

Nunapitchuk Climate Crisis

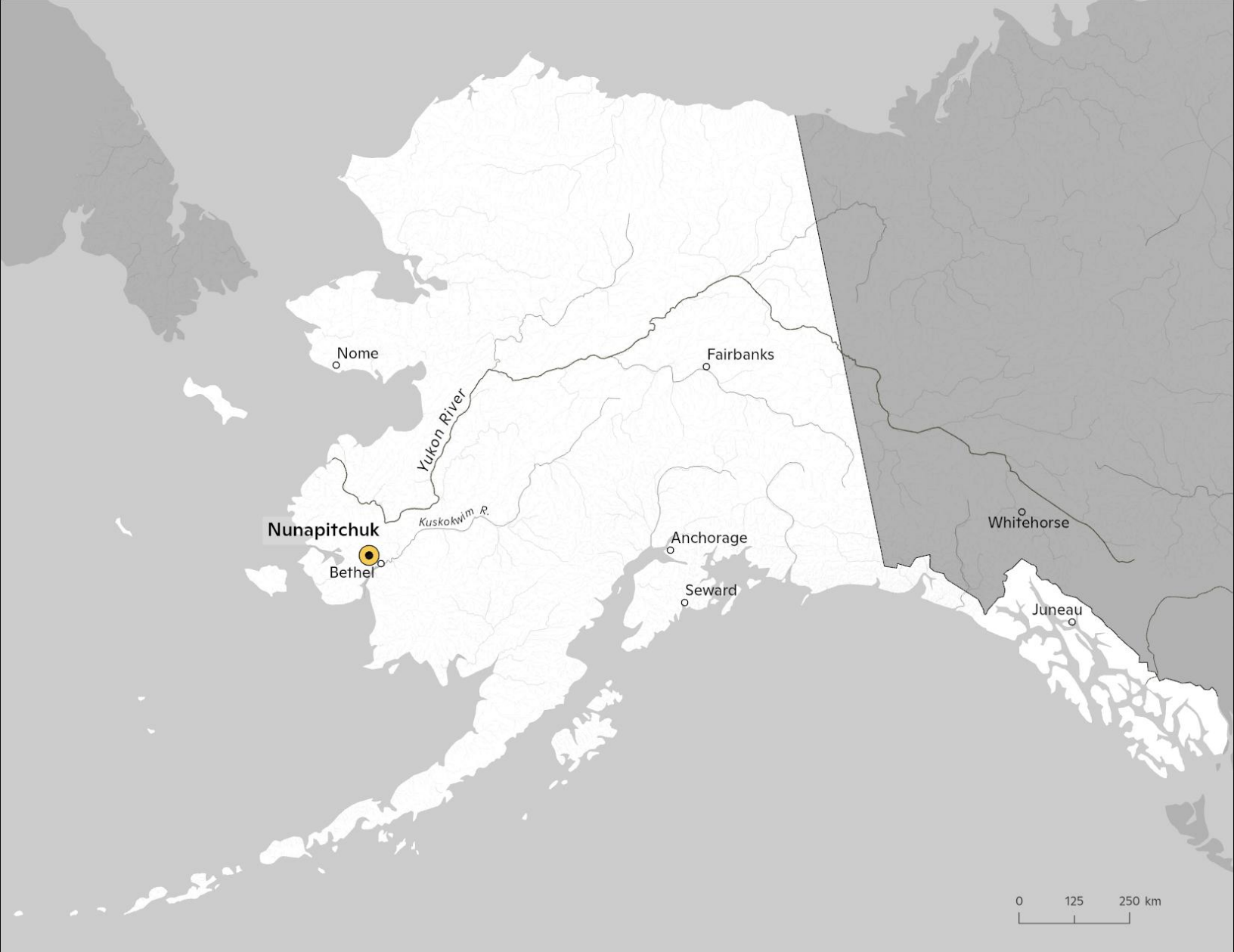
Impacts of Permafrost Thaw
on Public Health



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Prepared for the **Nunapitchuk IRA Council** by the
Alaska Institute for Justice on behalf of the **Native Village of Nunapitchuk**



Introduction

The Native Village of Nunapitchuk is a federally recognized Tribe located in Southwestern Alaska. The community is home to approximately 680 residents, the majority of whom are Indigenous people of the Central Yup'ik Culture. According to the 2020 US Census there were 143 homes in the community.

Nunapitchuk is located on the Yukon-Kuskokwim Delta on the banks of the Johnson River. This area of the delta is low-lying and prone to multiple environmental threats including permafrost thaw, erosion, and storm surges.

Historically, permafrost provided a stable foundation for all crucial infrastructure. However, due to Arctic warming, this once permanently frozen ground is thawing.

Urgent action

Action must be taken to enable this community to stay within their traditional homelands

Due to the anthropogenic climate crisis Nunapitchuk is facing an imminent and existential threat to safety and wellbeing. All infrastructure in Nunapitchuk is being impacted by permafrost thaw.

Washeteria: The community's water system is near a breaking point. Mitigation efforts have been made but the severity of permafrost thaw and related ground subsidence is beyond the capacity of the community to deal with. The repair and improvement of the water system needs to be prioritized in future mitigation work. Though improved water infrastructure is the most urgent need for the village, other hazardous conditions also exist and need to be addressed.

Boardwalks and Barge Landing: Permafrost thaw has made transportation to and within the community dangerous. It has increased the rate of erosion to the banks of the river creating hazards for the delivery of supplies. Thawing permafrost has deteriorated the boardwalk system in the village making transportation less reliable and more hazardous.

Electric Utilities: Power lines are being impacted by the degradation of permafrost, creating dangerous situations for community residents. The entire power system in the community needs to be assessed and repaired.

Fuel System: The tank farm in the community supplies fuel for both transportation and heating and is being destabilized by thawing permafrost. Failure of the tank farm would cause catastrophic damage to the community and environment. It must be continuously monitored to assure the safety of the human and non-human residents of the community.





View from the rear of the washeteria

Nunapitchuk washeteria

For years, residents of Nunapitchuk have been witnessing the sinking of the washeteria — a crucial piece of infrastructure that serves as the village's only source of running water — due to permafrost thawing beneath its foundation.

In addition to supplying drinking water, the washeteria provides water for cleaning dishes, flushing toilets, personal hygiene, and laundry. In July 2022, the washeteria was temporarily shut down as a safety precaution, leaving residents without running water. The Alaska Village Safe Water program inspected the building and continues to monitor the situation. Stop-gap measures have since been taken and the facility is now running at limited capacity. The water plant operator, Raymond Alexie, said this was a foreseen problem due to the settling of the building, which has been noticeable for 3 to 5 years.

The washeteria, constructed in 1978, now must be replaced. Though a new facility is being built, due to the remote location of the village and its weather-dependent accessibility, it is estimated that the new facility may take to up two years to complete.



The backside of the building shows mitigation attempts to lift or stall the sinking of the facility. Unfortunately, there is no longer stable permafrost to support its foundation.



Obvious signs of ground and foundation failure.

Impacts of permafrost thaw in photos



Marshy wetland surrounding boardwalks are no longer able to support the built environment.



Power lines leaning precariously. Failure of these lines and poles could cause serious harm to people and homes.



A leaning tank farm is shown. Failure of this essential infrastructure could cause serious harm to people and the environment.



Even in calm weather, water is inundating the foundations of homes in the community due to subsidence from permafrost thaw.

Impacts of permafrost thaw in photos



The cold climate water system is sinking due to thawing permafrost.



Because permafrost thaw deteriorates the stability of riverbanks, the additional turbulence caused by barges accelerates riverine erosion, especially at barge landings in communities.



Temporary adaptation measures are no longer working to maintain the functionality of equipment and infrastructure.



The fresh water system that was built on tundra is now floating on unstable marshy wetland.

Mitigation actions taken by The Native Village of Nunapitchuk

- Community based environmental monitoring of:
 - Permafrost thaw
 - Erosion
 - Flooding
 - Water quality
 - Soil quality
 - Storm impacts
- Continuous repair of damaged foundations
- Placement of Geotextiles for access to the landfill
- Propped up power lines
- Partnered with NGOs to gather data and create environmental reports
- Repair of access ways
- Repair of boat landing
- Repair of water access infrastructure
- Secured limited funding for environmental monitoring

Thank you for taking the time to read this report and witness the scale of the climate crisis in the Native Village of Nunapitchuk, Alaska.

This report was created on behalf of the Nunapitchuk IRA Council by the Alaska Institute for Justice in September 2022.

Photos courtesy of the Tribal staff and the Alaska Institute for Justice.