

Kivalina Consensus Building Project

Final Project Report

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for the
City of Kivalina

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City Council

Bert Adams, Mayor
Tom Hanifan, Vice Mayor
Lucy Adams
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Colleen Swan
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Janet Mitchell, City Administrator

Native Village of Kivalina Council

Millie Hawley, President
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Project Team Leaders

Evacuation Road and Shelter Team – Austin Swan
Natural Hazards Team – Millie Hawley
Current Site Issues Team – Bert Adams
Relocation Team – Stanley Hawley

Kivalina Consensus Building Project

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Executive Summary

The Kivalina Consensus Building Project is the first phase of a two-part community planning grant established by the Alaska State Legislature for communities at risk from climate change. The purpose of the project is to explore areas of agreement that will lay the foundation for future community planning. A logical next step for Kivalina would be development of a community plan that outlines strategies and specific actions the community will take to respond to natural hazards, including relocation and protection from storm surges, flooding, erosion, and melting permafrost.

The project began in September 2009 with a door-to-door survey to obtain the opinions of residents on short-term responses to increased risks from natural hazards. Two community meetings and 2 workshops were held to involve the residents in the project. In addition, 4 community teams were assembled to address the following topics: Natural hazards, current site issues, relocation, and evacuation routes and shelter. The *Final Project Report* summarizes the major findings from the project, including concerns and recommendations raised by the project teams. The teams provided reports at the January and May 2010 workshops.

Another major component of the project involved completion of the *Situation Assessment*, an analysis of previous studies and reports about natural hazards and relocation options. The assessment identifies issues that the community may wish to address in the second phase of the community planning project. In response to concerns raised in community meetings about the need for more information, the consultant prepared an annotated bibliography and provided copies of the studies and reports for review by residents in the City Office.

As a result of later freeze up and earlier melting of sea ice, Kivalina faces significant risks from storms, including flooding and erosion. Little is known about the coastal processes near Kivalina that erode or deposit beach sand, and additional studies may be necessary to confirm assumptions. While there have been few instances of flooding from storms, government agencies are concerned that a “100-year flood” could inundate the community. The 100-year flood estimate means that in any given year, there is a one-percent chance that a flood of this level would occur. A 2009 water level study by the U.S. Army Corps of Engineers estimates that the 100-year flood would reach 7.77’ above mean lower low water (MLLW). This estimate is 8.53’ lower than the estimate used for the 2006 *Kivalina Master Plan* that evaluated potential relocation sites. Traditional knowledge indicates that the last flood to inundate Kivalina’s island occurred in 1885.

Kivalina faces some considerable challenges as it charts its future course. While many people wish to relocate the community, little progress has been made since the first community election was held on relocation over 50 years ago. The majority of voters in a 2000 election selected Kiniktuuraq for relocation of the community, a coastal site about a mile south of the existing community. In the 2006 Master Plan, the U.S. Army Corps of Engineers found that Kiniktuuraq does not merit further consideration as a relocation site due to concerns about coastal erosion, flooding, and ice-rich permafrost soils.

The 2006 Master Plan also recommended that the current village site should not be considered further because increasing threats from flooding and erosion. The Master Plan, however, used a 100-year flood estimate of 16.3' above MLLW. Since most of the houses in the community are sited or above 10' above mean high water, another evaluation of risks from flooding is merited.

In anticipation of relocation, many improvements to the community have been deferred, but relocation efforts have taken much longer than originally expected. As a result, residents face health and safety issues from inadequate water and sewer facilities and overcrowded living conditions. In addition, the dumpsite is too close to the airport and subject to flooding and erosion. The adjacent disposal site for human waste is inadequate, and fecal coliform has been detected in the lagoon. The school and community buildings have outlived their expected lives. There is no adequate evacuation shelter in the community, and there are limited options for evacuation during fall storms.

Many Kivalina residents cannot understand why funding is not readily available to help the community respond to increasing threats from natural hazards. The fact remains, however, that many different interests compete for limited state and federal funds. In Alaska, an increasing number of communities are requesting assistance to respond to flooding, erosion and storms. A funding priority will likely be given to those communities that develop a well thought out plan that is supported by both its residents and the funding agencies.

The attention to Kivalina's situation in the past few years by the media and by government agencies presents some opportunities. Along with Shishmaref, Kivalina has become known throughout the world as a community facing perils from climate change. Recognition of its plight, however, will not be enough to find and fund an acceptable long-term solution. The community will need to find new ways to build internal agreement and new methods to collaborate with state and federal agencies. Resolutions of support for the next planning grant from both the Native Village of Kivalina and City of Kivalina, and a commitment to participate in the process, will help ensure its success.

Kivalina Consensus-Building Project

Final Project Report

1. Introduction

The Kivalina Consensus Building Project provided an opportunity for the community to work towards a consensus about the next steps it will take in response to climate change-related threats. This *Final Project Report* focuses on the recommendations of the community teams established for this project and comments and recommendations made by community residents during the two public meetings, two workshops and the door-to-door survey.

This project was the first part of a community planning grant funded by the Alaska State Legislature as a result of a recommendation from the Immediate Action Workgroup (IAWG) of the Governor's Subcabinet on Climate Change. In its 2008 and 2009 reports to the Subcabinet on Climate Change, the IAWG identified the need for community planning efforts by Kivalina and other communities at risk, including establishment of a local planning committee (Immediate Action Workgroup 2008, p. 30; 2009, p. 6). One of the reasons for community planning cited in the 2009 report is that the U.S. Army Corps of Engineers found that the community's preferred relocation site, Kiniktuuraq, as inadequate due to permafrost soils (Immediate Action Workgroup 2009, p. 6).

The purpose of the Kivalina Consensus Building Project is to explore areas of agreement that will lay the foundation for future community planning. A logical next step for Kivalina would be to develop a community plan that outlines strategies and specific actions it will take to respond to natural hazards, including storm surges, flooding, erosion, and melting permafrost.

The City of Kivalina selected Glenn Gray and Associates as the consultant for the Kivalina Consensus Building Project. The consultant began working on the project in September 2009 and completed his work in July 2010.

The remainder of this report includes information about the following subjects:

- Background Information.
- Community Survey,
- Annotated Bibliography,
- Situation Assessment,
- Community Meetings and Workshops,
- Project Teams,
- Areas of Consensus,
- Next Steps for Developing a Community Plan,
- Conclusion, and

- References.

2. Background Information

Kivalina is an Iñupiaq community located 83 miles above the Arctic Circle within the Northwest Arctic Borough. The 2008 estimated population of 406 live in houses clustered around the southern end of a 5.5-mile barrier island bordered on the west by the Chukchi Sea and on the east by Kivalina Lagoon. Historically, the marine waters around Kivalina have been ice free early July through late October, but later freeze-up and earlier melting has resulted in longer ice-free periods during recent years. Kivalina is the only village in the Northwest Arctic Borough that hunts bowhead whales, and it is a member of the Alaska Eskimo Whaling Commission.

Kivalina has both a tribal and a municipal government. The Native Village of Kivalina is governed by a 7-person council, and a tribal administrator implements its programs. A 7-member city council lead by the mayor governs the municipal government, and the city administrator provides day-to-day administration. The City of Kivalina occupies about 27 acres, not including the airport. The State of Alaska owns the 3,000' airstrip and adjacent area which extends 6,700' from the northern edge of town. The current dump site and area for disposal of human waste, established in 1996, is located north of the airstrip.

Residents of the community have expressed concerns about storm surges and erosion since soon after the community was first established (Replogle 1911). As a result of a changing climate, there is a longer ice-free period that subjects the community to dangerous fall storms. Significant storms occurring in 1970, 1976, and 2004-2007 caused erosion and some flooding.

In response to these storms, the Northwest Arctic Borough oversaw construction of an erosion control project on the ocean side of the community in 2006. Days before it was to be dedicated, a storm caused severe damage to the structure. In 2007, the Northwest Arctic Borough and community leaders decided to evacuate the village in response to an oncoming storm. Over growing concerns about erosion, Congress made a special appropriation to the U.S. Army Corps of Engineers for a 2,000' rock revetment project for the ocean side of the community. Initial construction began in 2008 – 2009 and the final 400' is expected to be completed during the summer of 2010. The Alaska Department of Transportation and Public Facilities designed a revetment north of this area, but at the time this report was written, that project was not fully funded.

Kivalina faces some considerable challenges as it charts its future course. While many people wish to relocate the community, little progress has been made since the first community election was held on relocation over 50 years ago. The majority of voters in a 2000 election selected Kiniktuuraq for relocation, a coastal site about a mile south of the existing community. The U.S.

Army Corps of Engineers, however, maintains that Kiniktuuraq does not merit further consideration due to concerns about coastal erosion, flooding, and ice-rich permafrost soils.

The stalemate over a suitable relocation site places the community in a dilemma. Living conditions at the current site raise significant health and quality of life concerns, but it has been challenging to obtain funds for community improvements because of the potential relocation. As a result, residents live in overcrowded conditions, they face health and safety hazards from inadequate infrastructure, and many people have lost hope for their future. Agencies are beginning to recognize the need to improve living conditions as evidenced by recent funding for a new clinic, and the city government has been working with its legislative delegation in an attempt to find funding to upgrade the sanitation systems.

The current living conditions and infrastructure in Kivalina are summarized in the following bullets.

- **Human Waste:** Homes are not connected to a sewer system. Individual households must make their own arrangements for storage and collection of “honey buckets” that are dumped in a metal containment basin next to the dump. This system presents a health hazard due to accidental spills that occur during collection and storage and possible leaching from the containment basin into the lagoon.
- **Water System:** Water is obtained from the Wulik River using a seasonal 3-mile surface transmission line because wells drilled in the community indicate significant saltwater intrusion into the aquifer. Water can be collected only during a short period of the year when the river is ice free and clear of silt. The limited capacity of the system results in rationing of water, and in some years when the tanks run dry, residents must haul ice as a water source. The lack of an adequate water supply results in health concerns that are amplified with consideration of overcrowded houses and lack of a central sewer system.
- **Solid Waste:** Each household is responsible for collecting its own waste and bringing it to a 3.4 acre dump site, located just north of the airport. The site is located at a thin portion of the island that is subject to winds, erosion and flooding. The dump site appears to be beyond capacity, and wind and water distribute materials far outside the site. There is no active management of the dump, no burn box, no system for collection of hazardous waste, and the trash is not compacted or capped with gravel. The close proximity to the airport raises safety concerns for aircraft because it is an attractive nuisance for birds.¹
- **Lack of Housing:** Since state land in the vicinity of the airport is not available for housing, and the rest of the village is surrounded by water, there is no room for

¹ FAA regulations require a 5,000’ separation between landfills and airports.

community expansion. About 80 homes are crowded together along the southern tip of the island, and in some cases up to 15 people may live in a single house.²

- **Public Facilities:** Most public facilities in the community are inadequate. The school has outlived its useful life, there are no hotels or bed and breakfasts, and the community hall, bingo hall and community and tribal offices are in disrepair. In the event of an emergency, there is no suitable shelter for the community to seek refuge in.
- **Transportation:** A 3,000' by 60' runway provides access by aircraft. Approximately 1.5 miles of roads and trails are located in the community, but these roads were not engineered to any standards and are not maintained. They are in need of grading and surfacing to reduce dust hazards. There is no road off the island, and during ice-free periods, there is no overland escape route.

The overcrowded conditions, inadequate water and sewer facilities, and lack of room to accommodate future generations affect the disposition of community residents. The lack of progress with the community relocation and the continuing threat of natural hazards have serious implications for the physical and mental health of the community.

3. Community Survey

The original proposal for the Kivalina Consensus Building Project relied on interviews with community leaders and community meetings to obtain information for the project. During the consultant's first visit to Kivalina for this project, it became clear that most residents did not attend public meetings. In response, the consultant received approval from the City Council to conduct a door-to-door survey.

The consultant completed the door-to-door survey in Kivalina September 29 - October 1, 2009. At the request of the City Council, the survey focused only on immediate, short-term responses to threats from natural hazards. About one-quarter of the adult population of Kivalina participated in the survey (56 individuals from 47 households).³ The consultant prepared a detailed report of the door-to-door survey results which is available at the Kivalina City Office.

While the questions were limited to short-term responses to threats from natural hazards, almost every person interviewed offered additional information, including information about relocation options and the need to improve living conditions at the current village site. The remainder of this section summarizes the most important information gained during the survey.

² A new site with adequate room for expansion would likely lead to doubling of the population in 20 years (U.S. Army Corps of Engineers 2006a).

³ According to the Alaska Department of Commerce, Community and Economic development, an estimated 408 people live in Kivalina in 2008. Early indications from the 2010 census indicate the population may be somewhat less than that.

Short-Term Responses: The first question asked what immediate actions the City Council should take in response to the threats of storms, flooding and erosion. Responses to this question varied, including continuation of the revetment, evacuation planning, and improved communications with the community.

Evacuation Route: The second question asked about support for an evacuation road and shelter, and if so, what route was preferred. All but two of the people interviewed supported construction of a relocation road. Most of those interviewed also supported construction of an evacuation shelter; although some people thought an area for tent camping would be sufficient. Twenty six people preferred a route across the lagoon towards Simik (also spelled Simiq), 15 people didn't express a preference, 10 people preferred a bridge across Singuak Entrance towards Kiniktuuraq, and 2 people said a route to either Kiniktuuraq or Simik would work. The two people who did not support an evacuation route thought the first priority should be relocation.

Permafrost: The third question asked if the person was aware of any problems with melting permafrost. Few people thought melting permafrost was a problem at the current village site, although some people remembered when the permafrost layer was closer to the surface. Those who mentioned problems with melting permafrost identified areas on the Wulik River that are slumping, melting ice cellars, and areas along the coast north of the island with slumping bluffs. A few people said the slumping on the Wulik River was an important concern because of the potential for silt to affect the drinking water source.

Dump Site: The fourth question asked whether the person interviewed had any suggestions about how to respond to threats of erosion and flooding the current dump site. Everyone interviewed supported improvements to the dump site. Many people recommended daily management of the site, implementation of a collection system and moving the site to a new location in conjunction with construction of an evacuation road.

Other Comments: Although none of the survey questions addressed long-term priorities, almost all of those interviewed volunteered comments about their opinion on relocation, living conditions at the current site and social impacts.

- **Relocation:** Most of the survey respondents volunteered information about their opinion on relocation: Eight people expressed a desire to relocate but did not suggest a relocation site, 6 people recommended relocation to Kiniktuuraq, 4 people recommended a move to Inmachuk Bluffs, and one person each recommended Tatchim Isua, Igrugaivik, Imaguk, and Rabbit Creek.
- **Current Site Concerns:** A number of residents expressed a need to improve community infrastructure, and several said they felt safer with the new rock revetment.

- **Psychological and Social Impacts:** The interviews revealed concerns about the social impacts from the threat of natural hazards and the lack of progress towards finding a long-term solution. One person said mental health problems have increased and that the anxiety level of children has increased, especially after the evacuation.
- **Communication:** A number of residents recommended more communication about relocation efforts and government reports as well as more community meetings.

4. Annotated Bibliography

Throughout the project, many residents commented that they did not have access to reports and studies about the hazards facing Kivalina and its relocation options. In response to this need, the consultant completed a bibliography of studies and reports with a brief summary of the major findings of each report. Since there is no library in the town, the consultant made a copy of these reports available for public review at the City Office. The bibliography was provided to the city in an electronic format so it can be updated in the future.

5. Situation Assessment

One of the major components of the project was development of the *Situation Assessment*, which summarized and analyzed information from reports and studies about Kivalina. This section of the *Final Project Report* summarizes the most important findings of the *Situation Assessment*. A copy of the complete report may be reviewed at the City office or obtained from the consultant.

Purpose: The purpose of the *Situation Assessment* is to compile existing information about climate-related changes affecting Kivalina. It addresses natural hazards, evacuation and emergency planning, evacuation road and shelter, and options for relocation or remaining at the current site. Companion documents to this report include the *Summary of the September 2009 Door-to-Door Survey* and the *Annotated Bibliography*. Although the *Situation Assessment* does not include recommendations for options to respond to natural hazards, it identifies areas where there is a lack of information and opportunities the community may wish to consider when choosing its next steps.

Natural Hazards: Climate-related natural hazards include storms, flooding, erosion, ice hazards, melting permafrost, sea level rise, and ocean acidification. Climate change is occurring in Arctic regions faster than in other areas, and recent climate indicators reveal that changes are occurring faster than previously predicted. Although there are year-to-year variations, trends indicate that the climate is continuing to warm.

As a result of later freeze up and earlier melting of sea ice, Kivalina faces significant risks from storms, including flooding and erosion. Little is known about the coastal processes near Kivalina that erode or deposit beach sand, and additional studies may be necessary to confirm

assumptions. While there has been little flooding of the community from storms, government agencies are concerned that a “100-year flood” could inundate the community. In other words, the 100-year flood means that there is a one-percent change in any given year that a flood of this level will occur.⁴ A new water level study produced by U.S. Army Corps of Engineers scientists estimates that the 100-year flood level is 7.77’ above MLLW (Chapman et al. 2009). This estimate is 8.53’ lower than the estimate used for the 2006 *Kivalina Master Plan* that evaluated potential relocation sites. While serious flooding of the island has not occurred during the lifetime of current residents, traditional knowledge indicates that a flood inundated the island in 1885.⁵

Erosion has endangered structures in Kivalina, but while there is a net erosion of sediments on the island, there are other areas where beaches are accreting. Certain practices have been attributed to accelerated erosion in Kivalina, including removal of beach sand for construction projects, uncontrolled ATV traffic, and the use of inadequate erosion control.

Permafrost melting has implications for Kivalina because it may affect coastal erosion, drinking water quality, subsistence access in the rivers, the ability to store food, and the feasibility of relocating to some proposed sites. While ice-rich permafrost soils could lead to significant sinking in some of the proposed relocation sites, melting of permafrost is not expected to result in subsidence at the current village site due to the high sand content and lack of ice lenses (chunks of ice in the soil). A 2008 permafrost study at Kiniktuuraq predicted that gravel fill may not protect the permafrost from melting.

Ice hazards at Kivalina include ice run up (ivu),⁶ breakup in the lagoon, and thinner ice. Thinner ice affects ability to use ocean ice for subsistence, and it presents significant safety hazards to subsistence users. Other potential climate change impacts to Kivalina residents include sea level rise and ocean acidification.

Evacuation and Emergency Planning: The City has prepared new community evacuation and emergency operations plans. The current Local Hazards Mitigation Plan needs to be updated to incorporate new flood estimates and any reduction in erosion and flooding risks resulting from the construction of the rock revetment.

⁴ Flood level studies usually include predictions of flood levels at various intervals, including the 100 year period. The 2009 study was based on a model that uses actual measurements taken at Nome and the Red Dog Mine port site to predict the occurrence of future flood levels. Because flood level models are based on different assumptions, they have resulted in different predictions for the 100-year flood level in Kivalina.

⁵ Kivalina resident Janet Mitchell reports that the last flood that inundated the island of Kivalina occurred in 1885, when her great-grandmother Regina Qaigan Swan was 15 years old.

⁶ The degree of risk from ivus may need further investigation. While residents confirmed during this project that ice has piled up high in front of the community in the past, it does not happen often.

Evacuation Road and Shelter: A 2005 study evaluated 8 alternatives and recommended a route across the lagoon to Simik continuing inland to a gravel and rock source at a cost of \$21.3 million. A 2008 study reviewed 2 routes: A bridge/road to Kiniktuuraq (\$38.9 million) and causeway/bridge across the lagoon to Simik (\$20.3 million). The study recommended no further work on these routes until substantial funding is secured.

Options to Relocate or Remain at the Current Site: Many reports have been written evaluating options for Kivalina's future including a 1994 DOWL Engineering report and reports in 1998 and 2006 by the U.S. Army Corps of Engineers. The 2006 *Master Plan* estimated the costs of relocation to be between \$154.9 and \$251.5 million (U.S. Army Corps of Engineers 2006a), but a subsequent report estimated the relocation costs for Kivalina to be between \$95 and \$125 million (U.S. Army Corps of Engineers 2006b). The 2006 *Master Plan* recommends future consideration of only two sites: Tatchim Isua and Imnakuk Bluff. Some residents believe these sites have poor access to subsistence uses and can be very windy. The *Master Plan* found that Kiniktuuraq, the relocation site selected by the community, is subject to storm surges, erosion and unsuitable ice-rich soils.

New information may merit reconsideration of some of the findings of the 2006 *Master Plan*. A 2008 permafrost study for Kiniktuuraq developed models that indicate gravel pads may not eliminate melting of permafrost under some conditions (University of Alaska 2008). The new 100-year flood estimate could also affect conclusions of the report, especially in regard to the suitability of some sites that are located above the 100-year flood level. In addition, more detailed information on natural hazards will result from an Alaska Division of Geological and Geophysical Services hazards mapping project that is scheduled to begin in 2010. This mapping project will provide additional information about hazards in Kivalina and at potential relocation sites.

6. Community Meetings and Workshops

The project involved two public meetings and two public workshops. This section provides a brief discussion about the purpose of the meetings and when they were held. Information provided by the participants at the meetings and workshops is included later in this report. Copies of the meeting and workshop summaries are included in Attachment A.

A scoping meeting was held at the outset of the project on October 1, 2009 at the community hall. This meeting occurred during the same trip the door-to-door survey was conducted. The purpose of that meeting was to provide an opportunity for community residents to identify concerns, discuss potential solutions to the problems facing the community and to help shape how the project would be implemented.

The second public meeting was held November 11, 2009 after completion of the draft *Situation Assessment*. Because many people indicated they do not attend community meetings, the consultant advertised his availability to discuss the reports and studies covered by the *Situation Assessment* on an individual basis the day before the meeting. A small group of people attended the meeting which was held at the McQueen School. During the meeting, an elder suggested that future gatherings for the project be called “teams” rather than “meetings” in an effort to attract more people. That suggestion led to the formation of project teams to address the major issue areas identified in the *Situation Assessment*.

The first project workshop occurred on January 28, 2010 which attracted 113 adults and children. The large turnout for this workshop was likely due to the door prizes that were offered and an extensive effort by the consultant to attract participants, including a newsletter mailed to each post office box. The purpose of this meeting was to initiate project teams that would develop final recommendations for next steps the community needs to take. After a summary of the major findings in the *Situation Assessment*, the meeting participants broke into four teams. After the teams had an opportunity to discuss their issues, team leaders made a report to the entire group.

The second workshop, the final meeting for this project, occurred on May 20, 2010. During this workshop team leaders provided recommendations and findings from their teams. The meeting concluded with a discussion about next steps for the community which included the possibility of developing a strategic community plan.

7. Project Teams

The four project teams that were created at the January 28 workshop addressed the following topics: Relocation, evacuation road and shelter, natural hazards, and current site issues. During a breakout session at the workshop, the four teams identified issues and initial recommendations to address those issues. The team leaders gave a report at the May 20, 2010 workshop. The summary below provides some of the highlights discussed by the teams. The meeting summaries for the two workshops in Attachment A provide a more information about the findings of the project teams.

- **Natural Hazards** – This team raised issues about: Pollution concerns from flooding and erosion (fuel tanks, dump and sewage disposal site), land diminishing from erosion, and melting permafrost (bumpy roads and an increasing water level at the cemetery).
- **Current Site Issues** – This team expressed concerns about lack of a water and sewer system, the unmanaged landfill, not enough room for expansion, a need for better fire equipment, the lack of an evacuation road, a need for dust control, a need for a recreation center, a need for a longer runway, a need for improved law enforcement, and a need for more manpower for local government offices.

- **Relocation** – The relocation team suggested the tribal government take the lead for relocation. The team identified needs for leadership, collaboration with state and federal agencies, the need to resolve issues at the current site, and the need to keep building hope. The team supported selection of a site that has high ground, clean water and room for a landfill. The team thought the new seawall provides some security, but recognized it will not last indefinitely. Team members expressed a sense of urgency to move ahead now, not 5 years from now. An enclosure to the meeting summary for the May workshop includes a letter from this team (Attachment A).
- **Evacuation Road and Shelter** – This team identified a need for an evacuation route either across the lagoon (wide enough for ATVs) or across the channel along the beach to the Red Dog Mine port site. It suggested a shelter could be built at Kiniktuuraq. The team also discussed an option to tie in an evacuation road to the Red Dog haul road. At the May workshop, the team leader supported the work of the Native Village of Kivalina to pursue a bridge across Singuak Entrance.

8. Areas of Consensus

Identification of common interests among the community members will be useful when developing a detailed plan of action for its next steps, including identification of goals and objectives and specific short- and long-term strategies to reach those objectives. Everyone agrees on basic community needs: Residents must be safe from natural hazards, the community needs to be located close to marine subsistence resources, there must be room for community expansion, and basic services need to be provided, including water, sewer and solid waste. There is also general consensus that an evacuation road needs to be built, although not everyone agrees on a route.

Regarding other issues, the degree of agreement is not known. As mentioned earlier, while many people offered opinions on a wide variety of issues during the door-to-door survey, no questions were asked about long-term responses to hazards such as relocation. The following discussion provides a sense of the degree of agreement from comments made during the survey and during the public meetings and workshops.

Relocation: While the majority of residents appear to favor relocation, there is not a clear consensus on where to locate. Although a question about relocation was not asked during the door-to-door survey, many people offered their opinion about this topic.⁷ At least a few residents question whether there may be improvements that would allow the community to remain at the existing site.

⁷ Of the people who offered their opinion during the survey about relocation, 8 did not specify a preferred relocation site, 6 recommended Kiniktuuraq, 4 recommended Inmachuk Bluffs, one recommended Tatchim Isua, one recommended Igrugaivik, one recommended Imaguk, and one recommended Rabbit Creek.

Evacuation Route and Shelter: Responses during the door-to-door survey indicate widespread support for construction of an evacuation route and shelter. Most of those people interviewed supported a route towards Simik although some people expressed a preference for a route through Kiniktuuraq, and some people didn't express a preference.

Factor Affecting Consensus: Discussions with community residents revealed possible reasons for the lack of agreement on important issues facing the community.

- **Lack of Information:** A number of people said they did not have access to reports that would give them needed background information. For example, several people mentioned they did not realize the Corps did not support further consideration of Kiniktuuraq as a relocation site.
- **Community Division:** As with many communities, there is a division opinion on how Kivalina should respond to the most important issues that will affect its long-term future. There appear to be long-standing divisions among some residents that provide an obstacle for reaching consensus. Some community members are reluctant to express their concerns at public meetings, and a number of people said they do not attend meetings because they do not like conflict. During discussions for this project, some people said they did not feel the community committees or leadership decisions reflected their interests, and some people remarked they didn't feel adequately represented.
- **Lost Dreams:** During the scoping meeting for this project, one resident offered an eloquent description of how community residents have given up on their dreams. The community has voted a number of times on relocation issues, and each time government agencies responded with reasons why the alternative selected by the voters would not work. The lack of adequate living conditions adds to the discouragement. With talk of relocation, community improvements have been deferred, and as a result residents live in overcrowded housing with unsanitary conditions due to the lack of sewer, water and garbage collection systems. During meetings for this project, people relayed a sense of hopelessness because of so little progress has been made to either relocate or fund needed community improvements.

During the May 2010 workshop, an elder said that when you speak of relocation, there will always be division. The community first voted on the question of relocation in 1953, and since then there have been three major studies and countless reports. Considering there appears to be no solution in sight that will be acceptable to funding agencies and the community, it should be no surprise that there is no consensus for some of the most important issues facing the community.

9. Next Steps

As a result of recommendations to the Governor's Subcabinet on Climate Change from the IAWG, the Alaska State Legislature developed the Alaska Climate Change Impact Mitigation

Program (ACCIMP). This program provides funding for community planning efforts for Kivalina and other communities immediately threatened by climate change-related impacts including erosion, flooding, storm surges, and thawing permafrost. The Kivalina Consensus Building Project was funded through this program, and \$120,000 remains for community planning efforts in Kivalina. The funding must be used to implement recommendations from the April 12, 2008 IAWG report to the Governor's Subcabinet on Climate Change.⁸ To insure success of the effort, it will be important that both the tribal and city councils support the project and commit to participate fully in the process, including attendance at project meetings.

While Kivalina may use the ACCIMP planning grant to address any of the recommendations in the April 12, 2008 IAWG report, development of strategic community plan would be a good use for the remaining planning grant funding for several reasons. First, a community plan would respond to one of the primary recommendations of the 2008 IAWG report by providing a framework for the community to agree on goals and objectives and strategies to reach those goals and objectives. Development of a plan would also address a concern raised in the 2008 report of the Alaska Climate Impact Assessment Commission about the lack of adequate planning in Kivalina (Alaska State Legislature 2008).⁹

Second, agencies often require a community plan before they allocate funds, and Kivalina does not have a community plan.¹⁰ While the 2006 Master Plan contains a lot of useful information that could be incorporated into a plan, Kivalina would benefit by a community-driven planning process that identifies alternatives, preferred solutions, goals and objectives, and strategies.

Third, a community plan would demonstrate to funding agencies that the community's proposed plan of action was developed through an open, transparent process that considered all feasible alternatives. Rather than waiting for government agencies to lead the way, a community plan would show that Kivalina has taken its own initiative to chart its future course. Newtok's progress in relocating the community has been attributed to such an approach.

Instead of developing a traditional comprehensive community plan, Kivalina may wish to consider development of a strategic community plan. While a comprehensive plan involves an all-inclusive approach for all aspects of community planning and land use, a strategic planning process focuses on the most important issues facing a community. For example, a strategic plan for Kivalina could include strategies for relocation, an evacuation road and shelter and

⁸ The ACCIMP grant application specifies that the projects must address IAWG recommendations on pages 3-8 and 27-45 of the April 17, 2008 report (http://www.climatechange.alaska.gov/docs/iaw_rpt_17apr08.pdf).

⁹ The report included the following finding about Kivalina: "Both immediate and long term planning are inadequate although improving, but decision-making among the action entities, including residents, are not coalescing adequately for the ultimate protection and relocation of this community" (Alaska State Legislature 2008, p.14).

¹⁰ During the May 20, 2010 project workshop, several participants said Kivalina had completed a comprehensive plan in the past. This plan is not included on the State of Alaska library of community plans, and there were no copies of it in the State of Alaska library or in the City office.

immediate improvements needed for the current village site to address health and safety concerns.

A strategic planning approach would also be a good tool to continue developing community consensus about future actions to respond to threats from natural hazards. The strategic planning process typically includes the following steps:

- Development of a community vision,
- An analysis of strengths, weaknesses, opportunities and threats,
- Analysis of the pros and cons of future alternatives,
- Development of goals and objectives,
- Identification of alternatives,
- Development of strategies to reach the goals and objectives, and
- Development of annual work plans.

In addition to the issues identified in this report, the *Situation Assessment* identifies questions and opportunities the community may wish to address in a strategic plan.

In addition to developing community consensus, a strategic planning process could also be used for consensus building among the funding agencies. More dialogue is needed between the community and state and federal agencies to ensure everyone has the same understanding. Kivalina could use the same process for developing the strategic plan to collaborate with state and federal agencies as well as scientists and researchers. Using this approach, in-person meetings and teleconferences could be scheduled to address one issue at a time.

10. Conclusion

Kivalina faces an uncertain future. The majority of voters in a 2000 election chose to relocate to Kiniktuuraq, a coastal site located about a mile south of the current village site. The Corps, however, recommends no further consideration of this site due to flooding, erosion and ice-rich, permafrost soils. In anticipation of relocation, many improvements to the community have been deferred, but relocation efforts have taken much longer than originally expected. As a result, residents face health and safety issues from inadequate water and sewer facilities and overcrowded living conditions. In addition, the dumpsite is too close to the airport and subject to flooding and erosion. The adjacent disposal site for human waste is inadequate, and fecal coliform has been detected in the lagoon. The school and community buildings have outlived their expected lives. There is no evacuation shelter in the community, and there are limited evacuation options during fall storms.

Even once the community and agencies agree on a suitable site for relocation, it will take many years to obtain full funding, complete engineering and environmental studies and finish construction activities. Funding agencies are recognizing the difficulties of finding a permanent

solution for Kivalina as evidenced by recent construction projects in the community. During the past year, a new clinic was constructed, houses have been weatherized and a new sewer system has been installed for the school.

It will not be easy to obtain funds to address a response to increased threats from flooding and erosion, but a plan of action would be the first step. In 2006, the Corps estimated it would take between \$95 and \$125 million to relocate the community. An evacuation road will cost between \$20 and \$39 million. A community plan with a well thought out plan of action that is supported by the community will get the attention of funding agencies and Congress.

Throughout the meetings, workshops and the door-to-door survey for this project, consensus on a few items was evident. Everyone agrees the community should be located in a safe place close to subsistence resources with basic services and room to expand. Residents want to be sure that they will be safe from growing threats of flooding and erosion. They want a place with enough suitable land for their children and grandchildren to build new homes. They also want basic services that are available to most other Alaskans, including water, sewer and solid waste (garbage) systems. Many people expressed concern that the current crowded and unsanitary living conditions are affecting the health of the community.

There is considerable alignment about the basic human needs that should be met, but there is less agreement about what short- and long-term responses the community should take to flooding and erosion. The community supports building an evacuation road, but there is not a consensus on where that road should be located. While many people believe the community should focus all of its efforts on relocation, there is not a consensus about where the community should relocate. Others believe it may be possible to stay at the current site by protecting against flooding and erosion and by filling in part of the lagoon for community expansion.

The community has held 5 elections on relocation matters. The last vote occurred in 2000 when the majority of voters chose to relocate at Kiniktuuraq. The 2006 community *Master Plan* completed by the Corps, however, found that Kiniktuuraq should not be considered further because of threats from flooding and erosion and ice-rich, permafrost soils. The Master Plan recommended that only two sites be considered further: Tatchim Isua and Imnakuk Bluff. Both sites are located north of the current community in areas unsuitable to the community leadership because of the distance from marine and river access and because of adverse weather conditions.

There is no current written plan outlining the next steps Kivalina will take to respond to the threats from climate change. If the community chooses to pursue a move to Kiniktuuraq, it will be necessary to address all of the concerns raised by the Corps and other federal and state agencies. If Kivalina is not able to address those concerns to the satisfaction of the agencies, it will not likely receive adequate funding for relocation to this site.

During the Kivalina Consensus Building Project, many residents emphasized the need for new ways of communication and participation in future community planning efforts. While residents are encouraged to attend community meetings, some people said they avoid meetings because they do not like conflict. Others expressed a need for new ways to get information to the community about government reports and community relocation efforts. The City Administrator has developed an informative website that updates residents and agency personnel about current events. Recognizing limited City personnel and resources, the \$120,000 ACCIMP community planning grant available to Kivalina presents an opportunity to fund additional outreach efforts including establishment of a new community planning committee, a community planning coordinator, newsletters and other methods to inform and involve residents in community planning efforts. Attachment B provides a list of characteristics of an open and transparent planning process that may be appropriate for future community planning.

Many Kivalina residents cannot understand why funding is not readily available to help the community respond to increasing threats from natural hazards. The fact remains, however, that many different interests compete for limited state and federal funds. In Alaska, an increasing number of communities are requesting assistance to respond to flooding, erosion and storms. A funding priority will likely be given to those communities that develop a well thought out plan that is supported by both its residents and the funding agencies.

The attention to Kivalina's situation in the past few years by the media and by government agencies presents significant opportunities. Along with Shishmaref, Kivalina has become known throughout the world as a community facing perils from climate change. Recognition of its plight, however, will not be enough to find an acceptable long-term solution. The community will need to find new ways to build internal agreement and new methods to collaborate with state and federal agencies. Resolutions of support for the next planning grant from both the Native Village of Kivalina and City of Kivalina, and a commitment to participate in the process, will help ensure its success.

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Kivalina Consensus-Building Project

Attachment A

Summaries of Project Meetings

October 1, 2009 Community Meeting

November 11, 2009 Community Meeting

January 28, 2010 Workshop

May 20, 2010 Workshop

Kivalina Consensus Building Project October 1, 2009 Public Meeting

Meeting Summary

Prepared by Glenn Gray and Associates

I. INTRODUCTION

A public meeting was held on October 1, 2009 to initiate the Kivalina Consensus Building Project. The meeting began with a prayer led by village elder Lucy Adams. Next, meeting participants introduced themselves. The following people attended the meeting, although a few people choose not to add their names to the signup sheet.

Glenn Gray – Meeting Facilitator
Lucy S. Adams, City Council Member
Alice C. Adams, City Council Member
Tom Hanifan, City Council Member
Ralph Knox, Kivalina
Lona Adams, Kivalina
Charla Swan, Kivalina
Jackie Norton, Kivalina
Nathaniel Nesselroad, Anchorage
Stanley Hawley, Kivalina
Millie Hawley, Kivalina
Jill Molder, Kivalina
Jeni Monet, Brooklyn, NY
Patrick Durrer, Coppel, Switzerland
Sally Cox, Alaska Division of Community and Regional Affairs
Erik O'Brien, Alaska Division of Community and Regional Affairs
John Chase, Northwest Arctic Borough

II. PROJECT BACKGROUND

Consultant Glenn Gray explained that the purpose of the project is to work towards a consensus on steps the community will take to respond to threats of erosion, flooding and storm surge. He said the project will involve a door-to-door survey, a series of public meetings and an assessment of government agency studies about Kivalina. The project deliverables will include a Situation Report, a Preliminary Report and a Final Report.

III. RELATION OF THIS PROJECT TO FUTURE PROJECTS

Sally Cox of the Alaska Division of Community and Regional Affairs (DCRA) explained that her agency funded this project as result of a recommendation of the Immediate Action

Workgroup (IAW).¹¹ Another recommendation from the IAW established the Alaska Climate Change Impact Mitigation Program which funded the Kivalina Consensus Building Project.

Future funding for community planning may be available to Kivalina through the Alaska Climate Change Community Assistance Project, a program funded by the Coastal Impact Assistance Program (CIAP). Through this program, grants will be provided to Kivalina, Shishmaref and Shaktoolik which will include hiring of a full-time local project coordinator who will work with project staff and agencies.

The Division of Community and Regional Affairs will be accepting grant applications from communities and tribes under the CIAP in the near future. Projects that meet one of the five authorized uses may be funded under the \$15.4 million public solicitation of this program (see this website for future updates: <http://www.commerce.state.ak.us/dca/>).

IV. COMMUNITY DISCUSSION

The remainder of the meeting provided participants an opportunity to discuss any issue related to the project. The following summary lists comments by topic rather than by the order in which they were discussed. The purpose of this discussion was for the meeting participant to discuss what was on their mind; individual comments do not necessarily reflect a consensus of the group. Comments are listed under three headings: Issues, Suggested Solutions and Next Steps for this Project.

A. Issues

- **History**
 - A 1911 report of the Kivalina school indicated that villagers expressed a desire to move the community because of threats of erosion.¹²
 - In recent years, later freeze up has resulted in stronger fall storms, and coastal erosion has accelerated.
 - Northwest Arctic Borough's first erosion control project didn't work.
 - State-Borough-NANA Oversight Panel didn't address concerns.
- **Evacuation Planning**
 - The 2006 Army Corps of Engineers report resulted in a focus on evacuation planning and an evacuation road (rather than relocation).
 - The evacuation plan was not followed during the 2007 evacuation.
- **Relocation**
 - 2006 Army Corps of Engineers report changed discussions:

¹¹ The IAW is an interagency work group of state and federal agencies. The IAW deals with the early assessment and development of an action plan addressing climate change impacts on vulnerable communities in Alaska.

¹² Construction of the school in 1905 led to the establishment of a year-round community on the coast. Traditionally, the Inupiaq people of the region lived seasonally on the coast moving inland each the fall.

- The findings of the 2006 Army Corps of Engineers report halted the relocation effort because it found that the community's preferred site (Kiniktuuraq) was not feasible.
 - Studies of the subsoil led to a recommendation by the Corps for no further of the community's preferred site.
- The agencies have disapproved four areas selected by the community for relocation.
- Why has the 2000 vote to move to Kiniktuuraq been ignored?
- Relocation planning has stopped.
 - Relocation committee doesn't meet any more.
- **Kivalina's Needs**
 - Better water system
 - Just this week, water is being rationed to 60 gallons per day for each household.
 - Many agencies are unwilling to fund improvements to basic needs in Kivalina because of plans to relocate the community.
 - Need to stop being controlled by the Northwest Arctic Borough.
 - City and IRA need to work out who does what.
 - City Council should lead the community.
 - Sometimes workers waste money and gas by driving back and forth.
- **Social Impacts**
 - There are effects to the mental health of the community:
 - All their hopes and dreams have been squashed.
 - This has led to a lack of trust.
 - The community is tired of going nowhere –“battle fatigue.”
 - The hopes and dreams of the community have been squashed.
- **Communication and Participation**
 - Agencies are not listening to the community, and this has divided the community.
 - The community is tired of having others make decisions.
 - The community does not have adequate access to information.
 - The City doesn't hold enough public meetings.
 - Why are the City and the IRA not here at this meeting?
 - The IRA and City Council want the community to have freedom to speak – that's why they are not here.
 - Elders don't come to public meetings.
 - Brice (erosion control contractor) and Corps only communicate with the City and IRA.
 - Relocation committee doesn't meet anymore –members don't know what is going on.

B. Suggested Solutions

- **Recreate the Dream**

- Build trusting relationships.
- Find a way to provide water, sewer and a place to build new homes for the next generation.
- The community needs to speak with one voice.

- **Evacuation**

- The community should do periodic drills to be ready for an evacuation.
- Improve winter trails.
- Construct a bridge to Kiniktuuraq.
- Build a bridge off the island.

- **Relocation**

- Request the Corps to propose a number of suitable sites for relocation.
 - Then the community can choose among those sites (rather than the other way around).
- Spend the money to relocate the community.
 - Don't spend the money on bridges.
 - Why is the government spending money on the rock revetment instead of on relocation?
- Why not relocate the area to a place where new homes can be built?
- Creating a way off the island will allow the problem to resolve itself (i.e., people will gradually migrate to a new location on their own).
- A government agency (BIA) decided to locate the community at its present location.
 - Shouldn't the government be responsible for relocation?

C. RECOMMENDED NEXT STEPS FOR THIS PROJECT

- Consultant should:
 - Distribute a summary of the 2006 Corps study to the community.
 - Look at studies of islands that have disappeared in other parts of the world.
 - Coordinate efforts with the Immediate Action Workgroup.
 - Read Jim Magdanz's recent study which compares population growth with subsistence trends.
- Don't have "public meetings"
 - Call gatherings for this project something else like "teams."
- Give students a chance to get involved in this project to address the community's challenges and express themselves.

Kivalina Consensus Building Project November 19, 2009 Public Meeting

Meeting Summary

Prepared by Glenn Gray and Associates

I. INTRODUCTION

A public meeting was held on October 1, 2009 to discuss initial findings of the Situation Assessment for the Kivalina Consensus Building Project. The following people attended all or part of the meeting.

Glenn Gray, Meeting Facilitator
Lucy Adams, City Council Member
Tom Hanifan, Vice Mayor
Judy Sage
Richard Sage
Anna Hercha
Roswell Stalker
Bruce Adams
Ella Leavitt
Corky Lee
Jenni Monet, Brooklyn, NY

II. SITUATION ASSESSMENT

Consultant Glenn Gray summarized the major sections of the draft Situation Assessment, a document he prepared for the Kivalina Consensus Building Project. The Situation Assessment summarizes state and federal studies about natural hazards facing Kivalina as well as options studied for relocation or remaining at the current town site.

- **Introduction:** Section 1 provides background about the Kivalina Consensus Building project.
- **Context:** Section 2 summarizes current conditions in the community including the need for housing and reliable systems for drinking water, wastewater and solid waste disposal.
- **Natural Hazards:** Section 3 of the report summarizes natural hazards facing Kivalina and proposed relocation sites. Flooding from storm surges and erosion pose the greatest threat for Kivalina, but there have been a number of different estimates for the 100-year storm surge. The most recent recommended estimate for the 100-year flood is about 7' lower than the estimate used for the 2006 Kivalina Master Plan. A recent study developed models for permafrost melting at Kiniktuuraq using two different scenarios for warming air temperatures. The study found that the ice-rich permafrost soil layer would melt with a 9' gravel pad.

- **Evacuation and Emergency Planning:** The City of Kivalina is currently developing a new Evacuation Plan and an Emergency Response Plan. The 2008 Local Hazards Mitigation Plan needs updating to reassess risks to the community using the new 100-year flood estimate and consideration of the new rock revetment.
- **Evacuation Road and Shelter:** A 2008 study recommended no further work on the evacuation road until a substantial portion of funding is secured. This study estimates that it would cost \$21.3 million for a route across the lagoon toward Simiq and \$38.9 million for an evacuation route through Kiniktuuraq.
- **Relocation Options:** Three main studies in 1994, 1998 and 2006 investigated several options for remaining at the present site or relocating to 13 other locations. The 2006 Master Plan recommended only two sites be investigated further: Tachim Isua and Imnakuk Bluffs. A proposed new 100-year flood estimate merits reconsideration of relocation options.

III. DISCUSSION

The meeting participants asked a number of questions about the Situation Assessment. One person asked if the state and federal agencies care what happens to Kivalina. The consultant explained that although there is no longer a lead federal agency, the Army Corps of Engineers has been working with Kivalina. The State of Alaska Immediate Action Workgroup (IAW) has developed recommendations for Kivalina in its report to the Governor's Subcabinet on Climate Change, including completion of community planning.

One person said that the community needed to agree on its future in order to be successful. The consultant said he thought Newtok's efforts to relocate have been successful because the community had agreement on what it needed to do.

One participant mentioned that she liked the references to work by Tiger Burch in the Situation Assessment. Another person mentioned that the school measured water heights in the past to determine the tidal range for Kivalina.

Someone asked if it would be possible to co-locate the community with Noatak. The Facilitator said that would be possible, but it was not investigated in the past because the community did not support that idea.

The group provided recommendations for getting larger turnouts at future meetings including: Door prizes, cancel bingo for the meeting night and don't pass out materials ahead of meeting so there will be a reason to attend. One person said it would be important to get more elders to the meeting.

IV. NEXT STEPS

The group discussed the timing of the next meeting and agreed that it should occur towards the end of January. The facilitator will work harder to get people to the meeting, and he will make sure there are door prizes.

In response to a suggestion at the last public meeting for this project, the facilitator will work with the community to develop teams to address short- and long-term responses to the threats of storms and erosion. The facilitator will work with the City Administrator to develop topics for the teams. Residents will select which team they would like to work on at the January meeting. The teams will address issues discussed in the Situation Report, meeting as needed to develop recommendations for the City Council. The recommendations will be presented at a community meeting in May and incorporated into the Final Report for the Consensus Building Project. The teams will also be encouraged to identify local and traditional knowledge for inclusion into the Final Report.



Kivalina Consensus Building Project Community Workshop *Summary*

January 28, 2010

Workshop Participants

One hundred thirteen adults and children signed in for the meeting. Attachment A includes the signup sheets with the names and contact information of the workshop participants.

Welcome

The Kivalina Inupiat dancers provided entertainment while community residents signed in and picked up project handouts. Project facilitator Glenn Gray welcomed the group and introduced John Chase and Chad Nordlum from the Northwest Arctic Borough.¹³ Glenn then provided an overview of the project and explained that it was funded as a result of a recommendation from the State of Alaska Immediate Action Workgroup and managed by the City of Kivalina. Unlike most projects, this project has been designed to get the input of Kivalina residents rather than have an outsider tell the village what it should do. This project will conclude in July, but funding may be available for future community planning.



Glenn explained that the workshop would begin with an overview of the Situation Assessment, and then the participants would break into groups. He told the participants he promised community members that no criticism would be allowed during the workshop. During the door-to-door survey, many people said they avoided community meetings because they did not like conflict.

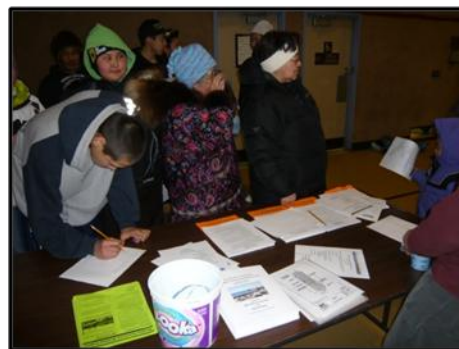
¹³ John Chase works on climate change and coastal management issues for the Borough. Chad Nordlum is a Borough employee who works with the village planning committees. He is currently working with Kivalina to establish a planning committee.

OPENING PRAYER

Elder Lucy Adams provided an inspirational prayer that included a call to work together to find consensus on the challenges facing the community.

SUMMARY OF SITUATION ASSESSMENT

Glenn Gray provided a summary of the Situation Assessment using a PowerPoint presentation. He drafted the document for review and comment by the community. The Situation Assessment summarizes reports about Kivalina that have been prepared by government agencies and researchers. It also includes a list of questions that may need to be answered before the community can move forward to resolve certain issues.



- **Areas of Agreement:** Kivalina residents agree on many issues: They want a community with a reliable, year-round water system, a sewer system, an improved landfill (dump site), and a better life for their children with room for new housing.
- **Natural Hazards:** As a result of later freeze up, there is a greater threat of erosion and storm surges from fall storms. The workshop participant's confirmed that the current open water is highly unusual; no one recalled ever seeing open water so close to the community during this time of the year. A recent study predicts the 100-year flood level would reach 8.9'. This estimate is 7.4' lower than what was used for the 2006 Kivalina Master Plan (the most recent document with relocation recommendations).¹⁴ Funding agencies may require that buildings (and relocation sites) be located above the 100-year flood level. Ice hazards are also a concern, including ice pile up and wither breakup of the lagoon ice. Permafrost is a concern for the water supply (thawed soils lead to an increased silt level in the Wulik River), coastal erosion, and melting ice cellars. Agencies have expressed concern about ice-rich permafrost soils at relocation sites, such as Kiniktuuraq, because structures would be damaged if the soil melts.
- **Evacuation and Emergency Planning:** The city is currently developing 2 plans: Community Evacuation and Emergency Operations plans. A consultant was in town earlier this week to finalize the plans. The Hazards Mitigation Plan will need to be updated to reflect new estimates for the 100-year flood level and to document how the new rock revetment may reduce risks from storms.
- **Evacuation Road and Shelter:** Two studies have been completed about potential routes and costs for an evacuation road. The 2005 study evaluated 8 options and recommended a route across the lagoon to Simik. The 2008 study evaluated 2 routes: A route across

¹⁴ The 100-year flood estimate is the expected flood level that could occur during a 100-year period. In other words, there is a one percent chance that a flood like this could occur in any given year.

the lagoon to Simik would cost \$20.3 million, and a route across the Singuak Channel through Kiniktuuraq would cost \$38.9 million.

- **Relocation Options:** Kivalina has held 5 elections related to relocation. In 2001, the community chose Kiniktuuraq as the relocation site, but in 2006, the U.S. Army Corps of Engineers said this site should no longer be considered because of coastal erosion, flooding and ice-rich permafrost sales.
 - 1994 Study by Dowl Engineers
 - 1998 Army Corps of Engineers Study
 - 2006 Army Corps of Engineers Master Plan
 - The 2006 Master Plan concluded that only two relocation sites should be considered further: Tachim Isua and Imnakuk Bluffs.
- **Options to Remain at Current Site:** The 1994 and 1998 studies considered options to expand the community (move airport and fill in lagoon). The 2006 Master Plan found that no further consideration should be given to the option to remain at the current site because of erosion, storm surges and the need to add gravel fill to a height of 15.5'. Another option would be to build an evacuation route across the lagoon with an island for community expansion (using materials dredged from lagoon).
- **Funding:** It will be difficult to obtain funding for an evacuation route and community relocation because of the high costs. Community consensus will be necessary to convince Congress to allocate adequate funds.

DISCUSSION GROUPS

During this part of the meeting, workshop participants broke into 4 discussion groups to identify the most important issues that the project teams should address: Evacuation Route & Shelter, Natural Hazards, Relocation, and Current Village Site. These teams will meet between now and April when the teams will provide their final recommendations.¹⁵ These recommendations will provide the basis for future community planning.

GROUP REPORTS

The workshop participants selected the group they wanted to participate in. The groups chose a facilitator to lead the discussions, someone to record ideas on “flip chart” paper and someone to report



¹⁵ Workshop participants requested a meeting in April instead of the proposed May date because residents will be participating in subsistence activities beginning in May.

back to the entire workshop. The groups provided the following ideas to the entire workshop participants.

- **Natural Hazards:** Concerns in Kivalina
 1. Fuel concerns during a flood
 - How are we gonna relocate fuel?
 2. Sewer concerns during erosion
 - Pollution of sewer contamination
 - Health related concerns
 - Exposure of raw sewage
 3. Land space diminishing during erosion
 - Our island getting smaller
 - No more room to lay our people at grave
 4. Open dumpsite overflow due to winter storms
 - Uncontrolled dumping of honey bucket
 - Wet honey buckets boxes all over leaving no space to walk or dump in proper place
 5. Permafrost melt
 - Bumpy roads
 - Water level higher in graves due to permafrost melt
 6. Home water purifying systems don't work
- **Current Site Issues:** Need to acknowledge the community is the “closest, brokest town to Red Dog”
 1. Water and Sewer
 - Much needed
 - Lack of causes
 - Contaminated drinking water
 - Need more tanks for water
 - Fecal coliform found in lagoon
 - Hook up water line to the new clinic
 2. Dump Site
 - Bad location
 - Deteriorated fences
 - Too close to airport
 - Separate trash and quqtaqs
 - Need incinerator



- Need a garbage man/equipment
- Landfill – ocean and lagoon site
- 3. Building Space
 - Everything is too close right now to each other physically
 - Need room for expansion for: School, residential homes, community buildings
- 4. Other Issues
 - Better fire department equipment
 - Law enforcement with holding cells and manpower
 - No evacuation road from current site
 - Dust control
 - Bigger runway
 - Children and adults alike need recreation centers
 - Need more manpower for local government offices
 - Grant writers
 - Office space
 - Jobs
- **Relocation**
 1. Local village government to take lead (preferably the tribe)
 2. Need to lead the people
 3. Need to work with state and federal agencies (for current site)
 4. Resolve current site
 5. Keep building the hope and keep the agreement
 6. Global warming
- **Evacuation Road and Shelter**
 - Road along the beach to port
 - Port has facilities available
 - Evacuation road across the lagoon
 - \$20 million – narrow enough for ATV's, use native gravel
 - Waste of money [it will erode]
 - Bridge – expensive, but needed
 - Sand spit area across from store is always there
 - Shelter – maybe where we relocated at Kiniktuuraq
 - Evacuation road – up towards the Noatak road
 - Miniigag – Suitable place to cross
 - Tie in to Red Dog Road – MS6
 - Kivalina- Noatak trail – high places to make shelter
 - Shelter – port site building
 - New site – community building
 - Port site – bus service for women, children and elders



NEXT STEPS

The participants signed up for project teams that will continue the group discussions. Attachment B includes the project team signup sheets. The teams will meet as often as necessary to develop recommendations that will be presented at the April 2010 workshop.

The project facilitator will circulate the Situation Assessment to appropriate state and federal agencies, and he will finalize the document after receiving comments from agencies and residents. Comments may be sent to the facilitator:

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Kivalina Consensus Building Project May 20, 2010 Community Workshop

Summary

Workshop Participants

Twenty-eight adults and 18 children attended the workshop. The following people signed in for the workshop:

Lucy Adams – Member City Council	Millie Hawley, President Kivalina IRA
Alice Adams – Member, City Council	Dolly Foster, Member IRA Council
Tom Hanifan – Member, City Council	Austin Swan, Elder Representative, NWAB Assembly
Nelda and Carla Swan	Judy Sage
Winona Hawley	Oran Knox Sr.
Franklin Knox	Jack Koenig
Russell Adams Jr.	Emmanuel Hawley
Monetta Adams	Larry Adams
Anita Adams	Lizzie Hawley
Abraham Adams	Amos Hawley
Ralph Knox	Robin Bronen, Anchorage ¹⁶
Gabriel Wolkin, DNR/DGGS	John Chase, NWAB Planning Department
Chad Nordlum, NWAB Planning Department	Glenn Gray, project facilitator

Welcome

Project facilitator Glenn Gray welcomed the group and asked each participant to introduce themselves. Elder Lucy Adams gave the opening prayer.

Glenn explained that this workshop would be the final community meeting for the Kivalina Consensus Building Project. He explained that the workshop would begin with a brief summary of the project, but the most important part would be the discussion by the participants about the next steps the community should take to plan for its future.

Project Components

The project began with a door-to-door survey of Kivalina residents to get their opinion about how the community should respond to short-term responses from increased threats of fall storms,

¹⁶ Robin Bronen is a graduate student working a doctoral thesis at the University of Alaska about human rights aspects of climate change.

erosion and flooding. Next, an annotated bibliography of all studies and reports related to natural hazards and relocation was produced. This bibliography and copies of the related studies are available at the City Office for review by community.

The next part of the project involved completion of the Situation Assessment which includes an analysis of the studies and reports. This document provides an opportunity for the community to know what is in the documents without having to read each one.

At the January workshop, community residents broke into four teams to discuss threats from natural hazards, evacuation route alternatives, relocation, and issues at the current site. These teams identified important issues and potential solutions to some of the problems facing the community. The recommendations from these teams and input from the workshops will be included in the final project report.



Situation Assessment Overview

Glenn provided a brief summary of some of the most important findings in the *Situation Assessment*. He handed out a one-page summary of the document for more information.

- **Natural Hazards:** As a result of later freeze up, there is a greater threat of erosion and storm surges from fall storms. The current estimate for the 100-year flood level is 8.9', 7.4' lower than what was used for the 2006 Kivalina Master Plan (the most recent document with relocation recommendations).¹⁷
- **Evacuation Road and Shelter:** Two studies have been completed about potential routes and costs for an evacuation road. The 2005 study evaluated 8 options and recommended a route across the lagoon to Simik. The 2008 study evaluated 2 routes: A route across the lagoon to Simik would cost \$20.3 million, and a route across the Singuak Channel through Kiniktuuraq would cost \$38.9 million.



¹⁷ The 100-year flood estimate is the expected flood level that could occur during a 100-year period. In other words, there is a one percent chance that a flood like this could occur in any given year.

- **Relocation Options:** The 2006 Master Plan prepared by the U.S. Army Corps of Engineers (Corps) recommended further consideration of only 2 sites: Tatchim Isua and Imnakuk Bluffs, both located north of the current village site. The Corps recommended no further consideration of Kiniktuuraq, the relocation site chosen by Kivalina voters in 2001, because of concerns about flooding, erosion and ice-rich permafrost soils. A 10/22/08 email from the Corps confirms it still believes no further investigation of Kiniktuuraq is warranted.¹⁸ Glenn said that if the community continues to pursue this option, it would need to address all of the issues raised by the Corps and consider new information (e.g., the 2008 permafrost report by Dr. Romanovsky and the 2009 storm surge study by the Corps).



Project Team Reports

During this part of the workshop, the four project teams were given an opportunity to provide final recommendations. The teams were formed at the January meeting, and they were encouraged to meet after that meeting to develop recommendations for next steps the community should take. The team reports from the January meeting were posted on the wall.

- **Natural Hazards** – Team Leader Millie Hawley discussed a climate change initiative by Maniilaq Association that includes a Climate Change Summit in Kotzebue September 16 – 17. She also talked about the permafrost report done by Dr. Romanovsky about Kiniktuuraq. Earlier in the meeting, Millie spoke about an effort of the Native Village of Kivalina and Maniilaq Association to work with WH Pacific to secure funds from the Indian Reservation Roads Fund to pursue a bridge across Singuak Channel towards Kiniktuuraq.
- **Current Site Issues** – Team leader Mayor Bert Adams could not make the workshop, so Glenn made a few observations. He said some residents have expressed concern that since it became known the community wanted to relocate, improvements to water, sewer and the dump have been deferred. Glenn said that in his opinion, something needs to be done about the crowded housing conditions and sanitation issues, “No one should have to live like this.”
- **Evacuation Road and Shelter** – Team Leader Austin Swan said an evacuation route is needed either across the lagoon or the channel. He said Noatak is planning to construct a road connecting the community to the Red Dog road, and Kivalina should consider this

¹⁸ The Corps email also encouraged Kivalina to apply for the community planning grant so there would be “a common blueprint for future state, federal and local investments.”

option too. He said he supported the work of the Native Village of Kivalina to pursue a bridge across Singuak Entrance.

- **Relocation** – Team leader Stanley Hawley could not make the meeting because of a family emergency. Team member Alice Adams read a letter from the committee which supported selection of a site that has high ground, clean water and room for a landfill. The new seawall provides some security, but it will not last indefinitely. The community needs to move ahead now, not 5 years from now. If there is a disaster, how can the community evacuate when there are high waves and cold water? The complete letter is attached to the end of this summary.

Next Steps for the Consensus Building Project

All project documents will be finalized by the beginning of July. The comment deadline for the Situation Assessment has been extended to May 31. Comments will be incorporated into the final draft.

A draft final report will be prepared by mid-June for review and comment. The final report will describe the various aspects of the project, discuss areas of consensus, and provide recommended next steps from project teams and workshop participants.



Funding Opportunities

Glenn provided a brief summary of some potential funding opportunities the community may wish to consider.

- **“Section 116” Authority:** A 2009 Senate appropriations bill provided authority for the Corps to conduct projects for storm damage prevention and reduction, coastal erosion, and ice and glacial damage in Alaska, including relocation of affected communities. Non-federal matching funds of up to 35% would be required. There may be forthcoming Corps direction regarding the benefit-cost ratio that will be required for such projects.
- **Indian Reservation Roads Fund:** The IRA is pursuing funding from this source for a bridge across Singuak Entrance.
- **Northwest Arctic Borough Planning Grant:** The Borough provides \$5,000 annual grants for its communities for community planning. A village planning committee must first be established with 2 members appointed by the City, 2 members appointed by the IRA and 3 “at large” members from the community. Members serve 3-year terms, and anyone may attend committee meetings.

- **Planning Grant:** Kivalina may apply for a noncompetitive \$120,000 community planning grant under the Alaska Climate Change Impact Mitigation Program. The purpose of the grant is to implement recommendations from the April 17, 2008 report of the Immediate Action Workgroup (IAWG) of the Governor’s Subcabinet on Climate Change. One of the most important recommendations is establishment of a Planning Committee to develop a plan of action for response to climate change-related threats.¹⁹

Hazard Mapping

Gabriel Wolken, a climate change scientist from the Alaska Division of Geological and Geophysical Surveys (DGGs) in DNR, spoke about a project he will be conducting during July around Kivalina. The purpose of the project is to get a better understanding of natural processes in the region and map hazards such as flooding, erosion, thawing permafrost, and slope instability. This project will provide critical information for use by the community when planning its future. He said he wants to hear from people about their things like melting ice cellars and other observations. His email address is: gabriel.wolken@alaska.gov

Consensus Discussion

Glenn facilitated a discussion among the workshop participants about next steps they think the community should take in response to threats from fall storms, flooding, erosion, and melting permafrost. The free-flowing discussion covered many different topics, and for most issues the level of agreement or disagreement was not fully explored.

For one issue there was a clear consensus; the community should apply to the for the \$120,000 community planning grant through the Alaska Climate Change Impact Mitigation Program. This noncompetitive grant is available to Kivalina for implementation of the April 17, 2008 recommendations of the IAWG of the Governor’s Subcabinet on Climate Change. Either the city or the IRA may apply for the grant.

As mentioned earlier, the IAWG recommends the community create a planning committee representing various community interests. The purpose of the committee would be to develop a plan outlining what steps the community will take to respond to climate change-related threats.

There was not a consensus among the group whether the existing Kivalina Relocation Planning Committee should develop the community plan or if a new committee should be formed to do it. While some people said it is time to “start all over” at least one workshop participant did not agree. This issue was not resolved during the workshop, and it should be noted that only one member of the Relocation Planning Committee was able to attend the workshop.

One person said it would be better to establish a new planning committee because it would be able to address other important issues not directly related to relocation in addition to relocation

¹⁹ In response to a question about when the funds run out for this grant, Glenn said he would find out. This information will be included in the final workshop summary.

issues. Several people said more open communication is needed, and a new committee could find ways to keep the community informed. One person said that decisions should be made only when all committee members are present.

The group agreed that both the city and IRA councils should add an agenda item for their next meetings to discuss the planning committee issue. One person suggested the two councils should meet jointly to discuss this matter.

The workshop participants discussed a wide range of additional issues. The following bullets summarize the discussion according to topics rather than the order in which the comments were made.

- Communication:
 - Need open communication.
 - Use planning grant to communicate current and new information.
 - Make sure there is an open and transparent process (may need someone from outside the community to help).
- Newtok: Robin Bronen spoke about her experience working with Newtok on its relocation efforts. She spoke about how the community is driving the relocation process.
- The community should contact the Cold Climate Housing Research Center to ask for assistance in designing low cost, culturally appropriate housing (<http://www.cchrc.org>)
- Relocation:
 - Kiniktuuraq:
 - One person said there is a misunderstanding about where in the Kiniktuuraq area the community wishes to relocate. He said there aren't permafrost problems in the desired location.
 - Another person said Kiniktuuraq is not suitable because it is muddy and the area is slumping.
 - It is not feasible to make a road to the proposed relocation sites north of the lagoon.
 - The new committee needs to look at other relocation sites.
 - Consider relocation to a site north of the Red Dog Mine.
 - There will always be division when talking about relocation.
 - Need an outside "3rd party" review of Corps 2006 Master Plan.
 - There needs to be a new branch of government that deals with relocation issues.
- Current Site:
 - Need more housing.

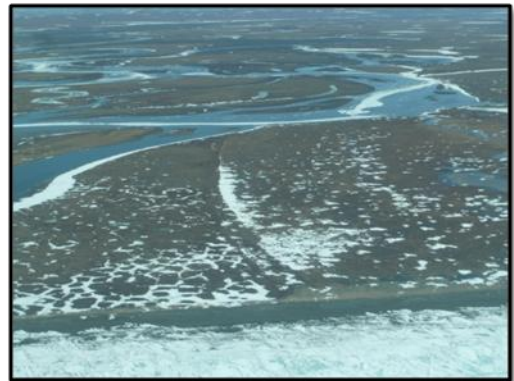


Open lead in front of the community January 27, 2010

- Need improved water and sewer systems.
 - Consider whether it would be possible to remain at the current site by protecting it from hazards and filling in part of the lagoon for new housing.
 - Raise the buildings in the current site.
- Hazards:
 - “We must think about our children.” The ocean is predicted to be ice free by 2014 – 2016 and the community will be subject to greater storm damage.
 - IPCC report predicts problems for entire Northern hemisphere.
 - Need to communicate new findings about 100-year flood estimate.
 - Need to consider the recent permafrost study by Dr. Romanovsky.
 - “I had a dream where there were big waves and the wind was blowing from the west.” In this dream, there were no men. Mothers were running with children without fathers. “I started praying for a north wind. You say we should ask for what we want, so I asked for the north wind and it happened.”
 - The ANTHC septic system project for the school involved placement of a vertical culvert for drainage. It was supposed to set up and freeze, but it looks like it is tipping over.
 - More damage may occur to beach side houses which may have to move.
 - The two most important things to do are to build an evacuation road and relocate the community.
 - Funding:
 - The estimates for relocation costs may be misleading. Some funding may already be available such as funding for a new school.
 - “Everyone always say where will you get the money? They tell us to plan, but then they say there is no money.”
 - The government needs to help instead of telling us there is no money.
 - “I’m tired of hearing there is no money. They are not helping us when they put us down [by saying there is no money].”
 - Studies:
 - Reconsider past studies – no more studies are needed.



Robin Bronen, Gabriel Wolken & Glenn Gray



Kiniktuuraq May 19, 2010

- Invite the Corps to visit the community and explain the 2006 Master Plan and whether new information changes any assumptions made in that plan.
- The DGGs mapping project will provide new information about hazards in the area.
- Kivalina needs to be drug free – drugs are a big problem.
- Use funding to put together a database of reports.
- How can we know when the Corps makes errors in estimates? This is life threatening to us.
- There are new tree-like shrubs growing up river.
- “Growing up I used to hear stories from elders about how the seas used to be high up in the mountains.” There are seashells up on those mountains and that is how they got there.



Information from the project workshops and community meetings will be included in the final project report. A draft of this report will be available for review by mid-June.



Kivalina Consensus Building Project
Enclosure to the May 20, 2010 Workshop

Letter from the Relocation Team
Read During the May 20 Community Workshop

19May2010

To All Concerned,

The Kivalina Relocation planning efforts have been attempting to address overcrowding and sanitation issues to date. However, new problems of accelerated erosion stemming from global warming has produced reason to be concerned for the safety and well being of the residents if we continue to live at or near the sea. The new sea wall provides for some measure of security but does not guarantee our island's survival indefinitely.

For the sake of safety and peace of mind, and to address the overcrowding and lack of sanitation problems, it would be highly desirable for this village to move to higher ground, a spot with stable soils, with access to clean water, and sufficient ground for a landfill.

To be truthful, getting the money to move anywhere, Kiniktuuraq included, will be very hard to accomplish. Kivalina is not exactly on any agencies favorable list due to the global warming lawsuit and the flap over Red Dog.

The agency that can help us move to another site is the Corp of Engineers. It is now four years with no sign of progress in the planning with the Corp. Working with the Corp is imperative at this time.

Finally, our working relationship on the relocation planning has mutated into cloak and dagger politics. We do not work together anymore. Kivalina has fractured into individualism and policies crafted behind closed doors. As long as we continue on this present course, with no unified voice as a community, we will all fall into the ditch.

Therefore, the proceedings from this meeting should not be the final chapter of our village relocation efforts. Give the Kivalina IRA Council time and space to restore order within their organization and allow them to lead our village. The City of Kivalina needs to continue working with the State to maintain dialog on consensus.

The people will be watching, with or without results. We are all crafting a legacy together. What we do now, will be in the books for our great, great grandchildren to research about for their college papers.

Relocation Team members

Kivalina Consensus-Building Project

Attachment B

Characteristics of an Open and Transparent Process

All communities face a certain amount of conflict when make important decisions that will affect the future of its residents. This attachment provides a list of methods that may be useful in building trust, reducing conflict and working towards a consensus. It should be noted that some of these techniques are already be being implemented in the community.

Communication

An open and transparent process includes adequate notice of meetings and multiple ways for residents to learn about what is going on.

- **Adequate Notice of Meetings:** Residents can be informed about council meetings, community workshops, community meetings, and agency-sponsored meetings through a number of methods, including meeting flyers posted on local bulletin boards, notices mailed to each post office box, and announcements on the CB radio the day of the meeting.
- **Meeting Summaries:** A written meeting summary is important because it documents what occurred during the meeting. Summaries are a useful way to inform people who did not attend the meeting about what was discussed and decided. In addition, meeting summaries are useful to those who attended the meeting to make sure their ideas were understood correctly.
- **Newsletters:** Newsletters can be a useful way to keep community members informed about a continuing issue. They can be used to track the progress of a project, provide updated or new information, and document decisions.
- **News Articles:** Articles in a newspaper, such as the Arctic Sounder, can be a useful tool to keep the community informed as well as people outside the community.
- **Internet:** The internet can be used to distribute notices and provide updates to residents who have an email address. The city webpage is an effective way to keep people informed, including residents with internet capability and outsiders.
- **Leadership:** The success of communication efforts will depend on the level of commitment by community leaders to participate in community meetings and workshops.

Community Involvement

It is important that there is a perception by community residents that they have the ability to have a meaningful role in community planning and decision-making, even if they choose not to participate. Some of the techniques listed below will ensure that such opportunities are available.

- **Schedule Time for Public Comments:** An item listed on each agenda for public comments will ensure that residents have an opportunity to speak at official meetings.
- **Community Meetings and Workshops:** Special meetings and workshops can be scheduled to get public opinion, “brainstorm” ideas, discuss alternatives, or meet with agency representatives from outside the community.
- **Surveys:** Surveys can be used to gather community opinion about an issue, proposal, or alternatives. Door-to-door surveys are useful when information is needed from a broad cross section of the community.
- **Advisory Votes:** For important issues, it may be important to hold an advisory vote. For example, although there have been many votes on relocation, the community may wish to consider if new information merits another vote. To be effective, an advisory vote should be held after the community has been thoroughly informed about the pros and cons of several alternatives.
- **Committees:** Committees are a good way to on specific issues or projects outside of formal council meetings. Committee meetings should be advertized and open to all residents. Public input can either be allowed during the entire meeting or at the very least during a scheduled part of the committee meeting. A written statement by the organizing body should establish details about the committee, including its purpose, expectations of committee members, how long the committee will exist, how decisions are made (e.g., consensus or majority vote), number of people needed to make decisions (quorum), and how the committee will report its recommendations. Membership should represent an adequate cross section of the community so all interests feel they are adequately represented. If the committee is established on an ongoing basis, members should have specific terms with members appointed on staggered terms.
- **Meeting Place:** An adequate meeting place should be chosen to ensure there will be room for the general public to listen to or participate in the meeting. The size of the meeting room will depend on the level of interest expected from the community.
- **Leadership:** Community leaders should make a special effort to attend community meetings and workshops.

Conflict Resolution Techniques

Some topics addressed during meetings can lead to unproductive conflict if the meeting is not managed properly. Difference of opinion can be a good thing to identify and resolve issues, but meeting participants should always feel they are in a safe environment.

- **Ground Rules:** While ground rules are not always necessary, they can be useful maintain a “safe environment” to keep participants from being berated or feeling they are being attacked.
- **Inupiat Values:** The Inupiat people have successfully lived in Northwest Alaska for millennia because of their ability to work together and adapt to changing conditions.

Inupiat values, such as avoiding conflict and learning from elders, could be useful if incorporated into public meetings.

- **Interests and Positions:** Meeting chairs can help a group find solutions to difficult problems by encouraging people to focus on their interests rather than positions. For example, someone who wants the evacuation road to be located across the lagoon (their position) may be agreeable to a different location if the alternate route will get residents off the island safely (their interest).
- **Facilitators:** For controversial issues, it may be useful to use an outside facilitator who is perceived by the community to be impartial.
- **Build on Areas of Agreement:** It is often human nature to dwell on areas of disagreement rather than on areas of agreement. Sometimes it can be useful to work on simple issues first, and build on areas of agreement.