U.S. Army Corps of Engineers Activities: Infrastructure and Coastal Erosion

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State of Alaska Climate Change Subcabinet: Alaska District Engagement

- Adaptation Advisory Group
  - Public Infrastructure Technical Working Group: addresses physical impacts of climate change on Alaska’s built environment, including both publicly- and privately-owned infrastructure with public access

- Immediate Action Working Group
  - One of two K/G’s initiated in 2008-Shortly after subcabinet was created.
  - Intended to deal with most urgent coastal erosion affected communities until subcabinet was functional.
  - 2008 recommendation for state appropriations accepted.
Climate change in Alaska is creating the following potential impacts to public infrastructure, with significant regional variation:

- Warming and thawing permafrost
- Increased storm surges, flooding, and erosion
- Decreased duration (cold season) and extent (warm season) of shore fast sea ice
- Increasing freeze/thaw cycles
- Changing wind and precipitation
- Increased storm frequencies and duration
- Increased fire risk
Public Infrastructure
Technical Working Group

Overview of Public Infrastructure

Policy Recommendations:

• Create a Coordinated and Accessible Statewide System for Key Data Collection, Analysis, and Monitoring
• Promote Improvements that Use the Current Best Practices
• Build to Last; Build Resiliency into Alaska’s Public Infrastructure
The recommended adaptation options are designed as an integrated system. The three policies (in the triangle) build upon and support one another. Process of continued, routine communication and feedback is essential to adapt and refine actions taken over time.

- **Sustainable Infrastructure That supports communities In an uncertain environment**
- **Build to Last, Build in Resiliency**
- **Promote Improvements that Use Current Best Practices**
- **Create a Statewide System for Key Data Collection, Analysis, Monitoring & Access**

**Performance Feedback**

**Integrated Coordinated Decision making**
Immediate Action Working Group

2003 GAO Report, Alaska Native Villages, Most are Affected by Flooding and Erosion, but Few Qualify for Federal Assistance, focused on the following communities:

- Barrow
- Bethel
- Kaktovik
- Kivalina
- Point Hope
- Unalakleet
- Koyukuk
- Newtok
- Shishmaref

Alaska

- Barrow Erosion Protection
- Kaktovik Erosion Protection
- Kivalina Erosion Protection
- Shishmaref Erosion Protection
- Koyukuk Erosion Protection
- Unalakleet Erosion Protection
- Newtok Storm Damage Reduction
- Bethel Bank Stabilization Extension & Erosion Protection

Anchorage
Communities with most immediate needs:

**Kivalina**
- ACOE completed 1,600 ft of rock revetment – Sep 2009
- ACOE completed 400 ft of rock revetment in 2010 using $3.3M in State funds
- CIAP grant of $180,000 used to further evaluate village relocation
- DNR-DGGS provided geologic and hazardous mapping for evacuation road

**Shishmaref**
- Completed 1,500 ft of rock revetment through Sep 2009
- 625 ft remain to protect washeteria and lagoon – needs funds
- DCCED-ACCIMP grant of $150,000 for Site Selection Feasibility Study

**Unalakleet**
- ACOE completed 670 ft of rock revetment in 2010
- Design completed for additional 810 ft
- State appropriated $5 million in 2008 and $1.7 million FY 2011 (July 2010)
- ACOE preparing project partnering agreement to finish revetment

**Newtok**
- Innovative Readiness Training (IRT) Group built base camp near barge landing
- IRT built ACOE/ADOT designed barge landing to Evacuation Center in 2010
- IRT planning to construct foundation for Evacuation Center summer 2011
Communities with most immediate needs:

**Shaktoolik**
- ACOE obtained accurate survey datum
- ACOE/Denali Commission preparing flood inundation map for the village
- ACOE initiated shore protection study
- Community considering elevated road for evacuation
- Rehabilitation of school, might serve as evacuation center

**Golovin**
- Initiated shore protection study
- Considering elevating road to reduce flood risks
- Currently evaluating economics and costs
- Next step: cost shared feasibility study

**Koyukuk**
- DCRA-ACCIMP funded preliminary evacuation shelter concept design
- Koyukuk has developed updated community profile map
Kivalina Erosion Protection

- Awarded: 2010
- Completed: 2009
- Completed: 2008
- Needs $$: Phase II
Shishmaref Erosion Protection

Corps Authorized Project Area

Corps Phase I (625 ft.)
Completed Aug 08
2005 City Project
2005 Corps Project
2003 Kawerak Project

Corps Phase II (750 ft.)
Contract Award Sep 2008
Constructed in 2009
2006 HESCO Bastions
(Covered by Corps Phase 1 Project)

Corps Phase III (550 ft.)
Awaiting Agreement and Funds

Corps Phase IV (1225 feet)
Includes Improvements to
2003 Kawerak and 2005 City Project
Aerial of Newtok.
A Baseline Erosion Assessment multi-agency committee, made up of key Federal, State, Tribal, and local stakeholders:

- Assembled a list of communities with an erosion problem.
- Sent out letters and questionnaires to Federal, State, Tribal, regional Native Corporations, and local officials to listed communities. A total of 178 communities were identified as having erosion problems.
- Developed 12 Detailed Erosion Assessments and 166 Erosion Information Papers to assess and rate individual community risk.
In Summary

• Addressing Alaska erosion important and challenging
• Climate change trends must be evaluated
• Out of the box (multiple players) planning required: significant coordination necessary
• Lack resources to address vast majority of critical needs for all erosion activities
Back-Up Slides

• PI TWG
Public Infrastructure
Technical Working Group

APPENDIX B. LIST OF ACRONYMS

- AAG Adaptation Advisory Group
- ABI Alaska Bureau of Investigation
- ACCAP Alaska Center for Climate Assessment and Policy
- ACCAP Alaska Climate Change Knowledge Network
- ACE Air convection embankment
- ACIA Arctic Climate Impact Assessment
- ACIA Arctic Climate Impact Assessment Commission
- ACRC Alaska Climate Research Center
- ADECCED Alaska Department of Commerce, Community, and Economic Development
- ADEC Alaska Department of Environmental Conservation
- ADEED Alaska Department of Education and Early Development
- ADF&G Alaska Department of Fish and Game
- ADHSS Alaska Department of Health and Social Services
- ADMVA Alaska Department of Military and Veterans Affairs
- ADNR Alaska Department of Natural Resources
- ADOT&P Alaska Department of Transportation and Public Facilities
- AEDIS Engineering Design Information System
- AFS Alaska Fire Service
- AHRS Alaska Heritage Resources Survey
- AIDEA Alaska Industrial Development and Export Authority
- AIWFMP Alaska Interagency Wildland Fire Management Plan
- AISWG Alaska Invasive Species Working Group
- AML Alaska Municipal League
- ANILCA Alaska National Interest Lands of Conservation Act
- ANTHC Alaska Native Tribal Health Consortium
- AOGCM Atmosphere-Ocean General Circulation Model
- AOOS Alaska Ocean Observing System
- ARRA American Recovery and Reinvestment Act
- AST Alaska State Troopers
- AVCP Association of Village Council Presidents Regional Housing Authority
- AWFCG Alaska Wildlife Fire Coordinating Group
- AWRVI Arctic Water Resources Vulnerability Index
- BIA Bureau of Indian Affairs
- BLM Bureau of Land Management
- BST Bituminous surface treatment
- BVS Bureau of Vital Statistics
- CCH Center for Climate and Health
- CES Cooperative Extension Service
- CDC Centers for Disease Control (and Prevention)
- CEQ Council on Environmental Quality
- CHIE Community Health Impact Evaluation
- CIP Capital Improvement Project
- CT Common Themes
- CNIPM Alaska Committee on Noxious and Invasive Plant Management
- CVRF Coastal Villages Region Fund
- CWPP Community Wildfire Protection Plans
- DCOM Division of Coastal and Ocean Resources
- DCRA Division of Community and Regional Affairs

Alaska Department of Environmental Conservation
page B-1 http://www.climatechange.alaska.gov