

Exhibit D Need

The State of Alaska is focusing on the threats of damage to infrastructure, housing and commercial and public buildings, and disruption of food supply; the hazards of storm surges, erosion, severe winds, flooding and permafrost degradation; and vulnerabilities to climate change, lack of cash economy, dependence on wild food supplies, high rates of domestic violence, low quality housing stock, and severe weather. Specifically, due to the nature of qualifying events, the focus of this application is the flood hazard, as riverine and coastal flooding and erosion affects 86% of Alaska Native Villages (source?). This application will also address the observed effects of climate change, its secondary and tertiary effects such as permafrost melting, effects on residential homes and infrastructure; and frequency and intensity of erosion and flooding. For overall resiliency, this application will address “all hazards” resiliency projects.

Threats, hazard and vulnerability information was derived from flood maps; history of disaster recovery events; information from tribal and regional partners, state and federal agencies, stakeholder involvement, the National Climate Assessment (NCA) Report, local hazard mitigation plans, state hazard mitigation plan, NCA National datasets, and Interagency Working Groups.

Future risks are repetitive and worsening flooding impacts to housing, infrastructure and environment due to seasonal, progressive coastal and riverine erosion and exacerbating conditions of the climate. Recently documented warming in the Arctic, resulting in permafrost thaw, increases the effects of coastal and riverine erosion. Additionally, the decrease in Alaskan Arctic sea ice concentration leaves coastal communities exposed to the effects of fall and winter storm surges, increasing the coastal erosion rate. All of the application communities are Alaska Native communities are subsistence communities with limited cash economies. Increased exposure to future events threatens Alaska Native subsistence cultures. These already distressed communities struggle to recover from disaster events and sustain

themselves due to impacts their capability to fish, hunt and gather berries and fuel. Environmental impacts such as damage to fuel storage tanks, landfills, and infrastructure also negatively affect public health and national food stock (fish, wildlife, berries). The referenced coastal and riverine communities and their native cultures are at risk from extinction without resilient recovery assistance.

The SIWG identified the risk and vulnerability of eligible Alaskan communities from cultural extinction from historical stakeholder involvement (past working groups), scientific studies (State, NOAA, BLM, FEMA, etc.), National Climate Assessment, NOAA Coastal Vulnerability Report, ongoing stakeholder input received during regular monitoring trips by agencies throughout the year and stakeholder surveys and outreach during the development of Phase I application. Qualitative studies such as the USACE Environmental Assessments and the Waste Erosion Assessment and Review (WEAR) Reports also support the SIWG's conclusions. See ANTHC's ethnographic research—Climate Change in the Bering Strait Region. Other studies that were helpful were Comprehensive Plans, Local Hazard Mitigation Plans, State Hazard Mitigation Plan, FEMA Project Worksheets and FEMA IA Data. This information is considered the best data for our geographic area because it came from regional tribal partners, state and federal agencies with pre- and post-disaster experience working directly with impacted communities. Collectively, these agencies use a cross disciplinary approach to analyze regional and local data to identify the risks of climate changes in the areas this application focuses. (need to specify direct references for this entire section)

As previously mentioned, given the history of the AVCP and TCC Tribal Regions, climate change projections, demographic and development trends, eligible Alaska Native communities are facing the ultimate risk of individual community identity and cultural extinction. Repetitive and increased exposure coastal and riverine erosion and flooding degrade the natural environment; damage residential housing and public infrastructure; damage landfills and sewage lagoons and spread debris and hazardous materials; contaminate freshwater sources; and threaten harvested and stored subsistence food stores and

food sources. As previously mentioned climate changes such as warming temperatures and resulting thawing permafrost and decreased sea ice extent and concentration have been noted to increase community risk to hazards (Dropbox: AK-213 pg. 517(4)).

Our approach is a regional approach based on tribal area. The risks these regions face are clear; economic, structural and cultural. The regional areas are predominately occupied by several of the 236 individual federally recognized tribes in Alaska. Their culture is based on the land on which they live, climate change, erosion, permafrost degradation are impacting their ability to live, hunt and fish in the place they have lived for thousands of years. These alterations in hunting, fishing and gathering practices undermine their intergenerational transfer of culture, skill and wisdom”. (Dropbox: AK-213 pg. 536 (23)). Their economies are part cash and part subsistence. State budgets which have been robust in the past are under pressure because of the decline in world oil prices. These stresses increase the potential physical and economic risks, as they limit public investments needed to build local resiliency. According to the National Climate Change Assessment on impact in the United States,” Coastal erosion is destroying infrastructure. Impacts of climate change on river ice dynamics and spring flooding are threats to river communities”. (Dropbox: AK-213 pg. 523 (10))

The risks to Alaska coastal communities are serious and very likely. The risks not only threaten housing and critical local infrastructure, but the very existence of unique Alaskan Native cultures, including their subsistence way of life. Alaska is warming at twice the rate of the continental US (source). Alaska experienced seven eligible disaster events in 2011, 2012 and 2013. The National Climate Assessment, supplemental material of traceable accounts shows that for coastal erosion, there is new information that the lack of sea ice causes storms to produce larger waves and more coastal erosion, but there is considerable uncertainty about the spatial patterns of future coastal erosion (Dropbox: AK-213 pg. 534(21)). “Known unknowns” include future frequency and intensity of events, and unanticipated secondary and tertiary effects.

The risks to Alaska's riverine communities have been recently demonstrated in Galena during the qualifying disaster DR-4122. As described in Exhibit B, Most Impacted Characteristics section for Galena, the current FIS established the BFE at 131.5 feet. After the event, the USACE assessed a more accurate BFE of 135.5 feet, taking event high-water mark data from NWS and USACE and ice-jam flooding into account. This is an example of updated best available data from JFO federal partner agencies. The serious risk to Galena was realized during DR-4122. The unknown is whether there will be a near-term recurrence while the community is still in recovery, slowing the community's recovery and exacerbating the effects of a future event, as there remain community unmet needs in establishing resiliency of housing, such as elevations and acquisitions; and protection of infrastructure such public buildings, roads, the dump, and the power and utility complex.

Alakanuk, Kotlik, Hughes and Newtok are not National Flood Insurance Program (NFIP) participating communities. Although Galena, Fort Yukon and Emmonak are NFIP participating communities, flood insurance is not a widely used source of homeowner mitigation in Alaska rural villages due to the largely subsistence-based economy of these largely tribal communities (see Exhibit B, Most Distressed Characteristics sections of eligible communities). However, NFIP participating communities may have flood insurance on locally-owned public infrastructure and meet local NFIP ordinance requirements.

[\(Get NFIP community insurance data from DCRA\)](#)

A representative Alaskan scenario of Alaskan homeowners living in the SFHA occurred in Emmonak in after federally declared flooding disasters in 2009 and 2013. After the 2009 flood, residents of the City of Emmonak in the SFHA, who received IA grant assistance, were required to carry NFIP insurance as a condition of the grant. Homeowners carried Group Flood Insurance Policies (GFIP), as paid by their IA grants. In 2013, when Emmonak flooded again, six homeowners were impacted again, but had failed to obtain standard NFIP policies after their GFIP expired in 2012. These homeowners were subject to the

“one bite rule” and were found ineligible for FEMA Individual Assistance. (Get NFIP community insurance data from DCRA)

The lack of residents and local jurisdictions capacity to obtain flood insurance in NFIP participating communities has led to a reliance of these communities on limited state, local and volunteer or other coordinated resources. Most Alaska communities do not participate in the NFIP due to reasons of economy and lack of local government capacity to manage the program and regulate land use. Alaska Native Villages such as Newtok have no land use authority and do not qualify for NFIP participation. FEMA’s former Administrator of Region X also testified in 2007 that FEMA’s mitigation programs have insufficient funds to comprehensively address the Alaska Native villages’ erosion problem. (Ref: GAO -09-551 Alaska Native Villages, pg. 28-Dropbox reference?) State, regional and local engagement in resilience planning needs to realistically take the lack of robust cash economy and other unique aspects of Alaska Native communities into account, and leverage other resiliency options.

There is a close tie to the subsistence nature of these communities and a lack of robust cash economy and resultant lack of general capacity to pay for flood insurance. Even what may be considered a smallest flood insurance premium is not generally affordable to most residents of these communities. The choice between obtaining flood insurance to mitigate risk from future flooding or the paying for the ability to heat your homes, with fuel prices ranging anywhere from \$5.40-\$9.00 per gallon, and mitigating the effects of severe Alaskan winters, is a real decision that many rural Alaskans face.

For Galena, Emmonak, Kotlik, Fort Yukon and Hughes, mitigating identified local threats and hazards through resiliency actions such as conducting property acquisition, demolition, and deed restriction; residential, public and commercial flood-proofing; implementing land-use planning and capacity; structure elevations and relocations; stabilizing protective roads, embankments and levees; and other innovative mitigation solutions can address specific unmet disaster recovery needs and enhance build

local and regional cultural resiliency. For the Newtok, the solution is to fund the already planned move to their selected village relocation site of Mertarvik (dropbox Mertarvik Strategic Plan).

Building resistance to the effects of erosion and repetitive flooding, through the aforementioned projects protects reduces the community public health risks from hazardous material spills; contaminated drinking water; contamination from flooding of landfill; and exposure to mold and debris from the effects of flooding. Building properly designed resilience against these threats also can reduce environmental impacts including those to local food harvest sources; loss to the few and therefore vital businesses which support local communities. A secondary effect of building local resilience is that these communities can act as regional resilience centers for less robust regional communities, providing food, shelter and aid to evacuated neighbors.

There are risks with disproportionate effects to the elderly, functional needs, and young. These groups are at higher risk when lack of resiliency leads to home and/or community evacuation; affects access to emergency and medical care, prescription medication supplies; and access to cultural food and routine supplies such as baby formula, diapers and clothing. An important lesson learned in providing emergency food for Alaska Native populations is that similar food sources should be supplied. Non-subsistence food for extended periods of time can substantially affect the physical and mental health of Alaska Native populations as a result of their subsistence lifestyle.

As previously discussed, in the AVCP and TCC target areas, disproportionate effects are related to both household income and being a member of a protected class. Household income is based both on cash and subsistence gathering of food. When stored subsistence food is lost as a result of a disaster, or other means, this food is not easily replaced, as “store-bought” food purchased by cash is not suitable for these cultures as a mainstay to replace subsistence foods. Also, cash is a limited household resource due to lack of local cash economy (jobs and services). Subsistence activities such as fishing, hunting and

gathering are seasonal, making local replacement of subsistence food difficult. Local, regional or state agencies usually solicit donations of stored subsistence food such as fish, moose meat, seal or whale. The vast majority of the populations in these tribal areas are Alaska Native/American Indians. The percentage by census area targeted ranges from 71-93%. Given the nature of the population, most of the people affected are in protected class, particularly in the lower income groups.

Some of the risks will disproportionately affect those with accessibility challenges. Individuals in need of additional response assistance may include those who have disabilities; who are elderly; who are children; who are from diverse cultures; who have limited English proficiency or are non-English speaking; or who are transportation disadvantaged. Increasing the resiliency of these areas will reduce risks to these groups as previously discussed.

Potential resiliency solutions will benefit those with functional needs, providing them with additional physical protection from hazards, and protecting their access to needed services, support and supplies, reducing their overall exposure to risk.

A good example of vulnerabilities offering opportunities for recovery, economic revitalization and resilience to current and future risk is the Newtok Relocation Effort. Over five years ago, Newtok joined with the state, federal and regional agencies to create the Newtok Planning Group. This group created, a Strategic Management Plan – Newtok to Mertarvik. This document charted the course for the future of the village, which is to relocate as a community to Mertarvik. The physical relocation will accomplish disaster-resistant housing and infrastructure through the move to a more secure, less exposed location, out of a floodplain. The relocation will result in new, more efficient and robust water, sewer and power; create future jobs for locals to maintain these new systems; create temporary jobs through building projects, home relocation, temporary sheltering, and demolition and debris removal projects; and create more resilient, fuel efficient, spacious and available housing.

Addressing the risk related to vulnerability of coastal communities threatened by erosion is important to the state, region, and local community because multiple Alaska rural communities face the same risks. Coastal communities threatened by erosion need to relocate in some fashion or another; or address significant shoreline stabilization or face inevitable physical and cultural disbandment and eventual extinction. Addressing the risk related to one community can act as a pilot program with lessons learned for future resiliency projects in the state, and well as build regional resiliency to support neighboring coastal communities until they progress to relocation or stabilization. The State of Alaska supports sustainability of Alaska Tribes, particularly through resiliency actions.

The Village of Newtok is an example of one community where existing conditions that exacerbate vulnerability. There is no year-round potable water supply. A fill and draw water system provides potable water, most years, from June through mid-January. When available, residents obtain potable water from the community water point and self-haul it to their homes. Once the potable water supply is exhausted, ice-melt or untreated surface water is obtained from three tundra ponds, two of which are located approximately 40 minutes round-trip (via four-wheeler) from the village and another located within the village. Many residents prefer the more distant water sources because of possible contamination of the nearest pond, which is prone to fall flooding. An additional tundra pond where residents previously collected water has been lost to erosion. Shower facilities are not available and laundry facilities are typically only available during summer and early fall. Additionally, riverbank erosion and filling has rendered their main barge landing inaccessible and their secondary barge landing area accessible during high tides. Finally, riverbank erosion threatens residential, school, fuel tanks and other infrastructure facilities.

While little quantitative information was available to determine the extent of water-related disease in Newtok, we were able to obtain infant hospitalization rates for various acute respiratory infections: all LRTIs, pneumonia, respiratory syncytial virus (RSV), and pneumonia RSV. These are all important

indicators of water-washed disease occurrence. Our review found that between 1994 and 2004, 29 percent of Newtok infants were hospitalized with LRTI, including 20 percent for pneumonia, 18 percent for RSV, and 11 percent for pneumonia RSV. While Newtok's small population prevents making statistically valid comparisons to other populations, these numbers are strikingly high. (Source-dropbox)

Most homes lack modern sewage disposal. Honeybuckets (typically a 5-gallon bucket with a toilet lid) are utilized. A wastewater disposal lagoon is not available. As the primary method of disposal, raw sewage is dumped directly into the Newtok River, which now has little to no flow due to erosion. The team (specify who) also noted a substantial amount of honeybucket spillage within the village, as well as evidence that honeybuckets were being dumped at multiple places around the village.

Since the previous solid waste disposal site was lost to erosion a new landfill has been constructed across the Newtok River from the village. The garbage disposal site is a non-permitted Class III landfill. Access to the disposal site is very limited, as it is located across the Newtok River from the village.

While it is true that sanitation conditions in the YK Delta region as a whole lag well behind those of other regions of the US, most all communities in Alaska have access to a year-round potable water supply, a contained location to dump raw sewage, and reasonable access to a solid waste disposal site. We know of no US community other than Newtok that lacks all three. Even though this report is from 2006, none of these conditions have changed. (Dropbox: AK-211)

The interagency, Newtok Planning Group (NPG) is making progress in addressing the risk from its vulnerabilities in planning, obtaining funding for, and implementing a village relocation. The group, in conjunction with DCRA has developed the Strategic Management Plan, Newtok-Mertarvik. In addition, in collaboration with DH&EM, the group has developed and submitted hazard mitigation project applications for housing relocation and acquisition and debris removal for funding. The NPG, USACE, DHS&EM and DEC are also collaborating on a plat development project for Mertarvik.

Project funding is the primary barrier keeping the state, regional and local governments from completing a solution. The interagency groups, including local jurisdictions largely have planning capability and capacity but lack the general funding to conduct specific project design and engineering, project and construction management, and construction. Funding cycles, narrow programmatic grant guidelines, and competition for funding are also other barriers.