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HAZARD PLANNING—NORTHWEST ALASKA



**CLARK'S POINT & EKUK, ALASKA**

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This annotated bibliography is part of a series created to facilitate access to documents useful for coastal geohazard evaluation and community planning in Northwest Alaska. Below is a comprehensive list of community-specific information sources, each with full bibliographic information and an informative-style annotation that highlights content pertaining to the communities of Clark's Point and Ekuk, Alaska. For a detailed description of the preparation and scope of this resource, please refer to this bibliography series' foreword. Any notable errors and/or omissions may be reported to the Coastal Hazards Program manager at the Alaska Division of Geological & Geophysical Surveys (DGGs).

Alaska Department of Commerce, Community & Economic Development (DCCED), accessed 2011, Division of Community & Regional Affairs (DCRA) Community Profiles [website]: State of Alaska Department of Commerce, Community & Economic Development.

<http://www.commerce.state.ak.us/dca/profiles/profile-maps.htm>

*This website provides access to community profile maps for community-based planning. The maps are available in 24" by 36" and 30" by 42" formats. The Clark's Point and Ekuk maps were created in 2003 and 1981 based on land surveys and/or interpretation of aerial imagery. Subsistence hunting grounds, habitat areas, community buildings, and public facilities are delineated. Shoreline position and potential erosion zones are included in the map content. All maps have been sponsored by the Alaska Division of Community & Regional Affairs and contracted to local agencies for production.*

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Alaska Department of Natural Resources Division of Coastal and Ocean Management (DCOM), accessed February 2011, Alaska Coastal Management program [website]: Alaska Department of Natural Resources Division of Coastal and Ocean Management.

<http://alaskacoast.state.ak.us/Explore/Tour.html>

*This website outlines the Alaska Coastal Management Plans for each coastal district. It provides stewardship plans "to ensure a healthy and vibrant Alaskan coast that efficiently sustains long-term economic and environmental productivity."*

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Bristol Bay Native Association with U.S. Department of Commerce, Economic Development Administration Indian Planning Grant, June 2003, Bristol Bay, Alaska, comprehensive economic development strategy: Bristol Bay Native Association, Dillingham, Alaska, 79 p.

*This plan represents 32 tribal councils of the Bristol Bay region of Southwest Alaska. The recent downturn of the regions fishing economy is of concern, causing restructuring of the salmon fishery. To compete with farmed salmon industries, Bristol Bay must find ways to improve salmon quality, reduce harvesting costs, and reduce fishing effort.*

*The region has growing interest by area villagers to diversify into the area's growing tourism industry. There is also mineral potential in the area, with Northern Dynasty conducting economic feasibility studies on the Copper deposits. The Southwest Alaska Vocational Technical Center in King Salmon has had an increasing number of villagers training for alternative jobs in the fields of carpentry, plumbing, welding, electricians, and operating engineers to land jobs.*

*Only seven of the 30 communities in the region have community economic development plans, which are prerequisites for most federal grant funding. The region is determined to overcome two economic barriers. One is to lower the high cost of living, and the other is the barrier of the high cost of transporting goods, materials, and people in and out of the region.*

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Bureau of Indian Affairs, 1966, Clark's Point, Alaska—Village study: Bureau of Indian Affairs, 8 p.

*The report gives a village background and description. The most distinguishable event affecting Clark's Point is identified as the storm of 1964, which has permanently changed the landscape and vulnerability of the village. During the storm, the protective bank on the beach side was completely washed away. The previous gardens of the community were then covered with gravel, and only a narrow street remained, separating many houses from the usual high tide. The foremost need of the community was to move from its location to higher ground, consideration of collocating to Ekuk was being considered.*

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Denali Commission, March 2011, Road and waterfront project selections fiscal year 2006–2011: Denali Commission, 9 p.

*This report contains an overview of all of the funding dispersed by the Denali Commission Transportation Program from 2006-2011. The document is organized by partner agency/project and includes a description of the project status. Funding for road planning between Clark's Point and Ekuk was given in the amount of \$50,000 in 2008. The project has since been completed.*

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Hartig, Larry, of Alaska Department of Environmental Conservation & Governor's Climate Change Sub-Cabinet, October 2010, State of Alaska and State/Federal Executive Roundtable Activities Regarding the Arctic [presentation]: Anchorage, AK, Northern Waters Task Force, 53 p.

[http://housemajority.org/coms/anw/pdfs/26/NWTF\\_Powerpoint\\_Hartig\\_01Oct10.pdf](http://housemajority.org/coms/anw/pdfs/26/NWTF_Powerpoint_Hartig_01Oct10.pdf)

*This is a powerpoint presentation about the state and federal executive roundtable activities regarding the Arctic. The discussion includes hazards associated with declining Arctic sea ice extent, melting of permafrost, storm surges, and coastal erosion. Thirty-one villages are identified as imminently threatened: Barrow, Kivalina, Selawik, Allakaket, Hughes, Huslia, Shishmaref, Deering, Teller, Koyukuk, Nulato, Golovin, Shaktoolik, Unalakleet, Saint Michael, Kotlik, McGrath, Emmonak, Alakanuk, Chevak, Newtok, Nunapitchuk, Lime Village, Eyak (Cordova), Napakiak, Akiak, Chefornek, Kwigillingok, Dillingham, Clark's Point, and Port Heiden. Specific photos and engineering initiatives for four communities are discussed, including: Kivalina, Shishmaref, Unalakleet, and Newtok.*

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Immediate Action Workgroup (IAWG), Michael Black and Patricia Opheen, eds., March 2009, Recommendations to the Governor's Subcabinet on climate change: Immediate Action Workgroup, 162 p.

*The Immediate Action Workgroup was established to address known threats to Alaskan communities caused by coastal erosion, thawing permafrost, flooding, and fires. This report is a follow-up to the recommendations made in April 2008 and provides recommendations of actions and policies to be implemented in 2009 and 2010 regarding these matters. Clark's Point has been identified as receiving agency actions from the U.S. Army Corps of Engineers (COE) and the Division of Emergency Management (EM). A flooding event is also reported for Clark's Point during 2005.*

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Kaufman, Darrell S., Steven L. Forman, Peter D. Lea, and Cameron W. Wobus, 1996, Age of pre-late-Wisconsin glacial-estuarine sedimentation, Bristol Bay, Alaska: Quaternary Research, vol. 45, no. 0006, p. 59–72.

*In this study, Pleistocene glacial-estuarine sediments from an intertidal environment in northeastern Bristol Bay, Alaska, were dated using multiple methods to determine the age of the mud in the tidal flats. These dates were representative of the Nushagak Formation and Halfmoon Bay drift, which were found to be consistent with other geochronological data to indicate pre-late-Wisconsin deposition.*

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Kaufman, Darrell S., William F. Manley, Alexander P. Wolfe, Feng Sheng Hu, Shari J. Preece, John A. Westgate, and Steve L. Forman, 2001, The last interglacial to glacial transition, Togiak Bay, southwestern Alaska: Quaternary Research, vol. 55, p. 190–202.

*This article includes a description for the maximum extent of late Pleistocene glaciers in the northwestern Bristol Bay region of Alaska. The author used examinations of the physical stratigraphy and paleoecology of the coastal bluff environment in Togiak Bay to determine the last interglacial to glacial transition of the area.*

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Lea, Peter D., September 1990, Pleistocene glacial tectonism and sedimentation on a macrotidal piedmont coast, Ekuk, Bluffs, southwestern Alaska: Geological Society of America Bulletin, vol. 102, p. 1230–1245.

*This paper is meant to simplify glacial histories in the Nushagak lowland of Bristol Bay, Alaska. The glacially deformed features at Ekuk are described in detail; however, an analysis of the mechanics of the forming events could not be completed because of the nature of the eroded environment.*

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Lea, Peter D., Scott A. Elias, and Susan K. Short, 1991, Stratigraphy and paleoenvironments of Pleistocene nonglacial deposits in the southern Nushagak Lowland, southwestern Alaska, U.S.A.: Arctic and Alpine Research, vol. 23, no. 4, p. 375–391.

*This article includes results of a study on pollen and beetle analyses of Pleistocene sediments in the Nushagak lowland of Bristol Bay, Alaska. The main focus of the study was to determine the record of Pleistocene nonglacial events predating the last glaciations. The authors found an indication of two Pleistocene nonglacial units and describe their composition.*

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Lower Kuskokwim Economic Development Council, June 2006, Lower Kuskokwim Economic Development Council comprehensive economic development strategy & area plan: Lower Kuskokwim Economic Development Council, Bethel, Alaska, 28 p.

*This report presents an economic development strategy by the Lower Kuskokwim Economic Development Council (LKEDC). The purpose of this report is to identify a more stable and diversified economy, assist in creating employment opportunities, improve local economic conditions, and act as a catalyst for guiding and coordinating the efforts of individuals and organizations concerned with sustainable economic and natural resource development in the region. The main areas of economic development are the promotion of fisheries resources, tourism, and infrastructure development, job development, and the coordination of LKEDC services to local residents. Specific communication efforts, opportunities, and goals are listed for each subject, including watershed management.*

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Maynard and Partch, 1984, Capital improvements program briefing paper—Yukon Kuskokwim needs assessment and regional plan: Alaska Department of Community and Regional Affairs (DCRA), 79 p.

*This report identifies the multi-year capital improvement needs for 50 communities in the Yukon–Kuskokwim Region. The region was chosen for study because of the rapid change from subsistence to cash-based economy. The capital improvements are summarized in tables for each community and are at a scale that will bring substantial benefits to the region.*

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Simpson, J.J., January 1984, Final report, Task Force on Erosion Control: Alaska Department of Transportation & Public Facilities, project no. R-30023, 101 p.

*The Erosion Control Task Force was appointed to investigate and inventory potential erosion problems on a statewide basis, to prioritize the erosion problem sites by severity and need, and to provide preliminary design plans where immediate remedial action is required. Sites were rated based on public safety, public property, private property, time of projected loss, ability to move, approximate replacement value, and economic value. Projected costs of erosion protection measures were analyzed totaling \$16,802,300 for all projects. This report outlines specific engineering projects to reduce the effects of coastal and riverine erosion for communities throughout Alaska.*

*Erosion at Clark's Point is dominated by shoreline erosion and coastal flooding from the tides of Bristol Bay. Public and private buildings are expected to be impacted by erosion within 25 years based on current rates of erosion. A net northerly longshore transport rate was determined to be 73,000 cubic yards per year. To mitigate the erosion, either a rip rap seawall or a precast concrete and steel bulkhead retaining wall is recommended for 2600 feet of the shoreline fronting the village.*

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Tetra Tech for Immediate Action Workgroup, advisory group of the Governor's Climate Change Sub-Cabinet, June 2010, Imperiled community water resources analysis: Anchorage, Alaska, Tetra Tech, 47 p.

*This report summarizes climate-related threats to water and wastewater infrastructure within Alaskan communities including those at risk to flooding, saltwater intrusion, loss of surface water supply, erosion, and sedimentation of the source region. The primary objectives of the analysis were to:*

1. Identify and select study group communities whose water infrastructure is threatened
2. Collect information on the threatened water infrastructure for the study group communities
3. Analyze information to determine the climate-related impacts to study group community water infrastructure. (p. 2)

*Clark's Point is subject to threats to water infrastructure from flooding of Bristol Bay and the Nushagak River.*

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U.S. Army Corps of Engineers, accessed 2011, Civil works floodplain management services [website]: U.S. Army Corps of Engineers, Alaska District.

[http://www.poa.usace.army.mil/en/cw/fld\\_haz/floodplain\\_index.htm](http://www.poa.usace.army.mil/en/cw/fld_haz/floodplain_index.htm)

*This website provides flood hazard data for communities throughout Alaska. A link is provided to a flood hazard-specific bibliography, maintained by the U.S. Army Corps of Engineers. The last flood event for Clark's Point was reported in 1995, with the worst flood event being reported as the 1929 flood, of coastal origin. Recommendations for building elevations are 33.0 feet MLLW, with a 100-year flood elevation expected to be 32.0 feet MLLW. The last flood event for Ekuk was recorded during 1969 from coastal flooding. Comments are available discussing relative water levels around the community from the 1969 flood.*

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U.S. Army Corps of Engineers, March 2009, Study findings and technical report—Alaska baseline erosion assessment: Elmendorf Air Force Base, Alaska, U.S. Army Corps of Engineers, Alaska District, 68 p.

<http://www.poa.usace.army.mil/AKE/Home.html>

*This statewide assessment was conducted by the U.S. Army Corps of Engineers to coordinate, plan, and prioritize responses to erosion throughout Alaska. The report has designated 26 communities as priority action communities, including Clark's Point. Erosion at Clark's Point is identified as occurring along the Nushagak Bay and River. Flooding, spring breakup, high tides, and wind and wave activity perpetuate the erosion issues. The average long-term rate of erosion along the community has been reported as 2 to 4 feet per year. Ekuk is identified as one of 20 communities having erosion issues.*

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U.S. Government Accountability Office (GAO), June 2009, Report to congressional requestors—Alaska Native villages, limited progress has been made on relocating villages threatened by flooding and erosion: U.S. General Accountability Office Report GAO-040895T, 53 p.

<http://www.gao.gov/products/GAO-09-551>

*This report is a follow-up to the 2003 GAO report on flooding and erosion in Alaska Native villages, and was completed to identify concerns due to climate change that have increased the urgency of federal and state efforts. The GAO developed recommendations for Congress that include:*

1. A flooding assessment to augment the erosion assessment completed by the Army Corps of Engineers.
2. An amendment to federal legislation so that 64 more villages may be eligible for grants.
3. Designating a federal entity to oversee and coordinate village relocation efforts.

*Clark's Point is identified as one of 31 Alaska Native Villages imminently threatened by flooding and erosion.*

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U.S. Government Accounting Office (GAO), 2003 [2004], Alaska Native villages—Most are affected by flooding and erosion, but few qualify for federal assistance: U.S. General Accounting Office Report GAO-04-142, 82 p.

<http://www.gao.gov/products/GAO-04-142>

*This study was conducted to provide recommendations to Congress that would improve how state and federal agencies respond to flooding and erosion in Alaska. This was done by:*

1. Determining the extent to which these villages were affected.
2. Identifying federal and state flooding and erosion programs.
3. Determining the current status of efforts to respond to flooding and erosion in nine villages.
4. Identifying alternatives that Congress may wish to consider when providing assistance for flooding and erosion (see "Highlights" section).

*Clark's Point was recognized as one of the 184 Alaska Native villages affected by flooding and erosion.*

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Wise, James L., Albert L. Comiskey, and Richard Becker, 1981, Storm surge climatology and forecasting in Alaska: Anchorage, Alaska, Arctic Environmental Information and Data Center, University of Alaska, 26 p.

*The objective of this study was to improve the quality of life and the security of property in coastal areas susceptible to flooding by enhancing the decision-making process for human activities and development. This study compiles historical climatological data to develop a surge forecast regression equation. Storm profiles specific to Clark's Point are recorded for 1964, 1978, and 1980. Storm profiles are also provided for Ekuk for 1969 and 1980.*

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Wise, James L., Lynn D. Leslie, and Joseph C. Labelle; Samuel F. Powel, ed., for U.S. Department of Transportation U.S. Coast Guard Office of Engineering and Development, October 1987, An oceanographic and climatological atlas of Bristol Bay: Arctic Environmental Information and Data Center, University of Alaska, Anchorage, Alaska, report no. CG-D-13-88, 185 p.

*This report was written in the case that an oil spill would occur in Bristol Bay, Alaska. Detailed sections are included for oceanography, meteorology, climatology, and ice information. The environmental conditions summarized are meant to help on the scene emergency coordinators with possible direction and magnitude to which an oil spill would flow, if one were to occur.*

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