Native Village of Venetie
Tribal Hazard Mitigation Plan

May 2018

Prepared by the Venetie Hazard Mitigation Planning Team and AECOM

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1. Tribal Office, 1999, Alaska Department of Commerce, Community and Economic Development; Division of Community and Regional Affairs' Community Photo Library

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Acronyms/Abbreviations

°F	Degrees Fahrenheit
ACCIMP	Alaska Climate Change Impact Mitigation Program
ACWF	Alaska Clean Water Fund
AECOM	AECOM Corporation
AFG	Assistance To Firefighters Grant
AK	Alaska
ANA	Administration For Native Americans
ARW	Airport / Runway
CBO	Communication (Other)
CCP	Citizen Corps Program
CDBG	Community Development Block Grant
CFR	Code Of Federal Regulations
CIG	Conservation Innovation Grant
CWSRF	Clean Water State Revolving Fund
DCCED	Alaska Department Of Commerce, Community, And Economic Development
DCRA	Alaska Division Of Community And Regional Affairs
DEC	Alaska Department Of Environmental Conservation
Denali	Denali Commission
DHS	U.S. Department Of Homeland Security
DHS&EM	Alaska Division Of Homeland Security And Emergency Management
DHSS	Alaska Department Of Health And Social Services
DM	Debris Management Grant
DMA 2000	Disaster Mitigation Act Of 2000
DMVA	Alaska Department Of Military And Veterans Affairs
DNR	Alaska Department Of Natural Resources
DOF	U.S. Division Of Forestry
DOL	U.S. Department Of Labor
DOT/PF	Alaska Department Of Transportation And Public Facilities
EFSP	Emergency Food and Shelter Program
EOC	Emergency Operations Center
EMPG	Emergency Management Performance Grant
EPA	U.S. Environmental Protection Agency
EPPS	Electric Systems
EQ	Earthquake
EQIP	Environmental Quality Incentives Program
FEMA	U.S. Federal Emergency Management Agency
FL	Flood
FMA	Flood Mitigation Assistance
FP&S	Fire Prevention And Safety
ft	Feet
g	Gravity
GF	Ground Failure

Acronyms/Abbreviations

GIS	Geospatial Information System
HMA	Hazard Mitigation Assistance
HMGP	Hazard Mitigation Grant Program
HMP	Hazard Mitigation Plan
HRD	Highway/Main Road
HSGP	Homeland Security Grant Program
HUD	U.S. Housing And Urban Development
ICDBG	Indian Community Development Block Grant
IGAP	Indian General Assistance Program
IHBG	Indian Housing Block Grant
M	Magnitude
MAP	Mitigation Action Plan
MMI	Modified Mercalli Intensity
mph	Miles Per Hour
NAHASDA	Native American Housing Assistance And Self Determination Act
NEHRP	National Earthquake Hazards Reduction Program
NDS	National Dam Safety Program
NFIP	National Flood Insurance Program
NIMS	National Incident Management System
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
NWS	National Weather Service
OTF	Fuel Tank
PDM	Pre-Disaster Mitigation
PGA	Peak Ground Acceleration
PWE	Potable Water Well
PWS	Waterfront Structure
PWTS	Potable Water Supply
RD	Rural Development
RL	Repetitive Loss
RurALCAP	Rural Alaska Community Action Program Incorporated
SAFER	Staffing For Adequate Fire And Emergency Response
SBA	U.S. Small Business Administration
SHSP	State Homeland Security Program
Sq.	Square
Stafford Act	Robert T. Stafford Disaster Relief And Emergency Assistance Act
STAPLEE	Social, Technical, Administrative, Political, Legal, Economic, And Environmental
STL	Steel
SW	Severe Weather
THMP	Tribal Hazard Mitigation Plan
US or U.S.	United States
USACE	United States Army Corps Of Engineers

Acronyms/Abbreviations

USC	United States Code
USDA	United States Department Of Agriculture
USGS	United States Geological Survey
VFAG/RFAG	Volunteer Fire Assistance and Rural Fire Assistance Grant
Village	Native Village of Venetie, Venetie, or Village
VSW	Village Safe Water
W	Wood
WF	Wildland Fire
WSP	Watershed Planning
WWTS	Wastewater Treatment

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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 Tribal Hazard Mitigation Plan (THMP).

1.1 OVERVIEW

In recent years, local and tribal hazard mitigation planning has been driven by 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.

Indian Tribal Government Defined:

For consistency and ease of reference, the term Indian Tribal government is used throughout this document. As defined in 44 Code of Federal Regulations (CFR) 201.2:

"Indian Tribal government means any Federally recognized governing body of an Indian or Alaska Native tribe, band, nation, pueblo, village, or community that the Secretary of Interior acknowledges to exist as an Indian tribe under the Federally Recognized Indian Tribe List Act of 1994, 25 U.S.C. 479a. This does not include Alaska Native corporations, the ownership of which is vested in private individuals."

To implement these planning requirements, FEMA published an Interim Final Rule in the Federal Register on February 26, 2002 (FEMA 2002), 44 CFR Part 201.6 (local government) and 201.7 (tribal government) requirements with subsequent updates specific to each government entity. The tribal planning requirements 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 and tribal hazard mitigation plans (44 CFR §201.6 and 201.7 respectively). 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.

The mitigation planning process encourages coordination among Indian tribal authorities and other governmental agencies, tribal members, local residents, businesses, academia, and nonprofit groups and promotes their participation in the plan development and implementation process. This broad-based approach enables the development of mitigation actions that are supported by tribal members and other stakeholders and that reflect the needs of the Indian Tribal government as a whole.

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

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1.2 AUTHORITIES

"Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) 42 U.S.C. 5165, as amended by the Disaster Mitigation Act of 2000 (DMA) (P.L. 106-390), provides for States, Indian Tribal governments, and local governments to undertake a risk-based approach to reducing risks to natural hazards through mitigation planning. The National Flood Insurance Act of 1968, 42 U.S.C. 4001 et seq., as amended, further reinforces the need and requirement for mitigation plans, linking flood mitigation assistance programs to State, Tribal, and Local Mitigation Plans.

FEMA has implemented the various hazard mitigation provisions through 44 CFR Part 201. This regulation emphasizes the need for State, local, and Indian Tribal governments to closely coordinate mitigation planning and implementation efforts and describe the requirement for a State, Local, or Tribal Mitigation Plan as a condition of pre- and post-disaster assistance.

In recognition of tribal sovereignty and the government-to-government relationship that FEMA has with Indian Tribal governments, FEMA amended 44 CFR Part 201 at 72 Fed. Reg. 61720, on October 31, 2007, and again at 74 Fed. Reg. 47471, on September 16, 2009, to consolidate and clarify the requirements for Indian Tribal governments, to establish Tribal Mitigation Plans separately from State and Local Mitigation Plans, and finalize the Mitigation Planning rule.

Indian Tribal governments with an approved Tribal Mitigation Plan in accordance with 44 CFR 201.7 may apply for assistance from FEMA as a grantee. If the Indian Tribal government coordinates with the State for review of their Tribal Mitigation Plan, then the Indian Tribal government also has the option to apply as a subgrantee through a State or another tribe. A grantee is an entity such as a State, territory, or Indian Tribal government to which a grant is awarded and that is accountable for the funds provided. A subgrantee is an entity, such as a community, local, or Indian Tribal government; State-recognized tribe; or a private nonprofit organization to which a subgrant is awarded and that is accountable to the grantee for use of the funds provided.

If the Indian Tribal government is eligible as a grantee or subgrantee because it has an approved Tribal Mitigation Plan and has coordinated with the State for review, it can decide which option it wants to take on a case-by-case basis with respect to each Presidential Disaster Declaration, and for each grant program under a Declaration, but not on a project-by-project basis within a grant program. For example, an Indian Tribal government can participate as a subgrantee for Public Assistance (PA), but also as a grantee for the Hazard Mitigation Grant Program (HMGP) under the same Declaration. However, the Indian Tribal government would not be able to request grantee status under HMGP for one HMGP project, then request subgrantee status for another HMGP project under the same Declaration.

Under the Stafford Act and the National Flood Insurance Act, Indian Tribal governments must have an approved, adopted THMP to meet the eligibility requirements for certain types of assistance, which may differ depending on whether the Indian Tribal government intends to apply as a grantee or subgrantee, as outlined in the following table.

Table 1-1 Tribal HMP Authorities and Requirements

Program	Enabling Legislation	Funding Authorization	Tribal Mitigation Plan Required (✓)	
			Grantee Status	Subgrantee Status
Public Assistance (PA) (Categories A, B: e.g., debris removal, emergency protective measures)	*Stafford Act*	*Presidential Disaster Declaration*	*No Plan Required*	*No Plan Required*
Public Assistance (Categories C-G: e.g., repairs to damaged infrastructure, publicly owned buildings)	*Stafford Act*	*Presidential Disaster Declaration*	✓	*No Plan Required*
Individual Assistance (IA)	*Stafford Act*	*Presidential Disaster Declaration*	*No Plan Required*	*No Plan Required*
Fire Management Assistance Grants	*Stafford Act*	*Fire Management Assistance Declaration*	✓	*No Plan Required*
Hazard Mitigation Grant Program (HMGP) Planning Grant	*Stafford Act*	*Presidential Disaster Declaration*	✓	*No Plan required*
HMGP Project Grant	*Stafford Act*	*Presidential Disaster Declaration*	✓	✓
Pre-Disaster Mitigation (PDM) Planning Grant	*Stafford Act*	*Annual Appropriation*	*No Plan required*	*No Plan required*
PDM Project Grant	*Stafford Act*	*Annual Appropriation*	✓	✓
Flood Mitigation Assistance (FMA)	*National Flood Insurance Act*	*Annual Appropriation*	✓	✓
Severe Repetitive Loss (SRL)	*National Flood Insurance Act*	*Annual Appropriation*	✓	✓
Repetitive Flood Claims (RFC)	*National Flood Insurance Act*	*Annual Appropriation*	✓	*No Plan Required*
Fire Management Assistance Grants	*Stafford Act*	*Fire Management Assistance Declaration*	✓	*No Plan Required*

(FEMA 2015b)

1.3 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*

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- *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).

1.3.1 Hazard Mitigation Assistance (HMA) Grant Programs

Table 1-2 lists HMA eligible grant program activities:

Table 1-2 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 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)

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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"* (DHS&EM 2013).

THMP Layout Description

The Native Village of Venetie's (Village) THMP consists of the following sections and appendices:

Section 1 Introduction

Section one 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

Section two provides a general history and background of the Village, including historical trends for population and the demographic and economic conditions that have shaped the area.

Section 3 Planning Process

Section three describes the THMP update's planning process, identifies the Planning Team Members, the meetings held as part of the planning process, and the key stakeholders within the Village 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 THMP development; actions the Village 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 THMP remains an active and applicable document throughout its 5-year lifecycle. The

process includes monitoring, reviewing, evaluating (Appendix F – Maintenance Documents), updating the THMP; and implementation initiatives.

Section 4 THMP Adoption

Section four describes the community's THMP adoption process (support documents are located in Appendix C)

Section 5 Hazard Analysis

Section five describes the process through which the Planning Team identified, screened, and selected the hazards to for profiling in this version of the THMP. 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 Analysis

Section six identifies the Village'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 Village could face and potential social impacts, damages, and economic losses. Land use and development trends are also discussed.

Section 7 Mitigation Strategy

Section seven 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 the Native Village of Venetie. Mitigation actions include preventive initiatives, 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

Section eight lists reference materials and resources used to prepare this THMP.

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 resolutions for the Native Village of Venetie.

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 the progress report form.

Section Two provides the Native Village of Venetie's (Village) location, geography, history, and demographic information.

2.1 LOCATION, GEOGRAPHY, AND HISTORY

"Venetie is located on the north side of the Chandalar River, 45 miles northwest of Fort Yukon" (DCRA 2017a).

The Village falls within the continental climate zone, characterized by extreme temperature differences - with cold winters and warm summers. The area temperature varies from -60 degrees Fahrenheit (ºF) during the winter and 70 ºF during the summer. Total annual precipitation averages 6.6 inches, with approximately 43 inches of snowfall during the winter The nearby Chandalar River is generally ice-free from the end of May through mid-September (DCRA 2017a).

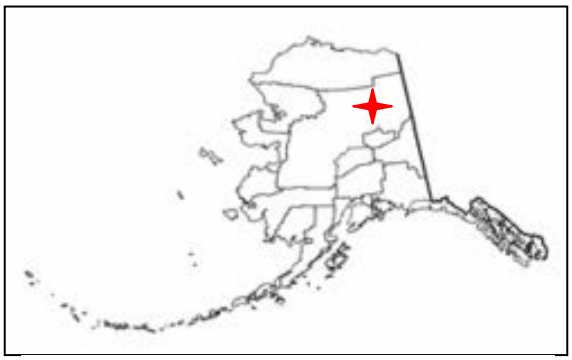

Figure 2-1 Venetie's Location

The Village is located in the Fairbanks Recording District. The village council is combined with Arctic Village (DCRA 2017a).

The following is a brief sketch of the Village's history:

1895	A man known to early explorers as Old Robert founded Venetie – originally known as Old Robert's Village.
1899	U.S. Geological Survey noted approximately 50 persons living in the proximity Old Robert's Village. Locals were known to spend the coldest months of the winter in small settlements of cabins near the mouth of the river and travelled the majority of the year for food resources.
1905-07	By 1905 the Village reported half a dozen cabins and 25-30 residents. Around 1906 the gold rush brought many miners to the Chandalar region. A mining camp of nearly 40 cabins and attendant services was established upriver from Venetie at Caro. An additional store was established near the mouth of the East Fork of Chandalar River.
1910	Gold rush activities subsided and Caro was generally abandoned.
1937	Fur Cooperative organized under John Fredson.
1943	Area residents from Venetie, Arctic Village, Christian Village and Robert's Fish Camp established the Venetie Indian Reservation to protect land for subsistence use; The first public school was established.
1950-60s	Use of seasonal camps declined.
1971	Venetie and Arctic Village opted for title under ANCSA to the 1.8 million acres of land they owned as tenants in common through the Native Village of Venetie's Tribal Government.

2.2 DEMOGRAPHICS

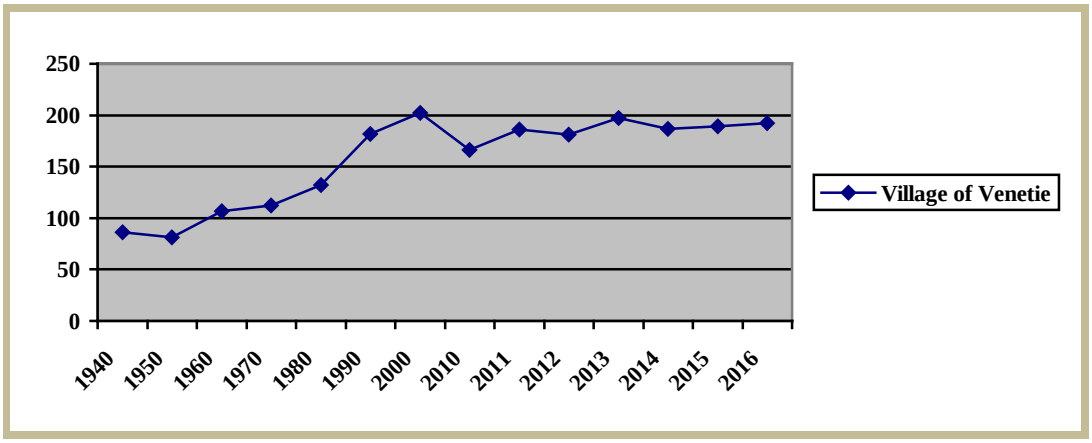

Figure 2-2 Native Village of Venetie's Historic Population

The 2010 census recorded 166 residents, of which the median age was 31 indicating a relatively young population. The population of Venetie is expected to remain steady because approximately 65% of the population was under 40 years of age. However, the community of Venetie has also experienced high migration fluctuations, largely based on seasonal subsistence values (VVC 2013). The Village community is principally comprised of the Neets'ai Gwich'in heritage, and to a lesser extent, the Gwichyaa and Dihaii Gwich'in. In 2010, approximately 91.5% of the population identified themselves as Alaska Native, 6% as Two or More Races, 1.8% as White and 0.6% as Asian. The male and female composition was approximately 60 and 40% respectively. The 2010 Census revealed that there are 61 households with the average household having approximately 3 individuals. The most recent 2016 population estimate is 192 (DOLWD 2017). Figure 2-2 illustrates the Village's historic population.

2.3 ECONOMY

The Village's economic structure is a mixture of cash and subsistence and is based on seasonal requirements with limited village and government employment. Seasonal construction and fire-fighting are two principle employment sectors in the area, although both industries vary greatly seasonally and annually. The Venetie Village Council has been one of the largest year-round employers with other top employers including the school, clinic, Tribal Government, post office, and store. Seasonal hunting and fishing remain essential for economic and traditional activities. Trapping, wood cutting and hauling are other sources of supplemental income (VVC 2013).

According to the 2011-2015 American Community Survey 5-Year Estimates, the median household income was $27,500 and a per capita income of $12,897. Approximately 53 percent were reported to be living below the poverty level. The potential work force (those aged 16 years or older) in Venetie was estimated to be 59, of which 47 were actively employed. The unemployment rate was 20%; however, this rate included part-time and seasonal jobs and practical unemployment or underemployment is likely to be significantly higher (Census 2017). In 2015, Venetie was reported as having the highest unemployment rate in the region (TCC 2016).

Figure 2-3 depicts an aerial photograph of the Native Village of Venetie.

Figure 2-3 Aerial Photograph –Native Village of Venetie (Google Earth 2016)

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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 THMP. Outreach support documents and meeting information regarding the Planning Team and public outreach efforts are provided in Appendix F.

DMA 2000 requirements and implementing Tribal governance regulations for describing the planning process include:

DMA 2000 Requirements
ELEMENTS. Planning Process
A1. Does the plan document the planning process, including how it was prepared and who was involved in the process? [44 CFR § 201.7(c)(1)]
A2. Does the plan document an opportunity for public comment during the drafting stage and prior to plan approval, including a description of how the tribal government defined "public"? [44 CFR § 201.7(c)(1)(i)]
A3. Does the plan document, as appropriate, an opportunity for neighboring communities, tribal 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? [44 CFR § 201.7(c)(1)(ii)]
A4. Does the plan describe the review and incorporation of existing plans, studies, and reports? [44 CFR § 201.7(c)(1)(iii)]
A5. Does the plan include a discussion on how the planning process was integrated to the extent possible with other ongoing tribal planning efforts as well as other FEMA programs and initiatives? [44 CFR § 201.7(c)(1)(iv)]
A6. Does the plan include a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within the plan update cycle)? [44 CFR § 201.7(c)(4)(i)]
A7. Does the plan include a discussion of how the tribal government will continue public participation in the plan maintenance process? [44 CFR § 201.7(c)(4)(iv)]
Source: FEMA, October 2017

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 the local Planning Team with developing the Village's THMP.

The planning process began on March 1, 2017 with Native Village of Venetie Environmental Director Lance Whitwell explaining to the Tribal Council and audience how their community was selected within the Division of Homeland Security and Emergency Management's 2016 Pre-Disaster Mitigation Grant award. AECOM staff described the THMP development requirement that enable's the Village to qualify for Hazard Mitigation Grant Program grants and the overall THMP development process.

Mr. Whitwell was encouraged to develop a community Planning Team to assist the community's efforts with identifying available resources and capabilities for THMP development. AECOM explained how the THMP differed from current emergency plans. The Planning Team will act as an advocate for the planning process, assist with gathering information, and provide support during public participation opportunities. AECOM briefly discussed existing hazards that affect the community such as erosion, sediment deposition, and permafrost impacts, which are increasing in intensity due to climate changes. Tribal President Patrick Hanson also worked with the Planning Team to assure it fulfilled FEMA Tribal HMP requirements.

In summary, the following five-step process took place from March 2017 through September 2017.

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 Venetie 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 HAZARD MITIGATION PLANNING TEAM

The local Planning Team members are led by Nina Frank (Planning Team Leader), with Lance Whitwell and Tiffany Yatlin.

Table 3-1 identifies the complete hazard mitigation Planning Team.

Table 3-1 Hazard Mitigation Planning Team

Name	Title	Organization	Key Input
Nina Frank	Tribal Administrator	Venetie Village Council	Planning Team Lead, THMP review.
Tiffany Yatlan	Tribal Administrator	Venetie Village Council	Planning Team Member, data input and THMP review.
Lance Whitwell	Environmental Director	Venetie Tribal Council	Planning Team Member, data input and THMP review.
Members	Tribal Council	Venetie Village Council	Planning Team Members, data input and THMP review.
Jessica Evans	Environmental Planner	AECOM, Alaska	Temporary Team Member, Responsible for THMP development, lead writer, project coordination.

3.3 PUBLIC INVOLVEMENT AND OPPORTUNITY FOR INTERESTED PARTIES TO PARTICIPATE

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 October 13, 2016. The following agencies were invited to participate and review the THMP:

- 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)

3.3.1 Native Village of Venetie's "Public" Determination

The Native Village of Venetie recognizes any tribal member, Alaska Native, community resident, or employee as a "Public" member of the community. This assures that anyone within the community is eligible to attend and participate in tribal public meetings concerning hazard mitigation plan development and implementation activities.

3.4 THMP PLANNING ACTIVITIES

Table 3-2 lists the community's THMP development public involvement initiatives focused to encourage participation and insight for the THMP (update) effort.

Table 3-2 Public Involvement Mechanisms

Mechanism	Description
Agency Involvement eMail (October 13, 2016)	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.
Newsletter #1 Distribution (July 2017)	In July 2017, the Village distributed a newsletter introducing the upcoming planning activity. The newsletter encouraged the whole community to provide hazard and critical facility information. It was posted at the store and the washeteria.
Newsletter #2 Distribution (September, 2017)	In September, 2017, the Village distributed a newsletter describing the HMPs availability and present potential HMP projects for review. The newsletter encouraged the whole community to provide comments or input. It was posted to enable the widest dissemination.
HMP Reviews Opportunities	The Planning Team reviewed each section during HMP development and final HMP review.
Public HMP Progress Notifications	Team members engaged their "Public" during tribal council meetings to provide update HMP progress and notify them of HMP review opportunities throughout the project.
Public Comment Results	No public comments were received during development or during the draft HMP review period.

Initial contact was made with Lance Whitwell during January, 2017; he was very excited that Venetie was included within DHS&EM's Pre-Disaster Mitigation grant and the prospects of completing the hazard mitigation plan. Mr. Whitwell formed the Planning Team and selected Nina Frank as the team lead. Ms. Frank began directing THMP data acquisition efforts. She introduced the hazard mitigation planning project and introductory newsletter in July, 2017. The first newsletter was placed on the DSH&EM website and posted on the community bulletin boards announcing the THMP and explaining the planning process.

The Planning Team determined that five natural hazards: earthquake, flood/erosion, ground failure, severe weather, and wildland/tundra fire periodically impact the Village.

AECOM described the specific information needed from the Planning Team to assess critical facility vulnerability and population risk by the location, value, and population within residential properties and critical facilities.

The risk assessment was completed after the community asset data was collected by the Planning Team during 2017, identifying the assets that are exposed and vulnerable to specific hazards. They evaluated these facilities and their associated risks to facilitate creating a viable or realistic risk analysis and subsequent vulnerability assessment for the Village.

A Planning Team meeting was held in September, 2017 to review, select, and prioritize mitigation actions based on the results of their Village risk assessment. A second newsletter was prepared and delivered in September, 2017 describing the process to date, presenting the

prioritized mitigation actions, and announcing the availability of the draft THMP for public review and comment.

The Village Council reviewed the draft THMP in October, 2017 for accuracy – ensuring it meets the Village's needs.

Note: *Neither the City nor the Village received public comments either during HMP development or during the draft review period.*

3.5 PLAN MAINTENANCE

This section describes a formal plan maintenance process to ensure that the THMP remains an active and applicable document. It includes an explanation of how the Planning Team intends to organize their efforts to ensure THMP development process is well-managed, efficient, and coordinated among community stakeholders.

The following three process steps are addressed in detail here:

1. Incorporate and integrate THMP components into existing planning mechanisms
2. Continued public involvement
3. Monitoring, reviewing, evaluating, and updating the THMP

3.5.1 Incorporating Existing Plans and Other Relevant Information

During the new HMP development and annual update planning process, the planning team reviewed and incorporated pertinent information from available since the legacy HMP received FEMA Final approval. Data collected included newly available plans, studies, reports, and technical research listed in Table 3-3. The data were reviewed and referenced where applicable for the THMP's jurisdictional information, hazard profiles, risk analysis, and vulnerability assessment.

Table 3-3 Documents Reviewed

Existing plans, studies, reports, ordinances, etc.	Contents Summary (How will this information improve mitigation planning?)
Tanana Chiefs Conference Comprehensive Economic Development Strategy Draft, 2016	Identified ways to strengthen the regional economy, including ways to mitigate natural hazards
Venetie Community Development Plan, 2013-2018	Identified community goals for, among other things, facilities, land and environment, transportation, and energy
Venetie Sanitation Facilities Master Plan/Feasibility Study, 2005	Assisted the community with the identification, evaluation, and prioritization of water, wastewater, and solid waste options
US Army Corps of Engineers, Alaska Baseline Erosion Information Paper - Venetie, 2008	Defined the community's erosion impacts
US Army Corps of Engineers, Floodplain Manager's Reports, Venetie 2011	Defined the area's historical flood impacts
State of Alaska, Department of Commerce, Community and Economic Development Community Profile	Provided historical and demographic information
State of Alaska Hazard Mitigation Plan, 2013	Defined statewide hazards and their potential locational impacts

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

3.5.2 Integrating THMP Precepts into Existing Planning Mechanisms

The Native Village of Venetie has extremely limited and transient staff; with associated funding challenges which could prevent the planning team from integrating any legacy HMP components into other planning mechanisms or initiatives during the THMP's 5-year lifecycle.

This section describes the requirements for coordinating, implementing, or integrating existing planning mechanisms into the THMP, as stipulated in the DMA 2000.

- Once the THMP is community adopted and receives FEMA's final approval, each Planning Team Member ensures that the THMP, in particular each Mitigation Action Project, is incorporated into existing tribal planning mechanisms whenever possible.
- Review community-specific regulatory tools to assess integrating HMP components. These regulatory tools are identified in the following capability assessment section
- Work with pertinent community departments to increase awareness of the THMP and provide assistance with integrating the mitigation strategy (including the MAP) into relevant planning mechanisms.

Note: *Implementation of these requirements may require updating or amending specific planning mechanisms*

3.5.3 Public Involvement

The Village recognizes any Venetie tribal member, community resident, or employee as a "Public" member of the community. This assures that anyone within the community is eligible to attend and participate in tribal public meetings concerning hazard mitigation plan development and implementation activities.

The Village is committed to involving the public directly to continually reshape and update the THMP. A paper copy of the THMP and any proposed changes will be available at the Tribal 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 Tribal Office.

The Tribe will strive to continue identifying opportunities to raise community awareness about the THMP and the hazards that affect the area. This effort could include attendance and providing hazard appropriate educational materials at Tribal-sponsored events, and outreach projects identified in Section 7, Mitigation Strategy. Any public comments received regarding the THMP will be collected by the Planning Team Leader who will include the information within the annual report for consideration during future THMP updates.

3.5.4 Monitoring, Reviewing, Evaluating, and Updating the THMP

3.5.4.1 Planning Team THMP Maintenance Recommitment

To maintain momentum and build upon this THMP's hazard mitigation planning efforts and successes, the Village will continue to use Venetie's Planning Team to monitor, review, evaluate, and update the 2018 THMP.

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 Venetie Tribal Council will direct the THMP Planning Team Leader, (or designee), as the primary point-of-contact, to coordinate Tribal efforts to monitor, evaluate, revise, and tabulate THMP actions' progress and status.

Venetie's Planning Team intends to organize their efforts to ensure that future THMP improvements and revisions occur in a well-managed, efficient, and coordinated manner. The Planning Team will follow these three process steps:

1. Review and revise the 2018 THMP to reflect development changes, planning process improvements, community plan integration, project implementation progress, project priority changes, and mitigation strategy progress since the THMP was implemented
2. Submit a THMP update at the end its five-year life cycle for State and FEMA review and approval
3. Continually strive to implement and integrate mitigation initiatives within community documents when feasible

3.5.4.2 Monitoring the THMP

Each authority identified in the Mitigation Action Plan (MAP) matrix (Table 7-9) will be responsible for implementing the MAP and determining whether their respective actions were effectively implemented. 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 update THMP mitigation strategy actions' progress, status, and closure.

The Village will review their success for achieving the THMP's mitigation goals and implementing the MAP's activities and projects during the annual review process.

During each annual review, each responsible 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 appropriate strategies to overcome them), and a statement of whether or not the project has helped achieve the appropriate goals identified in the plan.

3.5.4.3 Evaluating the THMP

The Annual Review Questionnaire (Appendix F) provides the basis for future THMP 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 THMP 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 an annual Planning Team Meeting. Each Annual Review Worksheet will evaluate the following:

- Determine Village authority's, outside agencies', stakeholders', and resident's participation in THMP implementation successes
- Identify notable risk changes for each identified and newly considered natural hazards
- Consider land development activities and related programs' impacts on hazard mitigation
- MAP implementation and integration progress (identify problems and suggest improvements as necessary)
- Evaluate THMP local resource implementation for THMP identified activities

3.5.4.4 Reviewing the THMP

The Planning Team commits to reviewing their success for fulfilling the THMP's mitigation goals and implementing the MAP's activities and projects during their annual HMP review process.

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

3.5.4.5 Updating the THMP

Completing annual reviews will reduce the Planning Team's efforts to update the THMP every five years. Therefore, the Planning Team Leader will review their Annual Review Questionnaires (Appendix F) to determine their success with integrating THMP components and implementing the MAP.

The Venetie Planning Team will review their THMP during its five-year life cycle (or when significant changes are made). The Planning Team will review all Annual Review Questionnaires (Appendix F) to determine their success with implementing their THMP's Mitigation Action Plan.

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

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

- Request grant assistance from DHS&EM to update the THMP (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 THMP sections that need improvement, the section and page number of their location within the THMP, and describing the proposed changes

- Thoroughly analyze and update the natural hazard risks:
  - Determine the current status of the mitigation projects
  - Identify the proposed MAPs (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 THMP 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 Venetie still desires to implement
  - Prepare a "new" Venetie THMP MAP matrix for Venetie
- Prepare a Draft Updated THMP
- Submit the updated draft THMP to the Division of Homeland Security &Emergency Management (DHS&EM) and FEMA for their respective reviews and approvals

3.5.4.6 Formal State and FEMA THMP Review

Completed Hazard Mitigation Plans do not qualify the Native Village of Venetie for mitigation grant program eligibility until they have been reviewed and adopted by the Village Council, and received State and FEMA final approval.

By formal THMP adoption, the Tribal government assures they will monitor the plan to evaluate progress and update the plan every five years to comply with all applicable Federal statutes and regulations in effect with respect to the periods for which it receives grant funding, including 2 CFR parts 200 and 3002. Each participating government will amend its plan whenever necessary to reflect changes in Tribal or Federal laws and statutes including 2 CFR parts 200 and 3002.

The Village submits their draft THMP to the State Hazard Mitigation Officer (SHMO) for initial State review. This will potentially enable the Tribe to avoid paying future mitigation project grant funding match.

The SHMO will then coordinate essential edit requirements and forward the State reviewed and state level approved draft THMP to FEMA for review and "Conditional Approval."

Upon FEMA's review and "Conditional Approval", the THMP will be returned to the State, who in-turn notifies the Tribe they can formally adopt the THMP.

The Tribes sends a copy of their formal adoption resolution to the State who in-turn will then forward it to FEMA for Formal THMP approval.

FEMA will provide a formal THMP adoption letter back to the Village for inclusion within their THMP. FEMA's final approval ensures the Village's eligibility for applying for various agencies' mitigation grant programs.

3.5.4.7 Tribal Mitigation Grant Application Process Considerations

The Native Village of Venetie can potentially qualify to either apply for applicable grant funding as a State sub-applicant through DHS&EM; or apply directly to FEMA as an eligible federally recognized tribal government with sovereign authority working directly with government agencies.

Therefore, the Native Village of Venetie can determine which of the two following options will best fit the Village's needs. These options are:

Option 1:

The Village can submit grant applications through the State with no loss in Tribal governance authorities.

The Village submits their mitigation grant applications to the State Hazard Mitigation Officer (SHMO) for initial State review. This option could potentially enable the Tribe to avoid paying future mitigation project grant funding match.

The SHMO will then coordinate tribal applications within their grant review and prioritization process for potential approval and award. DHS&EM will review, prioritize, and award grants assigning their most current grant recipient cost share requirements to successful grant awardees.

Option2:

The Tribe can submit mitigation grant applications directly to FEMA or other granting agencies as a sovereign, federally recognized tribal government, maintaining sovereign authority working directly with government agencies.

As a federally recognized tribe, the Tribal Council submits their mitigation grant applications directly to FEMA with full knowledge the Tribe will be responsible for providing any applicable programmatic project matching funds.

FEMA will review, prioritize, and award grants assigning their most current grant recipient cost share requirements to successful grant awardees.

Section Four is included to fulfill the Native Village of Venetie's formal THMP adoption requirements.

The Native Village of Venetie is represented in this THMP and meet the requirements of Section 409 of the Stafford Act and Section 322 of DMA 2000, and 44 CFR §201.7(c)(5) & (6).

4.1 TRIBAL GOVERNMENT THMP ADOPTION

DMA 2000 requirements and implementing Tribal governance regulations for the THMP adoption include:

DMA 2000 Requirements
ELEMENT. Tribal HMP Adoption and Assurances
E1. Does the plan include assurances that the tribal government will comply with all applicable Federal statutes and regulations in effect with respect to the periods for which it receives grant funding, including 2 CFR Parts 200 and 3002, and will amend its plan whenever necessary to reflect changes in tribal or Federal laws and statutes? [44 CFR § 201.7(c)(6)]
E2. Does the plan include documentation that it has been formally adopted by the governing body of the tribal government requesting approval? [44 CFR § 201.7(c)(5)]
Source: FEMA, October 2017

Tribal Assurance: Evidenced by Section Four of this Tribal Hazard Mitigation Plan update; by formal THMP adoption the Tribe formally adopted the jurisdictional THMP. The Tribal government therefore assures they will monitor the plan to evaluate progress and work with the DHS&EM to update the plan every five years to comply with all applicable Federal statutes and regulations in effect with respect to the periods for which it receives grant funding, including 2 CFR parts 200 and 3002. The Native Village of Venetie will amend its plan whenever necessary to reflect changes in tribal or federal laws and statutes as required in 2 CFR parts 200 and 3002, and 44 CFR 13.11(c), and 44 CFR 13.11(d).

The Venetie Tribal Council formally adopted their THMP on _____, 20_____ and submitted the final draft to FEMA for formal approval.

A scanned copy of their formal adoption is attached (Appendix C).

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Section Five identifies and profiles the hazards that could affect the Native Village of Venetie (Village).

5.1 HAZARD ANALYSIS OVERVIEW

A hazard analysis includes identifying, screening, and profiling each hazard. Hazard identification recognizes which natural events may 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.

5.2 HAZARD IDENTIFICATION AND SCREENING

The requirements for hazard identification, as stipulated in DMA 2000 and its implementing regulations are described below.

For the first step of the hazard analysis, the Planning Team reviewed seven possible hazards that could affect the Village. 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 known or expected hazard information availability (Table 5-1). The Planning Team determined that five hazards pose a great threat to the Village: earthquake, flood, ground failure, severe weather, and wildland/tundra fire; some of which are influenced by increasing changing climate conditions such as late ice formation, early thaw conditions, increased, lack, or inconsistent rain.

Table 5-1 Identification and Screening of Hazards

Hazard Type	Should It Be Profiled?	Explanation
Natural Hazards		
Earthquake	Yes	The Village has experienced 27 earthquakes above M4.0 with epicenters located within 100 miles from the area since 1973.
Flood (Riverine and resultant erosive scour damages)	Yes	Snowmelt run-off and rainfall flooding occur during spring thaw and the fall rainy season. Events occur from soil saturation. Several minor flood events cause damage. The Village experiences riverine high water flow scour along the area's rivers, streams, and creek embankments as well as damages from riverine ice flows, wind, surface runoff, and boat traffic wakes.

Table 5-1 Identification and Screening of Hazards

Hazard Type	Should It Be Profiled?	Explanation
Ground Failure (Avalanche, Landslide/Debris Flow, Permafrost, Subsidence, etc.)	Yes	Ground Failure occurs throughout Alaska from avalanches, landslides, melting permafrost, and ground subsidence. However subsidence and permafrost are the primary hazards causing houses to shift due to ground sinking and upheaval, and high ground water from melting the permafrost.
Severe Weather (Cold, Drought, Rain, Snow, Wind, etc.)	Yes	Severe weather impacts the community with climate change/global warming and changing El Niño/La Niña Southern Oscillation (ENSO) patterns generating increasingly severe weather events such as winter storms, freezing rain, and thunderstorms, with subsequent secondary hazards such as riverine floods, landslides, etc.
Tsunami (Seiche)	No	This hazard does not exist for this location.
Volcano	No	This hazard does not exist for this location.
Wildland (and/or Tundra) Fire	Yes	The community and the surrounding forest and/or 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

5.3 HAZARD PROFILE

The requirements for hazard profiles, as stipulated in DMA 2000 and its implementing regulations are described below.

DMA 2000 Requirements
ELEMENTS B: Planning Area and Natural Hazard Profiles
B1. Does the plan include a description of the type, location, and extent of all natural hazards that can affect the tribal planning area? [44 CFR § 201.7(c)(2)(i)]
B2. Does the plan include information on previous occurrences of hazard events and on the probability of future hazard events for the tribal planning area? [44 CFR § 201.7(c)(2)(i)]
B3. Does the plan include a description of each identified hazard's impact as well as an overall summary of the vulnerability of the tribal planning area? [44 CFR § 201.7(c)(2)(ii)]
Source: FEMA, October 2017

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 (impact boundaries, to include magnitude and severity)
- Impact (Section 5 provides general impacts associated with each hazard. Section 6 provides detailed impacts to Venetie's residents and critical facilities)
- Recurrence Probability

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 the criteria identified in the introductory narrative description of Section 5.3.

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% 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% 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% of property is severely damaged.

Similar to estimating magnitude and severity, recurrence probability (Table 5-3) is determined based on historic events, using the criteria identified above, to provide the likelihood of a future event.

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% 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%). • History of events is greater than 20% but less than or equal to 33% 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%). • History of events is greater than 10% but less than or equal to 20% 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%). • History of events is less than or equal to 10% likely per year. • Event is "Unlikely" but is possible to occur.

The hazards profiled for the Village 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 Figure 5-1, 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 2017).

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 Table 5-1).

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 2017)

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 THMP'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 1973 to present; none of which exceeded M5.2 located within 100 miles of the Village.

Therefore the Planning Team determined that based on available recorded data, the Village has a minor concern for earthquake damages as they have not experienced damaging impacts from their historical earthquake events and only need to be concerned with earthquakes with a magnitude > M5.0. This is substantiated in Table 5-4 which lists 27 historical earthquakes with magnitudes greater than 4.0; the largest one (M5.2) occurring on February 7, 1991.

Table 5-4 Historical Earthquakes for Venetie

Year	Time	Latitude	Longitude	Magnitude	Distance (Miles)
4/3/2015	8:29	67.5484	-145.695	4.6	42
8/31/2012	5:03	65.971	-147.755	4	81
6/11/2006	8:25	66.733	-147.667	4.2	39
8/4/2006	4:13	68.23	-147.524	4.3	89
5/21/2005	8:16	65.978	-148.37	4	90
3/10/2004	13:04	68.071	-147.536	4.5	79
7/29/2002	12:24	65.952	-147.301	4.3	78
12/8/2002	16:05	67.706	-146.785	4.1	49
8/26/2001	13:54	67.34	-146.16	4.4	23
8/12/2000	18:06	67.909	-146.383	4.4	62
8/25/1996	0:49	67.4	-144.64	4.7	55
1/5/1994	1:14	67.699	-147.078	4.9	50
1/20/1994	12:08	67.463	-145.758	4.1	35
1/30/1994	10:53	67.9	-144.178	4.1	86
3/30/1994	17:42	66.465	-148.03	4.6	58
8/18/1993	5:05	67.472	-146.024	4.1	33
8/21/1993	8:07	67.41	-145.885	4.1	30
8/21/1993	20:03	67.477	-146.16	4.7	32
8/25/1993	8:50	67.451	-146.023	4.2	32
10/17/1993	13:05	67.521	-145.92	4	37
3/25/1992	15:14	66.242	-146.807	4.1	54
11/5/1992	15:04	67.955	-145.907	4.2	67
11/20/1992	8:08	67.373	-146.568	4.6	25
2/7/1991	4:20	66.354	-147.958	5.2	62
12/12/1990	19:47	66.031	-147.485	4.5	74
9/8/1987	16:45	66.024	-147.521	4.4	75
1/27/1984	10:51	67.986	-147.37	4.6	72

(USGS 2017)

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. The Village experienced minimal ground motion from this historic event but had no damage.

Figure 5-2 depicts those earthquakes within close proximity (100 miles) of the Village.

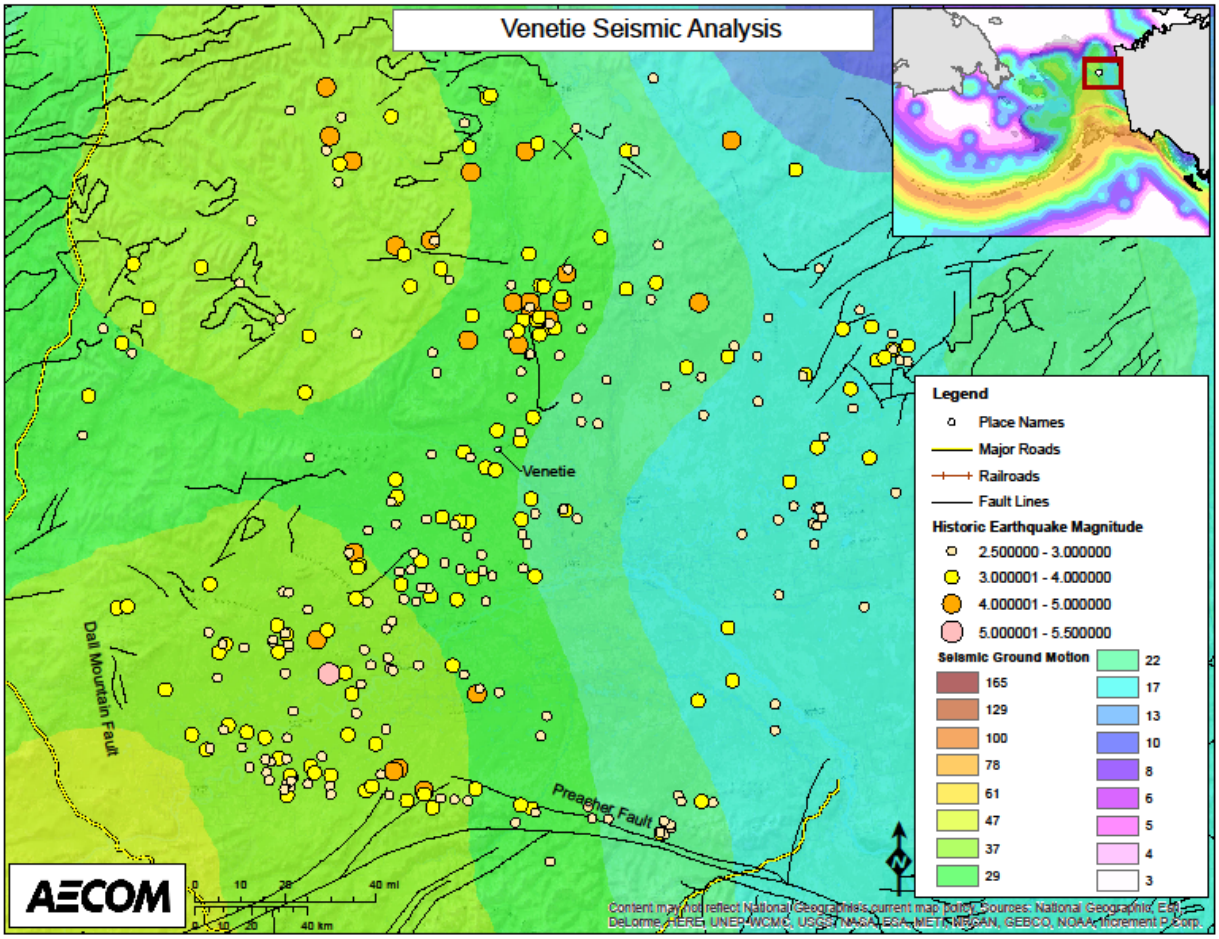

Figure 5-2 Venetie's Adjacent Earthquakes (AECOM 2017a)

The largest recorded earthquake that has occurred within 100 miles of the Village measured M5.2,located approximately 62 miles distant, occurring on February 7, 1991. This earthquake did not cause any damage to critical facilities, residences, non-residential buildings, or infrastructure.

5.3.1.3 Location, Extent, Impact, and Recurrence Probability

Location

The entire geographic area of Alaska is prone to earthquake effects. As such the Village has experienced 301 recorded earthquakes since 1973 with an average magnitude of approximately M3.1.

Figure 5-3 shows the locations of active and potentially active faults in Alaska.

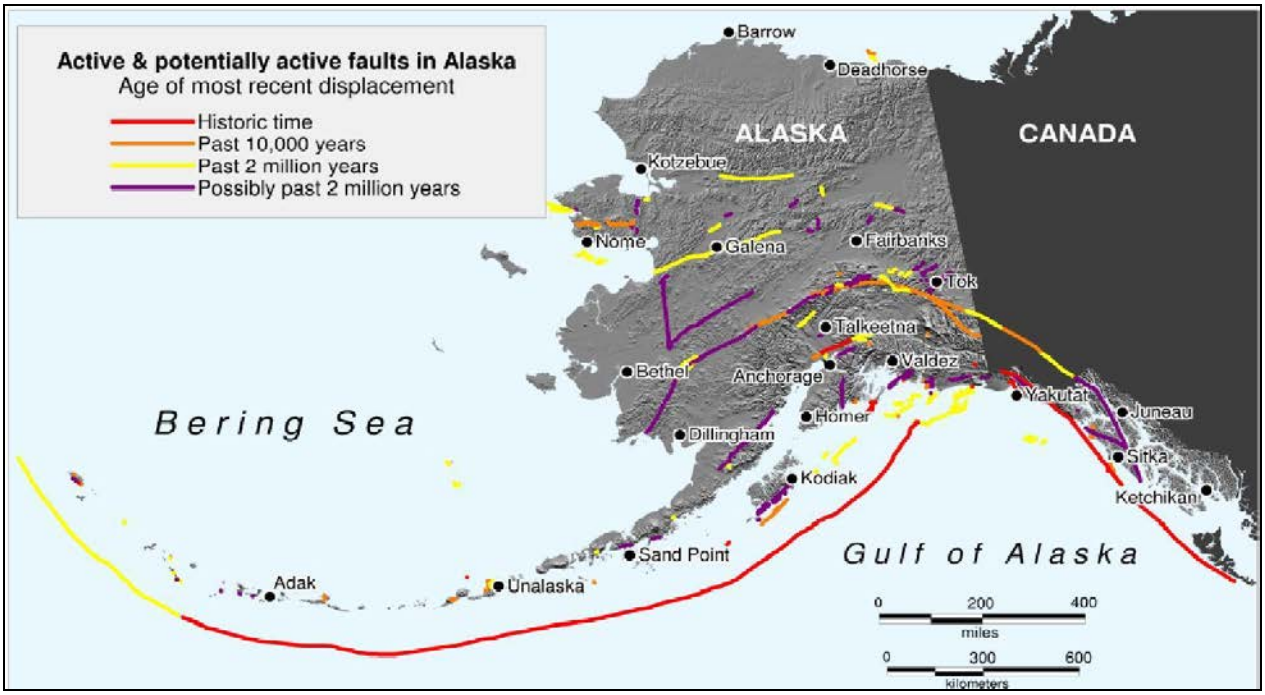

Figure 5-3 Active and Potentially Active Faults in Alaska (DGGS 2009)

5

Extent

Based on historic earthquake events and the criteria identified in Table 5-2, the magnitude and severity of earthquake impacts in the Village 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 one week; and more than 10% of property is severely damaged with limited long-term damage to transportation, infrastructure, or the economy.

The Village is located approximately 81 miles from the Preacher Fault and 95 miles from the Dall Creek Fault as depicted in Figure 5-4:

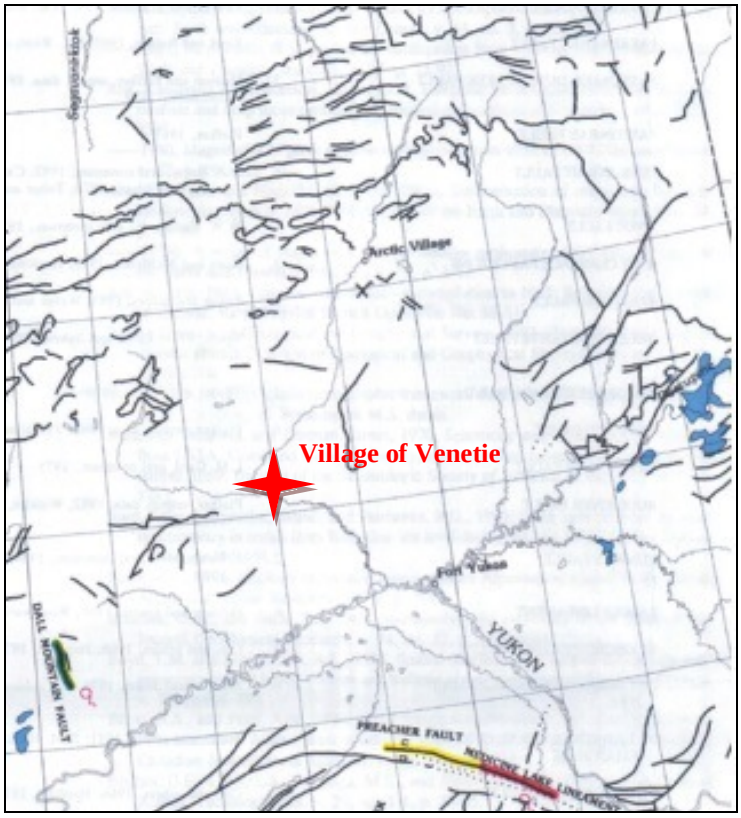

Figure 5-4 Neotectonic Map of Alaska (Plafker et al 1993)

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

While it is not possible to predict when an earthquake will occur, a Shake Map (Figure 5-5) was generated using the United States Geological Survey (USGS) Earthquake Mapping Model. 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).*

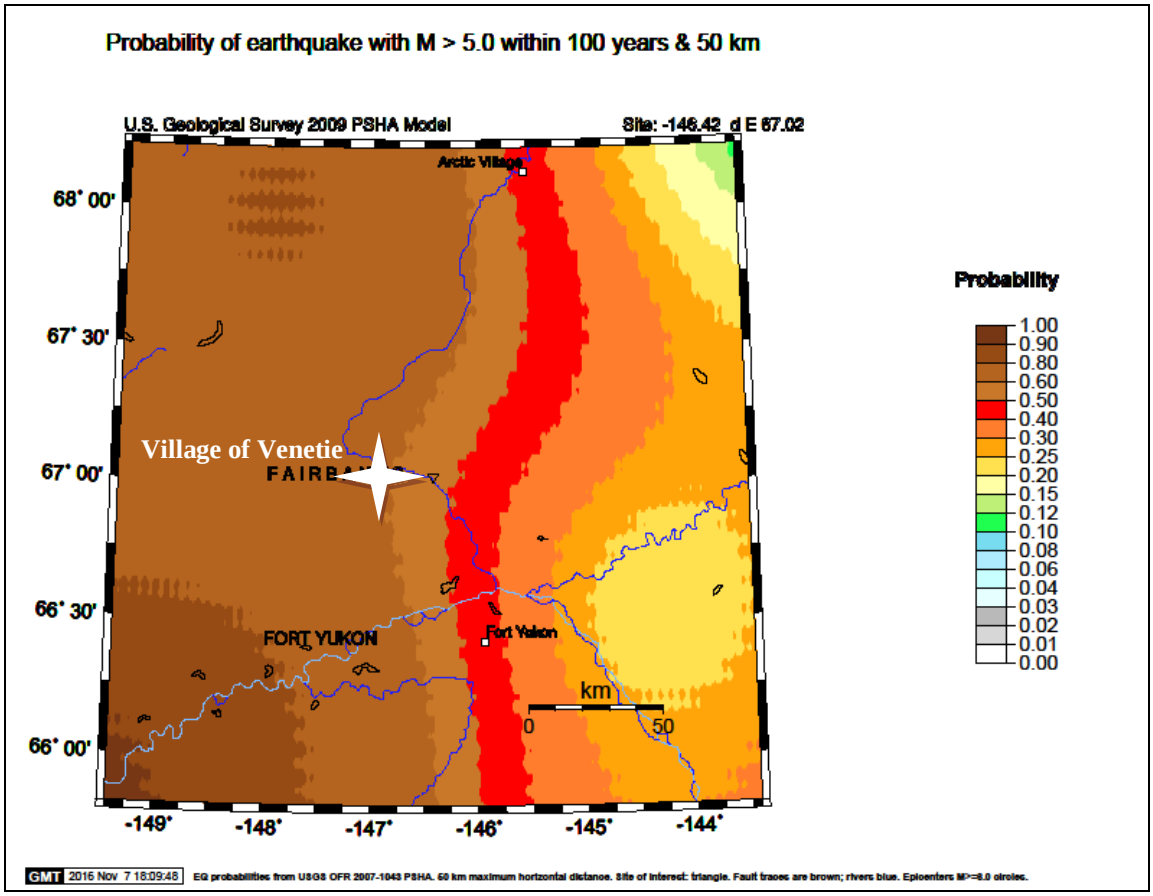

Figure 5-5 Venetie's Earthquake Recurrence Probability (USGS 2016)

The Shake Map indicates a M5.0 or greater earthquake occurring within 100 years and 50 kilometers of the Village is "Likely" (6/10=60%) chance of occurring; due to an event history that is less than or equal to 60 percent likely per year.

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.

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.

Four primary types of flooding occur in the Village: 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.

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.

5.3.2.2 History

The Village relocated in the late 1970's and is now above the Chandalar River floodplain. However, the Village still experiences some damages and erosion from heavy rainfall, snowmelt, and spring run-off flooding (USACE 2011).

The US Army Corp of Engineers reported:

> *"Riverine processes of the Chandalar River cause periodic erosion at Venetie. Conditions causing and contributing to the erosion reportedly include fluctuations in river flows and water levels, winter ice build-up and movements, heavy rain events, flooding, and increased runoff accompanying spring break up. Erosion mainly is along the outside of river bends where running water undercuts bank soils, causing overhang and subsequent collapse of the bank. The erosion area reportedly is along about 400 to 500 feet of the riverbank. The erosion rate is estimated at 10 feet per year."* (USACE 2008).

Figure 5-6 Native Village of Venetie Flood Locations (USACE 2008)

The DHS&EM Disaster Cost Index does not list any historical flood events affecting the Village (DHS&EM 2016a).

Flood or high water flow induced erosion events

The Army Corp of Engineers (USACE) completed an erosion survey for the Village during their 2009 Baseline Erosion Assessment. The report listed the community as having a "Monitor Conditions" erosion threat. The Erosion Information Paper – Venetie, Alaska, dated March 27, 2008 reported the following erosion problems or issues associated with Chandalar River.

> *"Over the years the community has had to retreat from the edge of the river. A 1977 Corps Flood Data report estimates 75 feet of bank in front of the school was lost due to ice scouring in the summer of 1973. Heavy rainfall flooded the community sewage lagoon in 1988 and another major flood-erosion event was caused by local ice movement in 1971. The community well and well house was destroyed by erosion. The Indian Health Service replaced it at a cost of $620,000 in 1997. The well was destroyed by erosion again in 2005 and replaced by the Alaska Native Tribal Health Consortium… The community is currently consulting with the ANTHC to alleviate threats to the well. The community has not used any erosion protection measures."* (USACE 2008).

Additionally, the USACE Inventory of Rural Sanitation Services documented that the sewage lagoon poses a potential threat from flooding to the nearby runway (USACE 1985).

5.3.2.3 Location, Extent, Impact, and Future Events Probability

Location

The Planning Team indicated that since the Village moved, it still experiences flooding impacts; most of which occur from rainfall and snowmelt run-off. The Village typical flood locations are in the lower village area and at the sewage lagoon. Additionally, water collects in low terrain depressions (See photos in Figure 5-6).

Figure 5-7 depicts the Village's USACE generated aerial photograph and their identified flood or high water flow induced erosion impact locations (Red dotted line).

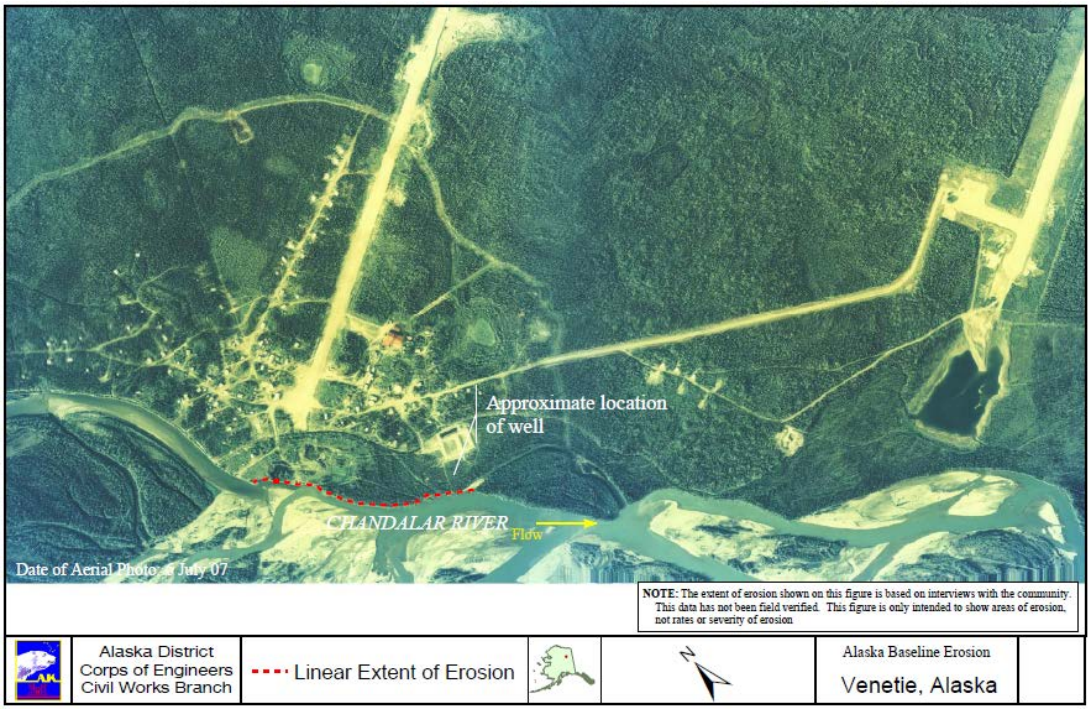

Figure 5-7 Venetie's Erosion Locations (USACE 2008)

Extent

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

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
- Village location related to identified-historical flood elevation

The Village experiences riverine flooding and high water flow flood erosion impacts. The Inventory of Rural Sanitation Services documents a flooding frequency of 20-30 years with a severity of 80% (USACE 1985). Therefore, based on past high water flow event history, documented reports, and the criteria identified in Table 5-2, the extent of flooding and resultant damages to infrastructure and their protective embankments in the Village are considered "Critical" where injuries and/or illnesses could result in permanent disability; critical facilities may shut-down for at least two weeks; and more than 25% of property is 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).

In Venetie, the Chandalar River has been getting wider and shallower in recent years, which has been exacerbating erosion along the shoreline. The water well has been moved twice to avoid erosion damage, and will need to be moved again in the near future. The cemetery too has been

noticeably impacted, insofar as some graves have had to be relocated from erosion along the bluff.

Recurrence Probability

As indicated above, the Inventory of Rural Sanitation Services documents a flooding frequency of 20-30 years with a severity of 80%. Based on previous occurrences, the USACE Floodplain Manager's report, and criteria in Table 5-3, it is "Likely" the community would experience a flood with a 1 in 3 year (1/3=33%) occurrence probability. History of events is greater than 20% but less than or equal to 33% likely per year.

5.3.3 Ground Failure

5.3.3.1 Nature

Ground failure describes avalanche, landslide, subsidence, and unstable soils gravitational or other soil movement mechanisms. Soil movement influences can include rain, snow, and/or water saturation induced avalanches or landslides; as well as from seismic activity, melting permafrost, river or coastal embankment undercutting, or in combination with steep slope conditions.

Landslides are a dislodgment and fall of a mass of soil or rocks along a sloped surface, or for the dislodged mass itself. The term is used for varying phenomena, including mudflows, mudslides, debris flows, rock falls, rockslides, debris avalanches, debris slides, and slump-earth flows. The susceptibility of hillside and mountainous areas to landslides depends on variations in geology, topography, vegetation, and weather. Landslides may also be triggered or exacerbated by indiscriminate development of sloping ground, or the creation of cut-and-fill slopes in areas of unstable or inadequately stable geologic conditions.

Additionally, avalanches and landslides often occur secondary to other natural hazard events, thereby exacerbating conditions, such as:

- Earthquake ground movement can trigger events ranging from rock falls and topples to massive slides
- Intense or prolonged precipitation can cause slope over-saturation and subsequent destabilization failures such as avalanches and landslides.
- Climate change related drought conditions may increase wildfire conditions where a wildland fire consumes essential stabilizing vegetation from hillsides significantly increasing runoff and ground failure potential

Development, construction, and other human activities can also provoke ground failure events. Increased runoff, excavation in hillsides, shocks and vibrations from construction, non-engineered fill places excess load to the top of slopes, and changes in vegetation from fire, timber harvesting and land clearing have all led to landslide events. Broken underground water mains can also saturate soil and destabilize slopes, initiating slides. Something as simple as a blocked culvert can increase and alter water flow, thereby increasing the potential for a landslide event in an area with high natural risk. Weathering and decomposition of geologic material, and alterations in flow of surface or ground water can further increase the potential for landslides.

The USGS identifies six landslide types, distinguished by material type and movement mechanism including:

- **Slides**, the more accurate and restrictive use of the term landslide, refers to a mass movement of material, originating from a discrete weakness area that slides from stable underlying material. A rotational slide occurs when there is movement along a concave surface; a translational slide originates from movement along a flat surface.
- **Debris Flows** arise from saturated material that generally moves rapidly down a slope. A debris flow usually mobilizes from other types of landslide on a steep slope, then flows through confined channels, liquefying and gaining speed. Debris flows can travel at speeds of more than 35 miles per hour (mph) for several miles. Other types of flows include debris avalanches, mudflows, creeps, earth flows, debris flows, and lahars.
- **Lateral Spreads** are a type of landslide generally occurs on gentle slope or flat terrain. Lateral spreads are characterized by liquefaction of fine-grained soils. The event is typically triggered by an earthquake or human-caused rapid ground motion.
- **Falls** are the free-fall movement of rocks and boulders detached from steep slopes or cliffs.
- **Topples** are rocks and boulders that rotate forward and may become falls.
- **Complex** is any combination of landslide types.

In Alaska, earthquakes, seasonally frozen ground, and permafrost are often agents of ground failure. Permafrost is defined as soil, sand, gravel, or bedrock that has remained below 32°F for two or more years. Permafrost can exist as massive ice wedges and lenses in poorly drained soils or as relatively dry matrix in well-drained gravel or bedrock. During the summer, the surficial soil material thaws to a depth of a few feet, but the underlying frozen materials prevent drainage. The surficial material that is subject to annual freezing and thawing is referred to as the “active layer”.

Seasonal freezing can cause frost heaves and frost jacking. Frost heaves occur when ice forms in the ground and separates sediment pores, causing ground displacement. Frost jacking causes unheated structures to move upwards. Permafrost is frozen ground in which a naturally occurring temperature below 32ºF has existed for two or more years. (DHS&EM 2013).

Indicators of a possible ground failure include:

- Springs, seeps, or wet ground that is not typically wet
- New cracks or bulges in the ground or pavement
- Soil subsiding from a foundation
- Secondary structures (decks, patios) tilting or moving away from main structures
- Broken water line or other underground utility
- Leaning structures that were previously straight
- Offset fence lines
- Sunken or dropped-down road beds

- Rapid increase in stream levels, sometimes with increased turbidity
- Rapid decrease in stream levels even though it is raining or has recently stopped and
- Sticking doors and windows, visible spaces indicating frames out of plumb

The State of Alaska 2010 State Hazard Mitigation Plan provides additional ground failure information defining mass movement types, topographic and geologic factors which influence ground failure which may pertain to the Native Village of Venetie.

5.3.3.2 History

There are few written records defining ground failure impacts. However, the Venetie Sanitation Facilities Master Plan describes one historical ground failure event affecting the Village in relation to Village sanitation improvements:

> "*Project AN 91-O34. In 1991, a new washeteria [and water treatment plant] (WTP) were built because structural cracks and differential settlement at the washeteria end of the old building resulted from frost heaves. The water treatment plant and washeteria are still in service. The washeteria was recently upgraded using grant funds from the Denali Commission….* (ASCG 2005).

In addition, residents of Venetie mentioned that early homes were built on gravel pads, which insulates heat. As a result, these homes experience permafrost melt below at the foundation and become uneven or sink. There are a few remaining homes with this problem.

5.3.3.3 Location, Extent, Impact, and Recurrence Probability

Location

There are various ground failure locations throughout the Village. Land subsidence such as melting permafrost, snow melt surface run-off, spring and fall rainy season soil saturation are the most common ground failure impacts.

According to permafrost and ice conditions map (Figure 5-8) developed for the National Snow and Ice Data Center/World Data Center for Glaciology, shows that the Village has discontinuous permafrost as supported by soil investigations in relation to the Venetie Sanitation Facilities Master Plan. (Jorgenson et al. 2008)

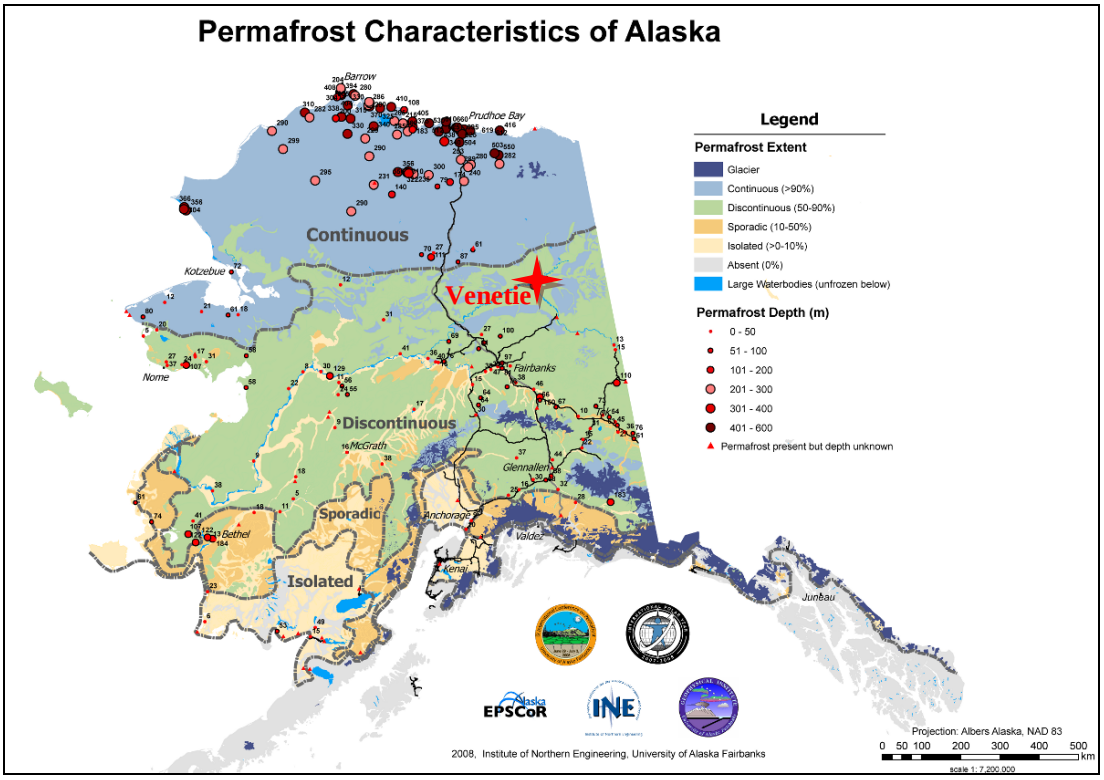

Figure 5-8 Permafrost and Ground Ice Map of Alaska (Jorgenson et al 2008)

Extent

The damage magnitude could range from minor with some repairs required - little to no damage to transportation, infrastructure, or the economy - or to major if critical facilities (such as the airport) were damaged and transportation was effected.

Based on research and the Planning Team's knowledge of past ground failure and various degradation events and the criteria identified in Table 5-2, the extent of ground failure impacts in the Village are considered "Limited". Impacts would not occur quickly but over time with warning signs. Therefore this hazard would not likely cause injuries or death, neither would it shutdown critical facilities and services. However, 10 percent of property could be severely damaged.

Impact

Impacts associated with ground failure include surface subsidence, infrastructure, building, and/or road damage. Ground failure damages often occur from improperly designed and constructed buildings that settle as the ground subsides, resulting in structure loss or expensive repairs. It may also impact buildings, communities, pipelines, airfields, as well as road and bridge design costs and location. To avoid costly damage to these facilities, careful planning and location and facility construction design is warranted.

In Venetie, residents report that thawing permafrost has impacted several structures, including the washeteria, which is having ground failure associated foundation problems. The water well is also affected by thawing permafrost and has been relocated twice to avoid significant damage.

Recurrence Probability

Even though there are few written records defining ground failure impacts for the Native Village of Venetie, the Planning Team first-hand knowledge of their community's ground failure damages. Based on previous occurrences, the Economic Development Plan, and criteria in Table 5-3, it is "Possible" Venetie will experience future ground failure damages in the next five years; with a 1 in 5 year (1/5=20%) chance of occurring.

5.3.4 Severe Weather

5.3.4.1 Nature

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

Climate Change influences the environment, particularly historical weather patterns. Climate change and El Niño/La Niña Southern Oscillation (ENSO) determines 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 and 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 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 varies according to normal regional climate. Near freezing temperatures are considered "extreme" in areas unaccustomed to winter weather. Alaska's extreme cold usually involves temperatures between -20 to -50 degrees Fahrenheit (°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 freezing rain accumulation which coats and glazes every surface it falls on. 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 the 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°F. 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, or affect livestock, crops and other vegetation. Buildings and trees can also collapse under heavy snow weight.

Figure 5-9 displays Alaska's annual rainfall map based on Parameter-elevation Regressions on Independent Slopes Model (PRISM) that combines climate data from the National Oceanic and Atmospheric Administration (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.

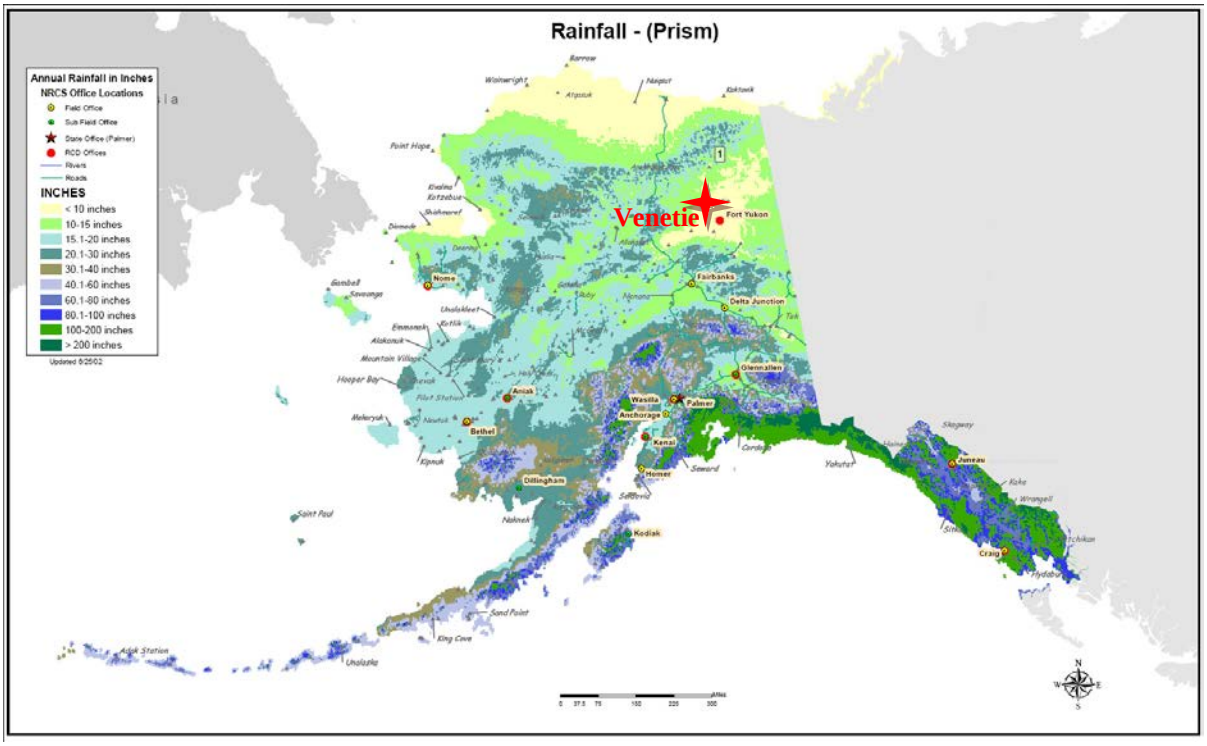

Figure 5-9 Statewide Rainfall Map (NRCS 2002)

5.3.4.2 History

The Native Village of Venetie is continually impacted by severe weather events. Hurricane force wind, rain, and cold typically have damaging results.

Climate Change. The University of Alaska Fairbanks (UAF) Arctic Climate Impact Assessment describes 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 2014)

The National Weather Service (NWS) characterizes areas that experience similar weather patterns as Weather Zones. Due to the nature of Venetie's location, it falls within the Yukon Flats and Surrounding Uplands, Zone 220 but is also in close proximity to the Southeastern Brooks Range, Zone 218.

5

The Weather Service Office (WSO) area weather recording stations in Fort Yukon and Chandalar Lake is the nearest WSO to the Native Village of Venetie. Figure 5-10 depicts weather data for the Fort Yukon WSO. Actual community temperatures and depths may vary due to their relative proximity to the WSO and varying climatic patterns.

FT YUKON, ALASKA (503175)

Period of Record Monthly Climate Summary

Period of Record : 01/01/1899 to 03/31/1990

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	-10.9	-3.6	14.7	34.8	56.1	70.9	73.2	66.3	50.6	27.2	1.3	-8.7	31.0
Average Min. Temperature (F)	-27.8	-23.4	-11.5	9.0	32.1	47.9	51.2	44.7	32.1	12.4	-14.2	-24.6	10.7
Average Total Precipitation (in.)	0.49	0.36	0.28	0.21	0.31	0.73	0.81	1.06	0.79	0.59	0.42	0.52	6.57
Average Total SnowFall (in.)	6.7	5.1	4.1	2.4	0.6	1.2	0.0	0.0	1.7	6.8	6.5	6.7	41.9
Average Snow Depth (in.)	19	22	24	15	2	0	0	0	0	2	9	14	9

Percent of possible observations for period of record.
Max. Temp.: 62.6% Min. Temp.: 62.9% Precipitation: 64.2% Snowfall: 63.9% Snow Depth: 62.4%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Western Regional Climate Center, wrcc@dri.edu

Figure 5-10 Fort Yukon Area Monthly Climate Summary (WRCC 1990)

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

*"**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.

The Venetie area is historically impacted by severe weather events. The UAF's Scenarios Network for Alaska and Arctic Planning (SNAP) depict the Village's historic and future predicted precipitation and temperatures (Figures 5-11 and 5-12). Note that both precipitation and temperature are projected to continue their increasing trend due to anticipated climate changes. Rain and snow variations could dramatically influence wildland fire potential as well as adversely impact future subsistence food sources and wildlife habitat support capacity.

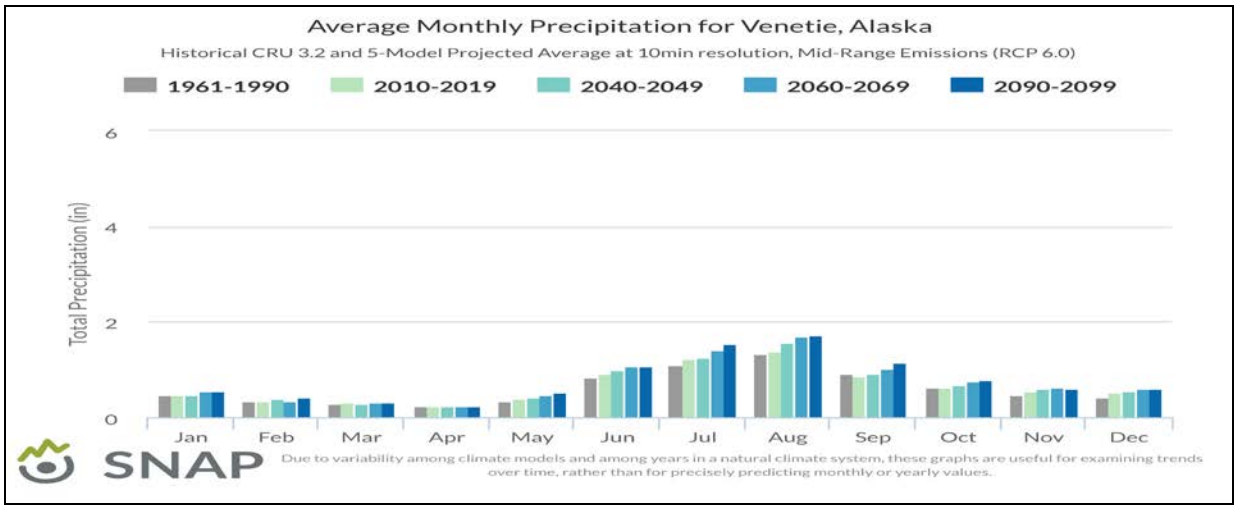

Figure 5-11 Venetie's Historic and Predicted Precipitation (SNAP 2017).

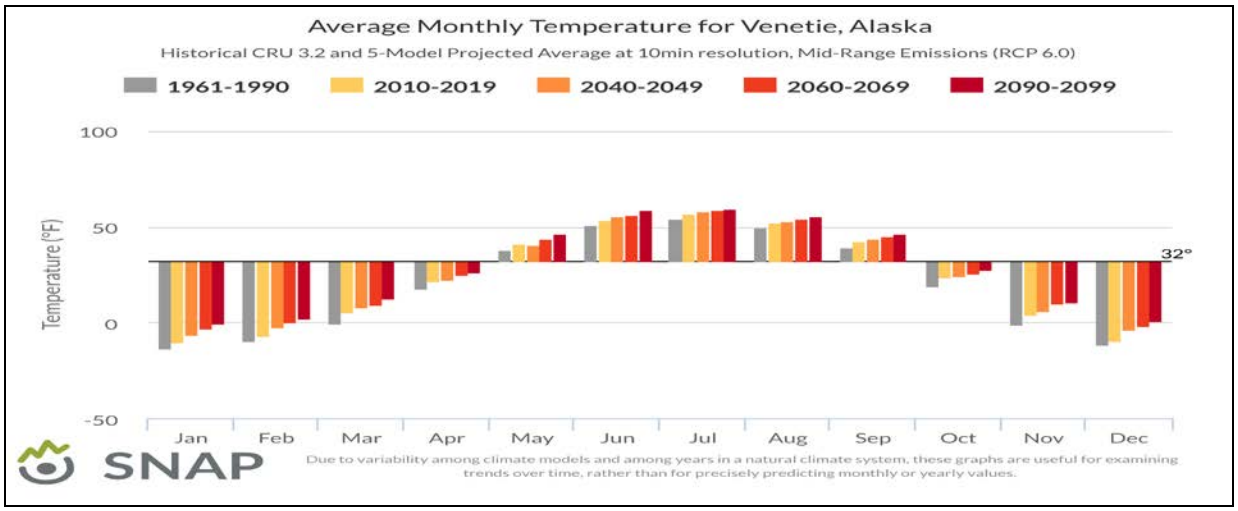

Figure 5-12 Venetie's Historic and Predicted Temperatures (SNAP 2017)

Table 5-5 lists a representative sample of nine major storm events the NWS has identified for the Venetie's Weather Zone – Yukon Flats and Surrounding Uplands, Zone 220. Each weather event may not have specifically impacted the Venetie area. And as indicated above, at times the Village may experience conditions more similar to the Southeastern Brooks Range, Zone 218.

Table 5-5 Severe Weather Events

Location	Date	Event Type	Magnitude
Zone 220	5/20/2015	Flood	High river levels due to increasing snowmelt occurred at Fort Yukon from the Porcupine River. Water rose enough to flood a portion of the Sucker River Road. Other low lying areas received flooding. The rapid snowmelt occurred due to above seasonal warming over eastern Alaska.
Zone 220	5/6/2014	Flood	An ice jam formed downstream of Circle City and remained in place while flowing water continued to be impounded behind the jam. This water backed up and flooded portions of the Village.
Zone 220	12/6/2013	Ice Storm	A low pressure center moved into the western Bering Sea and then as associated warm front and warm air moved across the Bering Strait, over the west coast of Alaska, and then continued north over interior Alaska. This warm front spread rain or freezing rain to the west coast and many locations across the northern interior. An estimated 0.2 inches of rain and freezing rain was likely received by some locations, based on reports in nearby zones.
Zone 220	5/19/ & 5/20/2013	Flood	An ice jam released upstream of Circle City and sent a surge of water and ice through that city. The ice jam caused major flooding by inundating the city with 5 to 8 feet of water. Most structures were flooded. All residents were evacuated to higher ground. One vehicle carrying village elders tried to drive through the flooded street to safety and went off the road into the ditch. They were rescued in the bucket of a front loader and taken to safety. Damage amounts are estimated and include repairs to 8 homes with major damage and 7 homes with minor damage, along with nearly $1M expended in emergency response and road repair. Additionally, a surge of water and ice from the upstream river ice breakup moved near Fort Yukon causing flooding of low-lying areas. A large sheet of ice became stuck 12 miles upstream of Fort Yukon causing widespread flooding of low-lying areas to persist. Damage amounts are estimated, and include repairs to 4 homes with major damage and 1 home with minor damage, along with affected roads, buildings and emergency response needs.
Zone 220	9/16/2012	High Wind	A low near Unalakleet moved north near Kivalina. A strong cold front moved west to east across the interior and was associated with high winds. As the cold front moved east across the eastern Alaska Range, it is suspected that a mountain wave that had developed to the lee of the Alaska Range on the north side broke out of it's stable layer to descend to near ground level, primarily affecting the community of Tanacross and Dry Creek and along the stretch of Alaska Highway between these two locations. A peak wind gust of 64 mph was observed at Eagle Summit.
Zone 220	5/28/2012	Flood	The combination of heavy rainfall in excess of an inch, residual winter snowpack in the uplands, and frozen ground in spots caused the Crooked Creek near Central to flood. Water also flooded residential yards and some roadways adjacent to Crooked Creek on the north side of the Steese Highway.
Zone 220	1/23/2012	Extreme Cold/ Wind Chill	The combination of temperatures of 35 to 40 below zero with a north wind of 15 to 30 mph produced wind chills as low as 78 below zero at Eagle Summit. The wind chills were 60 below or lower for almost 2 days. The strong wind produced areas of blowing and drifting snow and poor visibility near the summit.
Zone 220	6/22/2011	Heavy Rain	Heavy Rain in excess of an inch caused a six mile section of the Steese Highway between Birch Creek and Circle to washout in spots. Repairs were made to the gravel road but additional rainfall

Table 5-5 Severe Weather Events

Location	Date	Event Type	Magnitude
			on the next day caused another washout, with reports of 2 feet of water flowing over the road. The water flowing over the road was likely caused by plugged culverts and not due to flash flooding.
Zone 220	2/25/2011	Blizzard	A low in the central Bering Sea moved to the Gulf of Anadyr and then tracked northeast as a low in the southern Chukchi Sea. The low then tracked to the east and passed south of Banks Island. The storm produced widespread blizzard conditions along the west coast and arctic coast and heavy snowfall and high winds in parts of the Interior. Blizzard conditions likely occurred along the Steese and Dalton Highway Summits.

(NOAA 2017)

5.3.4.3 Location, Extent, Impact, and Recurrence Probability

Location

The entire Yukon area, which includes the Native Village of Venetie, experiences periodic severe weather impacts. The most common to the area are flooding, high winds and severe winter storms. Table 5-11 depicts weather events that have impacted the area since 2011 and are provided as a representative sample.

Extent

The entire Village is equally vulnerable to these severe weather effects. The Village experiences severe storm conditions with moderate snow depths; wind speeds exceeding 60 mph; and extreme low temperatures that reach -40ºF.

Based on past weather event magnitude and severity criteria identified in Table 5-2, the Village's severe weather is 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% 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 other winter storm impacts can be expected for the entire Village area.

Heavy snow can immobilize a community by bringing transportation to a halt. Until the snow can be removed, airports and roadways are affected, even closed completely, stopping the flow of supplies and disrupting emergency and medical services. Snow accumulations 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 surface or sheet flow flooding. The cost of snow removal, repairing damages, and the loss of business can have severe economic impacts communities.

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 future ice jams and associated flooding.

Extreme cold also interferes with the proper community's infrastructure functions by causing fuel to congeal in storage tanks and supply lines and 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 Village reports that the water line that runs from the well to the water tank must be covered during the winter to avoid freezing.

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 hypothermia risk 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 with an event in 1 in 3 years (1/3=33%) chance of occurring with an event 7ory greater than 20% but less than or equal to 33% likely per year.

5.3.5 Wildland Fire

5.3.5.1 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 (drought) 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 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.

5.3.5.2 History

The Alaska Interagency Coordination Center identified 514 tundra/wildland fires (Figure 5-13) that occurred within 50 miles of the Native Village of Venetie. Table 5-6 lists 48 of those fires that exceeded 20,000 acres with the largest one the 2004 Pingo fire burned 403,993 acres, the 2004 Winter Trail fire burned 344,833 acres, and the 1950 Venetie fire burned 295,800 acres.

Table 5-6 Wildfire Locations Since 1939 within 50 Miles of Venetie

Fire Name	Fire Year	Estimated Acres	Latitude	Longitude	Fire Type
Helmet	2017	40,202	67.5596667	-144.0433333	Lightning
Forty And One Half	2017	23,820	66.7772778	-147.7153333	Lightning
Canvasback Lake	2010	35,456	66.4049988	-146.4250031	Lightning
Sheenjek	2009	62,658	67.2394409	-144.316391	Lightning
Sheenjek River	2005	114,597	66.83417	-144.4403	Lightning
Nelson Mountain	2005	244,600	66.66666	-148.0833	Lightning
Lower Mouth	2004	87,413	66.34639	-146.2369	Lightning
Hat Lie Lakes	2004	29,680	66.3525	-145.312	Lightning
Winter Trail	2004	344,833	66.96	-145.3433	Lightning
Pingo	2004	403,993	67.2075	-146.3675	Lightning
Sheenjek	2003	25,230	67.65083	-144.0892	Lightning
Hadweenzic	2003	192,489	66.86667	-147.2536	Lightning
Cornucopia Creek	2003	52,917	67.15	-145.9167	Lightning
Kocacho #2	2002	25,186	67.36472	-146.1678	Lightning
42 Mile Creek	1996	41,410	66.7666702	-147.9499969	Lightning
Deadman Island	1996	33,490	66.5666656	-146.4833374	Lightning
232414	1992	35,090	67.4000015	-144.6333313	Lightning
Fyu Ne 65	1991	22,800	67.5833359	-144.3000031	Lightning
032034	1990	50,490	66.4000015	-144.8666687	Lightning
032018	1990	267,930	66.6166687	-147.8500061	Lightning
Wbq Nw 30	1988	35,500	66.9666672	-148.0666656	Lightning
832086	1988	36,700	67.1999969	-145	Lightning
Wbq Nw 25	1988	58,200	66.7166672	-148.2166595	Lightning

Table 5-6 Wildfire Locations Since 1939 within 50 Miles of Venetie

Fire Name	Fire Year	Estimated Acres	Latitude	Longitude	Fire Type
832043	1988	105,000	66.9333344	-144.6999969	Lightning
Fyu N 37	1986	27,430	67.1999969	-145.1333313	Lightning
Fyu W 82	1979	220,000	66.6333313	-148.6000061	Lightning
Wbq W 34	1977	65,000	66.5166702	-148.75	Lightning
Fyu W 46	1975	80,000	66.6833344	-147.0500031	Lightning
Curtis	1969	78,000	66.8666687	-144.4666595	Lightning
Mountain Creek	1969	20,000	67.1333313	-147.5833282	Lightning
Yukon Flats #1	1959	36,480	67.1833344	-144.8333282	Lightning
Lone Mountain N-12	1957	28,000	66.75	-148.5500031	Lightning
Venetie S15	1954	56,610	66.6666641	-146.5333405	Lightning
Sheenjek	1953	30,000	66.7166672	-144.2666626	Campfire
40 Mile Yukon	1953	65,280	66.3333359	-144.5	Lightning
E. Fork Chandalar	1953	20,000	67.5	-146.25	Lightning
Birch Creek	1951	38,707	66.5	-146.5	Incendiary
Venetie	1950	295,800	66.75	-146.5	Lightning
Sheenjek	1950	22,272	66.75	-144.5	Campfire
Birch Creek	1944	96,000	66.3666687	-145.6499939	Lightning
Birch Creek	1943	70,000	66.3333359	-145.5833282	Trapper
Graveyard Lake	1943	44,800	66.7166672	-144.2666626	Campfire
Beaver Creek	1941	211,200	66.25	-147.2333374	Unknown
Chandalar-Beaver	1941	242,600	66.5166702	-146.7666626	Unknown
Birch Creek	1941	24,000	66.3000031	-145.5333405	Unknown
Porcupine River	1941	96,000	66.7166672	-144.7166595	Unknown
Beaver 1	1941	64,000	66.3333359	-147.5833282	Unknown
Porcupine River	1940	192,000	66.7166672	-144.8166656	Debris Burning

(AICC 2017)

Figure 5-13 depicts the Native Village of Venetie's historical fires with locational and size comparison.

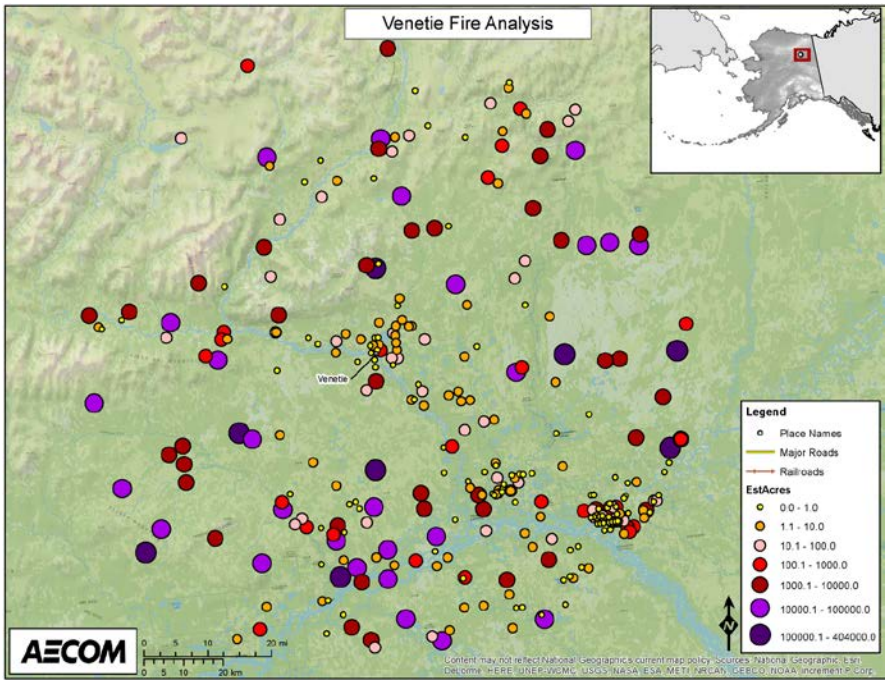

Figure 5-13 Venetie's Comparative Fire Sizes (AECOM 2017b)

5.3.5.3 Location, Extent, Impact, and Recurrence Probability

Location

Under certain conditions wildland fires may occur near Venetie when weather, fuel availability, topography, and ignition sources combine. Since fuels data is not readily available, for the purposes of this plan, all areas are considered to be vulnerable to wildland fire impacts. Since 1940, 324 wildland fire events have occurred within a 50 miles radius of Venetie. (Figure 5-14).

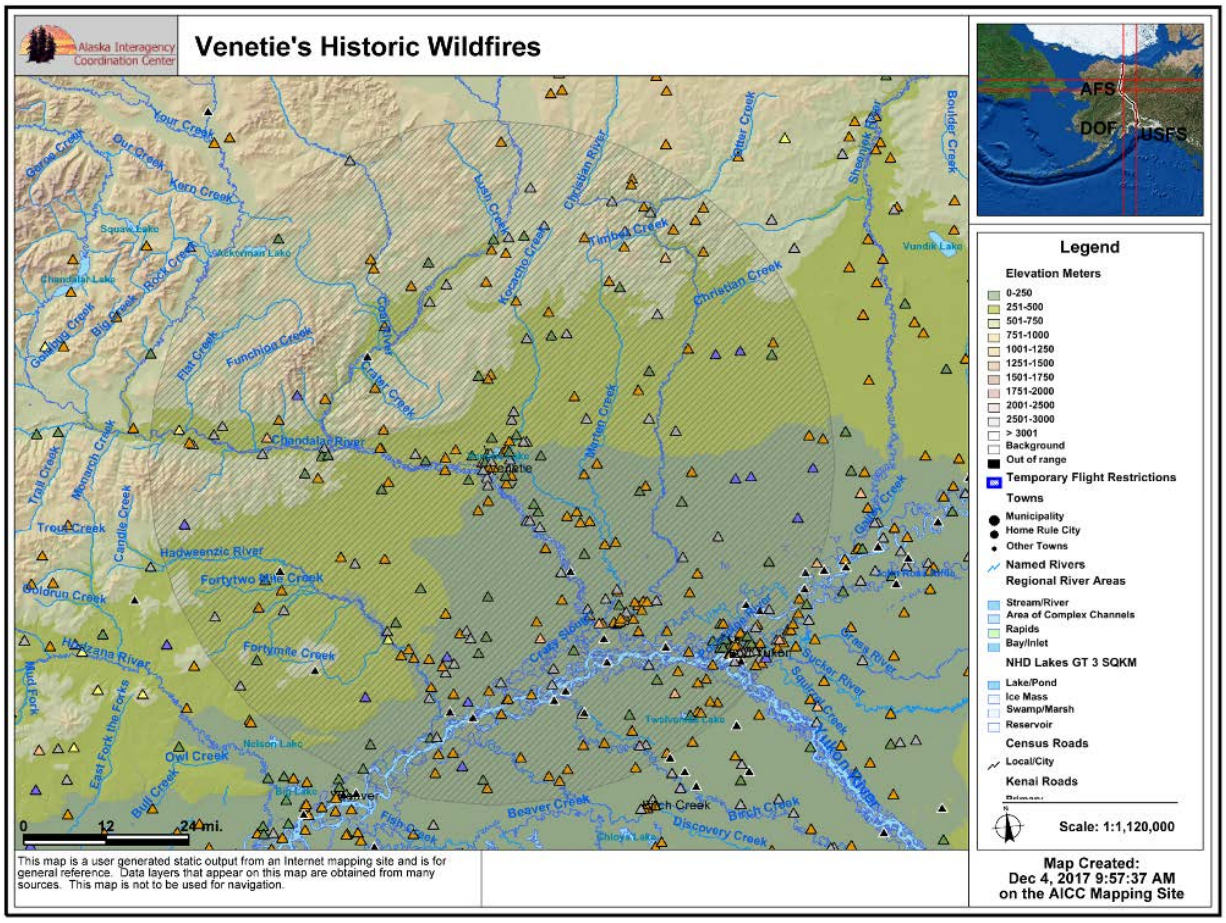

Figure 5-14 Venetie's Historical Wildfire Locations (AICC 2017)

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.

It is difficult to determine the average number of acres burned as the fires were vastly different for each of the wildland fire events listed in Table 5-5. An average based on such diverse data would easily be overstated.

Therefore, based on the large number of past wildland fire events and the criteria identified in Table 5-**2**, the impact magnitude and severity in the Venetie area is considered "Critical" with injuries that may result in permanent disability, potential for critical facilities to be shut down for at least two weeks, and more than 25% of property or critical infrastructure being severely damaged, with associated damage to transportation, infrastructure, or the economy.

Impact

Wildland fires that interface with the Native Village of Venetie's population center 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 affecting people, wildland fires may severely injure livestock and pets. Such events may require emergency watering and feeding, evacuation, and alternative shelter.

Indirect wildland fire impacts 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.

Recurrence Probability

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. Wildland fire's role as an essential ecological process and natural change agent has been incorporated into Alaska's fire management planning process and the full range of fire management activities exercised in Alaska, to help achieve ecosystem sustainability. This includes considering firefighters, the public's safety and welfare toward interrelated ecological, economic, and social values that dictate the most appropriate fire response.

An important issue related to wildland or tundra fire recurrence probability for an interface fire; is increased development along the community's perimeter, hazardous wildfire fuels accumulation, and uncertain weather patterns. Each or all of these may interrelated with various climate change events. These three combined elements create concern and heightened mitigation management of each community's wildland interface areas and open spaces.

Based on the history of wildland fires in the Venetie area and applying the criteria identified in Table 5-3, it is "Likely" a wildland fire event will occur within in the next three years. The event has up to 1 in 3 years (1/3=33%) chance of occurring with an event history of less than or equal to 33% likely each year. Climate change and flammable vegetation species are prolific throughout Alaska's forests and tundra locations. Fire frequency may increase in the future as a result.

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

6.1 VULNERABILITY ANALYSIS 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. National Flood Insurance Program Participation
4. Land Use and Development Trends
5. Vulnerability Analysis Methodology
6. Data Limitations
7. Vulnerability Exposure Analysis
8. Future Development

DMA 2000 requirements and implementing City governance regulations for current assets, and area future development initiatives:

DMA 2000 Requirements
ELEMENTS B: Risk and Vulnerability Assessment
B3. Does the plan include a description of each identified hazard's impact as well as an overall summary of the vulnerability of the tribal planning area? [44 CFR § 201.7(c)(2)(ii)]
Source: FEMA, October 2017

The requirements for a vulnerability analysis as stipulated in DMA 2000 and its implementing regulations are described here.

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

Table 6-1 provides an overview of Venetie's infrastructures' hazard vulnerability.

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	30	50	30	15
Ground Failure	100	100	100	100
Weather	100	100	100	100
Wildland Fire	100	100	100	100

6.2 CULTURALLY AND SACRED SITE SENSITIVITY

6.2.1 Location

The Native Village of Venetie did not identify specific sites that possess important cultural significance to the Tribe. Anyone desiring information concerning their potentially culturally sensitive information must contact the Native Village of Venetie's tribal office for assistance.

6.3 LAND USE AND DEVELOPMENT TRENDS

6.3.1 Land Use

Land use in the Village is predominately residential with limited area for commercial services and community (or institutional) facilities. Suitable developable vacant land is in short supply within Venetie's boundaries, and open space and various hydrological bodies surround the community. One area of town is classified as airport land use.

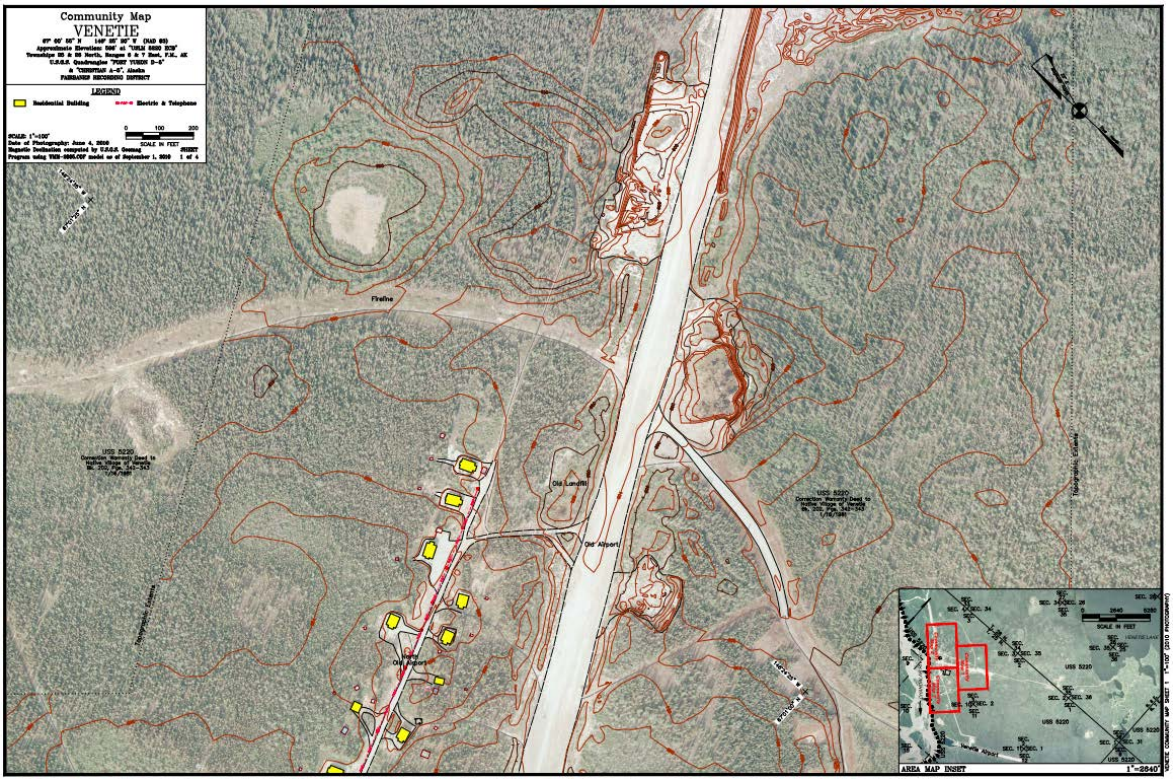

Figure 6-1 Native Village of Venetie (Sheet 1) (DCRA 2010)

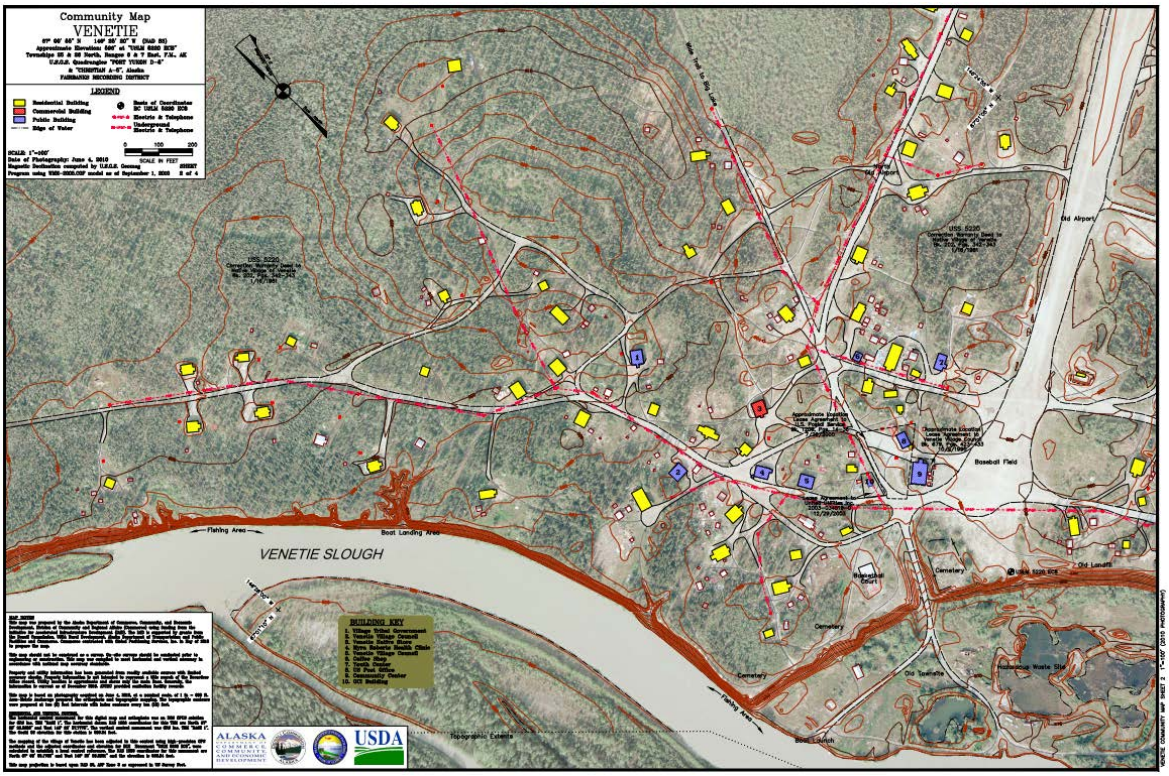

Figure 6-2 Native Village of Venetie (Sheet 2) (DCRA 2010)

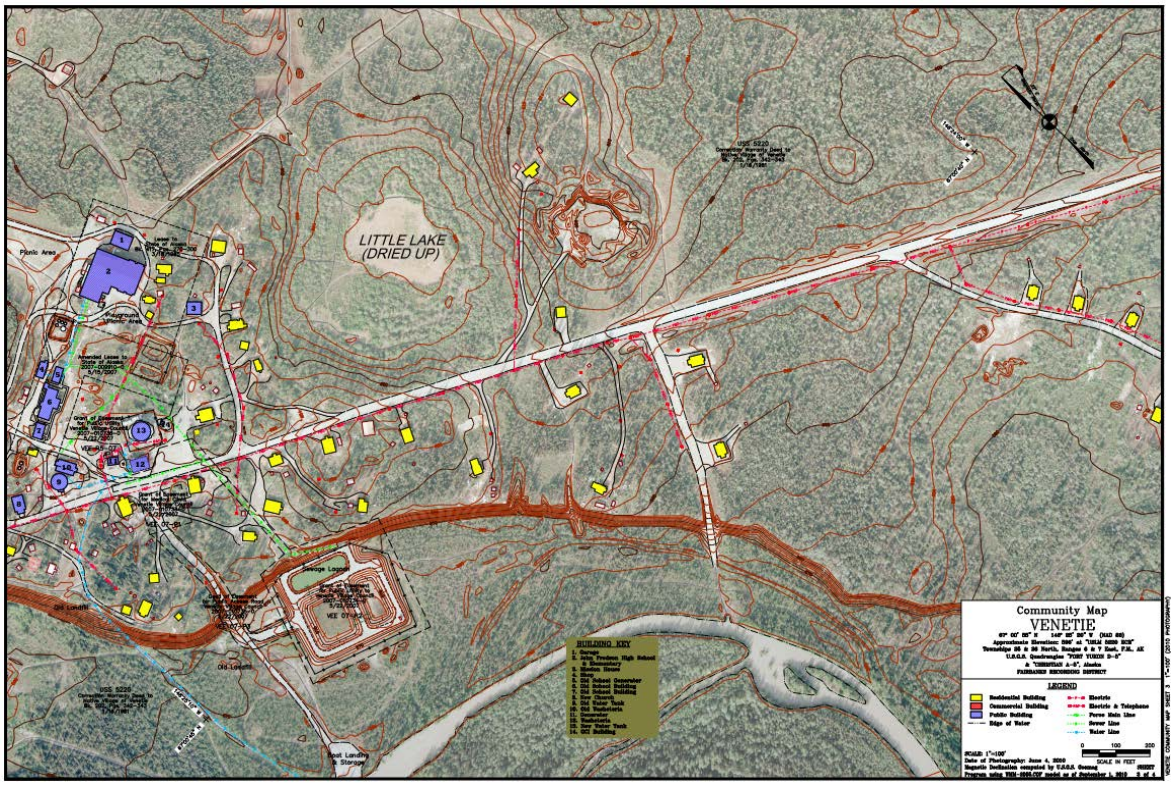

Figure 6-3 Native Village of Venetie (Sheet 3) (DCRA 2010)

6

6.4 EXPOSURE ANALYSIS FOR CURRENT ASSETS

6.4.1 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.

6.4.1.1 Population and Building Stock

Population data for the Village were obtained from the 2010 US Census estimates and the Department of Labor (DOL) or DCCED certified data. The US Census reports the Village's total population for 2010 as 166 and 2016 DCCED's data reported a population of 192 (Table 6-2).

Table 6-2 Estimated Population and Building Inventory

Population		Residential Buildings	
2010 Census	DCRA 2016 Data	Total Building Count	Total Value of Buildings[1]
166	192	89	U.S. Census $36,312,000 Village: $22,250,000

[1] Sources: US Census 2010, US Census 2011-2015 American Community Survey (ACS) 5-Year Estimates, and 2016 DCRA population data. US Census ACS listed housing value at $40,800. The Project Team determined that the average structural replacement value of all single-family residential buildings is $250,000.

Estimated replacement values for those structures, as shown in Table 6-2, were obtained from the US Census 2011-2015 American Community Survey, and planning team knowledge.

The Planning Team stated that residential replacement values are generally understated because replacement costs exceed US Census structure estimates due to material purchasing, barge or airplane delivery, and construction in rural Alaska. The Planning Team estimates the cost to build an average 30ft by 40 ft (1,200 sq ft) residential structure at $250,000. A total of 89 single-family residential buildings were considered in this analysis to estimate replacing all residential structures.

6.4.1.2 Existing Infrastructure

The Native Village of Venetie has benefited from numerous funding opportunities to assist them with upgrading their infrastructure. Since approximately 2010, the State Division of Community and Regional Affairs (DCRA) is no longer able to collect diverse agency project data for Alaskan communities. Therefore this plan update will only list Venetie's historically "closed" grant funded resources (Table 6-3). The older grants highlight their ongoing efforts toward improving their aging infrastructure.

Note: Recent infrastructure improvement projects are still ongoing; however there is no current information repository for these data.

Table 6-3 Venetie's Completed Capital Improvement Project List

Recipient	Award Year	Project Description / Comments	Project Status	Award Amount	End Date
Venetie Village Council	*2010*	*Purchase Bulk Fuel*	*Closed*	*$5,319*	*4/30/2011*
Venetie Village Council	*2005*	*Community Projects & Improvements*	*Closed*	*$0*	*7/1/2005*
Venetie Village Council	*2004*	*Temporary Fiscal Relief Grant*	*Closed*	*$3,500*	
Venetie Village Council	*2004*	*Community Financial Obligations*	*Closed*	*$25,124*	*8/31/2003*
Venetie Village Council	*2004*	*Community Financial Obligations*	*Closed*	*$0*	*6/30/2008*
Venetie Village Council	*2003*	*State Revenue Sharing*	*Closed*	*$3,631*	*3/31/2004*
Venetie Village Council	*2003*	*CP&I/Generator Purchase & Installation and Upgrade Water Treatment Plant/Washeteria Facility*	*Closed*	*$54,217*	*2/1/2007*
Venetie Village Council	*2002*	*CP&I/Generator Purchase and Installation*	*Closed*	*$53,935*	*12/31/2004*
Venetie Village Council	*2001*	*Construct New Community Center*	*Closed*	*Undefined*	*Undefined*
Venetie Village Council	*1999*	*Elders Center*	*Closed*	*$26,817*	*9/30/2000*
Venetie Village Council	*1998*	*Community Equipment Purchase*	*Closed*	*$50,826*	*10/31/1997*
Venetie Village Council	*1997*	*Multipurpose Building*	*Closed*	*$26,213*	*6/30/1998*
Venetie Village Council	*1996*	*Youth Center Building Purchase*	*Closed*	*$24,956*	*6/1/1997*
Venetie Village Council	*1995*	*Back-Up Generator Purchase*	*Closed*	*$25,000*	*3/1/1995*
Venetie Village Council	*1993*	*Washeteria Replacement*	*Closed*	*$100,000*	*8/31/1993*

(DCRA 2010)

6.4.1.3 Existing Critical Facilities

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 Native Village of Venetie while fulfilling important public safety, emergency response, and disaster recovery functions. The critical facilities profiled in this plan include the following:

- Government facilities, such as Village or 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.

The Village's critical facilities and infrastructure are listed in Table 6-4 and displayed in Figure 6-4.

Table 6-4 Venetie's Critical Facilities and Infrastructure

Facilities	Number of Occupants	Facilities	Latitude	Longitude	Estimated Value	Building Type	Earthquake	Flood or Erosion	Ground Failure	Severe Weather	Wildland Fire
Government	3	Village Tribal Government	67.019106	-146.421689	$10,000	W1	X		X	X	X
	5	Venetie Village Council	67.017403	-146.421145	$5,200	W1	X		X	X	X
	0	Venetie Village Council Storage Building	67.017649	-146.422666	$5,000	W1	X		X	X	X
	1	Post Office	67.017066	-146.419152	$45,000	W1	X		X	X	X
Education	70	John Fredson Elementary and High School	67.015867	-146.411321	$1,500,000	W1	X		X	X	X
	0	School Service/Maintenance Shop	67.016007	-146.410775		W1	X		X	X	X
	7	Early Head Start	67.017719	-146.421638	50,000	W1	X		X	X	X
	0	Old School Building	67.015528	-146.414204	$2,000	W1	X		X	X	X
	0	Old School Building	67.015436	-146.414810	$1,000	W1	X		X	X	X
Medical	5	Myra Roberts Health Clinic	67.014042	-146.416892	$150,000	W1	X		X	X	X
Community	100	Shitzu Sarah Frank Community Hall	67.016777	-146.419424	$100,000	W1	X		X	X	X
	3	Village Store	67.018092	-146.420728	$75,000	W1	X		X	X	X
	80	Church of the Good Shepard	67.015152	-146.416200	$100,000	W1	X		X	X	X
	4	Teachers Quarters	67.015597	-146.410573	$200,000	W1	X		X	X	X
	3	Mission House	67.015208	-146.410758	$80,000	W1	X		X	X	X

Table 6-4 Venetie's Critical Facilities and Infrastructure

Facilities	Number of Occupants	Facilities	Latitude	Longitude	Estimated Value	Building Type	Earthquake	Flood or Erosion	Ground Failure	Severe Weather	Wildland Fire
	0	Cemetery 1	67.016041	-146.420595	-	-	X	X	X	X	X
	0	New Community Gardens	67.016056	-146.422983	-	-	X	X	X	X	X
	0	Coffee shop	67.017798	-146.418530	$5,000	W1	X		X	X	X
	0	Shop (Old Washeteria)	67.015074	-146.414977	$1,000	W1	X		X	X	X
	0	Garage/Shop (Old Water Tank)	67.015030	-146.415312	$10,000	STL2	X		X	X	X
	0	Youth Center	67.017278	-146.417425	$20,000	W1	X		X	X	X
	0	GCI Satellite Dish	67.017018	-146.420277	$10,000	CBO	X		X	X	X
	0	United Utilities	67.014731	-146.412894	$5,000	CBO	X		X	X	X
Roads	-	Tribal Transportation Program Roads	7 miles		$500,000	HRD	X		X	X	X
	-	Airport Road	1.1 miles		$50,000	HRD	X		X	X	X
Transportation	5	New Airport	67.006082	-146.378919	$2,000,000	ARW	X		X	X	X
	0	Boat Landing & Storage	67.011802	-146.415310	$0	PWS	X	X	X	X	X
	0	Former Airstrip	67.018290	-146.408430	$0	ARW	X		X	X	X
Utilities	2	Landfill/Incinerator	67.020450	-146.392610	$200,000	-	X		X	X	X
	1	Power Plant and Generator	67.014846	-146.414176	$200,000	EPPS	X		X	X	X
	0	Generator at School	67.016110	-146.410990	$35,000	EPPS	X		X	X	X
	0	Airport Tank Farm (5,000 gal)	67.008306	-146.379511	$5,000	OTF	X		X	X	X

Table 6-4 Venetie's Critical Facilities and Infrastructure

Facilities	Number of Occupants	Facilities	Latitude	Longitude	Estimated Value	Building Type	Earthquake	Flood or Erosion	Ground Failure	Severe Weather	Wildland Fire
	0	Village Council Tank Farm	67.018375	-146.421447	$5,000	OTF	X		X	X	X
	0	Village Tank Farm	67.015369	-146.415603	$5,000	OTF	X		X	X	X
	0	School Tank Farm	67.015901	-146.412910	$10,000	OTF	X		X	X	X
	0	Old Airport Tank Farm (10,000 gal)	67.016947	-146.411989	$8,000	OTF	X		X	X	X
	5	Stanley Frank Washeteria and Water Treatment Plant	67.014656	-146.413858	$250,000	WWTS	X		X	X	X
	0	Reservoir/Water Supply	67.014833	-146.413365	$50,000	PWTS	X		X	X	X
	0	Water line from Washeteria to School	N/A	N/A	$30,000	PWE	X		X	X	X
	0	Water line from Well to Tank	N/A	N/A	$30,000	PWTS	X	X	X	X	X
	0	Sewage Lagoon	67.013002	-146.413036	$2,000,000	WWTS	X	X	X	X	X
	0	Venetie Water System Well	67.011800	-146.416300	$10,000	PWE	X	X	X	X	X
Total Occ.	**294**			**Total Value**	**$7,754,200**						

Building Type: ARW=Runway; CBO=Communication; EPPS=Electric; HRD=Major Road; OTF=Fuel Tank; PWE= Water Well; PWS=Waterfront Structure; PWTS=Potable Water; STL=Steel; W=Wood; WWTS=Wastewater Treatment

(VVC 2017, Community of Venetie)

6.5 VULNERABILITY ANALYSIS 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 consideration of probability or level of damage.

Replacement structure and contents 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.

6.6 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 THMP 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 THMP.

6.7 VULNERABILITY EXPOSURE ANALYSIS

There is insufficient GIS data available for The Native Village of Venetie. The following discussion contains data obtained from the project team and their subsequent analysis. The results of their exposure analysis and loss estimations are summarized in Tables 6-5 and 6-6, and Section 6.8.1 Narrative Summaries.

Table 6-5 Potential Hazard Exposure Analysis – Critical Facilities

		Government and Emergency Response		Educational		Medical		Community	
Hazard Type	Methodology	# Bldgs / # Occ	Value ($)	# Bldgs / # Occ	Value ($)	# Bldgs / # Occ	Value ($)	# Bldgs / # Occ	Value ($)
Earthquake	Descriptive	4/9	$65,000	5/9	$1,553,000	1/5	$150,000	13/190	$606,000
Flood/Erosion	Descriptive	0/0	$0	0/0	$0	0/0	$0	2/0	$0
Ground Failure	Descriptive	4/9	$65,000	5/9	$1,553,000	1/5	$150,000	13/190	$606,000
Severe Weather	Descriptive	4/9	$65,000	5/9	$1,553,000	1/5	$150,000	13/190	$606,000
Wildland Fire	Descriptive	4/9	$65,000	5/9	$1,553,000	1/5	$150,000	13/190	$606,000

Table 6-6 Potential Hazard Exposure Analysis – Critical Infrastructure

		Highway		Bridges		Transportation Facilities		Utilities	
Hazard Type	Methodology	Miles	Value ($)	No.	Value ($)	# Bldgs / # Occ	Value ($)	# Bldgs / # Occ	Value ($)
Earthquake	Descriptive	8.1	$550,000	0	0	3/5	$2,000,000	14/8	$2,830,000
Flood/Erosion	Descriptive	.25	$10,000	0	0	1/0	$0	3/0	$2,040,000
Ground Failure	Descriptive	8.1	$550,000	0	0	3/5	$2,000,000	14/8	$2,830,000
Severe Weather	Descriptive	8.1	$550,000	0	0	3/5	$2,000,000	14/8	$2,830,000
Wildland Fire	Descriptive	8.1	$550,000	0	0	3/5	$2,000,000	14/8	$2,830,000

6.7.1 Exposure Analysis – Hazard Narrative Summaries

Earthquake

The Village and surrounding area can expect to experience limited earthquake ground movement that may result in infrastructure damage. Intense shaking may be seen or felt based on past events. Although all structures are exposed to earthquakes, buildings within the Village constructed with wood have slightly less vulnerability to the effects of earthquakes than those with less stable materials.

Based on earthquake probability (PGA) maps produced by the USGS, the entire Village area is at risk of experiencing moderate earthquake impacts as a result of its close proximity to known earthquake faults. The probability is likely (see Section 5.3.1.3) that impacts to the community such as ”severe” ground movement may result in infrastructure damage and personal injury.

The Native Village of Venetie’s entire existing, transient, and future population, residential structures, and critical facilities are typically exposed to the effects of “Limited” earthquake events. This includes approximately:

- 192 people in 89 residences (approximate value $$22,250,000)
- Nine people in four government and emergency response facilities (approximate value $65,200)
- 77 people in five educational facilities (approximate value $1,553,000)
- Five people in one medical facility (approximate value $150,000)
- 190 people in 13 community facilities (approximate value $606,000)
- 8.1 road system miles (approximate value $550,000)
- Five people in three transportation facilities (approximate value $2,000,000)
- Eight people in 14 utility facilities (approximate value $2,830,000)

The Native Village of Venetie anticipates that impacts to future populations, residential structures, critical facilities, and infrastructure are anticipated at the same historical impact level.

Flood

Typical flood impacts associated include structures and contents water damage, roadbed, riverine embankment erosion, boat strandings, and areas of standing water in roadways. Buildings on slab foundations, not located on raised foundations, and/or not constructed with materials designed to withstand flooding events (e.g., cross vents to allow water pass-through an open area under the main floor of a building) are more vulnerable to sheet flood impacts (see Section 5.3.2.3).

No detailed 100 year flood analysis has been prepared for the Village nor does the USACE Floodplain Manager provide flood information or a 100 year floodplain map for Venetie.

There flood threat includes approximately:

- Zero people in two community facilities (approximate value $0)
- .25 road system miles (approximate value $10,000)
- Zero people in one transportation facility (approximate value $0)
- Zero people in three utility facilities (approximate value $2,040,000)

The Native Village of Venetie anticipates that impacts to future populations, residential structures, critical facilities, and infrastructure will be at the same historical impact level.

Ground Failure

Impacts associated with ground failure include surface subsidence, infrastructure, structure, and/or road damage. Buildings that are built on slab foundations and/or not constructed with materials designed to accommodate ground movement associated with building on permafrost and other land subsidence and impacts are more vulnerable to damage.

The potential ground failure impacts from subsidence can be widespread impacting transportation, utility systems, and water and waste treatment infrastructure along with public, private, and business structures located adjacent to riverine embankments, within alluvial fans, or natural drainages. Response and recovery efforts will likely vary from minor cleanup to more extensive utility system rebuilding. Utility disruptions are usually local and terrain dependent. Damages may require reestablishing electrical, communication, and gas pipeline connections occurring from specific breakage points. Initial debris clearing from emergency routes and high traffic areas may be required. Water and wastewater utilities may need treatment to quickly improve water quality by reducing excessive water turbidity and reestablishing waste disposal capability.

Ground Failure hazards periodically cause structure and infrastructure displacement due to ground shifting, sinking, and upheaval. According to mapping completed by the Division of Geological And Geophysical Survey, Venetie has discontinuous permafrost (see Section 5.3.3.3).

Threatened facilities include:

- 192 people in 89 residences (approximate value $$22,250,000)
- Nine people in four government and emergency response facilities (approximate value $65,200)
- 77 people in five educational facilities (approximate value $1,553,000)
- Five people in one medical facility (approximate value $150,000)
- 190 people in 13 community facilities (approximate value $606,000)
- 8.1 road system miles (approximate value $550,000)
- Five people in three transportation facilities (approximate value $2,000,000)
- Eight people in 14 utility facilities (approximate value $2,830,000)

The Native Village of Venetie anticipates that impacts to future populations, residential structures, critical facilities, and infrastructure are anticipated at the same impact level.

Severe Weather

Impacts associated with severe weather events includes roof collapse, trees and power lines falling, damage to light aircraft and sinking small boats, injury and death resulting from snow machine or vehicle accidents, overexertion while shoveling all due to heavy snow. A quick thaw after a heavy snow can also cause substantial surface flooding. Impacts from extreme cold include hypothermia, halting transportation from fog and ice, congealed fuel, frozen pipes, utility disruptions, frozen pipes, and carbon monoxide poisoning. Additional impacts may occur from secondary weather hazards or complex storms such as extreme high winds combined with

freezing rain. Section 5.3.4 provides additional detail regarding severe weather impacts. Buildings that are older and/or not constructed with materials designed to withstand heavy snow and wind (e.g., hurricane ties on crossbeams) are more vulnerable to the severe weather damage.

Based on information provided by the Native Village of Venetie and the National Weather Service, the entire existing, transient, and future community population, residential structures, and critical facilities are exposed to future severe weather impacts.

This includes approximately:

- 192 people in 89 residences (approximate value $$22,250,000)
- Nine people in four government and emergency response facilities (approximate value $65,200)
- 77 people in five educational facilities (approximate value $1,553,000)
- Five people in one medical facility (approximate value $150,000)
- 190 people in 13 community facilities (approximate value $606,000)
- 8.1 road system miles (approximate value $550,000)
- Five people in three transportation facilities (approximate value $2,000,000)
- Eight people in 14 utility facilities (approximate value $2,830,000)

The Native Village of Venetie anticipates that impacts to future populations, residential structures, critical facilities, and infrastructure are anticipated at the same impact level.

Wildland Fire

Impacts associated with a wildland fire event include the potential for loss of life and property. It can also harm livestock and pets, destroy forest resources, and contaminate water supplies. Buildings closer to the outer edge of town, those with a lot of vegetation surrounding the structure, and those constructed with wood are some of the buildings that are more vulnerable to the impacts of wildland fire. Section 5.3.5 provides additional detail regarding wildland or tundra fire impacts

According to the Alaska Fire Service, there are no wildland fire areas within Venetie's boundaries. However, 324 wildland fires have occurred within a 50-mile radius of the Village (see Section 5.3.5.2). There is a potential for a wildland fire event to interface with the population center of the Village. This area includes approximately:

- 192 people in 89 residences (approximate value $$22,250,000)
- Nine people in four government and emergency response facilities (approximate value $65,200)
- 77 people in five educational facilities (approximate value $1,553,000)
- Five people in one medical facility (approximate value $150,000)
- 190 people in 13 community facilities (approximate value $606,000)
- 8.1 road system miles (approximate value $550,000)
- Five people in three transportation facilities (approximate value $2,000,000)
- Eight people in 14 utility facilities (approximate value $2,830,000)

The Native Village of Venetie anticipates that impacts to future populations, residential structures, critical facilities, and infrastructure are anticipated at the same impact level.

6.8 FUTURE DEVELOPMENT

The Native Village of Venetie's Community Development Plan describes their land use goals as:

- *Design, finance, and construct a permitted landfill.*
- *A comprehensive land-use plan for the Village of Venetie Tribal Government.*
- *Construct a road to fish camp.*
- *Start a community garden.*
- *Construct a combined Cultural Heritage Museum and Elder/Youth Center.*
- *Construct a multi-purpose building that houses the Venetie Village Council, Village of Venetie Tribal government offices, and the community hall.*
- *Construct picnic areas at the gravel pit, community hall, and at Big Lake.*

Since approximately 2010, the State Division of Community and Regional Affairs (DCRA) is no longer able to collect diverse agency project data for Alaskan communities. Therefore this plan update will only list Venetie's historically "active" grant funded resources (Table 6-7). The older grants highlight their ongoing efforts toward improving their aging infrastructure.

Note: Recent infrastructure improvement projects are still ongoing; however there is no current information repository for these data.

Table 6-7 Planned and Funded Projects

Grant Recipient	Award Year	Project Description / Comments	Project Status	Award Amount	End Date
Venetie Village Council	*2013*	*New Landfill and Dump Closure*	*Active*	*$200,000*	*6/30/2018*
Venetie Village Council	*2013*	*New Clinic Match*	*Active*	*$200,000*	*6/20/2017*
Village of Venetie IRA	*2009*	*Health Care Clinic Project*	*Active*	*$150,000*	*6/30/2014*
ANTHC	*2017*	*Design for New Washeteria*	*Active*	*Unknown*	*Unknown*

(DHS&EM 2016b)

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Section Seven outlines the six-step process for preparing a 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)

7.2 NATIVE VILLAGE OF VENETIE'S CAPABILITY ASSESSMENT

The THMP displays DMA 2000 and 44 CFR 201.7 (Alaska Native Village) requirements to guide THMP development. Pertinent support data follows each regulatory criteria text boxes, striving to fulfill regulatory criteria.

Note: *Many rural Alaska villages have very transient, limited and funded staff or formal government processes. They "make do with what they have" looking at life with survival ever present in their minds and hearts. Many communities' leadership positions are extremely transitory with sometimes rapid or frequent turn-over.*

The 2018 THMP planning process was develop to integrate the Mitigation Strategy with FEMA mitigation programs and initiatives.

This section defines the Native Village of Venetie's capability to review its technical and fiscal resources to fulfill DMA 2000 requirements and implementing Tribal governance regulations for THMP project implantation and management include.

DMA 2000 Requirements
REQUIREMENTS CHECKLIST
ELEMENT C: Mitigation Strategy
C1. Does the plan include a discussion of the tribal government's pre- and post-disaster hazard management policies, programs, and capabilities to mitigate the hazards in the area, including an evaluation of tribal laws and regulations related to hazard mitigation as well as to development in hazard-prone areas? [44 CFR §§ 201.7(c)(3) and 201.7(c)(3)(iv)]
Source: FEMA, October 2017

This section outlines the resources available for mitigation and mitigation related funding and training. Tables 7-1 through 7-4 delineate the Native Village of Venetie's regulatory tools, technical specialists, and financial resource available for project management. Additional funding resources are identified in Appendix A.

Table 7-1 Venetie's Regulatory Tools

Regulatory Tools (ordinances, codes, plans)	Existing Yes/No?	Comments (Year of most recent update; problems administering it, etc.)
Tribal Economic Development Plan	Yes	Explains the Native Village of Venetie's economic and infrastructure initiatives and natural hazard impacts.
Regional Economic Development Plan	Yes	Explains the region's economic and infrastructure initiatives and natural hazard impacts.
Tribal Land Use Plan	No	
Emergency Response Plan	No	
Wildland Fire Protection Plan	No	
Building code	No	The Native Village of Venetie can exercise this requirement.

Local Resources

This section defines the Native Village of Venetie's available 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 Venetie's Technical Specialists for Hazard Mitigation

Staff/Personnel Resources	Yes / No	Department/Agency and Position
Planner or engineer with knowledge of land development and land management practices	Yes	Tanana Chiefs Conference provides this service
Engineer or professional trained in construction practices related to buildings and/or infrastructure	Yes	The Native Village of Venetie consults with other parties for this information
Planner or engineer with an understanding of natural and/or human-caused hazards	Yes	The Native Village of Venetie consults with other parties for this information
Floodplain Manager	No	The Native Village of Venetie does not have this capability
Surveyors	Yes	The Native Village of Venetie consults with other parties for this information
Staff with education or expertise to assess the jurisdiction's vulnerability to hazards	Yes	The Native Village of Venetie consults with other parties for this information
Personnel skilled in Geospatial Information System (GIS) and/or Hazards Us-Multi Hazard software	Yes	The Native Village of Venetie consults with other parties for this information
Emergency Manager	Yes	Tribal President
Finance (Grant writers)	Yes	Tribal Administrator
Public Information Officer	Yes	Tribal President, Administrator

DMA 2000 stipulated requirements and Tribal governance implementing regulations for grant financial management include:

DMA 2000 Requirements
ELEMENT
C2. Does the plan include a discussion of tribal funding sources for hazard mitigation projects and identify current and potential sources of Federal, tribal, or private funding to implement mitigation activities? [44 CFR §§ 201.7(c)(3)(iv) and 201.7(c)(3)(v)]
Source: FEMA, October 2017

Table 7-3 lists a sample of the tribal jurisdictions' funding resources. Table 7-4 lists a few FEMA specific funding programs while Appendix A provides a detailed list of potential state and federal agency funding resources.

Table 7-3 Tribal Financial Resources

Financial Resource	Accessible or Eligible to Use for Mitigation Activities
General funds	Yes, insufficient funds to enable extensive mitigation action implementation
Indian Community Development Block Grants (ICDBG)	Provides operational funds for tribal management
EPA, Indian Environmental General Assistance Program (IGAP)	Provides funding for tribal environmental improvement activities
HUD, Indian Housing Block Grant (IHBG)	Assists IRA Tribes with obtaining adequate housing
HUD, Native American Housing Assistance and Self Determination Act (NAHASDA)	Assists IRA Tribes with housing management resources
DOL, Employment and Training Administration, Disaster Unemployment Assistance	Provides disaster related unemployment by supporting employment and training activities

FEMA and Other Mitigation Program and Initiative Eligibility

A FEMA approved and tribal adopted THMP assures participant eligibility for FEMA mitigation grant programs and initiatives. The final THMP assures these jurisdictions can potentially fulfill grant management and integration with available grants listed in Table 7-4.

Table 7-4 Federal Agency Mitigation Programs

Financial Resources	Accessible or Eligible to Use for Mitigation Activities
Hazard Mitigation Grant Program (HMGP)	FEMA funding available to eligible local and tribal jurisdictions 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 available to eligible local and tribal jurisdictions on an annual basis. This grant can only be used to fund pre-disaster mitigation plans and projects only

Table 7-4 Federal Agency Mitigation Programs

Financial Resources	Accessible or Eligible to Use for Mitigation Activities
Flood Mitigation Assistance (FMA) grant program	FEMA funding available to eligible local and tribal jurisdictions on an annual basis. This grant can be used to mitigate repetitively flooded structures and infrastructure to protect repetitive flood structures. ***Venetie does not participate in the NFIP and is ineligible for this funding source***
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.

7.3 DEVELOPING MITIGATION GOALS

The requirements for the local hazard mitigation goals, as stipulated in DMA 2000 and its implementing regulations are described below.

DMA 2000 Requirements
ELEMENT C. Mitigation Goals
C3. Does the Mitigation Strategy include goals to reduce or avoid long-term vulnerabilities to the identified hazards? [44 CFR § 201.7(c)(3)(i)]
Source: FEMA, October 2017

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The exposure analysis results were used as a basis for developing the mitigation goals and actions. 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, ten goals were developed to reduce or avoid long-term vulnerabilities to the identified hazards (Table 7-5).

Additionally, the Native Village of Venetie desired to add three new mitigation action categorizes classified as Multi-Hazard along with their identified natural hazard categories. These three Multiple (Multi-Hazard or MH) Categories include:

- Multi-Hazard (MH) 1: Provide outreach activities to educate and promote recognizing and mitigating natural hazards that affect the Venetie area.
- Multi-Hazard (MH) 2: Cross-reference mitigation goals and actions with other Tribal planning mechanisms and projects.
- Multi-Hazard (MH) 3: Develop construction activities that reduce possibility of losses from natural hazards that affect the Venetie area.

Table 7-5 Mitigation Goals

No.	Goal Description
Multi-Hazards (MH)	
MH 1	Provide **outreach** activities to educate and promote recognizing and mitigating natural hazards that affect the Native Village of Venetie (Village).
MH 2	**Cross-reference** mitigation goals and actions with other Village planning mechanisms and projects.
MH 3	Develop **construction** activities that reduce possibility of losses from natural hazards that affect the Village.
Natural Hazards	
EQ 4	Reduce structural vulnerability to earthquake (EQ) damage.
FL 5	Reduce flood and erosive scour (FL) damage and loss possibility.
GF 6	Reduce ground failure (GF) damage and loss possibility.
SW 7	Reduce structural vulnerability to severe weather (SW) damage.
TS 8	Reduce vulnerability, damage, or loss of structures from tsunami or seiche (TS)
VO 9	Reduce vulnerability, damage, or loss of structures from volcanic (VO) debris impacts
WF 10	Reduce structural vulnerability to tundra/wildland fire (WF) damage.

7.4 IDENTIFYING MITIGATION ACTIONS

The Tribal governance requirements for the identification and analysis of mitigation actions, as stipulated in DMA 2000 and its implementing regulations are described below.

DMA 2000 Requirements
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, October 2017

Mitigation actions are activities, initiatives, 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 construction projects.

FEMA Hazard Mitigation Assistance Guidance and Addendum states the importance of considering, evaluating, and implementing the most effective projects, activities, and potential alternatives:

> *"Reviewing and incorporating information from the State, tribal, or local mitigation plan can help an Applicant or sub-applicant facilitate the development of mitigation project alternatives. Linking the existing mitigation plan to project scoping can support the Applicant and sub-applicant in selecting the most appropriate mitigation activity that best addresses the identified hazard(s), while taking into account community priorities, climate change, and resiliency. In particular, the mitigation strategy section of the plan identifies a range of specific mitigation activities that can reduce vulnerability and includes information on the process that was used to identify, prioritize, and implement the range of mitigation actions considered…*

It is important to reference the mitigation plan as potential project alternatives may have been considered during the planning process. If the project alternatives were not considered during the mitigation planning process, they should be considered in the next mitigation plan update" (FEMA 2015b)

Mitigation actions are activities, initiatives, 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 construction projects.

The Planning Team reviewed a comprehensive list of potential mitigation actions that were identified during this THMP development process for each hazard type. That list was deemed too large for THMP inclusion.

The Planning Team assessed the potential mitigation actions to carry forward into the mitigation strategy. Table 7-6 breaks out the project criteria as considered, selected, and ongoing. The community identified numerous "ongoing" mitigation actions currently in-process or those that were listed in other City planning documents

Table 7-6 Potential Mitigation Actions
(Ongoing and newly selected items will be carried forward into the MAP implementation)

Supports Goal No.	Hazard	Criteria *Considered Selected Ongoing Completed*	Priority *High Medium Low*	Action Description
Multi- Hazards (MH)				
MH 1	Provide **outreach** activities to educate and promote recognizing and mitigating natural hazards that affect the Native Village of Venetie.	Selected	Medium	Identify and pursue funding opportunities to implement mitigation actions.
		Selected	Medium	Establish a formal role for the Hazard Mitigation Planning Team to develop a sustainable process to implement, monitor, review, and evaluate community wide mitigation actions.
		Selected	Medium	Investigate benefits of, and potentially join, the National Flood Insurance Program to reduce monetary losses to individuals and the community.
		Selected	Medium	Identify evacuation routes away from high hazard areas and develop outreach program to educate the public concerning warnings and evacuation procedures.
MH 2	Cross reference mitigation goals and actions with other Tribal planning mechanisms and projects.	Selected	Medium	Develop land use ordinances or guidelines to minimize hazard impacts and damages such as: reducing vegetation removal to keep or maintain slope stability from rain, snowmelt run-off, and erosion impacts.
		Selected	Medium	Develop a process to regulate future development in potential high hazard areas (permitting, geotechnical review, soil stabilization techniques, etc.).
		Selected	Medium	Develop prioritized list of mitigation actions for threatened critical facilities and other buildings or

Table 7-6 Potential Mitigation Actions

(Ongoing and newly selected items will be carried forward into the MAP implementation)

Supports Goal No.	Hazard	Criteria *Considered Selected Ongoing Completed*	Priority *High Medium Low*	Action Description
				infrastructure.
MH 3	Develop **construction** activities that reduce possibility of losses from natural hazards that affect the Village.	Selected	Medium	Develop a vegetation management plan addressing slope-stabilizing root strength to maintain or encourage precipitation containment.
		Selected	Medium	Encourage utility companies to evaluate and harden vulnerable infrastructure elements for sustainability.
Natural Hazards				
EQ 4	Reduce structural vulnerability to earthquake (EQ) damage.	Selected	Medium	Evaluate critical public facilities with significant seismic vulnerabilities and complete retrofit (e.g. evaluate fire stations, public works buildings, potable water systems, wastewater systems, electric power systems, and bridges, etc.).
		Selected	Medium	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 flood (FL) and erosive scour damage and loss possibility.	Selected	Medium	Develop mitigation initiatives such as: Rip-rap (large rocks), sheet pilings, gabion baskets, articulated matting, concrete, asphalt, vegetation, or other armoring or protective materials to provide protection against flow scour.
		Selected	Medium	Establish flood mitigation priorities for critical facilities, residential structures, and commercial buildings located within the identified flood hazard area(s) (100- and 500-year floodplains, stormwater, etc.) based on current base flood elevation survey elevation data.
GF 6	Reduce ground failure (GF) damage and loss possibility.	Selected	Medium	Promote ground failure and permafrost sensitive construction practices in hazard impact areas.
SW 7	Reduce structural vulnerability to severe weather (SW) damage.	Selected	Medium	Develop critical facility list needing emergency back-up power systems, prioritize, seek funding, and implement installation.
		Selected	Medium	Develop and implement programs to coordinate maintenance and mitigation activities to reduce risk to public infrastructure from severe winter storms (snow load, ice, and wind).
		Selected	Medium	Reinforce buildings and homes against high winds.

Table 7-6 Potential Mitigation Actions
(Ongoing and newly selected items will be carried forward into the MAP implementation)

Supports Goal No.	Hazard	Criteria *Considered Selected Ongoing Completed*	Priority *High Medium Low*	Action Description
WF 8	Reduce possibility of damage and losses from tundra/ wildland fires (WF) damage.	Selected	Medium	Develop or update community Tundra/Wildland Fire Protection Plan.
		Selected	Medium	Identify, develop, implement, and enforce mitigation actions and protective measures for fuel breaks and wildland fire fuels reduction zones to assure sustainability.

In September, 2017, the Planning Team selected 18 natural hazard mitigation actions for MAP implementation during the five-year life cycle of this THMP. 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 high hazard impact areas.

7.5 EVALUATING AND PRIORITIZING MITIGATION ACTIONS

This section describes the Tribal governance requirements for evaluating and implementing mitigation actions, as stipulated in DMA 2000 and its implementing regulations.

DMA 2000 Requirements: Mitigation Strategy - Implementation of Mitigation Actions
ELEMENT C: Mitigation Actions
C5. Does the plan contain an action plan that describes how the actions identified will be prioritized, implemented, and administered by the tribal government? [44 CFR § 201.7(c)(3)(iii)]
Source: FEMA, October 2017

The MAP represents mitigation projects and programs the Native Village of Venetie could implement to potentially reduce damaging hazard impacts to both current and future infrastructure and buildings.

The Planning Team evaluated and prioritized each of the mitigation actions in September, 2017 to determine which actions would be included in the MAP. The MAP represents mitigation projects and programs to be implemented through the cooperation of multiple entities in Venetie. To complete this task, the Planning Team first prioritized the hazards that were regarded as the most significant within the community (earthquake, flood, ground failure, severe weather, and wildland fire).

The Planning Team reviewed the simplified social, technical, administrative, political, legal, economic, and environmental (STAPLEE) evaluation criteria (Table 7-7) and the Benefit-Cost Analysis Fact Sheet (Appendix E) 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 Native Village of Venetie chooses to implement.

Table 7-7 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, economic development, safety, and emergency management.	Political support Local champion 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

Venetie's Planning Team considered each hazard's history, extent, and recurrence probability to determine each potential actions priority. The Planning team defined their project rating categories as high, medium, or low priority:

- 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 7-9) was completed to provide the Native Village of Venetie with an implementation approach. The Tribe will primarily focus their mitigation efforts on their high priority initiatives as funding becomes available.

Unfortunately, DHS&EM has insufficient funding for large (high priority) projects but can fund smaller projects. Therefore, Venetie will strive to develop projects using a phased funding format where they can acquire funding for smaller projects to fulfill their diverse mitigation needs.

7.6 MITIGATION ACTION PLAN

DMA 2000 requirements and Tribal governance regulations for implementing mitigation actions.

DMA 2000 Requirements: Mitigation Strategy - Implementation of Mitigation Actions
ELEMENT C: Mitigation Action Implementation and Management
C5. Does the plan contain an action plan that describes how the actions identified will be prioritized, implemented, and administered by the tribal government? [44 CFR § 201.7(c)(3)(iii)]
Source: FEMA, October 2017

The Native Village of Venetie has a flat management structure. Like most rural-remote Alaskan communities there is limited budget available for developing and maintaining departmental or other infrastructure responsibilities. The Village is managed by their First Chief led Tribal Council. This process enables the Village to maximize governance capacity, coordinate project prioritization, and closely monitor their budget.

Table 7-8 delineates the acronyms used in the MAP (Table 7-8). See Appendix A for summarized funding agency resource descriptions.

Table 7-8 Potential Funding Source Acronym List
(See complete funding resource description in Appendix A)

City Office (City),

Tribal Council Office (Tribe)

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)

Table 7-8 Potential Funding Source Acronym List

(See complete funding resource description in Appendix A)

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)

Rasmussen Foundation Grants (RFG)

The MAP lists Venetie's projects and initiatives to address their various hazard impact threats. Table 7-9 defines how each mitigation action will be implemented and administered by the individual city and tribal governments.

Additionally, the MAP lists each selected mitigation action, their priorities, the responsible office, potential funding resource(s), the anticipated implementation timeline, and provides a brief explanation as to how the overall benefit/costs and technical feasibility were taken into consideration.

Note: *The actions are applicable to the Native Village of Venetie. Therefore the MAP, Table 7-9, identifies the "Responsible Office" for implementation as the Tribal Office (or designated alternate) as responsible for grant management for each project grant received from the granting organization.*

Table 7-9 Native Village of Venetie's Mitigation Action Plan (MAP)

Goal / Action ID	Description	Priority (High, Medium, Low)	Responsible Department	Potential Funding Source(s)	Timeframe (1-3 Years, 2-4 Years, 3-5 Years, Ongoing)	Benefit-Costs (B/C) Technical Feasibility (T/F)
MH 1.1	Identify and pursue funding opportunities to implement mitigation actions.	Medium	Tribe	Tribe	Ongoing	B/C: 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	Establish a formal role for the Hazard Mitigation Planning Team to develop a sustainable process to implement, monitor, review, and evaluate community wide mitigation actions.	Medium	Tribal Council (Tribe)	Tribe	1-3 years	B/C: The existing team has gained experienced throughout this process which can provide invaluable insight for ensuring a sustained effort toward mitigating natural hazard damages. 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 1.3	Investigate benefits of, and potentially join, the National Flood Insurance Program (NFIP) to reduce monetary losses to individuals and the community.	Medium	Tribe	Tribe	1-3 years	B/C: NFIP participation, while one of FEMA's highest priorities, also enables communities with an effective program focus on repetitive flood loss properties and other priority flood locations and projects. TF: Once the community is a member, residents can enjoy lower cost insurance. Continuation is relatively simple.

Table 7-9 Native Village of Venetie's Mitigation Action Plan (MAP)

Goal / Action ID	Description	Priority (High, Medium, Low)	Responsible Department	Potential Funding Source(s)	Timeframe (1-3 Years, 2-4 Years, 3-5 Years, Ongoing)	Benefit-Costs (B/C) Technical Feasibility (T/F)
MH 1.4	Identify evacuation routes away from high hazard areas and develop outreach program to educate the public concerning warnings and evacuation procedures.	Medium	Tribe	Tribe, Denali Commission, Division of Community and Regional Affairs (DCRA)	1-3 years	B/C: This project will ensure the community looks closely at their hazard areas to ensure they can safely evacuate their residents and visitors to safety during a natural hazard event. TF: This is technically feasible using existing tribal resources.
MH 2.1	Develop land use ordinances or guidelines to minimize hazard impacts and damages such as: reducing vegetation removal to keep or maintain slope stability from rain, snowmelt run-off, and erosion impacts.	Medium	Tribe	Tribe, Denali Commission, DCRA	1-3 years	B/C: Land Use plans are an essential community development and land management tool. Focused and coordinated planning enables effective damage abatement and ensures proper attention is assigned to reducing losses, damage, and injuries and strengthens materials management. TF: This action is feasible with limited fund expenditures.
MH 2.2	Develop a process to regulate future development in potential high hazard areas (permitting, geotechnical review, soil stabilization techniques, etc.).	Medium	Tribe	Tribe, Natural Resources Conservation Service (NRCS), Assistance to Native Americans (ANA), US Army Corps of Engineers (USACE), US Department of Agriculture (USDA), Lindbergh Grants Program (Lindbergh)	2-5 years	B/C: Coordinated planning ensures effective damage abatement and ensures proper attention is assigned to reduce losses and damage to structures and residents. TF: This action is feasible with limited fund expenditures.

Table 7-9 Native Village of Venetie's Mitigation Action Plan (MAP)

Goal / Action ID	Description	Priority (High, Medium, Low)	Responsible Department	Potential Funding Source(s)	Timeframe (1-3 Years, 2-4 Years, 3-5 Years, Ongoing)	Benefit-Costs (B/C) Technical Feasibility (T/F)
MH 2.3	Develop prioritized list of mitigation actions for threatened critical facilities and other buildings or infrastructure.	Medium	Tribe	Tribe, Denali Commission, DCRA	1-3 years	B/C: Repetitive damage reduction is a high priority for FEMA and will therefore benefit the community greatly. Identifying RL and SRL properties is the first step to reducing losses. Coordinated planning ensures effective damage abatement and ensures proper attention is assigned to reduce losses and damage to structures and Village residents. TF: This is feasible to accomplish as no cost is associated with the action until appropriate mitigation actions are identified. This activity relies on community member availability and willingness to serve their community.
MH 3.1	Develop a vegetation management plan addressing slope-stabilizing root strength to maintain or encourage precipitation containment.	Medium	Tribe	Tribe, Hazard Mitigation Assistance Grant Program (HMA), ANA, NRCS, USACE	2-5 years	B/C: Improving slope stability will greatly reduce potential infrastructure and residential losses. Project costs would outweigh replacement costs of lost facilities. Vegetative or other readily available materials may improve revitalization and facilitate community focused repairs with similar materials. TF: Technically feasible as the community has the skill to implement this action using native materials and equipment.

Table 7-9 Native Village of Venetie's Mitigation Action Plan (MAP)

Goal / Action ID	Description	Priority (High, Medium, Low)	Responsible Department	Potential Funding Source(s)	Timeframe (1-3 Years, 2-4 Years, 3-5 Years, Ongoing)	Benefit-Costs (B/C) Technical Feasibility (T/F)
MH 3.2	Encourage utility companies to evaluate and harden vulnerable infrastructure elements for sustainability.	Medium	Tribe	Tribe, HMA, Assistance to Firefighters Grant (AFG), Fire Prevention and Safety (FP&S), Staffing for Adequate Fire and Emergency Response Grants (SAFER), ANA, Emergency Food and Shelter Program (EFSP)	3-5 years	B/C: This project would ensure threatened infrastructures are available for use – their loss would exacerbate potential damages and further threaten survivability. TF: This project is feasible using existing staff skills, equipment, and materials.
EQ 4.1	Evaluate critical public facilities with significant seismic vulnerabilities and complete retrofit (e.g. evaluate fire stations, public works buildings, potable water systems, wastewater systems, electric power systems, and bridges, etc.).	Medium	Tribe	Tribe, HMA, ANA, EFSP, Alaska Department of Transportation and Public Facilities (DOT/PF)	2-4 years	B/C: Retrofit projects can be very cost effective methods for bush communities as materials and shipping costs are very high. Project viability is depending on the cost and extent of the modifications. A comprehensive BCA needs to be conducted to validate this activity. TF: The Tribe will need phase funding to obtain engineering and design expertise to determine project viability.
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.	Medium	Tribe	Tribe, HMA, ANA, EFSP, DOT/PF	2-4 years	B/C: Non-structural mitigation projects have minimal cost and will help the community reduce recurring earthquake impact damages from future events. TF: This project is technically feasible using existing Tribal Council staff

Table 7-9 Native Village of Venetie's Mitigation Action Plan (MAP)

Goal / Action ID	Description	Priority (High, Medium, Low)	Responsible Department	Potential Funding Source(s)	Timeframe (1-3 Years, 2-4 Years, 3-5 Years, Ongoing)	Benefit-Costs (B/C) Technical Feasibility (T/F)
FL 5.1	Develop mitigation initiatives such as: Rip-rap (large rocks), sheet pilings, gabion baskets, articulated matting, concrete, asphalt, vegetation, or other armoring or protective materials to provide protection against flow scour.	Medium	Tribe	Tribe, HMA, ANA, NRCS, USACE	3-5 years	B/C: Improving embankment and slope stability will greatly reduce potential infrastructure and residential losses. Project costs would outweigh replacement costs of lost facilities. TF: The community 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	Establish flood mitigation priorities for critical facilities, residential structures, and commercial buildings located within the identified flood hazard area(s) (100- and 500-year floodplains, stormwater, etc.) based on current base flood elevation survey elevation data.	Medium	Tribe	Tribe, HMA, NRCS, USACE, USDA Emergency Watershed Protection Program (EWP), DCRA Alaska Climate Change Impact Mitigation Program (ACCIMP)	1-3 years	B/C: Flood hazard mitigation is among FEMA's highest national priorities. FEMA desires communities focus on repetitive flood loss properties. This activity will ensure the Tribal Councils focus on priority flood locations and projects. TF: Low to no cost makes this outreach activity very feasible.
GF 6.1	Promote ground failure and permafrost sensitive construction practices in hazard impact areas.	Medium	Tribe	Tribe, HMA, ANA	2-4 years	B/C: This outreach project would decrease damage to facilities if they were sited and used the most appropriate construction practices. TF: Technically feasible as the community can work with and other entities to determine most viable permafrost construction practices.

Table 7-9 Native Village of Venetie's Mitigation Action Plan (MAP)

Goal / Action ID	Description	Priority (High, Medium, Low)	Responsible Department	Potential Funding Source(s)	Timeframe (1-3 Years, 2-4 Years, 3-5 Years, Ongoing)	Benefit-Costs (B/C) Technical Feasibility (T/F)
SW 7.1	Develop critical facility list needing emergency back-up power systems, prioritize, seek funding, and implement installation.	Medium	Tribe	Tribe, Lindbergh, HMA, FP&S, SAFER, ANA, US Department of Homeland Security (DHS), Homeland Security Grant Program (HSGP), Citizen Corps Program (CCP), Emergency Management Performance Grant (EMPG), Emergency Operations Center (EOC)	1-5 years	B/C: Identifying threatened infrastructure proximity to natural hazards is vital to their sustainability. There are currently few mapped hazard areas. This is a vital first step. This knowledge will help the community focus on activities to protect their vital infrastructure. Emergency power generation is a minor cost to ensure facilities' availability for use after a hazard strikes. TF: Installing emergency generators is technically feasible for this community as they already have staff to maintain existing community power generation facilities. This project typically needs to be associated with essential facility upgrades for FEMA funding
SW 7.2	Develop and implement programs to coordinate maintenance and mitigation activities to reduce risk to public infrastructure from severe winter storms (snow load, ice, and wind).	Medium	Tribe	Tribe, FEMA, AFG, FP&S, SAFER DOF Volunteer Fire Assistance and Rural Fire Assistance Grant (VFAG/RFAG)	Ongoing	B/C: Implementing this mitigation activity will potentially reduce ancillary damage from severe winter storms caused by heavy snow loads, icy rain, and wind. TF: This type activity is technically feasible within the community typically using existing labor, equipment, and materials.

Table 7-9 Native Village of Venetie's Mitigation Action Plan (MAP)

Goal / Action ID	Description	Priority (High, Medium, Low)	Responsible Department	Potential Funding Source(s)	Timeframe (1-3 Years, 2-4 Years, 3-5 Years, Ongoing)	Benefit-Costs (B/C) Technical Feasibility (T/F)
WF 8.1	Develop or update community Tundra/Wildland Fire Protection Plan.	Medium	Tribe	Tribe, FEMA AFG, VFAG/RFAG FP&S, SAFER, HSGP	3-5 years	B/C: This project will ensure the community looks closely at their wildland fire hazard to ensure they can safely address actions and needs during a wildland fire event. TF: This is technically feasible using existing tribal resources with existing State and Federal agency support and guidance.
WF 8.2	Identify, develop, implement, and enforce mitigation actions and protective measures for fuel breaks and wildland fire fuels reduction zones to assure sustainability.	Medium	Tribe	City, Tribe, FEMA AFG, VFAG, RFAG FP&S, SAFER, HSGP	1-3 years	B/C: This sustainable mitigation activity will greatly reduce the wildland/urban interface, have minimal cost, and will help build and support community capacity to respond to wildland fire disasters. TF: This project is technically feasible using existing Tribal Council staff.

7.7 MONITORING MITIGATION STRATEGY PROGRESS

The Planning Team determined that Mitigation Strategy, Section 7.7 is the most appropriate location to support DMA 2000 initiatives found in 44CFR §201.6(d)(3), Monitoring Progress of Mitigation Actions data.

Section 7-4, Table 7-6 will be edited to describe the status of each THMP project or initiative's current status during subsequent THMP update activities. This will include defining THMP mitigation action or projects status as: "Completed", "Deleted", "Deferred," "Ongoing", and "Re-Defined" to better meet participant's needs as well as provide respective status change explanations.

DMA 2000 requirements and Tribal governance regulations for monitoring mitigation action progress include:

DMA 2000 Requirements
ELEMENT C: Reviewing Progress
C7. Does the plan describe a system for reviewing progress on achieving goals as well as activities and projects identified in the mitigation strategy, including monitoring implementation of mitigation measures and project closeouts? [44 CFR §§ 201.7(c)(4)(ii) and 201.7(c)(4)(v)]
ELEMENT D: Plan Updates
D1. Was the plan revised to reflect changes in development? [44 CFR § 201.7(d)(3)]
D2. Was the plan revised to reflect progress in tribal mitigation efforts? [44 CFR §§ 201.7(d)(3) and 201.7(c)(4)(iii)]
D3. Was the plan revised to reflect changes in priorities? [44 CFR § 201.7(d)(3)]
Source: FEMA, October 2017

7.7.1 Reviewing THMP Successes

The Village Planning Team leaders will monitor, review, and evaluate their mitigation strategy to determine potential successes or roadblocks to achieving the THMP's mitigation goals and whether implementing the MAP's activities and projects were successful during the annual review process.

The Planning Team will work together with each agency or authority administering a mitigation project to prepare an Annual Review Progress Report (Appendix F) and submit to the Venetie's Planning Team. The report will include the current status of the mitigation project, including any project changes, a list of identified implementation problems (with appropriate strategies to overcome them), and a statement of whether or not the project has helped achieve their identified goals.

7.8 IMPLEMENTING MITIGATION STRATEGY INTO EXISTING PLANNING MECHANISMS

DMA 2000 requirements and Tribal governance regulations for implementing the THMP into existing planning mechanisms include:

DMA 2000 Requirements
ELEMENT C:
C6. Does the plan describe a process by which the tribal government will incorporate the requirements of the mitigation plan into other planning mechanisms, when appropriate? [44 CFR § 201.7(c)(4)(iii)]
Source: FEMA, October 2017

After THMP adoption, Venetie's Planning Team membership will ensure that the THMP, in particular each MAP action or project, is incorporated and integrated into existing planning mechanisms such as their Comprehensive Plan, Economic Development or Business Plan, and BIA Indian Reservation Roads (IRR) Plan, as well as seeking other integration opportunities where appropriate. The THMP Planning Team will achieve this by undertaking the following activities.

- Review tribal regulatory tools to determine where to integrate the mitigation philosophy and implementable initiatives within current and future planning mechanisms. Current regulatory tools are identified in Section 7.2 capability assessment.
- Work with pertinent community entities to implement THMP philosophies and mitigation strategy initiatives (including the MAP) into relevant current and future planning mechanisms (i.e. Comprehensive Plan, Economic Development Plan, Capital Improvement Project List, Transportation Improvement Plan, etc.).

Note: Implementing this philosophy and activities may require updating or amending specific planning mechanisms.

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

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Appendix A
Funding Resources

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Federal Funding Resources

The Federal government requires local governments to have a THMP 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) §201.7 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 agencies pursue the goals of the program through collaboration with each other and numerous partners. In addition to other federal agencies, program partners include state and local governments, universities, research centers, professional societies, trade associations and businesses, as well as associated councils, commissions and consortia.

    NEHRP's work encompasses research, development and implementation activities. Program research helps to advance our understanding of why and how earthquakes occur and impact the natural and built environments. The program develops strategies, tools, techniques and other measures that can reduce the adverse effects of earthquakes and facilitates and promotes implementation of these measures, thereby strengthening earthquake resilience among at-risk communities.

    Detailed information about the program is available at NEHRP.gov, which is maintained by NIST, the lead agency for NEHRP. For additional agency-specific information, visit FEMA Earthquake, the USGS Earthquake Hazards Program, the NIST NEHRP Office and the National Science Foundation.

- 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. 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 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 Act.

- 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 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. This funding source 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, 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)
- 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://dec.alaska.gov/water/MuniGrantsLoans/index.htm)

- 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. (https://ofmpub.epa.gov/apex/watershedfunding/f?p=109:2:0::NO::P2_X_PROG_NUM,P2_X_YEAR:51,2015)
- Indian Environmental General Assistance Program (IGAP). In 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. (http://www.epa.gov/tribal/gap/)

- 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. 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/)
- National Disaster Resilience (NDR) grant is a HUD/CDBG. The grant opportunity is called the Community Block Development Grant-National Disaster Resilience (CDBG-NDR). HUD sponsors the National Disaster Resilience Competition (NDRC) to help eligible communities impacted by federally declared disasters in 2011, 2012 and 2013 become more resilient. The NDRC is a two-phase process that will competitively award nearly $1 billion in HUD Disaster Recovery funds to the most impacted, distressed and needy eligible communities. The grant opportunity is called

the Community Block Development Grant-National Disaster Resilience (CDBG-NDR). The State of Alaska is one of many applicants nationwide eligible to apply on behalf of its impacted communities. (https://www.hudexchange.info/course-content/ndrc-nofa-phase-1-factors/NDRC-NOFA-Phase-1-Factors-Slides-2014-11-03.pdf)

- 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 funds grant programs that provide training opportunities at the local level for this target population. (http://www.dol.gov/dol/topic/training/indianprograms.htm)
- 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, 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).

- Natural Resources Conservation Service (NRCS) has several funding sources to fulfill mitigation needs. (http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/cig/)
  - The Emergency Watershed Protection Program (EWP). This funding source 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/)
  - Wildlife Habitat Incentive Program (WHIP). This is a voluntary program for conservation-minded landowners who want to develop and improve wildlife habitat on agricultural land, nonindustrial private forest land, and Indian land. (http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/whip/)
  - 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/)
- 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: Provides special outreach services for seniors, including food, shelter and clothing. (http://dhss.alaska.gov/dsds/Pages/hcb/hcb.aspx)
- Division of Insurance: 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 Program. The Department of Environmental Conservation / Division of Water administer the Alaska Clean Water Fund (ACWF) and the Alaska Drinking Water Fund. 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 (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. (RurALCAP) 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 RurALCAP. 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, RurALCAP 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. RurALCAP 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, 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. 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, Alaska Village Electric Cooperative, 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 Tribal HMP Review Tool

FEMA Region 10 Tribal Mitigation Plan Review Tool

The *Tribal Mitigation Plan Review Tool* records how the tribal mitigation plan meets the regulations in 44 CFR § 201.7 and § 201.5 (if applicable) and offers FEMA plan reviewers an opportunity to provide feedback to the tribal government.

- **Section 1**: The Regulation Checklist documents FEMA's evaluation of whether the plan has addressed all requirements. If plan requirements are not met, FEMA uses each Required Revisions section to indicate necessary changes.
- **Section 2**: The Strengths and Opportunities for Improvement summary identifies plan's strengths as well as areas for improvement as part of the next plan update.

The FEMA mitigation planner must reference the *Tribal Mitigation Plan Review Guide* when completing the *Tribal Mitigation Plan Review Tool*.

Tribal Jurisdiction: Native Village of Venetie	**Title of Plan:** Native Village of Venetie Tribal Hazard Mitigation Plan (THMP)	**Date of Plan:** May 2018
Tribal Point of Contact: Nina Frank	**Address:** Native Village of Venetie PO Box 33 Venetie, AK 99781	
Title: Tribal Administrator		
Agency: Native Village of Venetie		
Phone Number: 907. 849-8219	**Email:** venetievillagecouncil@yahoo.com	

State Reviewer (if applicable): Mike Johnson	**Title:** Emergency Mgmt Spec II	**Date:** 20 NOV 18

FEMA Reviewer: Kate Skaggs Kate.Skaggs@mbakerintl.com John Schelling john.schelling@fema.dhs.gov	**Title:** Mitigation Champion Mitigation Planning Manager	**Date:** December 5, 2018 March 29, 2019
Date Received in FEMA Region 10:	November 20, 2018	
Plan Not Approved:		
Plan Approvable Pending Adoption:	January 17, 2019	
Plan Approved:	March 29, 2019	

Section 1: REGULATION CHECKLIST

1. Standard Regulation Checklist **Regulation** (44 CFR § 201.7 Tribal 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? [44 CFR § 201.7(c)(1)]	Section 3, Page 3-1 to 3-10 Section 3.2: Pages 3-2 & Table 3-1 Section 3.4: Pages 3-4 to 3-5 & Table 3-2 Appendix D	X	
A2. Does the plan document an opportunity for public comment during the drafting stage and prior to plan approval, including a description of how the tribal government defined "public"? [44 CFR § 201.7(c)(1)(i)]	Section 3.2: Pages 3-3 &Table 3-1 Section 3.3. Page 3-3 Section 3.4: Pages 3-4 to 3-5 & Table 3-2 Section 3.5.3: Page 3-6 Appendix D	X	
A3. Does the plan document, as appropriate, an opportunity for neighboring communities, tribal 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? [44 CFR § 201.7(c)(1)(ii)]	Section 3.2: Pages 3-2 &Table 3-1 Section 3.3: Pages 3-3 Section 3.4: Pages 3-4 to 3-5 & Table 3-2 Appendix D	X	
A4. Does the plan describe the review and incorporation of existing plans, studies, and reports? [44 CFR § 201.7(c)(1)(iii)]	Section 3.4, Pages 3-4 to 3-5 & Table 3-2 Section 3.5.1, Page 3-5, & Table 3-3 Section 7.8, Page 7-19 to 7-20 Cited Throughout Plan	X	
A5. Does the plan include a discussion on how the planning process was integrated to the extent possible with other ongoing tribal planning efforts as well as other FEMA programs and initiatives? [44 CFR § 201.7(c)(1)(iv)]	Section 3.5.2, Page 3-6 Section 7.8, Page 7-19 to 7-20	X	
A6. Does the plan include a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within the plan update cycle)? [44 CFR § 201.7(c)(4)(i)]	Section 3.5, Page 3-5 to 3-10 Section 3.5.4.1, Page 3-6 to 6-7 Section 3.5.4.2, Page 3-7 Section 3.5.4.3, Page 3-7 Section 3.5.4.4, Page 3-8 Section 3.5.4.5, Page 3-8 to 3-9 Appendix F	X	
A7. Does the plan include a discussion of how the tribal government will continue public participation in the plan maintenance process? [44 CFR § 201.7(c)(4)(iv)]	Section 3.5.3, Page 3-6 Appendix F	X	

1. Standard Regulation Checklist **Regulation** (44 CFR § 201.7 Tribal Mitigation Plans)	**Location in Plan (section and/or page number)**	**Met**	**Not Met**
ELEMENT A: REQUIRED REVISIONS			
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 the tribal planning area? [44 CFR § 201.7(c)(2)(i)]	**Earthquake** Nature: Section 5.3.1.1, Page 5-6 to 5-7 Location: Section 5.3.1.3, Page 5-9 to 5-10 Extent: Section 5.3.1.3, Page 5-10 to 5-11, & Figure 5-4 **Flood** Nature: Section 5.3.2.1, Pages 5-12 to 5-13 Location: Section 5.3.2.3, Page 5-15 & Figure 5-7 Extent: Section 5.3.2.3, Page 5-15 to 5-16 **Ground Failure** with Climate Change Nature: Section 5.3.3.1, Pages 5-17 to 5-19 Location: Section 5.3.3.3, Page 5-19 to 5-20, & Figure 5-8 Extent: Section 5.3.3.3, Page 5-20 **Severe Weather** with Climate Change Nature: Section: 5.3.4.1, Pages 5-21 to 5-23 Location: Section 5.3.4.3, Page 5-27 Extent: Section 5.3.4.3, Page 5-27 **Wildland Fire** with Climate Change Nature: Section: 5.3.5.1, Pages 5-28 to 5-29 Location: Section 5.3.5.3, Page 5-31 & Figure 5-14 Extent: Section 5.3.5.3, Page 5-31 to 5-32	X	

1. Standard Regulation Checklist **Regulation** (44 CFR § 201.7 Tribal 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 the tribal planning area? [44 CFR § 201.7(c)(2)(i)]	**Earthquake:** History: Section 5.3.1.2, Page 5-8 to 5-9, Figure 5-2 &Table 5-4 Probability: Section 5.3.1.3, Page 5-11 to 5-12 & Figure 5-5 **Flood** History: Section 5.3.2.2, Page 5-13 to 5-14 & Figure 5-6 Probability: Section 5.3.2.3, Page 5-17 **Ground Failure** History: Section 5.3.3.2, Page 5-19 Probability: Section 5.3.3.2, Page 5-21 **Severe Weather** History: Section 5.3.4.2, Page 5-23 to 5-27, & Figure 5-10, 5-11, 5-12, Table 5-5 Probability: Section 5.3.4.3, Page 5-28 **Wildland Fire:** History: Section 5.3.5.2, Page 5-29 to 5-30, Figure 5-13 & Table 5-6 Probability: Section 5.3.5.3, Page 5-32	X	
B3. Does the plan include a description of each identified hazard's impact as well as an overall summary of the vulnerability of the tribal planning area? [44 CFR § 201.7(c)(2)(ii)]	**Earthquake** Impact: Section 5.3.1.3, Page 5-11 **Flood** Impact: Section 5.3.2.3, Page 5-16 to 5-17 **Ground Failure** Impact: Section 5.3.3.3, Page 5-20 **Severe Weather** Impact: Section 5.3.4.3, Page 5-27 to 5-28 **Wildland Fire** Impact: Section 5.3.5.3, Page 5-32 **Overall Vulnerability:** Section 6, Page 6-1 to 6-15	X	
ELEMENT B: REQUIRED REVISIONS			
ELEMENT C. MITIGATION STRATEGY			
C1. Does the plan include a discussion of the tribal government's pre- and post-disaster hazard management policies, programs, and capabilities to mitigate the hazards in the area, including an evaluation of tribal laws and regulations related to hazard mitigation as well as to development in hazard-prone areas? [44 CFR §§ 201.7(c)(3) and 201.7(c)(3)(iv)]	Section 1, Page 1-1 to 1-8, & Table 1-1 & 1-2 Section 7.2, Page 7-1 to 7-4 Tables 7-1 to 7-4	X	

1. Standard Regulation Checklist **Regulation** (44 CFR § 201.7 Tribal Mitigation Plans)	**Location in Plan (section and/or page number)**	**Met**	**Not Met**
C2. Does the plan include a discussion of tribal funding sources for hazard mitigation projects and identify current and potential sources of Federal, tribal, or private funding to implement mitigation activities? [44 CFR §§ 201.7(c)(3)(iv) and 201.7(c)(3)(v)]	Section 7.2, Page 7-1 to 7-4 Tables 7-1 to 7-4 Section 7.4, Page 7-5 to 7-8, & Table 7-6 Section 7.6, Page 7-10 to 7-18, & Table 7-8 & 7-9 Appendix A	X	
C3. Does the Mitigation Strategy include goals to reduce or avoid long-term vulnerabilities to the identified hazards? [44 CFR § 201.7(c)(3)(i)]	Section 7.3, Page 7-4 to 7-5, & Table 7-5	X	
C4. Does the plan identify and analyze a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with emphasis on new and existing buildings and infrastructure? [44 CFR § 201.7(c)(3)(ii)]	Section 7.4, Page 7-5 to 7-8, & Table 7-6 Section 7.5, Page 7-8 to 7-9	X	
C5. Does the plan contain an action plan that describes how the actions identified will be prioritized, implemented, and administered by the tribal government? [44 CFR § 201.7(c)(3)(iii)]	Section 7.5, Page 7-8 to 7-9, Table7-7 Section 7.6, Page 7-10 to 7-18, & Table 7-8 & 7-9	X	
C6. Does the plan describe a process by which the tribal government will incorporate the requirements of the mitigation plan into other planning mechanisms, when appropriate? [44 CFR § 201.7(c)(4)(iii)]	Section 3.5, Page 3-5 to 3-10 Section 7.8, Page 7-19 to 7-20	X	
C7. Does the plan describe a system for reviewing progress on achieving goals as well as activities and projects identified in the mitigation strategy, including monitoring implementation of mitigation measures and project closeouts? [44 CFR §§ 201.7(c)(4)(ii) and 201.7(c)(4)(v)]	Section 3.5.4.2, Page 3-7 Section 3.5.4.3, Page 3-7 to 3-8 Section 7.7, Page 7-19 Section 7.8, Page 7-19 to 7-20	X	
ELEMENT C: REQUIRED REVISIONS			
ELEMENT D. PLAN UPDATES			
D1. Was the plan revised to reflect changes in development? [44 CFR § 201.7(d)(3)]	This is a new plan	N/A	
D2. Was the plan revised to reflect progress in tribal mitigation efforts? [44 CFR §§ 201.7(d)(3) and 201.7(c)(4)(iii)]	This is a new plan	N/A	

1. Standard Regulation Checklist **Regulation** (44 CFR § 201.7 Tribal Mitigation Plans)	**Location in Plan (section and/or page number)**	**Met**	**Not Met**
D3. Was the plan revised to reflect changes in priorities? [44 CFR § 201.7(d)(3)]	This is a new plan	N/A	
ELEMENT D: REQUIRED REVISIONS			
ELEMENT E. ASSURANCES AND PLAN ADOPTION			
E1. Does the plan include assurances that the tribal government will comply with all applicable Federal statutes and regulations in effect with respect to the periods for which it receives grant funding, including 2 CFR Parts 200 and 3002, and will amend its plan whenever necessary to reflect changes in tribal or Federal laws and statutes? [44 CFR § 201.7(c)(6)]	Section 4.2, Page 4-1 to 4-2	X	
E2. Does the plan include documentation that it has been formally adopted by the governing body of the tribal government requesting approval? [44 CFR § 201.7(c)(5)]	Appendix C	X	
ELEMENT E: REQUIRED REVISIONS			

2. Enhanced Regulation Checklist **Regulation** (44 CFR § 201.5 Enhanced Tribal Mitigation Plans)	**Location in Plan (section and/or page number)**	**Met**	**Not Met**
ENHANCED ELEMENT F. STANDARD PLAN REQUIREMENTS			
F1. Does the enhanced plan include all elements of the standard tribal mitigation plan? [44 CFR §§ 201.3(e)(3), 201.5(b), and 201.7]	N/A		
ENHANCED ELEMENT F: REQUIRED REVISIONS			
ENHANCED ELEMENT G. INTEGRATED PLANNING			
G1. Does the enhanced plan demonstrate integration to the extent practicable with other tribal and/or regional planning initiatives and FEMA mitigation programs and initiatives? [44 CFR §§ 201.3(e)(3) and 201.5(b)(1)]	N/A		
ENHANCED ELEMENT G: REQUIRED REVISIONS			
ENHANCED ELEMENT H. TRIBAL MITIGATION CAPABILITIES			
H1. Does the tribal government demonstrate commitment to a comprehensive mitigation program? [44 CFR §§ 201.3(e)(3) and 201.5(b)(4)]	N/A		
H2. Does the enhanced plan document capability to implement mitigation actions? [44 CFR §§ 201.3(e)(3), 201.5(b)(2)(i), 201.5(b)(2)(ii), and 201.5(b)(2)(iv)]	N/A		
H3. Is the tribal government using existing mitigation programs to achieve mitigation goals? [44 CFR §§ 201.3(e)(3), 201.5(a) and 201.5(b)(3)]	N/A		
ENHANCED ELEMENT H: REQUIRED REVISIONS			

2. Enhanced Regulation Checklist **Regulation** (44 CFR § 201.5 Enhanced Tribal Mitigation Plans)	**Location in Plan (section and/or page number)**	**Met**	**Not Met**
ENHANCED ELEMENT I. HMA GRANTS MANAGEMENT PERFORMANCE			
I1. With regard to HMA, is the tribal government maintaining the capability to meet application timeframes and submitting complete project applications? [44 CFR §§ 201.3(e)(3), 201.5(b)(2)(iii)(A)]	N/A		
I2. With regard to HMA, is the tribal government maintaining the capability to prepare and submit accurate environmental reviews and benefit-cost analyses? [44 CFR §§ 201.3(e)(3) and 201.5(b)(2)(iii)(B)]	N/A		
I3. With regard to HMA, is the tribal government maintaining the capability to submit complete and accurate quarterly progress and financial reports on time? [44 CFR §§ 201.3(e)(3) and 201.5(b)(2)(iii)(C)]	N/A		
I4. With regard to HMA, is the tribal government maintaining the capability to complete HMA projects within established performance periods, including financial reconciliation? [44 CFR §§ 201.3(e)(3) and 201.5(b)(2)(iii)(D)]	N/A		
ENHANCED ELEMENT I: REQUIRED REVISIONS			

Section 2: STRENGTHS AND OPPORTUNITIES FOR IMPROVEMENT

INSTRUCTIONS: The purpose of the Strengths and Opportunities for Improvement section is for FEMA to provide more comprehensive feedback on the tribal mitigation plan to help the tribal government advance mitigation planning. The intended audience is the tribal staff responsible for the mitigation plan update. FEMA will address the following topics: 1. Plan strengths, including specific sections in the plan that are above and beyond the minimum requirements; and 2. Suggestions for future improvements.
FEMA will provide feedback and include examples of best practices, when possible, as part of the Tribal Mitigation Plan Review Tool, or, if necessary, as a separate document. The tribal mitigation plan elements are included below in italics for reference. FEMA is not required to provide feedback for each element.

Required revisions from the Regulation Checklist are not documented in the Strengths and Opportunities for Improvement section. Results from the Strengths and Opportunities for Improvement section are not required for Plan Approval.

Plan Strengths

- Broad and comprehensive list of invited agencies.
- Good, inclusive list of documents reviewed in Table 3-3, especially the 'Venetie Community Development Plan' and the 'Economic Development Strategy Draft'.
- Extensive information on critical facilities and infrastructure.
- Good descriptions of data limitations.
- Comprehensive exposure analysis.
- Clear future developments goals and funded projects that could help inform mitigation actions.

Opportunities for Improvement

- Consider alternative avenues for public engagement such as existing annual festivals or other community gatherings to discuss these natural processes, rather than focusing on the plan structure.
- Element A5 is not specific to previous hazard mitigation plans, and relates instead to other planning processes and efforts: "Planning efforts means governance structures that are used to manage land use and development and other tribal government decision-making, such as tribal master plans, capital improvement plans, natural and/or cultural resource plans, plans for sacred sites, emergency operations plans, and/or other long-range plans." Please see the updated handbook for more information on this requirement. A link to this resource here. It is still 'met' because of the information provided in Table 3-3 and because of the limited local capacity mentioned in the plan.
- Consider providing additional information on the process for continuing to update plans and planning processes with hazard mitigation information, instead of just 'Identified

community goals for, among other things, facilities, land, and environment, transportation, and energy." For example, what is the schedule for updating the Community Development plan after 2018 and even if it won't be updated, what are council meetings or other opportunities to consider future conditions when planning community development?

- For the update, consider reducing the amount of description of nationwide or even Alaska-wide impacts to natural hazards. Plans are reviews primarily for the impacts to community assets within the planning area. More specific information can support more effective mitigation actions.

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Appendix C

Native Tribal HMP Adoption Resolution

(Required for 201.7 THMPs)

U.S. Department of Homeland Security
FEMA Region 10
130 – 228th Street, SW
Bothell, Washington 98021

FEMA

January 18, 2019

The Honorable Patrick Hanson
First Chief, Venetie Village Council
P.O. Box 81080
Venetie, Alaska 99781

Dear First Chief Hanson:

The Federal Emergency Management Agency (FEMA) Region 10 completed a pre-adoption review of the draft *Native Village of Venetie Tribal Hazard Mitigation Plan*. The attached Mitigation Plan Review Tool documents the Region's review and compliance with all required elements of 44 Code of Federal Regulations Part 201.7. This letter serves as Region 10's commitment to approve the plan upon receiving documentation of its adoption by the tribe.

Formal adoption documentation must be submitted to FEMA Region 10 within one calendar year of the date of this letter, or the entire plan must be updated and resubmitted for review.

For further assistance on hazard mitigation planning, please contact our Risk Analysis Branch Chief, in the interim, Tamra Biasco, at (425) 457-6959.

Sincerely,

Tamra Biasco
Chief, Risk Analysis Branch

Enclosure

cc: Brent Nichols, Alaska Division of Homeland Security and Emergency Management

KS:rg

VILLAGE OF VENETIE

PO BOX 81109

VENETIE, AK. 99781

PH:907-849-8212

Email: administrator@villageofvenetie.com

RESOLUTION 2019- 19

The native Tribe of venetie, State of Alaska

WHEREAS the Native Tribe of Venetie,Alaska 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 Multi-Jurisdictional Hazard Mitigation Plan (the Plan) was developed through the combined efforts of the Village's Planning Team, and interested parties within the venetie area;

WHEREAS the Plan recommends hazard mitigation actions that will protect people and property affected by natural hazards that could potentially affect the area, could potentially reduce future public, private, community, and personal disaster response and recovery costs; and that will reinforce the Tribal Council's leadership in their 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 201.6 and 201.7 requires all jurisdictional participants 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 Village's Planning Team held public meetings to receive Plan comment as required by DMA 2000;

NOW THEREFORE BE IT RESOLVED by the Village of Venetie Tribal Council of Venetie that:

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

2. The Village of Venetie Tribal 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 Tribal council.

3. The Village of Venetie Tribe will provide annual progress reports on the status of their implemented Mitigation Action Plan's projects to their Tribal Planning Team Leader who shall submit this report to the Tribal Council annually by the Plan's adoption anniversary date.

4. The Tribal Planning Team members' 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 as determined by the State and FEMA.

NOW THEREFORE, BE IT RESOLVED by the Village of Venetie Tribal Council that the Venetie Tribe adopts their Hazard Mitigation Plan; dated March 12, 2019 as this Tribal Jurisdiction's Hazard Mitigation Plan, and resolves to execute and abide by all 44 CFR regulatory actions and requirements within the Plan.

ADOPTED this day of March 12, 2019

Bobby Smith

Tribal council

Patrick Hanson

Tribal Administrator

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U.S. Department of Homeland Security
Region X
130 228th Street, SW
Bothell, WA 98021-9796

FEMA

APR 2 2019

The Honorable Timothy Roberts
First Chief, Village of Venetie Tribal Council
P.O. Box 81109
Venetie, Alaska 99781

Dear Chief Roberts:

Congratulations, on March 29, 2019, the U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) Region 10 approved the *Native Village of Venetie Tribal Hazard Mitigation Plan* as a Tribal Mitigation Plan, in accordance with Code of Federal Regulations Title 44 Part 201.

An approval provides the Native Tribe of Venetie eligibility to apply directly with FEMA for Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) programs, i.e., Pre-Disaster Mitigation project grants, Public Assistance (Categories C-G), Fire Management Assistance and Hazard Mitigation Grant Program (HMGP) projects through March 28, 2024. Recipients are required to develop and maintain hazard mitigation plans compliant with FEMA standards as a condition for receiving funds. To continue eligibility, within five years from date of this letter, tribes must review, revise as appropriate and re-submit plans for approval. For further assistance on hazard mitigation planning, please contact our Regional Hazard Mitigation Planning Manager, John Schelling, at (425) 487-2104, John.Schelling@fema.dhs.gov.

FEMA's approval of your plan as a Tribal Mitigation Plan provides the Native Tribe of Venetie eligibility to apply for various Stafford Act programs. FEMA evaluates applications for funding according to the specific requirements of the applicable program. A mitigation action identified in the plan may, or may not, meet a program's eligibility requirements. For assistance with hazard mitigation grant funding, please contact FEMA-R10-HMA@fema.dhs.gov.

We look forward to continuing a productive relationship between FEMA Region 10 and the Native Tribe of Venetie. Our Regional Tribal Liaison Ramona VanCleve, at 907-271-4302, is available to facilitate this relationship and delivery of our programs. You are also welcome to contact me directly, at (425) 487-4604.

Sincerely,

Mike F. O'Hare
Regional Administrator

Enclosures

cc: Brent Nichols, Alaska Division of Homeland Security and Emergency Management

Appendix D
Public Outreach Activities

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From: Simmons, Scott
Sent: Thursday, October 13, 2016 12:35 PM
To: ''hdenny@anthc.org'; 'tneal@usgs.gov'; 'swhite@avcp.org'; 'steve.heppner.bia.ak@gmail.com'; 'alexa.greene@alaska.gov'; 'jneimeyer@denali.gov'; 'DOT Harvey Smith'; 'michelle.torres@alaska.gov'; 'ryan.anderson@alaska.gov'; 'jimmy.smith@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'; 'ak_le@fws.gov'; 'eddie.zingone@noaa.gov'; 'patty.burns@alaska.gov'; 'margie.goatley1@alaska.gov'; 'khoward@blm.gov'; 'BischofbergerKL@ci.anchorage.ak.us'; 'nicole.kinsman@noaa.gov'; 'bruce.r.sexaur@usace.army.mil'; 'mtavelton@usace.army.mil'; 'steve.mcgroarty@alaska.gov'; 'megan.kohler@alaska.gov'; 'jade.gamble@alaska.gov'; 'steven.russell@alaska.gov'; 'deanne.stevens@alaska.gov'
Cc: Young, Laura; Evans, Jessica; Appleby, Elizabeth; Seims, Tux; Schultz, Thomas
Subject: Agency Involvement Participant Invitation Letter

Dear Potential HMP Development Participants,

AECOM (formerly URS) has received a 2014 contract from the State Division of Homeland Security and Emergency Management (DHS&EM) to develop Local/Tribal Multi-Jurisdictional Hazard Mitigation Plans (MJHMPs) for the following communities: Each group defines the HMP type and targeted communities.

The following communities' do not currently have an HMP. These communities will develop plans that meet FEMA's current MJHMP requirements:

New MJHMP and Tribal HMP Development

Organized Cities with Co-Located Villages

- Diomede (2nd Class City with Tribal Village)
- Goodnews Bay (2nd Class City with Tribal Village)
- White Mountain (2nd Class City with Tribal Village)

Stand Alone Tribal HMPs

- Native Village of Minto
- Native Village of Tyonek
- Native Village of Venetie

The following communities' currently have expired HMPs. These communities will have their plans updated from HMP to MJHMPs to meet current FEMA requirements:

MJHMP/Tribal HMP Update Required

Organized Cities with Co-Located Villages

- Allakaket (2nd Class City with Tribal Village)
- Nulato (2nd Class City with Tribal Village)
- Saint Mary's (2nd Class City with Tribal Village)

Stand Alone Tribal HMPs

- Native Village of Alatna
- Native Village of Koyukuk
- Native Village of Kwethluk

The Northwest Arctic Borough (NWAB) Multi-Jurisdictional HMP (MJHMP) consists of nine organized cities and 2 unorganized communities. NWAB is currently expired. These Borough's plan as well as constituent communities will have their plans updated to meet current FEMA requirements:

The NWAB Borough, MJHMP

Organized Cities with Co-Located Villages

- Ambler (2nd Class City with Tribal Village)
- Buckland (2nd Class City with Tribal Village)
- Deering (2nd Class City with Tribal Village)
- Kiana (2nd Class City with Tribal Village)
- Kobuk (2nd Class City with Tribal Village))
- Kotzebue (2nd Class City with Tribal Village)
- Noorvik (2nd Class City with Tribal Village)
- Selawik (2nd Class City with Tribal Village)
- Shungnak (2nd Class City with Tribal Village)

Unorganized Communities

- Native Village of Noatak
- Red Dog Mine

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: https://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
Emergency Management, Mitigation, and Resilience Planner
scott.simmons@aecom.com

AECOM
700 G Street, Suite 500, Anchorage, AK 99501
Phone: 907.261.9706 or *800.909.6787*; *Personal Cell: 907.841.1832, Fax: 907.562.1297*

NATIVE VILLAGE OF VENETIE HAZARD MITIGATION PLAN

Newsletter #1 **July 2017**

This newsletter describes the Native Village of Venetie's Hazard Mitigation Planning project development processes to all interested agencies, stakeholders, and the public and to solicit comments.

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 prepare Hazard Mitigation Plans (HMP) for 23 Alaskan Communities. The Native Village of Venetie was selected for participation in this effort.

The Native Village of Venetie's Hazard Mitigation Plan will identify all natural hazards, such as earthquake, flood, ground failure, severe weather, and wildland fire hazards, etc. The plan will also identify the people and facilities potentially at risk and ways to mitigate damage from future hazard impacts. The public participation and planning process is documented as part of these projects.

What is Hazard Mitigation?

Across the United States, natural and human-caused 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 takes public resources and attention away from other important programs and problems.

The people and property in the State of Alaska are at risk from a variety of natural hazards that can potentially cause human injury, property damage, or environmental harm.

Hazard mitigation projects eliminate the risk or reduce the hazard impact severity to people and property. Projects may include short- or long-term activities to reduce exposure to or the effects of known hazards. Hazard mitigation activities include relocating or elevating buildings, replacing insufficiently sized culverts, using alternative construction techniques, or developing, implementing, or enforcing building codes, and providing educational opportunities to learn about your specific community hazard's characteristics and potential mitigation opportunities.

Why Do We Need A Hazard Mitigation Plan?

Communities must have a State and FEMA approved and community or tribally adopted mitigation plan to receive a project grant from FEMA's pre- and post- disaster grants. These grant opportunities are identified in their Hazard Mitigation Assistance Guidance and other agency's mitigation grant program solicitations. The Native Village of Venetie plans to apply for mitigation funds after our plan is complete.

A FEMA approved and tribal adopted HMP enables the Native Village of Venetie government to apply for the Hazard Mitigation Grant Program (HMGP), a disaster related assistance program. Applicants typically compete on a statewide basis.

The Pre-Disaster Mitigation (PDM) and the National Insurance Program's Flood Mitigation Assistance (FMA), grant programs are nationally competitive funding programs. These grants use the same application processes and eligibility requirements.

The Planning Process

There are very specific federal requirements that must be met when preparing a Hazard Mitigation Plan. 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 requires the plan to include and document the following topics:

- Plan development process
- Identify hazards specific to the community
- Identify the population's and structures' risks
- Define the jurisdiction's mitigation goals
- List the community's mitigation strategy, selected actions, and implemented projects
- Provide a copy of the community's HMP Adoption Resolution

FEMA has prepared Local and Tribal Planning Guidance (respectively available at: http://emilms.fema.gov/is318/assets/local_mtgtn_plan_gdnce_0708.pdf; it explains how the HMP meets each of the DMA2000 requirements.

FEMA has prepared and "Mitigation Planning "How to" Guides (available at: https://www.fema.gov/media-library/resources-documents/collections/6. The Native Village of Venetie's Hazard Mitigation Plan will follow those guidelines.

We are currently in the very beginning stages of preparing the plan. We will be conducting a public meeting to introduce the project and planning team, and to gather comments from our community residents. Specifically we will complete the hazard identification task, and collect data to conduct the risk assessment.

We Need Your Help

Please use the following table to identify any hazards you have observed in your area that DHS&EM is not aware of AND any additional natural hazards that may not be on the list.

Hazard Worksheet		
Hazard	**Yukon-Flats REAA**	**Venetie Village**
Earthquake	Yes	
Flood (Erosion)	Yes	
Ground Failure (Avalanche, Landslide, Permafrost)	Yes	
Severe Weather	Yes	
Tsunami & Seiche	No	
Volcanic	No	
Wildland Fire	Yes	
**Hazard Matrix from the State of Alaska Hazard Mitigation Plan for the Yukon-Flats REAA.*		

DHS&EM identified critical facilities within the Native Village of Venetie as part of the Alaska Critical Facilities Inventory, but the list of critical facilities needs to be updated and the estimated value and location (latitude/longitude) determined.

In addition, the number and value of structures, and the number of people living in each structure will need to be documented. Once this information is collected we will determine which critical facilities, residences, and populations are vulnerable to specific hazards in the Native Village of Venetie. Please add additional facilities if needed.

Critical Facilities	
Village Tribal Government Building	New Airport
Venetie Village Council Building	Boat Landing & Storage
Venetie Village Council Storage	Former Airport
Post Office	Landfill/Incinerator
John Fredson Elementary & High School	Power Plant
School Service/Maintenance Shop	Generator at School
Teachers' Quarters	Airport Tank Farm
Early Head Start	Village Council Tank Farm
Old School Buildings	Village Tank Farm
Myra Roberts Health Clinic	School Tank Farm
Shitzu Sarah Frank Community Hall	Stanley Frank Washeteria and Water Treatment Plant
Village Store	Reservoir/Water Supply
Shop (Old Washeteria)	Water line from Washeteria to School
Garage/Shop (Old Water Tank)	Water line from Well to Tank
Church of the Good Shepard	Sewage Lagoon
Mission House	Venetie Water System Well
Cemetery	GCI Building
Community Gardens	United Utilities
Coffee Shop	Youth Center

Please email or fax updated hazard and critical facility information directly to AECOM or provide it to your community planning & project team leader.

The Planning Team

The planning team is being led by Nina Frank with assistance from the Native Village of Venetie Tribal Council. AECOM has been contracted by DHS&EM to provide assistance and guidance to the planning team throughout the planning process.

Public Participation

Public involvement will continue throughout the project. The goal is to receive comments, identify key issues or concerns, and improve ideas for mitigation. When the Draft Native Village of Venetie's Hazard Mitigation Plan is complete, the results will be presented to the community before DHS&EM and FEMA approval and tribal adoption.

We encourage you to take an active part in preparing the Native Village of Venetie's Hazard Mitigation Plan. The purpose of this newsletter is to keep you informed and to allow you every opportunity to voice your opinion regarding these important projects. Please contact your community HMP Team Leader or Laura Young, AECOM directly if you have any questions, comments, or requests for more information:

Native Village of Venetie
Planning Team Leader
Lance Whitwell, Environmental Director
P.O. Box 81119
Venetie, AK 99781
849.8165 or 849-8212
lancewhitwell@yahoo.com

AECOM
Jessica Evans
700 G Street, Suite 500
Anchorage, Alaska 99501
261.6764 or 800.909.6787
jessica.evans@AECOM.com

Division of Homeland Security & Emergency Management
Kelly Isham PO Box 5750
Anchorage, AK 99505-5750
428.7078 or 800.478.2337
kelly.isham@alaska.gov

August 31, 2017

Nina Frank
Native Village of Venetie
PO Box 33
Arctic Village, AK 99722

Nina,

The Draft Tribal Hazard Mitigation Plan is ready for Tribal review! I am mailing you two hard copies. Let me know if you need any more.

I am also sending a newsletter that can be posted in the Tribal Hall or anywhere else that lets people know that anyone can read and comment on the Draft if they would like to.

It would be nice if the Council can review this as soon as possible. There is still some information from you or the Council that is needed: in particular, the information on culturally significant places and Table 7-5 (potential mitigation actions). Afterward, we can discuss any changes that need to be in the plan. After that, I'll send to the State and FEMA for final review before adoption.

Thanks for all your work on this!

Sincerely,

Jessica

Jessica Evans
Environmental Planner, AECOM
907.261.6764
jessica.evans@aecom.com

700 G Street, Suite 500
Anchorage, AK 99501
Fax: 907.562.1297

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From:	Simmons, Scott
To:	"venetievillagecouncil@yahoo.com"; "av_council@hotmail.com"
Cc:	Evans, Jessica
Subject:	RE Venetie Hazard Mitigation Plan Review
Date:	Tuesday, September 12, 2017 9:01:00 AM
Attachments:	Venetie HMPReviewLtr 091217.pdf image001.png Venetie THMP_Draft 091217.pdf Venetie NL 2_083117.pdf

Good Morning Chief Julian Roberts and Ms. Nina Frank,

I'm Scott Simmons, the HMP project Manager working with Ms. Evans who assisted with developing your hazard mitigation plan. Thank you for working to complete Venetie's draft HMP.

I've attached an HMP PDF copy for Village and your files along with the second newsletter. We are up against a review timeline because it took so long to complete the work due to conflicting community projects and subsistence activities.

We sent hard copies via snail mail and email on August 31 (to keep in the Tribal office) along with newsletters you could post on community bulletin boards to let the public know the HMP is available for review and comment.

Please send me an email by Friday this week 9/15 to let me know that Venetie as completed their draft HMP review and whether they have any significant edits before we finalize and forward for State and FEMA review.

Thank you again for your outstanding assistance completing this draft plan.

Kind Regards
-Scott-

AECOM
R. Scott Simmons, CFM, CPM
Emergency Management, Mitigation, and Resilience Planner
scott.simmons@aecom.com

700 G Street, Suite 500, Anchorage, AK 99501
Phone: 907.261.9706 or 800.909.6787
Fax: 907.562.1297
Personal Cell: 907.841.1832

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September 12, 2017

Native Village of Venetie
P.O. Box 33
Tyonek, AK 99722

RE: Venetie's Draft Hazard Mitigation Plan Review

Dear First Chief Julian Roberts and Tribal Administrator Nina Frank,

Please give me a call when you receive this package.

We sent your Draft Hazard Mitigation Plan for your review on August 31, 2017. This plan is not completed yet. We also enclosed the second newsletter for posting in the community informing every one of its availability for public review.

Has the Tribal Council completed Tribal and public review yet. We need to receive their approval to finalize the HMP and send it for State and FEMA review by this Friday September 15, 2017. The State and FEMA both have review timelines.

Has the Village had any HMP review comments or suggested edits? Were you able to make a log sheet, have people sign it, and or track any comments to help us make the changes that may be beneficial to the community.

Please send me any edits with any Tribal Council meeting minutes so I may insert them into the plan to validate the public review process.

You may send us suggested edits easily:

- You may write directly on one copy and send it back to me with the changes indicated by inserting slips of paper to direct me to specific pages. or
- If there are only a few changes or corrections, you can call me and we can make the changes over the phone.

It is critical that we receive Tribal approval by this Friday, September 15, 2017.

Thank you for your outstanding assistance with developing and coordinating the HMP development process within the community.

R. Scott Simmons
Emergency Management, Hazard Mitigation, and
Climate Change Adaptation Planner

Direct: 907.261.9706
Scott.simmons@aecom.com

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VENETIE TRIBAL HAZARD MITIGATION PLAN (HMP)

September 2017 **Newsletter 2**

This newsletter discusses the preparation of the Native Village of Venetie Tribal 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://ready.alaska.gov/plans/localhazmitplans

HMP Development

The Native Village of Venetie was one of several 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, flood and erosion, ground failure, severe weather, and 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 DMA 2000 criteria. Information about the criteria may be found on the Internet at: http://www.fema.gov/mitigation-planning-laws-regulations-guidance.

The DMA 2000 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 (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). The Village's Hazard Mitigation Plan will follow those guidelines.

The planning process kicked-off in February 2017 by establishing a local planning committee and holding a meeting. The planning committee examined the full spectrum of hazards listed in the State Hazard Mitigation Plan and identified five hazards the HMP would address.

After the first meeting, community planning staff and AECOM 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 hazards for Venetie.

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. During August and September, 2017, the local planning committee are identifying 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. A representative sample of the mitigation actions being reviewed by the planning team are listed below, and 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 Tribal office for public review and comment. Comments should be made via email, fax, or phone to Jessica Evans (listed below) and be received no later than October 1, 2017. The plan will be provided to DHS&EM and FEMA for their preliminary approval and returned to Venetie.

The Planning Committee

The plan was developed with the assistance from the community's planning committee consisting of a cross section from the community. Planning Team members who helped with developing the plan include Team Leader, Nina Frank, with assistance from the Tribal Councils, and Jessica Evans with AECOM.

Sample of the Native Village of Venetie Mitigation Actions. Review the draft HMP for a complete list.		
Develop and implement programs to coordinate maintenance and mitigation activities to reduce risk to public infrastructure from severe winter storms (snow load, ice, and wind).	Develop a vegetation management plan addressing slope-stabilizing root strength to maintain or encourage precipitation containment.	Identify, develop, implement, and enforce mitigation actions and protective measures for fuel breaks and wildland fire fuels reduction zones to assure sustainability.
Identify and pursue funding opportunities to implement mitigation actions.	Promote ground failure and permafrost sensitive construction practices in hazard impact areas.	Reinforce buildings and homes against high winds.
Develop land use ordinances or guidelines to minimize hazard impacts and damages such as: reducing vegetation removal to keep or maintain slope stability from rain, snowmelt run-off, and erosion impacts.	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.	Develop mitigation initiatives such as: Rip-rap (large rocks), sheet pilings, gabion baskets, articulated matting, concrete, asphalt, vegetation, or other armoring or protective materials to provide protection against flow scour.
Develop critical facility list needing emergency back-up power systems, prioritize, seek funding, and implement installation.	Develop or update community Tundra/Wildland Fire Protection Plan.	Develop prioritized list of mitigation actions for threatened critical facilities and other buildings or infrastructure.

We encourage you to learn more about the Native Village of Venetie's Hazard Mitigation Plan. The purpose of this newsletter is to keep you informed and to allow you every opportunity to voice your opinion regarding this important project. If you have any questions, comments, or requests for more information, please contact:

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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% 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%.
- 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 THMP 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 THMP 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 of 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?			

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MITIGATION ACTION PROGRESS REPORT

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

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

Responsible Agency: _____

Address: _____

City: _____

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*
- ☐ Canceled

*** Explain:**

Project Cost Status

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

**** Explain:**

***** 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: