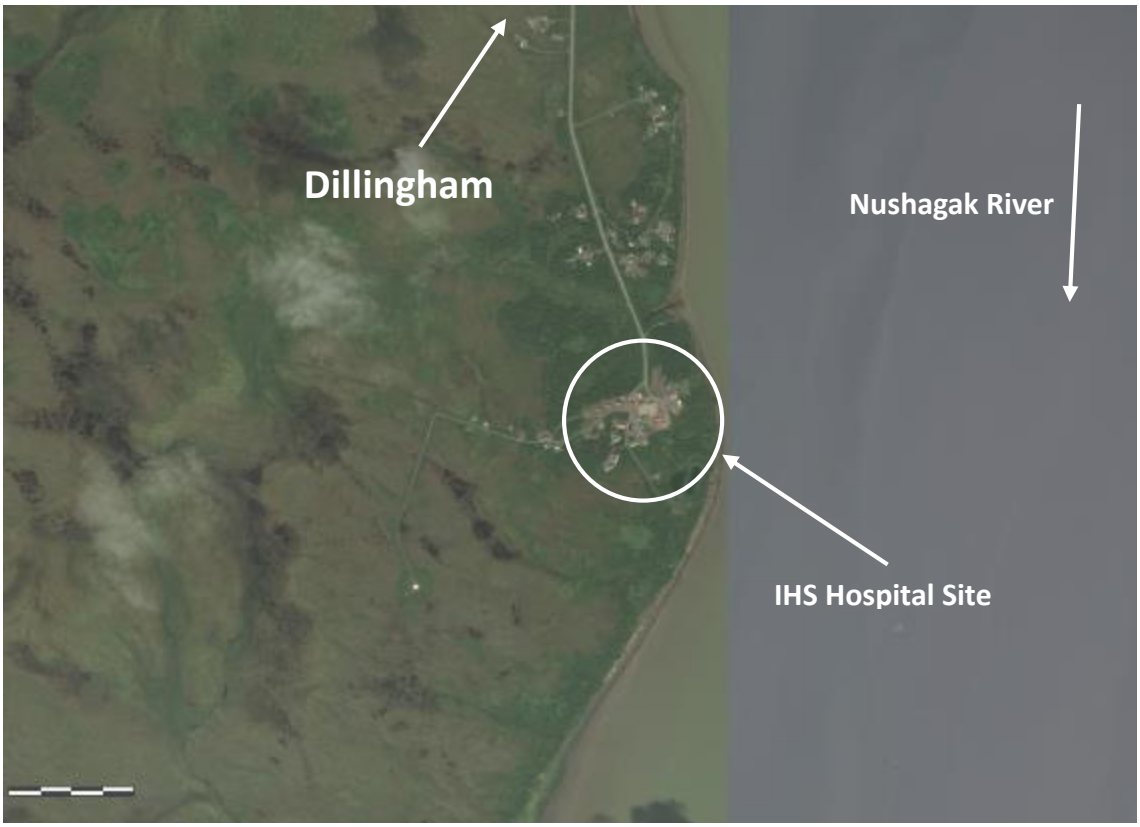
# DETAILED ACTION PLAN
# DILLINGHAM IHS HOSPITAL SITE
## WASTE EROSION ASSESSMENT & REVIEW (WEAR)
## MAY 2015

The **Dillingham Indian Health Service (IHS) Hospital Site** is located at latitude 59.000154 and longitude -158.531449. The site includes the IHS Kanakanak Hospital as well as multiple fuel-contaminated sites and an old hospital landfill. These were combined into a single WEAR site as they are all associated with the hospital. The area assessed covers about 50 acres and is located along the anadromous Nushagak River. The IHS Kanakanak Hospital is 3.5 miles southwest of the Dillingham harbor. The site has ten acres of petroleum contamination documented within the Contaminated Sites Database (File ID 2540.38.005). A historic hospital landfill was discovered several years ago when garbage began surfacing along the face of the bluff along the Nushagak River. The landfill was dug up to the extent practical in 2005 and transferred to the Dillingham Landfill, but residual waste may remain. During the 2013 WEAR inspection, bright orange water seeps originating from the bluff were noted.



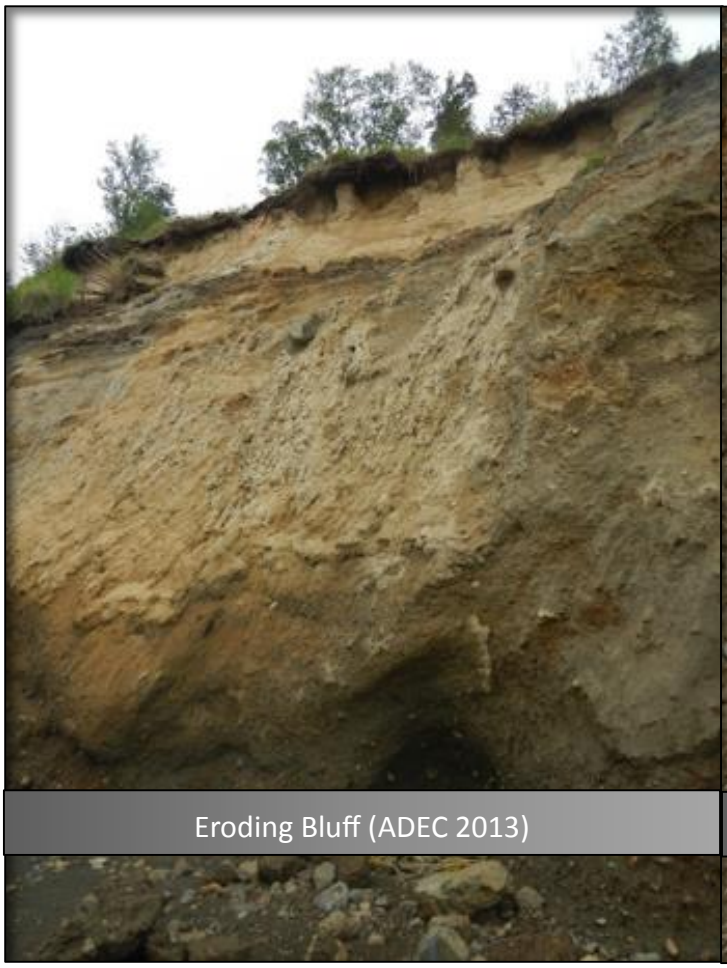

Imagery Dated 2011 WEAR Map at http://dec.alaska.gov/eh/sw/wear.html

**Community* – Dillingham** – The community is at the extreme northern end of Nushagak Bay in northern Bristol Bay. It is 327 miles southwest of Anchorage. Dillingham is the hub community for the Bristol Bay area.

## CONTAMINANT RISK

The IHS Kanakanak Hospital has been in operation since 1989. The 50-acre site contains about 10 acres of active, fuel-related contaminated sites. Sources of contaminants include fuels, municipal solid waste (MSW), hospital waste, and sewage. Contaminants associated with fuels include benzene and polycyclic aromatic hydrocarbons (PAHs). These contaminants are known to cause cancer and other chronic diseases. MSW may include household hazardous waste (HHW) such as cleaners, batteries, paints, etc. Hazardous contaminants associated with HHW may include solvents and heavy metals, such as lead, which are known to cause negative health effects. Hospital waste may include disinfection products, medical wastes, and pharmaceuticals. Contaminants from these sources can be harmful to human health and the environment.

The Dillingham IHS Hospital Site is located within a critical habitat area. Exposed landfill waste has been previously observed along the bluff and bright orange seeps further downriver were noted during the 2013 WEAR inspection. Stressed vegetation was also observed indicating current negative environmental effects. Erosion of this site may cause negative impacts within the Nushagak River.



Eroding Bluff (ADEC 2013)

Seepage (ADEC 2013)

Runoff (ADEC 2013)

Runoff (ADEC 2013)

Bluff Debris (ADEC 2013)

Bluff Debris (ADEC 2013)

Water Outfall in Bluff (ADEC 2013)

Runoff down Bluff (ADEC 2013)

## EROSION RISK

The US Army Corps of Engineers 2009 study, *Alaska Baseline Erosion Assessment* (BEA), studied erosion at the Dillingham harbor. The IHS Hospital Sites is located approximately 3.5 miles south of the Dillingham harbor. Based on comparison of historic aerial imagery, ADEC estimates that the bluff near the IHS Hospital Sites is eroding at one foot per year. This erosion poses the most immediate risk to the old hospital landfill and any potentially contaminated sites along the shoreline. During the 2013 WEAR site inspection, seeps were noted along the bluff emitting a sulfurous smell. The soil structure of silt and clay is more likely to erode than most soil types.

Eroding Shoreline (ADEC 2013)

Eroding Shoreline (ADEC 2013)

Eroding Bluff (ADEC 2013)

Observed Undercutting (ADEC 2013)

## MITIGATION

As of the 2013 WEAR inspection, there were no erosion mitigation efforts for this site.

**Mitigation Options**

A. **No Action** – If no action is taken to control erosion or remove the residual portion of the hospital landfill, the river will continue to erode more of the site. Possible MSW, fuels, hospital waste, and sewage could impact the environment. The hospital's landfill will eventually completely erode, releasing contaminants into the river that could possibly impact nearby subsistence areas.

B. **Remove Site** – Removing the hospital landfill and the origin of the orange sheen will mitigate the contaminant risk for the actively eroding area. Remediating the contaminated sites will mitigate the contaminant risk for the rest of the site. These actions would likely require some planning and a significant amount of money. Some of the steps involved would be: determine the location of all the contamination, investigate source of the orange sheen, obtain an approved cleanup plan from the Contaminated Sites Program, and removal or remediation of any contamination at the various locations.

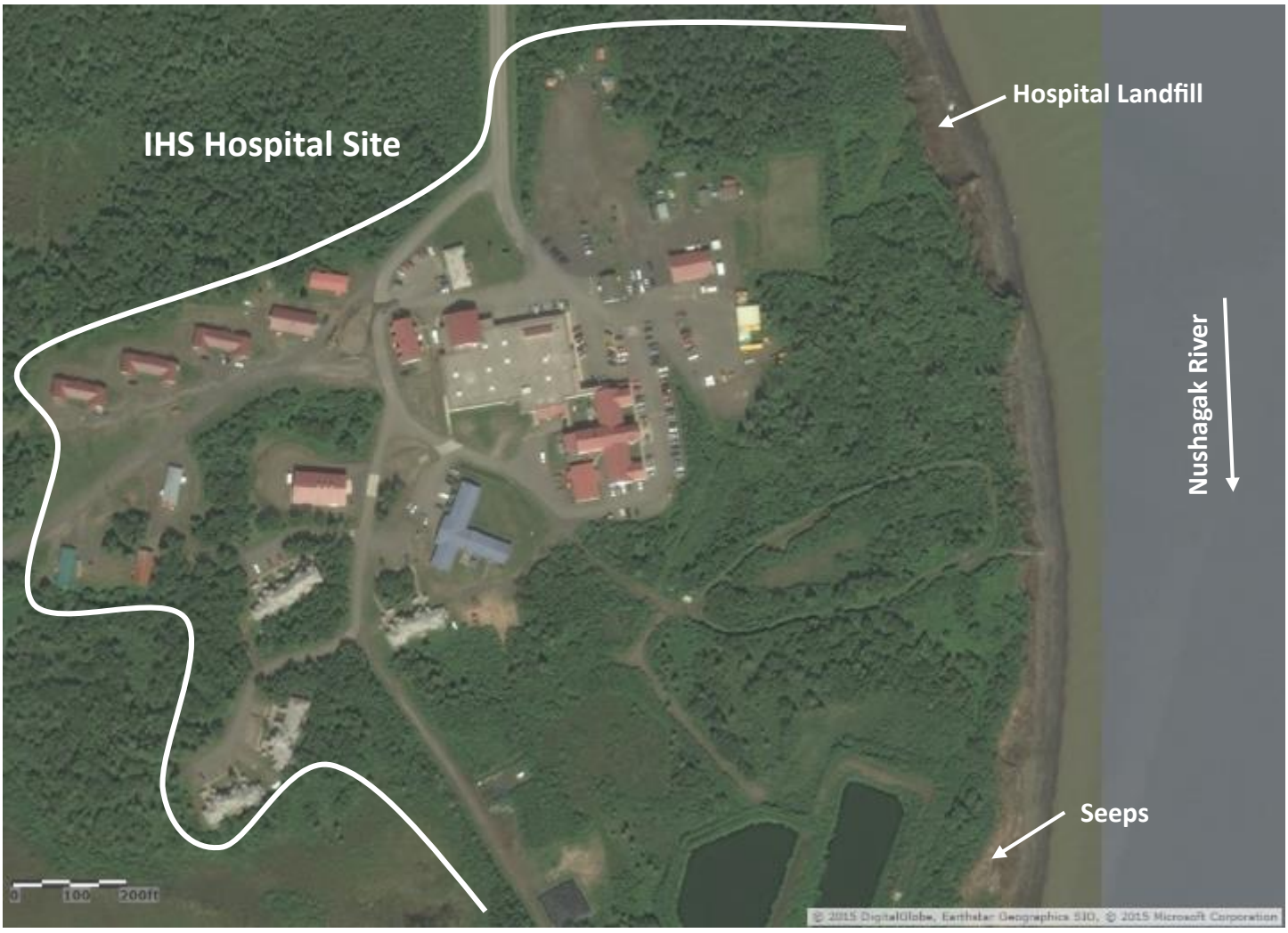
C. **Erosion Mitigation** – Waves and storm surges were reported as the primary causes of erosion on this riverbank. Further study should be conducted to evaluate what erosion mitigation is best for the Nushagak River. The Department of Commerce, Community, and Economic Development's Division of Community and Regional Affairs handbook, *Understanding and Evaluating Erosion Problems,* suggests the best methods for protecting against erosion from these causes are breakwaters, revetments, seawalls, beach fill or relocation. The full list of suggested methods is provided in Table 2 of the document which is available online at http://commerce.state.ak.us/dnn/dcra/PlanningLandManagement.aspx.

## SUMMARY

The Dillingham IHS Hospital Site poses a contaminant risk due to the fuel related contaminated sites and the old hospital landfill. With a calculated erosion rate of one foot per year, the entire site is not at an immediate risk for erosion, but the old hospital landfill located on the shoreline is at an immediate risk. This site is near important subsistence and critical habitat areas and there are no current mitigation efforts.

## RECOMMENDATIONS

Residual waste and contamination could remain after the 2005 landfill cleanup. Further investigation is recommended to identify possible contaminants associated with the old hospital landfill and any other potential sources. It is recommended that any remaining waste and contamination be removed and remediated to prevent further impacts to the Nushagak River. Additionally, it is recommended to monitor erosion and its potential impacts to the IHS Hospital Site. Installing any erosion mitigation measures would be extensive considering the length of the bluff along the IHS Hospital Site property.




Imagery Dated 2011. WEAR Map at http://dec.alaska.gov/eh/sw/wear.html

*Community Database Online, Division of Community and Regional Affairs, Department of Commerce, Community and Economic Development

*This document is funded in part with qualified outer continental shelf oil and gas revenues by the Coastal Impact Assistance Program within the Department of the Interior's U.S. Fish and Wildlife Service.*