THE STATE of ALASKA

GOVERNOR BILL WALKER

DEPARTMENT OF COMMERCE, COMMUNITY AND ECONOMIC DEVELOPMENT

Division of Community and Regional Affairs

Local Government Adaptation to Climate Change Impacts

Sally Russell Cox • Alaska Municipal League Conference • November 14, 2018






Climate Adaptation Responses

Protection-in-Place

- Shoreline protection measures and other controls to prevent/minimize the effects of coastal or riverine threats
- Allow the community to remain in its current location

Migration

- Gradually moving property and development away from hazard-prone areas
- Community must have suitable, developable land nearby

Relocation

- Moving entire community to entirely different location not vulnerable to natural hazards
- Usually considered only after determination that other methods of dealing with hazard threats would not be feasible

Newtok

Photo: Albertina Charles, 2018

Community Decision-Making Continuum

Community Understanding of Risk

- Hazard Identification
- Science/Engineering Studies + Local Observation
- Risk Assessments
- Recommendations

Planning: Local Decisions + Actions to Reduce Risk

- Strategic Community Planning
- Inter-Agency Planning Groups
- Identification + Prioritization of Strategic Actions
- Identification of Resources

Implementation: Working toward Resilience

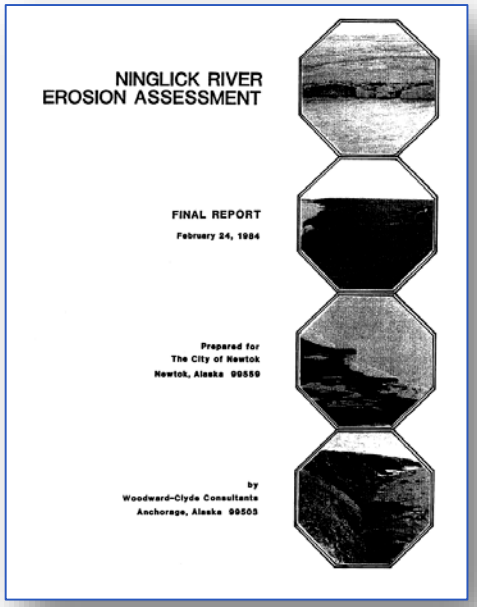
- Implementation of Strategic Actions *(Protect-in-Place, Migrate Infrastructure, Relocation)*
- Continuation of Inter-Agency Planning Groups to support implementation

Local Understanding of Risk

- Community became aware of erosion issues in the **1970s** and they began monitoring erosion using stakes

- **1983:** State provided $100,000 for ***Ninglick River Erosion Assessment*** by local engineering firm, Woodward-Clyde. Recommendation:

"Relocating Newtok would likely be less expensive than trying to hold back the Ninglick River."


NINGLICK RIVER
EROSION ASSESSMENT

FINAL REPORT
February 24, 1984

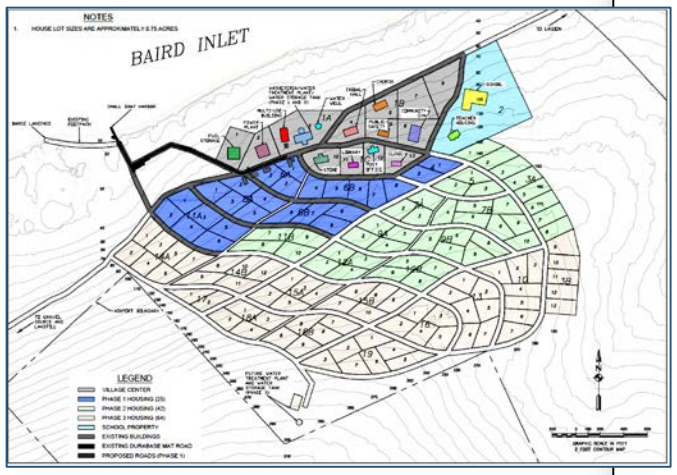
Prepared for
The City of Newtok
Newtok, Alaska 99559

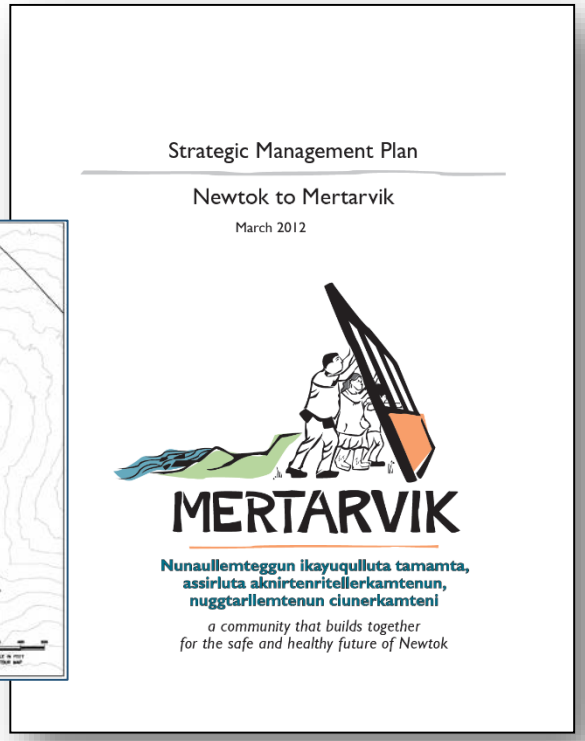
by
Woodward-Clyde Consultants
Anchorage, Alaska 99503

Newtok

Community Planning: Local Decisions + Actions to Reduce Risk

- **1994:** Decision to relocate; relocation site selection
- **2003:** Land exchange completed with Department of Interior
- **2006:** Newtok Planning Group formed. Discussions on how to develop Mertarvik begin.
- **2006 - 2015:** Community plans developed:
  - Mertarvik Community Layout Plan
  - Mertarvik Strategic Management Plan
  - Waterfront Development Plan




Strategic Management Plan

Newtok to Mertarvik

March 2012

MERTARVIK

Nunaullemteggun ikayuqulluta tamamta, assirluta aknirtenritellerkamtenun, nuggtarllemtenun ciunerkamteni

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

Newtok

Implementation: Working toward Resilience

2009 Mertarvik Barge Landing

EDA Grant to State + State Legislative Funding

Photo: Sally Russell Cox

2009 Mertarvik Barge Landing

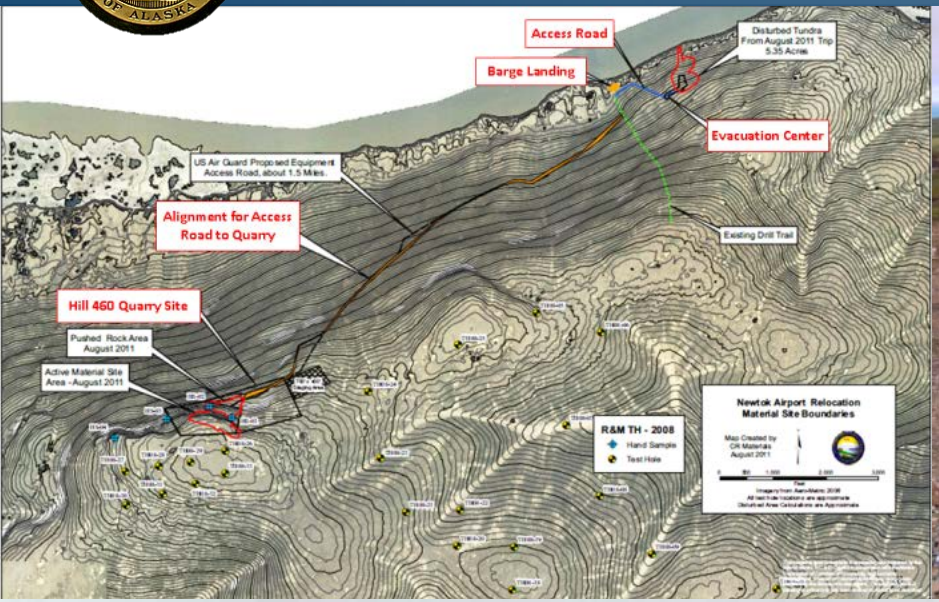
EDA Grant to State + State Legislative Funding

Photo: Robert Lundell

2009 IRT Arrives at Mertarvik

Photo: Robert Lundell

2011 Opening of Mertarvik Quarry



2011 Mertarvik Evacuation Center Foundation

State Legislative Grant
to Newtok

Photo: Sally Russell Cox

2011 Water Well + Septic System

2012 Mertarvik Access Road

State Legislative + BIA Funding

Photo: Robert Lundell

2012 Waterfront Development Concept

Prepared by State DOT/PF with BIA Funding to Newtok

Source: Alaska DOT/PF

2012-13 Military Buildings + Homes

2 Military Buildings: State Legislative Grant to Newtok
3 Homes: AVCP RHA through HUD

Photo: Sally Russell Cox

2016 Mertarvik Pioneer Infrastructure

Photo: LeMay Engineering

Community Understanding of Risk

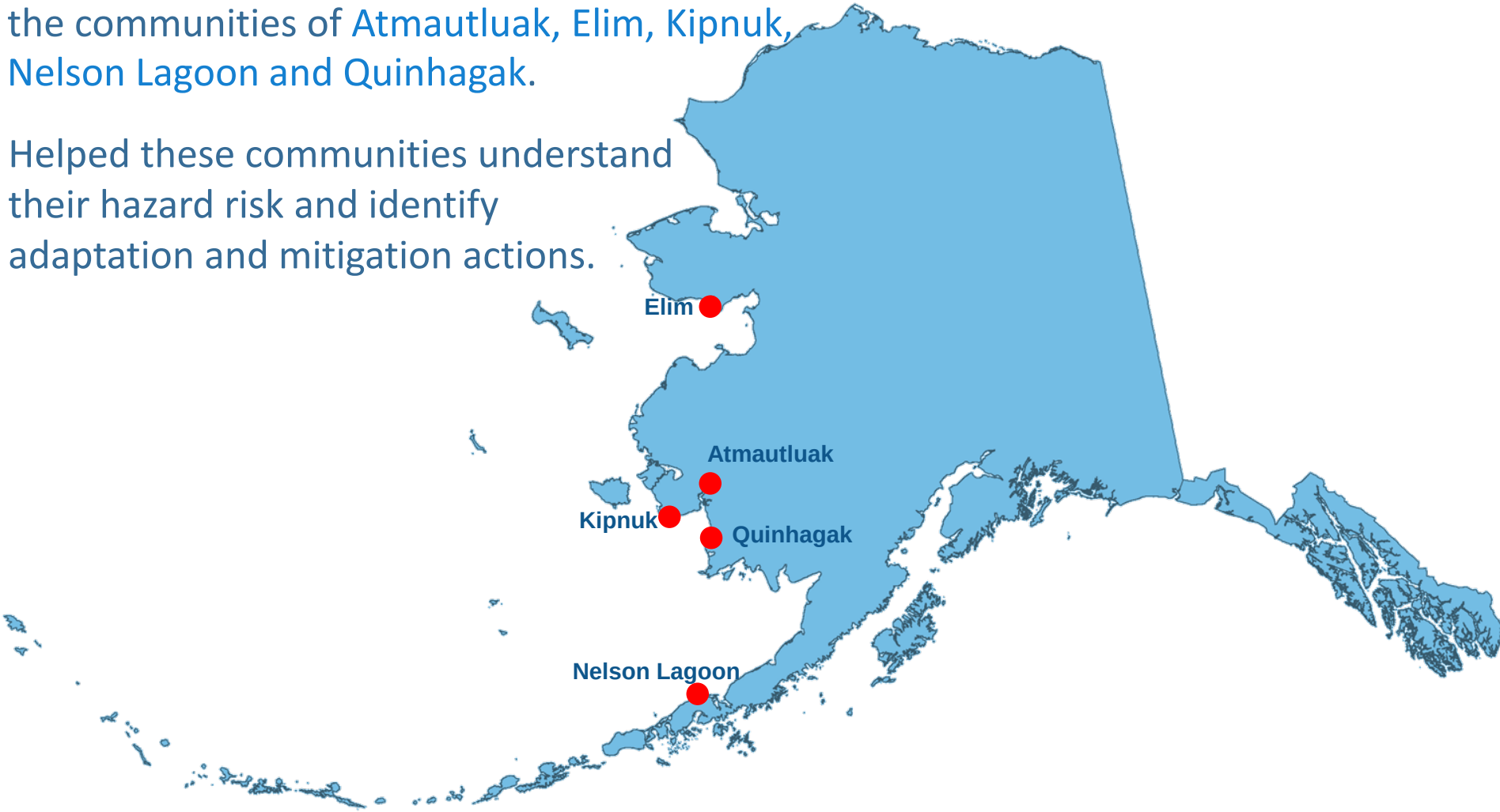
Established in 2008 to help threatened communities develop planned approach to shoreline protection, building relocation and/or eventual relocation of the village.

Hazard Impact Assessment (HIA)
Identify and document climate change-related hazards; establishes baseline
Analyze hazard trends and future impacts to community to understand risk
Recommend actions to adapt to hazard impacts, taking into account financial considerations

Alaska Climate Change Impact Mitigation Program

Hazard Impact Assessment studies conducted in the communities of Atmautluak, Elim, Kipnuk, Nelson Lagoon and Quinhagak.

Helped these communities understand their hazard risk and identify adaptation and mitigation actions.

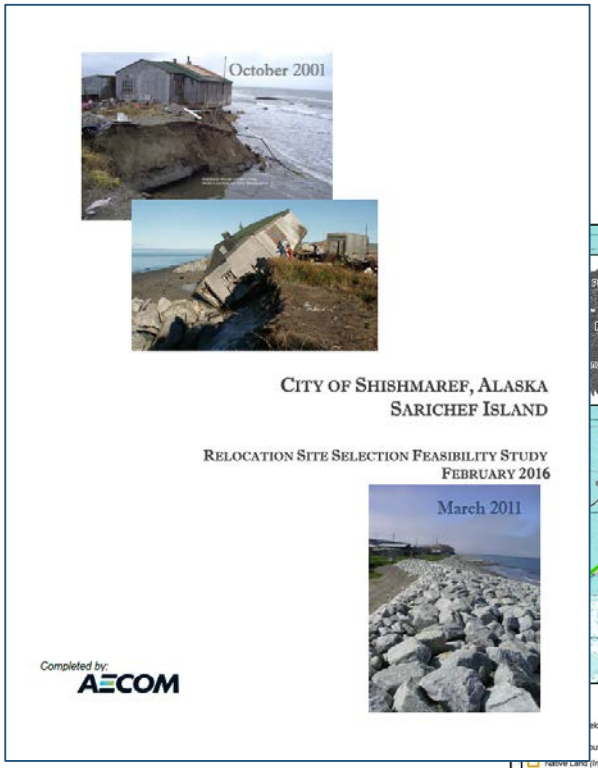


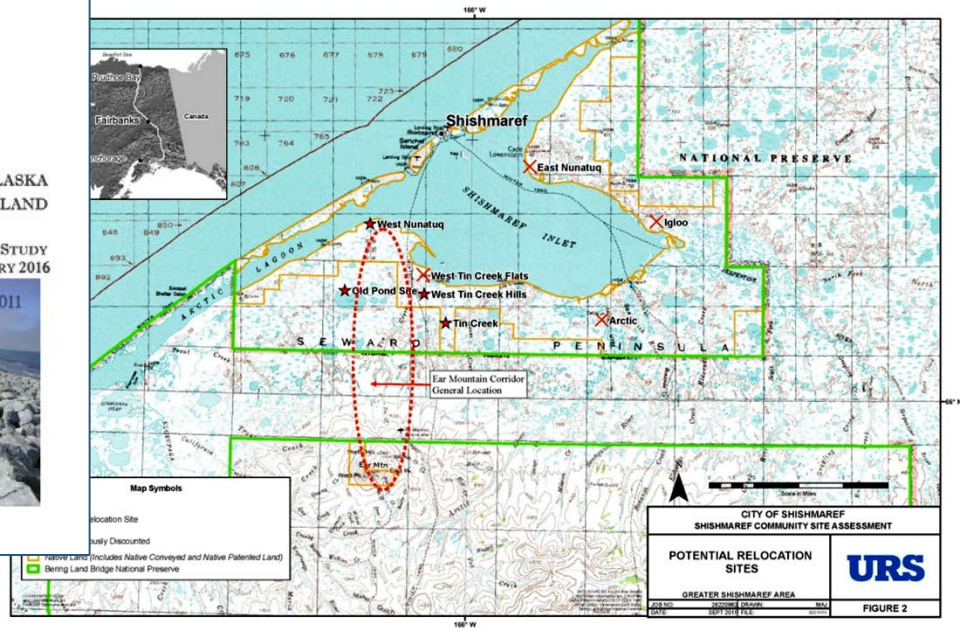
Planning: Local Decisions + Identification of Actions to Reduce Risk

Community Adaptation Planning Grant
Funding to implement one or more adaptation actions from Hazard Impact Assessment
Provides additional information on hazard risk
Brings community to next stage in adaptation decision-making process

Shishmaref Relocation Site Feasibility Study

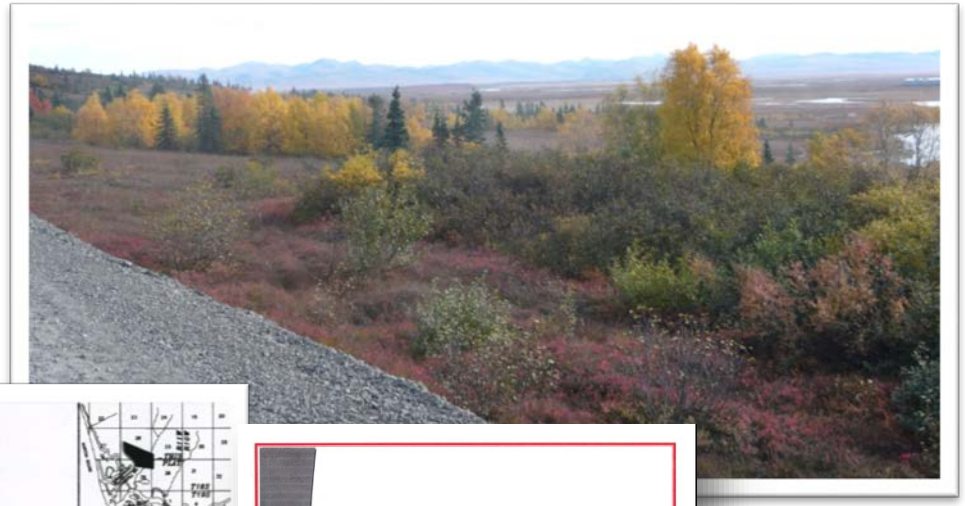
- Informed Shishmaref's decision to relocate and select a relocation site

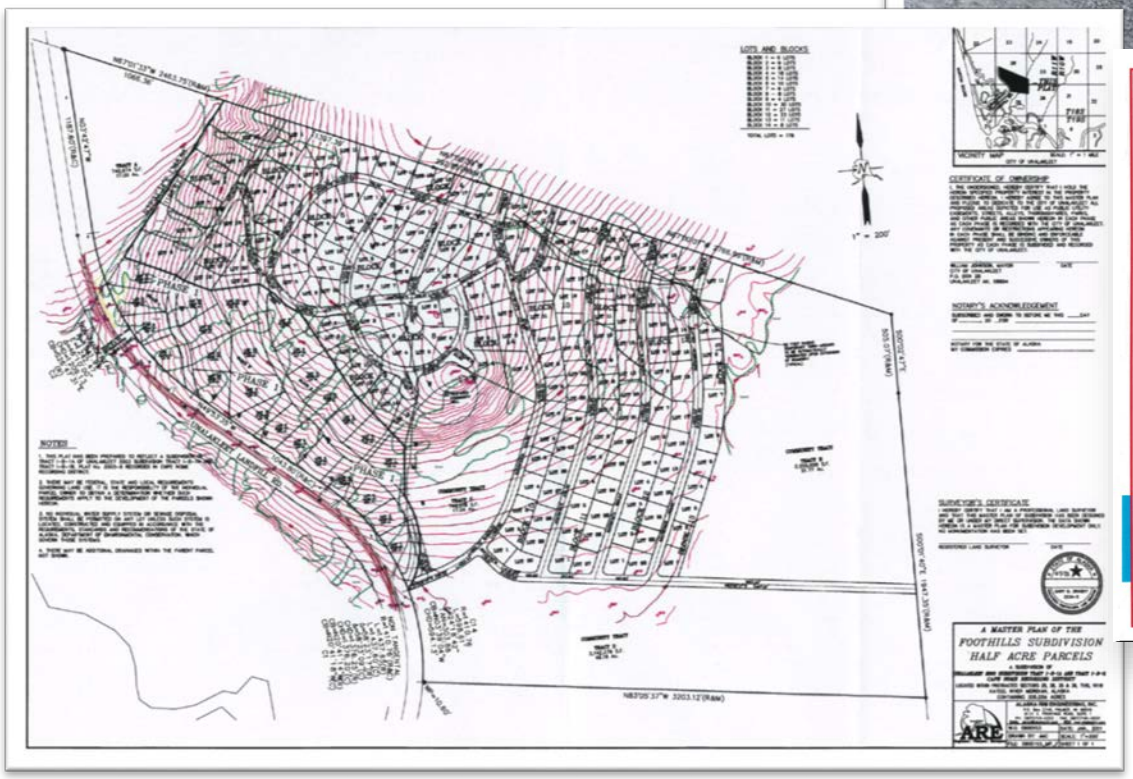


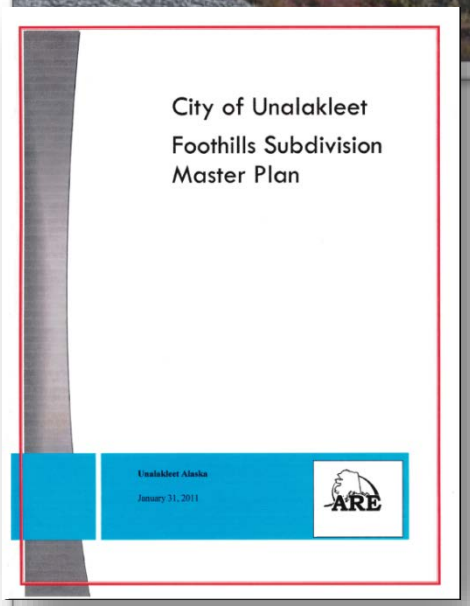


Unalakleet Foothills Master Plan and Subdivision Design Project

- Directs new development to higher ground, away from impacts of erosion, flooding, and storm surge.





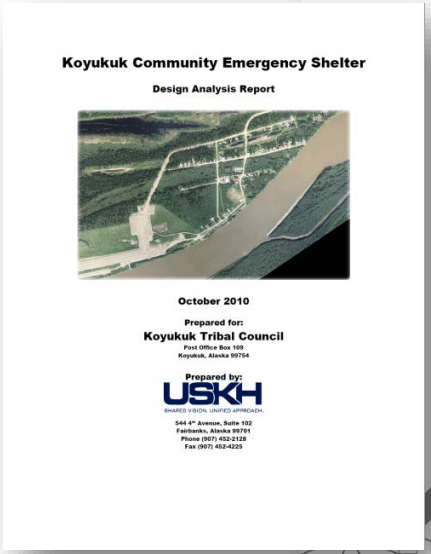


Shaktoolik Evacuation Shelter Design Analysis Report

- Concept-level design for an elevated structure which will provide shelter for the community during emergencies, principally during storm surges, *but* also in other extreme weather events and serve other non-emergency functions.

Koyukuk Community Emergency Shelter

- Proposed to provide shelter for community during flood events
- Will serve as command post and “safe house” accessible to community
- Facilitates evacuations, provides temporary housing, and enables return of residents to their homes in safe manner



Koyukuk Community Emergency Shelter

Design Analysis Report

October 2010

Prepared for:

Koyukuk Tribal Council

Post Office Box 109
Koyukuk, Alaska 99754

Prepared by:

USKH

SHARED VISION. UNIFIED APPROACH.

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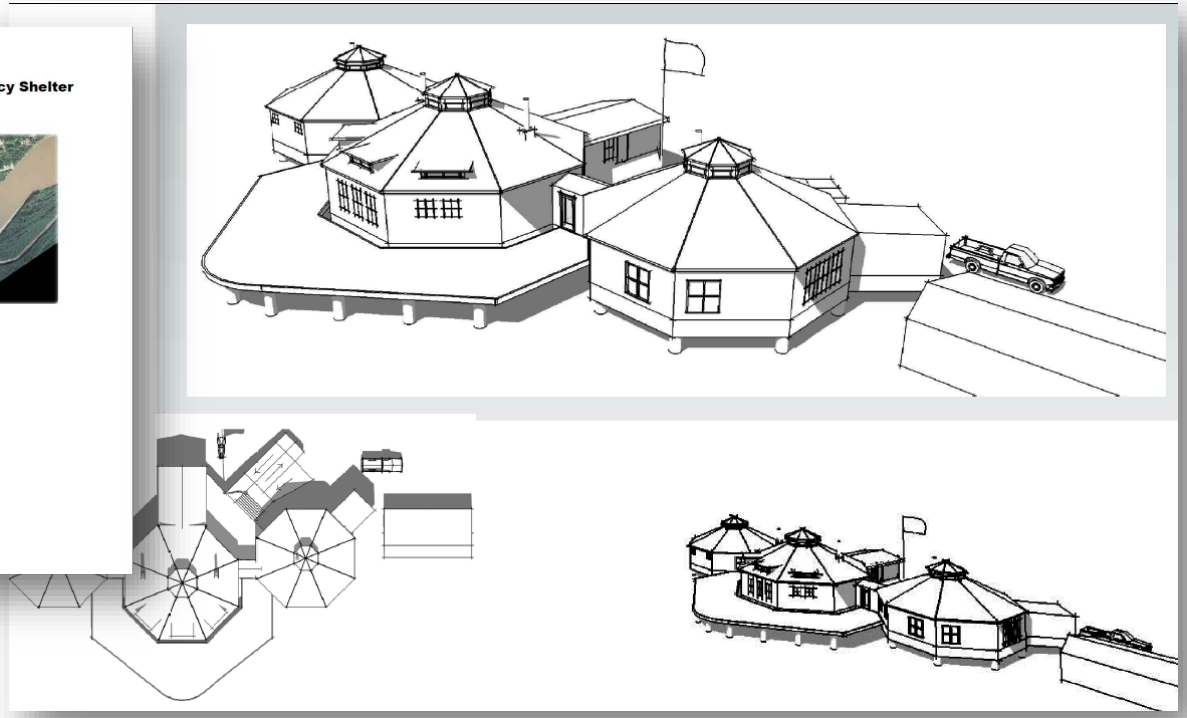


Planning: Local Decisions + Actions to Reduce Risk

- Based on Newtok model:
  - Local Coordinator funded full-time for 2 years
  - Organization of Inter-Agency Planning Groups to provide technical expertise on actions in Strategic Management Plan
  - Development of comprehensive Strategic Management Plan to guide community-agency activities to increase local resilience.
- Focus communities were Kivalina, Shaktoolik and Shishmaref.
- Funding came from Coastal Impact Assistance Program

The Planning Process

Identifying Issues, Values, Goals and Objectives

Year One

1. Literature Review
2. Community Survey
3. Value Survey
4. Elder Interviews
5. Community Gathering

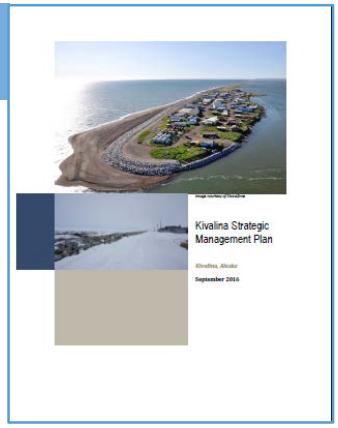
Background Planning Report
July 2015

Identifying and Prioritizing Strategic Actions

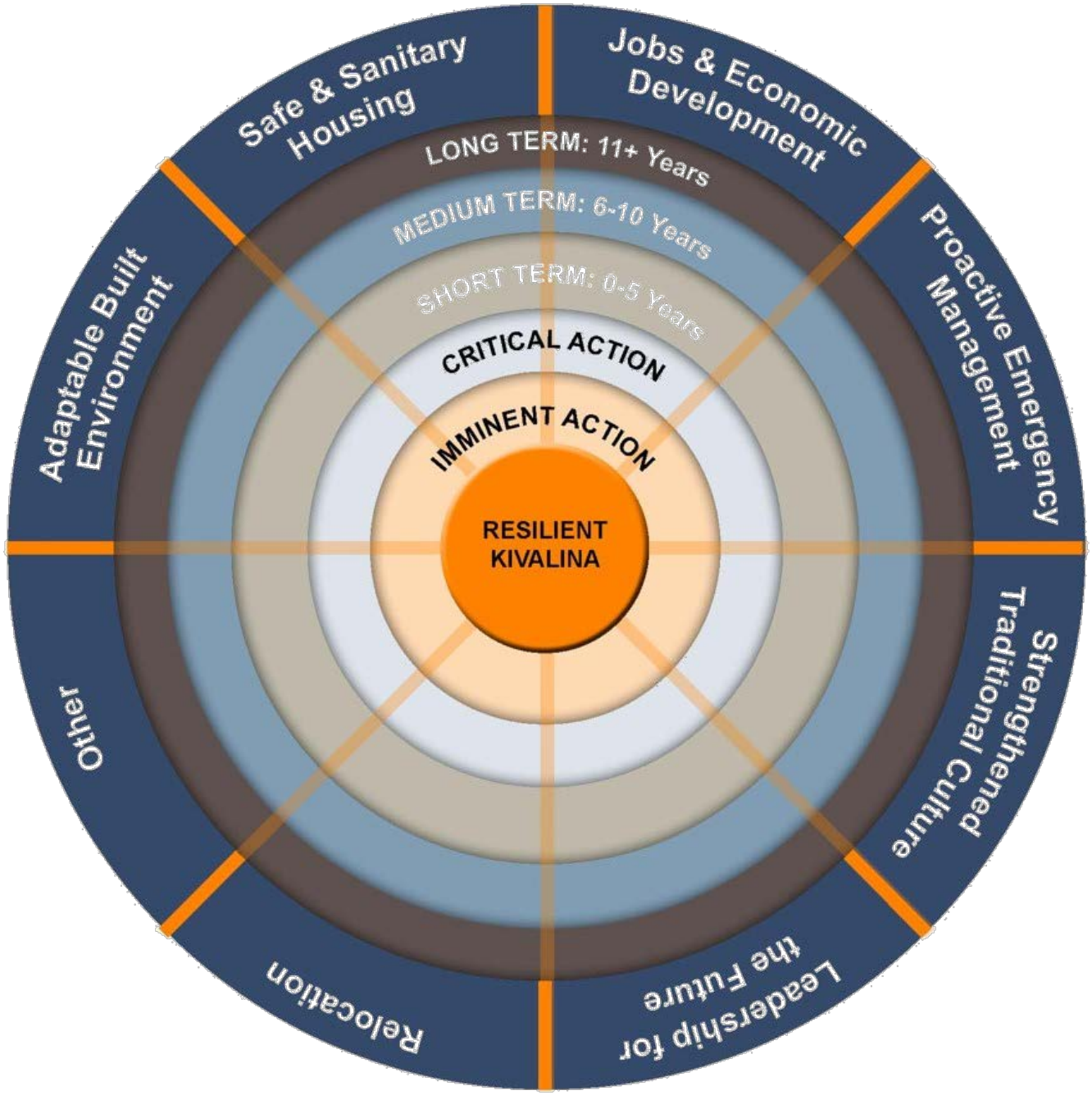
Year Two

Inter-Agency Planning Group Meetings + Community Input

Community Gathering



Strategic Management Plan
August 2016


Safe & Sanitary Housing
Jobs & Economic Development
Proactive Emergency Management
Strengthened Traditional Culture
Leadership for the Future
Relocation
Other
Adaptable Built Environment
LONG TERM: 11+ Years
MEDIUM TERM: 6-10 Years
SHORT TERM: 0-5 Years
CRITICAL ACTION
IMMINENT ACTION
RESILIENT KIVALINA

Inter-Agency Planning Groups

Kivalina Inter-Agency Planning Work Group

- Meeting Agendas and Summaries
- Reports and Studies

Background

Kivalina is a traditional Inupiat community located in the Northwest Arctic Borough of Alaska. The community is located on a barrier island off the Chukchi Sea, 83 miles north of the Arctic Circle. Historically, the marine waters around Kivalina have been ice-free from early July through late October, but later freeze-up and earlier melting have resulted in longer ice-free periods during recent years. This has left Kivalina facing significant risks from storms, such as flooding and erosion.

This barrier island has long been subject to the processes of accretion and erosion. Residents of the community have expressed concerns about storm surges and erosion for decades. The longer ice-free period that has resulted from the changing climate makes the village vulnerable to dangerous fall storms. Storm events in 2004 and 2005 eroded the Chukchi Sea shoreline, threatening critical infrastructure and facilities, including the community fuel tank farm, school, and airstrip. Chronic erosion on the lagoon side of the island has threatened homes, while on the sea side of the island, fall storm surges create annual coastal flooding and beach erosion. It has long been apparent that the island will eventually succumb to natural forces and that the village will have to be moved. Extensive studies have been undertaken, alternative village sites have been identified, and cost estimates have been prepared.

Strategic Management Planning

From 2014 to 2016, Kivalina was engaged in a community planning process with the **Division of Community and Regional Affairs (DCRA)** to develop the ***Kivalina Strategic Management Plan*** which provides a holistic approach for adapting to environmental threats and increasing community resilience to climate impacts and natural hazards. As part of the

Strategic Actions

Kivalina prioritized Strategic Actions based on community need:

- ***Imminent Actions*** are those actions the community needs in place today to protect people from harm during a hazard event.
- ***Critical Actions*** are those action items that, if not completed in 5 years, will result in a negative impact on community safety. Implementation of critical actions should be undertaken immediately with a goal of completing or substantially completing the action within 5 years. The identified critical actions are actions that are especially important for increasing community resiliency now.
- ***Short Term Actions*** are those action items that can be realistically completed in 0-5 years
- ***Medium Term Actions*** are those action items that can be realistically completed in 6-10 years
- ***Long Term Actions*** action items that will take 11 years or more to complete

The current focus of the Kivalina Inter-Agency Planning Work Group is to help Kivalina implement the Imminent and Critical Actions from the Strategic Management Plan.

IMMINENT ACTIONS	STATUS
Emergency Drills and Exercises: Emergency drills and exercises provide an opportunity to practice aspects of an emergency plan, allowing people to become familiar with what is expected of them during an emergency, and help identify whether the plan meets community needs or if changes need to be made. Kivalina has an emergency plan and an evacuation plan, but there has not been a community drill for either one in recent years.	The **Alaska Division of Homeland Security and Emergency Management** provided Kivalina with technical assistance to prepare a Small community Emergency Response Plan (SCERP). The community plans to organize a mock disaster to drill on the roles and responsibilities assigned to community residents in the SCERP.
Personal Emergency Kits: During a storm, Kivalina will likely be cut off from the rest of the state and will need to be self-sufficient until outside assistance can arrive. Residents need personal emergency kits that will last 7 to 10 days until additional resources can be brought to the village. Kivalina can either work with partners to find sufficient funding to purchase kits, find organizations willing to donate supplies, or encourage residents to assemble their own kits.	Kivalina plans to hold a community event where individual households will assemble a personal emergency kit.

Risk MAP: Assisting Alaska Native Villages

Discovery

- Identification of community threats + needs
- Collection of new/available data
- Summarize in Discovery Report

Risk Assessment + Analysis

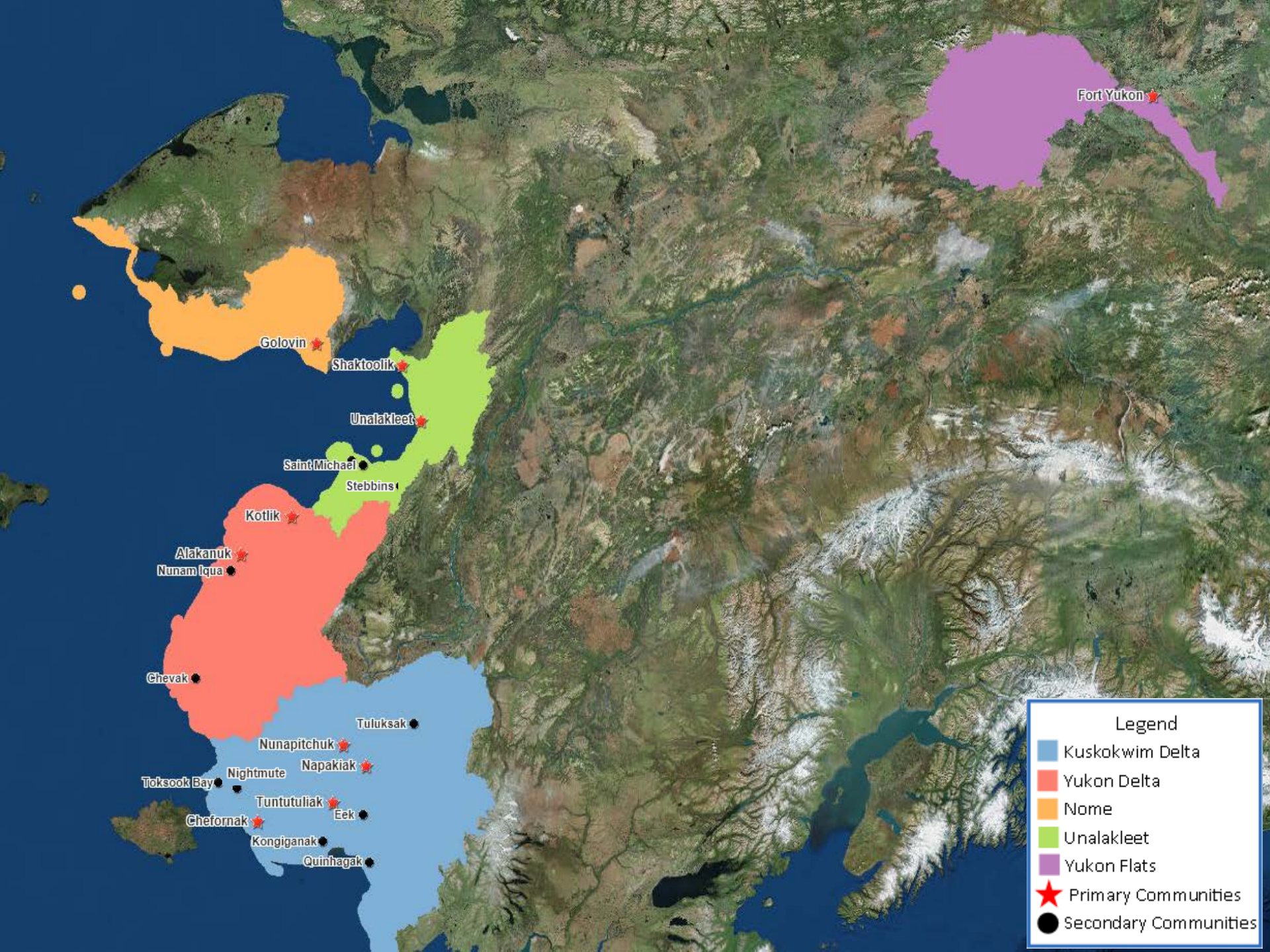
- Conduct risk and vulnerability assessments
- Analyze results and document in Risk Report for community

Risk Reduction

- Share results of risk assessments + draft Risk Report with community
- Identify strategies for risk reduction

Resilience

- Integrate Risk MAP information into local plans
- Seek funding + implement mitigation/adaptation projects


Fort Yukon
Golovin
Shaktoolik
Unalakleet
Saint Michael
Stebbins
Kotlik
Alakanuk
Nunam Iqua
Chevak
Tuluksak
Nunapitchuk
Napakiak
Nightmute
Toksook Bay
Tuntutuliak
Eek
Chefornak
Kongiganak
Quinhagak
Legend
Kuskokwim Delta
Yukon Delta
Nome
Unalakleet
Yukon Flats
Primary Communities
Secondary Communities