

**RECOMMENDATIONS REPORT  
TO THE  
GOVERNOR'S SUBCABINET  
ON  
CLIMATE CHANGE**



**DRAFT REPORT**

**IMMEDIATE ACTION WORKGROUP  
DECEMBER 22, 2008**

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*(Edit Note: This needs to be rewritten after 1/7 IAWG meeting and likely revised after 1/27 mtg)*

### *Commissioner Hartig and Members of the Governor's Subcabinet on Climate Change:*

The Immediate Action Workgroup is pleased to provide **its second set of** recommendations regarding the actions and policies that should be taken in the next 12 –18 months to prevent loss of life and property in Alaska's communities that have been identified as those in greatest peril due to climate change phenomena.

These immediate actions combined with the policy recommendations were developed to serve as a template and model to assist other Alaska communities in an effective manner as they too are impacted by erosion and other natural hazards that seem to be increasing in number and in severity.

What began as a series of scheduled meetings with representatives from state agencies, the U.S. Army Corps of Engineers, and community representatives, quickly evolved into a collaborative, cooperative working relationship with each participant providing useful information and ideas on innovative ways to expedite projects as well as practical, on-the-ground know-how. We wish to commend the workgroup and community representatives on their dedicated and thoughtful participation in this process.

We started by embracing the concept of *recipes for success*. What we found is - the recipes are complex, the ingredients numerous, and sometimes the chefs need to be the cooks and cooks, chefs. Our conceptual recipe for success follows here, with our list of ingredients following in the form of immediate action recommendations for specific community projects and then additional ingredients describing necessary and beneficial immediate policy and implementation actions to effectively address climate impacts, which we anticipate impacting many more Alaska communities.

### **Immediate Action Workgroup's Recipe for Success**

***Step 1: Begin by developing a collaborative organizational structure that can focus the combined capabilities of local, regional, state, and federal stakeholders on the problems at hand.*** Identify what expertise is available; which organization has the authority, capability, and potential funding to lead the combined effort; and, identify where functional gaps exist that need to be filled. Local communities severely affected by climate change should be encouraged to establish a project coordinator position to interact with all other organizations and be an advocate for funding through grants and other means to implement needed evaluations and action plans.

Team work is essential. Relying on one agency to carry out the mission risks both waste and lack of action. These problems, which primarily affect small, isolated communities are difficult to address and due to this are easily ignored. Only through continual focus and intelligent decision making can we adequately address their problems.

***Step 2: Discuss the nature and extent of the potential climate changes and create an applied approach to addressing significant impacts, as described in Step 3.*** A scenario analysis could

compare community impacts with the full range of plausible future conditions (minor sea level rise to significant rise this century, continuation of historical storms to increased intensity of storms, gradual thawing of permafrost to quick melt of permafrost, historical trend of subsistence species populations to reduced availability of subsistence resources, etc.).

**Step 3: *Identify the communities at risk, timeframe, and the true needs to address climate change.*** Once, communities at risk are identified and the timeframe established before major damages/ losses occur, recognize that communities in jeopardy under all plausible scenarios warrant special consideration. ***Develop a methodology for prioritization of needs based on the risk to lives, health, infrastructure, homes, businesses, subsistence harvests, significant cultural attributes, and the quality of life.*** Villages with declining populations, which already cannot support continuation of vital services such as a school, would likely be a lower priority than those which are likely to sustain viable communities during the foreseeable future.

***Next, determine the true needs of coastal communities subjected to climate change.*** Do they require additional land for population growth; are coastal storm damages increasing to potentially catastrophic levels; is melting permafrost destroying the foundation for structures at the community; will sufficient numbers of future subsistence resources be available to sustain the community at its current location; when will key facilities (airport, power, school, water supply, etc.) be lost so the community could not continue to function with dignity; and, is the community frequently needing emergency declarations to cope with impending disasters?

**Step 4: *Develop measures that meet the stated needs and combine those measures into alternative plans for comparison.*** Document the pros and cons of each alternative, obtain local input on community values, evaluate the environmental effects of each plan, and provide estimated costs for implementing each alternative. Determine the challenges of concurrent budgeting and meeting regulatory requirements where a collaborative effort with other agencies and organizations is proposed to implement the alternatives. Select the plan that provides the best overall balance to meet local needs and is cost effective, sustainable, engineeringly sound, and environmentally acceptable.

Michael Black, State Co-Chair  
Deputy Commissioner  
Department of Commerce, Community  
and Economic Development

Patricia Opheen, Federal Co-Chair  
Chief of Engineering – Alaska District  
U.S. Army Corps of Engineers

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# NEAR TERM FOCUS FOR IMMEDIATE ACTION WORKGROUP

The Immediate Action Workgroup of the Governor's Executive Sub-cabinet on Climate Change was established to address known threats to communities caused by coastal erosion, thawing permafrost, flooding, and fires.

**Objective:** Close a planning and execution gap identified by Governor Palin and Senator Stevens by creating a unifying mechanism to assist the communities of Newtok, Shishmaref, Kivalina, Koyukuk, Unalakleet, and Shaktoolik<sup>1</sup>. These communities face imminent threats of loss of life, loss of infrastructure, loss of public and private property, or health epidemics as caused by coastal erosion, thawing permafrost and flooding.

**Plan of Action:** The Immediate Action Workgroup will do the following:

- ***Conduct Workgroup meetings involving community leaders from the threatened villages to build a common understanding of the relative risks*** in each community using the following four criteria which individually or collectively create an urgent situation:
  - Safety of life during a reasonably foreseeable storm or flood event;
  - Potential loss of infrastructure critical for community viability (school, fuel tanks, power plant, water / sewer provisions);
  - Health threats to the community as defined by CDC or the Health Department (disease, reoccurring illnesses, unusually high frequency of illnesses); and
  - Potential loss of 10 percent or more of residential dwellings.
- ***Prioritize projects or actions to mitigate the community's most urgent risks*** through protecting or relocating threatened buildings and structures, affecting an emergency evacuation plan, or to address present or imminent health threats.
- ***Prepare recommendations for an oversight planning body and its authorities to provide successful coordination between each of these communities and all appropriate state and federal agencies*** to ensure the successful completion of projects or other actions identified by this effort.
- ***If warranted, make recommendations on the scope of additional assessments of protective seawall designs for the purpose of examining whether particular engineering designs may be successful*** in 1) providing a time window of protection for a community so as to enable the community to develop a multi-year relocation plan; or 2) provide long term protection of the community such that a relocation may not be necessary in the foreseeable future.
- ***Identify and propose changes to laws and policies*** (state and federal) ***that currently impede the ability of agencies to timely execute appropriate actions*** necessary for imminent threat circumstances in these and other communities.

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<sup>1</sup> The Workgroup has used the GAO 2004 report which identified 9 highly threatened communities (Shishmaref, Newtok, Kivalina, Koyukuk, Unalakleet, Barrow, Bethel, Kaktovik, and Point Hope) for its November 6 meeting to further examine the nature of imminent threats. Based upon the November 6 meeting and a November 19 / 20 Roundtable meeting conducted by Senator Stevens, the Workgroup will focus its work with the communities of Shishmaref, Newtok, Kivalina, Koyukuk, Unalakleet and Shaktoolik.

## EDIT NOTE: ADD UPDATE OF PROJECTS/EFFORTS FUNDED BY 2008 LEGISLATURE

# EXECUTIVE SUMMARY IMMEDIATE ACTION WORKGROUP RECOMMENDATIONS

This executive summary is a consolidated list of the Immediate Actions and the Relocation Assistance Policies developed by the Immediate Action Workgroup of the Governor's Alaska Climate Change Subcabinet. The executive summary consists of **an update of the projects and efforts funded in 2008**, the recommended immediate actions and associated budget estimates and two recommended policies. The policies have been expanded to help define and interpret meanings of terms used in each policy statement. These collective recommendations represent an intensive collaborative effort undertaken in an open public forum to address the immediate needs of the State, with a specific focus on six communities in peril: Newtok, Shishmaref, Kivalina, Koyukuk, Unalakleet, and Shaktoolik.

These recommendations will help the Subcabinet develop a State Climate Change Strategy. This executive summary can be used as a reference point, but should be read within the context of the entire report, which summarizes the state of the six communities in peril, immediate and near-term actions, along with the policies and implementation recommendations and accompanying rationale.

*These immediate actions combined with the policy recommendations were developed to serve as a template and model to assist other Alaska communities in an effective manner as they too are impacted by erosion and other natural hazards that seem to be increasing in number and severity.*

Detailed community descriptions can be found on pages **12 - 24**.



Photo 1: Undercutting of river bank in Newtok. (Credit: Stanley Tom)

# **UPDATE OF PROJECTS AND EFFORTS RECOMMENDED BY IAWG IN 2008**

Edit Note – Needs to be compiled.

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Immediate Action Funding Recommendations			
Community	Immediate Action	Budget Estimates	Action Taken
All Six Communities	<p><b>Develop Suite of Emergency Plans and Training/Drills</b> (Alaska DHS&amp;EM is lead) Emergency Operations, Community Evacuation, Hazard Mitigation Fire Management (Koyukuk only-DNR is lead)</p> <p>Purpose: Best chance to reduce loss of life and property when natural disasters occur.</p> <p>Coordinate with community planning projects to ensure dollars go as far as possible.</p>	<p><b>\$400,000 total to DHS&amp;EM.</b> DHS&amp;EM will RSA \$25,000 to DNR for Koyukuk Fire Management Plan. DHS&amp;EM will also provide \$100,000 federal funds match.</p> <p><b>Investment:</b> DHS&amp;EM estimates for every \$1 spent on preparation, \$4 saved in response.</p>	<p>Funds were included in FY09 Capital Budgets.</p> <p><b>FY10 Budget Placeholder: \$500,000</b></p>
All Six Communities	<p><b>Community Relocation Plan</b> Funding for future relocation planning efforts for each community require coordination and resources both at the community and agency levels. Communities need funding and technical assistance to support/augment local capacities. Rational and collaborative planning needs to examine alternatives (e.g. shoreline stabilization/protection vs. relocation) and identify the opportunities for implementation.</p> <p><b>Training/Workshop</b> to orient communities, agency personnel and contractors to the recommended collaborative community planning process.</p> <p><b>Cost Effective:</b> When coordinated, Emergency Preparedness, Community Relocation and other community project planning and project developments have cost-effective results.</p>	<p><b>Partially covered in current budgets.</b></p>	<p>Immediate: Funds were included in FY08 Supplemental Budget for initial relocation planning resources.</p> <p><b>FY10 Budget Placeholder: \$300,000</b></p>

Community	Immediate Action	Budget Estimates	Action Taken
All Six Communities	<p><b>Reduce Capital Budget Expenditures</b></p> <ul style="list-style-type: none"> <li>- Through inter-agency and local coordination identify capital cost savings by aligning timing of projects requiring heavy equipment.</li> <li>- State should establish co-sponsorship funding to ensure Alaska attracts federal funds for its priority projects.</li> <li>- Find/develop Western Alaska rock source to reduce costs.</li> </ul> <p><b>35% Funding Co-Sponsorship:</b> Based on recommendations from Senator Stevens at recent roundtables and other meetings.</p>	<p><b>Immediate and Near Term Capital Budget Estimates:</b> State should be prepared to augment federal funds with a target of 35% of erosion control and mitigation capital costs.<sup>2</sup></p> <p>US Army Corps of Engineers (USACE) recommends the State of Alaska create a target of 35% to augment federal funds control/mitigation projects to ensure the highest likelihood that federal funds will be allocated to Alaska, given the competitive nature of these funds.</p>	
All Six Communities	<p><b>Preliminary Engineering and Early Coordination</b></p> <p>Funding will allow for preliminary engineering investigations to begin so that project development can move ahead in an orderly, timely, and efficient manner. Site surveys, material source investigations, hazard mapping, geotechnical and hydrologic studies, and environmental documentation and permitting studies will all need to be conducted prior to developing erosion protection or relocation design plans. Because all likely project scenarios will involve extensive environmental documentation and permitting, it is critical that the project development process start as early as possible. Will also allow for early coordination between agencies and affected communities and a review of existing data, reports, and plans.</p>		<p>\$600,000 to ADOT/PF was included in the FY09 Capital Budget.</p> <p><b>FY 10 Budget Placeholder Request: \$500,000</b></p>
All Six Communities	<p><b>Identify and Develop a Data Strategy</b> to support Subcabinet decisions that need to be made for erosion control and relocation projects.</p>	<p><b>Address as part of the Subcabinet Climate Change Strategy.</b> Subcabinet budget requested in FY08 Supplemental.</p>	

<sup>2</sup> March 24, 2008 Email from P. Ophoen, USACE Alaska District: Water Resources Development Act of 1986: the following sections set the basis for the USACE cost sharing policies including in both the Planning Guidance Notebook and the Digest of Water Resources Policies and Authorities. Section 103 mandated cost sharing for construction of flood control and other purposes. Section 104 mandated cost sharing for feasibility studies, and preliminary engineering design (PED). It states in part that (para (a)(1)) "The Secretary shall not initiate any feasibility study for a water resources project after the date of enactment of this act unto; appropriate non-Federal interests agree, by contract to contribute 50 percent of the cost for such study...". It further states in paragraph (b) Planning and Engineering: "The Secretary shall not initiate any planning of engineering authorized by this Act for a water resources project until appropriate non-Federal interest agree, by contract to contribute 50 percent of the cost ...".

Although Senator Stevens has sponsored authorizing legislation to conduct coastal erosion projects for Alaskan Native Villages at 100 percent federal cost the authorization did not change budgetary policy or procedures, or the Administration's policies on mandating cost sharing for Civil Works studies, PED or construction. The budget guidance addresses non-budgetable (policy non-compliant) studies and projects by addressing them in what is known as increment 9 of the budget submission reflecting our capability to perform the work.

Community	Immediate Action	Budget Estimates	Action Taken
<p><b>Kivalina</b></p> <p>USACE Description of Need: 2000 LF is needed to <i>provide interim protection</i> for critical structures and residences on the ocean-side of the island while Kivalina plans to relocate. Anticipated contract cost is \$16M<sup>3</sup>. USACE received \$4.9 million in Federal fiscal year 2008, which will fund 400 LF of the 2000 LF total.</p>	<p><b>Revetment/Erosion Control Project</b></p> <p><b>Near-term (next 18-24 months):</b> construction of 2000 LF linear feet of rip rap revetment with a current estimated cost of \$16 M .to protect critical structures and residences on the ocean-side of the island where catastrophic erosion is taking place.</p> <p><b>Intermediate-term:</b> construction of 1300 LF of rip rap revetment to provide interim protection to critical structures and residences at the lagoon side of the island. Estimated cost is \$10 M. Total anticipated revetment project is \$26 M. (protection for both ocean-side and lagoon-side of island).</p>	<p><b>Immediate Action – Capital Budget Estimate for erosion protection on ocean-side of island:</b> \$3.3 million (35% of \$9.3 million in Federal funding<sup>4</sup>) funds a portion of 2000 LF shoreline protection for ocean side of island.</p> <p><b>Intermediate -term Estimated Capital Budget – \$9.1 million (35% of \$26 million)</b></p>	<p>Funds were included in the FY09 Capital Budget.</p>
	<p><b>State of Alaska serve as 3<sup>rd</sup> Party Reviewer for geologic aspects of USACE (Relocation) Assessment Reports</b> Alaska DGGS as lead.</p>	<p><b>Budget Estimate:</b> \$12,000<sup>5</sup></p>	<p>Covered in current budgets or FY08 Supplemental.</p>
	<p><b>Relocation Feasibility Study</b> Geologic Mapping (Alaska DGGS as lead).</p>	<p><b>Budget Estimate:</b> \$180,000</p>	<p>Eligible for funding through CIAP funds or FY 10 Capital Budget.</p> <p><b>FY10 Budget Placeholder for ~\$180,000</b></p>

<sup>3</sup> The base bid for the project is \$3.9 M for constructing 400 LF of rock revetment, with a total cost of \$4.5 million. This contract includes four options to construct 400 LF each at approximately \$2.4 million each, if funds are received before Mar 09. A contractor mobilization cost of \$375,000 would also be required for the second year of construction.

<sup>4</sup> USACE FY08 \$4.5 M + USACE FY09 (anticipated) \$4.8 M (two 400 LF increments at \$ 2.4 M each) = \$9.3 M. State-funded portion of approximately 400-600 LF at \$3.3 M will leave 200-400 LF of total 2000 LF rock revetment for ocean-side of island to be completed in FY10.

<sup>5</sup> This budget estimate is only for DGGS review of geologic aspects of the COE's relocation assessment reports. Broader, full review would involve many more participants and may not be appropriate for DGGS to lead. For review of all aspects, I suggest DCCED take the lead and draw on DGGS as well as other appropriate agencies. A larger budget estimate is needed if this is the intent. (Rod Combellick, DGGS edits to March 20, 2008 draft IAW Recommendations Report).

Community	Immediate Action	Budget Estimates	Action Taken
<p><b>Koyukuk</b></p>	<p><b>Review Feasibility Report:</b> Koyukuk, DGGs, ADOT/PF, and DCCED should review the USACE Recommendations Report to provide feedback/reality check to the USACE Report was recently provided to Koyukuk community. USACE representatives travel to Koyukuk to meet with community.</p> <p><b>Coordination Among:</b> Koyukuk, USACE, ADOT/PF, DCCED, DHS&amp;EM for preliminary engineering, planning, and funding strategy.</p> <p><b>Upgrade Existing Road:</b> Ensure road is passable during flooding.</p> <p><b>Build Evacuation Center:</b> Ensure community has an emergency shelter.</p>	<p><b>FY10 Capital Budget Estimate:</b> \$800,000.</p> <p><b>FY10 Capital Budget Estimate:</b> \$4.5 million.</p>	<p>Covered in Current FY09 Capital Budgets.</p> <p>For FY08 &amp; FY09: Covered in current and/or FY08 Supplemental (Community Planning grants and DHS&amp;EM Emergency Planning Training).</p> <p><b>FY10 Budget Placeholder: \$800,000</b></p>
<p><b>Newtok</b> USACE Status: Designs are underway for the road from the barge landing to the evacuation center at the new town site for Newtok. USACE does not currently have funding to construct the road which is estimated at \$5 million.</p>	<p><b>Build Staging Area for Barge Landing</b> – Ensure ability to receive supplies.</p> <p><b>Coordination Among:</b> Newtok, USACE, ADOT/PF, DCCED, and the Newtok Planning Group to determine what road standards are needed (purpose – construction costs may be less than FY10 estimate). Coordination expanded to Navy to determine if building Evacuation Shelter can be used as a training exercise (Navy has indicated they may be able to provide labor).</p> <p><b>Build Road to Evacuation Site</b> – Ensure community has access to shelter (2.5 miles).</p> <p><b>Build Evacuation Shelter</b> – Ensure community has an emergency shelter (approx 4,000 sq ft + 2,000 sq ft equipment shelter).</p>	<p><b>FY09 Capital Budget Estimate:</b> \$279,000. <b>For FY08 &amp; FY09:</b></p> <p><b>Capital Budget Estimate:</b> \$3.75 million.</p> <p><b>FY10 Capital Budget Estimate:</b> \$4.5 million.</p>	<p>Funds were included in the FY 09 Capital Budget for construction. Planning funds were included in the FY08 Supplemental Capital Budget.</p> <p>Partial funding was included in the FY 09 Capital Budget.</p> <p><b>FY10: Budget Placeholder \$2mm;</b> <b>Federal - IRT leverage \$3.5-\$4 million</b></p>

Community	Immediate Action	Budget Estimates	Action Taken
Shaktoolik	<p><b>Preliminary Relocation Site Assessment</b> for relocating village.</p> <p><b>Evacuation Road</b></p> <p><b>Coordination Among Shaktoolik, Kawerak, Federal, and State Agencies:</b> Funding, design, etc.</p>	<p><b>Budget Estimate:</b> \$150,000</p> <p><b>Budget Estimate:</b> Likely have an estimate by Fall 2008 after reconnaissance work completed.</p>	<p>Eligible for funding through FY08 Supplemental for Community Planning Grants.</p>
	<p><b>Relocation Feasibility Study</b> Geologic Mapping (Alaska DGGS as lead)</p>	<p><b>Budget Estimate:</b> \$180,000</p>	<p>Eligible for funding through CIAP funds or FY 10 capital budget.</p> <p><b>FY10 Budget Placeholder for ~\$180,000</b></p>

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<p><b>Shishmaref</b> USACE Description of Need: The washeteria and lagoon are not protected by the 700 LF USACE has under contract to install. the length was determined by funds availability. USACE anticipates the contractor will demob. Fall 2008 or early Spring 2009. The next 750 ft increment of rock revetment design is estimated at \$9 million for construction cost, which would protect homes and a church. Another 550 feet of rock revetment is needed to protect the washeteria and the sewage lagoon. There is also a need to extend the protection on the southern end of the village where the existing reveted area ends.</p>	<p><b>Funding Strategy Coordination:</b> Shishmaref, USACE, ADOT/PF, and DCCED</p> <p><b>Revetment/Erosion Control Project</b> 700 ft section that will provide protection to the North shore including the washeteria and sewage lagoon. USACE estimate: – \$8.7 million for 700 ft.; \$25 million for remaining project.</p> <p><b>FY10 State/Federal Coordination:</b> USACE will contribute \$500k for design of final stages of erosion control revetments if State contributes the final \$3million for construction.</p>	<p><b>FY10 Capital Budget Estimate:</b> \$8.5 million (35% of \$25 million). Recommendation for funding needed in Capital budget FY10-FY11.</p>	<p><b>For FY08 &amp; FY09:</b> Covered in current and/or FY08 Supplemental.</p> <p><b>FY10 Budget Placeholder: \$3 million</b></p>		
Community		Immediate Action		Budget Estimates	Action Taken
<p><b>Unalakleet</b> USACE Status: Design for 1500 ft is complete. No funds are available to initiate construction. Real Estate actions are advanced and if federal supplemental funds become available in Summer 2008, USACE could advertise.</p>	<p><b>Revetment/Erosion Control Project</b></p> <p><b>Coordination with ADOT/PF's 2008 Airport Erosion control project.</b></p>	<p><b>Immediate Action Capital Budget Estimate:</b> \$5 million (35% of \$13.5 million project).</p>	<p>Included in the FY09 Capital Budget.</p>		

Immediate Action Funding Recommendations			
Community	Immediate Action	Budget Estimates	Action Taken
All Six Communities	<p><b>Develop Suite of Emergency Plans and Training/Drills</b> (Alaska DHS&amp;EM is lead) Emergency Operations, Community Evacuation, Hazard Mitigation Fire Management (Koyukuk only-DNR is lead)</p> <p>Purpose: Best chance to reduce loss of life and property when natural disasters occur.</p> <p>Coordinate with community planning projects to ensure dollars go as far as possible.</p>	<p><b>\$400,000 total to DHS&amp;EM.</b> DHS&amp;EM will RSA \$25,000 to DNR for Koyukuk Fire Management Plan. DHS&amp;EM will also provide \$100,000 federal funds match.</p> <p><b>Investment:</b> DHS&amp;EM estimates for every \$1 spent on preparation, \$4 saved in response.</p>	Funds were included in FY09 Capital Budgets.
All Six Communities	<p><b>Community Relocation Plan</b> Funding for future relocation planning efforts for each community require coordination and resources both at the community and agency levels. Communities need funding and technical assistance to support/augment local capacities. Rational and collaborative planning needs to examine alternatives (e.g. shoreline stabilization/protection vs. relocation) and identify the opportunities for implementation.</p> <p><b>Training/Workshop</b> to orient communities, agency personnel and contractors to the recommended collaborative community planning process.</p> <p><b>Cost Effective:</b> When coordinated, Emergency Preparedness, Community Relocation and other community project planning and project developments have cost-effective results.</p>	Partially covered in current budgets.	Immediate: Funds were included in FY08 Supplemental Budget for initial relocation planning resources.

Community	Immediate Action	Budget Estimates	Action Taken
All Six Communities	<p><b>Reduce Capital Budget Expenditures</b></p> <ul style="list-style-type: none"> <li>- Through inter-agency and local coordination identify capital cost savings by aligning timing of projects requiring heavy equipment.</li> <li>- State should establish co-sponsorship funding to ensure Alaska attracts federal funds for its priority projects.</li> <li>- Find/develop Western Alaska rock source to reduce costs.</li> </ul> <p><b>35% Funding Co-Sponsorship:</b> Based on recommendations from Senator Stevens at recent roundtables and other meetings.</p>	<p><b>Immediate and Near Term Capital Budget Estimates:</b> State should be prepared to augment federal funds with a target of 35% of erosion control and mitigation capital costs.<sup>6</sup></p> <p>US Army Corps of Engineers (USACE) recommends the State of Alaska create a target of 35% to augment federal funds control/mitigation projects to ensure the highest likelihood that federal funds will be allocated to Alaska, given the competitive nature of these funds.</p>	
All Six Communities	<p><b>Preliminary Engineering and Early Coordination</b></p> <p>Funding will allow for preliminary engineering investigations to begin so that project development can move ahead in an orderly, timely, and efficient manner. Site surveys, material source investigations, hazard mapping, geotechnical and hydrologic studies, and environmental documentation and permitting studies will all need to be conducted prior to developing erosion protection or relocation design plans. Because all likely project scenarios will involve extensive environmental documentation and permitting, it is critical that the project development process start as early as possible. Will also allow for early coordination between agencies and affected communities and a review of existing data, reports, and plans.</p>		<p>\$600,000 to ADOT/PF was included in the FY09 Capital Budget.</p>
All Six Communities	<p><b>Identify and Develop a Data Strategy</b> to support Subcabinet decisions that need to be made for erosion control and relocation projects.</p>	<p><b>Address as part of the Subcabinet Climate Change Strategy.</b> Subcabinet budget requested in FY08 Supplemental.</p>	

<sup>6</sup> March 24, 2008 Email from P. Ophoen, USACE Alaska District: Water Resources Development Act of 1986: the following sections set the basis for the USACE cost sharing policies including in both the Planning Guidance Notebook and the Digest of Water Resources Policies and Authorities. Section 103 mandated cost sharing for construction of flood control and other purposes. Section 104 mandated cost sharing for feasibility studies, and preliminary engineering design (PED). It states in part that (para (a)(1)) "The Secretary shall not initiate any feasibility study for a water resources project after the date of enactment of this act unto; appropriate non-Federal interests agree, by contract to contribute 50 percent of the cost for such study...". It further states in paragraph (b) Planning and Engineering: "The Secretary shall not initiate any planning of engineering authorized by this Act for a water resources project until appropriate non-Federal interest agree, by contract to contribute 50 percent of the cost ...".

Although Senator Stevens has sponsored authorizing legislation to conduct coastal erosion projects for Alaskan Native Villages at 100 percent federal cost the authorization did not change budgetary policy or procedures, or the Administration's policies on mandating cost sharing for Civil Works studies, PED or construction. The budget guidance addresses non-budgetable (policy non-compliant) studies and projects by addressing them in what is known as increment 9 of the budget submission reflecting our capability to perform the work.

Community	Immediate Action	Budget Estimates	Action Taken
<p><b>Kivalina</b></p> <p>USACE Description of Need: 2000 LF is needed to <i>provide interim protection</i> for critical structures and residences on the ocean-side of the island while Kivalina plans to relocate. Anticipated contract cost is \$16M<sup>7</sup>. USACE received \$4.9 million in Federal fiscal year 2008, which will fund 400 LF of the 2000 LF total.</p>	<p><b>Revetment/Erosion Control Project</b></p> <p><b>Near-term (next 18-24 months):</b> construction of 2000 LF linear feet of rip rap revetment with a current estimated cost of \$16 M .to protect critical structures and residences on the ocean-side of the island where catastrophic erosion is taking place.</p> <p><b>Intermediate-term:</b> construction of 1300 LF of rip rap revetment to provide interim protection to critical structures and residences at the lagoon side of the island. Estimated cost is \$10 M.</p> <p>Total anticipated revetment project is \$26 M. (protection for both ocean-side and lagoon-side of island).</p>	<p><b>Immediate Action – Capital Budget Estimate for erosion protection on ocean-side of island:</b> \$3.3 million (35% of \$9.3 million in Federal funding<sup>8</sup>) funds a portion of 2000 LF shoreline protection for ocean side of island.</p> <p><b>Intermediate -term Estimated Capital Budget – \$9.1 million (35% of \$26 million)</b></p>	<p>Funds were included in the FY09 Capital Budget.</p>
	<p><b>State of Alaska serve as 3<sup>rd</sup> Party Reviewer for geologic aspects of USACE (Relocation) Assessment Reports</b> Alaska DGGS as lead.</p>	<p><b>Budget Estimate:</b> \$12,000<sup>9</sup></p>	<p>Covered in current budgets or FY08 Supplemental.</p>
	<p><b>Relocation Feasibility Study</b> Geologic Mapping (Alaska DGGS as lead).</p>	<p><b>Budget Estimate:</b> \$180,000</p>	<p>Eligible for funding through CIAP funds or FY 10 Capital Budget.</p>

<sup>7</sup> The base bid for the project is \$3.9 M for constructing 400 LF of rock revetment, with a total cost of \$4.5 million. This contract includes four options to construct 400 LF each at approximately \$2.4 million each, if funds are received before Mar 09. A contractor mobilization cost of \$375,000 would also be required for the second year of construction.

<sup>8</sup> USACE FY08 \$4.5 M + USACE FY09 (anticipated) \$4.8 M (two 400 LF increments at \$ 2.4 M each) = \$9.3 M. State-funded portion of approximately 400-600 LF at \$3.3 M will leave 200-400 LF of total 2000 LF rock revetment for ocean-side of island to be completed in FY10.

<sup>9</sup> This budget estimate is only for DGGS review of geologic aspects of the COE's relocation assessment reports. Broader, full review would involve many more participants and may not be appropriate for DGGS to lead. For review of all aspects, I suggest DCCED take the lead and draw on DGGS as well as other appropriate agencies. A larger budget estimate is needed if this is the intent. (Rod Combellick, DGGS edits to March 20, 2008 draft IAW Recommendations Report).

Community	Immediate Action	Budget Estimates	Action Taken
<p><b>Koyukuk</b></p>	<p><b>Review Feasibility Report:</b> Koyukuk, DGGs, ADOT/PF, and DCCED should review the USACE Recommendations Report to provide feedback/reality check to the USACE Report was recently provided to Koyukuk community. USACE representatives travel to Koyukuk to meet with community.</p> <p><b>Coordination Among:</b> Koyukuk, USACE, ADOT/PF, DCCED, DHS&amp;EM for preliminary engineering, planning, and funding strategy.</p> <p><b>Upgrade Existing Road:</b> Ensure road is passable during flooding.</p> <p><b>Build Evacuation Center:</b> Ensure community has an emergency shelter.</p>	<p><b>FY10 Capital Budget Estimate:</b> \$800,000.</p> <p><b>FY10 Capital Budget Estimate:</b> \$4.5 million.</p>	<p>Covered in Current FY09 Capital Budgets.</p> <p>For FY08 &amp; FY09: Covered in current and/or FY08 Supplemental (Community Planning grants and DHS&amp;EM Emergency Planning Training).</p>
<p><b>Newtok</b> USACE Status: Designs are underway for the road from the barge landing to the evacuation center at the new town site for Newtok. USACE does not currently have funding to construct the road which is estimated at \$5 million.</p>	<p><b>Build Staging Area for Barge Landing</b> – Ensure ability to receive supplies.</p> <p><b>Coordination Among:</b> Newtok, USACE, ADOT/PF, DCCED, and the Newtok Planning Group to determine what road standards are needed (purpose – construction costs may be less than FY10 estimate). Coordination expanded to Navy to determine if building Evacuation Shelter can be used as a training exercise (Navy has indicated they may be able to provide labor).</p> <p><b>Build Road to Evacuation Site</b> – Ensure community has access to shelter (2.5 miles).</p> <p><b>Build Evacuation Shelter</b> – Ensure community has an emergency shelter (approx 4,000 sq ft + 2,000 sq ft equipment shelter).</p>	<p><b>FY09 Capital Budget Estimate:</b> \$279,000. <b>For FY08 &amp; FY09:</b></p> <p><b>Capital Budget Estimate:</b> \$3.75 million.</p> <p><b>FY10 Capital Budget Estimate:</b> \$4.5 million.</p>	<p>Funds were included in the FY 09 Capital Budget for construction. Planning funds were included in the FY08 Supplemental Capital Budget.</p> <p>Partial funding was included in the FY 09 Capital Budget.</p>

Community	Immediate Action	Budget Estimates	Action Taken
<p><b>Shaktoolik</b></p>	<p><b>Preliminary Relocation Site Assessment</b> for relocating village.</p> <p><b>Evacuation Road</b></p> <p><b>Coordination Among Shaktoolik, Kawerak, Federal, and State Agencies:</b> Funding, design, etc.</p>	<p><b>Budget Estimate:</b> \$150,000</p> <p>.</p> <p><b>Budget Estimate:</b> Likely have an estimate by Fall 2008 after reconnaissance work completed.</p>	<p>Eligible for funding through FY08 Supplemental for Community Planning Grants.</p>
	<p><b>Relocation Feasibility Study</b> Geologic Mapping (Alaska DGGS as lead)</p>	<p><b>Budget Estimate:</b> \$180,000</p>	<p>Eligible for funding through CIAP funds or FY 10 capital budget.</p>
<p><b>Shishmaref</b> USACE Description of Need: The washeteria and lagoon are not protected by the 700 LF USACE has under contract to install. the length was determined by funds availability. USACE anticipates the contractor will demob. Fall 2008 or early Spring 2009. The next 750 ft increment of rock revetment has been designed and is estimated at \$9 million for construction cost. This increment would protect homes and a church. An additional 550 feet of rock revetment is needed to protect the washeteria and the sewage lagoon. There is also a need to extend the protection on the southern end of the village where the existing reveted area ends.</p>	<p><b>Funding Strategy Coordination:</b> Shishmaref, USACE, ADOT/PF, and DCCED</p> <p><b>Revetment/Erosion Control Project</b> 700 ft section that will provide protection to the North shore including the washeteria and sewage lagoon. USACE estimate: – \$8.7 million for 700 ft.; \$25 million for remaining project.</p>	<p><b>FY10 Capital Budget Estimate:</b> \$8.5 million (35% of \$25 million). Recommendation for funding needed in Capital budget FY10-FY11.</p>	<p><b>For FY08 &amp; FY09:</b> Covered in current and/or FY08 Supplemental.</p>

Community	Immediate Action	Budget Estimates	Action Taken
<p><b>Unalakleet</b>  USACE Status: Design for 1500 ft is complete. No funds are available to initiate construction. Real Estate actions are advanced and if federal supplemental funds become available in Summer 2008, USACE could advertise.</p>	<p><b>Revetment/Erosion Control Project</b>   <b>Coordination with ADOT/PF's 2008 Airport Erosion control project.</b></p>	<p><b>Immediate Action Capital Budget Estimate:</b>  \$5 million (35% of \$13.5 million project).</p>	<p>Included in the FY09 Capital Budget.</p>

DRAFT

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**POLICY 1: RELOCATION ASSISTANCE TO COMMUNITIES IN PERIL MUST UTILIZE COMPREHENSIVE INTEGRATED PLANNING AND VIABLE, FUTURE-ORIENTED SOLUTIONS WITH FUNDING THAT ALLOWS FOR SUSTAINABLE RELOCATION.**

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The Immediate Action Work Group believes that comprehensive integrated planning must be used to implement solutions for communities in peril. The planning process must integrate the expertise and resources available from all stakeholders. Flexible funding streams should be sought; particularly funding that can accommodate the needs associated with the ambitious task of moving communities to safe locations. Any relocation efforts must integrate the concepts of sustainability into the design, location, and attributes of the resulting settlement. Existing and future funding mechanisms for responding to climate change hazards should provide for mitigation measures. In seeking funds for mitigation, an examination of current federal and State statutes needs to be conducted to identify limitations in addressing these measures. The Stafford Act, for example, limits the ability of the State to deal effectively with communities in peril.

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**POLICY 2: EFFECTIVE RESPONSE AND ADAPTATION STRATEGIES MUST BE SUPPORTED BY A COMPREHENSIVE STATEWIDE DATA COLLECTION AND EVALUATION SYSTEM.**

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A Statewide data collection and evaluation system must be developed and implemented. The phenomena of climate-related impacts is not well understood and the impacts uncertain. A State lead coordinating agency or university should be identified and provided necessary resources to develop an effective data collection and evaluation system. Flexible funding must be provided to the State lead agency and appropriate collaborating State agencies that actively engage in identification, collection, analysis and dissemination of data. Response strategies should be developed through current adaptation impact modeling to identify near-term climate change impacts for protecting both in-place and relocation scenarios.

**Edit Note: Should Policy 2 be included in IAWG recommendations, or in an Appendix?**

## **COMMUNITY PROFILES**

**EDIT NOTE:**

**ADD ANY ADDITIONAL COMMUNITIES  
IAWG IDENTIFIES**

# KIVALINA

## Location and Climate

Kivalina is at the tip of an 8-mile barrier reef located between the Chukchi Sea and Kivalina River. It lies 80 air miles northwest of Kotzebue. The community lies at approximately 67.726940° North Latitude and -164.533330° (West) Longitude. (Sec. 21, T027N, R026W, Kateel River Meridian.) Kivalina is located in the Kotzebue Recording District. The area encompasses 1.9 sq. miles of land and 2.0 sq. miles of water. Kivalina lies in the transitional climate zone which is characterized by long, cold winters and cool summers. The average low temperature during January is -15; the average high during July is 57. Temperature extremes have been measured from -54 to 85. Snowfall averages 57 inches, with 8.6 inches of precipitation per year. The Chukchi Sea is ice-free and open to boat traffic from mid-June to the first of November.



*Photo 2: Work crew at eroded shoreline in Kivalina. (Credit: Colleen Swan)*

## History, Culture and Demographics

Kivalina has long been a stopping-off place for seasonal travelers between arctic coastal areas and Kotzebue Sound communities. It is the only village in the region where people hunt the bowhead whale. At one time, the village was located at the north end of the Kivalina Lagoon. It was reported as "Kivualinagmut" in 1847 by Lt. Zagoskin of the Russian Navy. Lt. G.M. Stoney of the U.S. Navy reported the village as "Kuveleek" in 1885. A post office was established in 1940. An airstrip was built in 1960. Kivalina incorporated as a City in 1969. During the 1970s, new houses, a new school and an electric system were constructed in the village. Prior to 1976, high school students from Noatak would attend school in Kivalina, and board with local families. Due to severe erosion and wind-driven ice damage, the City intends to relocate to a new site 7.5 miles away. Relocation alternatives have been studied and a new site has been designed and engineered. A federally-recognized tribe is located in the community -- the Native Village of Kivalina. The population of the community consists of 96.6 percent Alaska Native or part Native. Kivalina is a traditional Inupiat Eskimo village. Subsistence activities, including whaling, provide most food sources. The sale or importation of alcohol is banned in the village. During the 2000 U.S. Census, total housing units numbered 80, and vacant housing units numbered 2. U.S. Census data for Year 2000 showed 82 residents as employed. The unemployment rate at that time was 25.45 percent, although 65.11 percent of all adults were not in the work force. The median household income was \$30,833, per capita income was \$8,360, and 26.4 percent of residents were living below the poverty level.

## Facilities, Utilities, Schools, and Health Care

Wells have proven unsuccessful in Kivalina. Water is drawn from the Wulik River via a 3-mile surface transmission line, and is stored in a 700,000-gallon raw water tank. It is then treated and stored in a 500,000-gallon steel tank. Water is hauled by residents from this tank. One-third of residents have tanks which provide running water for the kitchen, but homes are not fully plumbed. The school and clinic have individual water and sewer systems. Residents haul their own honeybuckets to bunkers. A new landfill and honeybucket disposal site were recently completed. A Master Plan is underway to examine sanitation alternatives at the new community site. Electricity is provided by AVEC. There is one school located in

the community, attended by 127 students. Local hospitals or health clinics include Kivalina Clinic (907-645-2141).

Kivalina is classified as an isolated village, it is found in EMS Region 4A in the Maniilaq Association Region. Emergency Services have coastal and air access. Emergency service is provided by volunteers and a health aide

## **Economy and Transportation**

Kivalina's economy depends on subsistence practices. Seal, walrus, whale, salmon, whitefish, and caribou are utilized. The school, City, Maniilaq Association, village council, airlines, and local stores provide year-round jobs. The Red Dog Mine also offers some employment. Six residents hold commercial fishing permits. Native carvings and jewelry are produced from ivory and caribou hooves. The community is interested in developing an Arts and Crafts Center that could be readily moved to the new community site.

The major means of transportation into the community are plane and barge. A State-owned 3,000' long by 60' wide gravel airstrip serves daily flights from Kotzebue. Crowley Marine Services barges goods from Kotzebue during July and August. Small boats, ATVs, and snowmachines are used for local travel. Two main hunting trails follow the Kivalina and Wulik Rivers.



*Photo 3: Coastal storm threatens critical infrastructure in Kivalina. (Credit: Colleen Swan)*

# KOYUKUK

## Location and Climate

Koyukuk is located on the Yukon River near the mouth of the Koyukuk River, 30 miles west of Galena and 290 air miles west of Fairbanks. It lies adjacent to the Koyukuk National Wildlife Refuge and the Innoko National Wildlife Refuge. The community lies at approximately 64.880930° North Latitude and -157.701030° (West) Longitude. (Sec. 17, T007S, R006E, Kateel River Meridian.) Koyukuk is located in the Nulato Recording District. The area encompasses 6.2 sq. miles of land and 0.1 sq. miles of water. The area experiences a cold, continental climate with extreme temperature differences. The average daily high temperature during July is in the low 70s; the average daily low temperature during January ranges from 10 to below zero. Sustained temperatures of -40 degrees are common during winter. Extreme temperatures have been measured from -64 to 92. Annual precipitation is 13 inches, with 60 inches of snowfall annually. The River is ice-free from mid-May through mid-October.



*Photo 4: Runway located in the floodplain in Koyukuk. (Credit Cynthia Pilot)*

## History, Culture, and Demographics

The Koyukon Athabascans traditionally had spring, summer, fall, and winter camps, and moved as the wild game migrated. There were 12 summer fish camps located on the Yukon River between the Koyukuk River and the Nowitna River. Friendships and trading between the Koyukon and Inupiat Eskimos of the Kobuk area has occurred for generations. A Russian trading post was established at nearby Nulato in 1838. A smallpox epidemic, the first of several major epidemics, struck the Koyukon in 1839. A military telegraph line was constructed along the north side of the Yukon around 1867, and Koyukuk became the site of a telegraph station. A trading post opened around 1880, just before the gold rush of 1884-85. The population of Koyukuk at this time was approximately 150. Missionary activity was intense along the Yukon, and a Roman Catholic Mission and school opened downriver in Nulato in 1887. A post office operated from 1898 to 1900. Steamboats on the Yukon, which supplied gold prospectors, peaked in 1900 with 46 boats in operation. A measles epidemic and food shortages during 1900 tragically reduced the Native population by one-third. Gold seekers left the Yukon after 1906, but other mining activity, such as the Galena lead mines, began operating in 1919. The first school was constructed in 1939. After the school was built, families began to live at Koyukuk year-round. The City was incorporated in 1973. The community has experienced severe flooding from both the Yukon and Koyukuk Rivers, and residents want to relocate. A federally-recognized tribe is located in the community -- the Koyukuk Native Village. The population of the community consists of 91.1 percent Alaska Native or part Native. Residents are primarily Koyukon Athabascans with a subsistence lifestyle. During the 2000 U.S. Census, total housing units numbered 55, and vacant housing units numbered 16. Vacant housing units used only seasonally numbered 16. U.S. Census data for Year 2000 showed 40 residents as employed. The unemployment rate at that time was 23.08 percent, although 41.18 percent of all adults were not in the work force. The median household income was \$19,375, per capita income was \$11,342, and 35.11 percent of residents were living below the poverty level.

## **Facilities, Utilities, Schools, and Health Care**

The City provides treated well water at the washeteria. Households are not plumbed, and residents use honeybuckets. The school and washeteria use City water, with sewage disposal into a lagoon. As of May 2003 seven households are on the flush/haul system. The landfill is newly-completed. Electricity is provided by City of Koyukuk. There is one school located in the community, attended by 22 students. Local hospitals or health clinics include Koyukuk Health Clinic. Koyukuk is classified as an isolated village, it is found in EMS Region 1C in the Central Region. Emergency Services have river and air access, and are within 30 minutes of a higher-level satellite health care facility. Emergency service is provided by volunteers and a health aide.

## **Economy and Transportation**

There are few full-time jobs in the community; the city, tribe, clinic, school, and store provide the only year-round employment. BLM fire fighting, construction work, and other seasonal jobs often conflict with subsistence opportunities. Two residents hold commercial fishing permits. Trapping and beadwork supplement incomes. Subsistence foods include salmon, whitefish, moose, waterfowl and berries.

The State-owned 2,645' long by 60' wide lighted gravel runway provides year-round transportation. The river is heavily traveled when ice-free, from mid-May through mid-October. Cargo is delivered by barge about four times each summer. Numerous local trails and winter trails to Chance and Nulato are used by residents. Snowmachines, ATVs, and riverboats are used for local transportation.

# NEWTOK

## Location and Climate

Newtok is on the Ninglick River north of Nelson Island in the Yukon-Kuskokwim Delta Region. It is 94 miles northwest of Bethel. The community lies at approximately 60.942780° North Latitude and -164.629440° (West) Longitude. (Sec. 24, T010N, R087W, Seward Meridian.) Newtok is located in the Bethel Recording District. The area encompasses 1.0 sq. miles of land and 0.1 sq. miles of water. Newtok is located in a marine climate. Average precipitation is 17 inches, with annual snowfall of 22 inches. Summer temperatures range from 42 to 59, winter temperatures are 2 to 19.



*Photo 5: Flooding during coastal storm in Newtok. (Credit: Stanley Tom)*

## History, Culture, and Demographics

The people of Newtok share a heritage with Nelson Island communities; their ancestors have lived on the Bering Sea coast for at least 2,000 years. The people from the five villages are known as Qaluyaarmiut, or "dip net people." Only intermittent outside contact occurred until the 1920s. In the 1950s the Territorial Guard found volunteers from Newtok while they were traveling to Bethel. Tuberculosis was a major health problem during this period. In the late 1950s, the village was relocated from Old Kealavik ten miles away to its present location to escape flooding. A school was built in 1958, although high school students were required to travel to Bethel, St. Mary's, Sitka or Anchorage for their education. This was often their first exposure to the outside, and students returned with a good knowledge of the English language and culture. A high school was constructed in Newtok in the 1980s. A City was incorporated in 1976, but it was dissolved on Jan. 28, 1997. Due to severe erosion, the village wants to relocate to a new site called Mertarvik, approximately 5 miles away on Nelson Island. In November 2003, the 108th Congress passed S. 924, allowing the village to relocate to Nelson Island, authorizing an exchange of lands between the U.S. Fish and Wildlife Service and the Newtok Native Corporation, allowing the relocation.

A federally-recognized tribe is located in the community -- the Newtok Traditional Council. The population of the community consists of 96.9 percent Alaska Native or part Native. Newtok is a traditional Yup'ik Eskimo village, with an active subsistence lifestyle. Relative isolation from outside influences has enabled the area to retain its traditions and customs; more so than other parts of Alaska. The sale or importation of alcohol is banned in the village. During the 2000 U.S. Census, total housing units numbered 67, and vacant housing units numbered 4. U.S. Census data for Year 2000 showed 101 residents as employed. The unemployment rate at that time was 24.63 percent, although 52.13 percent of all adults were not in the work force. The median household income was \$32,188, per capita income was \$9,514, and 30.99 percent of residents were living below the poverty level.

## Facilities, Utilities, Schools, and Health Care

Water is pumped from a lake into a water treatment plant, then hauled from a storage tank. In winter, melted ice is used when water in the storage tank runs dry or freezes. Households are not plumbed, and honeybuckets are used. A washeteria is available. The health clinic uses flush/haul tanks and the schools have individual wells. Refuse collection is provided, and a new landfill has been completed, but ADOT/PF has determined that it is too close to the airport. The community wants to relocate and rebuild facilities on Nelson Island. A community Master Plan is being developed. Electricity is provided by Unqusrag Power Company. There is one school located in the community, attended by 107 students. Local hospitals or health clinics include Newtok Health Clinic. Newtok is classified as an isolated village, it is found in EMS Region 7A in the Yukon/Kuskokwim Region. Emergency Services have coastal and air access. Emergency service is provided by a health aide.

## Economy and Transportation

The school, clinic, village services, and commercial fishing provide employment. Subsistence activities and trapping supplement income. Twenty-seven residents hold commercial fishing permits. A State-owned 2,202' long by 35' wide gravel airstrip provides chartered or private air access year-round; major improvements are under construction. A seaplane base is also available. Boats, skiffs, and snowmachines are used for local transportation and subsistence activities. Winter trails are marked to Chevak (50 mi.), Tununak, Toksook Bay, Nightmute, and Manaryarapiaq (33.8 mi.) Barges deliver cargo during the summer months.



*Photo 6: Flooding during coastal storm in Newtok. (Credit: Stanley Tom)*

# SHAKTOOLIK

## Location and Climate

Shaktoolik is located on the east shore of Norton Sound. It lies 125 miles east of Nome and 33 miles north of Unalakleet. The community lies at approximately 64.333890° North Latitude and -161.153890° (West) Longitude. (Sec. 23, T013S, R013W, Kateel River Meridian.) Shaktoolik is located in the Cape Nome Recording District. The area encompasses 1.1 sq. miles of land and 0.0 sq. miles of water. Shaktoolik has a subarctic climate with maritime influences when Norton Sound is ice-free, usually from May to October. Summer temperatures average 47 to 62; winter temperatures average -4 to 11. Extremes from -50 to 87 have been recorded. Average annual precipitation is 14 inches, including 43 inches of snowfall.



*Photo 7: Lot inundation at Shaktoolik. (Credit: Steve Ivanoff)*

## History, Culture, and Demographics

Shaktoolik was the first and southernmost Malemiut settlement on Norton Sound, occupied as early as 1839. Twelve miles northeast, on Cape Denbigh, is "Iyatayet," a site that is 6,000 to 8,000 years old. Reindeer herds were managed in the Shaktoolik area around 1905. The village was originally located six miles up the Shaktoolik River, and moved to the mouth of the River in 1933. This site was prone to severe storms and winds, however, and the village relocated to its present, more sheltered location in 1967. The City was incorporated in 1969.

A federally-recognized tribe is located in the community -- the Native Village of Shaktoolik. The population of the community consists of 94.8 percent Alaska Native or part Native. It is a Malemiut Eskimo village with a fishing and subsistence lifestyle. The sale or importation of alcohol is banned in the village. During the 2000 U.S. Census, total housing units numbered 66, and vacant housing units numbered 6. Vacant housing units used only seasonally numbered 1. U.S. Census data for Year 2000 showed 68 residents as employed. The unemployment rate at that time was 27.66 percent, although 56.69 percent of all adults were not in the work force. The median household income was \$31,875, per capita income was \$10,491, and 6.09 percent of residents were living below the poverty level.

## Facilities, Utilities, Schools, and Health Care

Water is pumped three miles from the Togoomenik River to the pumphouse, where it is treated and stored in a 848,000-gallon insulated tank adjacent to the washeteria. A piped water and sewage collection system serves most homes. Seventy-five percent of households have complete plumbing and kitchen facilities. The school is connected to City water, and has received funding to develop a sewage treatment system to serve the entire community. The City burns refuse in an incinerator. The landfill needs to be relocated; the current site is not permitted. Electricity is provided by AVEC. There is one school located in the community, attended by 57 students. Local hospitals or health clinics include Shaktoolik Clinic.

Shaktoolik is classified as an isolated village, it is found in EMS Region 5A in the Norton Sound Region. Emergency Services have coastal and air access. Emergency service is provided by a health aide.

## **Economy and Transportation**

The Shaktoolik economy is based on subsistence, supplemented by part-time wage earnings. Thirty-three residents hold commercial fishing permits. Development of a new fish processing facility is a village priority. Reindeer herding also provides income and meat. Fish, crab, moose, beluga whale, caribou, seal, rabbit, geese, cranes, ducks, ptarmigan, berries, greens and roots are also primary food sources.

Shaktoolik is primarily accessible by air and sea. A State-owned 4,000' long by 75' wide gravel airstrip is available. The Alex Sookiayak Memorial Airstrip allows for regular service from Nome. Summer travel is by 4-wheel ATV, motorbike, truck, and boat; winter travel is by snowmachine and dog team. Cargo is barged from Nome, then lightered to shore. The community has no docking facilities.



*Photo 8: Log inundation at Shaktoolik. (Credit: Steve Ivanoff)*

# SHISHMAREF

## Location and Climate

Shishmaref is located on Sarichef Island, in the Chukchi Sea, just north of Bering Strait. Shishmaref is five miles from the mainland, 126 miles north of Nome and 100 miles southwest of Kotzebue. The village is surrounded by the 2.6 million-acre Bering Land Bridge National Reserve. It is part of the Beringian National Heritage Park, endorsed by Presidents Bush and Gorbachev in 1990. The community lies at approximately

66.256670° North Latitude and -166.071940° (West) Longitude. (Sec. 23, T010N, R035W, Kateel River Meridian.) Shishmaref is

located in the Cape Nome Recording District. The area encompasses 2.8 sq. miles of land and 4.5 sq. miles of water. The area experiences a transitional climate between the frozen arctic and the continental Interior. Summers can be foggy, with average temperatures ranging from 47 to 54; winter temperatures average -12 to 2. Average annual precipitation is about 8 inches, including 33 inches of snow. The Chukchi Sea is frozen from mid-November through mid-June.



Photo 9: Home falling over eroded bank in Shishmaref. (Credit: Tony Weyiouanna)



Photo 10: Shoreline erosion during coastal storm in Shishmaref. (Credit: Tony Weyiouanna)

## History, Culture, and Demographics

The original Eskimo name for the island is "Kigiktaq." In 1816, Lt. Otto Von Kotzebue named the inlet "Shishmarev," after a member of his crew. Excavations at "Keekiktuk" by archaeologists around 1821 provided evidence of Eskimo habitation from several centuries ago. Shishmaref has an excellent harbor, and around 1900 it became a supply center for gold mining activities to the south. The village was named after the Inlet and a post office was established in 1901. The City government was incorporated in 1969. During October 1997, a severe storm eroded over 30 feet of the north

shore, requiring 14 homes and the National Guard Armory to be relocated. Five additional homes were relocated in 2002. Other storms have continued to erode

the shoreline, an average of 3 to 5 feet per year on the north shore. In July 2002, residents voted to relocate the community.

A federally-recognized tribe is located in the community -- the Native Village of Shishmaref. The population of the community consists of 94.5 percent Alaska Native or part Native. It is a traditional Inupiat Eskimo village with a fishing and subsistence lifestyle. The sale or importation of alcohol is banned. During the 2000 U.S. Census, total housing units numbered 148, and vacant housing units

numbered 6. Vacant housing units used only seasonally numbered 4. U.S. Census data for Year 2000 showed 173 residents as employed. The unemployment rate at that time was 16.43 percent, although 51.81 percent of all adults were not in the work force. The median household income was \$30,714, per capita income was \$10,487, and 16.27 percent of residents were living below the poverty level.

## **Facilities, Utilities, Schools, and Health Care**

Water is derived from a surface source, is treated and stored in a new tank. Shishmaref is undergoing major improvements, with the construction of a flush/haul system and household plumbing. Nineteen HUD homes have been completed, and 71 homes remain to be served. The new system provides water delivery, but the unserved homes continue to haul water. Honeybuckets and the new flush tanks are hauled by the City. The school, clinic, Friendship Center, City Hall and fire hall are connected to a sewage lagoon. A new landfill is planned for the City; an access road is under construction. Electricity is provided by AVEC. There is one school located in the community, attended by 173 students. Local hospitals or health clinics include Katherine Miksrmaq Olanna Health Clinic. The clinic is a qualified Emergency Care Center. Shishmaref is classified as an isolated village, it is found in EMS Region 5A in the Norton Sound Region. Emergency Services have coastal and air access. Emergency service is provided by a health aide. Auxiliary health care is provided by the City Volunteer Fire Department/Emergency Services.

## **Economy and Transportation**

The Shishmaref economy is based on subsistence supplemented by part-time wage earnings. Two residents hold a commercial fishing permit. Year-round jobs are limited. Villagers rely on fish, walrus, seal, polar bear, rabbit, and other subsistence foods. Two reindeer herds are managed from here. Reindeer skins are tanned locally, and meat is available at the village store. The Friendship Center, a cultural center, and carving facility, was recently completed for local artisans.

Shishmaref's primary link to the rest of Alaska is by air. A State-owned 5,000' long by 70' wide paved runway is available. Charter and freight services are available from Nome. Most people own boats for trips to the mainland.



*Photo 11: Shoreline erosion at Shishmaref. (Credit: Frank Myomick)*

# UNALAKLEET

## Location and Climate

Unalakleet is located on Norton Sound at the mouth of the Unalakleet River, 148 miles southeast of Nome and 395 miles northwest of Anchorage. The community lies at approximately 63.873060° North Latitude and -160.788060° (West) Longitude. (Sec. 03, T019S, R011W, Kateel River Meridian.)

Unalakleet is located in the Cape Nome Recording District. The area encompasses 2.9 sq. miles of land and 2.3 sq. miles of water. Unalakleet has a subarctic climate with considerable maritime influences when



Photo 12: Log inundation at Unalakleet. (Credit: Steve Ivanoff)

Norton Sound is ice-free, usually from May to October. Winters are cold and dry. Average summer temperatures range 47 to 62; winter temperatures average -4 to 11. Extremes have been measured from -50 to 87. Precipitation averages 14 inches annually, with 41 inches of snow.

## History, Culture, and Demographics

Archaeologists have dated house remnants along the beach ridge from 200 B.C. to 300 A.D. The name Unalakleet means "from the southern side." Unalakleet has long been a major trade center as the terminus for the Kaltag Portage, an important winter travel route connecting to the Yukon River.

Indians on the upper river were considered "professional" traders who had a monopoly on the

Indian-Eskimo trade across the Kaltag Portage. The Russian-American Company built a post here in the 1830s. In 1898, reindeer herders from Lapland were brought to Unalakleet to establish sound herding practices. In 1901, the Army Signal Corps built over 605 miles of telegraph line from St. Michael to Unalakleet, over the Portage to Kaltag and Fort Gibbon. The City was incorporated in 1974.

A federally-recognized tribe is located in the community -- the Native Village of Unalakleet. The population of the community consists of 87.7 percent Alaska Native or part Native. Unalakleet has a history of diverse cultures and trade activity. The local economy is the most active in Norton Sound, along with a traditional Unaligmiut Eskimo subsistence lifestyle. Fish, seal, caribou, moose, and bear are utilized. The sale of alcohol is prohibited in the community, although importation and possession are allowed. During the 2000 U.S. Census, total housing units numbered 242, and vacant housing units numbered 18. Vacant housing units used only seasonally numbered 6. U.S. Census data for Year 2000 showed 258 residents as employed. The unemployment rate at that time was 14.57 percent, although 48.61 percent of all adults were not in the work force. The median household income was \$42,083, per capita income was \$15,845, and 11.04 percent of residents were living below the poverty level.

## Facilities, Utilities, Schools, and Health Care

Water is derived from an infiltration gallery on Powers Creek, is treated and stored in a million-gallon steel tank. The water source is not sufficient during extremely cold weather, and a feasibility study is underway. One hundred ninety households are connected to the piped water and sewer system and have complete plumbing. Only two households haul water and honeybuckets. Residents haul refuse to the baler facility for transportation to the landfill. Refuse collection is available for commercial customers. Matanuska Electric Association owns and operates the electrical system in Unalakleet, through the Unalakleet Valley Electric Cooperative. Electricity is provided by Unalakleet Valley Electric Cooperative. There is one school located in the community, attended by 210 students. Local hospitals or

health clinics include Euksavik Clinic. The clinic is a qualified Emergency Care Center. Unalakleet is classified as an isolated town/Sub-Regional Center, it is found in EMS Region 5A in the Norton Sound Region. Emergency Services have river and air access. Emergency service is provided by volunteers and a health aide.

## **Economy and Transportation**

Both commercial fishing for herring, herring roe, and subsistence activities are major components of Unalakleet's economy. One hundred nine residents hold commercial fishing permits. Norton Sound Economic Development Council operates a fish processing plant. Government and school positions are relatively numerous. Tourism is becoming increasingly important; there is world-class silver fishing in the area.

Unalakleet has a State-owned 6,004' long by 150' wide gravel runway which recently underwent major improvements; and a gravel strip that is 2,000' long and 80' wide. There are regular flights to Anchorage. Cargo is lightered from Nome; there is a dock. Local overland travel is mainly by ATVs, snowmachines and dogsleds in winter.



*Photo 13: Remains of infrastructure at eroded shoreline in Unalakleet. (Credit Steve Ivanoff)*

# **IMMEDIATE ACTIONS FOR COMMUNITIES**

## **EDIT NOTE:**

**EACH COMMUNITY MATRIX NEEDS TO BE  
REVIEWED AND REVISED AS NEEDED.**

- FY 10 PLACEHOLDER BUDGET \$ ADDED**
- UPDATE ON PROJECTS/EFFORTS 2008  
FUNDING**

DRAFT

## KIVALINA

**Situation Description:** Ongoing erosion and flooding concerns have caused problems for a number of years. The recently installed seawall was ineffective at arresting erosion and was severely damaged with sections completely destroyed during the minor storm events of 2006. The USACE has an approved project for 3,100 linear feet of rip rap revetment with a current estimated cost of \$25 million. With the recent increases in fuel costs this estimate is likely low. The USACE is proposing to utilize \$4.8 million in appropriated funds to construct a portion (at least 400 feet) of the revetment in Summer 2008 (See description in Executive Summary). Erosion is threatening the waste storage containment area located at the dump site. This is a potential environmental catastrophe for the surrounding water bodies. It will contaminate the area where subsistence activities are still practiced i.e. fishing and storage of fish on the lagoon side of the island.

**Overarching Problem:**

No definite timeline or authorities for erosion control and/or relocation makes it difficult to plan for needed erosion control projects and relocation. It's difficult to coordinate and focus resources.

What projects are or need to be done to address imminent threat?	Hurdles/problems or inadequacies of each project Other efforts/projects/communications needed	Needed information/data
<p><b>Project 1: Suite of Emergency Plans and Training/Drills</b> Emergency Operations, Community Evacuation, Hazard Mitigation</p> <p><b>Agency Lead:</b> DMVA/DHSEM; others along with leadership and coordination by the Kivalina community.</p> <p><b>IAW Recommends Completion Date:</b> ASAP – best if by 12/31/08, but recognizing funding realities likely will take 12-18 months to complete Emergency Plans for all 6 communities.</p> <p><b>Budget Estimate:</b> \$75,000 - \$100,000 <b>Funded in FY 09 Capital Budget.</b> Associated Emergency Community Plan: Revise Community Evacuation Plan (CEP) based on drills conducted and improvements identified. <b>Complete During:</b> Summer '08.</p>	<p><b>IAW Comments:</b> The Suite of Emergency Plans is the most immediate, most near-term and cost effective mechanism to reduce the risk of loss to lives and property.</p> <p>Community will need technical assistance to complete this project.</p> <p>The State needs the federal agencies to provide the weather, tidal, and horizontal and vertical control data mandated so the State can meet its FEMA, CZMA, and other mandates.</p>	<ul style="list-style-type: none"> <li>- Data for developing emergency and other community plans. (EM is familiar with the data needed.)</li> <li>- Horizontal and vertical control data for establishing plans for relocation and evacuation routes based on what flood levels have historically happened - note there is good horizontal and vertical control data at the Red Dog Port which is directly applicable to Kivalina).</li> <li>- Weather observation stations should be established and tied into the current, closest data collection sites for monitoring weather-related storm data whether from ice jams, seasonal river rise, storms, storm surges or floods.</li> <li>- A template to develop plan is available on DMVA/DHSEM's website</li> <li>- Yukon River Intertribal Watershed Council model may be useful too.</li> <li>- Integrate with Western Communities Evacuation Plan.</li> </ul>

What projects are or need to be done to address imminent threat?	Hurdles/problems or inadequacies of each project Other efforts/projects/communications needed	Needed information/data
<p><b>Project 2: Kivalina Seawall/ Erosion Revetment</b>  <b>Lead:</b> Kivalina and USACE</p> <p><b>Others involved:</b> Various</p> <p>The USACE has an approved project for 3,100 linear feet of rip rap revetment with a current estimated cost of \$25 million. With the recent increases in fuel costs this estimate is likely low.</p> <p><b>1<sup>st</sup> Phase - Completion date:</b> Summer of 2008 for first increment of 400 ft. (approximately \$4.8 million) Remainder to be determined depending upon future appropriations.</p>	<p>Funding for the seawall is the main problem. Additional increments are necessary for the revetment project, but no funding has been identified. Total revetment project cost could exceed \$30 million.</p> <p><b>Heavy Equipment:</b> Available at the right time to do projects.</p> <p>Permitting and environmental coordination is ongoing for the revetment work. No significant issues for ESA, wetlands, or SHPO. Coordination will continue.</p> <p>Local rock resources/quarry will help reduce costs (e.g. quarry at Deering).</p> <p><b>IAW Recommendations:</b></p> <ul style="list-style-type: none"> <li>- Through mapping and geologic information identify rock sources in western Alaska to reduce transportation costs.</li> <li>- Align multiple projects (e.g. ADOT/PF – Airport project) to take advantage of heavy equipment available and to not incur additional mob/demob costs.</li> <li>- Local Coordinator to help identify and coordinate projects to enable alignment of projects resulting in reduced overall costs.</li> <li>- Ensure state/local co-sponsorship funds are available if needed to attract federal funds.</li> <li>- Local coordinator is needed to assist with planning efforts and project alignment.</li> </ul> <p><b>Capital Budget Estimate:</b> \$3.3 million immediately (35% of \$9.3 for 1200' in shoreline protection). <b>Funded in FY 09 Capital Budget.</b> Recommended for FY 10-11 Capital Budget.  \$10.5 million (35% of \$30 million).</p>	<p>Mapping and geologic information to identify rock sources is needed.</p> <p>Analysis of rock to ensure needed composition.</p>

What projects are or need to be done to address imminent threat?	Hurdles/problems or inadequacies of each project Other efforts/projects/communications needed	Needed information/data
<p><b>Project 3: 3<sup>rd</sup> Party Review of USACE Relocation Assessment Reports</b></p> <p><b>IAW Recommendation:</b> State of Alaska should serve as 3<sup>rd</sup> party reviewer. (DCCED as lead with others, e.g. hydrologists, DGGS, ADOT/PF, etc) If funding is needed an inter-agency agreement should be implemented.</p>	<p>Kivalina community requested a 3<sup>rd</sup> Party review/analysis of the existing USACE reports.</p> <p><b>IAW Recommendation:</b> DGGS may need additional funding for mapping and geologic assessment. State (or 3<sup>rd</sup> Party) should use a process whereby Kivalina representatives can participate to ensure understanding of the process, the considerations being used in the review/analysis, and the findings of the 3<sup>rd</sup> party review.</p> <p><b>Budget Estimate:</b> \$12,000 (see footnote 2 on page 4).</p>	<p>Outcome of the 3<sup>rd</sup> party review of the USACE reports is critical to either move forward with relocation to this selected site, or to identify another site that is acceptable to the 3 major stakeholders - community, federal, and state.</p>
<p><b>Project 4: Evacuation Road Feasibility Study</b> <b>Lead:</b> NWAB and Denali Commission</p> <p>Feb 20, 2008 meeting in Kivalina</p>	<p>Will be refined further based on recommendations from project 3, above.</p>	<p>Not discussed</p>
<p><b>Project 5: Kivalina Relocation Feasibility Study</b></p> <p><b>Lead:</b> Kivalina, USACE, and ADOT/PF</p> <p><b>Others involved:</b> Various</p> <p><b>IAW Recommendation:</b> Conduct Geologic Mapping.</p> <p><b>Budget Estimate:</b> \$180,000</p>	<p>The USACE has been approved to perform a feasibility study at full Federal expense to analyze the relocation options for the community of Kivalina, however no funds have been appropriated to date.</p> <p><b>IAW Recommendation:</b> Create a process/recipe to identify suitable relocation sites to ensure an efficient and successful outcome. Kivalina's experience is a reflection of the downsides of not having an effective process in place. Although the IAW identified some of the steps, additional information is needed. This will also require local coordination.</p> <p><b>Budget Estimate:</b> Initial relocation planning resources are included in the current FY08 Planning Supplemental. Planning grant of \$150,000 available from DCCED through FY 08 Supplemental Capital budget.</p>	<p>Additional information/data will likely be obtained and/or identified from the relocation feasibility study to plan and execute a move, such as geologic mapping, assessment; site characterization of potential site, vertical data, etc.</p>

What projects are or need to be done to address imminent threat?	Hurdles/problems or inadequacies of each project Other efforts/projects/communications needed	Needed information/data
<p><b>Project 6: Community Relocation Plan</b></p> <p><b>Lead:</b> Kivalina Community</p> <p><b>Completion date:</b> Date can't be determined until funding source identified/authorized.</p>	<p>Kivalina Tribe, City, School, NWA Borough, and others (NANA) need to form local planning committee – soon/ASAP. If funding for a Relocation Planning effort is to be acquired, then local planning committee needs to request funds/assistance.</p> <p>Community will need technical assistance from DCCED and others.</p> <p>Funding will be needed to hire a contractor to work with the community and develop the plan.</p> <p><b>Budget:</b> Initial relocation planning resources are included in the current FY08 Supplemental Capital Budget.</p>	<p>A “how to” guide (or recipe) for all the ingredients and steps needed to develop a relocation plan needs to be detailed.</p> <p><b>IAW Recommendation:</b> Based on the Newtok Planning Group’s experience, document, and provide/orient other communities and agency efforts about how to plan and conduct a successful relocation effort.</p>

DRAFT

## KOYUKUK

**Situation Description:** There are three types of serious threats/impacts facing Koyukuk –erosion, flooding, and fires. The entire village of Koyukuk lies within the floodplain of the Yukon River. Erosion occurs during anytime the river is open and specifically during high flow events on the Yukon River. These events happen throughout the year, including floods during spring breakup ice jam events; spring/ summer/fall significant rainfall events; wind, and permafrost melt at Koyukuk and upstream. These floods are often severe, inundating a majority of the Village and sometimes requiring evacuation of citizens to other villages. These problems have been persistent and serious enough – often flood warnings provide only a 2 hour window to evacuate – that the community has begun planning efforts to relocate themselves to higher ground above the floodplain of the Yukon River upon nearby Koyukuk Mountain.

**Overarching Problem:** No definite timeline or authorities for erosion control and/or relocation makes it difficult to plan for needed erosion control projects and relocation. It's difficult to coordinate and focus resources.

What projects have or are being done to address imminent threat	Hurdles/problems or inadequacies of each project Other efforts/projects/communications needed	Needed information/data
<p><b>Project 1: Suite of Emergency Plans and Training/Drills</b> Emergency Operations, Community Evacuation, Hazard Mitigation Fire</p> <p><b>Agency Lead:</b> DMVA/DHSEM; others along with leadership and coordination by the Koyukuk community.</p> <p><b>IAW Recommends Completion Date:</b> ASAP – best if by 12/31/08, but recognizing funding realities likely will take 12-18 months to complete Emergency Plans for all 6 communities.</p>	<p><b>IAW Comments:</b> The Suite of Emergency Plans is the most immediate, most near-term, and cost effective mechanism to reduce the risk of loss to lives and property.</p> <p>Community will need technical assistance to complete this project.</p> <p>The State needs the federal agencies to provide the weather, tidal, and horizontal and vertical control data mandated so the State can meet its FEMA, CZMA, and other mandates.</p> <p><b>Budget:</b> \$75,000 - \$100,000 <b>Funding provided to DMVA in FY 09 Capital Budget.</b></p>	<ul style="list-style-type: none"> <li>- Data for developing emergency and other community plans. (EM is familiar with the data needed.)</li> <li>- Horizontal and vertical control data for establishing plans for relocation and evacuation routes based on what flood levels have historically happened.</li> <li>- Weather observation stations should be established and tied into the current, closest data collection sites for monitoring weather-related storm data whether from ice jams, seasonal river rise, storms, storm surges or floods.</li> <li>-A template to develop plan is available on DMVA/DHSEM's website.</li> <li>- Yukon River Intertribal Watershed Council model may be useful too.</li> <li>- Integrate with Western Communities Evacuation Plan.</li> </ul>

What projects have or are being done to address imminent threat	Hurdles/problems or inadequacies of each project Other efforts/projects/communications needed	Needed information/data
<p><b>Project 2: Community needs to review USACE Recommendations Report that was recently provided to Koyukuk community.</b></p> <p><b>Lead:</b> Koyukuk Tribe</p> <p><b>Others involved:</b> USACE for clarification and Q&amp;A. A representative of the IAW was also requested to attend.</p> <p><b>IAW Recommendation:</b> Tribal Council, City, Village Corporation, local School District, and USACE schedule a date for this meeting within next 2 months. (possibly with IAW representative).</p> <p><b>Budget Estimate:</b> Costs can be covered in current budgets.</p>		
<p><b>Project 3: Koyukuk Emergency Shelter Conceptual Design</b></p> <p><b>Lead:</b> Koyukuk Tribal Council</p> <p><b>Others involved:</b> Various</p> <p><b>IAW Recommendation:</b> Build Evacuation Center</p> <p><b>Capital Budget Estimate:</b> \$4.5 million</p>	<p><b>IAW Comments:</b> Recommended actions/next steps for the Shelter have been provided to the Community by the USACE in the report identified in Project 2. If Koyukuk wants to move forward with the USACE recommendation, then studies (geological, etc.) need to be conducted to ensure the selected site is satisfactory.</p> <p>A project cooperation agreement will need to be signed between the community and the USACE. Recent experience with similar projects shows this is not a significant effort.</p> <p>A clear process for site assessment, etc. along with a funding strategy will need to be developed.</p> <p>Permitting and environmental coordination is ongoing. No significant issues have arisen for ESA, wetlands, or SHPO, though coordination will continue.</p>	<p>Request for funding needed in FY 10-11 Capital Budgets.</p>

What projects have or are being done to address imminent threat	Hurdles/problems or inadequacies of each project Other efforts/projects/communications needed	Needed information/data
<p><b>Project 4: Evacuation Road Design and Construction to upgrade out of floodplain</b></p> <p>Current Road only to Rock Quarry beyond Airport.</p> <p><b>Capital Budget Estimate:</b> \$800,000</p>	<p><b>IAW Comments:</b> The current adequacy of the Evacuation Road is unclear. Need to clarify with ADOT/PF crew, who was in the community in 2006 when flood hit, if road needs to be elevated.</p> <p>Tribal Administrator believes that riprap along the lower part of the road near the river is all that's needed. Portions of the airport were done in 2006.</p> <p><b>IAW Recommendations:</b></p> <ul style="list-style-type: none"> <li>- Through inter-agency and local coordination identify cost savings by aligning timing of projects requiring heavy equipment.</li> <li>- State should establish a fund to ensure co-sponsorship is available to attract federal funds for Alaska projects.</li> <li>- Find/develop Western Alaska rock source to reduce costs.</li> <li>- Local coordinator is needed to assist with planning efforts and project alignment.</li> </ul>	<p>Need better data on adequacy of road during flooding.</p> <p>Request for funding needed in FY 10 Capital Budgets.</p>
<p><b>Project 5: Community Relocation Plan</b></p> <p><b>Lead:</b> Koyukuk</p> <p><b>Completion date:</b> Date can't be determined until funding source identified/authorized.</p>	<p>Koyukuk Tribe, City, School, and Village Corp need to form local planning committee – soon/ASAP. If funding for a Relocation Planning effort is to be acquired, then local planning committee needs to request funds/assistance.</p> <p>Community will need technical assistance from DCCED and others.</p> <p>Funding will be needed to hire a contractor to work with the community and develop the plan.</p>	<p>A “how to” guide (or recipe) for all the ingredients and steps needed to develop a relocation plan needs to be detailed.</p> <p><b>IAW Recommendation:</b> Based on the Newtok Planning Group's experience, document and provide/orient other communities, and agency efforts about how to plan and conduct a successful relocation effort.</p> <p><b>Budget Estimate:</b> Initial Budget included in FY 08 Supplemental Planning Request.</p>

## NEWTOK

**Situation Description:** Newtok facilities – both public and private – have already been severely damaged by erosion and storm surge flooding due to lack of sea ice, and it’s anticipated that continued erosion and destruction of public and private facilities are imminent. Problems endemic to many rural Alaska communities, such as a lack of adequate drinking water and sanitary sewage disposal, have been worsened by the erosion and flooding.

**Overarching Problem:** No definite timeline or authorities for erosion control and/or relocation makes it difficult to plan for needed erosion control projects. It’s difficult to coordinate and focus resources without funding sources and timeline.

What projects have or are being done to address imminent threat	Hurdles/problems or inadequacies of each project Other efforts/projects/communications needed	Needed information/data
<p><b>Project 1: Suite of Emergency Plans and Training/Drills</b> Emergency Operations, Community Evacuation, Hazard Mitigation</p> <p><b>Agency Lead:</b> DMVA/DHSEM; others along with leadership and coordination by the Newtok community.</p> <p><b>IAW Recommends Completion Date:</b> ASAP – best if by 12/31/08, but recognizing funding realities likely will take 12-18 months to complete Emergency Plans for all 6 communities.</p> <p><b>Budget Estimate:</b> \$75,000-\$100,000</p>	<p><b>IAW Comments:</b> The Suite of Emergency Plans is the most immediate, most near-term, and cost effective mechanism to reduce the risk of loss to lives and property.</p> <p>Community will need technical assistance to complete this project.</p> <p>The State needs the federal agencies to provide the weather, tidal, and horizontal and vertical control data mandated so the State can meet its FEMA, CZMA, and other mandates.</p> <p style="color: green;"><b>Funding provided in FY 09 Capital Budget.</b></p>	<ul style="list-style-type: none"> <li>- Data for developing emergency and other community plans. (EM is familiar with the data needed.)</li> <li>- Horizontal and vertical control data for establishing plans for relocation and evacuation routes based on what flood levels have historically happened.</li> <li>- Weather observation stations should be established and tied into the current, closest data collection sites for monitoring weather-related storm data whether from ice jams, seasonal river rise, storms, storm surges or floods.</li> <li>- A template to develop plans are available on DMVA/DHSEM’s website.</li> <li>- Yukon River Intertribal Watershed Council model may be useful too.</li> <li>- Integrate with Western Communities Evacuation Plan.</li> </ul>

What projects has or is being done to address imminent threat?	Hurdles/problems or inadequacies of each project. Other efforts, projects, communications needed	Needed information/data
<p><b>Project 2: Community Relocation Plan</b>  <b>Step 1 – Community Layout</b> (complete by May 2008).</p> <p><b>Lead:</b> Newtok  <b>Others:</b> DCCED, Newtok Planning Group, VSW, ADOT/PF, USACE, Community Design Consulting Organization.</p> <p><b>Completion date:</b> Date can't be determined until funding source identified/authorized  Coastal Impact Assistance Program (CIAP) will provide funding to develop Strategic Management Plan as well as a Hazard Mitigation Plan to guide the relocation.</p>	<p><b>IAW Comment:</b>  Newtok with state and federal agencies have formed the Newtok Planning Group to coordinate and plan the site selection, community design/layout and ultimate location, along with planning for the other projects identified in this document. These efforts have occurred with no identified funding source, but rather as an “added” duty to current roles.</p> <p><b>IAW Recommendation:</b> Funding for future relocation planning efforts for Newtok and additional efforts at other communities require resources both at the community and agency levels. Newtok will need funding and technical assistance to support/augment local capacities.</p> <p><b>Budget Estimate:</b> Initial Budget included in FY 08 Supplemental Planning Request.</p>	<p>A “how to” guide (or recipe) for all the ingredients and steps needed to develop a relocation plan needs to be detailed.</p> <p><b>IAW Recommendation:</b>  Based on the Newtok Planning Group’s experience, document and provide/orient other communities, and agency efforts about how to plan and conduct a successful relocation effort.</p> <p><b>Budget Estimate:</b> Initial Budget included in FY 08 Supplemental Planning Request.  Community eligible for \$150,000 planning grant through DCCED.</p>
<p><b>Project 3: Barge Landing Construction</b>  <b>Lead:</b> DCCED and ADOT/PF</p> <p><b>Completion date:</b> 9/31/08</p> <p><b>IAW Recommendation:</b> Fund Construction.</p> <p><b>Capital Budget Estimate:</b> \$279,000</p>	<p>A signed project agreement between DCCED and ADOT/PF will be signed by March 15, 2008.</p> <p>Local coordination is needed.</p> <p><b>Funding provided in FY 09 Capital Budget.</b></p>	<p>On-going coordination to ensure successful completion in Summer 2008.</p>

What projects has or is being done to address imminent threat?	Hurdles/problems or inadequacies of each project. Other efforts, projects, communications needed	Needed information/data
<p><b>Project 4: Evacuation Road from barge landing to planned evacuation center</b></p> <p><b>Lead:</b> USACE; ADOT/PF Others involved: Various</p> <p><b>IAW Recommendation:</b> Build Evacuation Road. <b>Capital Budget Estimate:</b> \$3.75 million.</p>	<p>Other than funding, there are no substantial issues. Permitting and environmental coordination is ongoing. No significant issues have arisen for ESA, wetlands, or SHPO, though coordination will continue.</p> <p>Local coordination is needed.</p> <p>Partial funding provided in FY 09 Capital Budget.</p>	
<p><b>Project 5: Evacuation Center</b></p> <p><b>Lead:</b> USACE</p> <p><b>Others involved:</b> Various</p> <p><b>IAW Recommendation:</b> Build Evacuation Center. <b>Capital Budget Estimate:</b> \$4.5 million</p>	<p>Other than funding, there are no substantial issues. Permitting and environmental coordination is ongoing. No significant issues have arisen for ESA, wetlands, or SHPO, though coordination will continue.</p> <p>Local coordination is needed.</p> <p>Request for funding needed in FY 10 Capital Budget.</p>	
<p><b>Project 6: Airport Planning Step 1 – Site Selection</b></p> <p>ADOT/PF recently received approval for a second year of wind and geotechnical studies by FAA. Four runway alternatives are being studied. Selection of a preferred alternative is expected by spring 2009.</p>	<p><b>IAW Comment:</b> Scenarios should be identified for a new airport with various functionalities that can then be reflected in different cost structures.</p>	

What projects has or is being done to address imminent threat?	Hurdles/problems or inadequacies of each project. Other efforts, projects, communications needed	Needed information/data
<p><b>Project 7: Fuel pipeline at current site for the delivery of fuel to village</b></p> <p><b>Lead:</b> Alaska Energy Authority</p> <p><b>Completion date:</b> 7/31/08 The project will be started and completed this summer 2008.</p>	<p>Local coordination is needed.</p> <p>Multi-agency funding provided in FY 08.</p>	
<p><b>Project 8: Alternative water source in current village</b></p> <p><b>Lead:</b> Village Safe Water (ADEC)</p> <p><b>Completion date:</b> 9/30/08 The village needs to request assistance with this project.</p>	<p>Local coordination is needed.</p>	<p>Request for funding needed in FY 10 Capital Budget.</p>

DRAFT

## SHAKTOOLIK

**Situation Description:** The community is vulnerable to erosion when fall storms hit the sand and gravel spit upon which the community resides. There is no breakwater to protect the community from destructive waves from Norton Sound when storms come from the southwest. In severe storms, the community becomes an island. The beaches have historically been susceptible to damage and erosion from storm conditions, tidal surges, and from the sea ice conditions. Logs that float down the Yukon change from being protective to becoming destructive during storm surges. Several areas along the coastline used by the people in Shaktoolik are vulnerable to erosion and flooding during the storm season. Over the past three floods natural barriers have eroded substantially.

**Overarching Problem:** No definite timeline or authorities for erosion control and/or relocation makes it difficult to plan for needed erosion control projects and relocation. It's difficult to coordinate and focus resources.

What projects has or is being done to address imminent threat?	Hurdles/problems or inadequacies of each project. Other efforts, projects, communications needed	Needed information/data
<p><b>Project 1: Suite of Emergency Plans and Training/Drills</b> Emergency Operations, Community Evacuation, Hazard Mitigation</p> <p><b>Agency Lead:</b> DMVA/DHSEM; others along with leadership and coordination by Shaktoolik community.</p> <p><b>IAW Recommends Completion Date:</b> ASAP – best if by 12/31/08, but recognizing funding realities likely will take 12-18 months to complete Emergency Plans for all 6 communities.</p> <p><b>Budget:</b> \$75,000 - \$100,000</p>	<p><b>IAW Comments:</b> The Suite of Emergency Plans is the most immediate, most near-term, and cost effective mechanism to reduce the risk of loss to lives and property.</p> <p>Community will need technical assistance to complete this project.</p> <p style="color: green;">Funding provided in FY 09 Capital Budget.</p>	<p>Data for developing emergency and other community plans. (EM is familiar with the data needed.)</p> <p>A template to develop plan is available on DMVA/DHSEM's website.</p> <p>Yukon River Intertribal Council model may be useful too.</p> <p>Integrate with Western Communities Evacuation Plan.</p>

What projects has or is being done to address imminent threat?	Hurdles/problems or inadequacies of each project. Other efforts, projects, communications needed	Needed information/data
<p><b>Project 2: Reconnaissance Study for an Evacuation Road</b> - \$55k from Denali Commission has been received by Kawerak – study to be completed by Kawerak early summer 2008 by their in-house engineers. Study to determine length of road and where it is placed – as the route to the preferred relocation site – approx 8.5 miles away.</p> <p><b>Note:</b> USACE has requested Shaktoolik be included in the 117 program like Unalakleet and Shishmaref which provides access to other funds – if appropriations occur.</p> <p>Others involved/Coordination needed among Kawarek, Village Manager, Mayor, and Village Corporation.</p>	<p><b>IAW Recommendation:</b> Local coordinator is needed to assist with planning efforts and project alignment. Community eligible for coordinator funding through DCCED’s planning grants.</p>	<p>Shaktoolik needs:</p> <ul style="list-style-type: none"> <li>- Erosion assessment.</li> <li>- Relocation and site feasibility assessments.</li> <li>- Funding strategy for projects.</li> <li>- Horizontal and vertical control data for establishing storm surge levels and route planning.</li> <li>- An IPY weather observation station tied into the Nome data collection site for monitoring weather related storm surges.</li> </ul> <p><b>IAW Recommendation:</b> Provide recommendations to the Research Workgroup to determine longer-term actions.</p> <p><b>Budget Estimate:</b> Requested in Climate Change Strategy Supplemental.</p>
<p><b>Project 3: Cabins and 30kw Generator</b> The community has identified that Cabins should be built to use for emergency housing along the new Evacuation Road route.</p>	<p>Community is moving forward with this project.</p>	
<p><b>Project 4: Preliminary Site Relocation Assessment</b> The initial step to identify a preferred relocation site.</p> <p><b>IAW Recommendation:</b> Preliminary Relocation Site Assessment .</p> <p><b>Budget Estimate:</b> \$150,000 funded from FY 08 Planning Supplemental.</p>	<p>Land Exchange (12a) for identified relocation site is needed. Local Community, Village Corporation, and Regional (Kawerak) are working on this. State planning coordination may be needed.</p>	<p>Kawerak is seeking GPS coordinates for identified relocation site, so can then consider next steps for Erosion Assessment. Should have Spring 2008. GPS coordinates will help in planning route and elevation from community to relocation site.</p> <p><b>Geologic mapping</b> (Alaska DGGs as lead) Budget estimate: \$180,000 (eligible for FY08 Supplemental funding for Community Planning Grants or CIAP funds).</p>

What projects has or is being done to address imminent threat?	Hurdles/problems or inadequacies of each project. Other efforts, projects, communications needed	Needed information/data
<p><b>Project 5: Community Relocation Plan</b></p> <p><b>Lead:</b> Shaktoolik/Kawerak</p> <p><b>Completion date:</b> Date can't be determined until funding source identified/authorized.</p>	<p>Shaktoolik - Tribe, City, School, Village Corp, and Kawerak need to form local planning committee – soon/ASAP. If funding for a Relocation Planning effort is to be acquired, then local planning committee needs to request funds/assistance.</p> <p>Community will need technical assistance from DCCED and others.</p> <p>Funding will be needed to hire a contractor to work with the community and develop the plan.</p>	<p>A “how to” guide (or recipe) for all the ingredients and steps needed to develop a relocation plan needs to be detailed.</p> <p><b>IAW Recommendation:</b> Based on the Newtok Planning Group’s experience, document and provide/orient other communities, and agency efforts about how to plan and conduct a successful relocation effort.</p> <p><b>Budget Estimate:</b> Initial relocation planning resources are included in the current FY08 Planning Supplemental.</p>

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## SHISHMAREF

**Situation Description:** Shishmaref has been threatened by erosion for many years with recent increases due to the lack of sea ice during the fall storm season. A partially completed USACE project is providing protection for portions of the shoreline. (See Executive Summary)

**Overarching Problem:** No definite timeline or authorities for erosion control and/or relocation makes it difficult to plan for needed erosion control projects. It's difficult to coordinate and focus resources without funding sources and timeline.

What projects has or are being done to address imminent threat	Hurdles/problems or inadequacies of each project Other efforts/projects/communications needed	Needed information/data
<p><b>Project 1: Suite of Emergency Plans and Training/Drills</b> Emergency Operations, Community Evacuation, Hazard Mitigation</p> <p>Agency Lead: DMVA/DHSEM; others along with leadership and coordination by the Unalakleet community.</p> <p><b>IAW Recommends</b> <b>Completion Date:</b> ASAP – best if by 12/31/08, but recognizing funding realities likely will take 12-18 months to complete Emergency Plans for all 6 communities.</p> <p><b>Budget Estimate:</b> \$75,000 - \$100,000 Funding provided to DMVA in FY09 Capital Budget.</p>	<p><b>IAW Comments:</b> The Suite of Emergency Plans is the most immediate, most near-term, and cost effective mechanism to reduce the risk of loss to lives and property.</p> <p>Community will need technical assistance to complete this project.</p> <p>Local coordination is essential.</p> <p>The State needs the federal agencies to provide the weather, tidal, and horizontal and vertical control data mandated so the State can meet its FEMA, CZMA, and other mandates.</p>	<ul style="list-style-type: none"> <li>- Data for developing emergency and other community plans. (EM is familiar with the data needed.)</li> <li>- Horizontal and vertical control data for establishing plans for relocation and evacuation routes based on what flood levels have historically happened.</li> <li>- Weather observation stations should be established and tied into the current, closest data collection sites for monitoring weather-related storm data whether from ice jams, seasonal river rise, storms, storm surges or floods.</li> <li>- A template to develop plan is available on DMVA/DHSEM's website.</li> <li>- Yukon River Intertribal Watershed Council model may be useful too.</li> <li>- Integrate with Western Communities Evacuation Plan.</li> </ul>

What projects has or is being done to address imminent threat?	Hurdles/problems or inadequacies of each project. Other efforts, projects, communications needed	Needed information/data
<p><b>Project 2: Revetment Project</b></p> <p><b>Lead:</b> Shishmaref and USACE</p> <p><b>Others involved:</b> Various</p> <p><b>Completion date:</b> Date can't be determined until funding source identified/authorized</p>	<p>Funding is insufficient for the revetment project.</p> <p>The next increment planned for construction is a 700 ft section that will provide protection to the North shore. No money has been appropriated for this project. The remaining portions (including described above) are estimated to cost \$25 million. The portion of the project already completed has a 15-25 year life (with some maintenance).</p> <p><b>IAW Recommendations:</b></p> <ul style="list-style-type: none"> <li>- Through inter-agency and local coordination identify cost savings by aligning timing of projects requiring heavy equipment.</li> <li>- State needs to establish a fund to ensure co-sponsorship is available if/when federal funds.</li> <li>- Find/develop Western Alaska rock source to reduce costs.</li> <li>- Local coordination is needed to assist with planning efforts and project alignment.</li> <li>- Local capacity building and augmenting community's administrative capacity is required.</li> </ul> <p><b>Capital Budget Estimate: \$8.5 million (35% of \$25 million)</b></p>	
<p><b>Project 3: Relocation Road Reconnaissance Assessment</b> (\$500k for assessment) Road from mainland</p> <p><b>Lead:</b> ADOT/PF and Shishmaref</p>	<p><b>Community Comment:</b> Potential Gravel Haul Road to new Airport.</p>	<p>Geotech data (being done Mar-April 2008).</p>

What projects has or is being done to address imminent threat?	Hurdles/problems or inadequacies of each project. Other efforts, projects, communications needed	Needed information/data
<p><b>Project 4: New Airport Master Plan and Site location for Port</b></p>	<p><b>IAW Comment:</b> Scenarios should be identified for a new airport with various functionalities that can then be reflected in different cost structures.</p>	
<p><b>Project 5: Shishmaref Relocation Feasibility Study</b></p> <p><b>Lead:</b> Shishmaref, USACE, ADOT/PF</p> <p><b>Others involved:</b> Various</p> <p><b>Completion date:</b> Date can't be determined until funding source identified/authorized.</p>	<p>The USACE has been approved to perform a feasibility study at full Federal expense to analyze the relocation options for the community of Shishmaref. No funds have been appropriated to date. NRCS did some site identification previously.</p> <p>Having local capacity to assist and coordinate these plans and projects at the local level is needed – capacity and administrative capacity building.</p> <p>Tin Creek has been identified as the Community's choice, but without Feasibility Study, a decision can't be made whether it is a satisfactory relocation site.</p>	<p>Feasibility Study will develop data such as mapping/soils testing, etc.</p> <p>Alaska DGGS report and geologic map published in 1996.</p>
<p><b>Project 6: Community Relocation Plan</b></p> <p><b>Lead:</b> Shishmaref</p> <p><b>Others involved:</b> Various</p> <p><b>Completion date:</b> Date can't be determined until funding source identified/authorized</p>	<p><b>IAW Comment:</b></p> <p>Shishmaref - Tribe, City, School, Village Corp, and others have formed a local planning committee. If funding for a Relocation Planning effort is to be acquired, then local planning committee needs to request funds/assistance.</p> <p>Community will need technical assistance from DCCED and others.</p> <p>The community will need funding and technical assistance top support/augment local capacities.</p>	<p>A “how to” guide (or recipe) for all the ingredients and steps needed to develop a relocation plan needs to be detailed.</p> <p><b>IAW Recommendation:</b></p> <p>Based on the Newtok Planning Group's experience, document, and provide/orient other communities and agency efforts about how to plan and conduct a successful relocation effort.</p> <p><b>Budget Estimate:</b> Initial Budget included in FY 08 Supplemental Planning Request.</p>

## UNALAKLEET

**Situation Description:** Unalakleet is susceptible to erosion damages along various locations in the community. Particularly along an NRCS gabion revetment that has been damaged by storms. The recommended project is a 1,500 foot long rock revetment which would be constructed along the alignment of the existing NRCS gabion basket revetment. The NRCS project would be removed or covered by the USACE project. \$12.8 million is the most current estimate available. Another threat is the logs that float down the Yukon, in that they change from being protective to becoming destructive during storms surges.

**Overarching Problem:** No definite timeline or authorities for erosion control and/or relocation makes it difficult to plan for needed erosion control projects. It's difficult to coordinate and focus resources without funding sources and timeline.

What projects have or are being done to address imminent threat	Hurdles/problems or inadequacies of each project Other efforts/projects/communications needed	Needed information/data
<p><b>Project 1: Suite of Emergency Plans and Training/Drills</b> Emergency Operations, Community Evacuation, Hazard Mitigation Fire</p> <p><b>Agency Lead:</b> DMVA/DHSEM; others along with leadership and coordination by the Unalakleet community.</p> <p><b>IAW Recommends Completion Date:</b> ASAP – best if by 12/31/08, but recognizing funding realities likely will take 12-18 months to complete Emergency Plans for all 6 communities.</p> <p><b>Budget Estimate:</b> \$75,000 - \$100,000 Funding provided in FY09 Capital Budget</p>	<p><b>IAW Comments:</b> The Suite of Emergency Plans is the most immediate, most near-term, and cost effective mechanism to reduce the risk of loss to lives and property.</p> <p>Community will need technical assistance to complete this project.</p> <p>The State needs the federal agencies to provide the weather, tidal, and horizontal and vertical control data mandated so the State can meet its FEMA, CZMA, and other mandates.</p>	<ul style="list-style-type: none"> <li>- Data for developing emergency and other community plans. (EM is familiar with the data needed.)</li> <li>- Horizontal and vertical control data for establishing plans for relocation and evacuation routes based on what flood levels have historically happened.</li> <li>- Weather observation stations should be established and tied into the current, closest data collection sites for monitoring weather-related storm data whether from ice jams, seasonal river rise, storms, storm surges or floods.</li> <li>- A template to develop plan is available on DMVA/DHSEM's website.</li> <li>- Yukon River Intertribal Watershed Council model may be useful too.</li> <li>- Integrate with Western Communities Evacuation Plan.</li> </ul>

What projects has or is being done to address imminent threat?	Hurdles/problems or inadequacies of each project. Other efforts, projects, communications needed	Needed information/data
<p><b>Project 2: Unalakleet Revetment</b></p> <p><b>Lead:</b> Unalakleet and USACE</p> <p><b>Others involved:</b> Various</p> <p><b>Completion date:</b> TBD depending upon appropriation of funds. USACE is completing design work.</p> <p>Unalakleet is trying to coordinate and build awareness that Summer 2008 should be the target time to conduct this project.</p> <p>This would take advantage of ADOT/PF's Airport Erosion control. RFP will be out soon.</p>	<p>2008 funding is critical if to take advantage of heavy equipment in 2009 season that will already be in place for ADOT/PF – Airport projects.</p> <p>Estimated cost savings: Based on discussions throughout the IAW process, cost savings could be substantial if the same heavy equipment is used for multiple projects , thereby minimizing mobilization/demobilization costs. Based on input from ADOT/PF and USACE, the most effective means to achieve cost savings will be to synchronize state and federal projects so they can be jointly advertised but awarded separately.</p> <p><b>IAW Recommendations:</b></p> <ul style="list-style-type: none"> <li>- Through inter-agency and local coordination identify cost savings by aligning timing of projects requiring heavy equipment.</li> <li>- State should establish a fund to ensure co-sponsorship is available to attract federal funds.</li> </ul> <p>Note: USACE has stated that co-sponsorship funds specifically for Unalakleet will incentivize federal decision to allocate funds to this project.</p> <p><b>Budget Estimate:</b> \$5 million /approx. 35% of federal funds as a minimum.</p> <ul style="list-style-type: none"> <li>- Find/develop Western Alaska rock source to reduce costs.</li> <li>- Local coordinator is needed to assist with planning efforts and project alignment.</li> </ul>	<p>Permitting and environmental coordination is ongoing. No significant issues have arisen for ESA, wetlands, or SHPO - coordination will continue. (Same footprint as NRCS work done 5+ years ago.)</p> <p>If co-sponsorship obtained - Need to determine where funds should be programmed to / through.</p> <p><b>IAW Recommendation:</b> Need funding strategy to ensure erosion/revetment project is done in 2008 or 2009. (Unalakleet/DCCED/USACE.)</p> <p><b>Budget Estimate:</b> \$0.00</p>
<p><b>Project 3: Local Street Rehab Projects</b></p> <p><b>Lead:</b> Kawerak</p>	<p><b>IAW Comment:</b> Additional cost savings by avoiding the mob/demob costs if done in 2008 – 09.</p>	

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# IMMEDIATE ACTION WORKGROUP RELOCATION ASSISTANCE POLICY RECOMMENDATIONS WITH IMPLEMENTATION ACTIONS AND RATIONALE

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**POLICY 1: RELOCATION ASSISTANCE TO COMMUNITIES IN PERIL MUST UTILIZE COMPREHENSIVE INTEGRATED PLANNING AND VIABLE, FUTURE-ORIENTED SOLUTIONS WITH FUNDING THAT ALLOWS FOR SUSTAINABLE RELOCATION.**

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**1) Comprehensive Integrated Planning must include:**

- a. Suite of Community Emergency Planning Efforts.
  - i. Community Evacuation Plans.
  - ii. Community Emergency Operation Plans.
  - iii. Geologic Mapping, Hazard Analysis, and Risk Mitigation Plans.
  - iv. Preparedness Activities to include outreach, training, and exercises.
- b. Community Wildfire Protection Plans for communities at significant risk of wildfire.
- c. Expansion of Comprehensive Community Plans to encompass Relocation.
- d. Community-based decision making approach will ensure continued focus to achieve the necessary end result.
- e. Local, Regional, Tribal, State, and Federal partnerships.
- f. Strategies that address incorporated and unincorporated community eligibility for the National Flood Insurance Program (NFIP), which likely require statutory changes by the State of Alaska.
- g. Enhancement and expansion of DCCED/DCRA's partnership with the Alaska Coastal Management Program (ACMP) to enable more effective assistance to the communities in peril and at significant risk.
- h. A strategy to consolidate various programmatic and grant reporting requirements into a single format that reinforces comprehensive integrated planning.
- i. A strategy to collect and utilize needed data and to develop data where gaps exist, including sustainability principles and strategies. (See Policy 2).

**Implementation actions:**

- Inclusion of native villages, tribal governments, and other land owners in collaboration with agencies during the planning process provides a wide range of benefits from broad-based community support and commitment to specifics such as land relocation issues. Communities take the lead and receive significant support from state and federal entities.

- Ease the administrative burden on remote communities by establishing a shared web-based system as an initial step toward consolidating program and grant reporting requirements into a single format.
- Identify coordinating and participating agencies and develop necessary Memoranda of Agreement (MOAs).

**Rationale:**

- Comprehensive planning has multiple benefits identified throughout this document. In addition to other identified benefits, comprehensive planning increases the ability to address complicated land exchanges often with multiple parties involved and permitting such as complying with NEPA requirements. NEPA requires the review of the effects of all federal, federally-assisted, and federally-licensed actions at any proposed new village site, including, but not limited to: Estate permits, endangered species, coastal consistency, essential fish habitat, and a host of other regulations and requirements recognizing agencies with funding or potential projects. Increased collaboration should focus on solutions such as a Programmatic EIS that can be developed which addresses many of the general issues involved in a proposed relocation. Once a lead agency is identified for NEPA some of the challenges the lead federal agency may encounter include, and can be most effectively addressed through coordination and cooperation, are:
  - Identification of coordinating and participating agencies and development of necessary Memoranda of Agreement (MOAs).
  - Identification of funding to undertake a NEPA analysis if such funding is not in the current project budget.
- Waiting for a disaster event that forces relocation will result in unnecessary risks to life/safety and extraordinarily complex response/relocation/recovery.
- Foundational plans (Geologic Mapping, Mitigation, Evacuation, & Emergency Plans) are critical building blocks for comprehensive community relocation planning, and can characterize possible relocation sites, identify hazards, and locate potential construction materials resources
- Under the federal 2003 Healthy Forest Restoration Act, communities at risk of wildfire are required to develop a Community Wildfire Protection Plan, a collaborative effort between wildfire suppression agencies, federal, state and local governments, community groups, and individuals, that includes risk assessment and a wildfire mitigation plan..
- Adoption of a formal State Mitigation Program would align with Comprehensive Community Relocation Planning to provide a mechanism to help deal with communities in peril.
- Preparedness activities provide opportunities for communities to test and modify plans in non-emergent situations.
- A Comprehensive Community Relocation Plan is essential to informed planning for communities in peril and is anticipated to significantly reduce costs compared to disaster-related response costs coupled with non-comprehensive approaches to mitigation and relocation.
- The life cycle cost of not relocating a community in peril, e.g. erosion control at a current site and repair/replacement of essential public facilities should be considered when developing relocation policies and priorities. This analysis should also review projected costs based on different timeframes to relocate. This can provide policy makers as well as taxpayers better information from which to consider cost effective alternative.

- Decisions regarding a community's future must be built on community support that derives from collaborative, comprehensive analysis of options and associated costs. This includes utilizing already existing work and efforts, which will likely require agencies to do some homework to fully understand the optimum starting point. A consistent focus to achieve the desired sustainable community vision will ensure that plans, studies, and individual projects are not an end in and of themselves, but necessary pieces of a complex project. Agencies should provide communities the best possible information in a timely manner for informed decision-making.
- Comprehensive community planning relies on local needs and resources, tribal inputs and associated rights and responsibilities, and statutory, regulatory and programmatic issues at the State and Federal level. Success cannot be achieved without collaborative partnerships throughout the planning and implementation processes.
- Alaska Native Village and Tribal lands are unique and pose a special set of complex issues when considering community relocations. The State needs to recognize this resource and closely work with Villages and tribes and other land owners to ensure their land issues are appropriately integrated and addressed in a timely way within the community planning process.
- State and Federal Governments must work together cohesively along with the community to develop solutions. Ongoing partnerships will ensure the most effective use of resources and attaining desired end results.
- Unincorporated communities are not currently eligible for the National Flood Insurance Program (NFIP) and the State must address this issue. Under existing statutes, the Legislature has responsibility for land-use issues for unincorporated areas of the state. Therefore it's further recommended that DCCED and the Department of Public Safety, Division of Fire and Life Safety develop recommendations and implementation strategies for the Legislature to consider, that addresses incorporated and unincorporated community eligibility in the NFIP.
- Imperiled communities are overwhelmed with the level of paperwork and documentation required by various agencies for grant and regulatory and other compliance. Alaska's small remote villages have the capability but lack the staff to handle this onerous documentation and reporting requirement for each funding stream.. It would greatly help viability and functionality of a remote village if funding agencies could, wherever possible, collaborate and provide integrated report/documentation that could serve the purpose of all funding agencies.

**Comment/Example:** Obtaining and administering government funds can be a challenge for small communities. Local capacity limitations place many rural communities at a competitive funding disadvantage. Because there is no dedicated funding source for erosion and/or relocation, imminently threatened communities must rely upon existing programs to meet erosion/relocation needs, yet few have the expertise to identify, write, secure and administer grants.

- Even when the local capacity and resources of a village are adequate under normal conditions, coping with erosion and flooding places community resources and capacity under tremendous pressure. The situation is compounded when the community attempts to relocate. Most rural communities have limited administrative and technical staff to work with multiple state and federal agencies on relocation activities, while also attempting to maintain basic community services.

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## 2) Flexible Funding Streams must mandate:

- a. Analysis of projected costs of all viable relocation alternatives, including not relocating
- b. Emergency, hazardous and evacuation plans for communities in peril to prevent loss of life when a natural disaster occurs
- c. ***Prioritized funding for communities in peril*** and a method to prioritize project funding among the communities. This needs to include providing capacity building opportunities in communities by funding local training or consulting efforts, where needs have been identified.
- d. State co-sponsorship funding to attract federal funds.
- e. Sufficient full-time employee positions for state agencies taking a lead or participative role to address expanded agency functions.
- f. Sufficient full-time employee positions for state agencies taking a lead or participative role to address expanded agency functions
- g. ***Based on U.S. Army Corps of Engineers recommendations and DOT/PF review, the state should plan for a 5-year appropriation plan with annual appropriations predicated upon development of budgets and project timelines during the first year of funding consistent with the recommendation in 2c)*** above regarding prioritization. USACE's initial recommendation is funding up to 35 percent of estimated erosion control and mitigation capital costs, which is about \$30 million annually. This will allow interim measures to be taken to protect communities in peril while beginning implementation of longer term adaptation/ mitigation solutions. A "block grant" structure would provide administrative efficiencies.
- h. Rapid response capabilities to release and distribute funds quickly.

### Implementation Actions:

- Develop investment guidelines, and designate funding for priority measures including fast-tracked needs to address critical infrastructure for communities-in-peril. Guidelines should include an assessment to identify critical needs, similar to the DCCED RUBA program. An expedited funding process should be able to meet the critical needs since current funding sources are extremely limited in their ability to fast-track projects. This remains true even with the recent changes to the federal Energy and Water Development Appropriation Act of 2005.
- Annual state appropriation will be synchronized with federal appropriations to better position our coastal erosion needs in the federal process; the distribution of the state appropriations will be handled in a grant-like process consistent with the Policy recommendation in paragraph 3, with DCCED as the coordinating agency; distribution of funds the first year will come with a requirement to identify the Immediate Actions scope, schedule and budget prior to the release of funds for any construction contracts.
- Identify funding to undertake a NEPA analysis if such funding is not in the current project budget.
  - Current status: Funding sources, such as through AHFC, encompass new construction, not funds to rehabilitate a damaged structure or one that needs to be moved out of imminent danger, even when the costs of doing so may be substantially less than replacement (e.g., less than \$20,000 to save a home).
  - Required changes: The funding to stage structures, to stabilize and move infrastructures that are in imminent danger, is needed. Identifying secondary and preventative protections can be accomplished through agency coordination with the community. However, specific assessment tools or "recipes," and the entities most appropriate to apply them must be identified and applied

in a coordinated and site specific effort. The tool(s) should identify at-risk facilities appropriate to move and the means to decide on exact relocation measures – how to move, where to move, whether to elevate or relocate away from threat.

- Roles and Responsibilities: Each responsible agency shall be charged with identifying barriers to making infrastructure investments in threatened and newly designated communities (relocation sites). This process should result in identifying additional policy, statutory, and regulatory changes required to effectively address communities-in-peril and optimize the current community efforts to keep moving forward in the process.
- Community in Peril: Newtok finds itself in a Catch-22, or a no-win, situation. Plans to relocate, combined with the imminent threat of flooding and erosion, has rendered Newtok ineligible for capital funding for improvements to existing infrastructure (e.g., water and sewer, bulk fuel tanks, power plant, and clinic) to meet needs at the current village until the relocation is complete or substantially complete. The ability to divert designated resources to the new village site is hampered by policies that create barriers to investment in non-existent communities.
- Investment guidelines shall include changes to AO #224 in light of the serious erosion and likely relocation of several communities. [State of Alaska Administrative Order No. 224](#) provides an example of this conflict through the establishment of the following investment guidelines:
  - Absence of imminent environmental threat: New facilities will be protected against imminent environmental threats, such as flooding and erosion, consistent with [Administrative Order No. 175](#).
  - Needs of existing communities have priority: Priority will be given to the infrastructure needs of existing communities before consideration of proposals to create new communities, unless there is a congressionally directed relocation of an existing community.

**Rationale:**

- Current funding streams neither require nor allow comprehensive analysis of comparative costs.
- This long-term problem cannot be addressed with short-term personnel.
- The approach for annual state funding for the next five years is supportive of the challenges faced in the federal appropriation process when there is not state participation; requiring budgets and schedules before beginning construction assures we progressively refine the immediate action requirements as we go through the five years of effort. Funding levels higher than recommended could be useful but this pace allows for collaboration, community input, and economies with other agencies to occur while making progress.
- Funding in the form of a State Block Grant that can be allocate to any community in peril project is desirable but may be impractical. If funding continues to be made by the Alaska Legislature specific to certain communities, the work of the sub cabinet must be effectively communicated to Legislative leaders and the Administration.
- Recent changes to Section 117 of the Consolidated Appropriations Act of 2005, PL 108-447, Division C - Energy and Water Development Appropriations Act, 2005, were intended to streamline the ability of the Secretary of the Army to react to situations in Alaska, but the change only reduced the 15 year cycle to a 2 year cycle. The Consolidated Appropriations Act of 2005, PL 108-447, Division C - Energy and Water Development Appropriations Act, 2005 states in part as follows: “SEC. 117. Notwithstanding any other provision of law, the Secretary of the Army is authorized to carry out, at full Federal expense, structural and non-structural projects for storm damage prevention and reduction, coastal erosion, and ice and glacial damage in Alaska, including relocation of affected communities and construction of replacement facilities.” However, even with this streamlined

authority, without state appropriations federal funds alone will likely not be made at a level to meet immediate needs.

- AO224 presents serious investment barriers for possible new locations sites. Other standards and requirements also present barriers to investment in new developing communities. For example, ADOT/PF policy suggests that emerging communities have a minimum of twenty-five residents, a post office, and a school before a project will be considered by the Project Evaluation Board. In addition, there is a minimum population requirement of twenty-five children for construction of a new school. Under these guidelines, the deferment of infrastructure investment can be expected to create hardships on relocating communities. Because village relocation is likely to be an incremental process, there will be populations at both locations (the current village and the new village site) and needs must be met concurrently.
- A disaster event that forces relocation results in unnecessary risks to life/safety and extraordinarily complex response/relocation/recovery, which carries associated and significant increased costs.
- Criteria for defining and funding communities in peril should provide consistency while still allowing for flexible strategies unique to each community. A Statewide Mitigation Program allows a proactive approach independent of Federal funding or a Federal disaster declaration.

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3) **Formulate a strategy to implement the Sustainable Community Relocation policy.** The strategy must define the process for addressing a community's specific needs. Specifically, the strategy must result in a work plan based on principles of sustainability and articulates cooperative working relationships through the specific assignment of roles and responsibilities across agencies, communities, and others along with resources, data and other information needs.

- a. DCCED will serve as the overall coordinating agency to formulate and implement the strategy.
- b. DMVA will serve as the lead agency for the Suite of Community Emergency Planning Efforts.
- c. DNR will serve as the lead agency for Community Wildfire Protection Plans.
- d. DNR will serve as the lead agency for geologic mapping and geologic hazards evaluation.
- e. DCCED will serve as the coordinating agency for the Expansion of Comprehensive Community Plans to encompass Relocation.
- f. DCCED will serve as the coordinating agency to develop and coordinate mechanisms that support community-based decision making.
- g. DCCED will serve as the coordinating agency for coordinating and formalizing Local/Regional, Tribal, State, and Federal partnerships.
- h. DCCED and the Department of Public Safety, Division of Fire and Life Safety will serve as the coordinating agencies to develop recommendations and implementation strategies that address incorporated and unincorporated community eligibility in the National Flood Insurance Program.

**Implementation Actions:**

- Utilize Denali Commission or similar MOU methodology to help address needed collaboration.
- Relocation sustainability community principles shall include:
  - Economic viability including:
    - Renewable / alternative energy technologies, green building design and land use planning
    - Guidelines for ensuring sustainability, including ICLEI Global Sustainability principals and cultural sustainability
    - Guidelines for prioritizing strategies and associated funding streams for erosion and relocation, including mitigation and the alleviation of hazards in proposed location

- Develop a clearing house type function, including planning and technical assistance that will help jump start the process.

### **Rationale:**

- Wherever possible, proven existing strategies should be utilized. Immediately, begin a coordinated system to identify possible resources and actions through a coordinated approach. By scheduling quarterly or semi-annual meetings we can then confidently identify, update and coordinate projects and funding sources from federal, state and regional/local sources to effectively address the most vulnerable needs. Recommend utilizing the Denali Commission’s MOU process for this immediate need, which is currently in development and has proven effective in the past.
- Wherever possible, proven existing strategies should be utilized. Immediately, begin a coordinated system to identify possible resources and actions through a coordinated approach. By scheduling quarterly or semi-annual meetings we can then confidently identify, update and coordinate projects and funding sources from federal, state and regional/local sources to effectively address the most vulnerable needs. Recommend utilizing the Denali Commission’s MOU process for this immediate need, which is currently in development and has proven effective in the past.
- Designating DCCED as the lead coordinating agency for relocation assistance is consistent with the authority DCCED currently has in regard to Alaska’s communities. While there is no formally designated state lead on coordinating relocation assistance, there is considerable authority for a state lead to coordinate ongoing activities and policies to address erosion, which is why relocation is necessary. This authority has been vested in DCCED through:

- administrative Order 175, which designates the former Department of Community & Regional Affairs (now DCCED) to be the State’s lead on coordinating capital investments where there is a potential for flood and erosion damage.
- AO231 and AO239 both direct DCCED to be the State’s coordinating agency to propose long-term solutions to on-going erosion issues.

Other authorities identify DCCED as the State’s lead coordinating agency:

- DCCED’s Division of Community and Regional Affairs is the State agency, which Article 10, Section 14 of the Alaska Constitution mandates be “...established by law in the executive branch of the state government to advise and assist local governments.”
- DCCED serves as the Governor's appointed state coordinating agency for the National Flood Insurance Program and the Flood Mitigation Assistance Program (Alaska Administrative Order No. 175).
- DCCED has statutory mandates for Planning Assistance for Development and Maintenance of District Coastal Management Plans (AS 44.33.781. This authority directs DCCED to provide a program of research, training and technical assistance to coastal resource districts within the Alaska Coastal Management Program (ACMP).
- Enhancement and expansion of DCCED/DCRA’s partnership with the Alaska Coastal Management Program (ACMP) will enable more effective assistance to those communities in peril and at significant risk due to erosion. Most of the communities currently identified as communities in peril are coastal communities.
- And, while a pure Comprehensive Community Plan as discussed in traditional planner circles is not being advocated, a modified Comprehensive Plan that includes analysis of relocation sites would be a significant integrated planning step forward. Thus, it is appropriate to broaden DCCED planning roles to include relocation. The purpose of the lead agency is to assist the community (or community

efforts) by providing guidance on where to get assistance, how to access resources, and to bring all the players together – which by working together the agencies and communities will then leverage resources for emergency preparedness, community infrastructure – including housing, education, health, environmental and related needs. Designating a lead coordinating agency does not preclude each agency from using its authorities and expertise and moving its projects forward for which it is responsible.

- A Relocation policy will provide non-profit organizations and NGO's such as Engineers Without Borders a better sense of how they can play an effective role and augment resources.

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**4) Develop statutes for Statewide Programs, with dedicated funding assurances, to mitigate hazards to enhance community viability and sustainability.**

- a. Statewide Hazards Analysis and Risk Mitigation Program through DMVA
- b. Statewide collection of field data on hazards in priority areas lacking information through DNR
- c. Statewide Vulnerability Assessment Program through DMVA

**Implementation actions:**

- DMVA shall develop recommendations for a Statewide Program to proactively address mitigation hazards that is not contingent, directly or indirectly, on the declaration of a federal disaster upon which current funding streams are based.
- Identify local rock and gravel sources for western Alaska communities in peril that will support infrastructure construction at relocation sites.

**Rationale:**

- Well-formulated state statutes will provide clear guidance and support, with associated funding, for ongoing, comprehensive programs. The recent federal funding trend of pre-designating funds for various states has reduced the amount of funds available to states, thus increasing the competitiveness for such funds and decreasing the likelihood of receiving any significant needed mitigation funding.
- Identification of local sources for rock and gravel is integral to any relocation planning and will significantly impact viable community alternatives.

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**5) Identify and call for required changes to federal statutes, such as the Stafford Act, that would enhance Alaska's ability to deal effectively with communities in peril and other communities with significant risk.**

**Implementation actions:**

- Designated state agencies shall develop similar recommendations for changes to existing federal legislation and seek support from appropriate national organizations.
- Sample Action: DMVA shall develop recommendations for changes to the Stafford Act and seek direct support from NEMA (National Emergency Management Association) and its member states.
- The Legislature should support needed changes in federal law through a legislative resolution.

- The Alaska Municipal League should support needed changes in federal law through a supporting AML Resolution.

**Rationale:**

- Federal statutes relating to mitigation require onerous cost-benefit analysis which does not really address the Alaska situation. In addition, the cost-benefit analysis does not include the consequence of not providing preventative assistance. It's believed by the Immediate Action Workgroup members that only through a preventative assistance strategy and associated funding, that significant cost savings can be achieved. Needed changes in the Stafford Act can be identified by DHS&EM and appropriately addressed through the National Emergency Management Association legislative process with companion support from Alaska's congressional delegation. Direct action from the Alaska Legislature and the Alaska Municipal League, through personal companion efforts and through resolutions, would strengthen efforts to seek needed changes.

DRAFT

## Edit Note: In Report or Appendix?

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### **POLICY 2: EFFECTIVE RESPONSE AND ADAPTATION STRATEGIES MUST BE SUPPORTED BY A COMPREHENSIVE STATEWIDE DATA COLLECTION AND EVALUATION SYSTEM.**

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#### **1) A Statewide data collection and evaluation system must:**

- a. Include suites of data and indicators needed to support policy and strategy decisions.
- b. Catalog currently available data and entities collecting the data.
- c. Create collaborative MOUs among data custodians and data collectors.
- d. Provide for collection of field data where lacking.
- e. Include cultural and traditional knowledge.
- f. Identify gaps in data and determine which gaps should be funded in order to develop a comprehensive statewide database. An example of a data gap is the current need for reliable flood hazard determination data including high water marks of record, detailed analysis of the flood plain, and base flood elevations.
- g. Establish a central data access website that links collaborators and data collectors/custodians and enables ready access to current information.
- h. Ensure data is identified, collected, analyzed, and available to users and policy makers.

#### **Implementation actions:**

- Establish a web-based system as an initial step toward development of a statewide collection and evaluation system.

#### **Rationale:**

- Alaska's communities in peril face complex issues that can only be effectively addressed with an understanding of all factors surrounding future planning. The very future of these communities hinges on the availability of accurate, comprehensive data that potentially relates to their at-risk circumstances.

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#### **2) A State lead coordinating agency or university must be identified and provided necessary resources to develop an effective data collection and evaluation system.**

- a. MOUs shall be developed with appropriate state agencies, and other collaborating entities.
- b. An evaluation system shall include comprehensive community planning and shall establish a priority system for regions of the state that encompasses communities in peril.

#### **Implementation actions:**

- Subcabinet should designate the lead coordinating agency for this effort.
  - Additional work and strategy development should be completed by either the Adaptation Committee, the Research Workgroup, or another group under the Subcabinet's umbrella, before the lead is designated.
- Capitalize on existing web-accessible Canadian Government climate-change database activities. *See* Natural Resources Canada: Climate Change Impacts and Adaptation Program *at:* [http://adaptation.rncan.gc.ca/index\\_e.php](http://adaptation.rncan.gc.ca/index_e.php)
- A clearinghouse of relevant data.

**Rationale:**

- Significant research is required to identify both required and available data necessary for informed decision making with regard to communities in peril. The lead coordinating agency, as recommended in Sub-Policy 2, should develop and implement this research effort. This likely involves community-based research and observations.
- Designation of a lead coordinating agency for this policy requires Subcabinet action because of the pervasive critical need for reliable data to support statewide strategies.

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**3) Flexible funding must be provided to the State lead agency and appropriate collaborating state agencies that actively engage in identification, collection, analysis and dissemination.**

- a. Funding must support dissemination of the data to available users and policy makers.
- b. Funding should prioritize projects that address identified gaps in existing data.
- c. Funding must support collection of new field data to fill identified gaps in priority areas.
- d. Data priorities should align with priority communities in peril and still provide sufficient data to identify, on a statewide basis, those communities with significant risk. Some of these data needs have been identified by the IAW, such as mapping and geologic data needs.

**Implementation actions:**

- Consider existing grant and additional funding sources to conduct data-related research, to the extent that it does not significantly delay implementation of proposed policies. Utilize analysis of current funding streams as rationale for requesting sole or additional supports through a state supplemental /capital budget request, should other sources of funding not prove viable.
- Develop and coordinate a regimen to jump start the process.

**Rationale:**

- State agencies are being asked to expand their functions and additional funding must be identified to meet these new challenges and avoid adverse impact on agency core missions.

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**4) Develop response strategies through current adaptation impact modeling to identify near-term climate change impacts for both protecting in-place and relocation scenarios:**

- a. Encourage Alaska communities to use the ICLEI model, or other multi-step climate impact planning model, which focuses on a review of scientific data to prioritize expected climate change impacts and opportunities a community should expect, and then to develop a set of responses/actions to possible changes.

**Implementation actions:**

- Alaska communities must identify near- term climate change impacts to ensure community’s plans accommodate new research data. The “milestones community planning model”, such as the ICLEI method, has been used to identify emerging impacts and opportunities and develop a set of responses that can be incorporated into local plans.

- An ICLEI method of community milestone planning should be established in immediate or near-term actions to allow new climate change impacts or opportunities to be factored into the relocation or protect-in-place plan.

**Rationale:**

- The effects of near-term climate changes impacts (as opposed to immediate threats) are not fully identified at this time. Further research and data collection into physical and cultural changes will present additional elements to be incorporated into adaptation and relocation plans during various stages of implementation.

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# **APPENDIX A**

## **DOCUMENT SUBMISSION**

### **EDIT NOTE: HOW TO PRESENT APPENDICES:**

- **ADD DOCUMENTS FROM AUGUST 28, 2008 – JAN 27, 2009 TO APPENDICES, OR**
- **CREATE NEW SET OF APPENDICES**
  - o **08- 09 DOCUMENTS AS FIRST SET OF APPENDICES**
  - o **INITIAL EFFORT IN EARLY 2008, AS SECOND SET OF APPEND**

### **WHICH DOCUMENTS NEED TO BE INCLUDED?**

- TIDE GAUGE PRIORITIES
- DCCED Database PPT/and handouts
- ANTHC Community Pilot
- Denali Cmsn Policy
- GAO 1- page summary report
- Summary of AK Flood Disasters
- BEA Exec Summary
- Erosion Community Criteria
- IAWG Compiled Community Criteria
- CIAP Presentation

DRAFT



ALASKA NATIVE TRIBAL HEALTH CONSORTIUM

*Division of Environmental Health & Engineering*

1901 Bragaw Street, Suite 200

Anchorage, AK 99508

Telephone: 907-729-3600

Facsimile: 907-729-4090

MEMORANDUM

DATE: February 22, 2008

FROM: Senior Director

SUBJECT: The Need for Data: Draft IAW Policy & Research Recommendations Comment

TO: Immediate Action Work Group

RECOMMENDATIONS:

I have reviewed the seventh draft IAW Policy and Research Recommendations. Most if not all, the recommendations include an element of data collection/evaluation. I would urge the Work Group to develop and include a stand-alone data gathering recommendation to:

- (1) Catalog currently available data and the entities collecting it.
- (2) Identify the suite of data/indicators needed on which to base climate change policy and strategy development.
- (3) Create collaborative MOU among data custodians and collectors.
- (4) Identify the gaps in data between what is and what should be and assign/fund the gap.
- (5) Establish a central data access website that links collaborators and data collectors/custodians to a central location enabling ready access to the most current information.

BACKGROUND:

At both the tactical and strategic level, data is our first step. Today the ANTHC expended funds in the construction of public health infrastructure in various locations across Alaska. We looked to the existing record (data) to set criteria for roof designs (snow load, wind load and precipitation). We examine local soils to establish a foundation design. As we move forward the variations in weather force us to question the historical record on which we base these design decisions and assumptions. The better our access to complete, current and accurate data and data trends is, the better our designs will be. The better our facilities function, the better our return on investment. We need better data and better access to data now to ensure sound investment in infrastructure that will function properly throughout its design life.

To establish a strategy to adapt to and mitigate the impact of climate change on our society will require an understanding of the challenge. Indicators of risk, Rates of change, and windows of

exposure will have to be created to identify and prioritize the most effective response scenarios. To make decisions in a systematic repeatable fashion as to how to prioritize our limited resources or to select the community with the highest hazard profile will require data. The GAO report on erosion identified 180+ rural communities at risk from erosion hazards, in addition to the 6 you are reviewing now. Who is at most risk? Who is next? Why? To answer these questions and to justify those answers will require data.

Once we have a strategy and a plan, who is buying? Traditionally Alaska has sought federal assistance with virtually all major infrastructure improvement programs. Today federal programs dollars are highly competitive. Domestic programs are hard pressed to compete for funding in the current environment of foreign priorities and other emergencies. As we look forward to communicate our story we will have to clearly articulate and justify our need. The historical weather patterns and how they are different today have to be described. Their impact on our communities, subsistence lifestyles, wildlife, forests and coastline needs to be quantified. The cost of doing nothing compared to the cost of doing something. To understand the changing nature and dynamic impact of erosion, a description of then and now will be required. We will not be able to effectively tell our story without data.

To publicize the climate change issue and promote support across Alaska will require a marketing campaign that educates on the impact and what individuals can do to make a difference. Carbon footprints and the activities and behaviors needed to reduce it. What is the benchmark? What are the targets? Why?

It's all about data. Every facet of our preparation, every step of our development and deployment of climate change strategies and interventions is better served and implemented with data. The sooner we have it available, the more often we can use and reuse it as we move through our processes.

#### ENVIRONMENTAL DATA IDENTIFICATION, COLLECTION, ACCESS & UTILITIZATION:

Data is a balancing act. Not enough of it leads to inefficient or incorrect results. Too much of it leads to paralysis and limited results. I see the data of interest as being primarily in three major categories: Engineering, Human Health and Biology. Within these major categories can be found as many subsets as we choose to highlight; such as: coastal, geology, forestry, and wildlife.

ANTHC is a health provider for Alaska Natives. With our focus on rural Alaska data sets, specific interests include: infrastructure criteria, weather related injury deaths (thin ice etc), zoonotic diseases, and drinking water access/safety. We are prepared to partner with federal and state agencies to assist in the organized tracking and trending on this and related data.

The Canadians have been organizing and establishing their climate change indicator database over the last two years. They have just begun their data collection/analysis phase. I see this as a ready source/start point for a similar Alaska effort.

We need to identify interested participants, and set a collaborative MOU in place. We should consider using the Denali Commission MOU as a model. Once the partnership is established, review the Canadian results to date and establish our climate change data set goals. From there we can identify data currently available/being collected and by who. With a series of short cycle reviews, we can identify gaps in the needed data collection, assign responsibilities, and/or seek funding for those gaps. With the data matrix established, we can initiate a coordinated program of data collection, analysis and trending. In parallel with this effort, a central website platform linking custodian data sites together can be constructed. This would help make the scientific data readily available for users and policy makers to in a uniform and systematic manner.

Steven M. Weaver, P.E., DEE

DRAFT

# **SUSTAINABILITY RECOMMENDATIONS FOR COMMUNITY RELOCATION**

# **SUSTAINABILITY RECOMMENDATIONS FOR COMMUNITY RELOCATION**

**SUBMITTED TO THE  
IMMEDIATE ACTION WORKGROUP  
MARCH 20, 2008**

BY  
ALLISON BUTLER  
PHD STUDENT  
UAF RESILIENCE AND ADAPTATION PROGRAM  
[allison.butler@uaf.edu](mailto:allison.butler@uaf.edu)

I am grateful for having had the opportunity to attend most of the Immediate Actions Workgroup meetings in person or via teleconference. It has been an honor and a pleasure to take part in the planning process for community relocation. I want to express my gratitude, respect, and admiration for the IAW members, other public participants, and especially the members of the imperiled communities for their tireless dedication, hard work, great ideas, respectful collaboration, and sincere desire to advance this important work. I have also appreciated the group's receptivity to ideas and recommendations for making sustainability an integral part of the plans for relocation.

At the IAW's request, I have given two presentations on sustainability: one to the full IAW and one to the Newtok Planning Group. Sustainability was already a priority of the group, and I am pleased to see that it continues to be addressed in the latest draft of the IAW Policy and Research Recommendations. I have also been asked to offer written sustainability recommendations for consideration by the IAW, which I have included below.

The global community has shown broad and increasing commitment to sustainability and sustainable development, from the local grass-roots level to national and international policies and programs. Many communities around the world, from small villages to major cities, are transforming themselves into sustainable communities. There is growing recognition that living sustainably is not only the "right thing to do," it is critical to our long-term success and survival. As the impacts of climate change and other major pressures on human and natural systems intensify, the need for sustainability becomes increasingly evident and urgent. Sustainability is not just about the natural environment; it improves human wellbeing, increases security, and makes sound economic sense as well.

Alaska is navigating an uncharted course as we begin to grapple with some of the Earth's most rapid and severe climate change impacts. There are no contemporary models to guide our adaptation; the world will soon be looking to Alaska for leadership and examples. As we begin our transformation in these first imperiled coastal villages, we have great responsibilities and

opportunities to plan wisely and build communities that are resilient, adaptable, and sustainable in the face of ongoing change.

For these reasons I urge the Immediate Actions Workgroup to recommend the appointment of a task group to develop a separate, clearly defined, and detailed set of recommendations specifically targeting sustainability as a primary, funded goal of Relocation Assistance Policy. I have provided a draft outline as a potential framework, summarized below and detailed in the following pages. It is by no means complete or comprehensive, but I hope it provides a useful starting point.

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**Community Sustainability Recommendations:**

- I. Sustainability & Self-Reliance: General Concepts
  - II. Sustainability Policy Strategies Based on Resilience Science
  - III. Sustainable Design & Technologies for the Built Environment
  - IV. Social, Cultural, & Economic Sustainability
  - V. Ecological Sustainability
  - VI. Sustainable Community Planning, Implementation, and Operation
- 

At the request of the IAW or later workgroups, I will be happy to contribute to the refinement of these ideas in collaboration with a sustainability task group made up of representatives from communities, agencies, and other stakeholder organizations.

I am aware that many of these items have been addressed in the Immediate Action Workgroup Relocation Assistance Policy Recommendations draft, and many are already being pursued by various individuals and groups involved in the relocation effort. The framework draft offered here is intended only to present a set of ideas that I believe are important in developing plans for community sustainability. There is no implication of what is or is not already in progress.

Thank you sincerely for considering these recommendations.



Allison Butler  
[allison.butler@uaf.edu](mailto:allison.butler@uaf.edu)

## **Golovin and Little Diomed Communities' Statements of Need**

-----Original Message-----

From: Black, Michael L (CED) [mailto:michael.black@alaska.gov]  
Sent: Wednesday, February 27, 2008 10:16 AM  
To: Cox, Sally A (CED); Opheen, Patricia S POA  
Cc: Margaret King  
Subject: FW: Golovin-2003 to 2005 Fall Storm Surge Flooding

FYI

-----Original Message-----

From: Toby Anungazuk Jr. [mailto:tobyajr@yahoo.com]  
Sent: Wednesday, February 27, 2008 9:12 AM  
To: Black, Michael L (CED)  
Subject: Golovin-2003 to 2005 Fall Storm Surge Flooding

Dear Deputy Commissioner Black:

My name is Toby Anungazuk Jr. and I live in Golovin, which a community of more than 150 people. For three years in a row, Golovin had fall storm surge flooding, we have reported it, but we seem to get no real response from any agency.

We recently read an article on the ADN titled "State begins to Rescue Villages From Sea". Part of the article said that recommendations about which village erosion projects should get priority; and that the recommendations would be due to reach a subcabinet by 4-1-08. That the funding agencies want someone to build consensus about what to do first. The article also had relocation estimated costs and ACOE est. cost of seawall improvements.

The Tribe in Golovin has sent pictures of the flooding to various agencies, the ADEC Fairbanks Office Brownfield Assessment (DBA Program has a report completely recently - contact Sonya Benson who has last falls first hand knowledge of Golovin).

I am requesting you as Deputy Commissioner of DCCED, look at this report - FYI, we did not have a perfect storm with the wind, storm surge coming at high tide - in 2005 we had flood waters swirling around houses and pouring over roads, along with wind gusts and rain conditions. Most of the downtown residents evacuated to higher ground at night. Golovin needs someone to speak for us. My work number is 907-779-2005 if you want to get ahold of me for more information.

Thank You for your help,  
Toby

-----Original Message-----

From: Opheen, Patricia S POA [mailto:Patricia.S.Opheen@usace.army.mil]  
Sent: Tuesday, April 08, 2008 8:16 AM  
To: john alvis; Black, Michael L (CED)  
Cc: Williams, David P POA; Anderson, Julie L POA; Scudder, J Larry POA; Campbell, Chris POA; Sexauer, Bruce R POA; MARGARET KING; Opheen, Patricia S POA  
Subject: RE: New Village for IAW: Little Diomede

John- Bruce's message below provides you with information on Corps of Engineers authorized programs, my message is to address your request for consideration by the Immediate Action Working Group (IAWG). We have completed a presentations of our recommendations to Commissioner Hartig, and the IAWG report is being finalized. One of the recommendations by the Climate Change Subcabinet addresses the need to evolve an approach for addressing additional communities for when requests such as your are received. I've copied Mike Black, my co-chair on the IAWG to assure he is aware of your request. You'll hear back from one of us on what will happen next.

Regards,  
Trish Opheen

Patricia S. Opheen, P.E.  
Chief, Engineering Division  
Alaska District,  
U.S. Army Corps of Engineers  
(907) 753-2662 office  
(907) 317-9769 cell  
[patricia.s.opheen@usace.army.mil](mailto:patricia.s.opheen@usace.army.mil)  
(Note: new email address)

-----Original Message-----

From: Sexauer, Bruce R POA  
Sent: Monday, April 07, 2008 10:24 AM  
To: 'john alvis'  
Cc: Opheen, Patricia S POA; Williams, David P POA; Anderson, Julie L POA; Scudder, J Larry POA; Campbell, Chris POA  
Subject: RE: New Village for IAW

John

Thanks for your email regarding inclusion of Little Diomede as part of the Immediate Action Workgroup (IAW) for the Alaska Governor's Sub Cabinet on Climate Change. I am not well versed in the IAW procedure, so I would defer IAW questions to our Chief of Engineering Division, Trish Opheen, who is a co-chair on the IAW.

In a recent discussion with Dave Williams, the project manager for the Corps Little Diomede feasibility study, the Corps and the state DOT are looking at options for addressing the small boat harbor and airstrip needs of the community.

Whereas there are several other authorities the Corps of Engineers can utilize to provide assistance for Little Diomed, I would suggest that the continued progress of the feasibility study would be the best option at this time.

Sometimes as a feasibility study progresses, interim solutions are found that may fit within the scope of our other authorities, creating "spin-off" opportunities, but not being familiar with the specifics of the needs of Little Diomed, I would refer you to Dave Williams or Larry Scudder (the project planner) to discuss those opportunities.

Please don't hesitate to contact me about Little Diomed or any of the other communities you are working with. I will always try to find you the answer or at very least somewhere that knows the issue in more detail than I.

Bruce R. Sexauer PE  
Senior Plan Formulator  
Project Formulation Section  
Alaska District USACE  
CEPOA-EN-CW-PF

[Bruce.r.sexauer@usace.army.mil](mailto:Bruce.r.sexauer@usace.army.mil)

(907) 753-5619 voice

(907) 753-2625 fax

---

From: john alvis  
Sent: Tuesday, April 01, 2008 1:34 PM  
To: 'Opheen, Patricia S POA'; 'bruce.sexauer@usace.army.mil'  
Cc: 'Stewart, Robert (MVA)'; 'Williams, David P POA'; 'Anderson, Julie L POA'  
Subject: New Village for IAW

I am John Alvis, P.E., transportation engineer for Kawerak Transportation. I have been, to some extent, involved in the Shishmaref, Shaktoolik, and Unalakleet Erosion problems. I am a retired DOT&PF engineer, living in Western AK for over 30 years.

I recently attended the Alaska Tribal Transportation Conference in Fairbanks. I was explaining to Bob Steward some problems the village of Diomed was having. Diomed was trying to construct an ice runway, an annual event, but both pieces of heavy equipment they use to construct the runway were inoperable. Evergreen Helicopters had sent their only helicopter in the Nome area to Anchorage for repairs and maintenance, so they couldn't get parts or a mechanic to the village to fix the equipment. Bob suggested I contact the Immediate Action Workgroup and the Governor's Subcabinet on Climate Change since he thought some of the problems Diomed is experiencing are related to climate change.

Diomed's only access to the outside world is normally by helicopter. Evergreen's helicopter flies mail from Wales to Diomed once per week, if the weather is good, which it frequently is not. Passengers wanting to go to or from Diomed must fly by plane from Nome to Wales (\$190 one way), then from Wales to

Diomedes by helicopter (\$130 one way) on one of its mail runs. When weather is bad, there is no access to or from the Island for 120 souls, sometimes for weeks at a time.

Once each year, when the ice gets thick enough (over three feet), Diomedes construct an ice runway on which planes can land. Traditionally, for three to four months, they get daily airplane service at a much reduced cost (Nome to Diomedes \$190 OW). Also, more and much larger freight can be transported to the island at a much lower cost. When the ice runway is formed, Evergreen sends their only helicopter to Anchorage for annual maintenance and repairs and then it is sent to other job sites until the ice runway is no longer useable. There have been periods of time Diomedes have had to go as long as six weeks with no transportation until the helicopter is repaired.

In recent years, the window for constructing and using an ice runway has decreased from 3 to 4 months to one or two. The ice runway used to open in January and be open thru April. This year, it is not yet constructed and will probably need to be closed by the end of April. This is partially due to inoperable equipment and partially due to a late forming ice pack. Diomedes tell me they do not get "old ice" down from the Arctic like they used to, but get more "young ice" (recently formed ice). I can foresee a day when they will get no ice thick and stable enough to form an ice runway.

Diomedes is part of Kawerak's transportation program (KTP) that is funded by Indian Reservation Roads funds. KTP, the Denali Commission, and the Corps of Engineers currently have a joint study project to determine the feasibility of constructing a runway and/or harbor at Diomedes. The project is funded at \$2.4M and will take approximately two years to complete (summer of 2010). Early results of the project indicate that constructing an airport or harbor at Diomedes is feasible, but at great costs. At this point, the cost appear to hinge on whether rock (granite) for construction can be taken off the island or not.

Important issues to consider regarding Diomedes's situation is that:

- 1) Diomedes is situated in a very strategic location when considering military or economic issues facing our future if the arctic ice pack melts.
- 2) Constructing an airport would save the U.S. Postal Service a large amount of money, since the USPS pays for the helicopter mail service the island now enjoys (at an approx. cost of \$3,000/flying hour) on a weekly basis.
- 3) Diomedes has no emergency evacuation services when Evergreen's helicopter is either not here or inoperable.

My question for you is: Can Diomedes be considered a village impacted by global warming, since the warmer climate is impacting construction of their ice runway? If so, what can we do to promote it's inclusion into the IAW?

John

DRAFT

## APPENDIX B

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## **Edit Note: Needs Updating**

### **IAW Members and Community Participants**

#### IAW Members

Mike Black, Co-Chair (DCCED)  
Trish Opheen Co-Chair (USACE)  
Luke Hopkins (AML)  
Bob Pawlowski (AFDF– Legislative Climate Change Representative)  
John Madden (DMVA/DHS&EM)  
Chris Maisch (ADNR)  
Mike Coffey (ADOT/PF)  
Frank Richards (ADOT/PF)  
George Cannelos (Denali Commission)

#### Community Participants

Stanley Tom, Newtok Co-Chair Relocation Committee  
David Albert, Newtok IGAP Coordinator

Enoch Adams, Kivalina – Northwest Arctic Borough  
Janet Mitchell, City of Kivalina  
Colleen Swan, Tribal Village of Kivalina  
Bobby Schaefer, Northwest Arctic Borough

Frank Myomick, St Michaels –Kawerak Transportation Planner

Tony A. Weyiouanna Sr.- Member of the Shishmaref Erosion and Relocation Coalition (SERC), President of the Shishmaref Native Corporation and Transportation Planner-Kawerak Inc. providing Technical Assistance to SERC, Board Member Bering Straits Native Corporation.

Stanley Tocktoo - Current Chairperson for SERC, Vice President of the Native Village of Shishmaref

Howard Weyiouanna Sr.- Member of SERC, member of the City of Shishmaref and the Native Village of Shishmaref

Luci Eningowuk - Past Chairperson of SERC and past member of the Native Village of Shishmaref

Johnson Eningowuk - Current member of SERC and the Shishmaref Native Corporation.

Darlene Turner- Current Co-Chair of SERC and member of the Shishmaref Native Corporation

Cindy Pilot, Tribal Administrator Koyukuk

John Alvis, Kawerak Transportation Engineer

Jeanette Pomrenke, Kawerak

Steve Ivanoff, Kawerak Transportation Planner

Simon Bekoalok, Shaktoolik Tribal President  
Eugene Asicksik, former Mayor Shaktoolik  
Rhonda Asicksik, resident Shaktoolik  
Robert Keith, Chair, Kawerak, Inc.  
Neil Rodriguez - Coastal Villages Region Fund

Public and Agency Participants

Larry Hartig (Chair of Sub-Cabinet - ADEC Commissioner)  
Frank Richards (ADOT/PF Commissioner)  
Tom Chapple (ADEC Air Quality Division Director)  
Kolena Momberger (ADEC)  
Tara Jollie (DCCED/DCRA Director)  
Sally Russell Cox (DCCED/DCRA)  
Taunnie Boothby (DCCED/DCRA)

Robert Stewart (DHS&EM)  
Merry Carlson (DHS&EM)  
Mark Roberts (DHS & EM)  
George Coyle (DHS& EM)  
Dave Andrews (DHS & EM)  
David Kang (DHS & EM)

Donna Gardino (ADOT/PF)  
Clint Adler (ADOT/PF)  
Krag Johnsen (Denali Commission)  
Jamilia George (DCCED/Denali Commission)  
Berney Richert (U.S. Economic Development Administration)

Carl Borash (USACE)  
Bruce Sexauer (USACE)  
Rod Combellick (DNR)

Rebecca Schaeffer (HDR)  
Peter Briggs (Corvus Design)  
Victoria Hykes  
Christy Miller (Tetra Tech)  
Allison Butler (UAF-PhD Student)  
Elizabeth Marino (UAF-PhD Student)  
Robin Bronen (UAF-PhD Student)

Judy Gottlieb (NPS)  
Jeff Malcolm (USGAO)  
Steve Weaver (ANTHC)  
Deborah Williams (Conservation Solutions)  
John Woodward

Facilitator

Margaret (Meg) King (UAA)

# APPENDIX C

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## **Edit Note: Needs Updating**

### **IAW Meeting Schedule and Proposed Agenda Items**

#### **January 8, 2008**

- Review Immediate Actions by each Community
- Identify IAW Tasks to Accomplish and Timeline

#### **January 18, 2008**

- Update on Next Steps from Jan 8<sup>th</sup> Meeting (Co-Chairs)
- Briefing on Existing Mitigation Programs and How to Use Them  
(John Madden, Director Division of Homeland Security and Emergency Management)  
Summary of State Disasters Over Past 30 Years  
(John Madden, Director Division of Homeland Security and Emergency Management)
- Current and Proposed Projects Status Overview on Communities Reviewed in the GAO report and for Kivalina, Shishmaref, Shaktoolik, Unalakleet, Newtok, and Koyukuk (Patricia Opheen, Chief, Engineering Division, Alaska - US Army Corps of Engineers)
- Relocating Communities in a Sustainable Way (Allison Butler, UAF PhD Candidate)
  - Identify other communities around the world, Characteristics of relocating sustainably - making communities more self sufficient, etc.
- Discussion on type of information needed for each of the Immediate Action projects:
  - What are the key “ingredients” to detail recommendations (recipe) on what will make projects successful,
  - What needs to be done for each project,
  - What should be done in the near term (now – 18months),
  - What resources are needed,
  - Identify resources

#### **January 31, 2008**

- Review Proposed Immediate Action Projects from each Community
- IAW Members Agree/Determine which proposed Immediate Action Projects will be advanced for recommendation
- Identify specifics about each Immediate Action Project
  - What’s needed for each project/create “recipe”
  - Identify approach for each immediate action project
  - Identify critical path for each
- Identify tasks and needed policies to create “recipes”

#### **February 12, 2008**

- Review with each community proposed immediate actions and projects and revise as needed

#### **February 19, 2008**

- Review and revise policy and research recommendations developed from earlier IAW meetings and discussions

#### **March 4, 2008**

- Review first draft of IAW Recommendations Report
  - Refine/Approve Immediate Community Actions and Projects
  - Review and Refine Policy and Research Recommendations

**March 20, 2008**

- Report from Alaska Legislature's Alaska Climate Impact Assessment Commission (if report available)
- IAW Recommendations Briefing to Commissioner Hartig, Chair Governor's Sub-Cabinet on Climate Change

**Website Reference for IAW Meeting Agendas, Handouts and Summaries**

<http://www.climatechange.alaska.gov/iaw.htm>

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