Little Diomede Navigation Improvements
Little Diomede, Alaska

Feasibility Scoping Meeting
Submittal Package for Review

FSM

U.S. Army Corps
of Engineers
Alaska District

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1.0 STUDY AUTHORITY

The authority for this General Investigation study is provided by the "Rivers and Harbors in Alaska" study resolution adopted by the U.S. House of Representatives Committee on Public Works on December 2, 1970, which reads in part:

"Resolved by the committee on public works of the House of Representatives, United States, that the Board of Engineers for Rivers and Harbors is hereby requested to review the reports of the Chief of Engineers on rivers and harbors in Alaska, published as House document numbered 414, 83rd Congress, 2nd session... and other pertinent reports, with a view to determine whether any modifications of the recommendations contained therein are advisable at the present time."

2.0 STUDY PURPOSE

The purpose of the feasibility study is to identify alternatives for resolution of navigation and shore protection needs at Little Diomede. It also determines if there is a Federal interest in a construction project addressing the navigation and shore protection needs of the study area consistent with Water Resources policies, engineering and economic feasibility, and environmentally acceptable to the community and local sponsor. In addition, the feasibility study secures local sponsor agreement to participate in a construction project and willingness to enter into a Project Cooperation Agreement. This submittal supports the Feasibility Scoping Meeting and provides preliminary information and conceptual alternatives.

3.0 LOCATION OF PROJECT/CONGRESSIONAL DISTRICT

Ignaluk, commonly known as Diomede, is a traditional Ingalikmiut Eskimo village of approximately 110 people on the western edge of Little Diomede Island, Alaska. The traditional Ingalikmiut Eskimo name for the community, Ignaluk, means "the other one" or "the one over there."

Little Diomede is at 65.758611° North Latitude and 168.953056° West Longitude. (Sec. 08, T004N, R049W, Kateel River Meridian.) The island is oriented north – south and is 2-1/8 miles long and 1-7/8 miles wide. The area encompasses 2.8 sq. miles of land and 0.0 sq. miles of water.

Little Diomede and its companion island, Big Diomede, are at the center of the Bering Strait that separates the Bering Sea from the Chukchi Sea. The island is 2-1/2 miles from Big Diomede Island, which belongs to Russia, 0.6 mile from Russian waters and airspace, and 27 miles from mainland Alaska. The island is about 685 miles northwest of Anchorage (figure 1)

The study area is in the Alaska Congressional District, with the following congressional delegation:

Senator Ted Stevens
Senator Lisa Murkowski
Representative Don Young

4.0 PREVIOUS REPORTS

There are no existing water projects at Little Diomede. There have been several studies and reports as follows:

- *Diomede Day School Protection.* The Alaska District, U.S. Army Corps of Engineers prepared this report in December 1978 at the request of the Bureau of Indian Affairs (BIA). The request was for a study of wave conditions at the BIA Day School and provision of a design and specifications for a structure to protect the school from storm waves.

- *Navigational Improvements Reconnaissance Report.* The Alaska District, U.S. Army Corps of Engineers prepared this report in May 1982 at the request of the village of Little Diomede. The report concluded that navigation improvements could be economically justified and recommended feasibility level studies.

- *Navigational Improvements Reconnaissance Report.* The Alaska District, U.S. Army Corps of Engineers prepared this report in June 1990 at the request of the Alaska Department of Transportation and Public Facilities. The report concluded that a solution to the navigation needs of Little Diomede was possible and that the Federal government had an interest in working toward that solution.

- *Navigational Improvement Technical Report.* The Alaska District, U.S. Army Corps of Engineers prepared this report in February 1994 at the request of the Alaska Department of Transportation and Public Facilities. The report concluded that navigation improvements could not be economically justified at that time. This finding was based in part on a change in the operations and equipment of the barge company servicing the island, reducing the cost of annual freight delivery to the island and thereby reducing the benefits that could be claimed for harbor construction. (Subsequently, the annual barge delivery was suspended and currently no commercial company will provide this service except as a special charter. The cost of the special charter is very expensive and is undertaken infrequently.)

- *Section 905(b) (WRDA 86) Analysis Navigation Improvements, Little Diomede, Alaska.* The Alaska District, U.S. Army Corps of Engineers prepared this report in April 2003 in response to Congressional direction included in Conference Report 106-988 for Fiscal Year 2001 Appropriations, Public Law 106-377. This report concluded that navigation improvements could be economically justified and recommended feasibility level studies.

- *Little Diomede Navigation Improvement Project Final Coordination Act Report.* The U.S. Fish and Wildlife Service prepared this report in 1992. The report contains recommendations for further study and mitigation options for construction.

Typically, the delivery interval is 2 or more years. A fuel barge delivers fuel oil once a year. The helicopter can carry four passengers or 1,300 pounds of small freight; however, mail has priority because the USPS subsidizes this service. Bad weather and/or mechanical problems frequently disrupt service and several weeks can pass between flights. From February through April, a runway is constructed on the frozen ocean, and fixed wing aircraft delivers dry goods and supplies during this time. The 1982 reconnaissance report stated that fixed wing aircraft could land on the ice runway during the 5 months in which the ice between Little and Big Diomede was frozen. Today, this runway is typically available for only 3 to 4 weeks. Continuing climate change may result in this form of access being lost altogether.

The community needs a protected harbor for supply barges and from which to launch and recover boats used in their subsistence activities. Annual supply barges have ceased calling at Little Diomede due to the unprotected conditions. Launching and recovering boats are hazardous and conditions are frequently severe enough that the residents must forgo subsistence activities. Rather than being tied to a dock, boats must also be removed from the water due to the wind and wave conditions. Cruise ships are often unable to send passengers to Diomede due to the rough landing conditions, and a protected harbor would facilitate more frequent visits resulting in a boast to the economy. Finally, in addition to local usage, a protected harbor could be used as a harbor of refuge for smaller boats.

5.3 COMMUNITY SETTING

Because of the island's steep slopes and essentially no coastal shelf, the community is constructed on the slope within an elevation range of 20 to 40 feet above the ocean. There has been an extreme housing shortage at Little Diomede in recent decades. The very high cost of getting a barge to deliver materials to the village, the higher cost of construction on the island, and the lack of buildable, i.e., flat, sites, has considerably hindered housing development. Housing and Urban Development (HUD) spent $1.5 million and finished the addition of three new homes for Diomede in 2007. HUD has no plans for additional housing over the next 6 years.

Wind and wave conditions have resulted in storm induced damage and erosion to structures, infrastructure, and equipment. The school is being undermined by erosion, and private and public property and equipment are damaged by waves, spray, and storm driven debris. Some residents have expressed interest in relocating the village due to the rocky slopes and harsh storms, lack of usable land for new housing construction, and inability to construct a water/sewer system, landfill, or airport.

5.4 HUMAN CONDITIONS

5.4.1 History

Early Eskimos on the islands were men of the ice and sea with an advanced culture practicing elaborate whale hunting ceremonies. They traded with both continents. Vitus Bering named the islands in 1728 in honor of Saint Diomede. The 1880 Census counted 40 people, all Ingalikmiut Eskimos, in the village of "Inalet." After the formation of the "Iron Curtain," Big Diomede became a Soviet military base and all Native residents were moved to mainland Russia. During World War II, Little Diomede residents who strayed into Soviet waters were taken captive.

alcohol is banned in the village. The migratory birds and their eggs are also taken for subsistence. Greens are taken from growth in between the talus slopes and boulder fields. Specific hunting blinds for sealing or birding are designated on the island. The cemetery is also located within the steep hill sides.

Historically and culturally, the location of Diomede was a favored location in hunting walrus, whales, and other marine mammals. It does not have many of the characteristics that make life easier in other communities in the region, such as flat land, access to a reliable water supply, vegetation, and other desirable features. In their Local Economic Development Plan, the residents describe their village location as follows: "*The island, which is located only 2.5 miles from Big Diomede Island, formerly the U.S.S.R., is a mass of boulders and is approximately seven miles in area. There is a small rocky beach immediately west of the village, and from there the land rises steeply on all sides to 1,250 feet. The top is broken tableland with no trees or shrubs and scant vegetation*" (Native Village of Diomede, Vision Statement, Diomede LEDP, 1999). What Diomede does have is access to the rich and varied marine mammals of the northern Bering Sea right at their doorstep. The cliffs nearby are also home to a large population of sea birds that are also utilized as food. These resources have been the economic mainstay of the community through subsistence production.

There is little data to provide a detailed and comprehensive profile of subsistence production by Diomede residents. While whaling has been important to the community, other marine mammals, particularly walrus, as well as seals and polar bear comprise the bulk of the harvests. Other subsistence production depends on king crab, sea birds, and other marine organisms that are harvested from the beach and are the preferred foods for Diomede residents.

5.4.4 Facilities and Services

A general store, church, clinic, recreation hall, armory, Ignaluk Corporation building, washeteria, and the school complex constitute the public facilities at Diomede. A state-owned heliport allows for weekly mail delivery. There is no permanent airstrip due to the steep slopes and rocky terrain. Water from a mountain spring and runoff during the summer months is treated and stored in a 434,000-gallon steel tank. Families haul water from this source. Desalinization of sea water is occasionally used, if necessary. The city provides water treatment and tank maintenance. The tank is filled for winter use, but the water supply typically runs out around March. The washeteria is then closed and residents are required to melt snow and ice for drinking water. The city has requested funds for a 600,000-gallon steel tank and to improve the water catchment system. The school has requested funding for a 500,000-gallon water storage tank to alleviate demands on the city's water supply, and as back-up for the community's water supply.

There is no community sewer system on Diomede. All households use privies and honeybuckets. The washeteria/clinic is served by a septic system and seepage pit. Due to soil conditions, lack of ground cover, and steep terrain, United States Public Health Service (PHS) has found limited waste disposal methods. Refuse is disposed of on the pack ice in winter; combustibles are burned. The city has requested funding to implement refuse collection and to purchase an incinerator.

The Norton Sound Economic Development Corporation (NSEDC) is one of the six Community Development Quota (CQD) groups. The Community Development Quota Program began in December of 1992 with the goal of promoting fisheries related economic development in western Alaska. The program is a federal fisheries program that involves eligible communities who have formed six regional organizations. There are 65 communities within a 50-mile radius of the Bering Sea coastline, including Diomede. All these communities are served by NSEDC.

5.4.7 Education

Student education is provided by a K through 12th grade school operated by the Bering Strait School District. The school currently has five teachers and 41 students.

5.4.8 Income and Poverty Levels

The figures below are estimates based on the 2000 Census sample[4]. They represent a cross sectional look at one point in time, and the current situation could differ significantly.

Diomede is located in the Nome Census Area.
Per Capita Income: $9,944
Median Household Income: $23,750
Median Family Income: $24,583
Persons in Poverty: 56
Percent Below Poverty: 35.4%

In a 2007 household survey completed by the Corps of Engineers, the family income distribution for 2007 was as follows: 2 households with incomes less than $10,000; 6 households with incomes between $10,000 and $14,999: 4 households with incomes between $15,000 and $24,999; 6 households with incomes between $25,000 and $34,999; 4 households with incomes between $35,000 and $49,999; and 1 household with income between $50,000 and $74,999.

5.4.9 Employment

Total Potential Work Force (Age 16+): 88
Total Employment: 45
Civilian Employment: 45
Military Employment: 0
Civilian Unemployed (And Seeking Work): 1
Percent Unemployed: 2.2%
Adults Not in Labor Force (Not Seeking Work): 42
Percent of All 16+ Not Working (Unemployed + Not Seeking): 48.9%

Private Wage & Salary Workers: 10
Self-Employed Workers (in own not incorporated business): 0
Government Workers (City, Borough, State, Federal): 35
Unpaid Family Workers: 0

[4] Alaska Department of Labor, Research and Analysis data from the 2000 Census.

5.4.12 Future Issues That May Affect Existing Conditions On Diomede

Shifts in the Bering Sea Groundfish Fisheries – In recent years, there has been a shift northward for large-scale groundfish trawling for pollock and other groundfish species. Shifts in water temperatures in the Bering Sea are thought to be the cause of the changes in resource abundance.

At the June 2007 meeting, the North Pacific Fishery Management Council (NPFMC) adopted new measures to preserve the Northern Bering Sea Research Area (the northern portion of the Bering Sea directly to the south of Diomede) from the effects of bottom trawling. The measures will prevent unregulated fishing north of the latitude of Cape Prince of Wales until resource assessments of northern waters are completed. What this means is that large scale bottom trawling will not occur near Diomede, even with the resource shifting that has occurred for the near-term future. However, mid-water trawling could occur, except for protection areas outlined by the NPFMC. It is possible that trends in groundfish fishing will bring more activity to waters near Diomede. Under existing conditions, it would be difficult for Diomede to benefit from any increase in commercial fishing activity in the area.

Chukchi Sea offshore oil development – The Minerals Management Service is moving towards lease sale 214 in 2011, which would open offshore areas in the Chukchi Sea to oil development. The areas to be offered, if the lease sale occurs, are far to the northeast of Diomede, so there may not be direct effects. However, offshore oil development would mean an influx of ship traffic directly near Diomede. There could be opportunities to provide some level of services to those ships, and in providing emergency response capability in case of spills. These opportunities could not be pursued under the existing conditions, due to the lack of a dock and/or harbor in Diomede.

Northwest Passage – For many years, the Institute of the North, and others, have investigated the idea of freight passage across the top of Alaska and Canada to link the Pacific and Atlantic through arctic waters. In the minds of some researchers, the reduction in arctic ice in recent years has increased the potential for this concept. At the recent Alaska Regional Ports and Harbors Conference (January 10th and 11th, 2008) Ben Ellis, Managing Director for the Institute of the North spoke to the likely potential and timing of the Northwest Passage, given the benefit of their recent research. The conclusion he presented was that even with global warming, freight shipments through the Northwest Passage are not likely within the next 40 to 50 years.

Commercial fisheries development (king crab, salmon) – The community of Diomede has been working with the Norton Sound Economic Development to investigate potential for commercial fishing from Diomede. A recent article in National Fisherman[5] notes stocks of blue king crab near Little Diomede Island. However, the article concludes that given the small stock size and the existing importance of the subsistence harvests of blue king crab, this species is not a good candidate for development of a commercial fishery. With few other abundant fisheries stocks nearby, the article suggests that other avenues for economic development, other than commercial fishing, will be necessary for Diomede.

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[5] Creating Economic Development in Remote Communities, Simon Kinneen, Norton Sound Fisheries Research and Development, *National Fisherman*, August 2007.

Glaucous gull	flat ground
Black-legged kittiwake	cliff
Common murre	cliff ledge
Thick-billed murre	cliff ledge
Pigeon guillemot	boulder rubble
Black guillemot	boulder rubble
Crested auklet	talus
Least auklet	talus
Parakeet auklet	talus
Horned puffin	rock crevice
Tufted puffin	burrow

- Mammals - The arctic fox is the only terrestrial mammal known to live on Little Diomede. Marine mammals found in the Bering Strait include several endangered whales such as the bowhead, humpback, fin, and blue whale. Other whales that may be present in the area are the orca, gray, sei, minke, and beluga. The threatened Steller sea lion may occasionally be found in the area, but no haul-out areas have been observed on the island. Several seal species, including the ribbon, ringed, spotted, and bearded seal frequent the area. Polar bears roam the sea ice during winter hunting for ringed seal, and there is at least one recorded case of polar bear denning on the island. Pacific walrus have a known haul-out area on Little Diomede.

5.5.2 Endangered / Threatened Species

Threatened and endangered whales and the threatened Steller sea lion as listed above are in the project area.

5.5.3 Subsistence

Little Diomede and the surrounding area provides the people of Diomede much of their annual subsistence requirements. The area closest to the community is used most heavily by community members because of the accessibility, abundance, and diversity of floral and faunal resources. Their diet includes fish and fowl, bird eggs, marine mammals, berries, and native vegetables such as Eskimo potatoes and Eskimo cabbage, and sea mammals that include walrus and seal. King crab is harvested when ice conditions are right. Imported western foods are also consumed.

The need for subsistence foods fluctuates through time depending on the number of persons in the household and the amount of cash necessary to substitute western food for fresh greens, poultry, and eggs readily and seasonally available. It also depends on the availability of western foods in the local store. When transshipment of goods is slow or non-existent, store bought food may not be available.

There are dozens of bird blinds, which are features composed of rock walls built along the slopes of the proposed material source site to the south. There are also seal blinds along the shore of the proposed material source site to the north. The bird blinds and seal blinds have been existence for longer than anyone can remember, and are used on a regular seasonal basis. The potential for cultural resources associated with harvesting species exists. Elders recall hearing of how the blinds were also used as fortresses for defensive purposes.

considered as a material source. This potential site had been proposed in previous planning documents and was evaluated by the U.S. Fish and Wildlife Service.
Due to the significant presence of nesting birds, the timing of operations and actual site of the proposed material source would be critical to minimizing impacts on birds. Mitigation would undoubtedly be required if bird habitat was destroyed.

- **Dredging** - Some material may need to be dredged to construct a harbor. Given the steep bathymetric profile, the amount of dredging may be small and may be limited to removing large boulders from the proposed mooring basin. As with breakwater construction, the area would need to be further investigated to assure that archeological artifacts are not lost.

5.5.5.2 Operation

- **Disturbance** – Depending on the size of the harbor, it is possible that vessel traffic could increase and result in disturbance and displacement of sea birds. Though this is not likely to be an issue with a protected barge mooring area that incorporates a protected area for local skiffs, it could become an issue if space is provided in the harbor for commercial fishing boats.

- **Lighting** – Lighting is a recurring issue in harbor planning in Alaska because birds become disoriented by or attracted to lights, especially when flying in fog or snow storms. Though this would not be an issue during the continuous daylight hours in the summer when nesting birds are present, it could be an issue for migrating birds in the spring and fall since many arctic nesting sea birds pass through the Bering Strait. This issue would likely be addressed by shielding the lights or other operational stipulations.

- **Petroleum** – Petroleum spills are a recurring concern at harbors and this issue would be considered further as the project coordination continues. A harbor would make fuel deliveries to the community considerably safer, so there could be a notable reduction in the likelihood of a petroleum spill. The harbor could also serve as a place of refuge for vessels in the area during severe storms or for those experiencing mechanical problems, thus reducing the chance of spills.

5.5.6 Mitigation

Mitigation would be required if bird habitat was destroyed, most likely in the form of habitat restoration. Construction of a material source site near the community could make subsistence harvest more difficult, and some form of mitigation could be required. If the off-shore features noted in the bathymetric survey are archeological remains, mitigation would be required to document and preserve, if possible, these cultural sites, and the Section 106 process (evaluation for the National Register of Historic Places, assessment of affects, mitigation) would need to be followed.

6.0 PROBLEMS AND OPPORTUNITIES

6.1 PROBLEMS

The community of Little Diomede has a number of problems, including life/safety issues, structure and infrastructure deterioration, and social issues, all related directly or indirectly to