation (see Appendix A-1 for a list of stakeholder and expert interviews conducted and Appendix A-2 for a list of Newtok community meeting participants).

In our stakeholder interviews, it became clear that a major barrier to current planning efforts and funder confidence was lack of a shared, long-range vision and framework for the relocation efforts. Working with the community of Newtok to establish a vision, framework, and initial plan became a top priority and components of Phase 2 were folded into Phase 1 (see Table 1). The goal of the Relocation Report is to share our findings to date and therefore reflects this change in approach.

Table 1. Objectives of Phases 1 and 2

Phase 1 (Background Planning Report)	Phase 2 (Strategic Management Plan)
Assess and summarize baseline data for Mertarvik and the surrounding area.	Establish a vision and framework for the relocation efforts.
Identify major stakeholders involved with the village relocation and community development activities.	Develop a plan that outlines a clear strategy for the relocation of the Newtok community to Mertarvik.
Document stakeholder issues and develop goals and objectives for the relocation process.	Establish construction windows to reduce environmental impacts.
Develop a preliminary schedule for the sequencing of pioneer infrastructure.	Identify sequencing and interdependencies between bodies of work, as well as opportunities for efficiencies and cost-sharing.
	Research and document funding options.

Darker shading refers to completed objectives.

Lighter shading refers to significant progress made on objectives.

The first section, "Background Planning Report," provides an overview of the context for the relocation, describes the accomplishments to date (summarizing investments, challenges and lessons learned), and reports out on two key questions posed to the team during the project kickoff session: What population thresholds must be met to trigger funding for an airport, a school, and mail service and why is "pioneering" or the movement and establishment of an initial population at Mertarvik important? This section also outlines environmental considerations, identifies construction windows and highlights important permitting requirements.

Newtok's experience to date shows that although relocating a village takes time, it can be done.

The second section of this report, "Preliminary Strategic Management Plan," includes drafts of several key elements of the SMP to be produced in Phase 2. The expedited production of these pivotal pieces will provide the community and stakeholders with more time to study, discuss, identify gaps, assess the feasibility of, and ultimately create a SMP that is embraced by the community, its many advocates and supporters, and federal and state agencies.

Erosion projections (last updated in 2007) indicate that the river could reach the school by 2017.

Newtok's experience to date shows that although relocating a village takes time, it is doable. We learned from the Newtok Traditional Council and community members during our recent site visit how the process of relocating a village can strengthen a community's relationships and core values, enhance the skills and capacity of its people, and spark a return to the subsistence lifestyle that is so important to the past and the future of Newtok's people and culture. We also heard a plan for how the community will drive the relocation efforts and define its own destiny. In the words of one Traditional Council member: "The erosion isn't waiting for any one agency – we need to start the pioneering."

Background Planning Report

The Urgency of Relocation

Newtok is a Yup'ik Eskimo village located on the Yukon-Kuskokwim Delta along the western coast of Alaska, near the confluence of the Newtok and Ninglick Rivers. While some rural Alaska villages are experiencing population declines, Newtok is growing. Based on the 2010 Census, the current population of Newtok is 354 (compared to the 2000 Census population count of 321).[1] Nearly half (47.2 percent) of the population is 17 years of age or younger and the median age is 20.2 years old. Alaska Natives represent 96 percent of the population. Residents young and old speak Yup'ik and maintain a traditional subsistence lifestyle and local transportation is limited to snowmachines, all-terrain vehicles and boats.

Newtok's population is growing. Photo by Carolyn George.

The community's health and safety are currently threatened by severe coastal erosion and flooding. The Ninglick River, which is tidally influenced and connects Baird Inlet from the Bering Sea, is eroding toward the village at an average pace of 72 feet per year (with an observed rate of up to 300 feet in one year) and has been moving toward the village for decades.[2] In 1996, the dump site was lost to erosion and the barge landing was lost to erosion in 2005.[3] The current dump site is only accessible at high tide and all incoming goods must now be shipped by air, an extremely costly endeavor. Erosion projections (last updated in 2007) indicate that the river could reach the school by 2017.[4]

It was the capture of the Newtok River by the Ninglick River in 1996 though that has had the most dramatic impact on livability of the current village. Nearly overnight, the village became more susceptible to storm surges on the Ninglick River due to the direct hydrologic connection. The Newtok River, which runs along side the village, turned from a free flowing river into a slough. When the slough silted in, commercial vessels could no longer navigate to the village and honey bucket waste dumped into the Newtok River, which would previously flow out with the tides, stopped flowing away and began to simply move back and forth with the tides.

These changes, which are likely exacerbated by climate change and melting permafrost, have increased the frequency and severity of flooding in Newtok during the last decade. According to local residents, the coastal storm season has become longer in recent years, "September and November is typically the storm period but now we are seeing storms as early as mid-July."

1. U.S. Census Bureau (2010). *Newtok CDP, Alaska: Profile of General Population and Housing Characteristics.* Retrieved in May 2011 from: http://factfinder2.census.gov/.
2. U.S. Army Corps of Engineers, Alaska District. July 2008. *Revised Environmental Assessment and Finding of No Significant Impact: Newtok Evacuation Center. Mertarvik, Nelson Island, Alaska.*
3. U.S. Army Corps of Engineers, Alaska District. 2008. *Section 117 Project Fact Sheet: Storm Damage Reduction Project, Newtok, Alaska.* Retrieved in June 2011 from: http://www.commerce.state.ak.us/dca/planning/pub/Newtok_Sec_117.pdf.
4. Arctic Slope Consulting Group (ASCG), Inc. October 2007. As cited in US Army Corps of Engineers, Alaska District. July 2008. *Revised Environmental Assessment and Finding of No Significant Impact: Newtok Evacuation Center. Mertarvik, Nelson Island, Alaska.*

A powerful storm surge can raise tide levels 10 to 15 feet above normal and severe flood events, such as the 20-year flood of 2005 and the lesser flood of 2006, permeate the village water supply, spread contaminated waters through the community, displace residents from homes, destroy subsistence food storage, and shut down essential utilities.[5]

The U.S. Army Corps of Engineers (USACE) predicts that the 50-year flood would flood almost the entire community.[6] High ground is limited and high ground with shelter sufficient to house the community is non-existent. Flood waters wash honey bucket waste from the Newtok River back into the village while the risk of permanent salination of the community's drinking water source potentially poses the most immediate threat to the community.

In 1994, after more than two decades of studies and analysis, the community contemplated their options and made the difficult decision to relocate. This is not the first time the community has had to relocate. In 1949, the village moved from Old Kealavik to the current site to avoid flooding and find suitable ground for a new school. The current site marks the farthest point up river that the barge carrying materials for a Bureau of Indian Affairs school could reach. Understandably, the community views the move to Mertarvik as their final move. As such, the community has carefully selected the site of their new home with conviction and determination to never move again. In the words of one Traditional Council member, "This will be our final move. Mertarvik is going to be a lifetime permanent location, higher ground with rock underneath."

The decision to move has had ramifications. In the years since the decision was made, Newtok has seen broad disinvestment from federal and state agencies. This disinvestment was driven by a desire not to waste funds improving and maintaining infrastructure in the existing village when the community intends to move. However, many agencies have since reassessed this policy as evidence suggests that disinvestment has led to poor living conditions and serious public health issues. As an example, Indian Health Service (IHS) regranted $1.2 million in 2010 for needed sanitation improvements in Newtok. Alaska Department of Environmental Conservation, Village Safe Water Program, as the lead agency, is managing the project that will establish a safe and year round drinking water supply and improve sanitation practices within the existing community.

Between 1994 and 2004, 29 percent of infants were hospitalized with Lower Respiratory Tract Infections, including pneumonia and respiratory syncytial virus (RSV), attributing Newtok with one of the highest rate of lower respiratory tract infections in the state.[7] Public health professionals conducting an assessment of

5. U.S. Army Corps of Engineers, Alaska District. 2008. Section 117 Project Fact Sheet: Storm Damage Reduction Project, Newtok, Alaska. Retrieved in June 2011 from: http://www.commerce.state.ak.us/dca/planning/pub/Newtok_Sec_117.pdf.
6. U.S. Army Corps of Engineers, Alaska District. July 2008. *Revised Environmental Assessment and Finding of No Significant Impact: Newtok Evacuation Center. Mertarvik, Nelson Island, Alaska.*
7. Troy Ritter, REHS, MPH,DAAS; Mark Stafford, PE, RS; Jennifer Dobson; Suzanne Edelman, BS, MS, September 2006. *Environmental Public Health Assessment: Newtok, Alaska.* Report cited with

The community's health and safety are currently threatened by impacts of severe coastal erosion and flooding.

public health conditions in Newtok in 2006 found that sanitation conditions, which include inadequate potable water for drinking and hygiene, high levels of contamination from honey bucket waste, and household overcrowding, were "grossly inadequate to protect public health." The team concluded that existing conditions "appear(ed) to result from an initial lack of infrastructure development and failure to properly maintain existing infrastructure."[8] Perhaps tellingly, when residents talk of Mertarvik and what life will be like there, they talk about the availability of clean drinking water. Appropriately, Mertarvik means "getting water from the spring."

Recognizing the need to sustain and ensure quality of life for Newtok residents during the transition years as the community works toward full relocation, the SMP will address both the building and populating of Mertarvik and the necessary maintenance and closure of Newtok.

Bearing the weight of the conditions and challenges outlined above, community leaders have made daily progress toward the relocation, the timing of which has now collided with a national economic crisis and federal and state funding environments that are ever-shrinking and ever more competitive. The community of Newtok understands that a successful relocation to Mertarvik is dependent upon residents themselves driving the relocation efforts.

Accomplishments to Date

Background

One of the first and most critical accomplishments of the relocation effort was the selection of a site that would be the new home for Newtok residents. After weighing the decision and several locations for the future townsite, the community confirmed the selection of Mertarvik, a site located nine miles from the existing village on Nelson Island. Through the 1960s, residents spent summers in fish camps on Nelson Island while wintering in Newtok. Positive geotechnical findings and the community's roots on Nelson Island made Mertarvik a compelling choice. In 1996, the Newtok Native Corporation passed a resolution authorizing the negotiation of a land exchange with USFWS. On November 17, 2003, the land exchange was enacted and Newtok Native Corporation acquired 10,943 acres for the new townsite from the U.S. Department of the Interior (U.S. Public Law 108-129). The land exchange catapulted Newtok into new territory, the first in a line of rural Alaskan communities impacted by climate change to endeavor to relocate a village in this era.

In May 2006, the NPG convened and today the group has representatives from the community; state, federal, and regional agencies; non-governmental organizations; and the legislature (see Appendix A-3 *Newtok Planning Group Participants*). The NPG

permission from Newtok Traditional Council, who provided the health assessment report to the Newtok Planning Group.
8. Ibid.

has met regularly since its inception working across agencies to secure funding and establish a framework and strategy for pushing the relocation process forward.

During the past five years, much progress has been made on the relocation effort and much has been learned about the challenges facing communities like Newtok and the possible methods for working around these barriers. Lack of a coordinated national response to climate adaptation, the absence of a single lead agency at the state level to drive the efforts, and the reality that agencies are mandated to fund existing and not future communities are just some of the challenges the NPG faced (see Appendix A-4 for an overview of Newtok village relocation issues and challenges as identified in stakeholders interviews).

Larry Hartig, Commissioner of the Alaska Department of Environmental Conservation summarized the challenges facing Alaskan villages impacted by climate change at this year's Alaska Forum on the Environment:

> The challenge in Alaska is that we are seeing climate change happening right now ... What is immediate here is not yet happening in the lower 48 ... The biggest changes are happening in northern and western Alaska where the costs of developing solutions are high and the populations are small ... We are competing for funding with much larger communities in Louisiana. If we are going to invest $100 million to x community with a population of 600 people, can we say they will be there in 100 years? (With regard to climate change,) we are constructing the track as we go. Trying to find the track and putting it in front of the train.[9]

Despite these challenges, the NPG and the Immediate Action Work Group under the Governor's Sub-Cabinet on Climate Change has obtained funding for the community for the development of several initial or groundwork laying infrastructure projects at Mertarvik. The strategy has been to fund and build key infrastructure to jump-start the relocation process and trigger additional investments.

The primary objective of these initial projects, which are in various stages of development, is to protect the health and safety of Newtok residents in case of a catastrophic storm or flood event by constructing an emergency evacuation center and the necessary supporting infrastructure so Mertarvik can serve as safe place for the community. Once community members begin to move to Mertarvik, the Mertarvik Evacuation Center (MEC) will continue to provide emergency shelter for those residents still living in Newtok while also serving as a multi-use facility for residents who have relocated to Mertarvik. The ability of the MEC to serve interim functions will be invaluable to the community during the transition stages of relocation when the need for services is likely to precede appropriate facilities.

In addition to the MEC, a material site has been identified and development of a quarry is slated to begin this summer. A local source for gravel is expected to significantly reduce the cost of developing Mertarvik while also providing local jobs.

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9. Alaska Forum on the Environment. 2011. Toward a Coordinated Response to Climate Adaption in Alaska. Moderator: Joel Neimeyer, Denali Commission, Panelists: Larry Hartig, Commissioner DEC, Daniel White, Alaska RISA-ACCAP, Trish Opheen, Chief of Engineering, Army Corps of Engineers, Marcia Combes, Director Alaska Operations Office, EPA, David Guess, Head of EPA's American Indian Office, based in D.C.

Projects, Investments, and Developing Community Capacity

To date, about $27 million has been invested in Mertarvik and in needed investments in Newtok.[10] The result is evident. A range of planning initiatives, baseline environmental, water, and geotechnical studies, and infrastructure projects have been completed or are currently underway at Mertarvik. Initial infrastructure projects include the construction of a barge landing, initial roads, the Mertarvik Evacuation Center (MEC), two production water wells, establishment of a construction camp, the planning stages of the future airport, and development of a local gravel source.

The Overview of Investments Table in the Appendix, outlines these contributions by funding source and shows the breadth of projects and investments in Mertarvik (see Appendix A-5 *Mertarvik Relocation Investments to Date by Funder and Type of Funding*). State of Alaska funding has accounted for approximately 31 percent of the total funding, while federal funding constitutes roughly 69 percent of the overall funding to date.[11] Of the total investments to date, approximately $6.5million have come from conventional funding streams while the remainder (about $23million) have come from non-conventional funding. Only 0.1 percent of the funding has come from non-governmental sources. Recently, the Newtok Traditional Council made the decision to form a tribal nonprofit corporation. The Mertarvik Community Development Corporation was incorporated as a nonprofit organization in the State of Alaska in August 2010. The creation of this organization makes Newtok eligible to pursue a range of promising funding opportunities for the relocation effort, including funding from private foundations, businesses, and individuals.

When asked what was working well about the efforts to date, the NPG agreed that the most important ingredient to date had been the leadership of Newtok through the Traditional Council and through Stanley Tom, the Tribal Administrator: "Stanley and the community are so engaged. They are actively leading the process, not just participating. If there is any takeaway from the last five years, it is that the community has to lead the effort." Over the course of this effort, the community has set the direction and priorities, working closely with outside contractors to inform the design process for the MEC and develop a community layout plan, independently pursing funding opportunities, and, most recently, building a skilled local workforce (see Appendices A-6 for Mertarvik Evacuation Center drawings and design highlights and A-7 for a copy of the *Mertarvik Community Layout Plan*). This type of leadership is what the community of Newtok has become known for.

It is perhaps the building of a skilled local workforce that most demonstrates the community's commitment to the move. Just recently, 17 community members completed three months of training in Bethel in construction, electrical and mechanical trades. Romy Cadiente, the village postmaster, spearheaded the effort:

> I was talking with Stanley one day and we were discussing the relocation and the work ahead. I thought, what are we going to do, just watch as others build our homes and buildings? No. We need to train our people. The results have been overwhelming. One young man (who completed the training) just secured a job on the Slope. His mother came to thank me with tears in her eyes. The paycheck is changing their lives and watching that group of

workers step off the plane in Newtok with certificates in hand has changed my life. I am so happy.

Building on this momentum, Romy Cadiente has secured funding for 20 additional community members and intends to expand the training opportunities to health-related skills and certifications. Newtok residents are gaining the skills they will need to build and maintain a new community.

In addition to the development and employment of a strong local workforce, a workforce of more than 100 military men and women will receive training this summer through the U.S. Department of Defense Innovative Readiness Training Program (IRT) by working on construction projects in Mertarvik. The IRT is in its third year of a five-year commitment to assist the community of Newtok in establishing the initial infrastructure required at Mertarvik.

Lessons Learned

A number of lessons have emerged from the relocation efforts made to date. The first is that local leadership is essential. In many ways, the community has compensated for the lack of a single lead agency, serving as both the glue and the director of efforts to date. The community's ability and willingness to drive future efforts could not be more critical. Agency missions, cultures, and rules can make needed collaboration difficult. While the collaboration between and across state and federal agencies has at times been challenging, it has also been remarkable. The NPG has set a precedent for groups on how multiple agencies with multiple barriers can cooperatively work together to assist a community. The NPG should also serve as a model for other villages that pursue relocation as a strategy for maintaining the integrity and culture of their community while adapting to climate change.

From a capital funding standpoint, Newtok has found that it takes both legislative and traditional agency support. According to one NPG member we interviewed, "Seed money from the legislature has been key for getting Mertarvik moving. To get to where we are now, we needed the legislature. Agencies could not have funded the ground laying work." Leveraging traditional funding agency streams and working across agencies to determine how to achieve the best funding results has been critical to securing funds for the relocation efforts: "The key to relocation is figuring out how to tap every agency's traditional funding sources that can be tapped. We knew the MEC would not fare well if it went through the Department of Transportation (DOT) because that was not a mission critical project compared to other DOT projects. Which agency is best suited to make the request differs by project." As work at Mertarvik moves beyond pioneer infrastructure, more agencies will become involved.

This aerial view of Mertarvik shows the significant progress made to date, June 2011. Photo by Harvey Smith.

The relocation planning efforts have reached a point where a SMP is essential for gaining the outside support needed to move forward before Newtok has completely

eroded away. The SMP will serve as a road map and guide for all agencies working at Mertarvik through every phase of relocation. The SMP will clearly communicate the community's vision and goals, the work to be completed during each phase of the relocation, and the sequence for major bodies of work. It will also help funders, public and private, understand how and when they can invest.

At the ground level, project managers have learned that the cost of mobilizing resources for initial infrastructure is far greater than originally assumed. According to Mike Coffey, Chief of Statewide Maintenance and Operations at the State of Alaska Department of Transportation and Public Facilities (AKDOT + PF), "While mobilizing resources for a project in rural Alaska typically adds 10 percent to the overall cost of a project, mobilizing and demobilizing a camp and construction supplies for Mertarvik (which because of its remote and undeveloped state requires bringing in everything you need for the project, as well as basic supplies such water, food, and tents for lodging) can add 35 percent or more to the construction costs of a project." The MEC project is currently facing a funding gap, in part due to the unexpectedly high cost of mobilization.

Regulatory barriers can also raise the cost and potentially extend the time lines of projects. For example, the original concept design for the MEC was completed by Cold Climate Housing Research Center in coordination with the community and was intended to be an in-ground structure. Ensuring compliance with State construction codes significantly impacted the design and, therefore, the overall cost of the MEC. A regulatory barrier with broader implications to the relocation effort is compliance with the National Environmental Policy Act (NEPA). The late Senator Ted Stevens recognized that NEPA would pose undue time delays and costs and sought a NEPA exception from Congress for Mertarvik; unfortunately, that request was not granted. USACE has taken the lead in drafting the Environmental Assessments that have covered the work at Mertarvik to date (see Table 2). The following section discusses NEPA and other permitting requirements.

Finally, finding ways to meaningfully engage the community in decision-making processes from the start is essential to "getting it right" and can save time, money, and effort. Meaningful engagement requires bridging the cultural and language gaps that exists between villagers and outsiders to ensure communications are clearly transmitted and truly understood by all parties. For instance, when weighing where exactly to locate the town center, a topographical map of the future site cannot replace a visit to Mertarvik with a group of elders and community leaders. When meeting with the community to discuss the Strategic Management Plan, we found that the use of images was far more effective at quickly communicating our findings and ideas and establishing a common basis for further discussion than translated words or traditional project planning tools.

Population Thresholds and Pioneering

This section of the Background Planning Report addresses two key issues raised during the project kickoff meeting with the NPG and in subsequent interviews with different stakeholder groups. First is the issue and belief that certain population

thresholds must be met for federal and state agencies to provide key community services and/or invest in community facilities at Mertarvik. The pioneering concept was coupled with this concern and discussed as a potential solution toward meeting necessary thresholds. From the start of the project it was clear that broad concern and varying perspectives and information existed on these issues.

Specifically, stakeholders were concerned with potential airport, school, and post office thresholds. Hearing this concern and recognizing the need to clarify population requirements, the project team set out on a fact finding mission. Table 2 provides an overview of what we learned. As shown, of the three bodies of work, only the United States Postal Service (USPS) has a set threshold of 25 families or 75 persons before they will provide mail service to a community. This conclusion was good news to the community and helped them to think more creatively about the

Table 2. Population Thresholds for Key Community Services and Infrastructure (What we learned.)

Type of Infra-structure	Threshold for Relocation?	Concern	Action
Airport	No established policy.*	FAA expressed concerned that the development of a power source for the airport would trigger the move of the community, thus burdening FAA with the task of completing an Environmental Impact Statement for the full relocation. An Environmental Assessment may suffice if FAA can address solely the impact of the airport.	Community must demonstrate relocation is not triggered by airport by obtaining non-federal funding for energy development and/or by pioneering.
School	No established policy for school construction in new communities. (The 10 student minimum is a requirement for keeping a school open, not constructing a new school.) For schooling, the community would need to provide a place for instruction and for a place for the teacher to live.+	LKSD expressed concerned that some residents may decide to stay in Newtok and they are not willing to work toward building a new school in Mertarvik unless a commitment is made to close the existing school in Newtok at the conclusion of the move.	Unanimous community commitment to move, with a clear plan for how that will happen, including shutting down the existing village and school.
Post Office	Mail service requires at least 25 families in an identifiable community with a population of approximately 75 or more (seasonal population fluxes not considered in year round numbers) and regularly scheduled transportation to the community.**	USPS is unlikely to provide funding for moving the existing post office or building a new post office.	Once the threshold is met, Newtok will need to negotiate what constitutes regularly scheduled transportation. Newtok should also consider potential locations for the future post office (possibly the MEC).

* Per Gabriel Mahns, FAA (interview conducted on 21 April 2011).

+ Per Kate McIntyre, Lower Kuskokwim School District (interview conducted on 24 February 2011) and Sam Kito, Alaska Department of Education + Early Development Facilities (interview conducted on 2 March 2011).

** Per Kathy Grosshandler, USPS Facilities Engineer (interview conducted on 21 April 2011).

"I have confidence about this early move. When I was one or two years old, my family moved. I focus on the time when people decided to move and they moved instead of relying on the agencies. I believe our sovereign way of life will be stronger – we can start a new life, a new village. We shouldn't wait. We need to encourage ourselves to do it ourselves. The elders have said we need to change ourselves; we need to start a new beginning and new life. Leave hate and anger and put it away and start a new life." – Newtok Traditional Council Member

The following paragraphs summarize community feedback on the importance of pioneering for the community and for their existing and potential funding partners. The community has made great strides toward identifying a strategy for the pioneering phase of the relocation process including how and when this first step should take place and who should go. Details of their initial strategy, including evaluation criteria for site and community readiness, are outlined in detail in the preliminary SMP below. The ideas informing the strategy were synthesized from two in-person meetings with the Newtok Traditional Council and from a community-wide work session during which community members gathered to learn and share ideas about the relocation process. Where possible, the direct words of Newtok residents and community leaders are included.

For the community of Newtok, pioneering represents the opportunity to establish a positive foundation for the whole relocation process. As such, the community wishes to focus on the many opportunities the relocation process will bring and less on the challenging aspects of moving. "We need to have a positive mind and believe in the process ... If we don't move, we're failing our people." In the view of the community, pioneering is an opportunity to educate its young people about the core values and traditional ways of life that define the people of Newtok: "One thing that we gain from pioneering is continuing and honoring our values. If we rely on the western society's way of life, that's forgetting who I am. We need to go back to our way of life. We have to start somewhere." Pioneering will be one of the first tangible positive steps that give community members living in Newtok the confidence they need as individuals and families to leave. Watching the process and seeing family and friends successfully accomplish the transition from Newtok to Mertarvik will inspire and motivate others to move. The pioneering families will also gain tremendous knowledge as they take this first step and will be able to share the lessons they learn with others along the way.

Pioneering will be the next and most critical phase of the relocation process in many ways. Working together to move the first set of families to their new homes at Mertarvik will also send a clear message to funding agencies and others that the community is serious about the move. Funders will have tangible, measureable evidence that the community is committed and dedicated to moving their community and will be more likely to fund not only next steps in the pioneering phase, but also subsequent phases of the move. Funders will have the confidence they need to commit current and/or future funds to the village relocation process. For example,

a priority for the community is to move a set of families into the three U.S Bureau of Indian Affairs (BIA) houses (built at Mertarvik by Newtok residents in 2007-2008), as well as the three houses slated to be built this summer. Initially, families will live there on a seasonal basis during the summer and winter months, returning to Netwok during the spring and fall when travel back and forth is perilous. Occupancy of these six houses will send the right message to funders that the community values these new homes and has started the pioneering process.

Pioneering presents an opportunity for the community to work together and return to traditional ways of life. Photo by Carolyn George.

The next steps for the pioneering phase are to share back this summary and the initial strategy outlined in the preliminary relocation SMP that follows with the Newtok Traditional Council, refining it as necessary to solidify the community's vision, strategy, and criteria for pioneering. Using the evaluation criteria, the community will also need to work together to flesh out immediate tasks that can best prepare the site for pioneers and to select specific pioneering families to make the move. Prior to the first families moving over, a comprehensive support plan must be created and in place.

Summary of Environmental Considerations

The following summary highlights important natural resources within the Mertarvik community site and Nelson Island as documented in several environmental studies completed in and around Mertarvik since 2006. National Environmental Policy Act (NEPA) documents for the Mertarvik Evacuation Center and associated environmental baseline studies outline anticipated impacts to protected resources from the Proposed Actions brought forth to date. Special considerations and anticipated impacts for those actions are included below where appropriate (USACE, 2005; USACE, 2008; USACE, 2011).

Fish and Wildlife

Birds and Waterfowl

The Yukon-Kuskokwim Delta is rich in bird species diversity and is home to a large number of nesting waterfowl. It is also one of the most productive areas in the world for geese. Almost 75 percent of Alaska's sandhill cranes breed on the Yukon-Kuskokwim Delta. Baird Inlet, about four miles north of Mertarvik is home to a colony of about 4,500 to 10,122 nesting pairs of Pacific black brant. This constitutes about 25 percent of the nesting black brant on the Yukon-Kuskokwim Delta. Birds and waterfowl are the principal animal group of concern for the relocation efforts.

Several waterfowl surveys have been conducted on wetlands within the area and show a variety of waterfowl use the wetlands at Mertarvik; however, area wetlands are not particularly suitable habitat for nesting waterfowl or shore birds. The community site and surrounding area are rich in crowberry tundra habitat that is utilized by emperor geese for food; however, this habitat is abundant in the area and not limited to the project site.

Bottom Line

Impacts to waterfowl habitat are anticipated to be minimal. There is potential for temporary and permanent loss of waterfowl habitat through construction of improvements and temporary construction disturbance.

Threatened and Endangered Species

The Yukon Delta National Wildlife Refuge (YDNWR) surrounds the Mertarvik community lands. While Threatened and Endangered species are known to be present within the YDNWR, they are not known to occur within the relocation area. Spectacled eiders nest in the refuge but nesting on the delta and/or within the relocation area is a rare occurrence. There are no indications that either the spectacled or the Steller's eider species nest on or near the relocation area. Small numbers of the marbled murrelet, another threatened species, may be found in the Bering and Chukchi Seas and possibly the Baird Inlet; however, this species is unlikely in the relocation area. The sea otter is not likely to occur near the relocation area. The U.S. Fish and Wildlife Service (USFWS) commented on the Environmental Document pertaining to the evacuation center that the project was not likely to impact critical habitat for these threatened species.

Bottom Line

No impacts to Threatened and Endangered species are anticipated. There are potential long-term impacts to wildlife and their habitats from increased access to the general area due to hunting and traffic. United States Fish and Wildlife Service Section 7 consultation will be conducted for any future development to ensure adverse affects are avoided.

Essential Fish Habitat

Mertarvik is between the two main streams on Nelson Island. Takikchak Creek is west of the relocation site and flows into Ninglick River, and Chakchak Creek is eight miles south of the site and flows east to Kolavinarak River. Ninglick River, Takikchak Creek and Chakchak Creek are anadromous fish streams and considered Essential Fish Habitat (EFH) important for the spawning, rearing and migration for essential fish species. Future proposed actions by DOT+PF may include development of a harbor and moorings in the Ninglick River and thus impact EFH. It is not anticipated that any future proposed actions undertaken by the community would require construction within EFH.

Bottom Line

Impacts to EFH from the community move are anticipated to be temporary and minimal in nature. Any proposed in-water work by DOT+PF as part of the harbor development could affect a small area of EFH. DOT+PF will assess impacts to EFH and propose conservation and any required mitigation measures during their permitting and review process.

Wetlands, Vegetation and Water Quality

Wetlands consist of moist to wet tundra within the majority of relocation area lands. These wetland and vegetation types are typical and widespread throughout higher ground on Nelson Island and are not unique to the site. Any improvements or ground disturbance would likely have an effect on wetland habitat. A salt marsh and freshwater spring (Mertarvik Spring) occur along the shoreline of the new community site. These high value wetlands are outside the immediate development area and would not be directly affected by community

development. There is a potential for sediment laden stormwater runoff during and post construction to degrade water quality. Best Management Practices will need to be implemented during construction, and revegetation techniques will be used to stabilize soils to avoid impacts to water quality.

Bottom Line

Temporary and permanent impacts to wetlands are anticipated as a result of community development at Mertarvik. However, these impacts are expected to be minimal through the implementation of avoidance, minimization and mitigation actions as developments plans progress. The community will work with the USACE to determine the most appropriate measures to minimize impacts.

Historic and Cultural Resources

Cultural resource surveys conducted in 2002 and 2005 identified several archaeological sites near the mouth of Takikchak Creek, but did not find any sites that would be affected by the evacuation center or associated facilities. The closest archaeological site to the community site is located about one mile northeast of the barge landing. The State Historic Preservation Officer (SHPO) concurred that no historic properties would be affected by the proposed construction of the emergency evacuation center, development of a quarry and proposed road alignments in March 2011. Future Federal actions for development at Mertarvik will be required to obtain such concurrence from the SHPO. Recent coordination efforts under Section 106 will expedite future consultations.

Bottom Line

A SHPO Finding of No Historic Properties Affected is anticipated for community development at Mertarvik.

Cumulative Impacts

Concerns about cumulative impacts associated with a community move to Mertarvik have been expressed in past environmental documents. A new community at Mertarvik will shift use to the area for berry picking, hunting, and subsistence gathering. Fishing on local streams will increase, as well as hunting for local waterfowl, ptarmigan and other birds. Surrounding wetland habitat may be damaged from increased ATV off-road use. Some of the structures and abandoned equipment at the old town site will remain after relocation to Mertarvik. Some of these areas such as the Newtok landfill, sewage lagoon and other non-movable structures could contribute to pollution of the Baird Inlet area. Coordination of clean up and restoration of the original town site will be an important component of any future development plans at Mertarvik.

Bottom Line

Cumulative impacts to protected resources from a community move to Mertarvik are anticipated. Through avoidance, minimization and mitigation plans, including preservation of wetlands and clean up of the old village site, significant cumulative impacts are not anticipated.

Construction Windows

The following table outlines time frames where environmental constraints/ permitting requirements would prevent certain construction activities. Certain activities such as site preparation and clearing should happen in early spring or late fall to use the full summer construction season without timing constraints. Building pads if placed in the summer months would facilitate movement of homes and other structures during the winter months when the ground is stable and travel over wetlands results in less impact. Table 3 highlights activities that cannot take place during certain time frames to protect sensitive species.

Important environmental consideration and construction timing windows:

- The USFWS recommends no fill or clearing activities take place within undisturbed tundra between May 5 and July 25 to protect nesting migratory birds. The regulation states that migratory birds may not be "taken." This requirement can be met by clearing potential nesting habitat before the nesting season or by conducting a nesting survey of construction areas just ahead of construction, with further monitoring during construction to prevent birds from nesting. USFWS should be consulted prior to construction to get any recommended revisions to this window.
- Additional consideration may be required in the fall to avoid impacts to emperor geese that may feed on crowberry tundra habitat in the area. Consultation with USFWS should take place to determine recommended construction windows. Note that USFWS input is advisory, not mandatory, but project proponents could be exposed to legal action if geese were "taken" during construction.

Table 3. Environmental Construction Windows for Mertarvik.

Activity	Work Window											
	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Clearing, Site Preparation+												
Materials Excavation, Stockpiling within previously disturbed areas												
Construction of Building Pads, placement of fill*												
Utility installation, vertical construction												
Revegetation, restoration of disturbed areas												
Relocation of Structures**												

Shaded areas depict time frames where no future work of that type should occur.

Orange indicates a work window to protect nesting birds.

Gray indicates a potential work window to protect Emperor Geese during an important feeding time period.

+Site preparation includes ground disturbing activities or disturbances.

*Construction of buildings pads/relocation of buildings could commence within no work window if site preparation has been previously completed and it is known that no nesting birds are present.

Permitting Considerations

Table 4 lists recommended consultations and required permits and clearances from different regulatory agencies and the associated anticipated time frames to complete each process.

Also included are milestones during project progress when certain activities should be initiated. This table does not represent an exhaustive list of requirements but highlights the major milestones in the process.

Much concern has been expressed by interviewed stakeholders about the cumulative impacts of the community's relocation necessitating the completion of an Environmental Impact Statement – a lengthy and costly process. Our assessment is that an EIS is not inevitable. Given the relatively few concerns outlined above and the careful planning that has characterized relocation efforts to date, it is possible and perhaps even likely that an EA will suffice for any projects requiring NEPA documentation and permitting (e.g., the evacuation center). One important way the community can ensure that no federal agency is responsible for triggering the community's move and, thus, is required to address the impact of the full relocation in its permitting process, is to ensure the move is initiated by the community and not driven by or dependent upon federally funded projects.

Table 4. Permitting Considerations for Newtok Relocation Projects

Agency	Permit/Clearance/Consultation	When to initiate	Approximate time line to acquire permit/clearance
Federally Funded Projects			
NEPA Decision Document	Environmental Assessment (EA)	Upon receipt of funding*	1 year
	Environmental Impact Statement (EIS)	Upon finding of significance during EA process, unless funding agency decides to start with an EIS class of action.	3-5 years
SHPO/Tribes	Initiation of Consultation	Once a set of Alternatives are selected	30 days
	Finding of No Historic Properties Affected	After selection of a preferred alternative	30-120 days
State and Federally Funded Projects			
USFWS	Section 7 Consultation for Threatened and Endangered Species	Once a set of alternatives are selected	30-120 days+
	Consultation regarding clearing windows for nesting birds and emperor geese	For any proposed ground disturbing activities	14-30 days
NMFS	Consultation for Essential Fish Habitat	For any in-water work	14-30 days
ADF+G	Title 16 Fish Habitat permit	For any work within Takikchak Creek	30-90 days
USACE	404 Wetlands permit	After a selection of a preferred alternative	120 days
ADEC	APDES Construction General Permit	1 month prior to construction, once 100% construction documents are complete	30 days**
Privately Funded Projects			
ADF+G	Title 16 Fish Habitat permit	For any work within Takikchak Creek	30-90 days
USACE	404 Wetlands permit, Individual or Nationwide Permit	For any work placing fill within wetlands	120 days
USFWS	Consultation regarding clearing windows for nesting birds and emperor geese	For any proposed ground disturbing activities	14-30 days
ADEC	APDES Construction General Permit	For any work that is part of a development plan with greater than 1 acre of disturbance. 1 month prior to construction, once 100% construction documents are complete	30 days**

*Initiation of NEPA document will begin with informal agency scoping and data-gathering. The NEPA process will continue throughout the entire project until a decision document (Finding of No Significant Impact (FONSI) or Record of Decision (ROD)) is obtained.

+Length of consultation will depend on determination of affect by regulatory agency.

** Includes review and approval of SWPPP, pre construction site visit, and submittal of notice of intent.

Photo by Carolyn George.

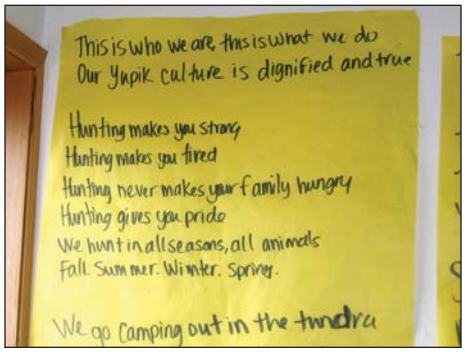
Preliminary Strategic Management Plan

Introduction

This section of the Relocation Report outlines the structure and initial content of the Mertarvik Strategic Management Plan (SMP). The purpose of the SMP is to provide a guide to the community and its partners for each component of the relocation process. This report contains preliminary information for each of the following main components of the SMP:

- Maligtaquyarat (Guiding Principles for Mertarvik) – Outlines the community's guiding principles for the relocation process. The community intends for all community members and partners to honor these principles when participating in activities associated with the relocation process.
- Relocation Plan – Provides a graphic depiction of the relocation plan for Mertarvik outlining the five phases of the relocation effort and highlighting the progression of services and infrastructure by major body of work.
- Pioneering – Outlines the community's initial strategy for the pioneering phase of relocation including a set of draft evaluation criteria for site and community readiness and a time line for moving the first families to Mertarvik.
- Preliminary Relocation Schedule – Details approximate time lines for each major body of work.

Maligtaquyarat (Guiding Principles for Mertarvik)



The guiding principles for the relocation draw upon the community's heritage and values. This poster hangs in the Newtok school.

June 9, 2011, the Newtok Traditional Council unanimously passed and approved a set of guiding principles for the community's relocation to Mertarvik (see Appendix A-8 *Newtok Traditional Council Resolution 11-30*). It is the hope and intent that all community residents and partners working toward the relocation will respect and promote these guiding principles.

The relocation of Newtok will be defined by our Yup'ik way of life. Our Guiding Principles are:

- Remain a distinct, unique community – our own community.
- Stay focused on our vision by taking small steps forward each day.
- Make decisions openly and as a community and look to elders for guidance.
- Build a healthy future for our youth.
- Our voice comes first – we have first and final say in making decisions and defining priorities.

- Share with and learn from our partners.
- No matter how long it takes, we will work together to provide support to our people in both Mertarvik and Newtok.
- Development should:
  - Reflect our cultural traditions.
  - Nurture our spiritual and physical well-being.
  - Respect and enhance the environment.
  - Be designed with local input from start to finish.
  - Be affordable for our people.
  - Hire community members first.
  - Use what we have first and use available funds wisely.
- Look for projects that build on our talents and strengthen our economy.

Relocation Plan

"Back in the old days, the people were working together as a unit. They moved the old church from another village by dog team. They didn't ask for money. They just did it. The BIA made us move here and now they are gone." – Newtok Traditional Council Member

The project team members Heidi Wailand and Shelly Wade of Agnew::Beck Consulting, Sally Russell Cox of ADCCED/DCRA, and Greg Magee and ADEC/Village Safe Water traveled to Newtok on June 7-8, 2011. The primary goal of the visit was to meet with community residents to establish a vision, framework, and present the draft relocation plan.

Residents discuss the phases of relocation and what life might be like in Mertarvik and Newtok as the community moves.

Figure 5, the Mertarvik Relocation Plan, is organized by nine bodies of work (site preparation; transportation; health and safety; drinking water, sewer, and solid waste; housing; energy; school and education; communications; and community resources) and four phases of the relocation driven by population levels. During the community meeting, each icon was printed on a single sheet of paper and assembled on the gymnasium wall. Community members were asked to help identify gaps or make changes to the sequencing or content of the icons as they saw fit. In a subsequent meeting with the Newtok Traditional Council, the phases were given Yup'ik titles. This version of the plan reflects the community's and the Newtok Traditional Council's feedback. Although no dates are assigned to the phases, the plan reflects a general sense of the time lines that might be associated with major projects, particularly those that are not yet in progress such as a school and a clinic.

This blank page is a place-holder for proper printing of the 11"X 17" Preliminary Relocation Plan graphic.

Mertarvik
Relocation Plan

MERTARVIK

Nunaullemteggun ikayuqulluta tamamta, assirluta aknirtenritellerkamtenun, nuggtarllemtenun ciunerkamteni

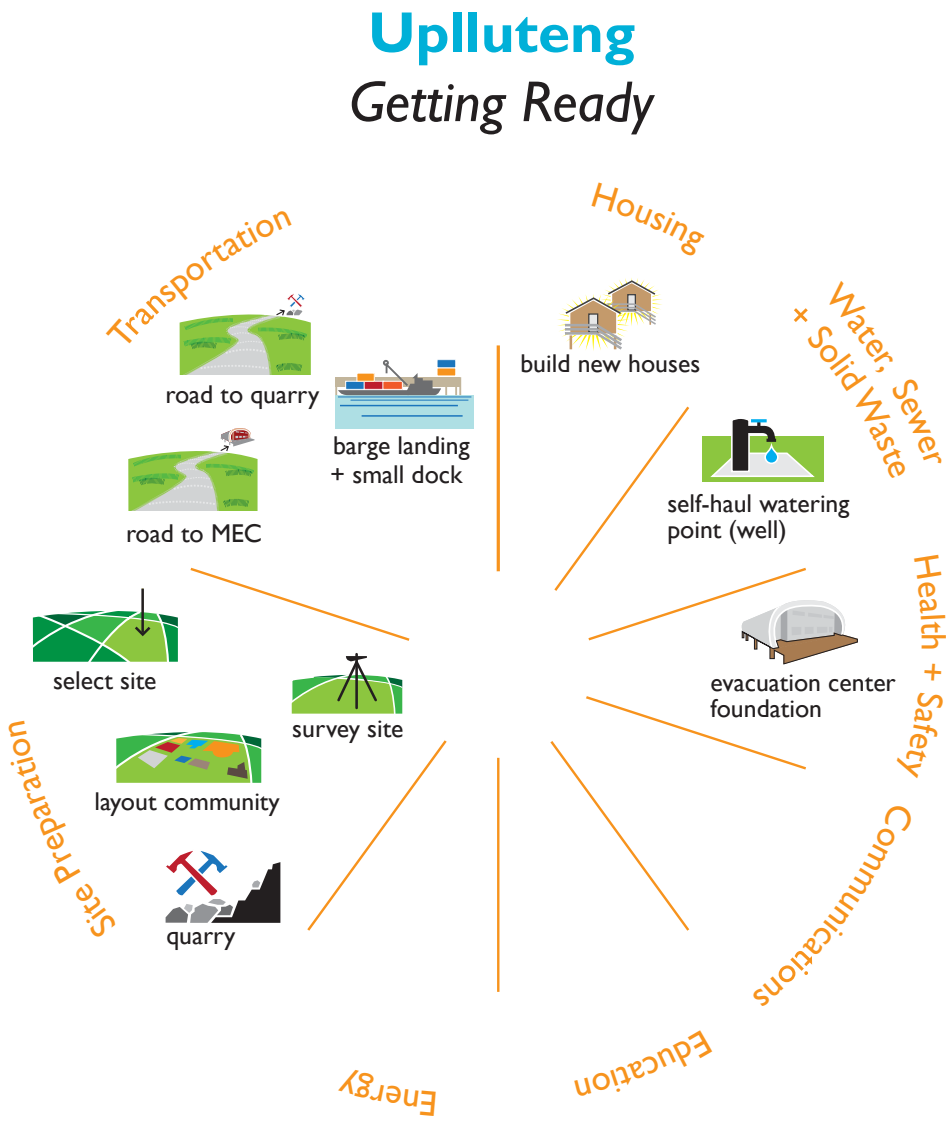
a community that builds together for the safe and healthy future of Newtok

	Uplluteng *Getting Ready*	**Upagluteng*** *Pioneering* * "Seasonal community movements" in Yup'ik (25 or more)	**Nass'paluteng** *Transition* (100 or more; 200 or more)	**Piciurlluni*** *Final Move* * "We made it!" in Yup'ik (350 or more)
Site Preparation	select site; survey site; quarry; layout community	quarry; survey site		
Transportation	road to MEC; road to quarry; barge landing; small dock	community roads; float plane	road to airport; boat harbor; pioneer runway; runway	runway & shelter
Housing	build new houses	relocate existing housing; build new houses		
Drinking Water, Sewer & Solid Waste	self-haul water (well)	honey buckets & bunkers; pilot new waste water treatment technologies; self-haul water (well); burn box	community water system; landfill; community waste water system; washeteria	
Health & Safety	evacuation center foundation		evacuation center; health aide; village public safety officer (VPSO)	clinic; tribal court
Communications	cell phone, VHF radio		MEC mail service; communications system	
Education	correspondence & home school		teacher in MEC; small school with room to expand; teacher in MEC	big school
Energy	woodstove; generator	fuel tank; alternative energy exploration	fuel tanks; alternative energy demonstration projects	community utility & fuel system; community alternative energy system
Community Resources			store; greenhouse	church; community serve center; evacuation center tribal offices

Phase 1: Uplluteng (Getting Ready)

Population 0

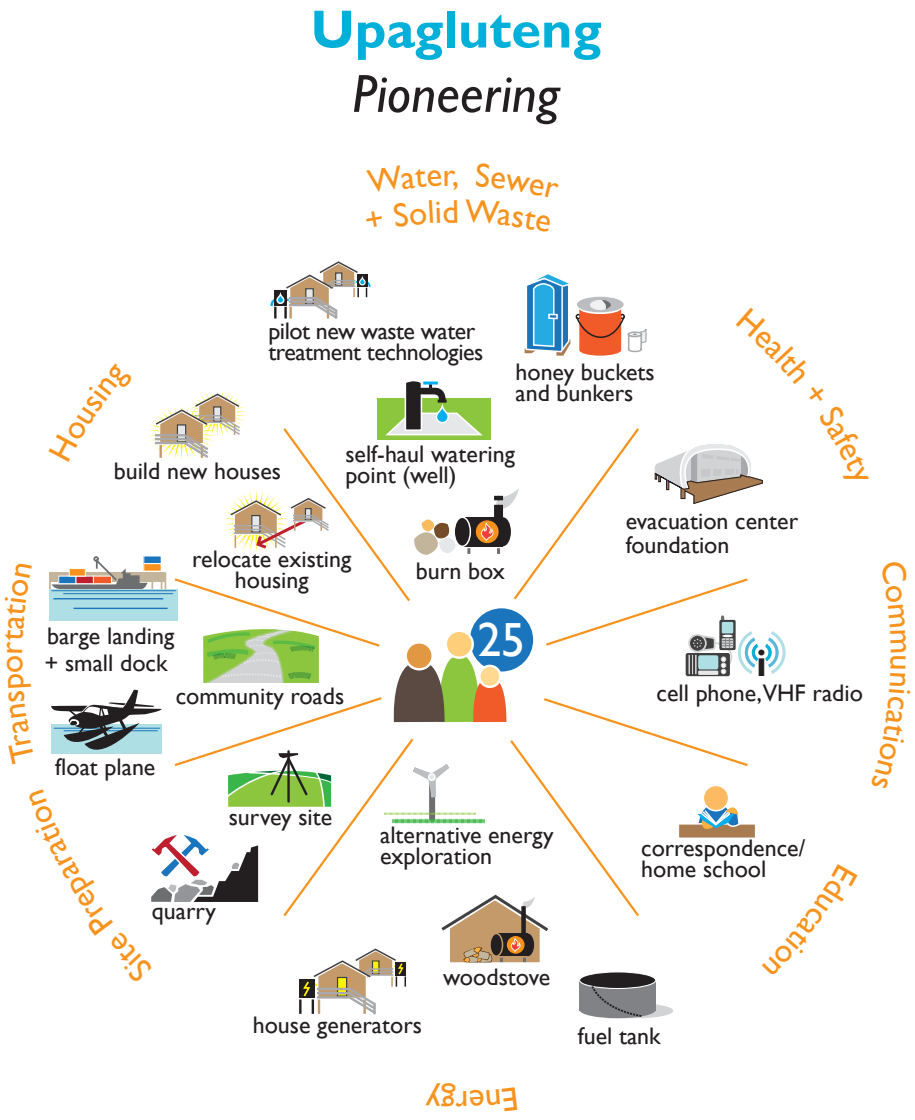
The getting ready phase refers to the current phase of development. The groundwork is being laid for future phases. This phase includes activities and infrastructure such as selecting the site, developing the quarry, completing a Community Layout Plan, drilling two drinking water wells, building a barge landing, houses, roads and the foundation of the MEC. Work streams in this phase are well established with one exception. A gap in the work currently in progress is the "grounding" of the Community Layout Plan or surveying to demarcate the future location of community infrastructure and housing. The Newtok Traditional Council is working with USACE to determine whether some initial surveying can take place in summer of 2011. A first round of surveying would help identify appropriate locations for the three houses slated for construction, as well as the three existing houses (slated to be moved) and also secure locations for future residents wishing to become a part of the pioneer move.



Phase 2: Upagluteng (Pioneering)

Population ~25 to 100 People

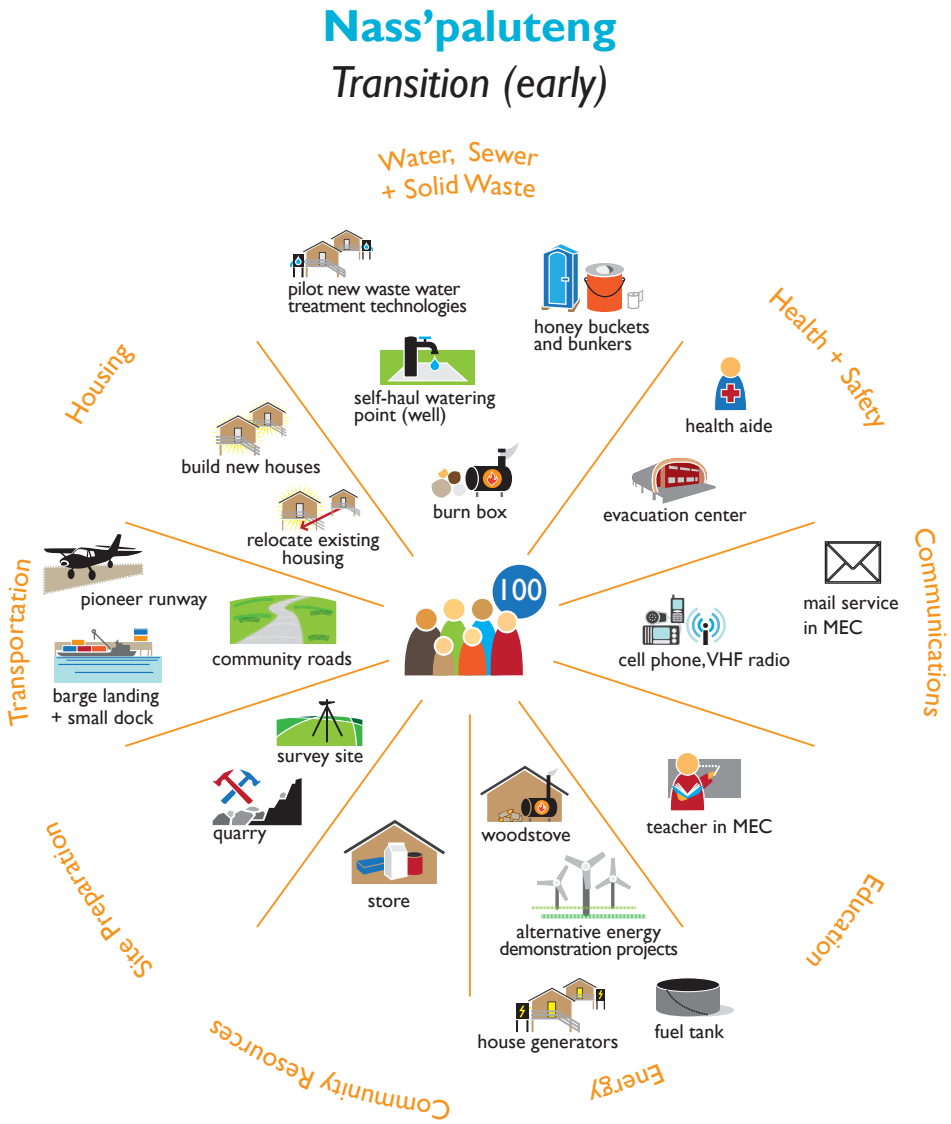
Upagluteng refers to the traditional practice of moving with the seasons. The icons depict what life might be like for the first residents living in Mertarvik. Self-haul water, honey buckets, wood stoves, and individual house generators, correspondence and home schooling, and VHF radio are some of the likely characteristics defining early life in Mertarvik. New technologies for waste water treatment and alternative energies might be piloted during this phase. For safety, residents will move back to Newtok during the spring and fall when movement back and forth to Newtok would be too risky.



Phase 3: Nass'paluteng (Transition)

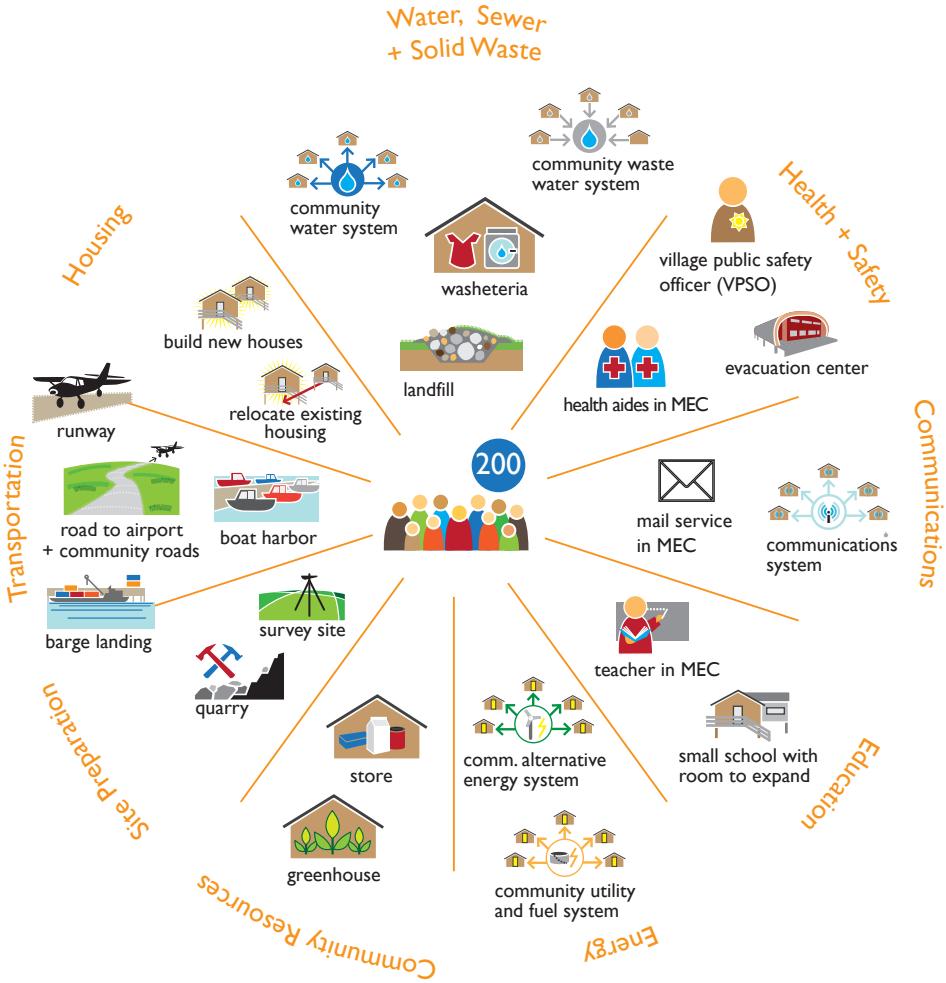
Population ~100 People or More

In Yup'ik, Nass'paluteng refers to periods of transition. During the transition phase, more and more community members will make the move to Mertarvik. Early in this phase, a health aide and teacher(s) might be in place to provide health care and education. The MEC will be completed and serve as a multi-functional community facility. A pioneer runway may be completed and larger-scale demonstration projects might test promising technologies as agencies explore sustainable solutions for basic services. As the population grows, reaching say 200 or more, community systems should be agreed upon and established for water, wastewater, energy, and communications. An airport, a landfill, a small school, a store, and community greenhouse might be set in place during this phase.



Nass'paluteng

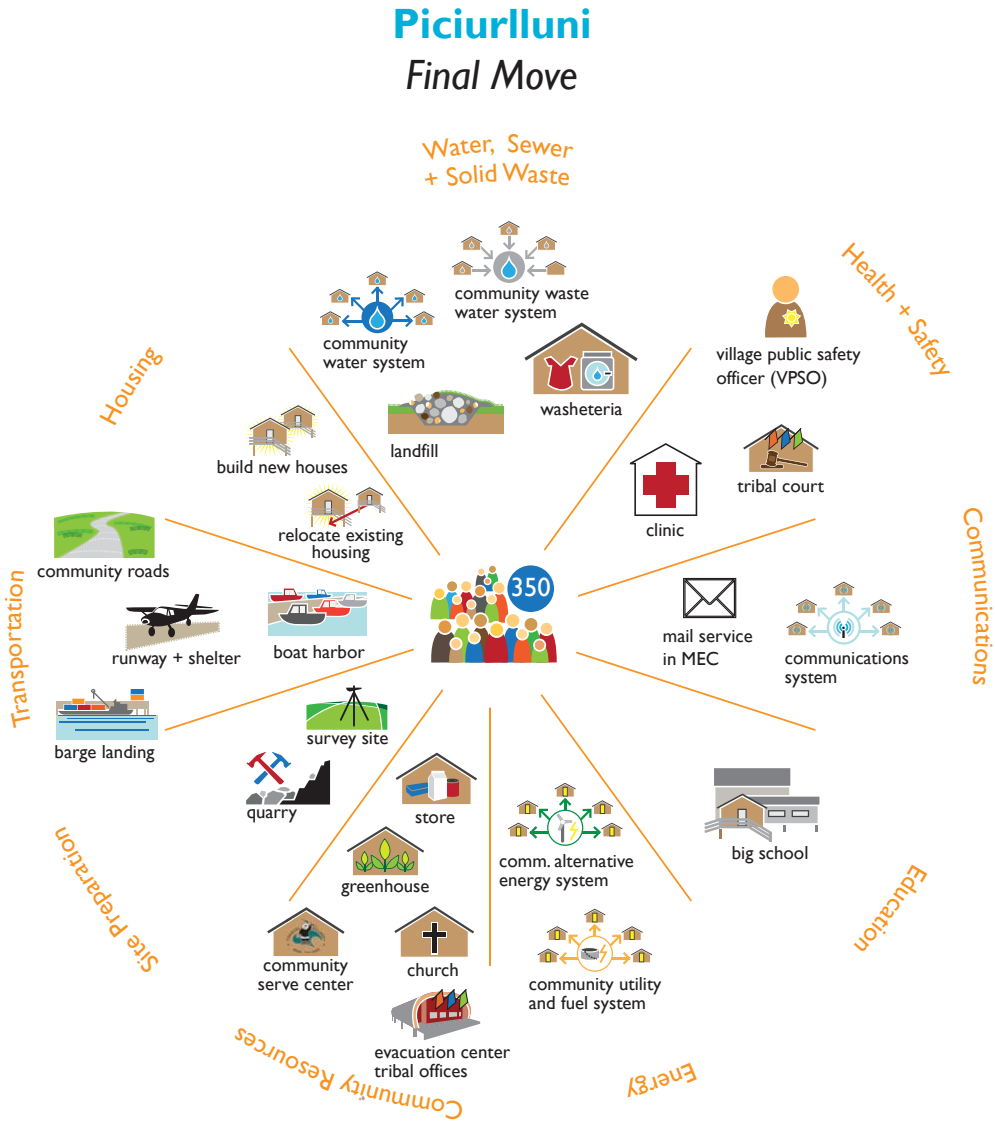
Transition (late)



Phase 4: Piciurlluni (Final Stage)

Population 350 People or More

Piciurlluni means "We made it!" in Yup'ik. This stage represents the final move of all Newtok residents to the new town site. The systems developed during the Transition phase are scaled to accommodate more people and more houses. Additional community facility projects, such a large school, a clinic, and a tribal court, are completed.



Pioneering Plan

One of the many positive outcomes of the community site visit in June 2011 was the development of a preliminary pioneering strategy for the relocation process. To ensure quality of life for pioneers, the community developed two sets of evaluation criteria to measure: 1. If the new site is ready and can provide pioneers with the essentials they need, and 2. Which individuals and families are well suited and prepared to pioneer. The criteria are presented in Tables 5 and 6 on the following pages. Following the criteria is a summary of the community's current thoughts on the timing of the pioneering phase with a focus on what will happen in the near-term, starting this summer.

"We can start subsisting and storing food in Mertarvik now to support the pioneering families." Photo by Carolyn George.

Table 5. Pioneering Evaluation Criteria for Site Readiness

Item	Criteria	Community Voices on Criteria
Housing	Housing is the top priority and criterion for site readiness. During the recent community work session, the idea to move non-elders into the existing BIA homes was discussed and is supported by the elders for whom the new homes were originally built. Families will also be selected to move into the three additional homes slated to be built this summer. Homes that are closest to the shoreline should be moved first. (A handful of AVCP rental homes are located close to the shore and thus top candidates for relocation. Working with AVCP to address issues of ownership and securing funds for moving houses could quickly add to the housing stock at Mertarvik.)	"People are overcrowded in Newtok. If we give them (pioneers) the elderly housing (already built at Mertarvik), maybe that will incentivize them". "I pay rental on an AVCP house, if I move, will I still have to pay? If these houses are owned by AVCP, we can't move the houses. If AVCP writes off the rental agreement, we could move those houses. We have to follow the AVCP income guidelines."
Transportation	Reliable transportation to and from Newtok. Although no pioneer runway will exist for emergency transport at the onset of the pioneering phase, this issue may be addressed through the use of float planes. Need to ensure a good float plane base at the new site.	"I would move across and be a pioneer but not having a pioneer runway (is a barrier)." "That's how we started the village here. They landed in the lake and on the river. On calm days the water is smooth. Before we had the airport, we had goods air dropped."
Food	A good supply of food and sufficient food storage.	"We can start subsisting and storing food in Mertarvik now to support the pioneering families."
Energy + Electricity	Sufficient fuel supply and the right resources to address energy and power needs. Minimize energy needs through energy efficient construction and living practices.	"There is plenty of willow over there and they burn a long time. There's plenty for firewood." "Electricity is probably the most important thing that they will need. These houses are very well insulated, wood stove will heat the whole house and they can use Coleman lanterns for light."
Emergency Plans	Develop a good strategy for working with people remaining in Newtok to address emergency issues.	"If there is an emergency, how will we evacuate? If someone gets sick, what kind of communication is in place with Newtok?"
Communication	VHF radio is the most reliable form of communication. Mertarvik also has cell phone reception further up the hillside.	There is the possibility that United Utilities Inc. can put planned broadband for the region in Mertarvik before or instead of Newtok.
Mail Service	Basic mail service – Air drop?	"If the pioneers are over there, they need to complete their food stamp and TANF paperwork."
Support from Newtok	Pioneering families will need the assistance of families remaining in Newtok to ensure a smooth transition to and from Newtok and to ensure essential supplies and services are accessible.	"Back in the old days, the people were working together as a unit."

Table 6. Pioneering Evaluation Criteria for Individual and Family Readiness

Criteria	Community Voices on Criteria
Knowledgeable subsistence hunters that are willing to teach others their skills.	"Our local knowledge makes it possible for us to pioneer." "If we have people who don't subsistence – that will be a problem."
Young families that can learn from others about how to do traditional subsistence activities. Many young families living in Newtok today are heavily dependent on food that comes from outside and food from the store.	"They (the young people) could starve and not have enough food if they move to Mertarvik and do not know how to subsist from the land. Knowledgeable hunters can teach them the old ways of living off the land."
Families that are ready to work together and parents that are dedicated to their children's education.	Children could attend the Newtok school in person during the spring and fall and work via correspondence visiting periodically during the months that they reside in Mertarvik. "We are also trying to start a family gathering program. We are getting the families together in the fall when school starts to improve how we live in harmony at the village level. We're targeting the school season because everyone will be home then."
People in good physical health, especially since there will be limited access to a health aide.	"The BIA HIP houses are elder houses; at least two elders are healthy and maybe they could go and teach subsistence to the younger generation families."

Six homes will be in place to shelter the first pioneers at Mertarvik. Selecting the right set of families to take over these homes will be key for the success of the pioneering phase.

The first pioneering families will live in Mertarvik during the summer and winter months when travel to Newtok is safe. Photo by Carolyn George.

Timing for Pioneering

The timing for moving the first families to Mertarvik could happen as early as winter 2011. However, this first set of families would not live there full time without the proper infrastructure to ensure their safety. Weather and travel conditions in the fall and spring would limit access to and from Newtok so this would be a "temporary" or transitional move. In the words of tribal leadership, "The spring and the fall are the two obstacles; they could live there in the summer and then move back and then when the snow gets thick enough, they could go back. Families will be in Mertarvik during the summer and winter. They will still have their houses here (in Newtok) and can stay in fall and spring."

Preliminary Relocation Schedule

In developing the preliminary relocation schedule, the project team examined each body of work, differentiating between work underway and work not yet in progress (see Appendix A-9 *Preliminary Relocation Schedule*). For work under way, year one is 2011. For work not yet in progress, the time frames are based on similar projects and year one could be 2011, 2012, 2013, etc. The time lines laid out are based on interviews with a range of stakeholders.

Securing sufficient funding to meet the community's housing need is likely to be the biggest challenge of the relocation effort.

Talking with the Traditional Council and a range of agency stakeholders, securing sufficient funding for housing is almost certain to be the biggest challenge of the relocation effort. Housing is the critical path and will dictate the time line for the move. The current village of Newtok contains 75 houses.[10] Between six and 22 are believed to be moveable.[11] If we assume that 80 houses will be needed in order for all residents to move, 15 existing houses in Newtok can be moved, and six houses will have been built in Mertarvik by the end of summer 2011, Newtok residents will need to secure funding for and build approximately 60 homes. [12] In terms of time lines, at the current pace of construction (three houses per year), the move will take 20 years. If the average pace of home construction can be doubled (i.e. six houses per year), it would take 10 years to move.

10. Alaska Division of Community and Regional Affairs and Denali Commission. 2008. *Newtok Housing Analysis.* Document prepared by interns Lee Huntoon, Jennine Stebing, and Robin Bronen and provided to the team by Sally Russell Cox.
11. Sally Russell Cox, ADCCED/DCRA, cited a study that concluded 6 houses were moveable; Newtok Tribal Administrator Stanley Tom reported that up to 22 houses may be moveable.
12. Given overcrowding and the condition of Newtok's housing stock, 60 new houses is likely a conservative estimate of need.

Feedback from interviewees suggests that meeting the housing need for Mertarvik will occur incrementally and require: 1. The implementation of a site control and ownership strategy as soon as possible, 2. Homeowner and resident labor and resourcefulness, 3. Relocation of existing houses, 4. Salvaging existing materials for rebuild, 5. Loans coupled with energy efficiency, and 6. Traditional and non-traditional funding for new housing.

Ongoing Maintenance and Closure of Newtok

During Phase 2, the project team will work with the community to develop a clear plan for the clean up and eventual closure of Newtok.

The community needs to work with its partners to ensure the health and safety of Newtok residents today. Besides current efforts to secure another fresh water supply (a project funded by Indian Health Service and managed by Village Safe Water), the community should inventory other needs that will help keep Newtok residents healthy and safe throughout the relocation process. Additionally, the community must work together to develop a clear plan for the eventual closure of Newtok beginning today with the clean-up of debris that has resulted from recent storm events. Tribal Administrator Stanley Tom expressed his vision for departing from Newtok: "(The community) would like to be able to say a graceful goodbye to Newtok; we won't be able to see the old village but we will return to some of the same areas for subsistence activities." A high-level strategy for the closure of Newtok will be folded into the SMP during Phase 2.

Funding Options

A critical component of Phase 2 is conducting a comprehensive inventory of funding opportunities and options. The SMP will lay out various funding scenarios for the different phases and bodies of work in the relocation process. Upon completion, the community and their partners will have a comprehensive inventory of funding opportunities that includes relevant private, federal and state resources. With this base of information, the community can develop a funding plan for the relocation.

Community Planning Process

After the SMP is finalized, the next step will be to implement the comprehensive planning process. The process will include the development of a land use plan that provides the framework and policy direction for land use decisions and builds upon the existing Community Layout Plan.

Appendices

A-1 Mertarvik Strategic Management Plan Stakeholder/Expert Interview Conducted

Date	Individual	Stakeholder Organization
1-26-11	Sally Russell Cox, Planner, Newtok Planning Group Coordinator, Mertarvik SMP Project Manager	State of Alaska, Department of Commerce, Community, and Economic Development, Division of Community and Regional Affairs
2-2-11	Laurie Cummings, Planner, Contractor for Mertarvik Community Layout Plan	HDR Alaska, Inc.
2-11-11	Stanley Tom, Tribal Administrator	Newtok Traditional Council
2-24-11	Kate McIntyre, Project Manager	Lower Kuskokwim School District
2-25-11	Greg Magee, Village Safe Water Program Manager, Mertarvik SMP Expert Advisor	State of Alaska, Department of Environmental Conservation, Village Safe Water Program
2-25-11	Guy McConnell, Chief, Environmental Resources Section	U.S. Army Corps of Engineers, Alaska District
2-25-11	Kim Mahoney, Project Manager	State of Alaska, Department of Transportation and Public Facilities, Statewide Public Facilities
3-1-11	David Vought, Sustainability Officer/Native American Program Specialist	U.S. Department of Housing and Urban Development, Office of Native American Programs
3-1-11	Greg Stuckey, Administrator's Advisor	U.S. Department of Housing and Urban Development, Office of Native American Programs
3-2-11	Captain Chad Hailey, Mertarvik IRT Lead	U.S. Marine Corps, Innovative Readiness Training Program
3-2-11	Sam Kito, Facilities Engineer	State of Alaska, Department of Education and Early Development,
3-3-11	Master Sergeant Charles Stoyer	Air National Guard, REDHORSE Team, Innovative Readiness Training Program
3-3-11	Mike Black, Director of Program Development	Alaska Native Tribal Health Consortium, Division of Environmental Health and Engineering
3-3-11	Judy Chapman, Manager, Aviation and Programs	State of Alaska, Department of Transportation and Public Facilities, Central Region Planning
3-3-11	Don Fancher, Planner, Kuskokwim Area	State of Alaska, Department of Transportation and Public Facilities, Central Region Planning
3-3-11	Morgan Merritt, Project Manager	State of Alaska, Department of Transportation and Public Facilities, Central Region
3-3-11	Gabriel Mahns, Central Region Planner	Federal Aviation Administration
3-3-11	Royce Conlon, Vice President and Principal Civil/Environmental Engineer, Contractor for Newtok Airport Relocation Reconnaissance Study	PDC Inc. Engineers
3-14-11	Nancy Merriman, Health Facilities Senior Program Manager	Denali Commission
3-14-11	Denali Daniels, Senior Energy Program Manager	Denali Commission
3-14-11	Tessa DeLong, Director of Programs	Denali Commission
3-16-11	Mike Coffey, Statewide Maintenance and Operations Chief	State of Alaska, Department of Transportation and Public Facilities, Commissioner's Office
3-23-11	David Longtin, Village Safe Water Engineer	State of Alaska, Department of Environmental Conservation, Village Safe Water Program
4-21-11	Andrea Elconin, Project Manager	U.S. Army Corps of Engineers, Alaska District
4-18-11	Neil Rodriguez, Regulatory Manager	Coastal Villages Region Fund

(Continued) A-1 Mertarvik Strategic Management Plan Stakeholder/Expert Interview Conducted

Date	Individual	Stakeholder Organization
4-20-11	Ruth Carter, Coastal Engineer	State of Alaska, Department of Transportation and Public Facilities, Ports and Harbors
4-20-11	Craig Boeckman, Regional Geologist	State of Alaska, Department of Transportation and Public Facilities, Central Region Materials
4-20-11	Dan Hall	Knik Construction
4-20-11	Ray Richards	Knik Construction
4-22-11	Cathe Grosshandler, Environmental Coordinator	U.S. Postal Service, Alaska District
4-26-11	James Jensen, Project Manager	Alaska Energy Authority
6-7-11	Romy Cadiente, Postmaster	U.S. Postal Service, Newtok Post Office
6-7-11	Grant Kashatok, School Site Administrator	Lower Kuskokwim School District, Newtok Ayaprun School
6-24-11	Patrick Snow	US Fish and Wildlife Service
7-11-11	Christine Klein, Chief Operating Officer	Calista Corporation

A-2 Newtok Community Meeting Participants: June 7, 2011

1. Norma Andy
2. Joseph Mark
3. Walter Kassaiuli
4. Harry Nevak
5. Myra Nevak
6. Theresa B. Andy
7. Carolyn George
8. Christine Patrick
9. Romy Cadiente
10. Moses Carl
11. Elizabeth A Tom
12. Stanley Tom
13. Sophie John
14. Gabriel Patrick
15. Paul Lincoln
16. Bertha Queenie
17. Elsie Stewart
18. Lucy Tom
19. Gabriel Charlie
20. Crystal Charlie
21. Margi Earviak
22. Agnes Earviak
23. Marie Earviak
24. Frieda Carl
25. Phillip Carl
26. Grant Kashatok
27. George Tom
28. David Carl
29. Marie P Carl
30. Julia Charles
31. Andy T Patrick
32. Lucinta Ivon
33. Precilla Paniyak
34. Annie Kassaiuli
35. Joseph Inakak
36. Nellie Andy
37. Bosco Tom
38. Darby John
39. Scott Charlie
40. Jack Tom Jr.
41. Roderick Stewart
42. Walter Tom
43. Rita Kilongak
44. Marie Carl
45. Mary George
46. Theresa Charles
47. Leona Albert
48. Georgianna Waska

A-3 Participants in the Newtok Planning Group

Native Village of Newtok

Newtok Traditional Council

Newtok Native Corporation

State of Alaska

Alaska Department of Commerce, Community, and Economic Development– group coordinator

Alaska Department of Environmental Conservation (DEC)/Village Safe Water Program

Alaska Department of Transportation and Public Facilities

Alaska Department of Military and Veterans Affairs/Division of Homeland Security and Emergency Management

Alaska Department of Education and Early Development

Alaska Department of Health and Social Services

Alaska Industrial Development and Export Authority/Alaska Energy Authority

Alaska Governor's Office

Alaska Legislative Representatives:

- Senator Lyman Hoffman's Office
- Representative Herron's Office

Federal

U.S. Army Corps of Engineers, Alaska District

U.S. Department of Commerce, Economic Development Administration

U.S. Department of Commerce, National Oceanic and Atmospheric Administration

U.S. Department of Defense, Innovative Readiness Training Program

U.S. Department of Agriculture, Rural Development

U.S. Department of Agriculture, Natural Resources Conservation Services

U.S Department of Housing and Urban Development

U.S. Department of the Interior, Bureau of Indian Affairs

U.S Department of Transportation, Federal Aviation Administration

U.S. Environmental Protection Agency

Denali Commission

Alaska Congressional Delegation

- Senator Lisa Murkowski's Office
- Senator Mark Begich's Office

Regional Organizations

Association of Village Council Presidents, Regional Housing Authority

Alaska Native Tribal Health Consortium

Coastal Villages Region Fund

Lower Kuskokwim School District

Rural Alaska Community Action Program

Yukon-Kuskokwim Health Corporation

A-4 Newtok Village Relocation Issues and Challenges as Identified in Stakeholder Interviews

Newtok Village Relocation Issues and Challenges as Identified in Stakeholder Interviews

Governmental Coordination

- There is no government mandate to give relocation assistance to Newtok.
- With Section 116 authority, Congress gave the Army Corps the authority to deal with coastal storm damage. Then, we lost our authority. Congress took it away.When our authority/action went away, the NPG turned to the IRT and we tried to help make things work for them.
- It is difficult to get agencies to work together, because they have different funding streams. Commitment or even the look of commitment will be difficult. When it comes down to committing an agency to an action, it is not taken lightly. Federal agencies are not allowed to spend funds unless authorized by Congress.
- Typically, the federal agency with the largest amount of funding would take the lead. So from that standpoint, one would hope that the airport would take the lead, but it may be that each agency is working within its own timeframe more or less independently.
- Newtok has the same zip code as Bethel and so is considered non-distressed by Denali Commission.
- The challenge of Mertarvik has been how do you find an agency you can lead the process. In terms of actually managing money or having money to commit.
- If there are lots of federal monies used for the community itself, it could be a bigger issue. A good size project if you're using federal money will take 13 years; if you're using state money it takes 5 years.
- The problem to date is that there isn't a single entity with authority. You have FAA, the Corps, DEC, us… and you'll have more as we progress past basic infrastructure. You really need the planning and the engineering. To implement, you have to have that one conductor.

IRT Specific

- Logistics of getting equipment to the site are challenging.
- IRT is only authorized to offer certain types of help – should not conduct work a civilian contractor could do (e.g. moving equipment as that could go to a barge operator).
- The IRT is not authorized to help civilian contractors to move equipment etc.
- Work and materials have to fit within the IRT service medal training mandate – they have some flexibility, but not much.
- Needs to be someone to champion the work but this cannot be the IRT because they are only there for a short period of time.
- Budget requests have to be in at least a year in advance. Need a clear schedule for future years to plan work. Need to have a plan in place by October for work the following summer.

Housing

- 100 [estimated] new homes are needed – but there is not a plan for how these can be bought and constructed.
- The new village already has 3 houses that have been empty for 3 years; that's not good.
- I would think that the community would want to have some covenants. Like homeowner associations.
- The community doesn't want to be able to see the dump site from the community or the houses, want it outside of the sight lines; in Newtok, we can see the dump and it is awful.
- A thorough housing and growth assessment is needed.
- The feasibility of moving old houses to new site has not really been done .

Sustaining the Village in the Interim

Infrastructure

- The village has generator and landfill issue, etc. If it is ten years before they can move there are basic necessities that people have to have at the current village. What will it take to keep Newtok going?
- Some facilities in existing village have already been upgraded – and may not be possible to relocate (EPA & Coast Guard requirement may at least prohibit use of federal dollars) –probably can't fund same items in new village (e.g. health clinic). What other options are there?
- The tank farms are deteriorating – Newtok runs out of fuel every year.
- While people live in the village, it still needs maintenance and facilities.
- Boardwalks are deteriorating – it is dangerous, there are nails and we are constantly tripping. But Newtok does not have the materials needed to fix the boardwalk.
- The sewage is so bad, that needs to be addressed. We do not have a lagoon; it comes back into village when coastal storms happen.
- No entity wants to take responsibility or provide the funding and direction for ongoing maintenance.
- Village is receiving more than a million dollars for water and sewer project - There are concerns about this investment.
- Many facilities in Newtok were put in place by agencies and they were given what they were given due to funding constraints etc. If they have problems now, they have to live with them because agencies are not willing to invest in the existing infrastructure.
- The new site is developing. We need to concentrate on the Mertarvik site. If we focus on Newtok, it will slow the relocation down.

Community Concerns/Issues

- The village is overcrowded.
- The lack of a solid plan is causing worries and stress.
- People are worried about the coastal storm season.
- Emergency plans are fine, but we also need strategies in place to help folks with the mental and physical difficulties of the transition.
- The people in the community would like to move because the disinvestment in the current village is reducing the quality of life.
- We need community wellness transition strategies.
- The community is in crisis mode.

Environmental Analysis

- The current EA does not include the sewage lagoon or the landfill (it does include septic system and a new well next to the center). DOT&PF also dropped the road next to the existing well to reduce mileage and impact to wetlands. The EA does not include the houses either.
- We are waiting for the people to be living there so we don't have to do the EIS. Nothing is being held up at this stage because the master plan is not done.
- There is no way we could have gone forward if USACE had had to tackle the whole move. We couldn't do an EIS because we couldn't get firm commitments about where things would go and where materials would come from.
- The issue is the environmental part of it, you don't want the airport to drive the village. If you do that, then the airport drives an EIS. If you 22 or 25 people there, then the airport is there to serve the existing community. Then, they wouldn't have to do an EIS for the relocation.
- No entity can conduct an EIS now because there is no federal action. There is no federal action until somebody has the authority to act.

Infrastructure

- What are the triggers for a health clinic? It will be important to have early some form of public health service early in the relocation.
- What kind of road surface can best serve the village?
- There is an opportunity to do all this nice sustainability work but you also have to be cost effective - can't expect a perfect plan or infrastructure.
- Everything is population based to drive future securement of services
- The community does not want to get themselves into a situation where they cannot pay for a power plant or an annual diesel shipment. They want systems that they can maintain themselves.
- We're going to be very cautious about investing in boardwalks in Newtok. For Mertarvik, we would consider a road design project but it would be very contingent on the timing of the water sewer project. We don't want the roads to be ripped up. My guess is that the water sewer piece of this community development is going to be the most critical.
- In terms of relocating existing infrastructure (specifically bulk fuel and rural power system), I am not sure if it would be worth it.
- The community would like the costs associated with power to be more capital costs as opposed to diesel costs. The community is also concerned about fuel spills.
- Here we have an opportunity to create brand new community – start over to make a sustainable community; if we don't do that, we create more of the same – need something different
- The other piece to keep in mind is that we looked at the universal need for primary care clinics across the state in 2000 and we funded Newtok. The potential of funding a community twice is low.
- The need is a lot higher than the funding we get.

Airfield

- The airfield is of primary importance and needed for logistics.
- FAA doesn't have an established population threshold for a new airport; however, FAA would like to develop an airport after people have started moving and the impacts of the relocation are covered under an existing environmental document.
- FAA wouldn't feel comfortable developing an airport without lights.
- FAA will not support two airports for Newtok at the same time.
- A power source would be needed for the airport. Could something be developed that would require very little maintenance and re-fuelling once a year?
- FAA is concerned that an environmental assessment would turn into an EIS because the development of a power source for the airport would trigger the move of the entire community, thus burdening them (FAA) with that document.

Pioneering

- Will need to think about who moves when, to really think through the prioritization based on folks that are the most vulnerable and that are capable of pioneering.
- Families need to pioneer before an EIS is triggered or they may not be able to after.
- Pioneering should be a first step – but there has been no talk of what happens after that.
- There has to be a lot of planning up ahead before you start really pioneering.
- Some people have expressed interest in sending a few families to homestead so that it triggers other funding sources, but they have to be careful about who goes.
- Pioneering effort sounds premature. I am a firm believer in good planning. Project management is planning ahead. I think we would have more problems if we open up the gate and have people start moving over.

Planning/Logisticsl/Layout

- The people of Newtok would like their environmental resources to remain intact. They are concerned about impacts to the environment.
- There is still a lot of detail that needs to be fleshed out e.g. what types of water and sewer systems are appropriate?
- Moving in one big group is not going to work.
- Need to have houses for people to move to.
- Some facilities are population based – need people in the new community before they can get facilities.
- One challenge [for people from outside the community] is working in Yup'ik - there are several different dialects. Some of the concepts that we have do not exist in Yup'ik.
- How much individual responsibility should people have for their relocation? This has not been established.
- If NEPA is triggered it will stop the process.
- You are creating the first strategic management plan. A lot of communities are going to use it. Be careful not to give us the Cadillac, give us the Chevrolet that we need.
- Full federal funding was removed – now local match required; [which is] 35%
- My concern with the layout is that we have three homes out there and we are planning to move those. We haven't subdivided or platted anything yet. I know that those homes aren't going to be in the right spot.
- The village needs to be laid out so relocation work does not need to be conducted more than once for each structure.

Mindset

- Need to destroy old paradigms and rewrite the rules.
- The community needs to take charge from inception to driving the nails.
- Does the village have realistic expectations?

School

- There has to be a need for a school to apply for funding. It's still not clear if the whole community plans to relocate.
- You need to have 10 kids to keep a school open; however, there is no established threshold for how many children are required for a new school to be built.
- When the legislature reviews a community's grant application for a new school, they consider how many "unhoused" students there are – Newtok would have a hard time illustrating that need since they have an existing school. Again, this is something new that the state has not faced and must make a decision on. However, this will be difficult getting all legislators to agree to these special circumstances considering all of the unmet education facilities needs in other communities around the state.
- It will take at least six years to develop new school.
- LKSD is required to provide education by state law, so there could be a temporary situation in which the kids of pioneering families could receive educational services. However, the community would need to provide a place for instruction and a place for the teacher to live.
- A transition plan needs to be submitted with the old project – the disposition of the old facility needs to be addressed – timeframe needs to be identified, none exists now.
- To build a new school, the school district has to spend a lot of money up front to do the necessary planning (up to schematic design phase) – approximately $200,000 – that is a lot of money to commit to (that LKSD doesn't have) without commitment to move from the whole community .
- To receive the necessary 30 planning points in the grant application, the school district must make that upfront commitment in the form of planning and a schematic design .
- Recommend unanimous community commitment to the move, with a clear plan for how that will happen, including shutting down the existing village.

A-5 Table. Mertarvik Relocation Investments to Date by Funder and Type of Funding (Items in orange indicate missing data. All figures need to be verified.)

Body of Work	Funder	Project Details	Timeline	Federal $	State $	Other $	Funding Type	Conventional	Non-Conventional	Notes
Site Acquisition	NNC	Land Exchange with Fish + Wildlife	1996-2003			?	Land Exchange			Estimated value of land exchanged + attorney
Preliminary Planning	BIA	Proposed Land Use and Transportation Plan by ASG, November 2001	2001-2004	$16,500			Cost Shared	$16,500		
	USACE	Proposed Land Use and Transportation Plan by ASG, November 2001	2001-2004	$16,500			Cost Shared	$16,500		Planning Assistance to States
	BIA	Preliminary Geotechnical Overview and Archaeological Inspection, November 2002	2002	$24,000			Cost Shared	$24,000		
	USACE	Preliminary Geotechnical Overview and Archaeological Inspection, November 2002	2002	$24,000			Cost Shared	$24,000		Planning Assistance to States
	BIA	Streamflow Monitoring and Water Quality Testing, Takikchak River by USGS	?	$42,500			Cost Shared	$42,500		
	USACE	Streamflow Monitoring and Water Quality Testing, Takikchak River by USGS	?	$42,500			Cost Shared	$42,500		Planning Assistance to States
	BIA	Background Relocation Report by ASG, January 2004	2003-2004	$22,000			Cost Shared	$22,000		
	USACE	Background Relocation Report by ASG, January 2005	2003-2005	$22,000			Cost Shared	$22,000		Planning Assistance to States
	USACE	Environmental Baseline Studies	2005-2007	$230,000			100%	$230,000		Tribal Partnership Program
	USACE	Aerial Photography and Topographic Mapping	2005-2007	$40,000			100%	$40,000		Tribal Partnership Program
	USACE	Preliminary Costs of Alternatives by Tetra Tech, April 2005	2005-2007	$30,000			100%	$30,000		Tribal Partnership Program
	USACE	Preliminary Relocation Planning Analysis by Tetra Tech	2006	$35,000			100%	$35,000		Tribal Partnership Program
	USACE	Mertarvik Townsite Geotechnical Report	2009	$265,000			100%	$265,000		Tribal Partnership Program
Barge Landing	EDA	Barge Landing + Initial Groundbreaking	2009	$800,000			Competitive Grant	$800,000		Awarded to Newtok and DCCED/DCRA
	DOT/PF	Barge Landing + Initial Groundbreaking	2009		$200,000		Match Funding	$200,000		
	State of AK	Barge Landing + Initial Groundbreaking	2009		$1,800,000		Legislative Appropriation		$1,800,000	State of Alaska funds appropriation to DOT/PF
Site Preparation	USDOD IRT	Base Camp, Small Dock, Roads Development Support	FY2000-2008	$667,693				$15,000		Some Service contributions not included
	USDOD IRT	Base Camp, Small Dock, Roads Development Support	FY2009	$2,871,000					$667,693	Individual Service contributions not included
	USDOD IRT	Base Camp, Small Dock, Roads Development Support	FY2010	$3,688,000					$2,871,000	Individual Service contributions not included
	USDOD IRT	Roads, MEC, and Quarry Development Support	FY2011	$4,964,000					$3,688,000	
	BIA	Initial Site Surveying	2011	$19,000					$4,964,000	
	VSW	Community Layout Plan (Initial Concept)	2006-2011		$5,000			$5,000		
	DCCED/DCRA	Community Layout Plan (First Draft)	2006-2011		$30,000		Competitive Grant	$30,000		Awarded to Newtok
	DCCED/DCRA	Community Layout Plan (Plan Update)	2006-2011		$30,000		Designated to Newtok	$30,000		Alaska Climate Change Impact Mitigation
Mertarvik Evacuation Center	USACE	Evacuation Center Decision Document and Evironmental Assessment, 2008	2006-2009	$300,000			100%	$300,000		Alaska Coastal Erosion Program (Section 117)
	USACE	Amend Environmental Assissment and Acquire Permits	2010-2011	$130,000			100%	$130,000		Planning Assistance to States
	DCCED/DCRA	Mertarvik Evacuation Center - Initial Concept Development by CCHRC	2009		$120,000		Designated to Newtok	$120,000		Alaska Climate Change Impact Mitigation
	State of AK	Mertarvik Evacuation Center - Design + Construction	FY10		$4,000,000		Legislative Appropriation		$4,000,000	State of Alaska funds appropriated to DCEDD/DCRA
Transportation - Roads	USACE	Access Road Design, 2009 + Initiate EA Amendment	2006-2009	$50,000				$50,000		Alaska Coastal Erosion Program (Section 117)

Orange = missing data

(Continued) A-5 Table. Mertarvik Relocation Investments to Date by Funder and Type of Funding (Items in orange indicate missing data. All figures need to be verified.)

Body of Work	Funder	Project Details	Timeline	Federal $	State $	Other $	Funding Type	Conventional	Non-Conventional	Notes
	State of AK	Access Road Design, 2009 + Initiate EA Amendment	2006-2009		$72,000		Legislative Appropriation		$72,000	State of Alaska funds appropriated to DOT/PF
	BIA IRR	Incorporation of Major Roads into IRR Roads Inventory	2011	$395,000				$12,000		
	State of AK	Mertarvik Road Design	FY09		$2,000,000		Legislative Appropriation		$57,000	SOA funds appropriated to DOT/PF
Transportation - Waterfront	BIA ARRA	Waterfront Site Assessment	2011-2012	$350,000					$120,000	
Quarry Development	USACE	Stormwater Pollution Prevention Plan	2010	$12,000				$150,000		Planning Assistance to States
	State of AK	Stormwater Pollution Prevention Plan	2010		$57,000		Legislative Appropriation	$1,200,000		State of Alaska funds appropriated to DOT/PF
	BIA	Quarry Equipment - Front Loader	2011	$120,000				$135,000		
Relocation Planning	BOEMRE	Strategic Management Plan	2011-2012	$150,000			Competitive grant to DCCED	$45,000		Coastal Impact Assistance Program
Water and Wastewater	IHS	Needed Investments in Newtok	2011-2012	$1,200,000			Designated to Newtok	$121,500		Administered by VSW
	EPA	Mertarvik Sanitation Master Planning: Hydrogeological Study to Determine Well Location	2002	$135,000			100 %	$40,500		
	VSW	Mertarvik Sanitation Master Planning: Hydrogeological Study to Determine Well Location	2002		$45,000		100 %	$82,500		
	EPA	Mertarvik Sanitation Master Planning: Well Testing and Feasibility study of Water/ Wastewater Options	2009	$121,500			100 %	$27,500		
	VSW	Mertarvik Sanitation Master Planning: Well Testing and Feasibility study of Water/ Wastewater Options	2009		$40,500		100 %	$395,000		
	EPA	Mertarvik's Water and Wastewater Master Plan	2011	$82,500			100 %		$2,000,000	
	VSW	Mertarvik's Water and Wastewater Master Plan	2011		$27,500		100 %			
Housing	HUD NAHASDA	Housing- Allocation from AVCP	2011	$250,000			Block Grant Allocation	$250,000		From AVCP
	BIA HIP	Three BIA HIP homes	2008-2009	$600,000				$600,000		Need to verify amount.
	BIA	Funds for removing asbestos from former school materials	2010-2011	?						
Airport	FAA	Conduct Airport Master Plan Study	2004-2008	$90,001				$90,001		
	FAA	Conduct Airport Master Plan Study (Collection of Wind Data)	2006	$104,000				$104,000		
	FAA	Conduct Geotechnical Investigation	2007	$332,450				$332,450		
	FAA	Conduct Airport Master Plan Study (Additional geotechnical, environmental data gathering, scoping and ALP)	2009	$356,250				$356,250		
Workforce Development	BIA	Scholarships for 17 Residents to Pursue Trade Training	2011	$7,500					$7,500	
	AVCP	Scholarships for 17 Residents to Pursue Trade Training	2011			$7,500			$7,500	
Community Engagement	Harvard University	Youth Video Project	2011			$20,000	Competitive Grant		$20,000	Honoring Nations Award
Newtok Cleanup	EPA IGAP	Newtok Village Site Cleanup		?			Block Grant			
	BOEMRE	Newtok Environmental Site Inventory and Assesment	2011-2012	$100,000			Competitive Grant	$100,000		CIAP grant awarded to DCCED
Total				**$ 18,705,894**	**$ 8,427,000**	**$ 27,500**	**27,160,394**			
Percentage of Total				**69%**	**31%**	**0.1%**	**100%**			

Orange = missing data

Design Considerations

- Building and systems must be designed to go cold and be able to be a turn key evacuation center for up to 300 people for 14 days. Building includes: gathering area, small residential style kitchen, washateria with energy efficient – residential grade washer/dryer, health clinic (small room for private examinations and supplies)
- Overall square footage is reduced to comply with code requirements (new total is 7000 SF). Original Size: 13,000+ square feet
- Generator sized for the project meets half of the design load with design potential to include alternate energy systems once the Village has relocated and the facility is used as a community building.
- Energy efficient design with simple systems the Village can easily maintain and obtain parts for.

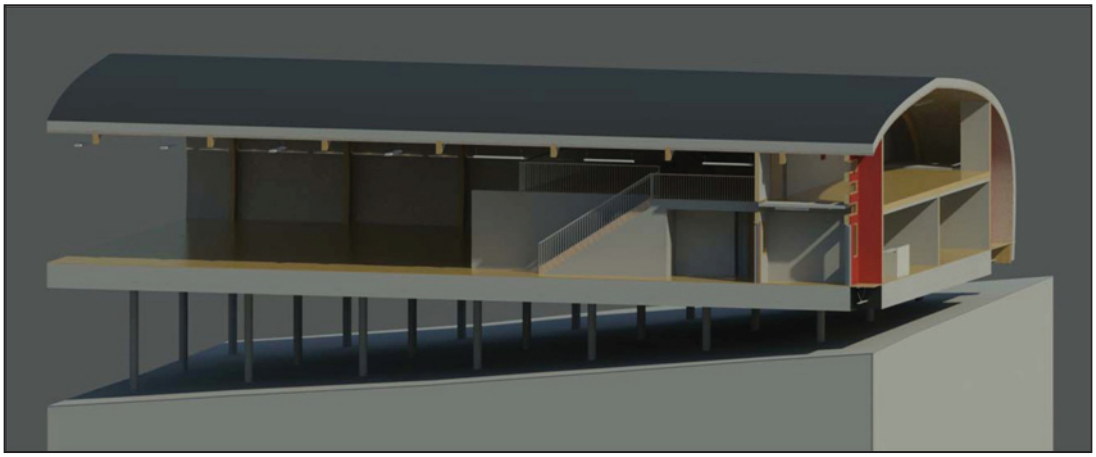
South Elevation

Main entry of the MEC with two recessed doors

- Windows for daylighting
- Mechanical louvers
- Red metal siding on end walls
- Gray spray-on coating on roof

North Elevation

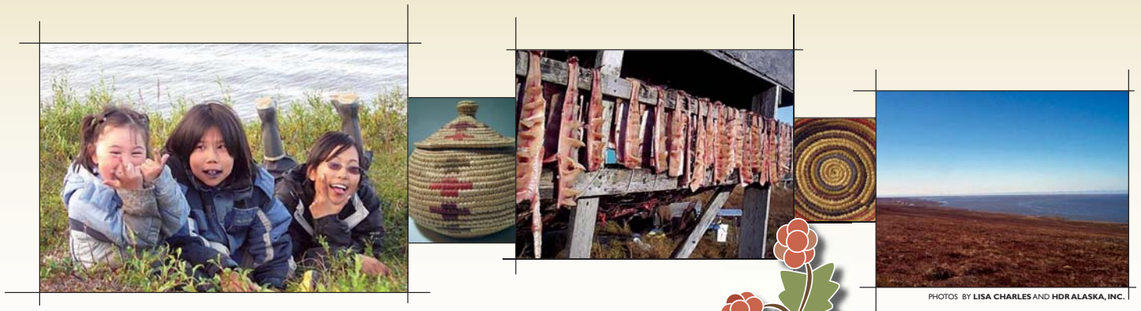
- Design incorporates R50 roof/wall assembly with no penetrations in the roof structure maximizing energy efficiency
- Endwalls with windows for daylighting and views still allow for a usable shelter in varying conditions.



Rendering based on 65% design – presents a close depiction of design plans

MOVING NEWTOK

Newtok's current village site
on the Bering Sea coast is threatened
by flooding and erosion.
The community will be relocating
to the Mertarvik site on a high hill
farther from the water's edge. The
MERTARVIK COMMUNITY LAYOUT PLAN
will guide the new village site's development.



PHOTOS BY **LISA CHARLES** AND **HDR ALASKA, INC.**

APRIL 2011

PREPARED FOR
NEWTOK
TRADITIONAL COUNCIL

BY HDR ALASKA, INC.

This plan is funded by the Alaska Climate Change Impact Mitigation Program which was established by Alaska's Twenty Fifth Legislature. The preparation of this plan was made possible by a grant from the Alaska Department of Commerce, Community and Economic Development, Division of Community & Regional Affairs to the Newtok Traditional Council. The views expressed herein are those of the author(s) and do not necessarily reflect the views of the State of Alaska or any of its sub-agencies.

THANK YOU TO THE FOLLOWING PEOPLE AND ORGANIZATIONS

Newtok Traditional Council

President, Moses Carl
Vice President, Walter Kassauili
Secretary, George Tom
Treasurer, Charlie Tommy
Member, Joseph John, Sr.
Member, Joseph Inakak
Member, Anday Patrick

Newtok Planning Group

DCCED, VSW, DOT&PF, COE, Denali Commission, RurAL CAP, USDA, HUD, DHS&EM, FAA, AVCP, CVRF, EPA, DEED, DNR, EDA, Newtok Traditional Council, AEA, IRTP, Alaska Governor's Office, BIA, Senator Lisa Murkowski's Office, LKSD, YKHC, Newtok Native Corporation

For more information, please contact:
Stanley Tom, Tribal Administrator
Newtok Traditional Council
PO Box 5545
Newtok, AK 99559-5545

Reference

Newtok Background for Relocation Report. ASCG. 2004.

Background & Project Purpose

Newtok is a Yup'ik Eskimo village and residents maintain a traditional subsistence lifestyle. Newtok shares a history with other Nelson Island communities. Their ancestors have lived on the Bering Sea coast for at least 2,000 years. Collectively, the people from the five Nelson Island villages are known as Qualuyaarmiut, or "dip net people."

The Village of Newtok is located on the north bank of the Ninglick River in the Yukon-Kuskokwim Delta Region. Newtok is approximately 94 miles northwest of Bethel. The current village location was first settled in 1949. At that time, the community moved from Old Kealavik to escape flooding and because there was no suitable site for a school. The current village site was located at the farthest point up river that the barge carrying the school building materials could reach.

Now, Newtok is again threatened by flooding and continuing land erosion from the Ninglick River. Projections indicate that buildings within the village will begin to erode into the river within the next five years.

After considering several options, the community has decided to relocate to a new site approximately 9 miles away on Nelson Island. The new site is farther from the water's edge and located on a high hill. The new site is called Mertarvik which means "getting water from the spring" in Yup'ik. Once Mertarvik is occupied, it will be known as Newtok. For more information on how Mertarvik was selected, please see the *Newtok Background for Relocation Report* (ASCG 2004).

To make the move, Newtok residents began looking at alternatives and planning. This community layout plan (CLP) for the Mertarvik site is the next important step. This CLP gives details on what the new village will be like, and will guide the new village's efficient and orderly development.

Project History

Erosion on the Ninglick River has occurred for more than 50 years and has had a negative impact on the community. The river has eroded over 3,300 linear feet since 1954 (ASCG 2004). This has resulted in a loss of the landfill and barge landing, reduced river access, increased workload to reach the temporary landfill, reluctance of agencies to invest in the community's infrastructure, and a general uncertainty among residents about what is going to happen in the future.

In response to the erosion threat, the village decided to relocate. In the early 1990s, the Newtok Traditional Council (NTC) analyzed six potential village relocation sites. The community selected a site on the north side of Nelson Island. This site was part of the Yukon Delta National Wildlife Refuge. In 1996, the Newtok Native Corporation began working with the U.S. Fish and Wildlife Service (USFWS) to exchange land within the Yukon Delta National Wildlife Refuge. In November 2003, the 108th Congress passed S. 924, the legislation that authorizes the exchange of lands between the USFWS and the Newtok Native Corporation.

In the spring of 2006, a group of representatives from State and Federal agencies as well as other interested parties formed the Newtok Planning Group (NPG). The purpose of the group is to identify agency resources and to establish a strategy for assisting Newtok in its relocation efforts.

As part of the NPG work, Village Safe Water (VSW) developed a preliminary layout based on a piped water and sewer system at the new site (sometime referred to as the boomerang layout) with minimal operating costs.

The NTC hired HDR Alaska to further develop the VSW layout. After several agency and community meetings, a CLP was developed in June 2008. In 2010, a decision was made to locate the new community closer to the water. As a result, a CLP update process was initiated. Two alternatives that built upon the same principles as the initial layout were developed. Based on community and agency input, Alternative 2 was the preferred choice, and after further modifications, became the final CLP (see reverse).

Simultaneously with this CLP effort, the Alaska Department of Transportation & Public Facilities (DOT&PF) is working on the design and construction of an evacuation center on Mertarvik to address the emergency needs of the existing community.

Planning Requirements

The CLP has to be designed to meet the needs of Newtok residents. In addition to being functional for their daily activities, the layout also needs to consider the topography of the selected site as well as the operation and maintenance costs. The main planning requirements are summarized below:

- Centrally locate community facilities
- Accommodate alternative energy sources
- Locate washeteria/water treatment plant near the power plant to use waste heat
- Accommodate 63 single family housing units with room for expansion
- Provide access to barge landing, airport, gravel source, and fish camp

Population & Demographics

Knowing the population and demographics of Newtok is important because they have a direct effect on many aspects of village life including housing, transportation, infrastructure, and community facilities.

Population in 2006	323
Estimated population in 2020	640
Average household size	5.1
Occupied housing units	63

Source: ASCG 2004

Goals & Objectives

A community meeting was held on December 10, 2006, to identify the community's goals for the Mertarvik Community Layout Plan. The community's wishes are summarized below:

Goal 1: Provide access to the natural environment

Create connections to the setting and preserve access to subsistence resources, including fishing, hunting and berry picking areas.

Objectives:

- Provide connections to subsistence resources such as fish camp and berry patches
- Consider wind and sun orientation in layout design

Goal 2: Preserve traditional way of life

Maintain Newtok's traditional way of life including Eskimo dancing and learning from the elders.

Objectives:

- Develop community spaces where people can interact and learn from each other
- Provide housing that is suitable for large families

Goal 3: Use reliable, affordable and sustainable infrastructure

Improve the quality of life of Newtok residents by providing basic infrastructure that can be maintained by the community.

Objectives:

- Develop a piped water and sewer system with affordable user fees
- Minimize maintenance requirements
- Consider alternative energy

Constraints

Sloping terrain. The new village site is located on a north-facing slope. The slope influenced the location of roads in an attempt to keep road grades to 8% or less. This grade is desirable because it:

- makes travel up and down the hill easier,
- has fewer maintenance needs,
- has fewer drainage issues.

Housing. The US Department of Housing and Urban Development (HUD) has certain criteria that need to be met before they will fund a housing project. HUD requires that projects:

- have an acceptable separation from above ground tanks,
- not be located in the runway protection zone (RPZ) of an airport,
- have a noise level of 65 dbl or less,
- have no contamination from toxic chemicals.

Airport. A runway requires a long, flat stretch of land. Area terrain limited airport alternatives. In addition, the sewage lagoon and landfill must be a minimum of 5,000 feet away from the airport. All setback requirements and height restrictions must also be met.

Infrastructure. The new site must be able to support a gravity fed water and sewer system. Maintenance costs should be minimized to reduce the financial obligations of the community. The sewage lagoon and landfill should be separate to prevent cross-contamination.

Water. A wellhead protection zone extends 200 feet around the well to protect it from uphill contaminants.

Planning Level Phasing Strategy

Construction needs to be planned carefully so that it happens in a logical and efficient manner. This section of the community layout plan describes a strategy for phasing construction.

1. The first phase would be the construction of a barge landing site that will allow materials to be delivered to the site so construction can begin. Construction on the barge landing ramp began in 2010 and will be completed in 2011.
2. The next phase would be to develop the evacuation site being planned by the DOT&PF. This site would include an evacuation center and the supporting infrastructure such as a temporary generator, sewage lagoon, water treatment plant, and a road from the barge landing ramp. A road to a gravel source may be required. Construction is scheduled to begin in the summer of 2011.
3. The third stage would be to develop a construction camp including a building to house construction workers as well as material storage space.
4. Shortly after completing the construction camp, the airport would be developed to support construction activities. Construction of the airport would require a road to the airport and a road to a gravel source (if not already developed).
5. After the airport is complete, the next priority would be to construct housing. Roads would be built to access the housing areas. At the same time, the water system, sewer system, sewage lagoon, landfill, etc. should also be built so they are available when people start moving into the new village; however, phasing of infrastructure construction may change depending on the systems selected. After the new housing is built, housing from the existing village would be relocated.
6. The last phase would be the construction of the remaining community buildings and facilities. Until these facilities are built, the multi-use building would be used.

Innovative Readiness Training Program (IRT)

The Department of Defense's Innovative Readiness Training Program provides military personnel with hands-on training opportunities on projects that benefit civilian communities. The IRT has made a 5-year commitment to the relocation effort by providing labor and transportation of materials and construction equipment. In 2010, the IRT constructed an access road from the barge landing to the evacuation center site. In 2011, the IRT will begin construction work on the evacuation center.

Recommendations

The following studies are recommended to provide a solid basis for planning and design:

Building Survey

A comprehensive building survey of the existing village is needed to identify buildings that can be moved to the new site. The survey would include identifying repairs each building needs prior to it being moved.
Once the community has a firm number of how many buildings could be moved, they could work on acquiring funding for moving and replacing buildings. Residents could also start making needed improvements to existing buildings so they are ready to be moved when the time comes.

Housing Plan

After the building survey is complete, Newtok would know how many housing units can be relocated and how many new structures will be required. Newtok should work with HUD to identify potential funding sources.

In addition, the existing housing may not be the most appropriate housing for the new location and Newtok's traditional way of life. Newtok should work with HUD and research groups such as University of Alaska Building Technology Department to determine what type of housing should be built at the new site. Issues that should be explored include methods of making housing more energy efficient and reducing maintenance.

Alternative Energy Study

Newtok residents expressed a desire to reduce their dependency on diesel fuel and felt wind energy would be a suitable alternative. Given the cost and environmental consequences of relying on diesel fuel, identifying ways to reduce energy consumption and increased use of alternative energy sources is important. Newtok should work with the Alaska Energy Authority (AEA) to determine if wind energy is a viable alternative energy source.

Electricity Study

An electricity study that determines future energy use should be conducted to allow the power plant to be sized appropriately and determine how much energy could be provided by alterative sources.

Evacuation Center Betterments

The DOT&PF is allowed to include betterments as part of the evacuation center. Betterment means providing something in excess of what would actually be required by the project. The DOT&PF would be unable to fund the betterments, but including betterments in the evacuation center might be more cost-efficient in the long-run. For example, the evacuation center needs a temporary generator that would no longer be required once the village's power plant is built. Rather than purchasing and shipping a temporary generator for the evacuation center and a permanent one for the power plant, only the permanent generator would be obtained. Initially, it would be used for the evacuation center and then moved to the power plant. Because only one generator would be purchased and shipped, the cost for the overall relocation process would be less.

Water and Sewer Study

A study is needed to determine the type of water and sewer system (pipe versus closed haul or some combination) that will be included in the new village. Village residents would like a piped water and sewer system; however, residents need to make an informed choice. They need a study that shows the potential water and sewer systems as well as the cost for each type of system. This study will allow the villagers to select a system that balances all their needs and does not become a financial burden.

Identify Road Surface and Trail Designs

The CLP identifies the location of the village roads and trails but it does not recommend a surface material. Community residents are interested in a boardwalk system, gravel roads, and a geo-textile surface. Each road surface has different capital and operating costs. The community needs more information about the cost and maintenance requirements for these surfaces in order to make an informed decision about the road surface in the new village. The road from the barge landing to the evacuation center site was built in 2010 using Dura-Base. The use of Dura-Base for all roads should be explored further.

Post Office Design

The post office provides a vital link to the rest of the world and is likely to be one of the first community buildings built at the new site. The USPS has requirements and guidelines for a post office. Newtok should work with USPS so the new post office can be properly sited.

Additional Site Information

Vegetation, steep slopes, and similar factors make several spots unsuitable for development. Additional research should be performed to identify these sites. After these sites have been identified the community layout should be updated to avoid these features.

MERTARVIK
COMMUNITY LAYOUT PLAN

Legend

- Community Area
- Elder Housing
- Future Housing
- Housing
- Open Space
- School Property
- Airport/Misvik
- Cemetery/Qungurvik
- Barge Landing/ Paacat Uciirviit
- Existing Road
- Planned Road/Trail/ROW
- Wind Farm/Wincaucat
- Incinerator/Elegcivik
- Recreation Area/ Ellami Aquivik
- Gravel Source
- Library/Kalikivik
- Community Garden
- Recycling Center
- Church/Agayuvik
- School/Elitnaurvik
- Post Office/Kalikivik
- Public Safety/Itercivik
- Tribal Hall/Caalivik
- Sewage Lagoon/Ciiqicivik
- Landfill
- Washeteria/ Water Treatment Plant/Ervigivik
- Clinic/Yuungcarivik
- Power Plant/Tank Farm/ Qeriurarvik/Kaassarvik
- Community Gym/Teen Center/Aquivik/ Ayagyuat Aquiviat
- Store/Kipusvik
- Teacher Housing/ Elitnaurstet Enait
- Multi-Use Building/Aqivik
- Fisheries Support Center/ Neqsurviit Wiitaurvitt
- Small Boat Harbor/Angyaarvik
- Water Source/Elakaq
- Wellhead Protection Zone
- Berry Patches/Naunriaviit
- Fish Camps/Neqsurviit
- Water Lines
- Sewer Lines
- Pressure Release Valve
- Willow Shrub

Produced by HDR Alaska on Behalf of the Newtok Traditional Council April 2011

0 250 500 750 Feet

To Tununak & Tooksok Bay

To Nightmute

To Cakcaoq

5,000 ft Airport Setback

Baird Inlet

Fish Camps/Neqsurviit

Berry Patches/ Naunriaviit

Small Boat Harbor/ Angyaarvik

Fisheries Support Center/ Neqsurviit Wiitaurvitt

Barge Landing/ Paacat Uciirviit

Power Plant/Tank Farm Qeriurarvik/Kaassarvik

Cemetery/Qungurvik

Recreation Area/ Ellami Aquivik

Community Garden

Well/Elakaq

Water Tank

Wind Farm/ Wincaucat

Gravel Source

Sewage Lagoon/Ciiqicivik

Recycling Center

Incinerator/ Elegcivik

Landfill

Road Layout & Travel Considerations

- ATVs and snowmachines are the primary mode of transportation
- Roads should allow 2 vehicles to pass
- Keep roads under an 8% grade
- 40 foot road right-of-way with 14 foot roadway (approx. 10 miles of road)
- 20 foot trail right-of-way (approx.0.6 miles of trail)
- Provide links to fish camp, berry patches, barge landing ramp, and airport
- The final road location should be modified based on more detailed topography and terrain information
- Roads used for construction should follow the alignment of the permenant roads to minimize impacts to the tundra

Airport

- Accommodate a 4,000-ft runway
- A cross-wind runway would be desirable
- Include runway lighting
- Desire for terminal building

Community Facilities

Community facilities are used by and benefit the entire village. Newtok residents expressed a strong desire to have all community facilities centrally located. Planning objectives for each community facility are summarized below.

Washeteria
- House laundry and bathing facilities
- Locate with or near the water treatment plant
- May not be needed

School
- Relocate and reuse existing school building from current site
- Make new school site between 15 and 20 acres
- Separate from residential areas
- Locate teacher housing on the school site

Clinic
- Relocate and reuse existing clinic building from current site
- Located for easy access to airport for medevac purposes

Tribal Hall
- House administrative programs
- Provide a gathering place

Post Office
- Will remain a contract post office (not operated by the United States Postal Service)
- Make three or four times larger than existing post office

Store
- Will be similar in size to existing store
- Be centrally located

Public Safety Building
- Provide office space for a Village Public Safety Officer (VPSO)
- Include a holding cell
- Include a court room for tribal court

Multi-Use Building
- Re-use the evacuation center and convert to a multi-use building
- Provide meeting space for community activities
- Potentially house a daycare center

Fisheries Support Center
- Locate near barge landing site
- Include an area for boat and net repair, office space, bunk space, and storage areas.

Outdoor Recreation Area
- Provide outdoor swimming and ice skating area
- Locate away from residential areas

Community Gym/Teen Center
- Indoor recreation space
- Basketball court
- Arts & craft area

Church
- Make larger than existing church

Housing

- Minimum of 63 housing units required
- Expandable to 152 units
- Mostly 3- and 4-bedroom single family houses
- Elder housing near village center
- Some privacy from adjacent housing
- Some parcels may be undevelopable due to vegetation, terrain, or other features. Property boundaries should be adjusted accordingly.

Infrastructure (Water, Sewer, Electricity, Landfill, Etc.)

Infrastructure refers to the structures and systems that provide the foundation for development including utilities and transportation routes. Planning objectives for each infrastructure type are summarized below.

Water
- Strong preference for piped system over haul system
- Minimize operation and maintenance costs/user fees

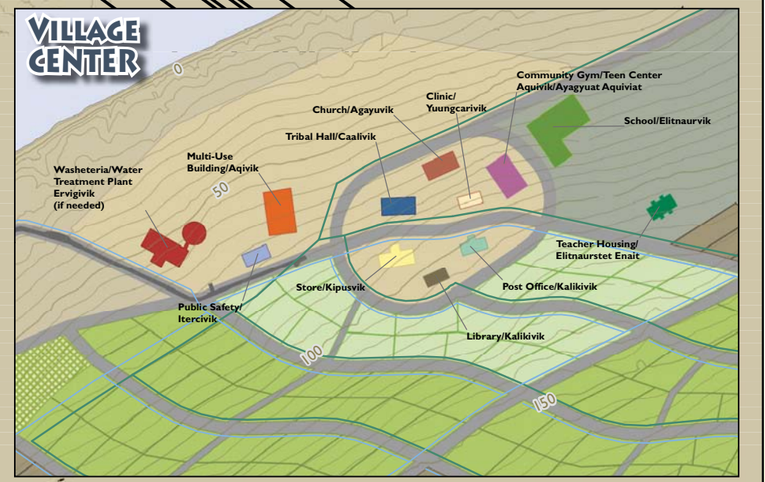
Sewer
- Strong preference for gravity fed piped system
- No lift stations/force mains
- Minimize operation and maintenance costs/user fees
- Locate sewage lagoon a minimum of 5,000 feet away from the airport
- Minimize visibility of sewage lagoon

Electricity
- Generate power locally through the Ungusraq Power Company
- Reduce usage of diesel generators
- Incorporate alternative energy sources
- Locate power plant away from residential areas
- Provide enough capacity to meet village needs including washeteria and airport lighting

Fuel Tank Farm
- Store fuel for entire village
- Locate near barge landing ramp

Landfill
- Minimum of 5,000 feet away from the airport
- Easily accessible on a daily basis
- Not readily visible
- Some separation from the sewage lagoon to prevent cross-contamination

Recycling Center
- Include an incinerator
- Include a re-use area



NEWTOK TRADITIONAL COUNCIL

P.O. Box 5545
Newtok, Alaska
99559-5545
Phone:907-237-2314/2316
Fax: 907-237-2428

RESOLUTION 11 - 30

A Resolution of the Native Village of Newtok's Traditional Council adopting Guiding Principles for the relocation to and development of Mertarvik, the new village site.

WHEREAS: The Native Village of Newtok's Traditional Council, hereinafter called the Council, is the State and Federally recognized governing body of Newtok, Alaska; and,

WHEREAS: The Village of Newtok has been threatened for years by the advance of the Ninglick River due to high rates of erosion of the river bank adjacent to the village; and,

WHEREAS: This progressive erosion is recognized as a serious long-term threat to the existence of the village; and,

WHEREAS: Seasonal flooding from coastal storms has exacerbated this situation. Newtok was included in two federal disaster declarations, DR-1571-AK (2004 Bering Sea Storm) and DR-1618-AK (2005 Fall Sea Storm); and,

WHEREAS: Studies performed by the U.S. Army Corps of Engineers and others have concluded that the village must relocate as there is no permanent and cost-effective alternative to remain at the current village site; and,

WHEREAS: The Newtok Traditional Council, by a vote of the people of Newtok, selected Mertarvik, a site on the northern coast of Nelson Island, located within the Yukon Delta National Wildlife Refuge, as the preferred relocation site for the village of Newtok; and,

WHEREAS: The Newtok Native Corporation entered into negotiations with the U.S. Department of the Interior, Fish and Wildlife Service to exchange Newtok Native Corporation land for the Mertarvik site; and,

WHEREAS: In November 2003, the 108th Congress passed S. 924, allowing the Newtok Native Corporation to received title to the Mertarvik land in a land exchange with the U.S. Fish and Wildlife Service; and,

WHEREAS: In May 2006, the Council and the Newtok Native Corporation joined with state, federal and regional agencies and organizations to form the Newtok Planning Group to assist with Newtok's relocation effort; and,

WHEREAS: In 2008, the Council and the State of Alaska negotiated a commitment with the U.S. Department of Defense, Innovative Readiness Training Program to provide labor on development projects at Mertarvik; and,

WHEREAS: In 2011, the Council, the Newtok Native Corporation and the agencies and organizations involved in the Newtok Planning Group began working with a contractor to develop a Strategic Management Plan for the relocation of Newtok to Mertarvik.

NOW, THEREFORE, LET IT BE RESOLVED; that the Council hereby adopts the following Maligtaquyarat (Guiding Principles, attached) for all agencies and organizations to follow in working with Newtok on the relocation to Mertarvik. The Maligtaquyarat form the basis of our Strategic Management Plan. It is the Newtok Traditional Council's desire that the relocation of Newtok be defined by our Yup'ik way of life. All proposals for and activities at the new village at Mertarvik must consider, respect, be assessed by, and be carried out according to Newtok's Guiding Principles.

I the undersigned, hereby certify that the Newtok Traditional Council is composed of __7__ members, of whom __7__ constituting a QUORUM were present and that the foregoing resolution was PASSED AND APPROVED on this __9__ day of __June_____, 2011.

Votes: __7___ Yeas _0____ Nays

Signed: _____
Honorable Moses Carl, President, Newtok Traditional Council

Attest: _____
Secretary George Tom, Newtok Traditional Council

MALIGTAQUYARAT
(Guiding Principles for Mertarvik)

The relocation of Newtok will be defined by our Yup'ik way of life. Our **Guiding Principles** are:

- To remain a distinct, unique community – our own community
- To stay focused on our vision by taking small steps forward each day
- To make decisions openly and as a community and look to elders for guidance
- To build a healthy future for our youth
- Our voice comes first – we have first and final say in making decisions and defining priorities
- To share with and learn from our partners
- No matter how long it takes, we will work together to provide support to our people in both Mertarvik and Newtok
- Development should:
    - Reflect our cultural traditions
    - Nurture our spiritual and physical well-being
    - Respect and enhance the environment
    - Be designed with local input from start to finish
    - Be affordable for our people
    - Hire community members first
    - Use what we have first and use available funds wisely
- To look for projects that build on our talents and strengthen our economy

A-9 Table. Preliminary Relocation Schedule

Schedule*	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Notes
Pioneering	Initial pioneer move will be seasonal; pioneering families will live in Mertarik during the summer and winter months and move back to Newtok during fall and spring. Pioneering slated to start Winter 2011 or Summer 2012.						
Waterfront	Waterfront site assessment (est. completion March 2012)						Per Ruth Carter, AK DOT Coastal Engineering
Evacuation Center	Foundation (slated to be completed 2011)	Vertical construction (Best guess: completion in winter 2013)					Per current AK DOT project plans Assume one year delay based on funding setbacks.
Drinking Water, Sewer + Solid Waste	New well near Mertarvik townsite Needed waste water + water supply improvements in Newtok (to be completed in 2012)	Pioneering support, piloting of new technologies, + feasibility studies					Per Greg Magee, Village Safe Water Per Dave Longtin, Village Safe Water
New School Construction	Commitment to move Planning	Application to legislature	Design + Bid	Construction (2 years)		Students in classroom	Per Kate McIntyre, LKSD Capital Projects
Clinic	Pursue funding to assess feasibility of moving existing clinic	Assess feasibility of moving existing clinic					Current Newtok clinic was built in 2003. More research is needed to determine potential funding sources and timelines.
Housing	Financing and grant development; reclamation of materials in Mertarvik Build new	Build new Relocate Existing	Build new Relocate Existing	Build new Relocate existing	Build new Relocate existing	Build new Relocate existing	Assume housing tract continues until need is met. Assume home construction in summer; relocation of existing homes in winter.
Energy	Pursue funding						More research is needed to determine potential funding sources and timelines.
Airport	Feasibility study (completed 2011) Emergency float plane service from Bethel	Environmental Assessment (2.5 years)	Pioneer runway construction	Runway Construction (2 years, could be completed by fall 2015) Road to Airport Construction		Runway in service	Timeline assumes FAA approval, resolution of energy source/EIS issues, and no significant construction delays; per Judy Chapman, ADOT+PF. Need to establish agreement with float plane service. Newtok to determine whether a pioneer runway is a priority and investigate prospects.
Community Serve Center (formerly known as Fishery Support Center)	Needs assessment, design selection, and planning	Serve Center Construction					Per Neil Rodriguez, Project Manager Coastal Villages Region Fund, funding slated for construction of a Serve Center in Mertarvik; more information needed to gauge timelines. A number of design options are available. Typically construction occurs within one season.
Mail service	Requires at least 25 families and 75 residents plus regularly scheduled public transportation to the community						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	

Green = tentative dates.

Blue = anticipated time line once project is under way.

*Possible time frames for Mertarvik relocation by bodies of work. Work in progress is depicted in green and shows best-guess time estimates assuming year 1 is 2011. Work not yet underway is depicted in blue and assumes year 1 can start at any point in the future. Schedule for work not yet underway is based on agency/funder-informed guidance for similar projects. A number of work streams are not yet included (such as roads). Schedule will be refined and added to during Phase 2.

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a community that builds together
for the safe and healthy future of Newtok

Relocation Report :: Newtok to Mertarvik

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