

EROSION EXPOSURE ASSESSMENT—DEERING

Richard M. Buzard, Mark M. Turner, Katie Y. Miller, Donald C. Antrobus, and Jacquelyn R. Overbeck



Deering, Alaska, in 2012. Photo: ShoreZone, shorezone.org.



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Report of Investigation 2021-3 Deering

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Suggested citation:

Buzard, R.M., Turner, M.M., Miller, K.Y., Antrobus, D.C., and Overbeck, J.R., 2021, Erosion Exposure Assessment of Infrastructure in Alaska Coastal Communities: Alaska Division of Geological & Geophysical Surveys Report of Investigation 2021-3. <https://doi.org/10.14509/30672>



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EROSION EXPOSURE ASSESSMENT—DEERING

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DEERING EROSION EXPOSURE ASSESSMENT

This is a summary of results from an erosion forecast near infrastructure at Deering, Alaska. We conduct a shoreline change analysis, forecast 60 years of erosion, and estimate the replacement cost of infrastructure in the forecast area. Buzard and others (2021) describe the method and guidance for interpreting tables and maps.

Source data for this summary include the following:

- Shoreline change assessment ArcGIS shapefiles from Overbeck and others (2020) updated to the vegetation line if appropriate.
- Infrastructure AutoCAD outlines and metadata from Division of Community & Regional Affairs (2004) Community Profile Map series.
- Added infrastructure such as roads, water and sanitation facilities, and outbuildings, delineated if visible in the most up-to-date high resolution (≤ 0.66 ft [20 cm] ground sample distance) aerial orthoimagery (Overbeck and others, 2016).

Deering is located on the north coast of the Seward Peninsula where Smith Creek exits into Kotzebue Sound. The community is constructed on a vegetated spit. Storm surge scours beach sand along the spit. Accretion also occurs after storm events. Due to this process, the shoreline appears stable in historical imagery from 1978 to 2016 (Overbeck and others, 2020). We cannot forecast erosion at



Deering because of the relatively stable erosion rate and protection structures in place. While the spit appears stable over the long-term, erosion from storm surge can scour sand and undercut infrastructure. A 2017 storm exposed a pre-existing concrete block revetment fronting the spit (Oliver, 2017; Overbeck and others, 2020). Mitigation projects have mixed success in Deering (U.S. Army Corps of Engineers, 2007). There likely will be continued costs related to erosion and mitigation. Beach erosion can be measured from repeated beach elevation surveys using GPS or digital elevation models. DGGs collected beach elevations in 2018. Continued monitoring and a longer record of beach elevation data can help identify whether and when infrastructure may become exposed to erosion.

ACKNOWLEDGMENTS

This work was funded by the Denali Commission Village Infrastructure Protection Program through the project “Systematic Approach to Assessing the Vulnerability of Alaska’s Coastal Infrastructure to Erosion.” The community of Deering was not consulted for this report.

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