City of Unalakleet
Hazard Mitigation Plan

Prepared by
The City of Unalakleet HMP Planning Team
Hazard Mitigation Planning Team
December 2015

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Region X
130 228th Street, SW
Bothell, WA 98021-9796

FEMA

December 21, 2015

Honorable Middy Johnson
Mayor, City of Unalakleet
P.O. Box 28
Unalakleet, Alaska 99684

Dear Mayor Johnson:

The U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) has approved the ***City of Unalakleet Hazard Mitigation Plan*** as a local plan as outlined in 44 CFR Part 201. With approval of this plan, City of Unalakleet is now eligible to apply for the Robert T. Stafford Disaster Relief and Emergency Assistance Act's hazard mitigation project grants through December 20, 2020.

The plan's approval provides eligibility to apply for hazard mitigation projects through your state. All requests for funding will be evaluated individually according to the specific eligibility and other requirements of the particular program under which the application is submitted. For example, a specific mitigation activity or project identified in the plan may not meet the eligibility requirements for FEMA funding, and even eligible mitigation activities are not automatically approved for FEMA funding under any of the aforementioned programs.

Over the next five years, we encourage your community to follow the plan's schedule for monitoring and updating the plan, and develop further mitigation actions. The plan must be reviewed, revised as appropriate, and resubmitted for approval within five years in order to continue project grant eligibility.

If you have questions regarding your plan's approval or FEMA's mitigation grant programs, please contact Scott Nelson, Emergency Management Specialist with Alaska Division of Homeland Security and Emergency Management, at (907) 428-7010, who coordinates and administers these efforts for local entities.

Sincerely,

Mark Carey, Director
Mitigation Division

cc: Ann Gravier, Alaska Division of Homeland Security and Emergency Management

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Acronyms/Abbreviations

°F	Degrees Fahrenheit
ACCIMP	Alaska Climate Change Impact Mitigation Program
ACIA	Arctic Climate Impact Assessment
ACWF	Alaska Clean Water Fund
ADWF	Alaska Drinking Water Fund
AEA	Alaska Energy Authority
AECOM	AECOM, Consultant, or Contractor
AEEE	Alternative Energy and Energy Efficiency
AFG	Assistance to Firefighters Grant
AHFC	Alaska Housing Finance Corporation
AICC	Alaska Interagency Coordination Center
AIDEA	Alaska Industrial Development and Export Authority
AK	Alaska
AMF	Airport Maintenance Facility
ANA	Administration for Native Americans
ARC	American Red Cross
ARW	Airport Runway
AVEC	Alaska Village Electric Cooperative
B/C	Benefit vs. Cost or Benefit/Cost
BCA	Benefit Cost Analysis
BIA	US Bureau of Indian Affairs
CBO	Communications Building-Other
CCP	Citizen Corps Program
CDBG	Community Development Block Grant
CEHHWG	Climate, Ecosystems & Human Health Work Group
CFR	US Code of Federal Regulations
CFP	Community Forestry Program
CGP	Comprehensive Grant Program
CIG	Conservation Innovation Grant
City	City of Unalakleet
CO-OP	Cooperative
Corp	Corporation
CP	City of Unalakleet's Comprehensive Plan
CRS	Community Rating System
CTA	Conservation Technical Assistance
CVRF	Coastal Villages Region Fund
CWSRF	Clean Water State Revolving Fund
DCCED	Department of Commerce, Community, and Economic Development
DCRA	Division of Community and Regional Affairs
DEC	Department of Environmental Conservation
Denali	Denali Commission
DHS	US Department of Homeland Security

Acronyms/Abbreviations

DHS&EM	Division of Homeland Security and Emergency Management
DHSS	Department of Health and Social Services
DGGS	Division of Geological and Geophysical Survey
DMA 2000	Disaster Mitigation Act Of 2000
DMVA	Department of Military and Veterans Affairs
DNR	Department of Natural Resources
DOE	US Department of Energy
DOF	Division of Forestry
DOI	Division of Insurance
DOL	Department of Labor
DOT/PF	Department of Transportation and Public Facilities
DSS	Division of Senior Services
EMPG	Emergency Management Performance Grant
EOC	Emergency Operations Center
EPA	US Environmental Protection Agency
EPPS	Energy Production Plant-Small
EQ	Earthquake
EQIP	Environmental Quality Incentives Program
ERP	Emergency Response Plan
EWP	Emergency Watershed Protection Program
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FL	Flood
FMA	Flood Mitigation Assistance
FP&S	Fire Prevention and Safety
ft	Feet
FY	Fiscal Year
g	Gravity
GF	Ground Failure
GIS	Geospatial Information System
Hazus	Hazards US – Multi-Hazard Software
HMA	Hazard Mitigation Assistance
HMGP	Hazard Mitigation Grant Program
HMP	Hazard Mitigation Plan
HSGP	Homeland Security Grant Program
HUD	Housing and Urban Development
IBHS	Institute for Business And Home Safety
ICDBG	Indian Community Development Block Grant
IGAP	Indian General Assistance Program
IHBG	Indian Housing Block Grant
IHLGP	Indian Home Loan Guarantee Program
INAP	Indian and Native American Programs
IRS	Internal Revenue Service

Acronyms/Abbreviations

Kt(s)	Knot(s)
LEG	Legislative Energy Grant
LEPC	Local Emergency Planning Committee
M	Magnitude
MAP	Mitigation Action Plan
MGL	Municipal Grants And Loans
MMI	Modified Mercalli Intensity
mph	Miles Per Hour
msl	Mean Sea Level
NAHASDA	Native American Housing Assistance and Self Determination Act
NFIP	National Flood Insurance Program
NIMS	National Incident Management System
NOAA	National Oceanic and Atmospheric Administration
NRF	National Response Framework
NRCS	Natural Resources Conservation Service
NWS	National Weather Service
OTF	Oil Tank Farm
PDM	Pre-Disaster Mitigation
PGA	Peak Ground Acceleration
PNP	Private Non-Profits
PPSB	Potable Water Pumping Station
PSTS	Water Storage Tank-Steel
PWE	Potable Water Well
PWPB	Potable Water Pipelines-Buried
PWS	Port Waterfront Structures (Harbor)
PWTS	Potable Water Treatment (Plant)-Small
RCASP	Remote Community Alert Systems
RD	Rural Development
RL	Repetitive Loss
RurALCAP	Rural Alaska Community Action Program Incorporated
SAFER	Staffing For Adequate Fire and Emergency Response
SBA	US Small Business Administration
SHMP	Alaska State Hazard Mitigation Plan
SHSP	State Homeland Security Program
SOA	State of Alaska
Sq.	Square
Stafford Act	Robert T. Stafford Disaster Relief and Emergency Assistance Act
STAPLEE	Social, Technical, Administrative, Political, Legal, Economic, and Environmental
T/F	Technical / Feasibility
US or U.S.	United States
USACE	US Army Corps of Engineers
USC	US Code

Acronyms/Abbreviations

USDA	US Department of Agriculture
USFWS	US Fish and Wildlife Service
USGS	US Geological Survey
VFA-RFA	Volunteer Fire Assistance and Rural Fire Assistance Grant
VSW	Village Safe Water
WARN	Warning, Alert, and Response Network
WTF	Water Treatment Facility
WWTS	Wastewater Treatment (Plant)-Small

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Section One provides a brief introduction to hazard mitigation planning, the grants associated with these requirements, and a description of this Hazard Mitigation Plan (HMP).

1.1 OVERVIEW

In recent years, local hazard mitigation planning has been driven by a new Federal law. On October 30, 2000, Congress passed the Disaster Mitigation Act of 2000 (DMA 2000) (P.L. 106-390) which amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) (Title 42 of the United States Code [USC] 5121 et seq.) by repealing the act's previous mitigation planning section (409) and replacing it with a new mitigation planning section (322). This new section emphasized the need for State, Tribal, and local entities to closely coordinate mitigation planning and implementation efforts. In addition, it provided the legal basis for the Federal Emergency Management Agency's (FEMA) mitigation plan requirements for mitigation grant assistance.

To implement these planning requirements, FEMA published an Interim Final Rule in the Federal Register on February 26, 2002 (FEMA 2002a), 44 CFR Part 201 with subsequent updates. The planning requirements for local entities are described in detail in Section 2 and are identified in their appropriate sections throughout this HMP.

In October 2007 and July 2008, FEMA combined and expanded flood mitigation planning requirements with local hazard mitigation plans (44 CFR §201.6). Furthermore, all hazard mitigation assistance program planning requirements were combined eliminating duplicated mitigation plan requirements. This change also required participating National Flood Insurance Program (NFIP) communities' risk assessments and mitigation strategies to identify and address repetitively flood damaged properties. Local hazard mitigation plans now qualify communities for several Federal Hazard Mitigation Assistance (HMA) grant programs.

This HMP complies with Title 44 CFR current as of March 11, 2015 and applicable guidance documents. (FEMA 2015a)

1.2 GRANT PROGRAMS WITH MITIGATION PLAN REQUIREMENTS

FEMA HMA grant programs provide funding to States, Tribes, and local entities that have a FEMA-approved State, Tribal, or Local Mitigation Plan. Two of the grants are authorized under the Stafford Act and DMA 2000, while the remaining three are authorized under the National Flood Insurance Act and the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act. Excerpts from FEMA's 2015 HMA Guidance, Part I, is as follows:

> *"The U.S. Department of Homeland Security (DHS) FEMA HMA programs present a critical opportunity to reduce the risk to individuals and property from natural hazards, while simultaneously reducing reliance on Federal disaster funds. On March 30, 2011, the President signed Presidential Policy Directive 8 (PPD-8): National Preparedness, and the National Mitigation Framework was finalized in May 2013. The National Mitigation Framework comprises seven core capabilities, including:*
>
> - *Threats and Hazard Identification*
> - *Risk and Disaster Resilience Assessment*
> - *Planning*

- *Community Resilience*
- *Public Information and Warning*
- *Long-Term Vulnerability Reduction*
- *Operational Coordination*

HMA programs provide funding for eligible activities that are consistent with the National Mitigation Framework's Long-Term Vulnerability Reduction capability. HMA programs reduce community vulnerability to disasters and their effects, promote individual and community safety and resilience, and promote community vitality after an incident. Furthermore, HMA programs reduce response and recovery resource requirements in the wake of a disaster or incident, which results in a safer community that is less reliant on external financial assistance.

Hazard mitigation is defined as any sustained action taken to reduce or eliminate long-term risk to people and property from natural hazards and their effects. This definition distinguishes actions that have a long-term impact from those that are more closely associated with immediate preparedness, response, and recovery activities. Hazard mitigation is the only phase of emergency management specifically dedicated to breaking the cycle of damage, reconstruction, and repeated damage. Accordingly, States, territories, federally-recognized tribes, and local communities are encouraged to take advantage of funding that HMA programs provide in both the pre- and post-disaster timelines.

In addition to hazard mitigation, FEMA's Risk Mapping, Assessment, and Planning (Risk MAP) Program provides communities with education, risk communication, and outreach to better protect its citizens. The Risk MAP project lifecycle places a strong emphasis on community engagement and partnerships to ensure a whole community approach that reduces flood risk and builds more resilient communities. Risk MAP risk assessment information strengthens a local community's ability to make better and more informed decisions. Risk MAP allows communities to better invest and determine priorities for projects funded under HMA. These investments support mitigation efforts under HMA that protect life and property and build more resilient communities.

The whole community includes children, individuals with disabilities, and others with access and functional needs; those from religious, racial, and ethnically diverse backgrounds; and people with limited English proficiency. Their contributions must be integrated into mitigation/resilience efforts, and their needs must be incorporated as the whole community plans and executes its core capabilities.

WHOLE COMMUNITY

A. HMA Commitment to Resilience and Climate Change Adaptation

FEMA is committed to promoting resilience as expressed in PPD-8: National Preparedness; the President's State, Local, and Tribal Leaders Task Force on Climate Preparedness and Resilience; the Administrator's 2011 FEMA Climate Change Adaptation Policy Statement (Administrator Policy 2011-OPPA-01); and the 2014–2018 FEMA Strategic Plan. Resilience refers to the ability to adapt to changing conditions and withstand and rapidly recover from disruption due to emergencies. The concept of resilience is closely related to the concept of hazard mitigation, which reduces or eliminates potential losses by breaking the cycle of damage, reconstruction, and repeated damage. Mitigation capabilities include, but are not limited to, community-wide risk reduction projects, efforts to improve the resilience of critical infrastructure and key

resource lifelines, risk reduction for specific vulnerabilities from natural hazards and climate change, and initiatives to reduce future risks after a disaster has occurred.

FEMA is supporting efforts to streamline the HMA programs so that these programs can better respond to the needs of communities nationwide that are addressing the impacts of climate change. FEMA, through its HMA programs:

- *Develops and encourages adoption of resilience standards in the siting and design of buildings and infrastructure*
- *Modernizes and elevates the importance of hazard mitigation*

FEMA has issued several policies that facilitate the mitigation of adverse effects from climate change on the built environment, structures and infrastructure. Consistent with the 2014–2018

FEMA Strategic Plan, steps are being taken by communities through engagement of individuals, households, local leaders, representatives of local organizations, and private sector employers and through existing community networks to protect themselves and the environment by updating building codes, encouraging the conservation of natural and beneficial functions of the floodplain, investing in more resilient infrastructure, and engaging in mitigation planning. FEMA plays an important role in supporting community-based resilience efforts, establishing policies, and providing guidance to promote mitigation options that protect critical infrastructure and public resources.

FEMA encourages better integration of Sections 404 and 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended (Stafford Act), Title 42 of the United States Code (U.S.C.) 5121 et seq., to promote more resilience during the recovery and mitigation process. FEMA regulations that implement Sections 404 and 406 of the Stafford Act allow funding to incorporate mitigation measures during recovery activities. Program guidance and practice limits Section 406 mitigation to the damaged elements of a structure. This limitation to Section 406 mitigation may not allow for a comprehensive mitigation solution for the damaged facility; however, Section 404 funds may be used to mitigate the undamaged portions of a facility.

Recognizing that the risk of disaster is increasing as a result of multiple factors, including the growth of population in and near high-risk areas, aging infrastructure, and climate change, FEMA promotes climate change adaptation by:

- *Incorporating sea level rise in the calculation of Benefit-Cost Analysis (BCA)*
- *Publishing a new HMA Job Aid on pre-calculated benefits for hurricane wind retrofit measures, see HMA Job Aid (Cost Effectiveness Determination for Residential Hurricane Wind Retrofit Measures Funded by FEMA)*
- *Encouraging floodplain and wetland conservation associated with the acquisition of properties in green open space and riparian areas*
- *Reducing wildfire risks*
- *Preparing for evolving flood risk*
- *Encouraging mitigation planning and developing mitigation strategies that encourage community resilience and smart growth*
- *Encouraging the use of building codes and standards (the American Society of Civil Engineers/Structural Engineering Institute [ASCE/SEI] 24-14, Flood Resistant Design and Construction) wherever possible.*

For additional information, see http://www.fema.gov/climate-change" (FEMA 2015b).

1

1.2.1 Hazard Mitigation Assistance (HMA) Grant Programs

HMA grant program activities include:

Table 1-1 HMA Eligible Activities

Activities	HMGP	PDM	FMA
1. Mitigation Projects	✓	✓	✓
Property Acquisition and Structure Demolition	✓	✓	✓
Property Acquisition and Structure Relocation	✓	✓	✓
Structure Elevation	✓	✓	✓
Mitigation Reconstruction	✓	✓	✓
Dry Floodproofing of Historic Residential Structures	✓	✓	✓
Dry Floodproofing of Non-residential Structures	✓	✓	✓
Generators	✓	✓	
Localized Flood Risk Reduction Projects	✓	✓	✓
Non-localized Flood Risk Reduction Projects	✓	✓	
Structural Retrofitting of Existing Buildings	✓	✓	✓
Non-structural Retrofitting of Existing Buildings and Facilities	✓	✓	✓
Safe Room Construction	✓	✓	
Wind Retrofit for One- and Two-Family Residences	✓	✓	
Infrastructure Retrofit	✓	✓	✓
Soil Stabilization	✓	✓	✓
Wildfire Mitigation	✓	✓	
Post-Disaster Code Enforcement	✓		
Advance Assistance	✓		
5 Percent Initiative Projects	✓		
Miscellaneous/Other[(1)]	✓	✓	✓
2. Hazard Mitigation Planning	✓	✓	✓
Planning Related Activities	✓		
3. Technical Assistance			✓
4. Management Cost	✓	✓	✓

[(1)] Miscellaneous/Other indicates that any proposed action will be evaluated on its own merit against program requirements. Eligible projects will be approved provided funding is available.

(FEMA 2015b)

The Hazard Mitigation Grant Program (HMGP) is a competitive, disaster funded, grant program. Whereas the other Unified Mitigation Assistance Programs: Pre-Disaster Mitigation (PDM) and Flood Mitigation Assistance (FMA) programs although competitive, rely on specific pre-disaster grant funding sources, sharing several common elements. The 2015 HMA Guidance provides the following programmatic information:

> *HMGP is authorized by Section 404 of the Stafford Act, 42 U.S.C. 5170c. The key purpose of HMGP is to ensure that the opportunity to take critical mitigation measures to*

reduce the risk of loss of life and property from future disasters is not lost during the reconstruction process following a disaster.

HMGP funding is available, when authorized under a Presidential major disaster declaration, in the areas of the State requested by the Governor. Federally-recognized tribes may also submit a request for a Presidential major disaster declaration within their impacted areas (see http://www.fema.gov/media-library/assets/documents/85146). The amount of HMGP funding available to the Applicant is based on the estimated total Federal assistance, subject to the sliding scale formula outlined in Title 44 of the Code of Federal Regulations (CFR) Section 206.432(b) that FEMA provides for disaster recovery under Presidential major disaster declarations. The formula provides for up to 15 percent of the first $2 billion of estimated aggregate amounts of disaster assistance, up to 10 percent for amounts between $2 billion and $10 billion, and up to 7.5 percent for amounts between $10 billion and $35.333 billion. For States with enhanced plans, the eligible assistance is up to 20 percent for estimated aggregate amounts of disaster assistance not to exceed $35.333 billion.

The Period of Performance (POP) for HMGP begins with the opening of the application period and ends no later than 36 months from the close of the application period.

PDM is designed to assist States, territories, federally-recognized tribes, and local communities to implement a sustained pre-disaster natural hazard mitigation program to reduce overall risk to the population and structures from future hazard events, while also reducing reliance on Federal funding in future disasters. Congressional appropriations provide the funding for PDM.

The total amount of funds distributed for PDM is determined once the appropriation is provided for a given fiscal year. It can be used for mitigation projects and planning activities.

The POP for PDM begins with the opening of the application period and ends no later than 36 months from the date of subapplication selection.

FMA is authorized by Section 1366 of the National Flood Insurance Act of 1968, as amended (NFIA), 42 U.S.C. 4104c, with the goal of reducing or eliminating claims under the National Flood Insurance Program (NFIP). FMA was created as part of the National Flood Insurance Reform Act (NFIRA) of 1994. The Biggert-Waters Flood Insurance Reform Act of 2012 (Public Law 112-141) consolidated the Repetitive Flood Claims and Severe Repetitive Loss grant programs into FMA. FMA funding is available through the National Flood Insurance Fund (NFIF) for flood hazard mitigation projects as well as plan development and is appropriated by Congress. States, territories, and federally-recognized tribes are eligible to apply for FMA funds. Local governments are considered subapplicants and must apply to their Applicant State, territory, or federally-recognized tribe.

The City of Unalakleet does not currently participate in FEMA's National Flood Insurance Program (NFIP) and is therefore ineligible for Flood Mitigation Assistance (FMA) associated grant funding opportunities.

The POP for FMA begins with the opening of the application period and ends no later than 36 months from the date of subapplication selection" (FEMA 2015b)

As the State Hazard Mitigation plan states:

"The [FMA] provides pre-disaster grants to State and Local Governments for planning and flood mitigation projects. Created by the National Flood Insurance Reform Act of

1994, its goal is to reduce or eliminate NFIP claims. It is an annual nationally competitive program. Residential and non-residential properties may apply for FMA grants through their NFIP community and are required to have NFIP insurance to be eligible. FMA grant funds may be used to develop the flood portions of hazard mitigation plans or to do flood mitigation projects. FMA grants are funded 75% Federal and 25% applicant.

The Biggert-Waters Flood Insurance Reform Act of 2012 eliminated the Repetitive Flood Claims (RFC) and Severe Repetitive Loss (SRL) grant programs. Elements of these flood programs have been incorporated into FMA. The FMA program now allows for additional cost share flexibility:

- *Up to 100-percent Federal cost share for severe repetitive loss properties.*
- *Up to 90-percent Federal cost share for repetitive loss properties.*
- *Up to 75-percent Federal cost share for NFIP insured properties.*

The FMA program is available only to communities participating in the NFIP. In the State of Alaska, the Department of Commerce, Community, and Economic Development (DCCED) manages this program" (SHMP 2013).

HMP Layout Description

The HMP consists of the following sections and appendices:

Section 1 Introduction

Defines what a hazard mitigation plan is, delineates federal requirements and authorities, and introduces the Hazard Mitigation Assistance program listing the various grant programs and their historical funding levels.

Section 2 Community Description

Provides a general history and background of the City of Unalakleet (City), including historical trends for population and the demographic and economic conditions that have shaped the area.

Section 3 Planning Process

Describes the HMP update's planning process, identifies the Planning Team Members, the meetings held as part of the planning process, and the key stakeholders within the Unalakleet and the surrounding area. This section documents public outreach activities (support documents are located in Appendix D); including document reviews and relevant plans, reports, and other appropriate information data utilized for HMP development; actions the plans to implement to assure continued public participation; and their methods and schedule for keeping the plan current.

This section also describes the Planning Team's formal plan maintenance process to ensure that the HMP remains an active and applicable document throughout its 5-year lifecycle. The process includes monitoring, reviewing, evaluating (Appendix F – Maintenance Documents), updating the HMP; and implementation initiatives.

Section 4 Jurisdictional Adoption

Describes the community's HMP adoption process (support documents are located in Appendix C)

Section 5 Hazard Analysis

Describes the process through which the Planning Team identified, screened, and selected the hazards to for profiling in this version of the HMP. The hazard analysis includes the nature, previous occurrences (history), location, extent, impact, and future event recurrence probability for each hazard. In addition, historical impact and hazard location figures are included when available.

Section 6 Vulnerability Assessment

Identifies the City's potentially vulnerable assets – people, residential and nonresidential buildings (where available), critical facilities, and critical infrastructure. The resulting information identifies the full range of hazards that the could face and potential social impacts, damages, and economic losses. Land use and development trends are also discussed.

Section 7 Mitigation Strategy

Defines the mitigation strategy which provides a blueprint for reducing the potential losses identified in the vulnerability analysis. This section lists the community's governmental authorities, policies, programs and resources.

The Planning Team developed a list of mitigation goals and potential actions to address the risks facing Unalakleet's residents. Mitigation actions include preventive actions, property protection techniques, natural resource protection strategies, structural projects, emergency services, and public information and awareness activities. Mitigation strategies were developed to address NFIP insured properties (if applicable) while encouraging participation with the NFIP and the reduction of flood damage to flood-prone structures.

Section 8 References

Lists reference materials and resources used to prepare this HMP.

Appendices

Appendix A: Delineates Federal, State, and other potential mitigation funding sources. This section will aid the community with researching and applying for funds to implement their mitigation strategy.

Appendix B: Provides the FEMA Local Mitigation Plan Review Tool, which documents compliance with FEMA criteria.

Appendix C: Provides the adoption resolution for the City of Unalakleet.

Appendix D: Provides public outreach information, including newsletters.

Appendix E: Contains the Benefit-Cost Analysis Fact Sheet used to prioritize mitigation actions.

Appendix F: Provides the plan maintenance documents, such as an annual review sheet and their progress report forms.

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Section Two provides the City of Unalakleet's location, geography, history, and demographic information.

2.1 LOCATION, GEOGRAPHY, AND HISTORY

Unalakleet, population 744 (State certified population) means "the most southerly point" in the Inupiaq language. It is 148 air miles southeast of Nome and 295 miles northwest of Anchorage at 63.87306° (North) Latitude and -160.78806° (West) Longitude. (Sec. 3, T019S, R011W, Kateel River Meridian.) It is in the Cape Nome Recording District. Unalakleet lies on Alaska's west coast at the eastern end of Norton Sound. The community was built west of the Nulato Hills at the mouth of the Unalakleet River. The area encompasses 2.9 sq. miles of land and 2.3 sq. miles of water.

Unalakleet is usually accessed by plane. During winter people from neighboring villages travel there by ATVs, snow machines and dogsleds. Cargo is shipped in flat-bottomed boats from Nome. The State-owned airport includes a gravel runway 6,004' long by 150' wide and a gravel airstrip 2,000' long and 80' wide. Flights to local villages and Anchorage depart regularly.

The City lies between three different ethnic groups: the Inupiaq Eskimos to the north, the Athabaskans to the east and the Yupik Eskimos to the south. It is also the terminus of the Kaltag Portage, a winter travel route that connects Norton Sound to the Yukon River. For much of its history Unalakleet has been an important trading center, attracting the Russian-American company in the 1830s. Lapland reindeer herders visited Unalakleet in 1898 to teach herding to the local residents. In 1901 a telegraph line was built between Unalakleet and St. Michael, a smaller City to the southwest. In 1973 the City was designated the first checkpoint along the Norton Sound for the Iditarod Trail Sled Dog Race.

Winter temperatures average from -4 to 11 degrees Fahrenheit. Summer temperatures average from 47 to 62 degrees Fahrenheit. Annual precipitation is 14 inches, and average snowfall is 41 inches. Please see the section on severe weather for more detailed information on the climate.

Figure 2-1 Unalakleet's Location Map

History

In 1833 Russian traders founded the village of St Michael, 60 miles southeast of Unalakleet. Three years later an unknown disease literally decimated Unalakleet; its population shrank from an estimated 120 people to 13. The remaining family migrated from the south end of the river's mouth to the north end. In 1839 the Russians built a Russian-American fur trading hut in the new town site, attracting Yupik-speaking native traders.

Some Unalakleet landmarks still have Yupik names: Kwiyuk Creek (Powers Creek), Ququahuq Creek, Okfi auktoolik, and Nuveulnuq (the village to the south known as Golsovia). The late

Thora Katchatag, daughter of Mullak Nagchuk, was a descendant of the sole surviving Unalit family from the 1836 epidemic. Many of her descendants live in Unalakleet.

Few people in Unalakleet speak the Yupik dialect, since after the epidemics other Inupiaq-speaking Eskimo groups migrated to the area: the Malimiut, Qawiaraqmiut, and the Kuvunmutes. The Kuvunmutes came from the Kobuk valley to the north. Alluyagnak II was an ethnic Athabaskan adopted by a Kuvunmute woman, Masu. She found him at the age of seven when an inter-tribal war left him orphaned and abandoned. He moved south after he and his sister had a falling-out and other Kuvunmute later settled with him on the coast in the Unalakleet valley.

One day a group of Athabascan Indians came to the coastal Kuvunmute tribe on a seemingly peaceful visit. Alluygnak II, who spoke the Athabascan language as a child, overheard the visitors planning to attack the Kuvunmute. He stood on a sod house and loudly told them that they needed to deal with him first before attacking his own people. Surprised to see that he spoke their dialect, the Athabascans decided instead to leave peacefully. They imitated honking geese as they departed to show they had no intention of attacking, to say goodbye, and to leave safely. Eventually the two tribes became trading partners and would hold potlucks and ceremonial dances together.

In 1898 Lapland reindeer herders came to teach herding to the residents of Unalakleet. The Nome gold rush, however, brought miners through Unalakleet and led to a measles epidemic. Many people and reindeer died. The herd was reestablished in 1911 but gradually shrank until finally disappearing in 1966.

The 1918 influenza epidemic had the net effect of raising the City’s population. Many smaller villages nearby experienced a higher mortality rate, prompting some survivors to move to Unalakleet. By that time the City had a school, a mission church, and better job opportunities.

During World War II the Army and Air Force built temporary bases near the City, stimulating the next period of migration. New technology such as snow machines, outboard motors, and guns began to replace traditional hunting and fishing methods.

2.2 DEMOGRAPHICS

Unalakleet population in the 2010 Census was 688, consisting of 87.7% Alaska Native or part Native, 11.9% White and 0.2% Black. Total housing units numbered 242 and vacant housing units numbered 18, six of which were vacant due to seasonal use. The unemployment rate at that time was 14.6 percent, although 48.6 percent of all adults were not in the work force; only 258 residents were employed. According to the Unalakleet Comprehensive Plan, however, no one listed forestry/fishing/farming as his or her occupation, although commercial fishing and subsistence are central to the community's economy. The median household income was $42,083, per capita income was $15,845, and 11.0 percent of residents were living below the poverty level.

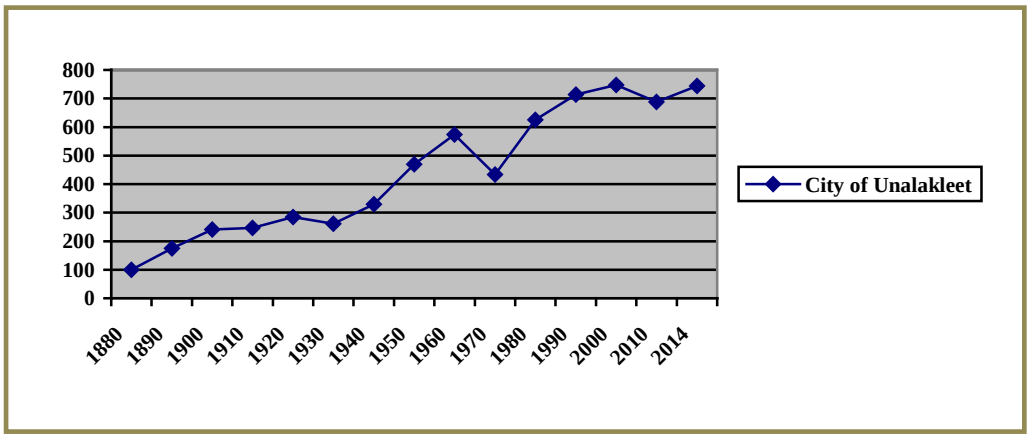

Figure 2-2 Unalakleet's Historic Population

2.3 ECONOMY

After a brief dip in the population in the 1960s, many people returned to Unalakleet after the Alaska Native Claims Settlement Act of 1971. New homes, public buildings, and utility improvements raised the residents' standard of living. The Bering Straits School District relocated to Unalakleet in 1983 and it now employs the most people in the City. The regional Annikan Clinic was built in more recent years to serve the Norton Sound area.

Subsistence activities and commercial fishing are two major components of the local economy. Unalakleet was hard hit by the decline of the salmon industry in the late 90's and the more recent drop in herring roe prices. Residents would like to diversify the City's commercial fishing industry. A proposed renovation of the fish processing plant would allow it to process other species such as crab and halibut. Other potential sources of economic growth include education, tourism, medicine, and construction.

Located on a spit that is eroding with rising sea levels, Unalakleet already narrow City limits will soon be insufficient to sustain its growth. Infill of the existing community is almost impossible and rent is prohibitively expensive. Although the median value of a home is only $70,000, the median rent is $531. Most young adults live with their parents because they cannot afford to move out. The community plans to gradually relocate to higher ground for flood protection and to allow the City to expand. Although this would generate many new construction jobs, the community would need a local building trades program to train local residents.

Another major proposed construction project is a new sub-regional minimum-security prison. Currently the only prison in the Norton Sound is in Nome. The long distance prohibits many people from visiting incarcerated relatives, which is believed to help with prisoner rehabilitation. A prison in Unalakleet would allow more frequent visits and would generate jobs within the City.

Cargo is brought to the City either by plane or by flat-bottomed boats from Nome when the sea is clear of ice. Unalakleet only access to the nearby Yukon River is a winter snow machine trail to Kaltag. Building a permanent road would give Unalakleet access to the Yukon during the summer months and allow shipment of goods from Nenena at a much lower cost.

Figures 2-3 and 2-4 are maps from the 2008 Legacy HMP.

Figure 2-3 Aerial View of Unalakleet

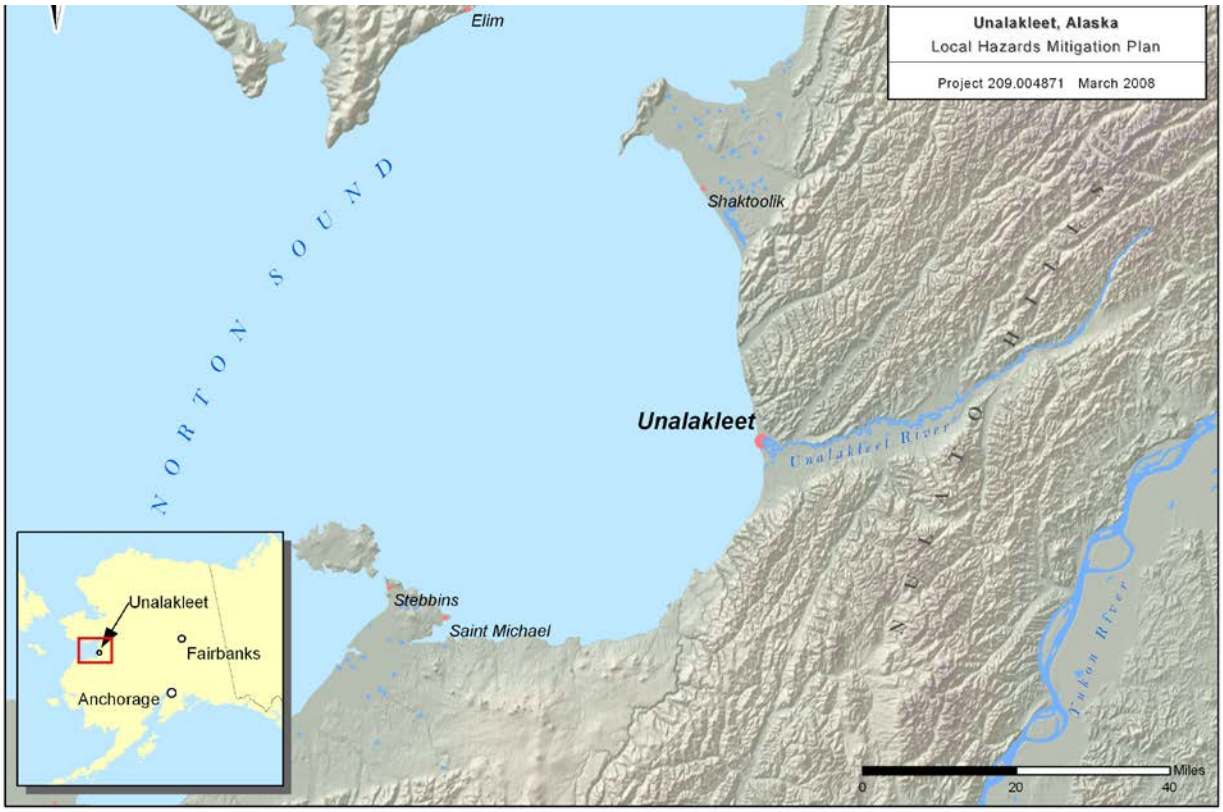

Figure 2-4 Location Map from Legacy 2008 HMP

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Section Three provides an overview of the planning process; identifies the Planning Team Members and key stakeholders; documents public outreach efforts; and summarizes the review and incorporation of existing plans, studies, and reports used to develop this HMP. Outreach support documents and meeting information regarding the Planning Team and public outreach efforts are provided in Appendix F.

DMA 2000 and its implementing regulations for the planning process:

DMA 2000 Requirements
Local Planning Process §201.6(b): An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include: Element §201.6(b)(1): An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval; §201.6(b)(2): An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and nonprofit interests to be involved in the planning process; and §201.6(b)(3): Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information. §201.6(c)(1): [The plan shall document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved. §201.6(c)(4)(i): The plan maintenance process shall include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle. §201.6(c)(4)(iii): The plan maintenance process shall include a] discussion on how the community will continue public participation in the plan maintenance process.
1. REGULATION CHECKLIST
ELEMENT A. Planning Process
A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1)) A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2)) A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1)) A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3)) A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii)) A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle?) (Requirement §201.6(c)(4)(i))
Does the updated plan document how the planning team reviewed and analyzed each section of the plan and whether each section was revised as part of the update process? (Not applicable until 2013 update).
Source: FEMA, March 2015.

3.1 OVERVIEW

The State of Alaska, Division of Homeland Security and Emergency Management (DHS&EM) provided funding and project oversight to AECOM to facilitate and guide Planning Team development and HMP development.

The planning process began on February 15, 2015 with a teleconference with AECOM explaining how their community was selected by the Division of Homeland Security and

Emergency Management's (DHS&EM) 2012 Pre-Disaster Mitigation Grant award. AECOM staff described the HMP development requirement to enable the City to qualify for Hazard Mitigation Grant Program grants and the overall HMP development process.

The Planning Team identified applicable resources and capabilities during the meeting. AECOM explained how the HMP differed from current emergency plans. The Planning Team then discussed the 's rolls such as: acting as an advocate for the planning process, assisting with gathering information, and supporting public participation opportunities. There was also a brief discussion about hazards that affect the community such as erosion, sediment deposition, and permafrost impacts, which are increasing in intensity.

The Planning Team further discussed the hazard mitigation planning process, asking participants to help identify hazards that affect the , to identify impacts to residential and critical facilities, and for assisting the Planning Team with identifying and prioritizing mitigation actions for potential future mitigation project funding

In summary, the following five-step process took place from February through August 2015.

1. Organize resources: Members of the Planning Team identified resources, including staff, agencies, and local community members, who could provide technical expertise and historical information needed in the development of the hazard mitigation plan.
2. Monitor, evaluate, and update the plan: The Planning Team developed a process to ensure the plan was monitored to ensure it was used as intended while fulfilling community needs. The team then developed a process to evaluate the plan to compare how their decisions affected hazard impacts. They then outlined a method to share their successes with community members to encourage support for mitigation activities and to provide data for incorporating mitigation actions into existing planning mechanisms and to provide data for the plans five year update.
3. Assess risks: The Planning Team identified the hazards specific to Unalakleet and with the assistance of a hazard mitigation planning consultant (AECOM), developed the risk assessment for seven identified hazards. The Planning Team reviewed the risk assessment, including the vulnerability analysis, prior to and during the development of the mitigation strategy.
4. Assess capabilities: The Planning Team reviewed current administrative and technical, legal and regulatory, and fiscal capabilities to determine whether existing provisions and requirements adequately address relevant hazards.
5. Develop a mitigation strategy: After reviewing the risks posed by each hazard, the Planning Team developed a comprehensive range of potential mitigation goals and actions. Subsequently, the Planning Team identified and prioritized the actions for implementation.

3.2 PLANNING TEAM

The local Planning Team members are City Manager Dave Richards (Planning Team Leader) and other members from the City and community as listed in Table 3-1.

Table 3-1 Hazard Mitigation Planning Team

Name	Title	Organization	Key Input
Dave Richards	City Manager	City of Unalakleet	Planning Team Lead, HMP review.
Middy Johnson	Mayor	City of Unalakleet	Planning Team Member, data input and HMP review.
Judy Kotongan	Councilmember	Unalakleet City/ANV	Planning Team Member, data input and HMP review.
Jeff Erickson	Councilmember	Unalakleet City/ANV	Planning Team Member, Tribal data input and HMP review.
John Wilson	Councilmember	Unalakleet City/ANV	Planning Team Member, Tribal data input and HMP review.
Ravinder Mashiana	Councilmember	Unalakleet City/ANV	Planning Team Member, Tribal data input and HMP review.
Paul Ivanoff	Councilmember	Unalakleet City/ANV	Planning Team Member, Tribal data input and HMP review.
Scott Simmons	Emergency Management, Hazard Mitigation, and Climate Change Planner	AECOM, Alaska	Temporary Team Member, Responsible for HMP development, lead writer, project coordination.
Eileen Bechtol	BP&D/Community Planner	HMP update, project planner	Project Planner

3.3 PUBLIC & AGENCY INVOLVEMENT

AECOM extended an invitation to all individuals and entities identified on the project mailing list described the planning process and announced the upcoming communities' planning activities. The announcement was emailed to relevant academia, nonprofits, and local, state, and federal agencies on November 20, 2014. The following agencies were invited to participate and review the HMP:

- University of Alaska Fairbanks, Geophysical Institute, Alaska Earthquake Information Center (UAF/GI/AEIC)
- Alaska Native Tribal Health Consortium-Community Development (ANTHC)
- Alaska Volcano Observatory (AVO)
- Association of Village Council Presidents (AVCP)
- Denali Commission
- Alaska Department of Environmental Conservation (DEC)
- DEC Division of Spill Prevention and Response (DSPR)
- DEC Village Safe Water (VSW)
- Alaska Department of Transportation and Public Facilities (DOT/PF)
- Alaska Department of Community, Commerce, and Economic Development (DCCED)
- DCCED, Division of Community Advocacy (DCRA)
- Alaska Department of Military and Veterans Affairs (DMVA)
- DMVA, Division of Homeland Security and Emergency Management (DHS&EM)
- US Environmental Protection Agency (EPA)
- National Weather Service (NWS) Northern Region
- NWS Southeast Region

- NWS Southcentral Region
- Natural Resources Conservation Service (NRCS)
- US Department of Agriculture (USDA)
- USDA Division of Rural Development (RD)
- US Army Corps Of Engineers (USACE)
- US Bureau of Indian Affairs (BIA)
- US Bureau of Land Management (BLM)
- US Department of Housing and Urban Development (HUD)
- US Fish & Wildlife Service (USFWS)

Table 3-2 lists the community's public involvement initiatives focused to encourage participation and insight for the HMP effort.

Table 3-2 Public Involvement Mechanisms

Mechanism	Description
Newsletter #1 Distribution (May 2015)	The jurisdiction distributed a newsletter introducing the upcoming planning activity. The newsletter encouraged the City to provide hazard and critical facility information. It was posted at City offices, bulletin boards, and meeting areas to enable the widest dissemination.
Agency Involvement eMail (November 20, 2014)	AECOM invited agencies to participate in mitigation planning effort and to review applicable newsletters located on the DHS&EM Local/Tribal All Hazard Mitigation Plan Development website at: http://ready.alaska.gov/plans/localhazmitplans.htm
Newsletter #2 Distribution (June 2015)	The jurisdiction distributed Newsletter #2 describing the HMPs availability and present potential HMP projects for review. The newsletter encouraged the City communities to provide comments or input. It was posted at the City office and disseminate as appropriate in their community.
Planning Team Meeting July 9, 2015	Completed the infrastructure tables and reviewed the mitigation plan.
City Council Meeting (July 14, 2015)	The HMP Update was discussed at the City Council meeting and people were encouraged to participate.
Public Meeting Notice (August 2015) City Council Meeting	Meeting notice was posted at City Hall, and disseminate as appropriate in their community.

Initial contact was made with the City on February 15, 2015 via explanatory email (attached in public outreach appendix. Two newsletters (attached in public outreach appendix) were placed on the DSH&EM website and posted throughout the community.

The Planning Team identified natural hazards: earthquake, flood, weather (severe) and wildland/tundra fire which periodically impact the City. A few of the legacy HMP's hazards have been combined within broader categories to better reflect their impacts and relationships.

The Planning Team reviewed infrastructure and mitigation tables and the draft plan at a meeting (open to the public) on July 9, 2015. At the July 14, 2015 City Council meeting, the draft plan was discussed and there were no comments from the Council or the public. The Planning Team reviewed the 2008 Legacy mitigation plan actions (Section 7, Table 21) to determine whether these actions should be brought forward, and if completed, deferred, deleted or ongoing. New mitigations actions were also identified.

Another public meeting will be held with the City in fall 2015 to adopt the final draft plan after preliminary DHS&EM and FEMA approval.

3.4 LEGACY 2008 HMP REVIEW AND RECOMMNEDATIONS

44 CFR requires communities to schedule HMP Planning Team meetings and teleconferences to review, discuss, and determine mitigation implementation accomplishments, track data relevance for future HMP update inclusion and document recommendations for future HMP updates.

3.4.1 Review and Analysis of the 2008 HMP.

The Legacy 2008 HMP document was revised as described below.

Section 1. ***Introduction****: added entire new section explaining the plan process.*

Section 2. ***Community Description****: updated and expanded community information, including new census and State data.*

Section 3. ***Planning Process****: updated this section to reflect 2015 update public process including newsletters, public meetings and 2015 Planning Team.*

Section 4. ***Plan Adoption****: 2015 resolution and date.*

Section 5. ***Hazard Profile Analysis****: reviewed hazard identification and risk assessment for earthquake, flooding, weather (severe) and wildland/tundra fire adding 2008 to 2015 descriptions and data.*

Section 6. ***Vulnerability Analysis****: reviewed Legacy 2008 HMP vulnerability analysis to determine if there were any significant changes.*

Section 7. ***Mitigation Strategy****: reviewed Legacy 2008 mitigation goals and actions and added new goals and action for the 2015 Mitigation Action Plan.*

Section 8. ***References****: revised to reflect 2015 Update.*

AECOM described the specific HMP information needs during the initial November 2014 email to form the foundation for their updated 2015 HMP. Another email was sent directly to Unalakleet with additional update information on February 15, 2015 (attached in public outreach appendix).

The Planning Team did not complete their designated annual HMP reviews or plan maintenance activities. Therefore it became a primary consideration to update the existing 2008 HMP to include all hazards that have, or could potentially have, impacted the community during the legacy HMP's 5-year lifecycle.

Table 3-3 delineates Planning Team identified HMP components that necessitated information update. The Team determined how community changes, construction and infrastructure conditions, climate change impacts, and population increases or decreases have influenced hazard risks and/or facility vulnerabilities.

The 2015 HMP Update process included inviting new and existing stakeholders to review the existing HMP to determine what was accomplished versus what was intended to accomplish.

Pertinent section data are identified within Table 3-3, which provided the foundation for completing the 2015 HMP Update.

Table 3-3 HMP Review and Update Needs Determination

2008 FHMP Section	2008 HMP Items to be updated	Status: F: Fulfilled NF: Not Fulfilled	2015 HMP Identified items for deletion	Newly identified items to be added for HMP compliance	New Action commitments
Planning Process	• Planning process • Planning team membership • Mitigation resource list • Public outreach initiatives • Plan Maintenance Activities • Plan Review Obligations	• NF: Did not meet or complete annual HMP review • NF: Adding Manmade/ Technological Hazards • NF: Continued Plan Development	• None	• Refine plan maintenance processes and responsibilities	• Planning Team will begin to hold annual review meetings and • Strive to integrate HMP initiatives into other plans, ordinances, and resolutions. • Planning Team will continue meetings and strive to integrate HMP initiatives into other plans, ordinances, and resolutions.
Hazard Profile Update	• Update hazard profile and new event history • Profile newly identified hazard risks	• NF: Update hazard profile and new event history	• Mitigation projects that were deleted or combined due to similarity	• Identify new hazards • Develop new Mitigation Action Plan (MAP) • Update existing hazards' impacts	• Delineate new actions within the MAP
Risk Analysis and Vulnerability Assessment	• Asset inventory • Vulnerability analysis & summaries	• NF: Identify development and land use changes	• None	• Develop asset inventory • Determine infrastructure vulnerabilities • Determine residential structure vulnerabilities • Identify repetitive loss properties as appropriate	• Fill data gaps • Locate scientific information to augment these data. • Delineate climate change scenario future development analysis

Table 3-3 HMP Review and Update Needs Determination

2008 FHMP Section	2008 HMP Items to be updated	Status: F: Fulfilled NF: Not Fulfilled	2015 HMP Identified items for deletion	Newly identified items to be added for HMP compliance	New Action commitments
Mitigation Strategy	• Determine existing mitigation actions status • Define mitigation action implementation successes or barriers	• NF: Did not track project implementation processes	• Delete completed, combined, or deleted actions • Implemented & non-relevant mitigation actions	• Identify existing (20xx) mitigation plan actions' status • Identify new mitigation actions for newly identified hazard implementation • Develop community specific capability assessment(s)	• Annually review action's status and feasibility

3.5 EXISTING DATA INCORPORATION

During the planning process, the Planning Team reviewed and incorporated information from existing plans, studies, reports, and technical reports (Table 3-4) into the HMP. The following were available from various sources and were reviewed and referenced where applicable for the HMP's jurisdictional information, hazard profiles, and vulnerability assessment.

Table 3-4 Documents Reviewed

Existing plans, studies, reports, ordinances, etc.	Contents Summary (How will this information improve mitigation planning?)
Unalakleet Community Plan 2002	General guide for the community.
Local Economic Development Plan 2014	Has section on erosion and actions that are included in the Mitigation Action Plan.
State of Alaska, Department of Commerce, Community and Economic Development Community Profile	Provided historical and demographic information
US Army Corps of Engineers, Erosion Information Paper, Unalakleet, Alaska, November 10, 2008	US Army Corps of Engineers, Erosion Information Paper Unalakleet, Alaska, November 10, 2008
US Army Corps of Engineers, Alaska Baseline Erosion Assessment, 2009	US Army Corps of Engineers, Alaska Baseline Erosion Assessment, 2009
US Army Corps of Engineers, Floodplain Manager's Reports, Community Specific 2011	Defined the area's historical flood impacts
State of Alaska, Department of Commerce, Community and Economic Development , Division of Community and Regional Affairs, Community Specific Profile	Provided historical and demographic information

Table 3-4 Documents Reviewed

Existing plans, studies, reports, ordinances, etc.	Contents Summary (How will this information improve mitigation planning?)
State of Alaska Hazard Mitigation Plan (SHMP), 2013	Defined statewide hazards and their potential locational impacts

A complete list of references list is provided in Section 8.

3.6 PLAN MAINTENANCE

This section describes a formal plan maintenance process to ensure that the HMP remains an active and applicable document. It includes an explanation of how the City's Planning Team intends to organize their efforts to ensure that improvements and revisions to the HMP occur in a well-managed, efficient, and coordinated manner.

The following three process steps are addressed in detail here:

1. Implementation into existing planning mechanisms
2. Continued public involvement
3. Monitoring, reviewing, evaluating, and updating the HMP

3.6.1 Implementing HMP Precepts

DMA 2000 and its implementing regulation for HMP implementation through existing planning mechanisms:

DMA 2000 Requirements
Incorporation into Existing Planning Mechanisms §201.6(b)(3): Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.
1. REGULATION CHECKLIST
ELEMENT A Planning Process (Continued)
A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information?
Source: FEMA, March 2015.

Once the HMP is community adopted and receives FEMA's final approval, Each Planning Team Member ensures that the HMP, in particular each Mitigation Action Project, is incorporated into existing planning mechanisms whenever possible. Each member of the Planning Team has undertaking the following activities.

- Conduct a review of the community-specific regulatory tools to assess the integration of the mitigation strategy. These regulatory tools are identified in the following capability assessment section
- Work with pertinent community departments to increase awareness of the HMP and provide assistance in integrating the mitigation strategy (including the Mitigation Action

Plan) into relevant planning mechanisms. Implementation of these requirements may require updating or amending specific planning mechanisms

3.6.2 Continued Public Involvement

DMA 2000 and its implementing regulation for continued public involvement:

DMA 2000 Requirements
Continued Public Involvement §201.6(c)(4)(iii): The plan maintenance process shall include a] discussion on how the community will continue public participation in the plan maintenance process.
1. REGULATION CHECKLIST
ELEMENT A Planning Process (Continued)
A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))
Source: FEMA, March 2015.

Unalakleet is dedicated to involving the public directly in the continual reshaping and updating the HMP. A paper copy of the HMP and any proposed changes will be available at the City Office. An address and phone number of the Planning Team Leader to whom people can direct their comments or concerns will also be available at the City Office.

The Planning Team will continue to identify opportunities to raise community awareness about the HMP and the hazards that affect the area. This effort could include attendance and provision of materials at City -sponsored events, outreach programs, and public mailings. Any public comments received regarding the HMP will be collected by the Planning Team Leader, included in the annual report, and considered during future HMP updates.

3.6.3 Monitoring, Reviewing, Evaluating, and Updating the HMP

DMA 2000 and its implementing regulation for monitoring, reviewing, evaluating, and updating the HMP:

DMA 2000 Requirements
Monitoring, Evaluating and Updating the Plan §201.6(c)(4)(i): The plan maintenance process shall include a] discussion on how the community will continue public participation in the plan maintenance process. §201.6(d)(3): A local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit if for approval within 5 years in order to continue to be eligible for mitigation project grant funding.
1. REGULATION CHECKLIST
ELEMENT A. Planning Process (Continued)
A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle?)
Source: FEMA, March 2015.

This section provides an explanation of how the City's Planning Team intends to organize their efforts to ensure that improvements and revisions to the HMP occur in a well-managed, efficient, and coordinated manner.

The following three process steps are addressed in detail here:

1. Review and revise the HMP to reflect development changes, project implementation progress, project priority changes, and resubmit
2. HMP resubmittal at the end of the plan's five year life cycle for State and FEMA review and approval
3. Continued mitigation initiative implementation

3.6.3.1 Monitoring the HMP

The HMP was prepared as a collaborative effort. To maintain momentum and build upon previous hazard mitigation planning efforts and successes, the City will continue to use the Planning Team to monitor, review, evaluate, and update the HMP. Each authority identified in the Mitigation Action Plan (MAP) matrix (Table 7-8) will be responsible for implementing the Mitigation Action Plan and determining whether their respective actions were effectively implemented. The Director of Public Safety, the hazard mitigation Planning Team Leader, (or designee), will serve as the primary point of contact and will coordinate local efforts to monitor, evaluate, revise, and tabulate HMP actions' status.

3.6.3.2 Reviewing the HMP

The Planning Team will review their success for achieving the HMP's mitigation goals and implementing the Mitigation Action Plan's activities and projects during the annual review process.

During each annual review, each agency or authority administering a mitigation project will submit a Progress Report (Appendix F) to the Planning Team. The report will include the current status of the mitigation project, including any project changes, a list of identified implementation problems (with an appropriate strategies to overcome them), and a statement of whether or not the project has helped achieve the appropriate goals identified in the plan.

3.6.3.3 Evaluating the HMP

The Annual Review Questionnaire (Appendix F) provides the basis for future HMP evaluations by guiding the Planning Team with identifying new or more threatening hazards, adjusting to changes to, or increases in, resource allocations, and garnering additional support for HMP implementation.

The Planning Team Leader will initiate the annual review two months prior to the scheduled planning meeting date to ensure that all data is assembled for discussion with the Planning Team. The findings from these reviews will be presented at the annual Planning Team Meeting. Each review, as shown on the Annual Review Worksheet, will include an evaluation of the following:

- Determine authorities, outside agency, stakeholders, and resident's participation in HMP implementation success

- Identify notable risk changes for each identified and newly considered natural or human-caused hazards
- Consider land development activities and related programs' impacts on hazard mitigation
- Mitigation Action Plan implementation progress (identify problems and suggest improvements as necessary)
- Evaluate HMP local resource implementation for HMP identified activities

3.6.3.4 Updating the HMP

In addition to the annual review, the Planning Team will update the HMP every five years. This section explains how they will review, evaluate, and explain implementation successes.

DMA 2000 Requirements
Reviewing, Evaluating, and Implementing the Plan §201.6(d)(3): A local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit if for approval within 5 years in order to continue to be eligible for mitigation project grant funding.
1. REGULATION CHECKLIST
ELEMENT A. Planning Process (Continued)
D1. Was the plan revised to reflect changes in development? (Requirement §201.6(d)(3))
D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement §201.6(d)(3))
D3. Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))
Source: FEMA, March 2015

The City of Unalakleet's Planning Team did not review the legacy HMP during its five-year life cycle. However, City Administrator has recommitted to annually reviewing the HMP and completing an Annual Review Questionnaire (Appendix F) as described in Section 3.5.3.2. This will facilitate updating the HMP every five years (or when significant changes occur).

A complete Annual Review Questionnaire will enable the Team to identify possible changes (successes, failures, and roadblock experiences) in the HMP Mitigation Action Plan by refocusing on new or more threatening hazards, resource availability, and acquiring stakeholder support for the HMP project implementation.

No later than the beginning of the fourth year following HMP adoption, the Planning Team will undertake the following activities:

- Request grant assistance from DHS&EM to update the HMP (this can take up to one year to obtain and one year to update the plan)
- Ensure that each authority administering a mitigation project will submit a Progress Report to the Planning Team
- Develop a chart to identify those HMP sections that need improvement, the section and page number of their location within the HMP, and describing the proposed changes
- Thoroughly analyze and update the natural hazard risks

- Determine the current status of the mitigation projects
- Identify the proposed Mitigation Plan Actions (projects) that were completed, deleted, or delayed. Each action should include a description of whether the project should remain on the list, be deleted because the action is no longer feasible, or reasons for the delay
- Describe how each action's priority status has changed since the HMP was originally developed and subsequently approved by FEMA
- Determine whether or not the project has helped achieve the appropriate goals identified in the plan
- Describe whether the community has experienced any barriers preventing them from implementing their mitigation actions (projects) such as financial, legal, and/or political restrictions and stating appropriate strategies to overcome them
- Update ongoing processes, and to change the proposed implementation date/duration timeline for delayed actions the Planning Team still desires to implement
- Prepare a "new" MAP matrix for the Unalakleet's Updated HMP

- Prepare a new Draft Updated HMP
- Submit the updated draft HMP to the Division of Emergency Management (DHS&EM) and FEMA for review and approval

3.6.3.5 Formal State and FEMA HMP Review

Completed Hazard Mitigation Plans do not qualify the City of Unalakleet or the Native Village of Unalakleet for mitigation grant program eligibility until they have been reviewed and adopted by the City and Tribal councils and received State and FEMA final approval.

Upon HMP completion, the City (or its contractor) and Tribe will submit the updated HMP to the DHS&EM for initial review and preliminary approval. Once any corrections are made, DHS&EM will forward the HMP to FEMA for their review and conditional approval.

The Native Village of Unalakleet has participated with this HMP's development and it intends to follow and implement applicable tribal activities to qualify the Village Tribal Council for tribal grant opportunities. The Native Village of Unalakleet's Traditional Council supports 44 CFR 201 and assures compliance with all applicable Federal statutes and regulations.

The City of Unalakleet and the Native Village of Unalakleet councils, with assistance from the State Hazard Mitigation Officer (SHMO) and the State Hazard Mitigation Advisory Committee (SHMAC), is responsible for monitoring, evaluating, and updating their portion of the Unalakleet Hazard Mitigation Plan in accordance with 44 CFR §201.7. Their respective councils will monitor the plan to evaluate progress and update the plan every five years, or within 90 days of a Presidential Declared Disaster (as required), to reflect changes in State or Federal law. The Hazard Mitigation Plan Annual Progress Report and Hazard Mitigation Plan Annual Evaluation Forms are plan review tools.

The City and Tribal councils, with assistance from the SHMO and FEMA, determine when significant changes warrant an update prior to the scheduled date.

Once the plan has fulfilled all FEMA criteria, the City of Unalakleet and the Village of Unalakleet will pass an HMP Adoption Resolution and forward to the State and FEMA for final approval. FEMA's final approval assures the City is eligible for applying for appropriate mitigation grant program funding.

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Section Four is included to fulfill the City of Unalakleet's HMP adoption requirements.

4.1 JURISDICTIONAL ADOPTION

DMA 2000 and its implementing regulations for governing body formal HMP adoption:

DMA 2000 Requirements
Local Plan Adoption §201.6(c)(5): [The plan shall include…] Documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County commissioner, Tribal Council). For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.
1. REGULATION CHECKLIST
ELEMENT E. Plan Adoption
E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval??) (Requirement §201.6(c)(5))
Source: FEMA, March 2015.

The City of Unalakleet's City Council and the Native Village of Unalakleet's Tribal Council are represented in this HMP; they meet the requirements of Section 409 of the Stafford Act, Section 322 of DMA 2000, and 44 CFR §201.6(c)(5) and §201.7 respectively.

The Unalakleet City Council adopted the HMP on October 13, 2015.

The Native Village of Unalakeet's Tribal Council adopted the HMP on _____.

The City submitted the final draft HMP to FEMA for formal approval; scanned copies of their formal adoption resolutions are included in Appendix C

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Section Five identifies and profiles the hazards that could affect the City of Unalakleet.

5.1 OVERVIEW

A hazard analysis includes the identification, screening, and profiling of each hazard. Hazard identification is the process of recognizing the natural events that threaten an area. Natural hazards result from unexpected or uncontrollable natural events of sufficient magnitude. Human and Technological, and Terrorism related hazards are beyond the scope of this plan. Even though a particular hazard may not have occurred in recent history in the study area, all natural hazards that may potentially affect the study area are considered; the hazards that are unlikely to occur or for which the risk of damage is accepted as being very low, are eliminated from consideration.

Hazard profiling is accomplished by describing hazards in terms of their nature, history, magnitude, frequency, location, extent, and probability. Hazards are identified through historical and anecdotal information collection, existing plans, studies, and map reviews, and study area hazard map preparations when appropriate. Hazard maps are used to define a hazard's geographic extent as well as define the approximate risk area boundaries.

DMA 2000 and its implementing regulations for hazard identification:

DMA 2000 Requirements
Identifying Hazards §201.6(c)(2)(i): The risk assessment shall include a] description of the type, location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events. §201.6(c)(2)(iii): For multi-jurisdictional plans, the risk assessment section must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.
1. REGULATION CHECKLIST
ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT
B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction? B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods?
Source: FEMA, March 2015.

5.2 HAZARD IDENTIFICATION AND SCREENING

This is the first step of the hazard analysis. In February 2015 the Planning Team reviewed seven possible hazards that could affect the Bering Strait REAA. They then evaluated and screened the comprehensive list of potential hazards based on a range of factors, including prior knowledge or perception of their threat and the relative risk presented by each hazard, the ability to mitigate the hazard, and the known or expected availability of information on the hazard (Table 5-1). The Planning Team determined that four hazards pose a threat to the City: earthquake, flood/scour, severe weather, and wildland/tundra fire; some of which are influenced by increasing changing

climate conditions such as late ice formation, early thaw conditions, and increased, lack, or inconsistent rain.

Table 5-1 Identification and Screening of Hazards

Hazard Type	Should It Be Profiled?	Explanation
Natural Hazards		
Earthquake	Yes	Periodic, unpredictable occurrences. The City area experienced no damage from the 11/2003 Denali EQ, but experienced minor shaking from the earthquake and its aftershocks, from the 1964 Good Friday Earthquake. The City has experienced 11 historical earthquakes with the largest one (M4.7) occurring March 22, 1978.
Flood (Riverine and/or coastal related floods and resultant erosion)	Yes	Snowmelt run-off and rainfall flooding occurs during spring thaw and the fall rainy season. Events occur from soil saturation. Several minor flood events cause damage. Severe damages occur from major floods. The City experiences storm surge, coastal ice run-up, and coastal wind erosion along the shoreline from high water flow, riverine high water ice flows, wind, surface runoff, and boat traffic wakes.
Ground Failure (Avalanche, Landslide/Debris Flow, Permafrost, Subsidence)	No	Unalakleet is located on a flat spit with a gentle topographic relief in the City estimated to be 6 – 16 feet. There is no danger from avalanches, landslides or volcanoes because there are no mountains or steep slopes in the City.
Severe Weather (Cold, Drought, Rain, Snow, Wind, etc.)	Yes	Severe weather impacts the City with climate change/global warming and changing El Niño/La Niña Southern Oscillation (ENSO) patterns generating increasingly severe weather events such as winter storms, heavy or freezing rain, thunderstorms and with subsequent secondary hazards such as riverine or coastal storm surge floods, landslides, snow, and wind etc. Severe weather events cause fuel price increases and frozen pipes. Heavy snow loads potentially damage house roofs. Winds potentially remove or damage roofs and moved houses off their foundations.
Tsunami (Seiche)	No	There is no threat of a tsunami in Unalakleet.
Volcano	No	There is no threat from a volcano in the community.
Wildland (Tundra) Fire	Yes	The community and the surrounding tundra area become very dry in summer months with weather (such as drought and lightening) and human caused incidents igniting dry vegetation in the adjacent area (burning trash outside their landfill's burn box, camp fires, etc.).

5.3 HAZARD PROFILES

DMA 2000 and its implementing regulations for hazard profiles:

DMA 2000 Requirements
Profiling Hazards Requirement §201.6(c)(2)(i): [The risk assessment shall include a] description of the location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.
1. REGULATION CHECKLIST
ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT
B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction? (Requirement §201.6(c)(2)(i)) B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction?
Source: FEMA, March 2015.

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The specific hazards selected by the Planning Team for profiling have been examined in a methodical manner based on the following factors:

- Nature (Type)
  - Potential climate change impacts are primarily discussed in the Severe Weather hazard profile but are also identified where deemed appropriate within each hazard profile.
- History (Previous Occurrences)
- Location
- Extent (breadth, magnitude, and severity)
- Impact (Section 5 provides general impacts associated with each hazard. Section 6 provides detailed impacts to Unalakleet's residents and critical facilities)
- Recurrence Probability

NFIP insured Repetitive Loss Structures (RL) are addressed in Section 6.0, Vulnerability Analysis.

Each hazard is assigned a rating based on the following criteria for magnitude/severity (Table 5-2) and future recurrence probability (Table 5-3).

Estimating magnitude and severity are determined based on historic events using Table 5-2 identified criteria from Section 5.3's narrative descriptions.

Table 5-2 Hazard Magnitude/Severity Criteria

Magnitude / Severity	Criteria
4 - Catastrophic	• Multiple deaths. • Complete shutdown of facilities for 30 or more days. • More than 50 percent of property is severely damaged.
3 - Critical	• Injuries and/or illnesses result in permanent disability. • Complete shutdown of critical facilities for at least two weeks. • More than 25 percent of property is severely damaged.
2 - Limited	• Injuries and/or illnesses do not result in permanent disability. • Complete shutdown of critical facilities for more than one week. • More than 10 percent of property is severely damaged.
1 - Negligible	• Injuries and/or illnesses are treatable with first aid. • Minor quality of life lost. • Shutdown of critical facilities and services for 24 hours or less. • Less than 10 percent of property is severely damaged.

Similar to estimating magnitude and severity, Probability is determined based on historic events, using Table 5-3 identified criteria, to provide estimated future event recurrence likelihood.

Table 5-3 Hazard Recurrence Probability Criteria

Probability	Criteria
4 - Highly Likely	• Event is probable within the calendar year. • Event has up to 1 in 1 year chance of occurring (1/1=100 percent). • History of events is greater than 33 percent likely per year. • Event is "Highly Likely" to occur.
3 - Likely	• Event is probable within the next three years. • Event has up to 1 in 3 years chance of occurring (1/3=33 percent). • History of events is greater than 20 percent but less than or equal to 33 percent likely per year. • Event is "Likely" to occur.
2 - Possible	• Event is probable within the next five years. • Event has up to 1 in 5 years chance of occurring (1/5=20 percent). • History of events is greater than 10 percent but less than or equal to 20 percent likely per year. • Event could "Possibly" occur.
1 - Unlikely	• Event is possible within the next ten years. • Event has up to 1 in 10 years chance of occurring (1/10=10 percent). • History of events is less than or equal to 10 percent likely per year. • Event is "Unlikely" but is possible to occur.

The hazards profiled for the Unalakleet area are presented throughout the remainder of Section 5.3. The presentation order does not signify their importance or risk level.

5.3.1 Earthquake

5.3.1.1 Nature

An earthquake is a sudden motion or trembling caused by a release of strain accumulated within or along the edge of the earth's tectonic plates. The effects of an earthquake can be felt far beyond the site of its occurrence. Earthquakes usually occur without warning and after only a few seconds can cause massive damage and extensive casualties. The most common effect of earthquakes is ground motion, or the vibration or shaking of the ground during an earthquake.

Ground motion generally increases with the amount of energy released and decreases with distance from the fault or epicenter of the earthquake. An earthquake causes waves in the earth's interior (i.e., seismic waves) and along the earth's surface (i.e., surface waves). Two kinds of seismic waves occur: P (primary) waves are longitudinal or compressional waves similar in character to sound waves that cause back and forth oscillation along the direction of travel (vertical motion), and S (secondary) waves, also known as shear waves, are slower than P waves and cause structures to vibrate from side to side (horizontal motion). There are also two types of surface waves: Raleigh waves and Love waves. These waves travel more slowly and typically are significantly less damaging than seismic waves.

In addition to ground motion, several secondary natural hazards can occur from earthquakes such as:

- **Surface Faulting** is the differential movement of two sides of a fault at the earth's surface. Displacement along faults, both in terms of length and width, varies but can be significant (e.g., up to 20 feet [ft]), as can the length of the surface rupture (e.g., up to 200 miles). Surface faulting can cause severe damage to linear structures, including railways, highways, pipelines, and tunnels.

- **Liquefaction** occurs when seismic waves pass through saturated granular soil, distorting its granular structure, and causing some of the empty spaces between granules to collapse. Pore water pressure may also increase sufficiently to cause the soil to behave like a fluid for a brief period and cause deformations. Liquefaction causes lateral spreads (horizontal movements of commonly 10 to 15 ft, but up to 100 ft), flow failures (massive flows of soil, typically hundreds of ft, but up to 12 miles), and loss of bearing strength (soil deformations causing structures to settle or tip). Liquefaction can cause severe damage to property.

- **Landslides/Debris Flows** occur as a result of horizontal seismic inertia forces induced in the slopes by the ground shaking. The most common earthquake-induced landslides include shallow, disrupted landslides such as rock falls, rockslides, and soil slides. Debris flows are created when surface soil on steep slopes becomes totally saturated with water. Once the soil liquefies, it loses the ability to hold together and can flow downhill at very high speeds, taking vegetation and/or structures with it. Slide risks increase after an earthquake during a wet winter.

The severity of an earthquake can be expressed in terms of intensity and magnitude. Intensity is based on the damage and observed effects on people and the natural and built environment. It varies from place to place depending on the location with respect to the earthquake epicenter, which is the point on the earth's surface that is directly above where the earthquake occurred. The severity of intensity generally increases with the amount of energy released and decreases

with distance from the fault or epicenter of the earthquake. The scale most often used in the U.S. to measure intensity is the Modified Mercalli Intensity (MMI) Scale. As shown in Table 5-4, the MMI Scale consists of 12 increasing levels of intensity that range from imperceptible to catastrophic destruction. Peak ground acceleration (PGA) is also used to measure earthquake intensity by quantifying how hard the earth shakes in a given location. PGA can be measured as acceleration due to gravity (g) (MMI 2006).

Magnitude (M) is the measure of the earthquake strength. It is related to the amount of seismic energy released at the earthquake's hypocenter, the actual location of the energy released inside the earth. It is based on the amplitude of the earthquake waves recorded on instruments, known as the Richter magnitude test scales, which have a common calibration (see Figure 5-1).

UPSeis
an educational site for budding seismologists

Modified Mercalli Intensity Scale

Mercalli Intensity	Equivalent Richter Magnitude	Witness Observations
I	1.0 to 2.0	Felt by very few people; barely noticeable.
II	2.0 to 3.0	Felt by a few people, especially on upper floors.
III	3.0 to 4.0	Noticeable indoors, especially on upperfloors, but may not be recognized as an earthquake.
IV	4.0	Felt by many indoors, few outdoors. May feel like heavy truck passing by.
V	4.0 to 5.0	Felt by almost everyone, some people awakened. Small objects moved. trees and poles may shake.
VI	5.0 to 6.0	Felt by everyone. Difficult to stand. Some heavy furniture moved, some plaster falls. Chimneys may be slightly damaged.
VII	6.0	Slight to moderate damage in well built, ordinary structures. Considerable damage to poorly built structures. Some walls may fall.
VIII	6.0 to 7.0	Little damage in specially built structures. Considerable damage to ordinary buildings, severe damage to poorly built structures. Some walls collapse.
IX	7.0	Considerable damage to specially built structures, buildings shifted off foundations. Ground cracked noticeably. Wholesale destruction. Landslides.
X	7.0 to 8.0	Most masonry and frame structures and their foundations destroyed. Ground badly cracked. Landslides. Wholesale destruction.
XI	8.0	Total damage. Few, if any, structures standing. Bridges destroyed. Wide cracks in ground. Waves seen on ground.
XII	8.0 or greater	Total damage. Waves seen on ground. Objects thrown up into air.

Figure 5-1 Modified Mercalli Intensity (MMI 2015)

5.3.1.2 History

Accurate seismology for Alaska is relatively young with historic data beginning in 1973 for most locations. Therefore data is limited for acquiring long-term earthquake event data. The MJHMP's Alaska earthquake data is based on best available data; obtained from the US Geological Survey (USGS) and the State of Alaska, UAF Geophysical Institute's archives. Research included searching the US Geological Survey (USGS) earthquake database for events spanning from 1978 to present; none of which exceeded M4.1 located within 100 miles of the midpoint of the City.

North America's strongest recorded earthquake occurred on March 27, 1964 in Prince William Sound measuring M9.2 and was felt by many residents throughout Alaska. Unalakleet experienced minimal ground motion from this historic event. Planning Team members further stated that the City has experienced no ground shaking from the November 3, 2002 M7.9 Denali EQ.

The Planning Team determined that based on available recorded data, the City has a minor concern for earthquake damages as they have not experienced many historical earthquake events. This is substantiated from the USGS Table 9, which lists 11 historical earthquakes, since 1978, with the largest one (M4.7) occurring on March 22, 1978.

Table 5-4 Unalakleet's Historical Earthquakes since 1978

Date	Time (24 hour format)	Latitude	Longitude	Depth in Miles	Magnitude
07/06/2006	23:26	65.287	-160.734	5.1	4.5
02/06/2001	21:01	64.512	-159.344	33	4.1
11/21/2000	04:27	64.456	-158.295	20	4.2
05/17/1999	17:32	64.372	-158.43	10	4.5
09/13/1998	04:27	64.501	-158.295	0	4.3
07/21/1998	10:59	64.881	-162.32	10	4
12/15/1997	14:22	64.555	-162.672	25.1	4.5
07/31/1993	09:38	64.423	-162.447	10	4
07/27/1988	23:45	64.301	-161.391	10	4.3
08/15/1982	15:47	65.015	-162.068	33	4.4
03/22/1978	15:45	64.879	-160.482	33	4.7

(USGS 2012)

5.3.1.3 Location, Extent, Impact, and Recurrence Probability

Location

The entire geographic area of Alaska is prone to earthquake effects. Figure 2 shows the locations of active and potentially active faults in Alaska. Even when earthquakes occur in other parts of the state, secondary effects such as transportation and supply interruptions may affect the City.

Figure 5-2 shows the locations of active and potentially active faults in Alaska.

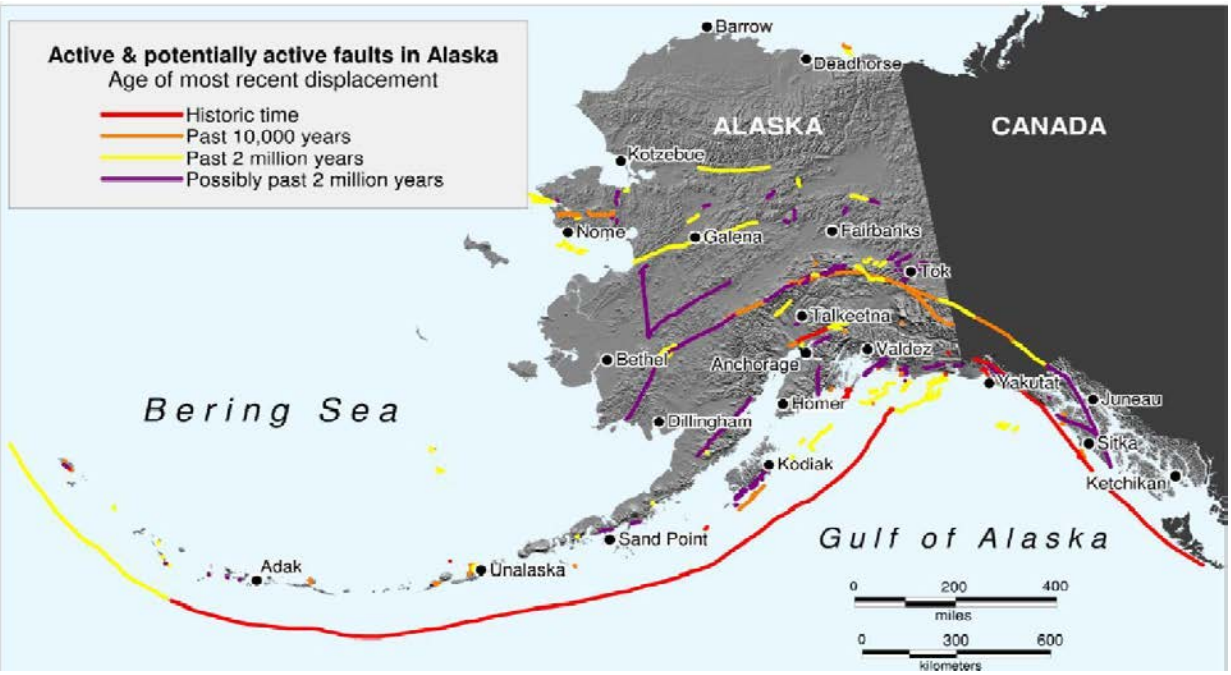


Figure 5-2 Active and Potentially Active Faults in Alaska (DGGS 2009)

5

Extent

Based on historic earthquake events and the criteria identified in Table 7, the magnitude and severity of earthquake impacts in the City are considered "Limited" with potential injuries and/or illnesses that do not result in permanent disability; critical facilities could expect to be shut-down for more than two weeks; and more than 10 percent of property severely damaged with limited long-term damage to transportation, infrastructure, or the economy..

Impact

Impacts to the community such as significant ground movement that may result in infrastructure damage are not expected. Minor shaking may be seen or felt based on past events. Impacts to future populations, residences, critical facilities, and infrastructure are anticipated to remain the same.

Recurrence Probability

As indicated, while it is not possible to predict when an earthquake will occur, the Shake Map was generated using the United States Geological Survey (USGS) Earthquake Mapping Model to generate the2014 Shake Map (Figure 5-5). This modelling effort incorporates current seismicity in its development and is the most current map available for this area. Peter Haeussler, USGS, Alaska Region states, it is a viable representation to support probability inquiries.

> *"The occurrence of various small earthquakes does not change earthquake probabilities. In fact, in the most dramatic case, the probability of an earthquake on the Denali fault was/is the same the day before the 2002 earthquake as the day afterward. Those are time-independent probabilities. The things that change the hazard maps is changing the number of active faults or changing their slip rate" (Haeussler, 2009).*

Insert EQ probability map here and edit text box to contain community name

While it is not possible to predict when an earthquake will occur; the following Unakakleet earthquake Shake Map (Figure 5-3) depicts the City's location within the United States Geological Survey's (USGS) Earthquake Mapping Model.

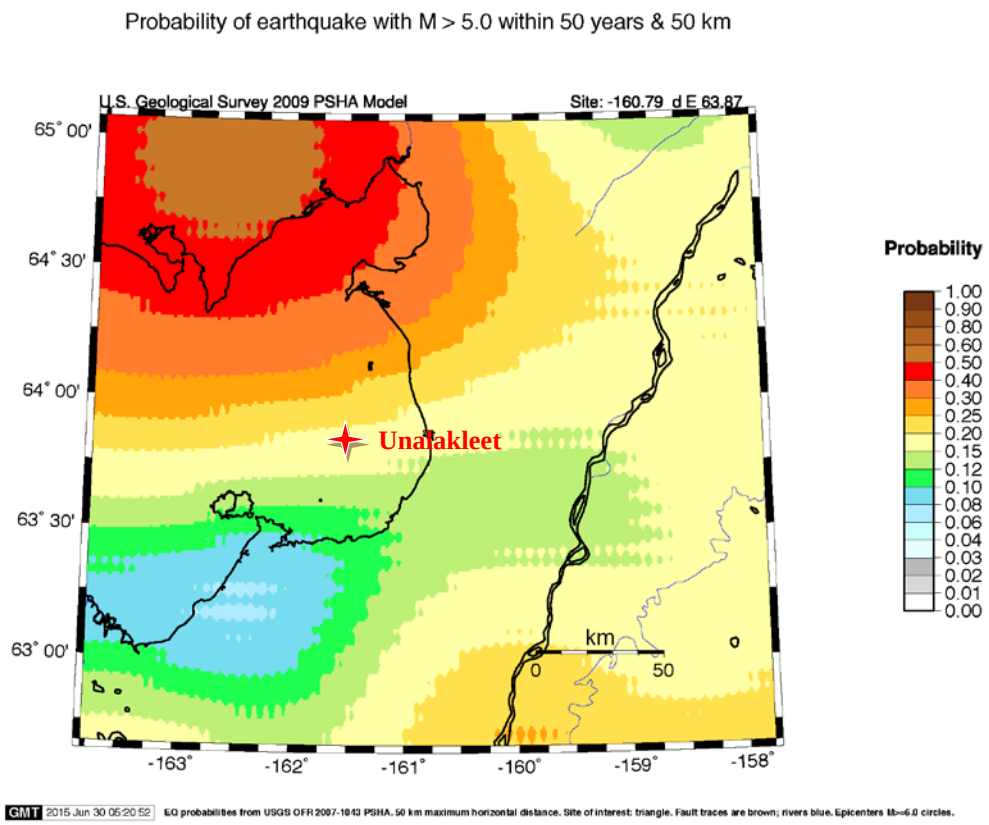


Figure 5-3 Unalakleet's Earthquake Recurrence Probability (USGS 2015)

The Shake Map indicates a M5.0 or greater earthquake occurring within 50 years and 50 miles of the City is "Possible" within the next 5 years (1/5=20 percent) chance of occurring; due to an event history that is greater than 10 percent but less than or equal to 20 percent.

5.3.2 Flood

5.3.2.1 Nature

Flooding is the accumulation of water where usually none occurs or the overflow of excess water from a stream, river, lake, reservoir, glacier, or coastal body of water onto adjacent floodplains. Floodplains are lowlands adjacent to water bodies that are subject to recurring floods. Floods are natural events that are considered hazards only when people and property are affected.

Flood events not only impact communities with high water levels, or fast flowing waters, but sediment transport also impacts infrastructure and barge and other river vessel access limitations. Dredging may be the only option to maintain an infrastructure's viability and longevity.

Four primary types of flooding occur in the : rainfall-runoff, snowmelt, ice jam, storm surge, and ice override floods.

Rainfall-Runoff Flooding occurs in late summer and early fall. The rainfall intensity, duration, distribution, and geomorphic characteristics of the watershed all play a role in determining the magnitude of the flood. Rainfall runoff flooding is the most common type of flood. This type of flood event generally results from weather systems that have associated prolonged rainfall.

Snowmelt Floods typically occur from April through June. The depths of the snowpack and spring weather patterns influence the magnitude of flooding.

Ice-Jam floods occur when warming temperatures and rising water flows causes the ice to break-up and disconnect from the embankment. The large ice chunks begin to flow and move down river. The ice does not flow easily, often impacting with adjacent blocks resulting in occasional ice jams. Some ice jams quickly break apart, however, larger jams occur which create small dams causing the water to exert increasing pressure on the jam creating a damming effect. Water subsequently begins to build depth and often overtops adjacent embankments which flood upstream communities.

When the ice-jam breaks the built-up water rushes downstream with great force. Ice blocks scour the embankment, destroying infrastructure such as fuel headers, barge landings, and boat mooring structures. Large house sized ice blocks may even be driven above the embankment destroying any structure in its path. Communities are virtually helpless against such devastation.

Storm Surges, or coastal floods, occur when the sea is driven inland above the high-tide level onto land that is normally dry. Often, heavy surf conditions driven by high winds accompany a storm surge adding to the destructive-flooding water's force. The conditions that cause coastal floods also can cause significant shoreline erosion as the flood waters undercut roads and other structures. Storm surge is a leading cause of property damage in Alaska.

The meteorological parameters conducive to coastal flooding are low atmospheric pressure, strong winds (blowing directly onshore or along the shore with the shoreline to the right of the direction of the flow), and winds maintained from roughly the same direction over a long distance across the open ocean (fetch).

Communities that are situated on low-lying coastal lands with gradually sloping bathymetry near the shore and exposure to strong winds with a long fetch over the water are particularly susceptible to coastal flooding. Several communities and villages along the Bristol Bay coast, the Bering Sea coast, the Arctic coast, and the Beaufort Sea coast have experienced significant damage from coastal floods over the past several decades. Most coastal flooding occurs during the late summer or early fall season in these locations. As shore-fast ice forms along the coast before winter, the risk of coastal flooding abates, but, later freeze-ups greatly increase the risk of erosion, storm surge flooding and ice override events.

Ice Override (also known as an Ivu) is a phenomenon that occurs when motion of the sheet ice is initiated by wind stress acting on the surface of ice that is not confined. Onshore wind, coupled with conditions such as a smooth gradual sloping beach and high tides can cause ice sheets to slide up or "override" the beach and move inland as much as several hundreds of feet. Ice override typically occurs in fall and early winter (though events have been reported at other times) and is usually associated with coastal storms and storm surge but may also happen in calm weather.

Override advances are slow enough to allow people to move out of its path, and therefore poses little immediate safety hazard. Intact sheets of ice up to several feet thick moving into buildings or across roads and airports can however cause structural damage and impede travel. Shoreline protection in the form of bulkheads or other structures to break-up the ice can limit the movement of ice. In at least one occasion, a bulldozer was able to break-up the ice and prevent damage.

Coastal Scour (used interchangeably with erosion) rarely causes death or injury. However, erosion causes property destruction, prohibits development, and impacts community infrastructure. Erosion is typically gradual land loss through wind or water scour. However, erosion can occur rapidly as the result of floods, storms or other event or slowly as the result of long-term environmental changes such as melting permafrost. Erosion is a natural process, but its effects can be easily exacerbated by human activity.

Coastal and riverine erosive scour threatens the Unalakleet area's infrastructure, built environment, and utilities adjacent embankments and shorelines.

Coastal scour, sometimes referred to as tidal, bluff, or beach erosion, may other times encompass different categories altogether. For this profile, tidal, bluff and beach erosion will be nested within the term erosion.

Land scour, no matter the source results in lost beach, shoreline, or dune material from natural activity or human influences. Coastal damage occurs throughout the area roughly from the top of the bluff out into the near-shore region to about the 30 feet water depth. It is measured as the rate of change in the position or horizontal displacement of a shoreline over a period of time. Bluff recession is the most visible aspect of coastal erosion because of the dramatic change it causes to the landscape. As a result, this aspect of coastal erosion usually receives the most attention.

High water flow forces are embodied in waves, currents, and winds; surface and ground water flow; freeze-thaw cycles may also play a role. Not all of these forces may be present at any particular location. Coastal scour can occur from rapid, short-term daily, seasonal, or annual natural events such as waves, storm surge, wind, coastal storms, and flooding, or from human activities including boat wakes and dredging. The most dramatic erosion often occurs during storms, particularly because the highest energy waves are generated under storm conditions.

Scour damages may also be due to multi-year impacts and long-term climatic change such as sea-level rise, lack of sediment supply, subsidence, or long-term human factors such as aquifer depletion or the construction of shore protection structures and dams. Attempts to control erosion using shoreline protective measures such as groins, jetties, seawalls, or revetments can lead to increased erosion.

Riverine Scour results from the force of flowing water and ice formations in and adjacent to river channels. This scouring affects the river the channel, river bed and banks and can alter or preclude any channel navigation or riverbank development. In less stable braided channel reaches, scour, and material deposition are constant issues. In more stable meandering channels, scour episodes may only occasionally occur from human activities including boat wakes and dredging.

Attempts to control scour using shoreline protective measures such as groins, jetties, levees, or revetments can lead to increased embankment loss or damage.

Land surface loss results from high flowing surface water across roads due to poor or improper drainage. These events typically occur from rain and snowmelt run-off.

Event Recurrence Intervals

Many flood damages are predictable based on rainfall and seasonal thaw patterns. Most of the annual precipitation is received from April through October with August being the wettest. This rainfall leads to flooding in early/late summer and/or fall. Spring snowmelt increases runoff, which can cause excessive surface flooding. It also breaks riverine winter ice cover, exacerbating localized ice-jam flood or coastal ice override damage impacts.

5.3.2.2 History

The DHS&EM Disaster Cost Index delineates historical flood events affecting the City. The index lists the following events:

> *"**04-209 03 Fall Sea Storm (AK-04-209) Declared January 29, 2004 by Governor Murkowski.** A series of sea storms with high winds and tidal surge during the period of November 1 to November 24, 2003 caused damages in the communities of **Unalakleet**, Diomede, and Port Heiden. Damage was also reported by the Department of Transportation. The City of **Unalakleet** and Port Heiden declared local emergencies and Diomede requested assistance in a letter to the Division of Homeland Security and Emergency Management. The Department of Transportation reported damages in Nome on the Nome-Counsel Road (MP 22 and 23.8) and at the **Unalakleet** airport. The City of **Unalakleet** had a large quantity of debris deposited throughout the road system. Damages to a gabion protection wall, roads and exposure of a water line were also experienced. Port Heiden experienced tidal erosion that exposed two grave sites, a power line and endangered a road. The US Air Force, under the coordination of the Division of Homeland Security and Emergency Management, addressed the issue of the two grave sites. Disaster Assistance for Emergency Protective Measures and Permanent Work category C for the City of Port Heiden, the Department of Transportation and **Unalakleet,** category F for Port Heiden and debris removal for **Unalakleet** were approved under the State Public Assistance Program. No Federal Disaster Assistance was requested. No Hazard Mitigation was applicable. The total for this disaster is approximately $654K. This is for Public Assistance for 4 potential applicants with 5 PW's.*
>
> ***04-211 2004 Bering Strait Sea Storm declared October 28, 2004 by Governor Murkowski then FEMA declared (DR-1571) on November 15, 2004. Amended declaration to extend incident to October 24, 2004.** Between October 18 and 20, 2004, a severe winter storm with strong winds and extreme tidal surges occurred along the Western Alaska coastline, which resulted in severe damage and threat to life and property, specifically in the Bering Strait Regional Educational Attendance Area (REAA), including Elim, Nome, Koyuk, Shaktoolik, **Unalakleet**, and other communities; in the Northwest Artic Borough, including Kivalina, Kotzebue, and other communities; and in the City of Mekoryuk; with potentially unidentified damages in adjacent areas, and additional storm surges likely from continuing weather patterns in this area Alaska. Conditions that exist in the coastal communities of the Northwest Artic as a result of this disaster: severe damage to roadways, power distribution systems, and drain fields. Conditions that exist in the coastal communities of the Bering Strait REAA as a result of this disaster: severe damage to gabions (used to protect shoreline), major damage to coastal highways and roads, damage to water and septic systems, damage to a bridge,*

damage to power distribution systems, damage to fuel storage tanks, fuel spills, and property damage. Conditions that exist in the City of Mekoryuk as a result of this disaster: major damage to sea wall and damage to roadways. On November 16, 2004, the declaration was amended to reflect a more accurate timeframe of the disaster. The City of St. George appealed the denial of funding decision for the breakwater. The appeal was granted, which increased the original estimate for total funding of this disaster by more than $3 million. The dates of the severe storm were changed to October 18 through October 24, 2004. Individual assistance totaled $1 million for 271 applicants. Public Assistance total $13 million for 60 potential applicants with 125 PW's. Hazard Mitigation totaled $800K. The total for this disaster is $17 million.

06-215 2005 West Coast Storm declared October 24, 2005 by Governor Murkowski then FEMA declared (DR-1618) on December 9, 2005. *Beginning on September 22, 2005 and continuing through September 26, 2005, a powerful fall sea storm produced high winds combined with wind-driven tidal surges resulting in severe and widespread coastal flooding and a threat to life and property in the Northwest Arctic Borough, and numerous communities within the Bering Strait (REAA 7), the Kashunamiut (REAA 55), the Lower Yukon (REAA 32) and the Lower Kuskokwim (REAA 31) Rural Education Attendance Areas including the cities of Nome, Kivalina, Unalakleet, Golovin, Tununak,* ***Unalakleet****, Chevak, Mekoryuk and Napakiak. The following conditions existed as a result of this disaster: sever damage to personal residences requiring evacuation and sheltering of the residents; to businesses; to drinking water systems, electrical distribution systems, local road systems, airports, seawalls, and other public infrastructure; and to individual personal and real property; necessitating emergency protective measures and temporary and permanent repairs. On October 25, 2005, a request for a federal time extension was submitted. On December 9, 2005 a presidential disaster was declared (DR-1618) for Public Assistance for the Northwest Arctic Borough, Bering Strait REAA, Kashunamiut REAA (Chevak) and the Lower Kuskokwim REAA however, they failed to include the Lower Yukon REAA in the federal declaration. The State will write Project Worksheets for the Lower Yukon REAA under or State Public Assistance Declaration. Individual Assistance total is estimated at $209K, with 220 applicants" (DHS&EM 2014).*

The 2011 US Army Corp of Engineers Floodplain Manager's reported stated:

"The flood of record (November 1965) reached an elevation of approximately 18 ft MSL. This is estimated to represent the 100-year flood elevation. The November 1974 flood was the next highest flood, which was about 3 ft lower than the 1965 flood" (USACE 2011).

Flood or high water flow induced erosion events

The Army Corp of Engineers (USACE) completed an erosion survey for the City of Unalakleet during their 2009 Alaska Baseline Erosion Assessment. The report listed the community as having a "Priority" erosion threat. The Erosion Information Paper reported the following erosion problems or issues associated with the Unalakleet River and Norton Sound.

*"**Historical Erosion Protection Costs***

In 2000 the Natural Resource Conservation Service (NRCS) constructed 1,400 feet of gabions (wire baskets filled with rock) beginning at the upstream end of the fish processing plant on the Unalakleet River and extending around the end of the spit

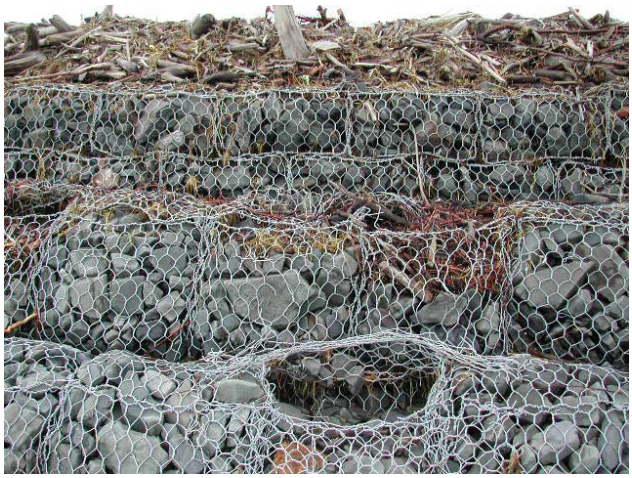
approximately 1,000 feet with a cost of about $1.3 million. A late November storm in 2003 caused severe damage to the gabions.

The State of Alaska signed a disaster declaration for this area and the community is applying for funding to repair the gabions. The estimated remaining life of the gabions ranges between 2 and 10 years. Failure would cause site-specific damage to structures and facilities, but complete loss of the community is not expected" (USACE 2009).

Figures 5-4 and 5-5 are photos of erosion control efforts by the state from 1983 to 2004, which totaled almost $2 million. (USACE 2009)

Sagging Gabion Wall

Figure 5-4 Mitigation Efforts in Unalakleet



Typical Gabion Cell Rupture

Figure 5-5 Gabion Cell Failures in Unalakleet

The City's current LEDP depicts (Figure 5-6) a typical community gabion protection effort.

Figure 5-6 Rock Filled Gabion Bank Protection (Unalakleet LEDP)

5.3.2.3 Location, Extent, Impact, and Future Events Probability

Location

The entire community of Unalakleet is at risk for flooding and the shoreline area is at risk of coastal storm surges and scoring from waves.

According to the 2009 USCOE Alaska Baseline Erosion Paper for Unalakleet: the airstrip, near the coast about 1.5 miles north from the community, is generally protected from erosion by sand dunes along the Bering Sea, however, storm waves pound into and overtop the small sand dunes and can cause considerable damage.

Extent

Floods are described in terms of their extent (including the horizontal area affected and the vertical depth of floodwaters) and the related probability of occurrence.

The following factors contribute to riverine flooding frequency and severity:

- Rainfall intensity and duration
- Antecedent moisture conditions
- Watershed conditions, including terrain steepness, soil types, amount, vegetation type, and development density
- The attenuating feature existence in the watershed, including natural features such as swamps and lakes and human-built features such as dams
- The flood control feature existence, such as levees and flood control channels
- Flow velocity
- Availability of sediment for transport, and the bed and embankment watercourse erodibility
- location related to identified-historical flood elevation

The 2009 USACE Baseline Erosion Assessment states that,

> *"Catastrophic failure of the sand spit is not expected; however, the community will continue to suffer property damage and loss from erosion. Unalakleet suffers from erosion on both the ocean side (Norton Sound) and from the Unalakleet River. The erosion rate on the Norton Sound side averages 1 foot per year and occurs when storm surge attacks the spit, washing away beach material. The rate of erosion from the Unalakleet River is more severe and averages 2 feet per year.*
>
> *At current erosion rates the fish processing plant and some residences at the mouth of the Unalakleet River could be lost within 2 to 10 years. The community's water line running along Norton Sound could also be lost, as well as some parts of the airport. Over time, erosion will continue to capture some residences, roads, and utilities but the community as a whole will not be destroyed" (USACE 2009).*

Based on past event history and the criteria identified in Table 7, the extent of flooding and shoreline scouring with resultant damages to infrastructure and their protective embankments in the City are considered "Critical". The category means that there could be a complete shutdown of critical facilities for at least two weeks. Injuries and/or illnesses could result in permanent disability and more than 25 percent of property could be severely damaged.

Impact

Nationwide, floods result in more deaths than any other natural hazard. Physical damage from floods includes the following:

- Structure flood inundation, causing water damage to structural elements and contents
- High water flow storm surge floods scour (erode) coastal embankments, coastal protection barriers, and result in infrastructure and residential property losses. Additional impacts can include roadway embankment collapse, foundations exposure, and damaging impacts
- Damage to structures, roads, bridges, culverts, and other features from high-velocity flow and debris carried by floodwaters. Such debris may also accumulate on bridge piers and in culverts, decreasing water conveyance and increasing loads which may cause feature overtopping or backwater damages
- Sewage, hazardous or toxic materials release, materials transport from wastewater treatment plant or sewage lagoon inundation, storage tank damages, and/or severed pipeline damages can be catastrophic to rural remote communities

Floods also result in economic losses through business and government facility closure, communications, utility (such as water and sewer), and transportation services disruptions. Floods result in excessive expenditures for emergency response, and generally disrupt the normal function of a community.

Impacts and problems also related to flooding are deposition as well as embankment, coastal erosion, and/or wind. Deposition is the accumulation of soil, silt, and other particles on a river bottom or delta. Deposition leads to the destruction of fish habitat, presents a challenge for navigational purposes, and prevents access to historical boat and barge landing areas. Deposition also reduces channel capacity, resulting in increased flooding or bank erosion. Embankment erosion involves material removal from the stream or river banks, coastal bluffs, and dune areas.

When bank erosion is excessive, it becomes a concern because it results in loss of embankment vegetation, fish habitat, and land, property, and essential infrastructure (BKP 1988).

The 2009 Alaska Baseline Erosion study designated Unalakleet as a "Priority Action Community" community, which is defined as:

> *". . . After subsequent investigation, the Corps designated 26 communities "Priority Action Communities"—indicating that they should be considered for immediate action by either initiating an evaluation of potential solutions or continuing with ongoing efforts to manage erosion. The erosion issues in these communities warrant immediate and substantial Federal, State, or other intervention. In some cases, action is needed to continue funding for projects that are underway and funded by Federal, State, Tribal, and/or local entities" (USACE 2009).*

The 2009 USACE summed up future impacts that could occur in Unalakleet in the following paragraphs regarding residential structures, commercial and public buildings, and infrastructure impacts.

> ***"Residential Structures Assumptions***
>
> *Some housing is be expected to be lost if the bank protection is not be repaired or replaced. These losses would be limited in nature to areas directly adjacent to gabion wall failure.*
>
> ***Commercial and Public Buildings Assumptions***
>
> *The Unalakleet Fisheries processing plant is subject to erosion loss within the 50-year planning horizon. Due to the specialized nature of fish processing and the generally large pieces of equipment, it is assumed that moving the building and equipment out of harm's way is not an option.*
>
> ***Infrastructure Assumptions***
>
> *Various site specific roads, electric and telephone lines, and water and sewer lines in the community are subject to loss, though the infrastructure as a whole is not be expected to be destroyed.*
>
> *Catastrophic failure of the sand spit is not expected; however, the community will continue to suffer property damage and loss from erosion. Unalakleet suffers from erosion on both the ocean side (Norton Sound) and from the Unalakleet River. The erosion rate on the Norton Sound side averages 1 foot per year and occurs when storm surge attacks the spit, washing away beach material. The rate of erosion from the Unalakleet River is more severe and averages 2 feet per year.*
>
> *At current erosion rates the fish processing plant and some residences at the mouth of the Unalakleet River could be lost within 2 to 10 years. The community's water line running along Norton Sound could also be lost, as well as some parts of the airport. Over time, erosion will continue to capture some residences, roads, and utilities but the community as a whole will not be destroyed" (USACE 2009).*

Figure 5-7 shows Unalakleet as a "Priority Action Community" that has been determined to have erosion issues that require immediate action.

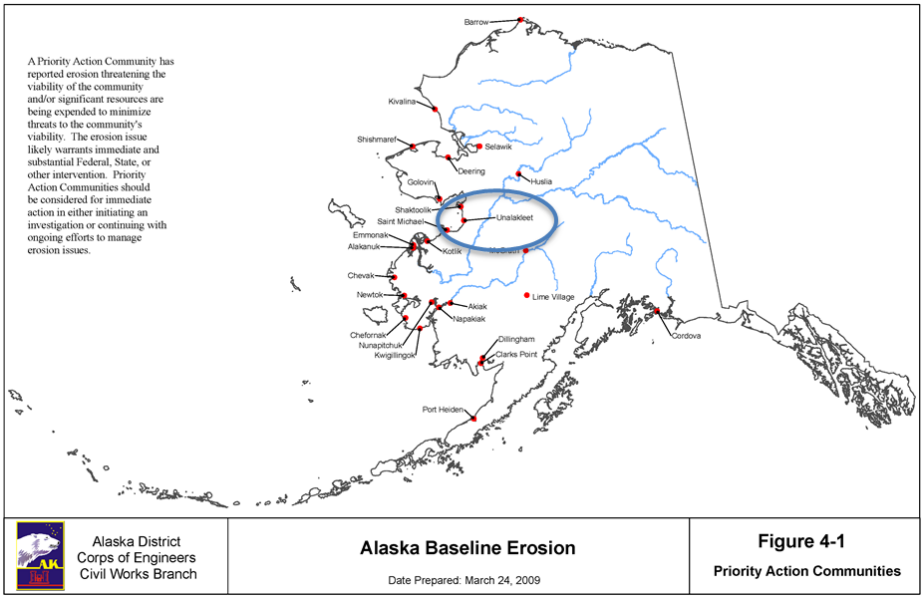


Figure 5-7 Unalakleet – Priority Action Community (USACE 2009)

5

Recurrence Probability

Based on previous occurrences, 2009 USACE report, and criteria in Table 8, it is "Likely" a future erosion event will occur with a 1 in 3 year (1/3=33 percent) chance with a history of events greater than 20 percent but less than or equal to 33 percent likely per year.

The 2009 USACE study, predicts the community's shoreline will recede at a predictable rate (Figure 10) by the year 2054.

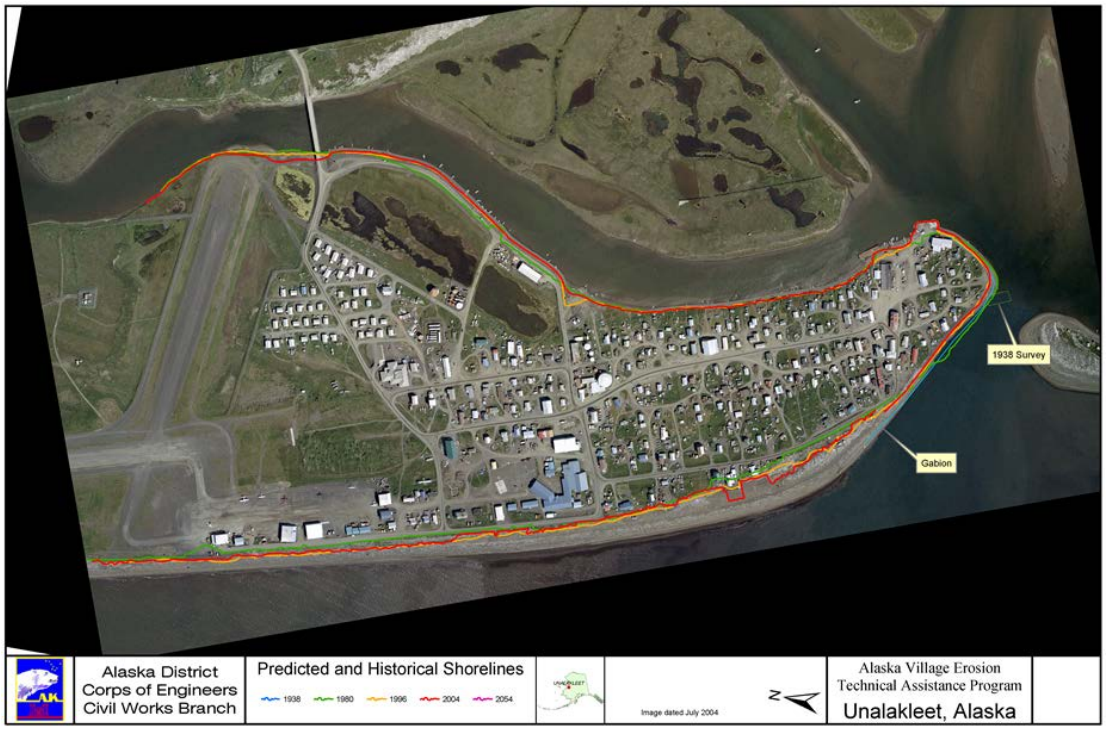


Figure 5-8 Unalakleet Predicted Shoreline in 2054 (USACE 2009)

5.3.3 Severe Weather

5.3.3.1 Nature

Severe weather occur throughout Alaska with extremes experienced by the City that includes thunderstorms, lightning, hail, heavy and drifting snow, freezing rain/ice storm, extreme cold, and high winds. The City experiences periodic severe weather events such as:

Climate Change influences the environment, particularly historical weather patterns. Climate change and El Niño/La Niña Southern Oscillation (ENSO) influences create increased weather volatility such as hotter summers (drought) and colder winters, intense thunderstorms, lightning, hail, snow storms, freezing rain/ice storms, high winds and even a few tornadoes within and around Alaska.

ENSO is comprised of two weather phenomena known as El Niño and La Niña. While ENSO activities are not a hazard, they can lead to severe weather events and large-scale damage throughout Alaska's varied jurisdictions. Direct correlations were found linking ENSO events to severe weather across the Pacific Northwest, particularly increased flooding (riverine, coastal storm surge) and severe winter storms. Therefore, increased awareness and understanding how ENSO events potentially impact Alaska's vastly differing regional weather.

Climate change is described as a phenomena of water vapor, carbon dioxide, and other gases in the earth's atmosphere acting like a blanket over the earth, absorbing some of the heat of the sunlight-warmed surfaces instead of allowing it to escape into space. The more gasses, the thicker the blanket, the warmer the earth. Trees and other plants cannot absorb carbon dioxide through photosynthesis if foliage growth is inhibited. Therefor carbon dioxide builds up and changes precipitation patterns, increases storms, wildfires, and flooding frequency and intensity; and substantially changes flora, fauna, fish, and wildlife habitats.

The governor's Alaska's Climate, Ecosystems & Human Health Work Group is tasked with determining how the changing ecosystems may impact human health and to identify, prioritize, and educate Alaskan's about the connection between their health and changing environmental patterns.

Heavy Rain occurs rather frequently over the coastal areas along the Bering Sea and the Gulf of Alaska. Heavy rain is a severe threat to the area**.**

Heavy Snow generally means snowfall accumulating to four inches or more in depth in 12 hours or less or six inches or more in depth in 24 hours or less.

Drifting Snow is the uneven distribution of snowfall and snow depth caused by strong surface winds. Drifting snow may occur during or after a snowfall.

Freezing Rain and Ice Storms occur when rain or drizzle freezes on surfaces, accumulating 12 inches in less than 24 hours. Ice accumulations can damage trees, utility poles, and communication towers which disrupts transportation, power, and communications.

Extreme Cold is the definition of extreme cold varies according to the normal climate of a region. In areas unaccustomed to winter weather, near freezing temperatures are considered "extreme". In Alaska, extreme cold usually involves temperatures between -20 to -50°F. Excessive cold may accompany winter storms, be left in their wake, or can occur without storm

activity. Extreme cold accompanied by wind exacerbates exposure injuries such as frostbite and hypothermia.

High Winds occur in Alaska when there are winter low-pressure systems in the North Pacific Ocean and the Gulf of Alaska. Alaska's high wind can equal hurricane force but fall under a different classification because they are not cyclonic nor possess other hurricane characteristics.

Strong winds occasionally occur over the interior due to strong pressure differences, especially where influenced by mountainous terrain, but the windiest places in Alaska are generally along the coastlines.

Winter Storms include a variety of phenomena described above and as previously stated may include several components; wind, snow, and ice storms. Ice storms, which include freezing rain, sleet, and hail, can be the most devastating of winter weather phenomena and are often the cause of automobile accidents, power outages, and personal injury. Ice storms result in the accumulation of ice from freezing rain, which coats every surface it falls on with a glaze of ice. Freezing rain is most commonly found in a narrow band on the cold side of a warm front, where surface temperatures are at or just below freezing temperatures. Typically, ice crystals high in the atmosphere grow by collecting water vapor molecules, which are sometimes supplied by evaporating cloud droplets. As the crystals fall, they encounter a layer of warm air where they particles melt and collapse into raindrops. As the raindrops approach the ground, they encounter a layer of cold air and cool to temperatures below freezing. However, since the cold layer is so shallow, the drops themselves do not freeze, but rather, are supercooled, that is, in liquid state at below-freezing temperature. These supercooled raindrops freeze on contact when they strike the ground or other cold surfaces.

Snowstorms happen when a mass of very cold air moves away from the polar region. As the mass collides with a warm air mass, the warm air rises quickly and the cold air cuts underneath it. This causes a huge cloud bank to form and as the ice crystals within the cloud collide, snow is formed. Snow will only fall from the cloud if the temperature of the air between the bottom of the cloud and the ground is below 40 degrees Fahrenheit. A higher temperature will cause the snowflakes to melt as they fall through the air, turning them into rain or sleet. Similar to ice storms, the effects from a snowstorm can disturb a community for weeks or even months. The combination of heavy snowfall, high winds and cold temperatures pose potential danger by causing prolonged power outages, automobile accidents and transportation delays, creating dangerous walkways, and through direct damage to buildings, pipes, livestock, crops and other vegetation. Buildings and trees can also collapse under the weight of heavy snow.

Winter storm floods are discussed in Section 5.3.3.

Figure 5-9 displays Alaska's annual rainfall map based on Parameter-elevation Regressions on Independent Slopes Model (PRISM) that combines climate data from NOAA and Natural Resources Conservation Service (NRCS) climate stations with a digital elevation model to generate annual, monthly, and event-based climatic element estimates such as precipitation and temperature.

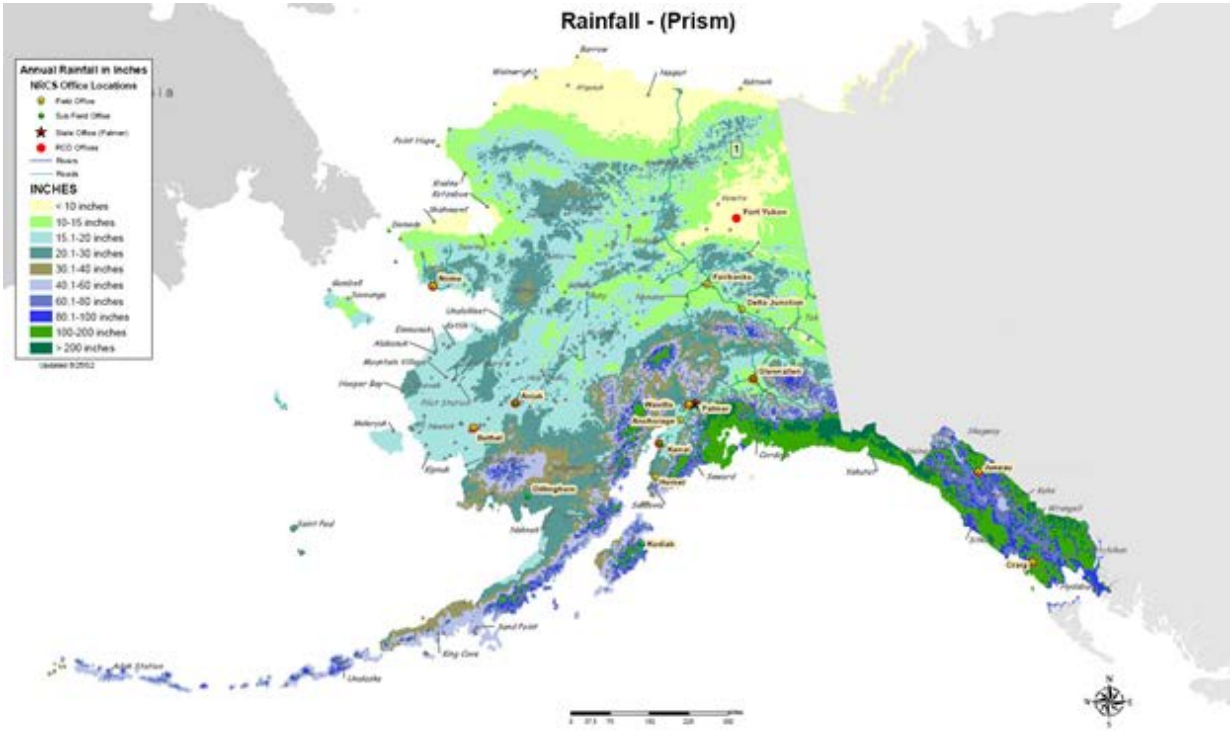


Figure 5-9 Statewide Rainfall Map (PRISM 2012)

5.3.3.2 History

The City is continually impacted by severe weather events. Hurricane force wind, storm surge, and cold typically have disastrous results.

Climate Changes were studied by the University of Alaska Fairbanks (UAF) Arctic Climate Impact Assessment (ACIA); they describe recent weather changes and how they impact Alaska:

> *"**18.3.3.1. Changes in climate***
>
> *Alaska experienced an increase in mean annual temperature of about 2 to 3 ºC between 1954 and 2003…Winter temperatures over the same period increased by up to 3 to 4 ºC in Alaska and the western Canadian Arctic, but Chukotka experienced winter cooling of between 1 and 2 ºC…*
>
> *The entire region, but particularly Alaska and the western Canadian Arctic, has undergone a marked change over the last three decades, including a sharp reduction in snow-cover extent and duration, shorter river- and lake ice seasons, melting of mountain glaciers, sea-ice retreat and thinning, permafrost retreat, and increased active layer depth. These changes have caused major ecological and socio-economic impacts, which are likely to continue or worsen under projected future climate change. Thawing permafrost and northward movement of the permafrost boundary are likely to increase slope instabilities, which will lead to costly road replacement and increased maintenance costs for pipelines and other infrastructure. The projected shift in climate is likely to convert some forested areas into bogs when ice-rich permafrost thaws. Other areas of Alaska, such as the North Slope, are expected to continue drying. Reduced sea-ice extent and thickness, rising sea level, and increases in the length of the open-water season in*

the region will increase the frequency and intensity of storm surges and wave development, which in turn will increase coastal erosion and flooding…

18.3.3.4. Impacts on people's lives

Traditional lifestyles are already being threatened by multiple climate-related factors, including reduced or displaced populations of marine mammals, seabirds, and other wildlife, and reductions in the extent and thickness of sea ice, making hunting more difficult and dangerous. Indigenous communities depend on fish, marine mammals, and other wildlife, through hunting, trapping, fishing, and caribou/reindeer herding. These activities play social and cultural roles that may be far greater than their contribution to monetary incomes. Also, these foods from the land and sea make significant contributions to the daily diet and nutritional status of many indigenous populations and represent important opportunities for physical activity among populations that are increasingly sedentary…" (ACIA 2015)

DHS&EM's latest (201) Disaster Cost Index and the 2002 Comprehensive Plan listed the following statewide severe weather disaster event, which may have affected the area.

5

DHS&EM's Disaster Cost Index records the following severe weather disaster events which may have affected the area:

*""**23. Unalakleet, March 5, 1984.** Extreme cold for a period of 6-7 weeks caused a drastic reduction in the city water supply and eventual freezing of a major loop on the city water system. Public assistance has granted to repair/replace portions of the water system.*

***83. Omega Block Disaster, January 28, 1989 & FEMA declared (DR-00826) on May 10, 1989.** The Governor declared a statewide disaster to provide emergency relief to communities suffering adverse effects of a record breaking cold spell, with temperatures as low as -85 degrees. The State conducted a wide variety of emergency actions, which included: emergency repairs to maintain & prevent damage to water, sewer & electrical systems, emergency resupply of essential fuels & food, & DOT/PF support in maintaining access to isolated communities.*

***04-209 03 Fall Sea Storm Declared January 29, 2004 by Governor Murkowski.** A series of sea storms with high winds and tidal surge during the period of November 1 to November 24, 2003 caused damages in the communities of **Unalakleet**, Diomede, and Port Heiden. Damage was also reported by the Department of Transportation. The City of Unalakleet and Port Heiden declared local emergencies and Diomede requested assistance in a letter to the Division of Homeland Security and Emergency Management. The Department of Transportation reported damages in Nome on the Nome-Counsel Road (MP 22 and 23.8) and at the Unalakleet airport. The City of Unalakleet had a large quantity of debris deposited throughout the road system. Damages to a gabion protection wall, roads and exposure of a water line were also experienced. Port Heiden experienced tidal erosion that exposed two grave sites, a power line and endangered a road. The US Air Force, under the coordination of the Division of Homeland Security and Emergency Management, addressed the issue of the two grave sites. Disaster Assistance for Emergency Protective Measures and Permanent Work category C for the City of Port Heiden, the Department of Transportation and Unalakleet, category F for Port Heiden and debris removal for Unalakleet were approved under the State Public Assistance Program. No Federal Disaster Assistance was requested. No Hazard Mitigation was applicable. The total for this disaster is approximately $654K. This is for Public Assistance for 4 potential applicants with 5 PW's.*

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06-215 2005 West Coast Storm declared October 24, 2005 by Governor Murkowski then FEMA declared (DR-1618) on December 9, 2005. *Beginning on September 22, 2005 and continuing through September 26, 2005, a powerful fall sea storm produced high winds combined with wind-driven tidal surges resulting in severe and widespread coastal flooding and a threat to life and property in the Northwest Arctic Borough, and numerous communities within the Bering Strait (REAA 7), the Kashunamiut (REAA 55), the Lower Yukon (REAA 32) and the Lower Kuskokwim (REAA 31) Rural Education Attendance Areas including the cities of Nome, Kivalina,* ***Unalakleet****, Golovin, Tununak, Hooper Bay, Chevak, Mekoryuk and Napakiak. The following conditions existed as a result of this disaster: sever damage to personal residences requiring evacuation and sheltering of the residents; to businesses; to drinking water systems, electrical distribution systems, local road systems, airports, seawalls, and other public infrastructure; and to individual personal and real property; necessitating emergency protective measures and temporary and permanent repairs. On October 25, 2005, a request for a federal time extension was submitted. On December 9, 2005 a presidential disaster was declared (DR-1618) for Public Assistance for the Northwest Arctic Borough, Bering Strait REAA, Kashunamiut REAA (Chevak) and the Lower Kuskokwim REAA however, they failed to include the Lower Yukon REAA in the federal declaration. The State will write Project Worksheets for the Lower Yukon REAA under or State Public Assistance Declaration. Individual Assistance total is estimated at $209K, with 220 applicants. Public Assistance is around $3.63 million for 16 potential applicants with around 20 PW's. Hazard Mitigation total is $254K. The total cost for disaster is estimated at $5.33 million" (DHS&EM 2014).*

The Unalakleet area is historically impacted by severe weather events. The UAF's Scenarios Network for Alaska and Arctic Planning depict the City's historic and future predicted precipitation and temperatures. (Figures 5-10 and 5-11) Note that both precipitation and temperature are projected to increase due to anticipated climatic changes. Rain and snow

variations could dramatically determine wildland fire potential as well as adversely impact future subsistence food source and wildlife habitat support capacity.

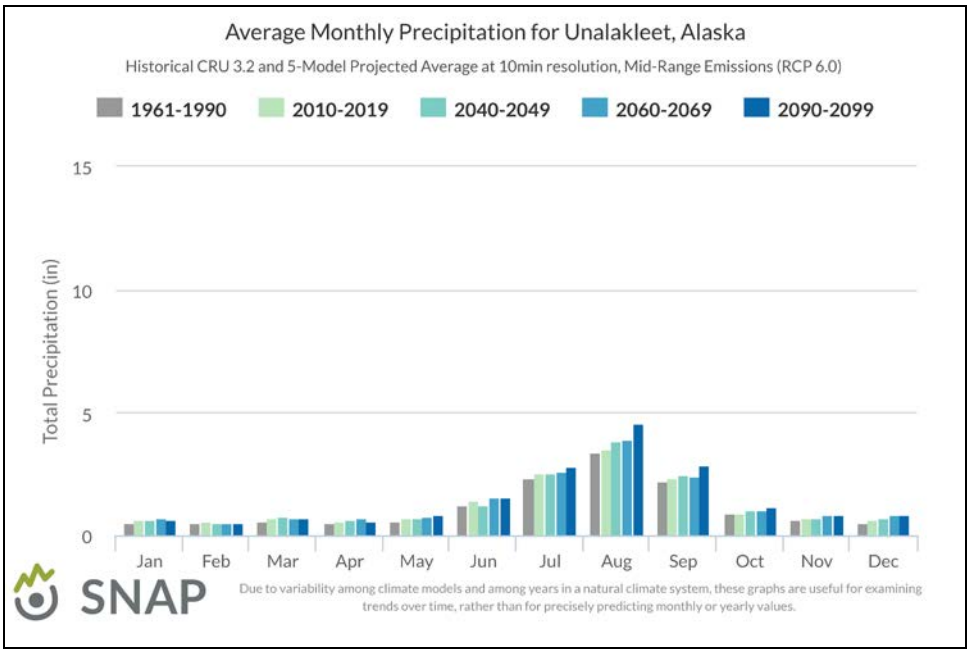

Figure 5-10 Unalakleet's Historic and Predicted Precipitation (SNAP 2012)

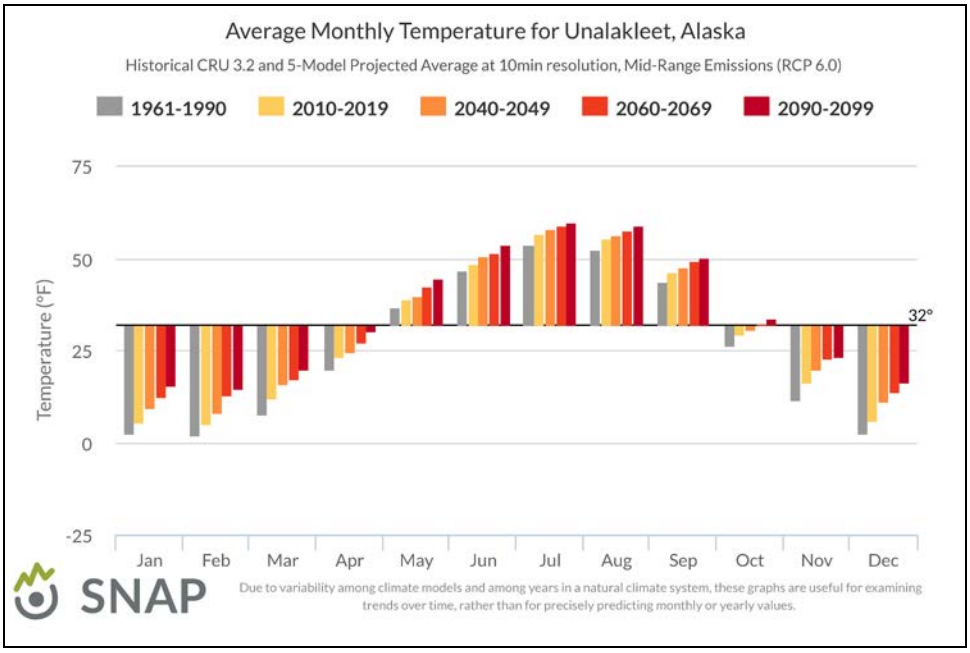

Figure 5-11 Unalakleet's Historic and Predicted Temperatures (SNAP 2012)

Table 5-5 delineates the Western Regional Climate Center (WRCC) summarized weather data. Actual community temperatures and depths may vary due to their relative proximity to the WSO. (http://www.wrcc.dri.edu/summary/Climsmak.html)

Table 5-5 Monthly Weather Summaries 1981 to 2010

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual
Ave Max Temp (F)	14.6	13.6	21.4	31.8	47.6	58.0	62.8	59.1	50.9	34.7	20.3	17.4	36.1
Ave Min Temp	-1.8	-4.9	0.9	13.7	30.8	41.9	48.4	45.0	36.0	20.6	5.3	0.9	19.8
Ave Total Rain	0.55	0.54	0.49	0.43	0.92	1.29	2.67	4.26	3.00	1.39	0.75	0.62	16.90

(WRCC 2015)

5.3.3.3 Location, Extent, Impact, and Recurrence Probability

Location

Unalakleet relies on several agencies for financial assistance to enable them to withstand the area's intense weather. For example, the 2014-2019 Unalakleet Local Economic Development Plan depicts a few successful home winterization projects funded by the Bering Strait Regional Housing Authority's (BSTHA) grant program. Winterization is essential for successfully mitigating the harsh environment to avoid future severe winter weather damages. Figure 5-12 depicts on of their newly winterized homes.

5

Bering Strait Regional Housing Authority (BSRHA) guarantees repairs for new home-owners during the first year under contract. But home-owners are responsible for costs beyond that. Some residents express concern to have better understanding of regulations required for finance and other options.

Newly weatherized home in Unalakleet

Figure 5-12 Winterized Home in Unalakleet (Unalakleet 2014)

Extent

The entire Unalakleet area is equally vulnerable to the severe weather effects. They experience severe storm conditions with moderate snow depths; wind speeds exceeding 90 mph; and extreme low temperatures that can reach as low as -48ºF.

Based on past severe weather events and the criteria identified in Table 7, the extent of severe weather in the City are considered "Limited" where injuries do not result in permanent disability, complete shutdown of critical facilities occurs for more than one week, and more than 10 percent of property is severely damaged.

Impact

The intensity, location, and the land's topography influence a severe weather event's impact within a community. Hurricane force winds, rain, snow, and storm surge can be expected to impact the entire City.

Heavy snow can immobilize a community by bringing transportation to a halt. Until the snow can be removed, airports and roadways are impacted, even closed completely, stopping the flow of supplies and disrupting emergency and medical services. Accumulations of snow can cause roofs to collapse and knock down trees and power lines. Heavy snow can also damage light aircraft and sink small boats. A quick thaw after a heavy snow can cause substantial flooding. The cost of snow removal, repairing damages, and the loss of business can have severe economic impacts on cities and towns.

Injuries and deaths related to heavy snow usually occur as a result of vehicle and or snow machine accidents. Casualties also occur due to overexertion while shoveling snow and hypothermia caused by overexposure to the cold weather.

Extreme cold can also bring transportation to a halt. Aircraft may be grounded due to extreme cold and ice fog conditions, cutting off access as well as the flow of supplies to communities. Long cold spells can cause rivers to freeze, disrupting shipping and increasing the likelihood of ice jams and associated flooding.

Extreme cold also interferes with the proper functioning of a community's infrastructure by causing fuel to congeal in storage tanks and supply lines, stopping electric generation. Without electricity, heaters and furnaces do not work, causing water and sewer pipes to freeze or rupture. If extreme cold conditions are combined with low or no snow cover, the ground's frost depth can increase, disturbing buried pipes. The greatest danger from extreme cold is its effect on people. Prolonged exposure to the cold can cause frostbite or hypothermia and become life-threatening. Infants and elderly people are most susceptible. The risk of hypothermia due to exposure greatly increases during episodes of extreme cold, and carbon monoxide poisoning is possible as people use supplemental heating devices.

Recurrence Probability

Based on previous occurrences and the criteria identified in Table 5-3, it is "Likely" a severe storm event will occur in the next three years, an event has up to 1 in 3 years (1/3=33 percent) chance of occurring with history demonstrating a greater than 20 percent but less than or equal to 33 percent likely per year.

5.3.4 Wildland Fire

5.3.4.1 Nature

A wildland fire is a wildfire type that spreads through vegetation consumption. It often begins unnoticed, spreads quickly, and is usually signaled by dense smoke that may be visible from miles around. Wildland fires can be caused by human activities (such as unattended burns or campfires) or by natural events such as lightning. Wildland fires often occur in forests or other areas with ample vegetation. In addition to wildland fires, wildfires can be classified as tundra fires, urban fires, interface or intermix fires, and prescribed burns.

The following three factors contribute significantly to wildland fire behavior and can be used to identify wildland fire hazard areas.

Topography describes slope increases, which influences the rate of wildland fire spread increases. South-facing slopes are also subject to more solar radiation, making them drier and thereby intensifying wildland fire behavior. However, ridge tops may mark the end of wildland fire spread since fire spreads more slowly or may even be unable to spread downhill.

Fuel is the type and condition of vegetation plays a significant role in the occurrence and spread of wildland fires. Certain types of plants are more susceptible to burning or will burn with greater intensity. Dense or overgrown vegetation increases the amount of combustible material available to fuel the fire (referred to as the “fuel load”). The ratio of living to dead plant matter is also important. Climate change is deemed to increase wildfire risk significantly during periods of prolonged drought as the moisture content of both living and dead plant matter decreases. The fuel load continuity, both horizontally and vertically, is also an important factor.

Weather is the most variable factor affecting wildland fire behavior is weather. Temperature, humidity, wind, and lightning can affect chances for ignition and spread of fire. Extreme weather, such as high temperatures and low humidity, can lead to extreme wildland fire activity. Climate change increases the susceptibility of vegetation to fire due to longer dry seasons. By contrast, cooling and higher humidity often signal reduced wildland fire occurrence and easier containment.

The frequency and severity of wildland fires is also dependent on other hazards, such as lightning, drought, and infestations (such as the damage caused by spruce-bark beetle infestations). If not promptly controlled, wildland fires may grow into an emergency or disaster. Even small fires can threaten lives and resources and destroy improved properties. In addition to affecting people, wildland fires may severely affect livestock and pets. Such events may require emergency water/food, evacuation, and shelter.

The indirect effects of wildland fires can be catastrophic. In addition to stripping the land of vegetation and destroying forest resources, large, intense fires can harm the soil, waterways, and the land itself. Soil exposed to intense heat may lose its capability to absorb moisture and support life. Exposed soils erode quickly and enhance rivers and stream siltation, thereby enhancing flood potential, harming aquatic life, and degrading water quality. Lands stripped of vegetation are also subject to increased debris flow hazards.

5.3.4.2 History

The Alaska Interagency Coordination Center (AICC) identified 150 historic tundra/wildland fires that occurred since 1939 within 100 miles of Unalakleet. Table 5-6 lists 28 fires that have occurred since the legacy HMP received FEMA approval.

Table 5-6 Fires within 100 miles of Unalakleet since 1939

Fire Name	Fire Year	Estimated Acres	Latitude	Longitude	Specific Cause
Old Woman	2015	30,000	64.0023	-159.7923	Lightning
Egavik	2015	9,000	64.03	-160.6967	Lightning
Honeymoon	2015	1,200	63.785	-159.3767	Lightning
The Sisters	2014	2,622	63.3832	-161.6425	Lightning
Bear Creek	2013	13,180	63.6967	-159.5883	Lightning
Shaktoolik River	2013	11,700	64.1213	-160.298	Lightning
Old Woman River	2013	5,122	63.7557	-159.7817	Lightning
Ridge Top	2013	2,468	63.722	-159.6683	Lightning
Unalakleet River	2007	380	63.8931	-160.135	Lightning
North Fork Unalakleet River	2007	329	64.2967	-159.7047	Lightning
Papa Willie Creek	2005	117,211	63.65	-159.1167	Lightning
Menotl East	2005	15,814	63.6667	-158.9167	Lightning
Old Woman River	2005	2,489	63.95	-159.5333	Lightning
Rodo River	2004	8,716	64.1933	-159.2767	Lightning
Bear Creek	2004	4,066	63.8633	-159.575	Lightning
Khotol River	2002	50,811	63.9142	-158.6572	Lightning
Gal Sw 94	1994	5,650	63.3333	-158.4167	Lightning

(AICC 2015)

5.3.4.3 Location, Extent, Impact, and Recurrence Probability

Location

Under certain conditions wildland fires may occur near Unalakleet when weather, fuel availability, topography, and ignition sources combine. Since fuels data is not readily available, for the purposes of this plan, all areas outside community limits are considered to be vulnerable to tundra/wildland fire impacts. (Figure 5-13).

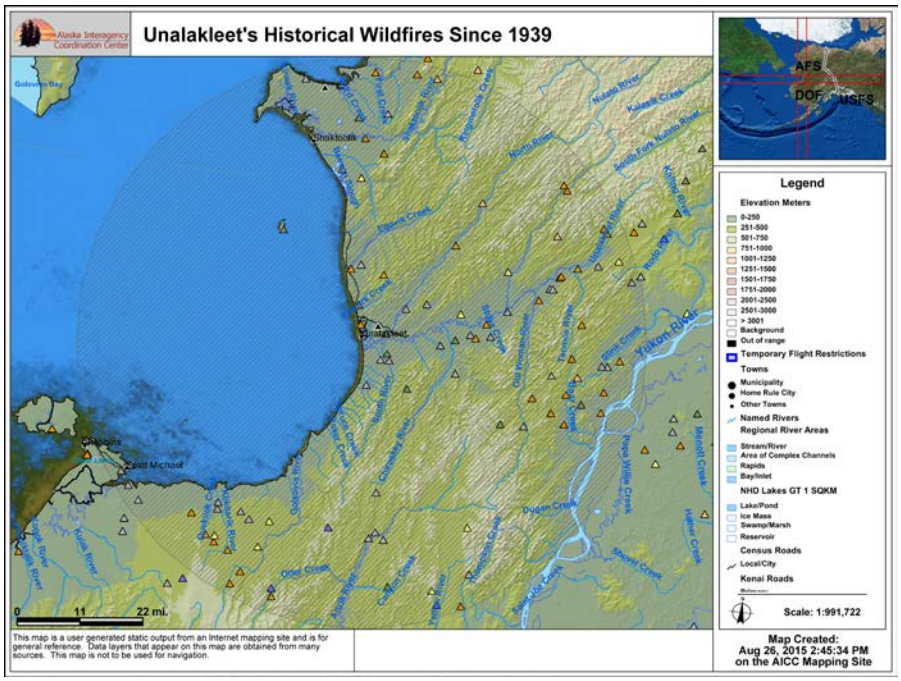

Figure 5-13 Historical Fires within 50 miles of Unalakleet (AICC)

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Extent

Generally, fire vulnerability dramatically increases in the late summer and early fall as vegetation dries out, decreasing plant moisture content and increasing the ratio of dead fuel to living fuel. However, various other factors, including humidity, wind speed and direction, fuel load and fuel type, and topography can contribute to the intensity and spread of wildland fires. The common causes of wildland fires in Alaska include lightning strikes and human negligence.

Fuel, weather, and topography influence wildland fire behavior. Fuel determines how much energy the fire releases, how quickly the fire spreads, and how much effort is needed to contain the fire. Weather is the most variable factor. High temperatures and low humidity encourage fire activity while low temperatures and high humidity retard fire spread. Wind affects the speed and direction of fire spread. Topography directs the movement of air, which also affects fire behavior. When the terrain funnels air, as happens in a canyon, it can lead to faster spreading. Fire also spreads up slope faster than down slope.

Based on the number of past wildland fire events, the possibility of structure fires and the criteria identified in Table 7 and the magnitude and severity of impacts in the City are considered "Critical" in that more 10 percent of property could be damaged. Injuries and/or illnesses could result in permanent disability. A complete shutdown of critical facilities may last for at least two weeks. More than 25 percent of property would be severely damaged.

Impact

Impacts of a wildland fire that interfaces with the population center of the could grow into an emergency or disaster if not properly controlled. A small fire can threaten lives and resources and destroy property. In addition to impacting people, wildland fires may severely impact livestock and pets. Such events may require emergency watering and feeding, evacuation, and alternative shelter.

Indirect impacts of wildland fires can be catastrophic. In addition to stripping the land of vegetation and destroying forest resources, large, intense fires can harm the soil, waterways, and the land itself. Soil exposed to intense heat may lose its capability to absorb moisture and support life. Exposed soils erode quickly and enhance siltation of rivers and streams, thus increasing flood potential, harming aquatic life, and degrading water quality.

Fire is recognized as a critical feature of the natural history of many ecosystems. It is essential to maintain the biodiversity and long-term ecological health of the land. The role of wildland fire as an essential ecological process and natural change agent has been incorporated into the fire management planning process and the full range of fire management activities is exercised in Alaska, to help achieve ecosystem sustainability, including its interrelated ecological, economic, and social consequences on firefighters, public safety and welfare; natural and cultural resources threatened; and the other values to be protected dictate the appropriate management response to the fire. In Alaska, and within 50 miles of Unalakleet, the natural fire regime is characterized by a return interval of approximately 150 years due to their tundra vegetation, gently rolling topography.

Recurrence Probability

An important issue related to the wildland or tundra fire probability is the interface fire is increased development along the community's perimeter, accumulation of hazardous wildfire fuels, and the uncertainty of weather patterns that may accompany climate change. These three combined elements are reason for concern and heightened mitigation management of each community's wildland interface areas, natural areas, and open spaces.

Based on the history of wildland fires in the City area, the large number of fires in the area and applying the criteria identified in Table 8, it is "Likely" a wildland or tundra fire event will occur within the next three years. The event has up to 1 in 3 years chance of occurring (1/3=33 percent) and the history of events is equal to or over 20 percent but less than or equal to 33 percent likely each year. Climate change and flammable vegetation species are prolific throughout Alaska's forests and tundra locations.

Section Six outlines the vulnerability process for determining potential losses for the community from various hazard impacts.

6.1 OVERVIEW

A vulnerability analysis predicts the extent of exposure that may result from a hazard event of a given intensity in a given area. The analysis provides quantitative data that may be used to identify and prioritize potential mitigation measures by allowing communities to focus attention on areas with the greatest risk of damage. A vulnerability analysis is divided into eight steps:

1. Asset Inventory
2. Exposure Analysis For Current Assets
3. Repetitive Loss Properties
4. Land Use and Development Trends
5. Vulnerability Analysis Methodology
6. Data Limitations
7. Vulnerability Exposure Analysis
8. Future Development

DMA 2000 and its implementing regulations for current assets, and area future development initiative vulnerability assessment:

DMA 2000 Recommendations
Assessing Risk and Vulnerability, and Analyzing Development Trends §201.6(c)(2)(ii): The risk assessment shall include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community. *All plans approved after October 1, 2008 must also address NFIP insured structures that have been repetitively damaged by floods.* The plan should describe vulnerability in terms of: §201.6(c)(2)(ii)(A): The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas; §201.6(c)(2)(ii)(B): An estimate of the potential dollar losses to vulnerable structures identified in … this section and a description of the methodology used to prepare the estimate. §201.6(c)(2)(ii)(C): Providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions. §201.6(c)(2)(iii): For multi-jurisdictional plans, the risk assessment section must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.
1. REGULATION CHECKLIST
ELEMENT B. Risk Assessment, Assessing Vulnerability, Analyzing Development Trends
B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))
B4. Does the Plan address NFIP insured structures within each jurisdiction that have been repetitively damaged by floods?
C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))
Source: FEMA, March 2015.

Vulnerability assessment requirements include:

- Summarizing the community's vulnerability to each hazard that addresses the impact of each hazard on the community.
- Identifying the types and numbers of RL properties in the identified hazard areas.
- Identifying the types and numbers of existing vulnerable buildings, infrastructure, and critical facilities and, if possible, the types and numbers of vulnerable future development.
- Estimating potential dollar losses to vulnerable structures and the methodology used to prepare the estimate.

Table 6-1 lists Unalakleet's infrastructure hazard vulnerability synopsis.

Table 6-1 Vulnerability Overview

Hazard	Area's Hazard Vulnerability			
	Percent of Jurisdiction's Geographic Area	Percent of Population	Percent of Building Stock	Percent of Critical Facilities and Utilities
Earthquake	100	100	100	100
Flood	100	100	100	100
Ground Failure	100	100	100	100
Weather	100	100	100	100
Wildland Fire	100	100	100	100

6.2 LAND USE AND DEVELOPMENT TRENDS

6.2.1 Land Use

Land use in the City is predominately residential with limited area for commercial services and community (or institutional) facilities.

Figure 6-1 and 6-2 are examples of Unalakleet's ongoing flood impact mitigation actions.

Figure 6-1 Unalakleet Land Use Map - Sheet 1 (DCRA 2014)

6

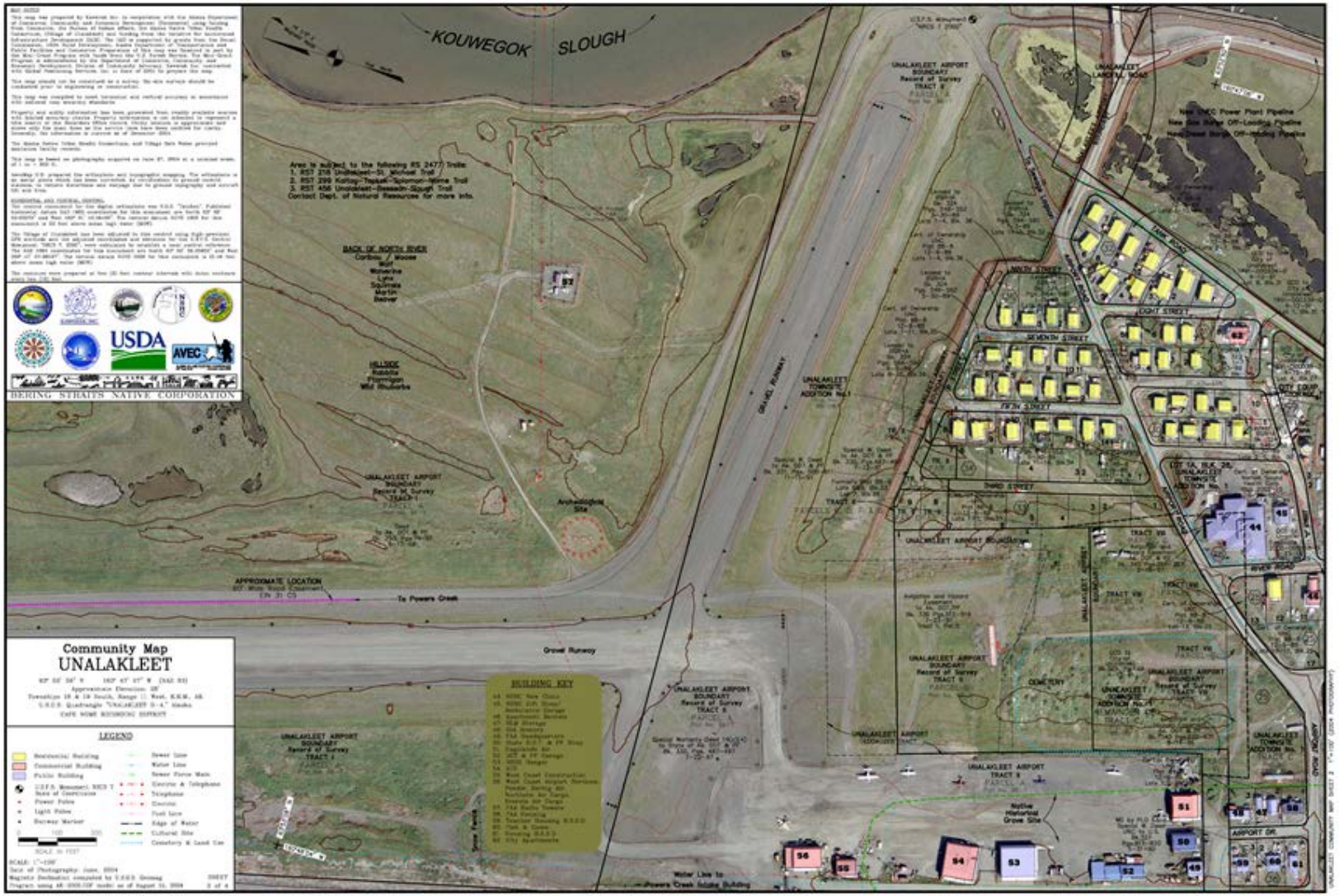

Figure 6-2 Unalakleet Land Use Map - Sheet 2 (DCRA 2014)

6

6.2.2 Cultural Sites

Ten archeological sites have been established in Unalakleet, including a cluster of over 100 house pits. The Yupik-speaking *"Unalit"* appear to have used them from approximately 200 B.C. to 300 A.D. They still inhabited the City in the 1800s when westerners arrived and were nearly wiped out by epidemics.

6.3 CURRENT ASSET EXPOSURE ANALYSIS

6.3.1 Asset Inventory

Asset inventory is the first step of a vulnerability analysis. Assets that may be affected by hazard events include population (for community-wide hazards), residential buildings (where data is available), and critical facilities and infrastructure. The critical facility and infrastructure assets and associated values throughout the City are addressed in Section 6.3.1.3.

6.3.1.1 Population and Building Stock

Population data for the Unalakleet were obtained from the 2010 U.S. Census and the DCCED. The U.S. Census reports the City's total population for 2010 as 688 and 2014 DCRA certified data reported a population of 744 (Table 6-2).

Table 6-2 Estimated Population and Building Inventory

Population		Residential Buildings	
2010 Census	DCCED 2014 Data	Total Building Count	Total Value of Buildings[1]
688	744	225	US Census $27,922,500 Unalakleet: $78,750,000

1 Sources: U.S. Census 2010, and 2014 DCCCED population data. U.S. Census listed housing value at $124,100. The Project Team determined that the average structural replacement value of all single-family residential buildings is $350,000.

The Planning Team stated that U.S. Census residential replacement values are generally understated because replacement costs exceed Census structure values of $124,100 due to material purchasing, barge or airplane delivery, and construction in rural Alaska. The Planning Team estimates average 30ft by 40 ft. (1,200 sq. ft.) residential structure replacement costs $350,000.

6.3.1.2 Existing Infrastructure

DCRA provided the information contained within Table 6-3 listing the City's identified "completed" and "pending" infrastructure improvement projects. This data provides a depiction of the community's ongoing development trends and focus toward improving their aging infrastructure.

Table 6-3 Unalakleet Completed and Pending Infrastructure Projects

Project Name	Award Year	Grant Status	Award Amount	End Date
Unalakleet Erosion Protection	2009	Active	$5,000,000	6/30/2014
Community Planning: Foothills Master Plan and Subdivision Design Plan	2009	Closed	$150,000	6/30/2012
City Streets Dust Control/ Paving	2008	Active	$1,000,000	6/30/2013
Elder Assisted Living Facility Feasibility Study	2007	Closed	$30,000	Undefined
Heavy Equipment Purchase and Repair	2007	Closed	$250,000	6/30/2013
Unalakleet Equipment Purchase and Repair	2006	Closed	$150,000	6/30/2010
Temporary Fiscal Relief Grant	2004	Closed	$40,000	Undefined
Direct Aid to Fisheries-Impacted Communities	2004	Closed	$3,720	Undefined

(DCRA 2015)

6.3.1.3 Unalakleet's Critical Facilities

6

A critical facility is defined as a facility that provides essential products and services to the general public, such as preserving the quality of life in the and fulfilling important public safety, emergency response, and disaster recovery functions. Due to many of Alaska's remote rural location – a long distance from their nearest neighboring community, most all facilities are deemed "critical" to their survival. The critical facilities profiled in this plan include the following:

- Government facilities, such as city and tribal administrative offices, departments, or agencies
- Emergency response facilities, including police department and firefighting equipment
- Educational facilities, including K-12
- Care facilities, such as medical clinics, congregate living health, residential and continuing care, and retirement facilities
- Community gathering places, such as community and youth centers
- Utilities, such as electric generation, communications, water and waste water treatment, sewage lagoons, landfills.

Table 6-4 lists the City's critical facilities and infrastructure.

Table 6-4 Unalakleet Critical Facilities & Infrastructure

Facilities	Number of Occupants	Facilities	Address	Latitude	Longitude	Estimated Value	Building Type	Earthquake	Flood	Severe Weather	Tundra/Wildland Fire
Government	3	City Hall	28 Beach Road	63.87662	-160.79333	$1,000,000	W1	X	X	X	X
	3	Native Village Offices	Main Street	63.87191	-160.78527	$2,000,000	W1	X	X	X	X
	NA	IRA Office Native	NA	63.8795	-160.78926	NA	W1	X	X	X	X
Emergency Response	4	Memorial Community Hall/ State Troopers	Airport	63.87516	-160.78685	$4,000,000	W1	X	X	X	X
	2	Emergency Operations Center/Police station	Main Street	63.87739	-160.78906	$3,000,000	W1	X	X	X	X
		National Guard Building	Airport	63.87979	-160.79422	$1,000,000	W1	X	X	X	X
Educational	150	BSSD-Unalakleet School	Beach Road	63.87726	-160.79301	$20,000,000	W1	X	X	X	X
	0	OLD BIA School abandoned	Undefined	63.87252	-160.78502	Undefined	W1	X	X	X	X
	12	School Offices	Beach Road	63.87733	-160.79124	$5,000,000	W1	X	X	X	X
Medical	12	Health Clinic	Airport Road	63.87776	-160.79111	$30,000,000	W1	X	X	X	X
Community	1	Library Building	Pond Road	63.87851	-160.79249	$200,000	W1	X	X	X	X
	3	UNC Office Building Store	Pond Road	63.8753	-160.78702	$3,000,000	W1	X	X	X	X
	2	Post Office	Main Street	63.87301	-160.78502	$6,000,000	S2L	X	X	X	X
	24	Fish Cannery	By the dock	Undefined	Undefined	Undefined	W1	X	X	X	X
	2	Teachers Quarters	Main Street	63.87784	-160.7937	$500,000	W1	X	X	X	X
	2	Teachers Quarters	Main Street	63.87812	-160.7939	$500,000	W1	X	X	X	X
	2	Teachers Quarters	Main Street	63.87781	-160.79005	$500,000	W1	X	X	X	X
	6	AC Store	Main Street	63.87277	-160.78347	$500,000	W1	X	X	X	X

Table 6-4 Unalakleet Critical Facilities & Infrastructure

Facilities	Number of Occupants	Facilities	Address	Latitude	Longitude	Estimated Value	Building Type	Earthquake	Flood	Severe Weather	Tundra/Wildland Fire
	1	Assembly of God Church	Abandoned	63.87171	-160.78494	Undefined	W1	X	X	X	X
	1	Catholic Church	Abandoned	63.87671	-160.78959	Undefined	W1	X	X	X	X
	75	Covenant Church	Undefined	63.87298	-160.785	$3,000,000	W2	X	X	X	X
	0	Cemetery	Undefined	63.88076	-160.79259	20,000	NA	X	X	X	X
Bridges	Bridge number 1308 in Unalakleet, crosses Kouwegok Slough approximately 1.25 km (0.8 miles) north of the Unalakleet River inlet. The bridge is under the jurisdiction of Alaska Department of Transportation & Public Facilities (DOT&PF) Northern Region. Elevated water levels associated with storm surges have been documented at this location in the past and the slough is tidally influenced under normal conditions.							X	X	X	X
Transportation	6	Airport Terminal – Raven Airlines	Airport	63.8839	-160.79025	$4,000,000	W1	X	X	X	X
	6	Airport Terminal Penn Air	Airport	63.89094	-160.79856	$6,000,000	W1	X	X	X	X
	0	City Dock	Harbor	63.8722	-160.7818	$3,000,000	NA	X	X	X	X
	0	Airport	Airport	63.8909	-160.79856	$10,000,000	Paved	X	X	X	X
Utilities	2	AVEC Power Generation Facility	Undefined	63.8775	-160.78796	$100,000	S3	X	X	X	X
	0	Sewage Lagoon	Outside City limits	63.88095	-160.7694	$7,500,000	NA	X	X	X	X
	0	City Pipeline	Citywide	5 mile pipeline - from the City Well to community		$20,000,000	PWP	X	X	X	X
	2	Trash Compactor/ Transfer Facility	Bailer Canal	63.87836	-160.78547	$10,000,000	S1	X	X	X	X
	0	Landfill	Outside City	63.9137	-160.76018	$20,000	CBO	X	X	X	X
	2	City Shop and Waterhouse	Main Street	63.87715	-160.78917	$10,000,000	S2L	X	X	X	X
	2	BSSD Power Plant	School	63.87726	-160.79301	$100,000	OTF	X	X	X	X
	1	GCI	Undefined	63.87747	-160.7875	$20,000	CBO	X	X	X	X

Table 6-4 Unalakleet Critical Facilities & Infrastructure

Facilities	Number of Occupants	Facilities	Address	Latitude	Longitude	Estimated Value	Building Type	Earthquake	Flood	Severe Weather	Tundra/Wildland Fire
	o	Fuel Storage Tanks (>500gal) Northwest 15 tanks	Undefined	63.87961	-160.78673	$25,000,000	OTF	X	X	X	X
	0	Radio Transmitter	Undefined	63.87662	-160.79333	$20,000	CBO	X	X	X	X
	1	Generator	Undefined	63.8775	-160.78796	$15,000	EPPS	X	X	X	X
	315	**Estimated Occupants**			**Estimated Total Value**	**$168,495,000**					

(Unalakleet 2015, DHS&EM 2009)

Table 16 provides summaries the City's critical facility threats by classifications.

Table 6-5 Critical Facilities and Infrastructure Summaries

Government and Emergency Response		Education	
# Bldgs./ # Occ	Values ($)	#Bldgs./ #Occ	Values ($)
5/12	$11,000,000	3/162	$25,000,000
Medical		**Community**	
# Bldgs./ # Occ	Values ($)	#Bldgs./ #Occ	Values ($)
1/12	$30,000,000	12/115	$13,720,000
Utilities		**Transportation**	
# Bldgs./ # Occ	Value ($)	#Bldgs./ # Occ	Values ($)
8/11	$72,775,000	4/10	$23,000,000

6.4 VULNERABILITY EXPOSURE ANALYSIS

Since Unalakleet is a very small geographical area the entire community is at equal risk to the hazards of earthquake, flood, weather (severe) and wildfire (Section 5.3).

Therefore based on limited GIS data availability for the City of Unalakleet; the following discussion contains data obtained from the Project Team and their subsequent analysis. The results of the exposure analysis for loss estimations are summarized in Table 6-5 and in Section 6.7.1 as a single narrative summary due to their vulnerability to all identified natural hazard threats.

6.4.1 Exposure Analysis – Narrative Summary

The following provides a narrative summary of Table 6-4 and 6-5 identified potential damage threats.

- 774 people in 225 residences (approximate value $78,750,000)
- 12 people in five government and emergency response facilities (approximate value $11,000,000)
- 162 people in three educational facility (approximate value $25,000,000)
- 12 people in one health center facility (approximate value $30,000,000)
- 115 people in twelve community facilities (approximate value $13,720,000)
- 9 people in eleven utility facilities (approximate value $72,775,000) (City Pipeline infrastructure most likely to be destroyed because it is located by the shoreline.)
- 10 people in four transportation facilities (approximate value $23,000,000

6.5 REPETITIVE LOSS PROPERTIES

DMA 2000 and its implementing regulations for estimating the number and type of structures at risk to repetitive flooding:

DMA 2000 Requirements
Addressing Risk and Vulnerability to NFIP Insured Structures §201.6(c)(2)(ii): The risk assessment shall include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community. *All plans approved after October 1, 2008 must also address NFIP insured structures that have been repetitively damaged by floods.* The plan should describe vulnerability in terms of: §201.6(c)(2)(ii)(A): The plan should describe vulnerability in terms of] the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas; §201.6(c)(2)(ii)(B): The plan should describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate; §201.6(c)(2)(ii)(C): The plan should describe vulnerability in terms of] providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions. §201.6(c)(3)(ii): The mitigation strategy shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.
1. REGULATION CHECKLIST
ELEMENT B. NFIP Insured Structures
B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods?
C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate?
Source: FEMA, March 2015.

6.5.1 NFIP Participation

The City of Unalakleet does not participate in the NFIP neither do they have a repetitive flood property inventory that meets NFIP criteria as the loss thresholds are substantially below FEMA values.

6.6 VULNERABILITY ASSESSMENT METHODOLOGY

A conservative exposure-level analysis was conducted to assess the risks of the identified hazards. This analysis is a simplified assessment of the potential effects of the hazards on values at risk without considering recurrence probability or damage level.

The Community Planning Team determined their facility locations within identified hazard impact zones. This data was used to develop a vulnerability assessment for those hazards.

Combined structure and contents replacement values were determined by the community for their physical assets. The community's aggregate exposure was calculated by assuming the worst-case scenario (that is, the asset would be completely destroyed and would have to be replaced) for each physical asset located within a hazard area. A similar analysis was used to evaluate the proportion of the population at risk. However, the analysis simply represents the number of people at risk; no estimate of the number of potential injuries or deaths was prepared.

6.7 DATA LIMITATIONS

The vulnerability estimates provided herein use the best data currently available, and the methodologies applied result in a risk approximation. These estimates may be used to understand relative risk from hazards and potential losses. However, uncertainties are inherent in any loss estimation methodology, arising in part from incomplete scientific knowledge concerning hazards and their effects on the built environment as well as the use of approximations and simplifications that are necessary for a comprehensive analysis.

It is also important to note that the quantitative vulnerability assessment results are limited to the exposure of people, buildings, and critical facilities and infrastructure to the identified hazards. It was beyond the scope of this HMP to develop a more detailed or comprehensive assessment of risk (including annualized losses, people injured or killed, shelter requirements, loss of facility/system function, and economic losses). Such impacts may be addressed with future updates of the HMP.

6.8 FUTURE DEVELOPMENT

The 2009 USACE Baseline Erosion Assessment for Unalakleet analyzed the cost of doing mitigation actions to address future potential damages. The following provides a brief description:

> ***"Future Damages***
> *Residential Structures Assumptions*
>
> *Some housing is be expected to be lost if the bank protection is not be repaired or replaced. These losses would be limited in nature to areas directly adjacent to gabion wall failure.*

Commercial and Public Buildings Assumptions

The Unalakleet Fisheries processing plant is subject to erosion loss within the 50-year planning horizon. Due to the specialized nature of fish processing and the generally large pieces of equipment, it is assumed that moving the building and equipment out of harm's way is not an option.

Infrastructure Assumptions

Various site specific roads, electric and telephone lines, and water and sewer lines in the community are subject to loss, though the infrastructure as a whole is not be expected to be destroyed.

Summary of Future Damages

The combined residential, commercial and public buildings, and infrastructure costs due to erosion are more than $105 million for the 50-year project horizon if the existing protection is not repaired or no further erosion protection is installed" (USACE 2009)

The 2014-2019 Unalakleet Local Economic Development Plan identified the following priorities that are also appropriate as hazard mitigation actions.

Priority #1: Construct New Water Line.
Unalakleet's main water line follows the shore and is vulnerable to damage during storms, which could leave the village without water. It is also old, brittle, and susceptible to damage during freezes. The City has plans underway to construct a new water transmission line out of the erosion/flood zone to increase safety for the community.

PRIORITY #2: Roads for both Subdivisions
The new subdivisions on the hillside north and east of Unalakleet do not have road access for construction and future residents. The City is taking steps toward their creation.

PRIORITY #3: SAR and Fire Department Funding 9.4.1 Project Description
Unalakleet's SAR and Fire Department both need equipment upgrades in order to keep the community safe. The fire truck is old and expensive to maintain. SAR volunteers use their personal snow-machines during rescues and their cell phones do not work outside of the village. Training is an ongoing necessity for both organizations.

PRIORITY #4: Evacuation Center 9.10.1 Project Description
Unalakleet is subject to severe storms that have the potential to flood the entire community and wash away shoreline. The community has a Hazard Mitigation Project (HMP) and an Emergency Operation Plan (EOP) but there is not an evacuation center.

The road leading up the hill was elevated to assure a safe escape route. The city and corporation both have potential sites for an emergency evacuation shelter toward the northeast end of the community, past the tank farm, but no particular site has been selected and planning is only in the very beginning stages. The school is currently used for shelter in emergencies, but it is located right by the ocean, which makes it vulnerable to potential storm-damage. The Elders' Assisted Living Facility project that is in its planning stages might be used dually as an emergency evacuation center because it will be located at higher elevation on the hillside northeast of the village.

Project Needs and Benefits
The community needs an emergency evacuation shelter that is elevated above sea level,

out of the flood zone, and out of danger of storm-damage" (ULEDP 2014)

Table 6-6 delineates Unalakleet's future, planned, and funded projects and their tentative completion status.

Table 6-6 Unalakleet's Active Projects

Project Name	Award Year	Grant Status	Award Amount	End Date
Public Safety Building	2013	Active	$3,000,000	6/30/17
Erosion Control	2012	Active	$100,000	6/30/16
Assisted Living Facility	2012	Active	$300,000	6/30/16
Wastewater Treatment Plant Improvements	2012	Active	$4,000,000	6/30/16
Erosion Control	2011	Active	$1,741,000	6/30/15

(DCRA 2015)

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Section Seven delineates the City's HMP mitigation strategy.

7.1 OVERVIEW

The mitigation strategy provides the blueprint for implementing desired activities that will enable the community to continue to save lives and preserve infrastructure by systematically reducing hazard impacts, damages, and community disruption. A vulnerability analysis is divided into six steps:

1. Identifying each jurisdiction's existing authorities for implementing mitigation action initiatives
2. NFIP Participation
3. Developing Mitigation Goals
4. Identifying Mitigation Actions
5. Evaluating Mitigation Actions
6. Implementing the Mitigation Action Plan (MAP)

DMA 2000 and its implementing regulations for comprehensive mitigation strategy development:

DMA 2000 Requirements
Identification and Analysis of Mitigation Actions §201.6(c)(3): [The plan shall include the following:] A *mitigation strategy* that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs, and resources, and its ability to expand on and improve these existing tools. §201.6(c)(3)(i): [The hazard mitigation strategy shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards. §201.6(c)(3)(ii): [The mitigation strategy shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure. §201.6(c)(3)(iii): [The hazard mitigation strategy shall include an] action plan, describing how the action identified in paragraph (c)(3)(ii) of this section will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs. §201.6(c)(3)(iv): [For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan. Requirement §201.6(c)(4): [The plan shall include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvements, when appropriate.
1. REGULATION CHECKLIST
ELEMENT C. Mitigation Strategy
C1. Does the plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs?
C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? *(Addressed in Section 6.4)*
C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards?

DMA 2000 Requirements
C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure?
C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction?
C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate?
Source: FEMA, March 2015.

7.2 UNALAKLEET'S CAPABILITY ASSESSMENT

The City's capability assessment reviews the technical and fiscal resources available to the community. DMA 2000 and its implementing regulations for technical and fiscal resources available to the community for HMP project implantation and management:

DMA 2000 Requirements
Incorporation into Existing Planning Mechanisms §201.6(c)(3): [The plan shall include the following:] A *mitigation strategy* that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs, and resources, and its ability to expand on and improve these existing tools.
1. REGULATION CHECKLIST
ELEMENT C. Incorporate into Other Planning Mechanisms
C1. Does the plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs?
C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate?
Source: FEMA, March 2015.

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Tables 7-1, 7-2, and 7-3 delineate the City's regulatory tools, technical specialists, financial and training resource available for project management. Appendix A provides a detailed list of potential funding resources.

Table 7-1 Unalakleet's Regulatory Tools

Regulatory Tools (ordinances, codes, plans)	Existing Yes/No?	Comments (Year of most recent update; problems administering it, etc.)
Comprehensive Plan	Yes	Explains the City's land use initiatives and natural hazard impacts.
Land Use Plan	Yes	Explains the City's land use goals and initiatives.
Tribal Land Use Plan	Yes	Describes the Village's community development goals and initiatives.
Emergency Response Plan	Yes	Emergency Operation Plan
Wildland Fire Protection Plan	No	
Building code	Yes	The City can exercise this authority.
Zoning ordinances	No	The City can exercise this authority.

Table 7-1 Unalakleet's Regulatory Tools

Regulatory Tools (ordinances, codes, plans)	Existing Yes/No?	Comments (Year of most recent update; problems administering it, etc.)
Subdivision ordinances or regulations	Yes	The City can exercise this authority.
Special purpose ordinances	No	The City can exercise this authority.

Local Resources

The City of Unalakleet has a number of planning and land management tools that will allow it to implement hazard mitigation activities. The resources available in these areas have been assessed by the hazard mitigation Planning Team, and are summarized below.

Table 7-2 Unalakleet's Technical Specialists

Staff/Personnel Resources	Yes / No	Department/Agency and Position
Planner or engineer with knowledge of land development and land management practices	No	The City hires planners and engineering consultants
Planner or engineer with an understanding of natural and/or human-caused hazards	No	The City hires planners and engineering consultants
Floodplain Manager	No	The City works with the State Floodplain Coordinator
Surveyors	Yes	The City has staff with this knowledge
Staff with education or expertise to assess the jurisdiction's vulnerability to hazards	No	The City hires consultants when they need a surveyor.
Personnel skilled in Geospatial Information System (GIS) and/or Hazards Us-Multi Hazard (Hazus-MH) software	No	The City hires consultants when they need a surveyor.
Scientists familiar with the hazards of the jurisdiction	No	City can work with U.S. Fish & Wildlife Service (USFWS) and Fish & Game (ADF&G), and the Alaska Department of Transportation and Public Facilities as needed
Emergency Manager	No	The City Mayor, City Manager, City Administrator Tribal President, or Tribal Administrator as applicable
Finance (Grant writers)	Yes	City or Tribal Bookkeeper as applicable
Public Information Officer	Yes	The City Mayor, City Manager, City Administrator Tribal President, or Tribal Administrator as applicable

Table 7-3 Unalakleet's Financial Resources

Financial Resource	Accessible or Eligible to Use for Mitigation Activities
General funds	Can exercise this authority with voter approval
Payment in Lieu of Taxes (PILT)	Provides operating support funding
Municipal Energy Assistance Program (MEAP)	Provides operating support funding
Community Development Block Grants (CDBG)	Can exercise this authority with voter approval

Table 7-3 Unalakleet's Financial Resources

Financial Resource	Accessible or Eligible to Use for Mitigation Activities
Capital Improvement Project Funding	Can exercise this authority with voter approval
Authority to levy taxes for specific purposes	Can exercise this authority with voter approval
Incur debt through general obligation bonds	Can exercise this authority with voter approval
Incur debt through special tax and revenue bonds	Can exercise this authority with voter approval
Incur debt through private activity bonds	Can exercise this authority with voter approval
Hazard Mitigation Grant Program (HMGP)	FEMA funding which is available to local communities after a Presidentially-declared disaster. It can be used to fund both pre- and post-disaster mitigation plans and projects.
Pre-Disaster Mitigation (PDM) grant program	FEMA funding which available on an annual basis. This grant can only be used to fund pre-disaster mitigation plans and projects only
Flood Mitigation Assistance (FMA) grant program	FEMA funding which is available on an annual basis. This grant can be used to mitigate repetitively flooded structures and infrastructure to protect repetitive flood structures. ***Unalakleet does not qualify for this funding source because they do not participate in the NFIP.***
United State Fire Administration (USFA) Grants	The purpose of these grants is to assist state, regional, national or local organizations to address fire prevention and safety. The primary goal is to reach high-risk target groups including children, seniors and firefighters.
Fire Mitigation Fees	Finance future fire protection facilities and fire capital expenditures required because of new development within Special Districts.

The Planning Team developed their mitigation goals and potential mitigation actions to address identified potential hazard impacts (refer to Section 5.3) for the Unalakleet area.

7.3 DEVELOPING MITIGATION GOALS

DMA 2000 stipulated and implementing regulations for developing hazard mitigation goals:

DMA 2000 Requirements
Local Hazard Mitigation Goals §201.6(c)(3)(i): The hazard mitigation strategy shall include a description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.
1. REGULATION CHECKLIST
ELEMENT C. Mitigation Goals
C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards?
Source: FEMA, March 2015.

The exposure analysis results were used as a basis for developing the mitigation goals and actions (Table 7-4). Mitigation goals are defined as general guidelines that describe what a community wants to achieve in terms of hazard and loss prevention. Goal statements are typically long-range, policy-oriented statements representing community-wide visions. As such, seven goals were developed to reduce or avoid identified long-term hazard vulnerabilities.

Table 7-4 Mitigation Goals

No.	Goal Description
Multi-Hazards (MH)	
MH 1	Provide **outreach** activities to educate and promote recognizing and mitigating all natural hazards that affect the City of Unalakleet (City).
MH 2	**Cross-reference** mitigation goals and actions with other City planning mechanisms and projects.
MH 3	Develop **construction** activities that reduce possibility of losses from all natural hazards that affect the City.
Natural Hazards	
EQ 4	Reduce structural vulnerability to earthquake (EQ) damage.
FL 5	Reduce flood (FL) and erosive scour damage and loss possibility.
SW 6	Reduce structural vulnerability to severe weather (SW) damage.
WF 7	Reduce structural vulnerability to tundra/wildland fire (WF) damage.

7.4 IDENTIFYING MITIGATION ACTIONS

DMA 2000 requirements and implementing regulations for identifying and analyzing mitigation actions:

DMA 2000 Requirements
Identification and Analysis of Mitigation Actions §201.6(c)(3)(ii): [The mitigation strategy shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.
1. REGULATION CHECKLIST
ELEMENT C. Mitigation Actions
C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure?
Source: FEMA, March 2015.

After developing mitigation goals, the Planning Team reviewed a comprehensive list of potential mitigation actions that were identified during this HMP development process for each hazard type including.

The Planning Team assessed the potential mitigation actions to carry forward into the mitigation strategy. Mitigation actions are activities, measures, or projects that help achieve the goals of a

mitigation plan. Mitigation actions are usually grouped into three broad categories: property protection, public education and awareness, and structural projects.

During the planning process January 2014 through June 2015 the Planning Team selected City natural hazard, mitigation actions for potential Mitigation Action Plan (MAP) implementation during the five-year life cycle of this HMP.

Table 7-5 breaks out the project criteria as deleted, deferred (ongoing), and newly selected. The community identified numerous "ongoing" mitigation actions currently in-process or those that were listed in other City planning documents.

In July 2015, the Planning Team selected 15 "ongoing" and eight newly identified natural hazard, mitigation actions for Mitigation Action Plan (MAP) implementation (as funding becomes available) during the five-year life cycle of this HMP. The Planning Team placed particular emphasis on projects and programs that reduce the effects of hazards on both new and existing buildings and infrastructure as well as facilities located in potential flood zones to comply with NFIP requirements should the City join the NFIP.

Table 7-5 Mitigation Plan and Potential Actions

(Blue texts are 2008 Legacy Plan actions.)

Supports Goal No.	Description	Status: Considered, Selected, Completed, Deferred, Deleted, or Ongoing	Explain Status Change	Action Description
MH 1	Provide outreach activities to educate and promote recognizing and mitigation all natural hazards that affect the City	S	Newly selected project	Train residents in installation of erosion monitoring devises to determine rate of eroding shorelines and riverbanks.
		S	Newly selected project	Train/advise residents in grant writing and project management.
		O Deferred	No available funding Reworded to better fulfill community needs	*Develop a Suite of Emergency Plans and Training/Drills to increase public knowledge about mitigation opportunities, floodplain functions, emergency response procedures, and potential hazard impacts.*
		Deleted	Removed; covered in action above.	*Community Readiness*
MH 2	Promote cross-referencing mitigation goals and actions with other City mechanisms and projects.	S	Newly selected project	Regularly meet with community residents to identify best ways to assist mitigation efforts within the community, and add mitigation actions to City documents.

Table 7-5 Mitigation Plan and Potential Actions

(Blue texts are 2008 Legacy Plan actions.)

Supports Goal No.	Description	Status: Considered, Selected, Completed, Deferred, Deleted, or Ongoing	Explain Status Change	Action Description
MH 3	Develop construction activities that reduce possibility of losses from all natural hazards that affect the City.	**S LEDP Priority #4**	Newly selected project	Construct a much needed Emergency Evacuation Center on higher ground away from severe weather and water hazards.
		O Deferred	No available funding Edited and reclassified to reflect multi-hazard benefits	*Encourage using weather resistant building construction materials and following best practices to enable structures to resist hazard impact damages.*
EQ 4	Reduce vulnerability of structures to earthquake damage.	**S**	Newly selected project	Inspect, prioritize, and retrofit any critical facility or public infrastructure that does not meet current State Adopted Building Codes.
		S	Newly selected project	Install non-structural seismic restraints for large furniture such as bookcases, filing cabinets, heavy televisions, and appliances to prevent toppling damage and resultant injuries to small children, elderly, and pets.
FL 5	Reduce vulnerability, damage, or loss of structures from erosion.	**Deleted**	Covered with next action	*Protection of utilities*
		O Deferred	No available funding. Separated and reworded to reflect two distinct projects. Moved to MH 3 to better reflect community's needs.	*A: consider city relocation: Relocate the City to a more resilient location to the Northeast that is free from danger of erosion, sheltered from strong winds, and not in an airport clear zone.* *B: Protect and extend utilities and North River water distribution to a new city site*
		Deleted	Covered with next action	*Rip rap wall along the beach adjacent to DOT property and the airport*
		O Deferred	No available funding Reworded and combined with rip-rap project above for clarity	*Unalakleet Revetment:* *Re: Work with the USACE to construct a 1,500 foot rip-rap revetment to replace the failing NRCS constructed gabion basket embankment protection structure*
		O Deferred	Seeking community support. Move to MH 2	*Consider joining the NFIP and obtaining FEMA Flood Insurance Rate Maps (FIRMs) for Unalakleet*

Table 7-5 Mitigation Plan and Potential Actions

(Blue texts are 2008 Legacy Plan actions.)

Supports Goal No.	Description	Status: Considered, Selected, Completed, Deferred, Deleted, or Ongoing	Explain Status Change	Action Description
		O Deferred	Reworded to better reflect community needs	*Protection of the Happy Valley subdivision: Elevate residential structures in Happy Valley Subdivision to Protect from periodic flood damages.*
		O Deferred	Seeking funding	*Planting trees and shrubs along shoreline*
		S LEDP Priority #1	Newly selected project.	Construct new water line away from the disaster damage prone shoreline
SW 6	Reduce structural vulnerability to severe weather (SW) damage.	**O Deferred**	No available staff or resources to pursue. Project move to MH 1	*Research and consider instituting the National Weather Service program of "Storm Ready".*
		O Deferred	No available funding Move to MH 1	*Conduct special awareness activities, such as Winter Weather Awareness Week, Flood Awareness Week, etc.*
		O Deferred	Seeking funding Move to MH 1	*Expand public awareness about NOAA Weather Radio for continuous weather broadcasts and warning tone alert capability*
WF 7	Tundra/Wildland Fire (WF) damage.	**O Deferred**	Continuing to support the fire department	*Continue to support the local fire department with adequate firefighting equipment and training.*
		O Deferred	Awaiting agency cooperation or scheduling	*Promote Fire Wise building design, siting, and materials for construction.*
		O	Continuing to enforce building codes.	*Continue to enforce development of building codes and requirements for new construction.*
		O Deferred	Seeking funding	*Enhance public awareness of potential risk to life and personal property. Encourage mitigation measures in the immediate vicinity of their property.*
		O Deferred	Seeking funding	*Construct a public safety building to store fire equipment.*
		O Deferred	Seeking funding	*Construct roads for both Subdivisions, so that emergency response can reach the area.*
		S	Newly selected project	Support efforts to reduce flammable materials near residences and critical facilities.

7.5 EVALUATING AND PRIORITIZING MITIGATION ACTIONS

DMA 2000 stipulated and implementing regulations for evaluating and implementing mitigation actions:

DMA 2000 Requirements: Mitigation Strategy - Implementation of Mitigation Actions
Implementation of Mitigation Actions §201.6(c)(3)(iii): [The hazard mitigation strategy shall include an] action plan, describing how the action identified in paragraph (c)(3)(ii) of this section will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.
1. REGULATION CHECKLIST
ELEMENT C. MITIGATION STRATEGY
C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))
Source: FEMA, March 2015.

The Planning Team evaluated and prioritized each of the mitigation actions in July 2015 to determine which actions would be included in the Mitigation Action Plan. The Mitigation Action Plan represents mitigation projects and programs to be implemented through the cooperation of multiple entities in the City. To complete this task, the Planning Team first prioritized the hazards that were regarded as the most significant within the community (earthquake, flood, severe weather, and tundra/wildland fire).

The Planning Team reviewed the simplified social, technical, administrative, political, legal, economic, and environmental (STAPLEE) evaluation criteria (Table 7-6) and the Benefit-Cost Analysis Fact Sheet (Appendix G) to consider the opportunities and constraints of implementing each particular mitigation action. For each action considered for implementation, a qualitative statement is provided regarding the benefits and costs and, where available, the technical feasibility. A detailed cost-benefit analysis is anticipated as part of the application process for those projects the City chooses to implement.

Table 7-6 Evaluation Criteria for Mitigation Actions

Evaluation Category	Discussion "It is important to consider…"	Considerations
Social	The public support for the overall mitigation strategy and specific mitigation actions.	Community acceptance Adversely affects population
Technical	If the mitigation action is technically feasible and if it is the whole or partial solution.	Technical feasibility Long-term solutions Secondary impacts
Administrative	If the community has the personnel and administrative capabilities necessary to implement the action or whether outside help will be necessary.	Staffing Funding allocation Maintenance/operations
Political	What the community and its members feel about issues related to the environment,	Political support Local champion

Table 7-6 Evaluation Criteria for Mitigation Actions

Evaluation Category	Discussion "It is important to consider…"	Considerations
	economic development, safety, and emergency management.	Public support
Legal	Whether the community has the legal authority to implement the action, or whether the community must pass new regulations.	Local, State, and Federal authority Potential legal challenge
Economic	If the action can be funded with current or future internal and external sources, if the costs seem reasonable for the size of the project, and if enough information is available to complete a Federal Emergency Management Agency (FEMA) Benefit-Cost Analysis.	Benefit/cost of action Contributes to other economic goals Outside funding required FEMA Benefit-Cost Analysis
Environmental	The impact on the environment because of public desire for a sustainable and environmentally healthy community.	Effect on local flora and fauna Consistent with community environmental goals Consistent with local, state, and Federal laws

On July, 2015, the hazard mitigation Planning Team prioritized 23 natural hazard mitigation actions that were selected to carry forward into the Mitigation Action Plan (MAP).

The hazard mitigation Planning Team considered each hazard's history, extent, and probability to determine each potential actions priority. A rating system based on high, medium, or low was used.

- High priorities are associated with actions for hazards that impact the community on an annual or near annual basis and generate impacts to critical facilities and/or people.
- Medium priorities are associated with actions for hazards that impact the community less frequently, and do not typically generate impacts to critical facilities and/or people.
- Low priorities are associated with actions for hazards that rarely impact the community and have rarely generated documented impacts to critical facilities and/or people.

Prioritizing the mitigation actions within the MAP matrix (Table 7-8) was completed to provide the City with an implementation approach.

7.6 MITIGATION ACTION PLAN

The City Unalakleet has flat management structures. Like most rural-remote Alaskan communities there is limited budget; therefore no funding is available for developing and maintaining departmental or other infrastructure responsibilities. The City and Village are managed by their mayoral led City Council or tribal president/chief led Tribal Council respectively. This process enables the each jurisdiction to maximize governance capacity, coordinate project prioritization, and closely monitor their limited budget constraints.

Table 7-7 delineates the acronyms used in the Mitigation Action Plan (Table 7-8). See Appendix A for summarized agency funding source descriptions.

Table 7-7 Potential Funding Source Acronym List

(See complete funding resource description in Appendix A)

City of Unalakleet (City Mayor's Office)

Tribal Assembly (Tribal Office)

US Department of Homeland Security (DHS)
Citizens Corp Program (CCP)
Emergency Operations Center (EOC)
Homeland Security Grant Program (HSGP)
Emergency Management Performance Grant (EMPG)
State Homeland Security Program (SHSP)

Federal Management Agency (FEMA) /
Hazard Mitigation Assistance Grant Programs (HMA)
Emergency Management Program Grant (EMPG)
Debris Management Grant (DM)
Flood Mitigation Assistance Grants (FMA)
National Earthquake Hazards Reduction Program (NEHRP)
National Dam Safety Program (NDS)

US Department of Commerce (DOC) /
Remote Community Alert Systems Program (RCASP)
National Oceanic and Atmospheric Administration (NOAA)
Economic Development Administration (EDP)
Public Works and Development Facilities Program (PWDFP)
US Environmental Protection Agency (EPA)/
Indian Environmental General Assistance Program (IGAP)

US Department of Agriculture (USDA) /
USDA, Farm Service Agency
Emergency Conservation Program (ECF)
Rural Development (RD)

USDA, Natural Resources Conservation Service (NRCS)
Conservation Technical Assistance Program (DCT)
Conservation Innovation Grants (CIG)
Environmental Quality Incentives Program (EQIP)
Emergency Watershed Protection Program (EWP)
Watershed Planning (WSP)

US Geological Survey (USGS)
Alaska Volcano Observatory (AVO)

Assistance to Native Americans (ANA)
*Native American Housing Assistance and Self Determination Act (NA*FSMA),

US Army Corp of Engineers (USACE) /
Planning Assistance Program (PAP)
Capital Projects: Erosion, Flood, Ports & Harbors

Alaska Department of Military and Veterans Affairs (DMVA), Division of Homeland Security and Emergency Management (DHS&EM)
Mitigation Section (for PDM & HMGP projects and plan development)
Preparedness Section (for community planning)
State Emergency Operations Center (SEOC for emergency response)

Alaska Department of Community, Commerce, and Economic Development (DCCED)
Division of Community and Regional Affairs (DCRA)/
Community Development Block Grant (CDBG)
Alaska Climate Change Impact Mitigation Program (ACCIMP)
Flood Mitigation Assistance Grants (FMA)

Alaska Department of Transportation
State road repair funding

Alaska Energy Authority (AEA)
AEA/Bulk Fuel (ABF)
AEA/Alternative Energy and Energy Efficiency (AEEE)

Alaska Department of Environmental Conservation (DEC) /
Village Safe Water (VSW)
DEC/Alaska Drinking Water Fund (ADWF)
DEC/Alaska Clean Water Fund [ACWF]
DEC/Clean Water State Revolving Fund (CWSRF)

Alaska Division of Forestry (DOF) /
Volunteer Fire Assistance and Rural Fire Assistance Grant (VFAG/RFAG)
Assistance to Firefighters Grant (AFG)
Fire Prevention and Safety (FP&S)
Staffing for Adequate Fire and Emergency Response Grants (SAFER)
Emergency Food and Shelter (EF&S)

Denali Commission (Denali)
Energy Program (EP
Solid Waste Program (SWP)

Lindbergh Foundation Grant Programs (LFGP)

Rasmuson Foundation Grants (LFG)

The City's Mitigation Action Plan, Table 7-8, depicts how each mitigation action will be implemented and administered by the Planning Team. The MAP delineates each selected mitigation action, its priorities, the responsible entity, the anticipated implementation timeline, and provides a brief explanation as to how the overall benefit/costs and technical feasibility were taken into consideration.

Table 7-8 City of Unalakleet's Mitigation Action Plan (MAP)

(Blue Italicized Initiatives were brought forward from existing HMP or other identified plans)

(See Table 7-9 Potential Funding Agency list; Appendix 9 for agency programmatic details)

Goal / Action ID	Description	Priority (High, Medium, Low)	Applicable City, Tribal or Agency's Office	Potential Funding Source(s)	Timeframe (1-3 Years 2-4 Years 3-5 Years)	Benefit-Costs (BC) / Technical Feasibility (T/F)
MH 1	Identify and pursue funding opportunities to implement mitigation actions.	High	Unalakleet City Manager, Departmental Offices, or Tribal Assembly *(The Tribal Assembly is included as a viable responsible entity in order to obtain Administration for Native Americans (ANA) funding, the Tribe would need to be the applicant for those projects)*	City, Tribe, (See Appendix A)	Ongoing	B/C: City and Village life requires this as an ongoing activity; it is essential for rural communities as there are limited funds available to accomplish effective mitigation actions. TF: This activity is ongoing demonstrating its feasibility.
MH 1.2	Train residents in installation of erosion monitoring devises to determine rate of eroding shorelines and riverbanks.	High	City Manager	City, USACE, NWS, Denali Commission	1-3 years	B/C: This could be an ongoing activity for the City as there are limited funds available to accomplish effective mitigation actions. T/F: This activity could be ongoing demonstrating its feasibility.
MH 1.3	Train/advise residents in grant writing and project	High	City Manager	City, DCEED, Denali Commission, other grant	1-3 years	B/C: This could be an ongoing activity for the City as there are

Table 7-8 City of Unalakleet's Mitigation Action Plan (MAP)

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(See Table 7-9 Potential Funding Agency list; Appendix 9 for agency programmatic details)

Goal / Action ID	Description	Priority (High, Medium, Low)	Applicable City, Tribal or Agency's Office	Potential Funding Source(s)	Timeframe (1-3 Years 2-4 Years 3-5 Years)	Benefit-Costs (BC) / Technical Feasibility (T/F)
	management.			agencies as applicable		limited funds available to accomplish effective mitigation actions. T/F: This activity could be ongoing demonstrating its feasibility.
MH 1.4	*Develop a Suite of Emergency Plans and Training/Drills to increase public knowledge about mitigation opportunities, floodplain functions, emergency response procedures, and potential hazard impacts.*	*High*	*City Manager*	*City, DCRA, DHS&EM, FEMA*	*1-3 years*	*B/C: This could be an ongoing activity for the City as there are limited funds available to accomplish effective mitigation actions.* *T/F: This activity could be ongoing demonstrating its feasibility.*
MH 1.5	*Research and consider instituting the National Weather Service program of "Storm Ready".*	*Medium*	*City Manager*	*City, HMA, NRCS, ANA, USACE, US USDA, Lindbergh*	*1-3 years*	*B/C: Sustained emergency response planning, notification, and mitigation outreach programs have minimal cost and will help build and support community capacity enabling the public to prepare for, respond to, and recover from disasters.* *TF: This project is technically feasible using existing City staff*
MH 1.6	*Expand public awareness about NOAA Weather Radio for continuous weather broadcasts and warning tone alert capability*	*Medium*	*City Manager*	*City, HMA, NRCS, ANA, USACE, US USDA, Lindbergh*	*1-3 years*	*B/C: Sustained emergency response planning, notification, and mitigation outreach programs have minimal cost and will help build and support community capacity enabling the public to prepare for, respond to, and recover from disasters.* *TF: This project is technically feasible using existing City staff*

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MH 1.7	*Conduct special awareness activities, such as Winter Weather Awareness Week, Flood Awareness Week, etc.*	*Medium*	*City Manager*	*City, HMA, NRCS, ANA, USACE, US USDA, Lindbergh*	*1-3 years*	*B/C: Sustained emergency response planning, notification, and mitigation outreach programs have minimal cost and will help build and support community capacity enabling the public to prepare for, respond to, and recover from disasters.* *TF: This project is technically feasible using existing City staff*
MH 1.8	*Enhance public awareness of potential risk to life and personal property. Encourage mitigation measures in the immediate vicinity of their property.*	*Medium*	*City Mayor or Tribal Council as applicable*	*City, Tribe, FEMA HMA, AFG, FP&S, SAFER, ANA, EEFSP, Lindbergh, Rasmuson, Denali Commission*	*1-3 years*	*B/C: Sustained mitigation outreach program has minimal cost and will help build and support area-wide capacity. This type activity enables the public to prepare for, respond to, and recover from disasters.* *TF: This low cost activity can be combined with recurring community meetings where hazard specific information can be presented in small increments. This activity is ongoing demonstrating its feasibility.*
MH 2.1	Regularly meet with community residents to identify best ways to assist mitigation efforts within the community, and add mitigation actions to City documents.	Medium	City Manager	City, FEMA HMA programs, AFG, FP&S, and SAFER	2-4 years	B/C: Sustained mitigation outreach programs have minimal cost and will help build and support area-wide capacity. This type activity enables the public to prepare for, respond to, and recover from disasters. T/F: This low cost activity can be combined with recurring community

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						meetings where hazard specific information can be presented in small increments. This activity is ongoing demonstrating its feasibility.
MH 2.2	*Consider joining the NFIP and obtaining FEMA Flood Insurance Rate Maps (FIRMs) for Unalakleet*	Medium	City Manager	City, ADOT, HMA, NRCS, USACE, USDA/EWP, USDA/ECP, DCRA/ ACCIMP	3-5 years	B/C: Flood hazard mitigation is among FEMA's highest national priorities. Proactive mitigation activities have a high/cost benefit ratio and result in less costly construction before a problem develops. T/F: The City has the skill to implement this action. Specialized skills may need to be contracted-out with materials and equipment barged in depending on the method selected.
MH 2.3	*Continue to enforce development of building codes and requirements for new construction.*	*Medium*	*City Mayor or Tribal Council as applicable*	*City, Tribe, Denali Commission, Division of Community and Regional Affairs (DCRA)*	*1-3 years*	*B/C: Coordinated planning ensures effective damage abatement and ensures proper attention is assigned to reduce losses and damage to structures and City residents.* *TF: This is feasible to accomplish as no cost is associated with the action and only relies on member availability and willingness to serve their community.*
MH 3.1	*Relocate the City to a more resilient location to the*	*Medium*	*City Manager*	*City, ADOT, HMA, NRCS, USACE, USDA/EWP,*	*3-5 years*	*B/C: Flood hazard mitigation is among FEMA's highest national*

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	Northeast that is free from danger of erosion, sheltered from strong winds, and not in an airport clear zone.			*USDA/ECP, DCRA/ ACCIMP*		*priorities. Proactive mitigation activities have a high/cost benefit ratio and result in less costly construction before a problem develops.* *T/F: The City has the skill to implement this action. Specialized skills may need to be contracted-out with materials and equipment barged in depending on the method.*
MH 3.2	*Protect and extend utilities and North River water distribution to a new city site*	*Medium*	*City Manager*	*City, ADOT, HMA, NRCS, USACE, USDA/EWP, USDA/ECP, DCRA/ ACCIMP*	*3-5 years*	*B/C: Flood hazard mitigation is among FEMA's highest national priorities. Proactive mitigation activities have a high/cost benefit ratio and result in less costly construction before a problem develops.* *T/F: The City has the skill to implement this action. Specialized skills may need to be contracted-out with materials and equipment barged in depending on the method.*
MH 3.3	Construct a much needed Emergency Evacuation Center on higher ground away from severe weather and water hazards	Medium	City Manager	City, DCRA, DHS&EM, DOT, USACE, US Army Guard	0 – 5 years	B/C: An evacuation center is a long-range action which depends on funding. T/F: This high cost action can be accomplished through the City's proven record of successful grants.
MH 3.4	*Encourage using weather*	*Medium*	*City Manager*	*City, FEMA HMA*	*2-4 years*	*B/C: Sustained mitigation outreach*

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	resistant building construction materials and following best practices to enable structures to resist hazard impact damages.			*programs, AFG, FP&S, and SAFER*		*programs have minimal cost and will help build and support area-wide capacity. This type activity enables the public to prepare for, respond to, and recover from disasters.* *T/F: This low cost activity can be combined with recurring community meetings where hazard specific information can be presented in small increments. This activity is ongoing demonstrating its feasibility.*
EQ 4.1	Inspect, prioritize, and retrofit any critical facility or public infrastructure that does not meet current State Adopted Building Codes.	High	City Manager Public Works Director	City, HMA, NRCS, ANA, USACE, US USDA, Lindbergh	1-3 years	B/C: This project would ensure threatened infrastructures are available for use – their loss would exacerbate potential damages and further threaten survivability. T/F: This project is feasible using existing staff skills, equipment, and materials.
EQ 4.2	Install non-structural seismic restraints for large furniture such as bookcases, filing cabinets, heavy televisions, and appliances to prevent toppling damage and resultant injuries to small children, elderly, and pets.	High	City Manager Public Works Director	City, HMA, NRCS, ANA, USACE, US USDA, Lindbergh	1-3 years	B/C: This project would ensure threatened infrastructures are available for use – their loss would exacerbate potential damages and further threaten survivability. T/F: This project is feasible using existing staff skills, equipment, and materials.
FL 5.1	*Work with the USACE to construct a 1,500 foot rip-rap*	*High-Medium*	*City Manager*	*City, ADOT, HMA, NRCS, USACE, USDA/EWP,*	*3-5 years*	*B/C: Flood hazard mitigation is among FEMA's highest national*

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	revetment to replace the failing NRCS constructed gabion basket embankment protection structure			*USDA/ECP, DCRA/ ACCIMP*		*priorities. Proactive mitigation activities have a high/cost benefit ratio and result in less costly construction before a problem develops.* *T/F: The City has the skill to implement this action. Specialized skills may need to be contracted-out with materials and equipment barged in depending on the method selected.*
FL 5.2	*Elevate residential structures in Happy Valley Subdivision to Protect from periodic flood damages.*	High	City Manager	City, ADOT, HMA, NRCS, USACE, USDA/EWP, USDA/ECP, DCRA/ ACCIMP	3-5 years	B/C: Flood hazard mitigation is among FEMA's highest national priorities. Proactive mitigation activities have a high/cost benefit ratio and result in less costly construction before a problem develops. T/F: The City has the skill to implement this action. Specialized skills may need to be contracted-out with materials and equipment barged in depending on the method selected.
FL 5.3	Planting trees and shrubs along shoreline	Medium	City Manager	City, ADOT, HMA, NRCS, USACE, USDA/EWP, USDA/ECP, DCRA/ ACCIMP	3-5 years	B/C: Flood hazard mitigation is among FEMA's highest national priorities. Proactive mitigation activities have a high/cost benefit ratio and result in less costly

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						construction before a problem develops. T/F: The City has the skill to implement this action. Specialized skills may need to be contracted-out with materials and equipment barged in depending on the method selected.
FL 5.7	Construct new water line away from the disaster damage prone shoreline.	Medium	City Manager	City, ADOT, HMA, NRCS, USACE, USDA/EWP, USDA/ECP, DCRA/ ACCIMP	3-5 years	B/C: Flood hazard mitigation is among FEMA's highest national priorities. Proactive mitigation activities have a high/cost benefit ratio and result in less costly construction before a problem develops. Moving the waterline would remove this essential facility to a more disaster resistant location. T/F: The City has the skill to implement this action. Specialized skills may need to be contracted-out with materials and equipment barged in depending on the method selected.
WF 7.1	*Continue to support the local fire department with adequate firefighting equipment and training.*	*High*	*City Manager, Emergency Services*	*City, ADOT, HMA, NRCS, USACE, USDA/EWP, USDA/ECP, DCRA/ ACCIMP*	*1-3 years*	*B/C: This action has a high/cost benefit ratio and result in less costly construction before a problem develops.* *T/F: The City has the skill to implement this action. Specialized*

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						skills may need to be contracted-out with materials and equipment barged in depending on the method selected.
WF 7.2	*Promote Fire Wise building design, siting, and materials for construction.*	*High*	*City Manager, Emergency Services*	*City, ADOT, HMA, NRCS, USACE, USDA/EWP, USDA/ECP, DCRA/ ACCIMP*	*1-3 years*	*B/C: This action has a high/cost benefit ratio and result in less costly construction before a problem develops.* *T/F: The City has the skill to implement this action. Specialized skills may need to be contracted-out with materials and equipment barged in depending on the method selected.*
WF 7.3	*Construct a public safety building to store fire equipment.*	*High*	*Emergency Services*	*CITY, ADOT, HMA, NRCS, USACE, USDA/EWP, USDA/ECP, DCRA/ ACCIMP*	*1-3 years*	*B/C: This action has a high/cost benefit ratio and result in less costly construction before a problem develops.* *T/F: The CITY has the skill to implement this action. Specialized skills may need to be contracted-out with materials and equipment barged in depending on the method selected.*

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WF 7.4	*Construct roads for both Subdivisions, so that emergency response can reach the area.*	*High*	*Public Works Director*	*City, ADOT, HMA, NRCS, USACE, USDA/EWP, USDA/ECP, DCRA/ ACCIMP*	*1-3 years*	*B/C: This action has a high/cost benefit ratio and result in less costly construction before a problem develops.* *T/F: The CITY has the skill to implement this action. Specialized skills may need to be contracted-out with materials and equipment barged in depending on the method selected.*
WF 7.5	Support efforts to reduce flammable materials near residences and critical facilities.	High	Public Works Director	City, ADOT, HMA, NRCS, USACE, USDA/EWP, USDA/ECP, DCRA/ ACCIMP	1-3 years	B/C: This action has a high/cost benefit ratio and result in less costly construction before a problem develops. T/F: The CITY has the skill to implement this action. Specialized skills may need to be contracted-out with materials and equipment barged in depending on the method selected.

7.7 IMPLEMENTING MITIGATION STRATEGY INTO EXISTING PLANNING MECHANISMS

DMA 2000 and its implementing regulations for implementing the HMP into existing planning mechanisms:

DMA 2000 Requirements
Incorporation into Existing Planning Mechanisms §201.6(c)(4)(ii): [The plan shall include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.
1. REGULATION CHECKLIST
ELEMENT C. Incorporate into Other Planning Mechanisms
C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate?
Source: FEMA, March 2015.

After the adoption of the HMP, each Planning Team Member will ensure that the HMP, in particular each Mitigation Action Project, is incorporated into existing planning mechanisms. Each member of the Planning Team will achieve this incorporation by undertaking the following activities.

- Review the community-specific regulatory tools to determine where to integrate the mitigation philosophy and implementable initiatives. These regulatory tools are identified in Section 7.1 capability assessment.
- Work with pertinent community departments to increase awareness for implementing HMP philosophies and identified initiatives. Provide assistance with integrating the mitigation strategy (including the Mitigation Action Plan) into relevant planning mechanisms (i.e. Comprehensive Plan, Capital Improvement Project List, Transportation Improvement Plan, etc.).
- Implementing this philosophy and activities may require updating or amending specific planning mechanisms.

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Section Eight provides a comprehensive reference list used to develop the HMP.

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Appendix A

Funding Resources

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Federal Funding Resources

The Federal government requires local governments to have a HMP in place to be eligible for mitigation funding opportunities through FEMA such as the UHMA Programs and the HMGP. The Mitigation Technical Assistance Programs available to local governments are also a valuable resource. FEMA may also provide temporary housing assistance through rental assistance, mobile homes, furniture rental, mortgage assistance, and emergency home repairs. The Disaster Preparedness Improvement Grant also promotes educational opportunities with respect to hazard awareness and mitigation.

- FEMA, through its Emergency Management Institute, offers training in many aspects of emergency management, including hazard mitigation. FEMA has also developed a large number of documents that address implementing hazard mitigation at the local level. Five key resource documents are available from FEMA Publication Warehouse (1-800-480-2520) and are briefly described here:
    - How-to Guides. FEMA has developed a series of how-to guides to assist states, communities, and tribes in enhancing their hazard mitigation planning capabilities. The first four guides describe the four major phases of hazard mitigation planning. The last five how-to guides address special topics that arise in hazard mitigation planning such as conducting cost-benefit analysis and preparing multi-jurisdictional plans. The use of worksheets, checklists, and tables make these guides a practical source of guidance to address all stages of the hazard mitigation planning process. They also include special tips on meeting DMA 2000 requirements (http://www.fema.gov/hazard-mitigation-planning-resources#1).
    - Local Mitigation Planning Handbook, March 2013. This handbook explains the basic concepts of hazard mitigation and provides guidance to local governments on developing or updating hazard mitigation plans to meet the requirements of Title 44 Code of Federal Regulations (CFR) §201.6 for FEMA approval and eligibility to apply for FEMA Hazard Mitigation Assistance grant programs. (http://www.fema.gov/library/viewRecord.do?id=7209)
    - A Guide to Recovery Programs FEMA 229(4), September 2005. The programs described in this guide may all be of assistance during disaster incident recovery. Some are available only after a Presidential declaration of disaster, but others are available without a declaration. Please see the individual program descriptions for details. (http://www.fema.gov/txt/rebuild/ltrc/recoveryprograms229.txt)
    - The Emergency Management Guide for Business and Industry. FEMA 141, October 1993. This guide provides a step-by-step approach to emergency management planning, response, and recovery. It also details a planning process that businesses can follow to better prepare for a wide range of hazards and emergency events. This effort can enhance a business's ability to recover from financial losses, loss of market share, damages to equipment, and product or business interruptions. This guide could be of great assistance to a community's industries and businesses located in hazard prone areas. (https://www.fema.gov/media-library/assets/documents/3412)
    - The 2015 Hazard Mitigation Assistance (HMA) Guidance and Addendum, February 27 and March 3, 2015 respectively. Part I of the Hazard Mitigation Assistance (HMA)

Guidance introduces the three HMA programs, identifies roles and responsibilities, and outlines the organization of the document. This guidance applies to Hazard Mitigation Grant Program (HMGP) disasters declared on or after the date of publication unless indicated otherwise. This guidance is also applicable to the Pre-Disaster Mitigation (PDM) and Flood Mitigation Assistance (FMA) Programs; the application cycles are announced via http://www.grants.gov/. The guidance in this document is subject to change based on new laws or regulations enacted after publication.

- FEMA, http://www.fema.gov - includes links to information, resources, and grants that communities can use in planning and implementing community resilience and sustainability measures.
- FEMA also administers emergency management grants (http://www.fema.gov/help/site.shtm) and various firefighter grant programs (http://www.firegrantsupport.com/) such as
  - Emergency Management Performance Grant (EMPG). This is a pass through grant. The amount is determined by the State. The grant is intended to support critical assistance to sustain and enhance State and local emergency management capabilities at the State and local levels for all-hazard mitigation, preparedness, response, and recovery including coordination of inter-governmental (Federal, State, regional, local, and tribal) resources, joint operations, and mutual aid compacts state-to-state and nationwide. Sub-recipients must be compliant with National Incident Management System (NIMS) implementation as a condition for receiving funds. Requires 50% match. (https://www.fema.gov/fiscal-year-2015-emergency-management-performance-grant-program)
  - National Earthquake Hazards Reduction Program (NEHRP). The National Earthquake Hazards Reduction Program (NEHRP) seeks to mitigate earthquake losses in the United States through both basic and directed research and implementation activities in the fields of earthquake science and engineering. (https://www.fema.gov/national-earthquake-hazards-reduction-program)

    The NEHRP is the Federal Government's coordinated approach to addressing earthquake risks. Congress established the program in 1977 (Public Law 95-124) as a long-term, nationwide program to reduce the risks to life and property in the United States resulting from earthquakes. The NEHRP is managed as a collaborative effort among FEMA, the National Institute of Standards and Technology, the National Science Foundation, the United States Geological Survey, and the Department of Interior.

    The four goals of the NEHRP are to:
    - Develop effective practices and policies for earthquake loss-reduction and accelerate their implementation.
    - Improve techniques to reduce seismic vulnerability of facilities and systems.
    - Improve seismic hazards identification and risk-assessment methods and their use.
    - Improve the understanding of earthquakes and their effects.

NEHRPDHSnformation may be found at:
http://www.fema.gov/plan/prevent/earthquake/nehrp.shtm, and
http://www.ehow.com/info_7968511_disaster-research-grant-funding.html

- Assistance to Fire Fighters Grant (AFG), Fire Prevention and Safety (FP&S), Staffing for Adequate Fire and Emergency Response Grants (SAFER), and Assistance to Firefighters Station Construction Grant programs. Information can be found at: (http://forestry.alaska.gov/fire/vfa.htm).

- Department of Homeland Security (DHS) provides the following grants:
  - Homeland Security Grant Program (HSGP), State Homeland Security Program (SHSP) are 80% pass through grants. SHSP supports implementing the State Homeland Security Strategies to address identified planning, organization, equipment, training, and exercise needs for acts of terrorism and other catastrophic events. In addition, SHSP supports implementing the National Preparedness Guidelines, the NIMS, and the National Response Framework (NRF). Must ensure at least 25% of funds are dedicated towards law enforcement terrorism prevention-oriented activities. (https://www.dhs.gov/homeland-security-grant-program-hsgp)
  - Citizen Corps Program (CCP). The Citizen Corps mission is to bring community and government leaders together to coordinate involving community members in emergency preparedness, planning, mitigation, response, and recovery activities. (http://www.dhs.gov/citizen-corps)
  - Emergency Operations Center (EOC) Guidance. This program is intended to improve emergency management and preparedness capabilities by supporting flexible, sustainable, secure, strategically located, and fully interoperable Emergency Operations Centers (EOCs) with a focus on addressing identified deficiencies and needs. Fully capable emergency operations facilities at the State and local levels are an essential element of a comprehensive national emergency management system and are necessary to ensure continuity of operations and continuity of government in major disasters or emergencies caused by any hazard. Requires 25% match. (https://www.fema.gov/media-library/assets/documents/20622)
  - Emergency Alert System (EAS). Resilient public alert and warning tools are essential to save lives and protect property during times of national, state, regional, and local emergencies. The Emergency Alert System (EAS) is used by alerting authorities to send warnings via broadcast, cable, satellite, and wireline communications pathways. Emergency Alert System participants, which consist of broadcast, cable, satellite, and wireline providers, are the stewards of this important public service in close partnership with alerting officials at all levels of government. The EAS is also used when all other means of alerting the public are unavailable, providing an added layer of resiliency to the suite of available emergency communication tools. The EAS is in a constant state of improvement to ensure seamless integration of CAP-based and emerging technologies. (https://www.fema.gov/emergency-alert-system)

- U.S. Department of Commerce's grant programs include:

- National Oceanic and Atmospheric Administration (NOAA), provides funds to the State of Alaska due to Alaska's high threat for tsunami. The allocation supports the promotion of local, regional, and state level tsunami mitigation and preparedness; installation of warning communications systems; installation of warning communications systems; installation of tsunami signage; promotion of the Tsunami Ready Program in Alaska; development of inundation models; and delivery of inundation maps and decision-support tools to communities in Alaska. (http://www.tsunami.noaa.gov/warning_system_works.html)
- Remote Community Alert Systems (RCASP) grant for outdoor alerting technologies in remote communities effectively underserved by commercial mobile service for the purpose of enabling residents of those communities to receive emergency messages. (http://www.federalgrants.com/Remote-Community-Alert-Systems-Program-11966.html) This program is a contributing element of the Warning, Alert, and Response Network (WARN) Act.
- Public Works and Development Facilities Program. This program provides assistance to help distressed communities attract new industry, encourage business expansion, diversify local economies, and generate long-term, private sector jobs. Among the types of projects funded are water and sewer facilities, primarily serving industry and commerce; access roads to industrial parks or sites; port improvements; business incubator facilities; technology infrastructure; sustainable development activities; export programs; brownfields redevelopment; aquaculture facilities; and other infrastructure projects. Specific activities may include demolition, renovation, and construction of public facilities; provision of water or sewer infrastructure; or the development of stormwater control mechanisms (e.g., a retention pond) as part of an industrial park or other eligible project. (http://cfpub.epa.gov/fedfund/program.cfm?prog_num=51)
- US Environmental Protection Agency (EPA). Under EPA's Clean Water State Revolving Fund (CWSRF) program, each state maintains a revolving loan fund to provide independent and permanent sources of low-cost financing for a wide range of water quality infrastructure projects, including: municipal wastewater treatment projects; non-point source projects; watershed protection or restoration projects; and estuary management projects. (http://yosemite.epa.gov/R10/ecocomm.nsf/6da048b9966d22518825662d00729a35/7b68c420b668ada5882569ab00720988!OpenDocument)
  - Indian Environmental General Assistance Program (IGAP). 1992, Congress passed the Indian Environmental General Assistance Program Act (42 U.S.C. 4368b) which authorizes EPA to provide General Assistance Program (GAP) grants to federally-recognized tribes and tribal consortia for planning, developing, and establishing environmental protection programs in Indian country, as well as for developing and implementing solid and hazardous waste programs on tribal lands.

    The goal of this program is to assist tribes in developing the capacity to manage their own environmental protection programs, and to develop and implement solid and hazardous waste programs in accordance with individual tribal needs and applicable federal laws and regulations.

http://www.epa.gov/Indian/gap.htm

- Department of Agriculture (USDA). Provides diverse funding opportunities; providing a wide benefit range. Their grants and loans website provides a brief programmatic overview with links to specific programs and services. (http://www.rd.usda.gov/programs-services)
  - Farm Service Agency: Emergency Conservation Program, Non-Insured Assistance, Emergency Forest Restoration Program, Emergency Watershed Protection, Rural Housing Service, Rural Utilities Service, and Rural Business and Cooperative Service. (http://www.fsa.usda.gov/FSA/stateoffapp?mystate=ak&area=home&subject=landing&topic=landing)
  - Natural Resources Conservation Service (NRCS) has several funding sources to fulfill mitigation needs. (http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/alphabetical/)
    - Conservation Technical Assistance Program (CTA) is voluntary program available to any group or individual interested in conserving their natural resources and sustaining agricultural production. The program assists land users with addressing opportunities, concerns, and problems related to using their natural resources enabling them to make sound natural resource management decisions on private, tribal, and other non-federal lands. (http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/technical/)
    - Conservation Innovation Grants (CIG) is a voluntary program intended to stimulate developing and adopting innovative conservation approaches and technologies while leveraging Federal investment in environmental enhancement and protection, in conjunction with agricultural production. Under CIG, Environmental Quality Incentives Program funds are used to award competitive grants to non-Federal governmental or nongovernmental organizations, Tribes, or individuals.

      CIG enables NRCS to work with other public and private entities to accelerate technology transfer and adoption of promising technologies and approaches to address some of the Nation's most pressing natural resource concerns. CIG will benefit agricultural producers by providing more options for environmental enhancement and compliance with Federal, State, and local regulations. (http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/cig/)
    - The Environmental Quality Incentives Program (EQIP) is a voluntary program that provides financial and technical assistance to agricultural producers through contracts up to a maximum term of ten years in length. These contracts provide financial assistance to help plan and implement conservation practices that address natural resource concerns and for opportunities to improve soil, water, plant, animal, air and related resources on agricultural land and non-industrial private forestland. In addition, a purpose of EQIP is to help producers meet Federal, State, Tribal and local environmental regulations.

(http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/financial/eqip/?cid=stelprdb1242633)

- The Emergency Watershed Protection Program (EWP) is designed is to undertake emergency measures, including the purchase of flood plain easements, for runoff retardation and soil erosion prevention to safeguard lives and property from floods, drought, and the products of erosion on any watershed whenever fire, flood or any other natural occurrence is causing or has caused a sudden impairment of the watershed. (http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/landscape/ewpp/)
- Watershed Surveys and Planning. NRCS watershed activities in Alaska are voluntary efforts requested through conservation districts and units of government and/or tribes. The purpose of the program is to assist Federal, State, and local agencies and tribal governments to protect watersheds from damage caused by erosion, floodwater, and sediment and to conserve and develop water and land resources. Resource concerns addressed by the program include water quality, opportunities for water conservation, wetland and water storage capacity, agricultural drought problems, rural development, municipal and industrial water needs, upstream flood damages, and water needs for fish, wildlife, and forest-based industries. (http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/landscape/wsp/)

- Department of Energy (DOE), Office of Energy Efficiency and Renewable Energy, Weatherization Assistance Program. This program minimizes the adverse effects of high energy costs on low-income, elderly, and handicapped citizens through client education activities and weatherization services such as an all-around safety check of major energy systems, including heating system modifications and insulation checks. (http://www1.eere.energy.gov/wip/wap.html)
  - The Tribal Energy Program offers financial and technical assistance to Indian tribes to help them create sustainable renewable energy installations on their lands. This program promotes tribal energy self-sufficiency and fosters employment and economic development on America's tribal lands. (http://energy.gov/eere/wipo/tribal-energy-program)
- Department of Health and Human Services, Administration of Children & Families, Administration for Native Americans (ANA). The ANA awards funds through grants to American Indians, Native Americans, Native Alaskans, Native Hawaiians, and Pacific Islanders. These grants are awarded to individual organizations that successfully apply for discretionary funds. ANA publishes in the Federal Register an announcement of funds available, the primary areas of focus, review criteria, and application information. (http://www.acf.hhs.gov/grants/open/foa/)
- Department of Housing and Urban Development (HUD) provides a variety of disaster resources. They also partner with Federal and state agencies to help implement disaster recovery assistance. Under the *National Response Framework* the FEMA and the Small

Business Administration (SBA) offer initial recovery assistance. (http://www.hud.gov/info/disasterresources_dev.cfm)

- HUD, Office of Homes and Communities, Section 108 Loan Guarantee Programs. This program provides loan guarantees as security for Federal loans for acquisition, rehabilitation, relocation, clearance, site preparation, special economic development activities, and construction of certain public facilities and housing. (http://www.hud.gov/offices/cpd/communitydevelopment/programs/108/index.cfm)
- HUD, Office of Homes and Communities, Section 184 Indian Home Loan Guarantee Programs (IHLGP). The Section 184 Indian Home Loan Guarantee Program is a home mortgage specifically designed for American Indian and Alaska Native families, Alaska Villages, Tribes, or Tribally Designated Housing Entities. Section 184 loans can be used, both on and off native lands, for new construction, rehabilitation, purchase of an existing home, or refinance.
- Because of the unique status of Indian lands being held in Trust, Native American homeownership has historically been an underserved market. Working with an expanding network of private sector and tribal partners, the Section 184 Program endeavors to increase access to capital for Native Americans and provide private funding opportunities for tribal housing agencies with the Section 184 Program. (http://www.hud.gov/offices/pih/ih/homeownership/184/)
- Indian Housing Block Grant / Native American Housing Assistance and Self Determination Act (IHBG/NAHASDA) administration, operating & construction funds. The act is separated into seven sections:

  The Indian Housing Block Grant Program (IHBG) is a formula grant that provides a range of affordable housing activities on Indian reservations and Indian areas. The block grant approach to housing for Native Americans was enabled by the Native American Housing Assistance and Self Determination Act of 1996 (NAHASDA).

  Eligible IHBG recipients are Federally recognized Indian tribes or their tribally designated housing entity (TDHE), and a limited number of state recognized tribes who were funded under the Indian Housing Program authorized by the United States Housing Act of 1937 (USHA). With the enactment of NAHASDA, Indian tribes are no longer eligible for assistance under the USHA.

  An eligible recipient must submit to HUD an Indian Housing Plan (IHP) each year to receive funding. At the end of each year, recipients must submit to HUD an Annual Performance Report (APR) reporting on their progress in meeting the goals and objectives included in their IHPs.

  Eligible activities include housing development, assistance to housing developed under the Indian Housing Program, housing services to eligible families and individuals, crime prevention and safety, and model activities that provide creative approaches to solving affordable housing problems. (http://portal.hud.gov/hudportal/HUD?src=/program_offices/public_indian_housing/ih/grants/ihbg)
- HUD/CDBG provides grant assistance and technical assistance to aid communities in planning activities that address issues detrimental to the health and safety of local

residents, such as housing rehabilitation, public services, community facilities, and infrastructure improvements that would primarily benefit low-and moderate-income. persons (http://www.hud.gov/offices/cpd/communitydevelopment/programs/)

- HUD/Indian Community Development Block Grants (ICDBG) provide grant assistance and technical assistance to aid communities or Indian tribes in planning activities that address issues detrimental to the health and safety of local residents, such as housing rehabilitation, public services, community facilities, and infrastructure improvements that would primarily benefit low-and moderate-income. persons (http://portal.hud.gov/hudportal/HUD?src=/program_offices/public_indian_housing/ih/grants/icdbg)

- Department of Labor (DOL), Employment and Training Administration, Disaster Unemployment Assistance (DUA). Provides weekly unemployment subsistence grants for those who become unemployed because of a major disaster or emergency. Applicants must have exhausted all benefits for which they would normally be eligible. (http://www.workforcesecurity.doleta.gov/unemploy/disaster.asp)
  - The Workforce Investment Act contains provisions aimed at supporting employment and training activities for Indian, Alaska Native, and Native Hawaiian individuals. The Department of Labor's Indian and Native American Programs (INAP) funds grant programs that provide training opportunities at the local level for this target population. (http://www.dol.gov/dol/topic/training/indianprograms.htm)
- U.S. Department of Transportation (DOT), Hazardous Materials Emergency Preparedness (HMEP) Grant. The Hazardous Materials Transportation Safety and Security Reauthorization Act of 2005 authorizes the U.S. DOT to provide assistance to public sector employees through training and planning grants to States, Territories, and Native American tribes for emergency response. The purpose of this grant program is to increase State, Territorial, Tribal, and local effectiveness in safely and efficiently handling hazardous materials accidents and incidents, enhance implementation of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA), and encourage a comprehensive approach to emergency training and planning by incorporating the unique challenges of responses to transportation situations. (http://www.phmsa.dot.gov/hazmat/grants)
- Federal Financial Institutions. Member banks of Federal Deposit Insurance Corporation, Financial Reporting Standards or Federal Home Loan Bank Board may be permitted to waive early withdrawal penalties for Certificates of Deposit and Individual Retirement Accounts.
- Internal Revenue Service (IRS), Disaster Tax Relief. Provides extensions to current year's tax return, allows deductions for disaster losses, and allows amendment of previous year’s tax returns (http://www.irs.gov/Businesses/Small-Businesses-%26-Self-Employed/Disaster-Assistance-and-Emergency-Relief-for-Individuals-and-Businesses-1).
- U.S. Small Business Administration (SBA) Disaster Assistance Loans and Grants program provides information concerning disaster assistance, preparedness, planning,

cleanup, and recovery planning. (https://www.sba.gov/category/navigation-structure/loans-grants)

  - May provide low-interest disaster loans to individuals and businesses that have suffered a loss due to a disaster. (https://www.sba.gov/category/navigation-structure/loans-grants/small-business-loans/disaster-loans). Requests for SBA loan assistance should be submitted to DHS&EM.

- United States Army Corps of Engineers (USACE) Alaska District's Civil Works Branch studies potential water resource projects in Alaska. These studies analyze and solve water resource issues of concern to the local communities. These issues may involve navigational improvements, flood control or ecosystem restoration. The agency also tracks flood hazard data for over 300 Alaskan communities on floodplains or the sea coast. These data help local communities assess the risk of floods to their communities and prepare for potential future floods. The USACE is a member and co-chair of the Alaska Climate Change Sub-Cabinet.
  - Civil Works and Planning (http://www.poa.usace.army.mil/Missions/CivilWorksandPlanning.aspx)
  - Environmental Resources Section (http://www.poa.usace.army.mil/About/Offices/Engineering/EnvironmentalResources.aspx)
  - USACE Alaska District Grants (http://search.usa.gov/search?affiliate=alaska_district&query=grants)
- The Grants.gov program management office was established, in 2002, as a part of the President's Management Agenda. Managed by the Department of Health and Human Services, Grants.gov is an E-Government initiative operating under the governance of the Office of Management and Budget.

  Under the President's Management Agenda, the office was chartered to deliver a system that provides a centralized location for grant seekers to find and apply for federal funding opportunities. Today, the Grants.gov system houses information on over 1,000 grant programs and vets grant applications for 26 federal grant-making agencies.

State Funding Resources

- Department of Military and Veterans Affairs (DMVA): Provides damage appraisals and settlements for VA-insured homes, and assists with filing of survivor benefits. (http://veterans.alaska.gov/links.htm)
  - DHS&EM within DMVA is responsible for improving hazard mitigation technical assistance for local governments for the State of Alaska. Providing hazard mitigation training, current hazard information and communication facilitation with other agencies will enhance local hazard mitigation efforts. DHS&EM administers FEMA mitigation grants to mitigate future disaster damages such as those that may affect infrastructure including elevating, relocating, or acquiring hazard-prone properties. (http://ready.alaska.gov/plans/mitigation.htm)

DHS&EM also provides mitigation funding resources for mitigation planning on their Web site at http://ready.alaska.gov/grants.

- Division of Health and Social Services (DHSS): On this site you will find information intended to assist all who are interested in DHSS grants and services they support. (http://dhss.alaska.gov/fms/grants/Pages/grants.aspx and http://dhss.alaska.gov/fms/Documents/FY15GrantBook.pdf)
- Division of Health and Social Services (DSS): Provides special outreach services for seniors, including food, shelter and clothing. (http://dhss.alaska.gov/dsds/Pages/hcb/hcb.aspx)
- Division of Insurance (DOI): Provides assistance in obtaining copies of policies and provides information regarding filing claims. (http://commerce.state.ak.us/dnn/ins/Consumers/AlaskaConsumerGuide.aspx)
- DCRA within the DCCED administers the HUD/CDBG, FMA Program, and the Climate Change Sub-Cabinet's Interagency Working Group's program funds and administers various flood and erosion mitigation projects, including the elevation, relocation, or acquisition of flood-prone homes and businesses throughout the State. This division also administers programs for State's" distressed" and "targeted" communities. (http://www.commerce.state.ak.us/dca/)
    - DCRA Planning and Land Management staff provide Alaska Climate Change Impact Mitigation Program (ACCIMP) funding to Alaskan communities that meet one or more of the following criteria related to flooding, erosion, melting permafrost, or other climate change-related phenomena: Life/safety risk during storm/flood events; loss of critical infrastructure; public health threats; and loss of 10% of residential dwellings. (http://commerce.state.ak.us/dnn/dcra/PlanningLandManagement/ACCIMP.aspx)

      The Hazard Impact Assessment is the first step in the ACCIMP process. The HIA identifies and defines the climate change-related hazards in the community, establishes current and predicted impacts, and provides recommendations to the community on alternatives to mitigate the impact. (http://commerce.alaska.gov/dca/planning/accimp/hazard_impact.html)
- Department of Environmental Conservation (DEC). DEC's primary roles and responsibilities concerning hazards mitigation are ensuring safe food and safe water, and pollution prevention and pollution response. DEC ensures water treatment plants, landfills, and bulk fuel storage tank farms are safely constructed and operated in communities. Agency and facility response plans include hazards identification and pollution prevention and response strategies. (http://dec.alaska.gov/)
    - The Division of Water's Village Safe Water (VSW) Program works with rural communities to develop sustainable sanitation facilities. Communities apply each year to VSW for grants for sanitation projects. Federal and state funding for this program is administered and managed by the VSW program. VSW provides technical and financial support to Alaska's smallest communities to design and construct water and wastewater systems. In some cases, funding is awarded by VSW through the

Alaska Native Tribal Health Consortium (ANTHC), who in turn assist communities in design and construct of sanitation projects.

- Municipal Grants and Loans (MGL) Program. The Department of Environmental Conservation / Division of Water administer the Alaska Clean Water Fund (ACWF) and the Alaska Drinking Water Fund (ADWF). The division is fiscally responsible to the Environmental Protection Agency (EPA) to administer the loan funds as the EPA provides capitalization grants to the division for each of the loan funds. In addition, it is prudent upon the division to administer the funds in a manner that ensures their continued viability. (http://dec.alaska.gov/water/MuniGrantsLoans/loanoverview.html
- Under EPA's Clean Water State Revolving Fund (CWSRF) program, each state maintains a revolving loan fund to provide independent and permanent sources of low-cost financing for a wide range of water quality infrastructure projects, including: municipal wastewater treatment projects; non-point source projects; watershed protection or restoration projects; and estuary management, [and stormwater management] projects. (http://yosemite.epa.gov/R10/ecocomm.nsf/6da048b9966d22518825662d00729a35/7b68c420b668ada5882569ab00720988!OpenDocument)

  Alaska's Revolving Loan Fund Program, prescribed by Title VI of the Clean Water Act as amended by the Water Quality Act of 1987, Public Law 100-4. DEC will use the ACWF account to administer the loan fund. This Agreement will continue from year-to-year and will be incorporated by reference into the annual capitalization grant agreement between EPA and the DEC. DEC will use a fiscal year of July 1 to June 30 for reporting purposes. (http://www.epa.gov/region10/pdf/water/srf/cwsrf_alaska_operating_agreement.pdf)

- Department of Transportation and Public Facilities (DOT/PF) personnel provide technical assistance to the various emergency management programs, to include mitigation. This assistance is addressed in the DHS&EM-DOT/PF Memorandum of Agreement and includes but is not limited to: environmental reviews, archaeological surveys, and historic preservation reviews.
  - DOT/PF and DHS&EM coordinate buy-out projects to ensure that there are no potential right-of-way conflicts with future use of land for bridge and highway projects, and collaborate on earthquake mitigation.
  - Additionally, DOT/PF provides the safe, efficient, economical, and effective State highway, harbor, and airport operation. DOT/PF uses it's Planning, Design and Engineering, Maintenance and Operations, and Intelligent Transportation Systems resources to identify hazards, plan and initiate mitigation activities to meet the transportation needs of Alaskans, and make Alaska a better place to live and work. DOT/PF budgets for temporary bridge replacements and materials necessary to make the multi-modal transportation system operational following natural disaster events.
- DNR administers various projects designed to reduce stream bank erosion, reduce localized flooding, improve drainage, and improve discharge water quality through the stormwater grant program funds. Within DNR,

- The Division of Geological and Geophysical Survey (DGGS) is responsible Alaska's mineral, land, and water resources use, development, and earthquake mitigation collaboration.

  Their geologists and support staff are leaders in researching Alaska's geology and implementing technological tools to most efficiently collect, interpret, publish, archive, and disseminate information to the public. (http://dggs.alaska.gov/pubs/advanced-search)

- The DNR's Division of Forestry (DOF) participates in a statewide wildfire control program in cooperation with the forest industry, rural fire departments and other agencies. Prescribed burning may increase the risks of fire hazards; however, prescribed burning reduces the availability of fire fuels and therefore the potential for future, more serious fires. (http://forestry.alaska.gov/pdfs/08FireSuppressionMediaGuide.pdf)

- DOF also manages various wildland fire programs, activities, and grant programs such as the FireWise Program (http://forestry.alaska.gov/fire/firewise.htm), Community Forestry Program (CFP) (http://forestry.alaska.gov/community/), Assistance to Fire Fighters Grant (AFG), Fire Prevention and Safety (FP&S), Staffing for Adequate Fire and Emergency Response Grants (SAFER), and Volunteer Fire Assistance and Rural Fire Assistance Grant (VFA-RFA) programs (http://forestry.alaska.gov/fire/vfarfa.htm). Information can be found at http://forestry.alaska.gov/fire/current.htm.

- The Alaska Interagency Coordination Center (AICC) is the Geographic Area Coordination Center for Alaska. AICC serves as the focal point for initial attack resource coordination, logistics support, and predictive services for all state and federal agencies involved in wildland fire management and suppression in Alaska.

  Fire management planning, preparedness, suppression operations, prescribed burning, and related activities are coordinated on an interagency basis. DOF has cooperative agreements with the Departments of Agriculture and Interior, and numerous local government and volunteer fire departments to respond to wildland fires, reduce duplication of efforts, and share resources.

  In 1984 the State of Alaska adopted the National Interagency Incident Management System Incident Command System concept for managing fire suppression. The Incident Command System (ICS) guiding principles are followed in all wildland fire management operations. All State of Alaska Departments adopted ICS in 1996 through the Governor's administrative order.

Other Funding Resources

The following provide focused access to valuable planning resources for communities interested in sustainable development activities.

- Rural Alaska Community Action Program Inc. (RurAL CAP) In the nearly 50 years since it began, it is difficult to imagine any aspect of rural Alaskan lives which has not been touched in some way by the people and programs of RurAL CAP. From Head Start, parent education, adult basic education, and elder-youth programs, to Native land claims and subsistence rights, energy and weatherization programs, and alcohol and substance

abuse prevention, RurAL CAP has left a lasting mark on the history and development of Alaska and its rural Peoples. (http://ruralcap.com/?page_id=334)

  - Weatherization Assistance Program assists low to moderate income households in weatherization needs. The program is available to homeowners as well as renters and includes; single family homes, cabins, mobile homes, condominiums and multifamily dwellings. (http://ruralcap.com/?page_id=794)
  - Solid Waste Management. RurAL CAP continues to host an expert solid waste liaison, Ted Jacobson, through funding provided by the Environmental Protection Agency (EPA) and Senior Services America, Inc. The liaison provides solid waste management technical assistance to rural communities through training, site visits, hands-on demonstrations, and remote contact. Resources are provided for dump management activities, collaborating with funders for funding and technical assistance on solid waste management, recycling, and backhaul. (http://ruralcap.com/?page_id=198

- American Planning Association (APA), http://www.planning.org - a non-profit professional association that serves as a resource for planners, elected officials, and citizens concerned with planning and growth initiatives.
- Institute for Business and Home Safety (IBHS), an initiative of the insurance industry to reduce deaths, injuries, property damage, economic losses, and human suffering caused by natural disasters. (http://www.disastersafety.org/)
- American Red Cross (ARC). Provides for the critical needs of individuals such as food, clothing, shelter, and supplemental medical needs. Provides recovery needs such as furniture, home repair, home purchasing, essential tools, and some bill payment may be provided. (http://www.redcross.org/find-help)
- Catalog of Federal Domestic Assistance (DFDA) Crisis Counseling Program (CCP). Provides grants to State and Borough Mental Health Departments, which in turn provide training for screening, diagnosing and counseling techniques. Also provides funds for counseling, outreach, and consultation for those affected by disaster. (http://dialoguemakers.org/Resourses4states+Nonprofits.htm)
- Denali Commission. Introduced by Congress in 1998, the Denali Commission is an independent federal agency designed to provide critical utilities, infrastructure, and economic support throughout Alaska. With the creation of the Denali Commission, Congress acknowledged the need for increased inter-agency cooperation and focus on Alaska's remote communities. Since its first meeting in April 1999, the Commission is credited with providing numerous cost-shared infrastructure projects across the State that exemplifies effective and efficient partnership between federal and state agencies, and the private sector. (http://www.denali.gov/grants)

  - The Energy Program primarily funds design and construction of replacement bulk fuel storage facilities, upgrades to community power generation and distribution systems, alternative-renewable energy projects, and some energy cost reduction projects. The Commission works with the Alaska Energy Authority (AEA), Alaska

Village Electric Cooperative (AVEC), Alaska Power and Telephone and other partners to meet rural communities' fuel storage and power generation needs.

  - The goal of the solid waste program at the Denali Commission is to provide funding to address deficiencies in solid waste disposal sites which threaten to contaminate rural drinking water supplies.

- Lindbergh Foundation Grants. Each year, The Charles A. and Anne Morrow Lindbergh Foundation provides grants of up to $10,580 (a symbolic amount representing the cost of the Spirit of St. Louis) to men and women whose individual initiative and work in a wide spectrum of disciplines furthers the Lindberghs' vision of a balance between the advance of technology and the preservation of the natural/human environment. (http://www.thelindberghfoundation.org/awards)

- Rasmuson Foundation Grants. The Rasmuson foundation invests both in individuals and well-managed 501(c)(3) organizations dedicated to improving the quality of life for Alaskans.

  Rasmuson Foundation awards grants both to organizations serving Alaskans through a base of operations in Alaska, and to individuals for projects, fellowships and sabbaticals. To be considered for a grant award, grant seekers must meet specific criteria and complete and submit the required application according to the specific guidelines of each program. (http://www.rasmuson.org/index.php?switch=viewpage&pageid=5)

  - Tier 1 Awards: Grants of up to $25,000 for capital projects, technology updates, capacity building, program expansion, and creative works.
  - Tier 2 Awards: Grants over $25,000 for projects of demonstrable strategic importance or innovative nature.
  - Pre-Development Program: Guidance and technical resources for planning new, sustainable capital projects.

  The Foundation trustees believe successful organizations can sustain their basic operations through other means of support and prefer to assist organizations with specific needs, focusing on requests which allow the organizations to become more efficient and effective. The trustees look favorably on organizations which demonstrate broad community support, superior fiscal management and matching project support. (http://www.rasmuson.org/index.php)

Appendix B

FEMA Hazard Mitigation Plan (HMP) Review Tool

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LOCAL MITIGATION PLAN REVIEW TOOL

The *Local Mitigation Plan Review Tool* demonstrates how the Local Mitigation Plan meets the regulation in 44 CFR §201.6 and offers States and FEMA Mitigation Planners an opportunity to provide feedback to the community.

- The Regulation Checklist provides a summary of FEMA's evaluation of whether the Plan has addressed all requirements.
- The Plan Assessment identifies the plan's strengths as well as documents areas for future improvement.
- The Multi-jurisdiction Summary Sheet is an optional worksheet that can be used to document how each jurisdiction met the requirements of the each Element of the Plan (Planning Process; Hazard Identification and Risk Assessment; Mitigation Strategy; Plan Review, Evaluation, and Implementation; and Plan Adoption).

The FEMA Mitigation Planner must reference this *Local Mitigation Plan Review Guide* when completing the *Local Mitigation Plan Review Tool*.

Jurisdiction: City of Unalakleet, Alaska	**Title of Plan:** City of Unalakleet Hazard Mitigation Plan Update	**Date of Plan:** August 2015
Local Point of Contact: Dave Richards	**Address:** City of Unalakleet CP.O. Box 28 Unalakleet, Alaska 99684	
Title: City Manager		
Agency: City of Unalakleet, Alaska		
Phone Number: 907.624.3531	**E-Mail:** counk@alaskan.com	

State Reviewer: Scott Nelsen	**Title:** Mitigation Planner	**Date:** 8/28/2015

FEMA Reviewer: **Jamie Mooney** **Kristen Meyers**	**Title:** **CERC Mitigation Planner** **Mitigation Planner**	**Date:** **9/24/15** **10/15/15; 10/25/15**
Date Received in FEMA Region ***(insert #)***	9/4/15	
Plan Not Approved		
Plan Approvable Pending Adoption		
Plan Approved	12/21/2015	

SECTION 1:
REGULATION CHECKLIST

INSTRUCTIONS: The Regulation Checklist must be completed by FEMA. The purpose of the Checklist is to identify the location of relevant or applicable content in the Plan by Element/sub-element and to determine if each requirement has been 'Met' or 'Not Met.' The 'Required Revisions' summary at the bottom of each Element must be completed by FEMA to provide a clear explanation of the revisions that are required for plan approval. Required revisions must be explained for each plan sub-element that is 'Not Met.' Sub-elements should be referenced in each summary by using the appropriate numbers (A1, B3, etc.), where applicable. Requirements for each Element and sub-element are described in detail in this *Plan Review Guide* in Section 4, Regulation Checklist.

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	**Location in Plan** (section and/or page number)	**Met**	**Not Met**
ELEMENT A. PLANNING PROCESS			
A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))	Section 3 Section 3.1, Page 3-1 to 3-2 Section 3.2, Page 3-2 to 3-3 Table 3-1, Page 3-3	√	
A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2))	Section 3.3, Page 3-3 to 3-4	√	
A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))	Section 3.3, Page 3-3 to 3-5 Table 3-2, Page 3-4	√	
A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))	Section 3.5, Page 3-7 to 3-8 Table 3-4, Page 3-7 to 3-8	√	
A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))	Section 3.6, Page 3-8 Section 3.6.2 Page 3-9 Section 3.5.2 Page 19	√	
A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))	Section 3.6 (Throughout this section) Section 3.6.3.4, Page 3-11 to 6-13	√	
ELEMENT A: REQUIRED REVISIONS			

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	**Location in Plan** (section and/or page number)	**Met**	**Not Met**
ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT			
B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))	Section 5, Page 5-1 to 5- Section 5.2, Page 5-1 to 5-2, Table 5-1, Page 5-2 ***Earthquake*** Section 5.3.1, Section 5.3.1.1 Type, Page 5-5 to 5-6 Section 5.3.1.3, Location, Page 5-7 to 5-8 Extent, Page 5-8 ***Flood*** Section 5.3.2 Section 5.3.2.1, Type, Page 5-9 to 5-12 Section 5.3.1.3 Location, Page 5-15 Extent, Page 5-15 to 5-16 ***Severe Weather*** Section 5.3.3.1 Type, Page 5-19 to 5-21 Section 5.3.3.3, Location, Page 5-25 Extent, Page 5-26 ***Wildland Fire*** Section 5.3.4.1 Type, Page 5-27 Section 5.3.4.3 Location, Page 5-28 to 5-29 Extent, Page 5-29	√	

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	**Location in Plan** (section and/or page number)	**Met**	**Not Met**
B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))	***Earthquake*** Section 5.3.1.2 History: Page 5-6 to 5-7 Section 5.3.1.3 Probability: Page 5-8 to 5-9 ***Flood*** Section 5.3.2.2 History: Page 5-12 to 5-15 Section 5.3.1.3 Probability: Page 5-18 ***Severe Weather*** Section 5.3.3.2 History: Page 5-21 to 5-25 Section 5.3.3.3 Probability: Page 5-26 ***Wildland Fire*** History: Section 5.3.4.2 Page 5-28 Probability: Section 5.3.4.3 Page 5-30	√	

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	**Location in Plan** (section and/or page number)	**Met**	**Not Met**
B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))	***Earthquake*** Impact 5.3.1.3, Page 5-9 ***Flood*** Impact Section 5.2.2.3 Page 5-16 to 5-18 ***Severe Weather*** Impact: Section 5.3.3.3 Page 5-26 ***Wildland Fire*** Impact: Section 5.3.4.3 Page 52 **Vulnerability Assessment** Section 6, Pages 6-1 to 6-13	√	
B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))	Section 1.2.1, Page 1-5 Section 6.4, Page 6-9 to 6-10	√	
ELEMENT B: REQUIRED REVISION			

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
ELEMENT C. MITIGATION STRATEGY			
C1. Does the plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement §201.6(c)(3))	Section 7 Section 7.2, Page 7-2 to 7-4 Tables 7-1, 7-2 and 7-3	√	
C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))	Section 1.2.1, Text Box Page 1-5 Plan Layout-Mitigation Strategy Page 1-7 Section 5, Page 5-3 Section 6.4, Page 6-10 Section 7, Page 7-1 Table 7-3, Page 7-4 Section 7.4 Page 7-6 Table 7-10, Page 7-16, Project MH 2.2	√	
C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))	Section 7.3, Page 7-4 Table 7-4, Page 75	√	
C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement §201.6(c)(3)(ii))	Section 7-4, Page 7-5 Table 7-5, Page 7-6 to 7-9	√	
C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))	Process: Section 7-5, Page 7-9 to 7-10 Table 7-6, Page 7-10 Section 7-6 Mitigation Action Plan, Page 7-11 to 7-22 MAP Table 7-8, Page 7-13 to 7-22	√	
C6. Does the Plan describe a process by which local governments will Integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))	Section 7.7, Page 7-23	√	
ELEMENT C: REQUIRED REVISIONS			

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	**Location in Plan** (section and/or page number)	**Met**	**Not Met**
ELEMENT D. PLAN REVIEW, EVALUATION, AND IMPLEMENTATION (applicable to plan updates only)			
D1. Was the plan revised to reflect changes in development? (Requirement §201.6(d)(3))	Section 6.2, Page 6-2 Section 6.3, Page 6-5 to 6-13	√	
D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement §201.6(d)(3))	Section 3.4, Page 3-5 to 3-7 Table 3-3, Page 3-6 to 3-7; Section 7 Table 7-5	√	
D3. Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))	Section 7.3, Page 7-4 to 7-5 Table 7-4, Page 7-5 Section 7.4, Table 7-5, Page 7-6 to 7-10	√	
ELEMENT D: REQUIRED REVISIONS			
ELEMENT E. PLAN ADOPTION			
E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))	Section 4.1, Page 4-1	√	
E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))	N/A		
ELEMENT E: REQUIRED REVISIONS			
ELEMENT F. ADDITIONAL STATE REQUIREMENTS (OPTIONAL FOR STATE REVIEWERS ONLY; NOT TO BE COMPLETED BY FEMA)			
F1.			
F2.			
ELEMENT F: REQUIRED REVISIONS			

A. Plan Strengths and Opportunities for Improvement

This section provides a discussion of the strengths of the plan document and identifies areas where these could be improved beyond minimum requirements.

ELEMENT A. PLANNING PROCESS

Plan Strengths

- The plan includes a strong list of stakeholders invited to participate in the planning process and comment on the plan.
- The plan maintenance documents and templates in Appendix F will be a good starting point for the Planning Team to monitor and evaluate the effectiveness of the HMP and the Mitigation Strategy.

Opportunities for Improvement

- Having a description of which of the added stakeholders actually participated from the list, and how they participated, would strengthen the plan. Did any actually provide information, attend meetings, or otherwise participate in the planning process?
- The plan clearly indicates that the public was given the opportunity to participate in the plan during drafting and during the review process, but neither the plan nor Appendix D includes the details of public participation. Consider including a description of how the public was involved in the body of the plan. Did any members of the public attend the public meeting? Did any provide comments or feedback? If so, how were they incorporated?
- Consider including the completed Annual Review Questionnaires as an appendix to the HMP in the next five-year update.

ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT

Plan Strengths

- Table 5-1 provides a nice snapshot of why hazards were selected for inclusion in the HMP.
- Scales for magnitude/severity and likelihood are well-defined and described.
- The 5.3.X.1: Nature sections very clearly delineate the range of types of hazards included in each categorization.
- Critical facility and asset inventory is very thorough, and level of detail on facilities will be helpful for future identification of mitigation opportunities.

Opportunities for Improvement

- In general, the discussion of the geography of hazard events (both potential and past occurrences) could be stronger. In lieu of quantitative data, future plan updates should include a qualitative description of where hazard events have occurred or are expected to occur in the future. Where a hazard impacts the entire community equally, the plan should state so in the hazard profiles themselves.

- Many maps were small and difficult to read. The City of Unalakleet's location was not noted on all maps. Consider larger maps with the jurisdiction marked on each one for future plan updates.
- Consider adding additional detail and past occurrences to the Severe Weather Profile. Qualitative descriptions and/or photos of hazard events collected from the Planning Team will strengthen the risk assessment.
- All of the hazards are expected to impact 100% of the planning area when they occur, and are anticipated to impact all population, all structures, and all critical facilities. Consider incorporating some kind of ranking or rating for hazards to identify which are more pressing concerns to mitigate.

ELEMENT C. MITIGATION STRATEGY

Plan Strengths

- Plan provides a detailed list of potential funders for hazard mitigation activities, and the associated Appendix provides good baseline descriptions of funding sources that can be used as a starting point for identifying funds.

Opportunities for Improvement

- As time goes on, the Mitigation Action Plan should get progressively more refined. During the next plan update, focus on making actions more specific. For example, try to move Action EQ 4.2 from "Inspect, prioritize, and retrofit any critical facility or public infrastructure that does not meet current Building Codes" – for the next plan, list the structures or infrastructure that are the highest priority to retrofit. Similarly, list locations most in need of rip rap, sheet pilings, gabion baskets, etc.
- Future plans should include a column (or other narrative) for each action stating the progress made since the previous plan update.
- The discussion of the integration could be stronger. For example, include the update schedule for the Comprehensive Plan, Capital Improvement Project List, Transportation Improvement Plan, and other mechanisms so it is clear when integration will occur in the future. Where are the current planning mechanisms aligned? Where are there gaps that integrating planning mechanisms would fill?

ELEMENT D. PLAN REVIEW, EVALUATION, AND IMPLEMENTATION

Plan Strengths

- Table 7-5 clearly shows the status of past mitigation actions.

Opportunities for Improvement

- Rather than using different colors for table 7-5 and 7-8, you could add a column that address progress over time.

B. Resources for Implementing Your Approved Plan

The **Local Mitigation Plan Review Guide and Tool** resource is available through FEMA's Library and should be referred to for the next plan update.
http://www.fema.gov/library/viewRecord.do?id=4859

The **Local Mitigation Planning Handbook** is available. While the requirements under §201.6 have not changed, the *Handbook* provides guidance to local governments on developing or updating hazard mitigation plans to meet the requirements is available through the FEMA Library website. http://www.fema.gov/library/viewRecord.do?id=7209

The **Mitigation Ideas: A Resource for Reducing Risk from Natural Hazards** resource presents ideas for how to mitigate the impacts of different natural hazards, from drought and sea level rise, to severe winter weather and wildfire. The document also includes ideas for actions that communities can take to reduce risk to multiple hazards, such as incorporating a hazard risk assessment into the local development review
process. http://www.fema.gov/library/viewRecord.do?id=6938

The **Integrating Hazard Mitigation Into Local Planning: Case Studies and Tools for Community Officials** resource provides practical guidance on how to incorporate risk reduction strategies into existing local plans, policies, codes, and programs that guide community development or redevelopment patterns. It includes recommended steps and tools tools to assist with local integration efforts, along with ideas for overcoming possible impediments, and presents a series of case studies to demonstrate successful integration in practice.
http://www.fema.gov/library/viewRecord.do?id=7130

The mitigation strategy includes projects that are eligible for FEMA's grant programs. Contact the State Hazard Mitigation Officer, Ann Gravier, at ann.gravier@alaska.gov for application information.

Appendix C

Community HMP Adoption Resolution

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RESOLUTION OF ADOPTION #15-04

City of Unalakleet Hazard Mitigation Plan

WHEREAS the City of Unalakleet is vulnerable to damages from natural hazard events which pose a threat to public health and safety and could result in property loss and economic hardship;

WHEREAS a Hazard Mitigation Plan (the Plan) was developed through the work of City of Unalakleet Hazard Mitigation Plan (HMP) Planning Team, and interested parties within the City area;

WHEREAS the Plan recommends hazard mitigation actions that will protect people and property affected by natural hazards that face City residents, that will reduce future public, private, community, and personal costs of disaster response and recovery; and that will reinforce the City's leadership in emergency preparedness efforts;

WHEREAS the Disaster Mitigation Act of 2000 (P.L. 106-390) (DMA 2000) and associated Federal regulations published under 44 CFR Part 201 require the City to formally adopt a Hazard Mitigation Plan subject to the approval of the Federal Emergency Management Agency to be eligible for federal hazard mitigation projects and activities funds;

WHEREAS the City held public meetings or provided opportunities to receive comment on the Plan as required by DMA 2000;

NOW THEREFORE BE IT RESOLVED by the City of Unalakleet City Council that:

1. The Plan is hereby adopted as an official plan of the City of Unalakleet.

2. The Planning Team's officials identified in the Planning Process (Section 3) and the Mitigation Action Plan (Section 7) are hereby directed to implement the recommended actions assigned to them. These officials will report quarterly on their activities, accomplishments, and progress to the City Council.

3. The City of Unalakleet's Hazard Mitigation Planning Team will provide annual progress reports on the status of the implemented Mitigation Action Plan's projects to the City Council. The Planning Team will submit this report to the City of Unalakleet City Council annually by the Plan's adoption anniversary date.

4. The City of Unalakleet Hazard's Planning Team, will complete periodic updates of the Plan as indicated in the Plan Maintenance Section (Section 3), but no less frequently than every five years or when determined by the State of Alaska or the Federal Emergency Management Agency (FEMA).

NOW THEREFORE, BE IT RESOLVED by City of Unalakleet City Council that the City of Unalakleet adopts the updated hazard mitigation plan, dated 10/13, 2015 as this jurisdiction's Hazard Mitigation Plan, and resolves to execute the actions in the Plan.

ADOPTED this "Date", 2015 at the meeting of the City Council.

David Richards

"Name", "Title" City Manager

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Appendix D

Public Outreach Activities

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Subject: Hazard Mitigation Plan Development Project Initial Notice

Date: Thursday, November 20, 2014 at 12:18:13 PM Alaska Standard Time

From: Simmons, Scott

To: 'mewest@alaska.edu', 'hdenny@anthc.org', 'tneal@usgs.gov', 'swhite@avcp.org', 'steve.heppner.bia.ak@gmail.com', 'kato_howard@ak.blm.gov', 'jneimeyer@denali.gov', 'leslie.pearson@alaska.gov', 'ryan.anderson@alaska.gov', 'Alice.Edwards@alaska.gov', 'taunnie.boothby@alaska.gov', 'scott.nelsen@alaska.gov', 'alan.wien@alaska.gov', 'terri.lomax@alaska.gov', 'Soderlund.Dianne@epamail.epa.gov', 'john.lingaas@noaa.gov', 'joel.curtis@noaa.gov', 'sam.albanese@noaa.gov', 'meg.mueller@ak.usda.gov', 'merlaine.kruse@ak.usda.gov', 'greg.magee@alaska.gov', 'Anna_Plager@dnr.state.ak.us', 'kerry_walsh@dnr.state.ak.us', 'John_Dunker@dnr.state.ak.us', 'Steve_Clautice@dnr.state.ak.us', 'patricia_burns@dnr.state.ak.us', 'Steve_McGroarty@dnr.state.ak.us', 'Mac_McLean@dnr.state.ak.us', 'Margie_Goatley@dnr.state.ak.us', 'Bruce.R.Sexauer@poa02.usace.army.mil', 'colleen.bickford@hud.gov', 'ak_le@fws.gov'

CC: Eileen Bechtol (erbechtol@gmail.com), DHSEM Scott Nelsen, Evans, Jessica, Appleby, Elizabeth, Wasserman, Evan

Dear Potential HMP Development Participants,
URS Corporation has received a 2014 contract from the State Division of Homeland Security and Emergency Management (DHS&EM) to develop 21 Local/Tribal All-Hazard Mitigation Plans for the following communities:

New HMP Development

- Atmautlauk (Unorganized)
- Chitina (Unorganized)
- Copper Center (Unorganized)
- Grayling (Unorganized)
- Kongiganak (Unorganized)
- Kwigillingok (Unorganized)
- City of Merkoryuk (2nd Class City)
- City of Nightmute (2nd Class City)
- Tuntutuliak (Unorganized)
- Tununak (Unorganized)
- City of Wales (2nd Class city)

HMP Update Required

- Newtok (Unorganized)
- City of Aniak (2nd Class City)
- City of Dillingham (1st Class City)
- City of Golovin (2nd Class City)
- Lake and Peninsula Borough, MJHMP
- City of Hooper Bay (2nd Class City)
- City of Kivalina (2nd Class City)
- City of Saint Paul (2nd Class City)
- City of Unalakleet (2nd Class City)
- City and Borough of Yakutat

The Lake and Peninsula Borough (L&PB) Multi-Jurisdictional HMP (MJHMP) consists of six organized cities and 12 unorganized communities:

The Lake and Peninsula Borough, MJHMP

Organized Cities	*Unorganized Communities*
City of Chignik (2nd Class City)	Chignik Lagoon
City of Egegik (2nd Class City)	Chignik Lake
City of Newhalen (2nd Class City)	Igiugig
City of Nondalton (2nd Class City)	Iliamna
City of Pilot Point (2nd Class City)	Ivanof Bay
City of Port Heiden (2nd Class City)	Kokhanok

We invite you to participate in this important community planning effort during the development

process. Community newsletters will be located on the DHS&EM Local/Tribal All Hazard Mitigation Plan Development website at: http://ready.alaska.gov/plans/localhazmitplans as the communities finalize them.

Please feel free to contact me and to forward this email to the most appropriate person within your agency involved with hazard assessments, hazard mitigation plan development or community specific hazard information or planning suggestions. (Please cc me so I may update the contact list)

I encourage you to acknowledge receiving this invitation at your earliest convenience to allow me to include your participation (with appropriate acknowledgments) within the Draft and Final HMPs prior to State and FEMA review and subsequent approvals.

Kind Regards
-Scott-

R. Scott Simmons, CFM, CPM
AECOM + URS
700 G Street, Suite 500 | Anchorage, AK 99501
Ph: 907.261.9706 | 800.909.6787 | Personal Mobile: 841.1832 | Fax: 907.562.1297
eMail Address: scott.simmons@urs.com

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Subject: Unalakleet HMP Update

Date: Saturday, February 14, 2015 at 10:09:38 PM Alaska Standard Time

From: Eileen Bechtol

To: Loretta Millet

CC: Simmons, Scott

Hello Ms. Millet:

I am writing to introduce myself, Eileen Bechtol, a subcontractor for Scott Simmons, AECOM (formerly known as URS Corporation). AECOM was contracted by the Division of Homeland Security and Emergency Management (DHS&EM) to develop a Hazard Mitigation Plan Update for 21 Alaska jurisdictions. The City of Unalakleet is one of the selected jurisdictions.

I got your name as the City Clerk of Unalakleet from DHS&EM; if there is someone else I should contact about the Unalakleet HMP Update please forward this email. Thank you.

It is important to note that the City of Unalakleet does not have to pay anything for this project. This is an important project for your community funded by FEMA through the DHS&EM. URS worked with rural communities to assist them with their hazard mitigation plan development needs. In fact, URS has been developing HMPs nationwide since 2000. Our Alaska office has completed approximately 90 State, Borough and local community, State reviewed, and FEMA approved Hazard Mitigation Plans to-date.

HMP updates require reviewing current plans to identify how conditions have changed since the plan was last approved. For example, the current plan's plan development activities may change such as planning team membership; new plans, reports, and studies reviewed, new hazards identified and newly disaster impacts annotated. These changes could directly change identified planning community vulnerabilities and risks. This requires that the current Mitigation Strategy be reviewed and updated to identify current project's status. Were any project completed or do they need to be modified, merged with similar initiatives for the same impact or location; deleted because they are no longer deemed the most appropriate mitigation initiative, or changed to reflect new jurisdictional needs?

AECOM role in this project is to ensure that the Updated HMP meets state and federal requirements -- part of this requirement is to describe the process in which the community was involved. We are at the beginning stages of this project.

Our task is to write the plan while guiding you through the HMP Update process, maximizing your Planning Team's talent and local knowledge. AECOM will write the plan. The Planning Team will assist the process by working with us to identify changes since 2008 implementation:

Describe how the HMP has changed:

- New Planning Team membership and processes
- HMP update participation and plan reviewers,
- Identify new hazards not formerly addressed,
- Help us explain your hazard impacts since 2008,
- Identify changes to new and existing participating community's critical facilities and their relative location within each identified hazard's impact area,
- Determine their "estimated" replacement costs,
- Define the community's population risk and critical facility vulnerabilities,
- Review current and update the existing hazard mitigation goals if applicable,
- Determine the current status of each project within the Mitigation Strategy; was it completed, deleted, delayed, combined/changed, or is it still viable and ongoing? We will need to provide a brief explanation for any changes.

- Update the HMP Maintenance section to reflect how the City completed HMP annual review commitments and identify whether it was effective or not, then update the process to make it more effective for future use.

There will be opportunities for the entire community to review the team's work during various public involvement processes because FEMA requires at least two public involvement activities. We will provide planning team meeting minutes and two newsletters for distribution or posting to enable community wide knowledge, providing information during Borough Planning Commission Meetings or other public meetings, and working with us over the phone as we capture needed information.

AECOM will provide two (2) newsletters. The first newsletter will introduce the project and explain the planning process, encourage public involvement; ask the community to identify known hazards, and to confirm their critical infrastructure as identified by DHS&EM's statewide small community Critical Facility Database. The second will introduce the updated draft HMP and encourage the community to review and provide comments to make the plan better or more usable to mitigate your hazards.

Please write me back with the names of whom you want on the Planning Team.

I would like to schedule an introductory teleconference meeting with yourself and other members of the Planning Team to introduce the project and the process letting you know what information we will need to allow us to proceed. I can call you on your speakerphone if that works. Please let me know when a good time is to call you.

I look forward to working with you and your Team. Thank you for your time.

Eileen Bechtol

Make no little plans; they have no magic to stir men's blood and probably themselves will not be realized. Make big plans; aim high in hope and work."
— Daniel Hudson Burnham (1846-1912)

Bechtol Planning & Development
Eileen R. Bechtol, AICP
P.O. Box 3426
Homer, Alaska 99603
Phone: 907.399.1624
Email: erbechtol@gmail.com

CITY OF UNALAKLEET HAZARD MITIGATION PLAN UPDATE

Newsletter #1 May 2015

The purpose of this newsletter is to describe the City of Unalakleet (Unalakleet) Hazard Mitigation Plan (HMP) development processes to all interested agencies, stakeholders, and the public and to solicit comments on the HMP. It can also be viewed on the State of Alaska Division of Homeland Security and Emergency Management Website at *http://ready.alaska.gov/plans/localhazmitplans .*

The State of Alaska, Department of Military and Veterans Affairs, Division of Homeland Security and Emergency Management (DHS&EM) was awarded a Pre-Disaster Mitigation Program grant from the Federal Emergency Management Agency (FEMA) to update Unalakleet 2008 HMP.

AECOM was contracted to assist Unalakleet with preparing a 2015 FEMA-approvable HMP update. The HMP will identify all applicable natural hazards, such as earthquake, tsunami, flood/erosion, ground failure/avalanche, severe weather, and wildland/tundra fire hazards, etc. The plan will identify the people and facilities potentially at risk and ways to mitigate damage from future hazard impacts. Public participation in the planning process will be documented as part of the project.

What is Hazard Mitigation?

Hazard mitigation eliminates the risks or reduces the severity of the hazard impact to people and property. Hazard mitigation activities may include short- or long-term projects to reduce exposure to, or the effects of, known hazards. Examples include: relocating or elevating buildings; replacing insufficiently sized culverts; using alternative construction techniques; developing, implementing, and enforcing building codes; and public education.

Why Do We Need A Hazard Mitigation Plan?

Communities must have a State- and FEMA-approved and community-adopted mitigation plan to receive FEMA pre- and post- disaster grants identified in their Hazard Mitigation Assistance and agency mitigation grant programs. Unalakleet plans to apply for mitigation grant funds after the plan is complete.

A FEMA approved and community adopted HMP enables the local government to apply for the Hazard Mitigation Grant Program (HMGP), a disaster related assistance program, the Pre-Disaster Mitigation (PDM), and the National Flood Insurance Program (NFIP) Flood Mitigation Assistance (FMA) grant programs.

The Planning Process

There are very specific federal requirements that must be met when preparing a FEMA approvable HMP. These requirements are commonly referred to as the Disaster Mitigation Act of 2000, or DMA2000 criteria.

Information about the criteria and other applicable laws and regulations may be found at: http://www.fema.gov/mitigation-planning-laws-regulations-guidance.

The DMA2000 criteria require the plan to include and document the following topics:

- New Planning Team membership and processes
- HMP update participation and plan reviewers
- Identify new hazards not formerly addressed
- Help us explain your hazard impacts since 2008
- Identify changes to new and existing participating community's critical facilities and their relative location within each identified hazard's impact area
- Determine their "estimated" replacement costs
- Define the community's population risk and critical facility vulnerabilities
- Review current and update the existing hazard mitigation goals if applicable
- Determine the current status of each project within the Mitigation Strategy; was it completed, deleted, delayed, combined/changed, or is it still viable and ongoing? We will need to provide a brief explanation for any changes.
- Update the HMP Maintenance section to reflect how the City completed HMP annual review commitments and identify whether it was effective or not, then update the process to make it more effective for future use.
- Provide a copy of the community's HMP Adoption Resolution

FEMA has prepared Local Planning Review Guide available at: http://emilms.fema.gov/is318/assets/local_mtgtn_plan guidence_0708.pdf . It explains how the HMP Update meets each of the DMA2000 requirements.

We are currently in the very beginning stages of preparing the plan update. We will be conducting a Planning Team Meeting to introduce the project and planning team, to gather comments from community residents update hazards lists, and collect data to refine the vulnerability assessment.

We Need Your Help

Please use the following table to confirm the hazards AND identify new hazards not formerly addressed.

Unalakleet Hazard Worksheet		
Hazard	**2007 Plan**	**Still Valid Yes/No**
Earthquake (EQ)	Yes	
Flood (Erosion) (FL)	Yes	
Ground Failure (GF) Avalanche, Landslide, Melting Permafrost, and/or Subsidence	No	
Severe Weather (SW)	Yes	
Tsunami & Seiche (TS)	No	
Volcano (VO)	No	
Wildland/Tundra Fire (WF)	No	

The 2008 HMP identified critical facilities within Unalakleet and their vulnerability to natural hazards, but the list needs to be reviewed and updated and the estimated value and location (latitude and longitude) determined. In addition, the number and value of structures, and the number of people living in each structure will need to be documented.

This newsletter will be sent to the Unalakleet Planning Team with the table below listing critical facilities for their review and comment. Once this information is collected, we will determine which critical facilities, residences, and populations are vulnerable to specific hazards in Unalakleet.

Critical Facilities	Current Natural Hazards			
	FL	SW	WF	EQ
Bering Straits School District (BSSD) Power Plant		X		X
BSSD-Unalakleet School		X		X
City Hall	X	X		X
City Shop & Warehouse	X	X		X
Clinic	X	X		X
Fish Cannery	X	X		X
Gonangnan-Paneok Memorial Hall		X		X
Head Start		X		X
Library Building		X		X
Native Village (NV) Offices		X		X
NV of Unalakleet Buildings		X		X
Post Office		X		X
Seawall	X	X		X
Teacher Housing		X		X
Trash Compactor		X		X
Unalakleet Native Corporation Office Building	X	X		X
United Utilities Building	X	X		X
Water Treatment & Pump	X	X		X

Planning Team

Loretta Millett, City Clerk, is leading the planning team with assistance from AECOM throughout the planning process.

Public Participation

The purpose of this newsletter is to encourage public involvement as a continuous effort throughout the project. The goal is to receive comments, identify key issues or concerns, and improve mitigation ideas and to guide the community.

We encourage you to take an active part in the Unalakleet Hazard Mitigation Plan development effort. The purpose of this newsletter is to keep you informed and to allow you every opportunity to voice your opinion regarding these important plans and projects. Please contact Loretta Millett, City Clerk; Scott Simmons, AECOM; or Eileen Bechtol, BP&D directly if you have any questions, comments, or requests for more information:

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Bechtol Planning & Development

SUBJECT: Unalakleet HMP Update – Hazard Mitigation Plan Review Teleconference

Community: City of Unalakleet, Alaska

Date/Time: July 9, 2015 - 11 a.m.

Attendees:

- BP&D, Eileen R. Bechtol, AICP (by telephone)
- Planning Team

Discussion Items:

- The Planning Team assisted Ms. Bechtol is completing the hazard infrastructure table, which included the following.
    - Occupancy of critical facilities
    - Street addresses of critical facilities
    - Estimated value of replacing the infrastructure and contents within it.
    - Type of structure
- Mitigation Strategy Tables
    - The Planning Team determined that all of the 2008 Legacy Plan mitigation actions should be carried over to the 2015 HMP Update.

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CITY OF UNALAKLEET HAZARD MITIGATION PLAN (HMP)

Newsletter #2 **July 2015**

This newsletter discusses the preparation of the City of Unalakleet (Unalakleet) Hazard Mitigation Plan. It has been prepared to inform interested agencies, stakeholders, and the public about the project and to solicit comments. This newsletter can also be viewed on the State of Alaska Division of Homeland Security and Emergency Management Website at:
http://www.ready.alaska.gov/plans/localhazmitplans.htm.

HMP Development

Unalakleet was one of 21 communities selected by the State of Alaska, Division of Homeland Security and Emergency Management (DHS&EM) for a Hazard Mitigation Planning (HMP) development project. The plan identifies natural hazards that affect the community including earthquake, erosion, flood, ground failure, severe weather, and tundra/wildland fire. The HMP also identifies the people and facilities potentially at risk and potential actions to mitigate community hazards. The public participation and planning process is documented as part of the project.

What is Hazard Mitigation?

Across the United States, natural disasters have increasingly caused injury, death, property damage, and business and government service interruptions. The toll on individuals, families, and businesses can be very high. The time, money, and emotional effort required to respond to and recover from these disasters take public resources and attention away from other important programs and problems. People and property throughout Alaska are at risk from a variety of hazards that have the potential for causing human injury, property damage, or environmental harm.

The purpose of hazard mitigation is to implement projects that reduce the risk severity of hazards on people and property. Mitigation programs may include short-term and long-term activities to reduce hazard impacts or exposure to hazards. Mitigation could include education, construction or planning projects. Hazard mitigation activity examples include relocating buildings, developing or strengthening building codes, and educating residents and building owners.

Why Do We Need A Hazard Mitigation Plan?

A community is only eligible to receive grant money for mitigation programs by preparing and adopting a hazard mitigation plan. Communities must have an approved mitigation plan to receive grant funding from the Federal Emergency Management Agency (FEMA) for eligible mitigation projects.

The Planning Process

There are very specific federal requirements that must be met when preparing a HMP. These requirements are commonly referred to as the Disaster Mitigation Act of 2000, or DMA2000 criteria. Information about the criteria may be found on the Internet at: http://www.fema.gov/mitigation-planning-laws-regulations-guidance.

The DMA2000 requires the plan to document the following topics:

- Planning process
- Community Involvement and HMP review
- Hazard identification
- Risk assessment
- Mitigation Goals
- Mitigation programs, actions, and projects
- A resolution from the community adopting the plan

FEMA has prepared a Local Planning Review Guide) and (available at: http://www.fema.gov/library/viewRecord.do?fromSearch=fromsearch&id=4859). It explains how the HMP meets each of the DMA2000 requirements. FEMA has prepared and "Mitigation Planning Guidance" and "How to Guides" (available at: http://www.fema.gov/hazard-mitigation-planning-resources). Unalakleet's Hazard Mitigation Plan will follow those guidelines.

The planning process kicked-off on February 14, 2015 by establishing a local planning team, distributing Newsletter #1 and holding a planning team meeting. The planning team examined the full spectrum of hazards listed in the State Hazard Mitigation Plan and identified natural hazards the HMP would address.

Unalakleet staff, AECOM and the public began identifying critical facilities, compiling the hazard profiles, assessing capabilities, and conducting the risk assessment for the identified hazards. Critical facilities are facilities that are critical to the recovery of a community in the event of a disaster. After collection of this information, AECOM helped to determine which critical facilities and estimated populations are vulnerable to the identified natural hazards in Unalakleet.

A mitigation strategy was the next component of the plan to be developed. Understanding the community's local capabilities and using information gathered from the public and the local planning committee and the expertise of the consultants and agency staff, a mitigation strategy was developed. The mitigation strategy is based on an evaluation of the hazards, and the assets at risk from those hazards. Mitigation goals and a list of potential actions/projects were developed as the foundation of the mitigation strategy.

Mitigation goals are defined as general guidelines that explain what a community wants to achieve in terms of hazard and loss prevention. Goals are positively stated future situations that are typically long-range, policy-oriented statements representing community-wide visions. Mitigation actions and projects are undertaken in order to achieve your stated objectives.

The planning team identified projects and/or actions for each hazard that focus on six categories: prevention, property protection, public education and awareness, natural resource protection, emergency services, and structural projects. The mitigation actions identified by the planning team are explained in more detail in the plan.

The selected projects and/or actions will potentially be implemented over the next five years as funding becomes available. A maintenance plan was also been developed for the hazard mitigation plan. It outlines how the community will monitor progress on achieving the projects and actions that will help meet the stated goals and objectives, as well as an outline for continued public involvement.

The draft plan is available in the City offices for public review and comment. Comments should be made via email or phone to Eileen Bechtol (contact information listed below) and be received no later than July 15, 2015. The plan will be provided to DHS&EM and FEMA for their preliminary approval and returned to the Unalakleet City Council for formal adoption.

The Planning Team

The plan was developed with the assistance from the community's planning team consisting of a cross section from the community. Planning Team members who helped with developing the plan including the city's Team Leader Dave Richards, the City Council, and AECOM.

The plan will be presented to the community on July 14, 2015 at the City Council Meeting. All input is welcome!

Sample of the City of Unalakleet's Mitigation Actions. Review the draft HMP for a complete list.		
Construct new water line (EDP)	Inspect, prioritize, and retrofit any critical facility or public infrastructure that does not meet current State Adopted Building Codes.	*Construct a public safety building to store fire equipment*
Consider joining the NFIP and obtaining FEMA FIRM Unalakleet Maps	Train/advise residents in grant writing and project management.	Evacuation Center, Economic Development Plan (EDP)

The Hazard Mitigation Plan will be discussed at a Planning Team Meeting on July 9, 2015 and at the July 14, 2015 City Council Meeting. Both meetings are open to the public.

We encourage you to take an active part in the City of Unalakleet Hazard Mitigation Plan development effort. The purpose of this newsletter is to keep you informed and to allow you every opportunity to voice your opinion regarding these important plans and projects. Please contact Dave Richards, City Manager; Scott Simmons, AECOM; or Eileen Bechtol, BP&D directly if you have any questions, comments, or requests for more information:

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Bechtol Planning & Development

SUBJECT: Unalakleet HMP Update – July 14, 2015 City Council Meeting

Community: City of Unalakleet, Alaska

Date/Time: July 14, 2015

Attendees: Unalakleet Mayor and City Council

Dave Richards, City Manager

Members of the Public (There is not a sign in sheet available for this meeting)

City Manager Dave Richards introduced the Hazard Mitigation Plan Update to the Mayor and the Council and members of the public.

There were no comments from the Council or the public regarding the plan.

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Appendix E

Benefit–Cost Analysis Fact Sheet

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Benefit-Cost Analysis Fact Sheet

Hazard mitigation projects are specifically aimed at reducing or eliminating future damages. Although hazard mitigation projects may sometimes be implemented in conjunction with the repair of damages from a declared disaster, the focus of hazard mitigation projects is on strengthening, elevating, relocating, or otherwise improving buildings, infrastructure, or other facilities to enhance their ability to withstand the damaging impacts of future disasters. In some cases, hazard mitigation projects may also include training or public-education programs if such programs can be demonstrated to reduce future expected damages.

A Benefit-Cost Analysis (BCA) provides an estimate of the "benefits" and "costs" of a proposed hazard mitigation project. The benefits considered are avoided future damages and losses that are expected to accrue as a result of the mitigation project. In other words, benefits are the reduction in expected future damages and losses (i.e., the difference in expected future damages before and after the mitigation project). The costs considered are those necessary to implement the specific mitigation project under evaluation. Costs are generally well determined for specific projects for which engineering design studies have been completed. Benefits, however, must be estimated probabilistically because they depend on the improved performance of the building or facility in future hazard events, the timing and severity of which must be estimated probabilistically.

All Benefit-Costs must be:

- Credible and well documented
- Prepared in accordance with accepted BCA practices
- Cost-effective (BCR $\geq$ 1.0)

General Data Requirements:

- All data entries (other than Federal Emergency Management Agency [FEMA] standard or default values) MUST be documented in the application.
- Data MUST be from a credible source.
- Provide complete copies of reports and engineering analyses.
- Detailed cost estimate.
- Identify the hazard (flood, wind, seismic, etc.).
- Discuss how the proposed measure will mitigate against future damages.
- Document the Project Useful Life.
- Document the proposed Level of Protection.
- The Very Limited Data (VLD) BCA module cannot be used to support cost-effectiveness (screening purposes only).
- Alternative BCA software MUST be approved in writing by FEMA HQ and the Region prior to submittal of the application.

Damage and Benefit Data

- Well documented for each damage event.
- Include estimated frequency and method of determination per damage event.
- Data used in place of FEMA standard or default values MUST be documented and justified.

- The Level of Protection MUST be documented and readily apparent.
- When using the Limited Data (LD) BCA module, users cannot extrapolate data for higher frequency events for unknown lower frequency events.

Building Data

- Should include FEMA Elevation Certificates for elevation projects or projects using First Floor Elevations (FFEs).
- Include data for building type (tax records or photos).
- Contents claims that exceed 30 percent of building replacement value (BRV) MUST be fully documented.
- Method for determining BRVs MUST be documented. BRVs based on tax records MUST include the multiplier from the County Tax Assessor.
- Identify the amount of damage that will result in demolition of the structure (FEMA standard is 50 percent of pre-damage structure value).
- Include the site location (i.e., miles inland) for the Hurricane module.

Use Correct Occupancy Data

- Design occupancy for Hurricane shelter portion of Tornado module.
- Average occupancy per hour for the Tornado shelter portion of the Tornado module.
- Average occupancy for Seismic modules.

Questions to Be Answered

- Has the level of risk been identified?
- Are all hazards identified?
- Is the BCA fully documented and accompanied by technical support data?
- Will residual risk occur after the mitigation project is implemented?

Common Shortcomings

- Incomplete documentation.
- Inconsistencies among data in the application, BCA module runs, and the technical support data.
- Lack of technical support data.
- Lack of a detailed cost estimate.
- Use of discount rate other than FEMA-required amount of 7 percent.
- Overriding FEMA default values without providing documentation and justification.
- Lack of information on building type, size, number of stories, and value.
- Lack of documentation and credibility for FFEs.
- Use of incorrect Project Useful Life (not every mitigation measure = 100 years).

Appendix F

Plan Maintenance Documents

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Annual Review Questionnaire

PLAN SECTION	QUESTIONS	YES	NO	COMMENTS
PLANNING PROCESS	Are there internal or external organizations and agencies that have been invaluable to the planning process or to mitigation action			
	Are there procedures (e.g. meeting announcements, plan updates) that can be done more efficiently?			
	Has the Planning Team undertaken any public outreach activities regarding the HMP or implementation of mitigation actions?			
HAZARD PROFILES	Has a natural and/or manmade/ technologically caused disaster occurred during this reporting period?			
	Are there natural and/or manmade/ technologically caused hazards that have not been addressed in this HMP and should be?			
	Are additional maps or new hazard studies available? If so, what have they revealed?			
VULNERABILITY ANALYSIS	Do any critical facilities or infrastructure need to be added to the asset lists?			
	Have there been development patterns changes that could influence the effects of hazards or create additional risks?			
MITIGATION STRATEGY	Are there different or additional resources (financial, technical, and human) that are now available for mitigation planning within the City or Village as applicable?			
	Are the goals still applicable?			
	Should new mitigation actions be added to the Mitigation Action Plan (MAP)?			
	Do existing mitigation actions listed in the Mitigation Strategies' MAP need to be reprioritized			
	Are the mitigation actions listed in the MAP appropriate for available resources?			

MITIGATION ACTION PROGRESS REPORT

Progress Report Period: _____ **To** _____
(Date) **(Date)**

Project Title: _____ **Project ID#:** _____

Responsible Agency: _____

Address: _____

: _____

Contact Person: **Title:**

Phone #(s): _____ **eMail Address(s):** _____

_____ _____

List Supporting Agencies and Contacts:

_____

_____

Total Project Cost: _____

Anticipated Cost Overrun/Underrun: _____

Project Approval Date: _____ **Project Start Date:** _____

Anticipated Completion Date: _____

Description of Project (describe each phase, if applicable, and the time frame for completing each phase:

_____

_____

Milestones	Complete	Projected Completion Date

MITIGATION ACTION PROGRESS REPORT

Plan Goal(s) Addressed: _____

Goal: _____

Success Indicators: _____

Project Status

- ☐ **On Schedule**
- ☐ **Completed**
- ☐ **Delayed***

*** Explain:** _____

- ☐ **Canceled**

Project Cost Status

- ☐ **Cost Unchanged**
- ☐ **Cost Overrun****

**** Explain:**

- ☐ **Cost Underrun*****

***** Explain:** _____

Summary of progress on project for this report:

A. What was accomplished during this reporting period? _____

B. What obstacles, problems, or delays did you encounter, if any? _____

C. How was each problem resolved? _____

Next Steps: What is/are the next step(s) to accomplish over the next reporting period?

Other Comments: _____