APPENDIX D
TRIP PHOTOGRAPHS

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APPENDIX D-a
JUNE 2011

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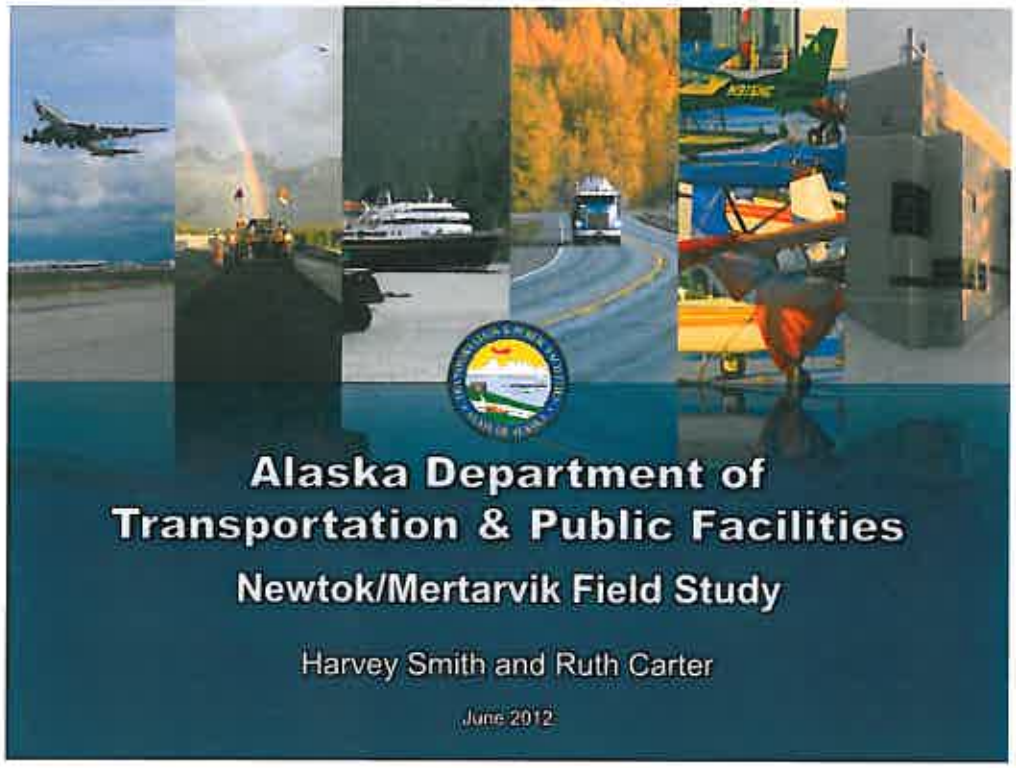


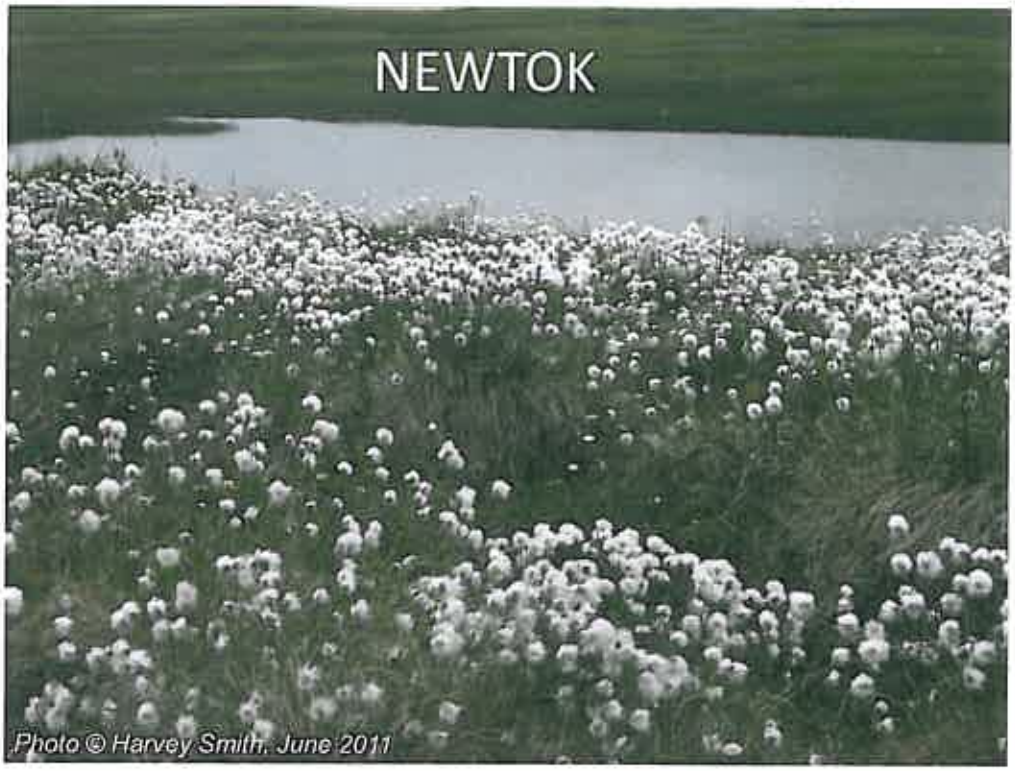
Alaska Department of Transportation & Public Facilities

Newtok/Mertarvik Field Study

Harvey Smith and Ruth Carter

June 2012

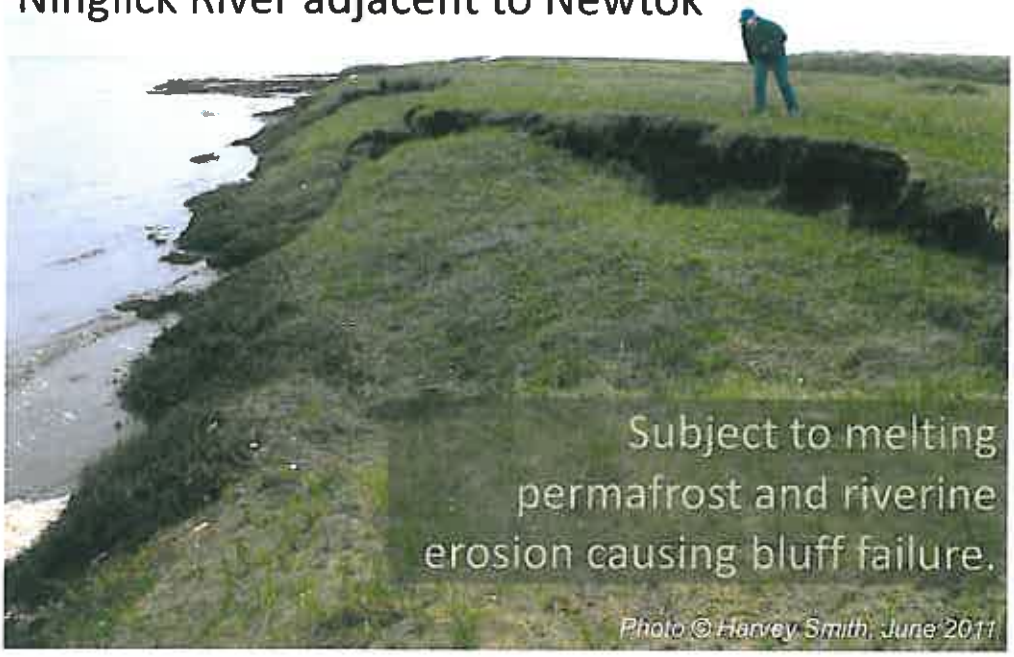

Angyaarvik – Small Boat Harbor
Photo © Ruth Carter, June 2011


NEWTOK
Photo © Harvey Smith, June 2011


Ninglick River
Newtok, Alaska Waterfront
Kealavik River
Photo © Harvey Smith, June 2011


Photo © Harvey Smith, June 2011

Ruth Carter investigates erosion along Ninglick River adjacent to Newtok



Typical Vessels in Newtok Fleet

Moorage for 55 boats = 2 Acres

15 x 20' LOA
20 x 22' LOA
15 x 24' LOA
5 x 32' LOA

Moorage along Kealavik River

High Tide

Low Tide at Newtok

Photos © Ruth Carter, June 2011

Photos © Ruth Carter, June 2011

Photos © Ruth Carter, June 2011

Photos © Harvey Smith, June 2011

Photos © Harvey Smith, June 2011

Photos © Harvey Smith, June 2011


Mertarvik – view across Ninglick River
Photo © Ruth Carter, June 2011


First Homes at Mertarvik
Photo © Harvey Smith, June 2011


Mertarvik Waterfront
Photo © Harvey Smith, June 2011


Evacuation Center under Construction
Photo © Harvey Smith, June 2011


Tide Staff and Beach Access at Mertarvik
Photo © Harvey Smith, June 2011

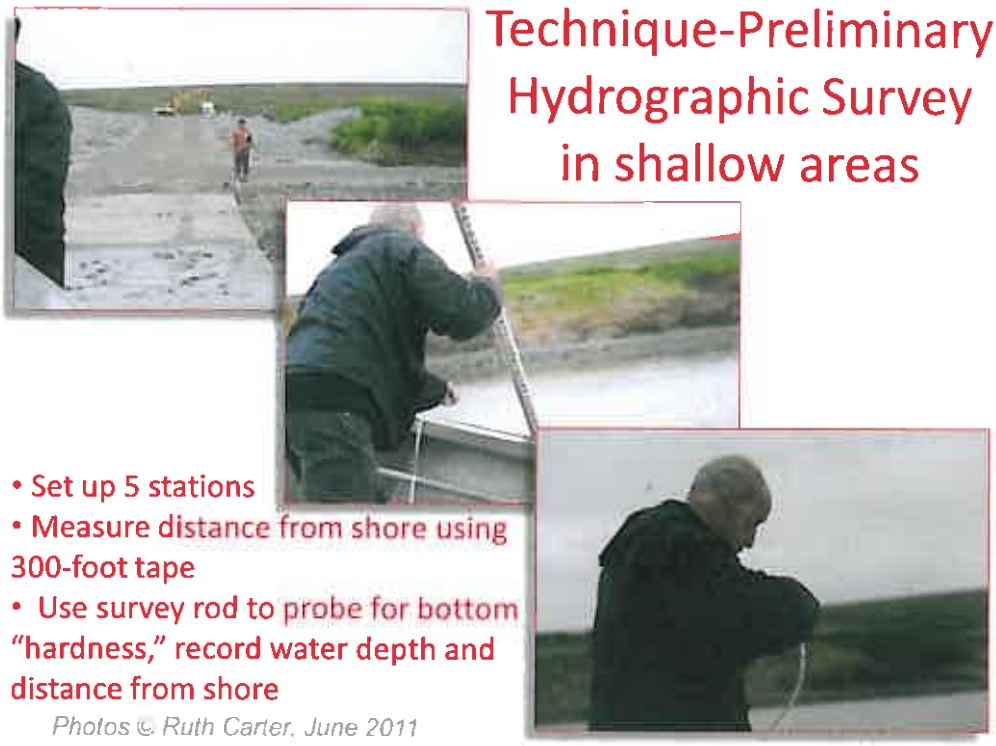

Helping with
Hydrographic Survey
Photo © Harvey Smith, June 2011

Uplands Adjacent to Proposed Harbor

The Field Team

Photos © Ruth Carter and Harvey Smith, June 2011

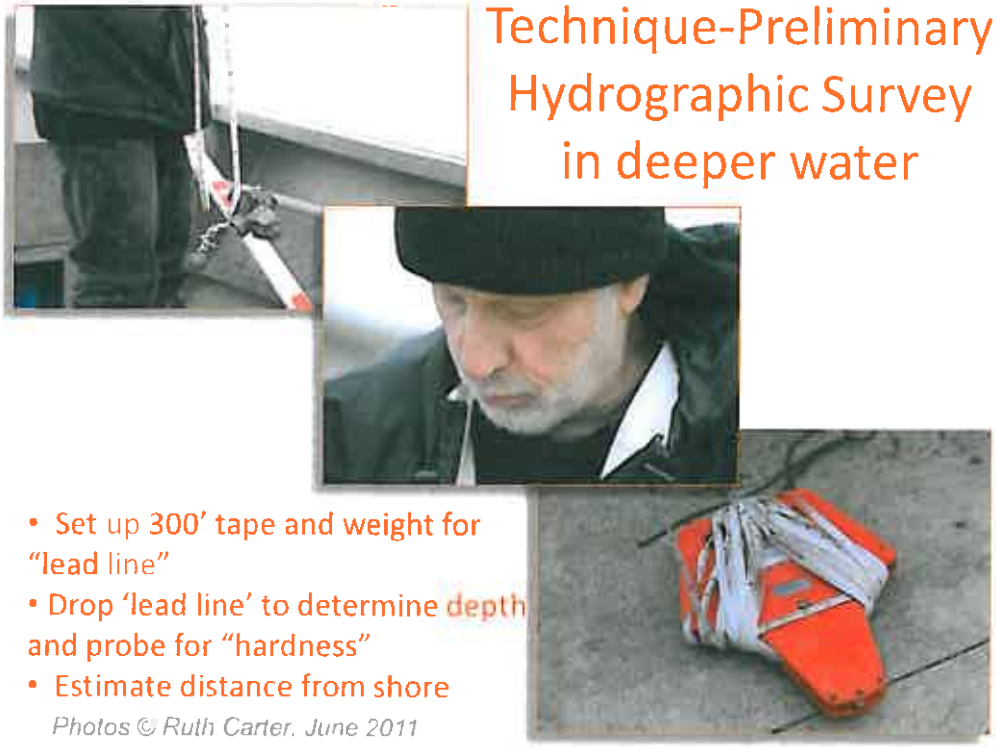
Technique-Preliminary Hydrographic Survey in shallow areas



- Set up 5 stations
- Measure distance from shore using 300-foot tape
- Use survey rod to probe for bottom "hardness," record water depth and distance from shore

Photos © Ruth Carter, June 2011

Technique-Preliminary Hydrographic Survey in deeper water



- Set up 300' tape and weight for "lead line"
- Drop 'lead line' to determine depth and probe for "hardness"
- Estimate distance from shore

Photos © Ruth Carter, June 2011

Technique-Preliminary Geotechnical Survey

- Shallow area silt/mud
- Deeper areas – coarse gravel (-11')
- Hit boulders three times in offshore (at -6' on falling tide)
- During flood tide, significant suspended sediment in water column (right)
- Using lead line found
  - Hard bottom (cobble at -12')
  - Softer bottom farther offshore (-22')

Photos © Ruth Carter, June 2011

Additional Geotechnical

- Disturbed slopes need to be stabilized
- Rock, est. W50 as 2-ft., appears stable
- Planks accessible on highest tides; barge landing also needs higher tides for access

Photos © Ruth Carter and Harvey Smith, June 2011

Typical Beach At Mertarvik

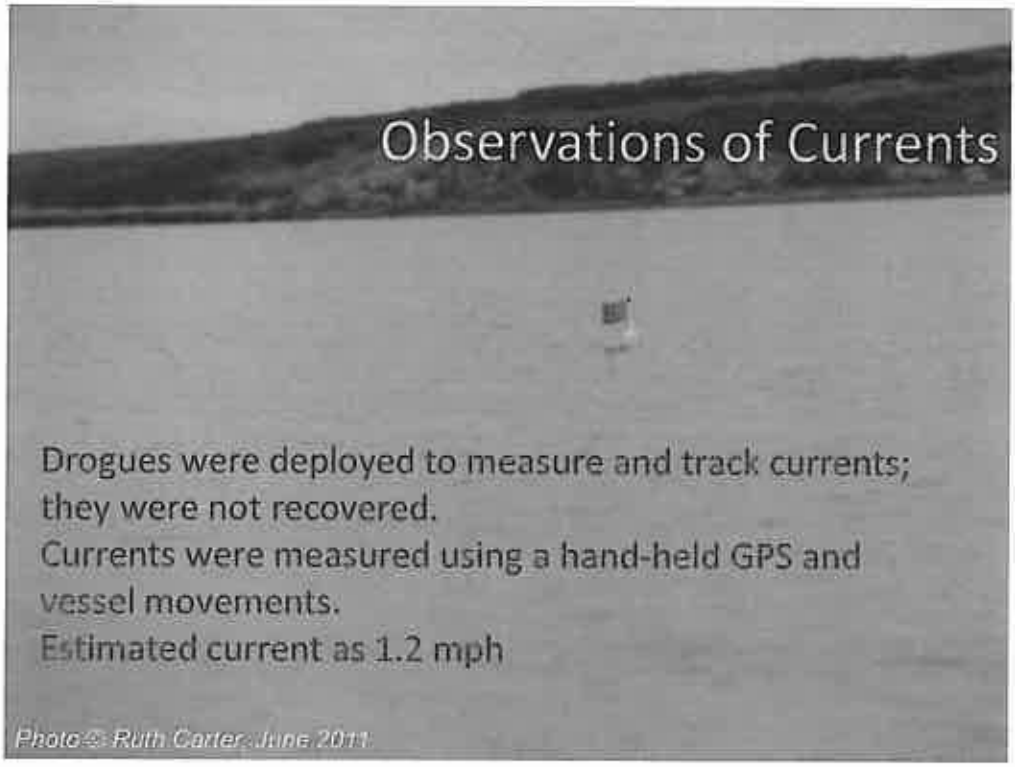
View west from Barge Landing
- Cobble beach with boulders
- Lots of fines

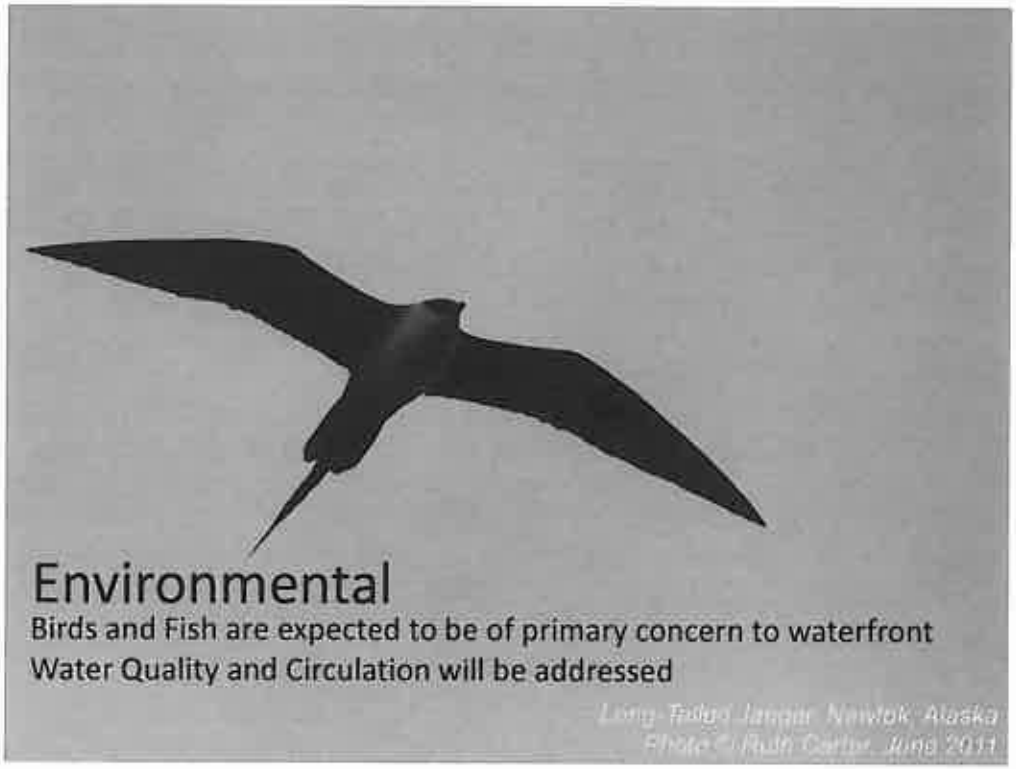
Photos © Harvey Smith, June 2011

Field - Tidal Observations

NOTES
- Tidal staff set on concrete planks
- Time/Tide data recorded
- Used to approximate datum
- Tide varies about 6'

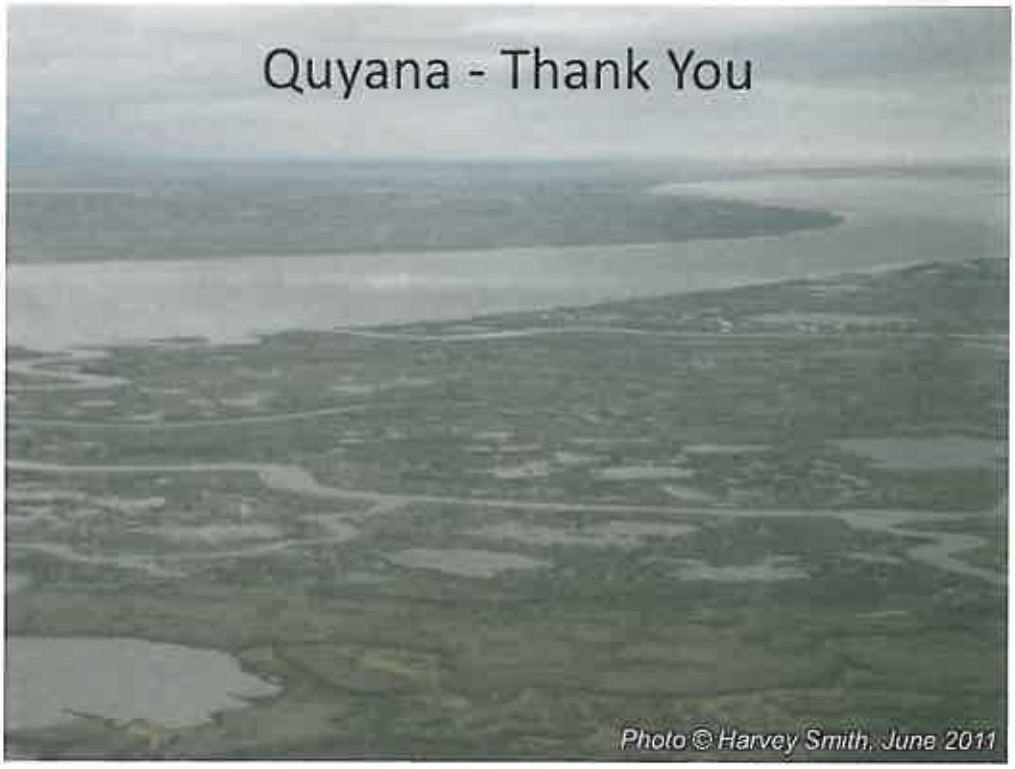
Photos © Ruth Carter, June 2011


Observations of Currents
Drogues were deployed to measure and track currents; they were not recovered.
Currents were measured using a hand-held GPS and vessel movements.
Estimated current as 1.2 mph
Photo © Ruth Carter, June 2011


Environmental
Birds and Fish are expected to be of primary concern to waterfront
Water Quality and Circulation will be addressed
Long-Tailed Jaeger, Newtok, Alaska
Photo © Ruth Carter, June 2011

Heading back to Newtok

Quyana - Thank You




Alaska Department of Transportation and Public Facilities
COASTAL ENGINEERING SECTION
5800 East Tudor Road, Anchorage, Alaska 99507
Harvey Smith, P.E.
State Coastal Engineer
Harvey.Smith@alaska.gov
907-269-6231
and
Ruth Carter, P.E.
Coastal Engineer
RuthA.Carter@alaska.gov
907-269-6241
Kotzebue, AK © ADOT&PF


Alaska Department of Transportation
Coastal Engineering
And Public Facilities

APPENDIX D-b
NOVEMBER 2011

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Mertarvik – Trip Photos

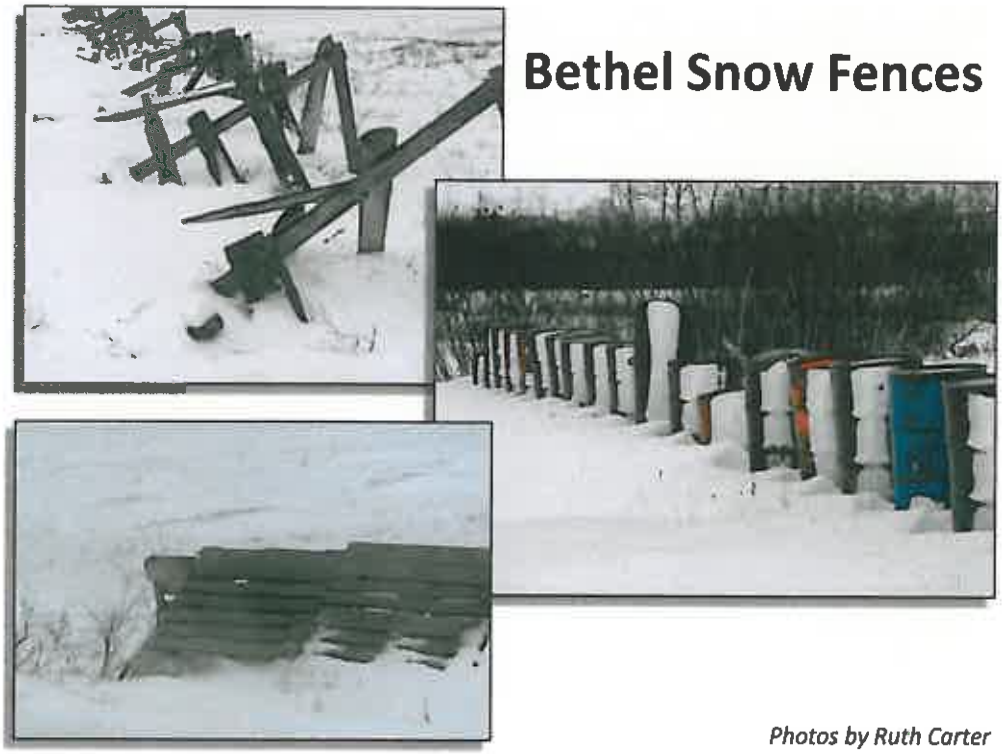
plus a few pictures of Bethel

2-4 November 2011

Harvey N. Smith, P.E.
And Ruth A. Carter, P.E.
Coastal Engineering Section
Alaska Department of Transportation
and Public Facilities

View from the Grub Beat B&B, Photo by Ruth Carter

Bethel Snow Fences



Photos by Ruth Carter

Photo by Harvey Smith

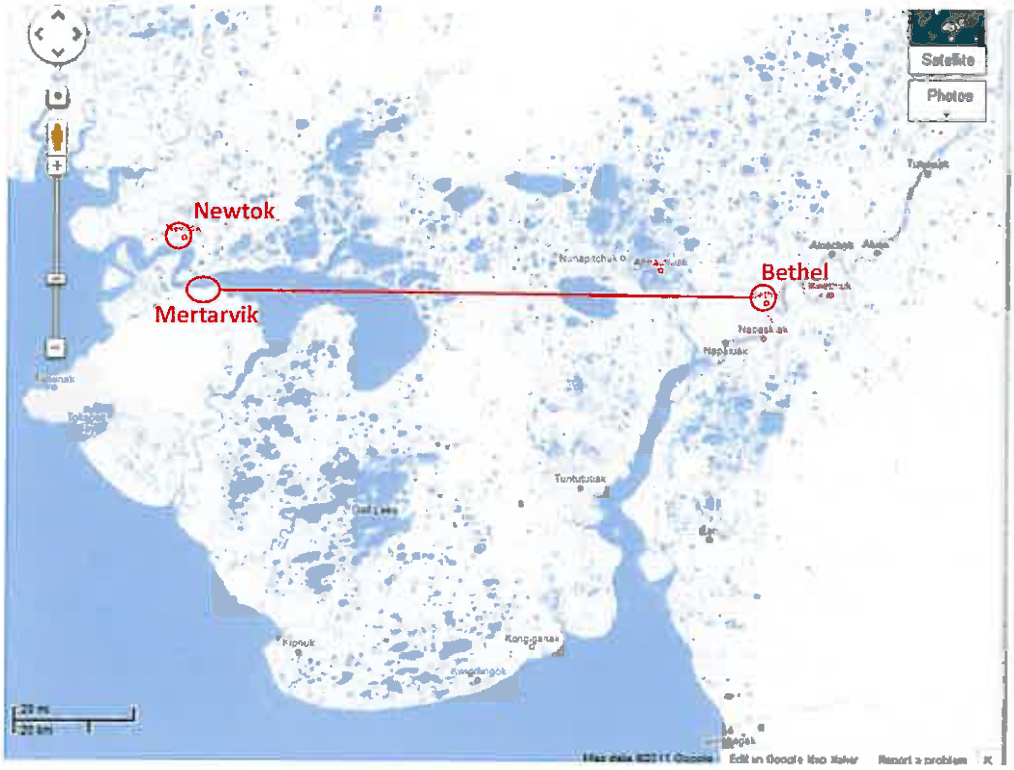
Port of Bethel, Photo by Ruth Carter

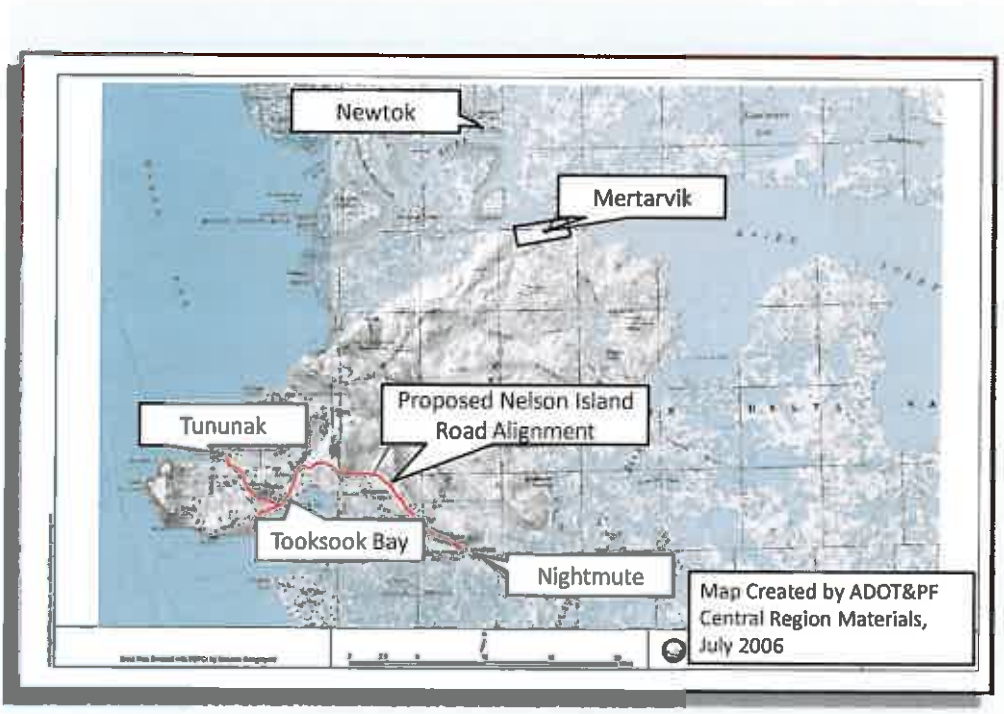
Port of Bethel, Photo by Harvey Smith

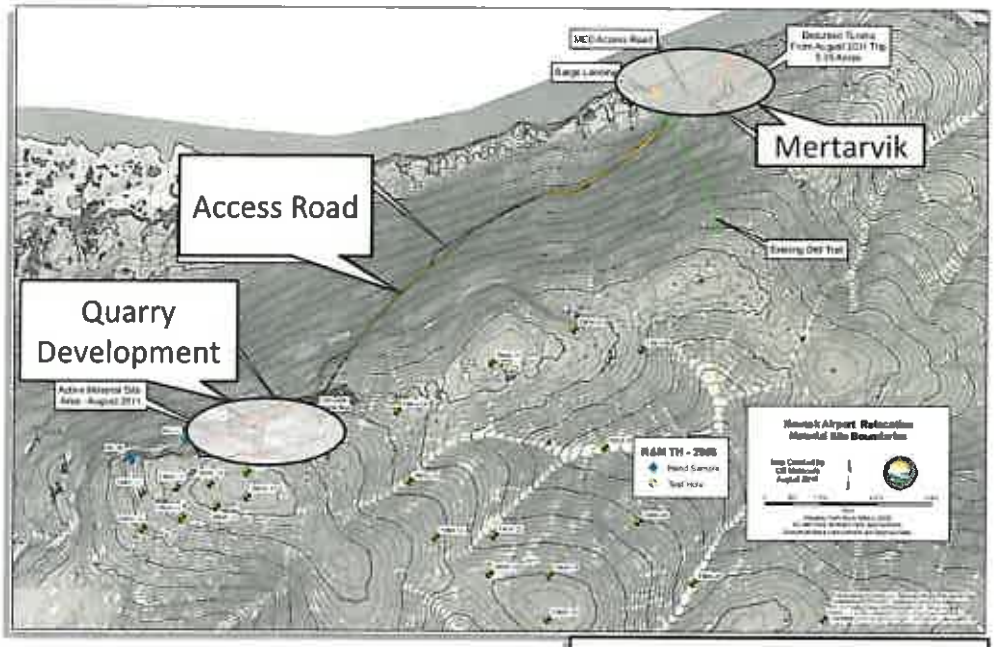
Corps' Bethel Sea Wall.
Photo by Harvey Smith

Corps' Bethel Sea ***Wall***
Photo by Ruth Carter

Bethel Small Boat Harbor
Photo by Ruth Carter


Satellite
Photos
Newtok
Mertarvik
Bethel


Newtok
Mertarvik
Tununak
Proposed Nelson Island
Road Alignment
Tooksook Bay
Nightmute
Map Created by ADOT&PF
Central Region Materials,
July 2006



Map Created by ADOT&PF Central Region Materials, July 2006

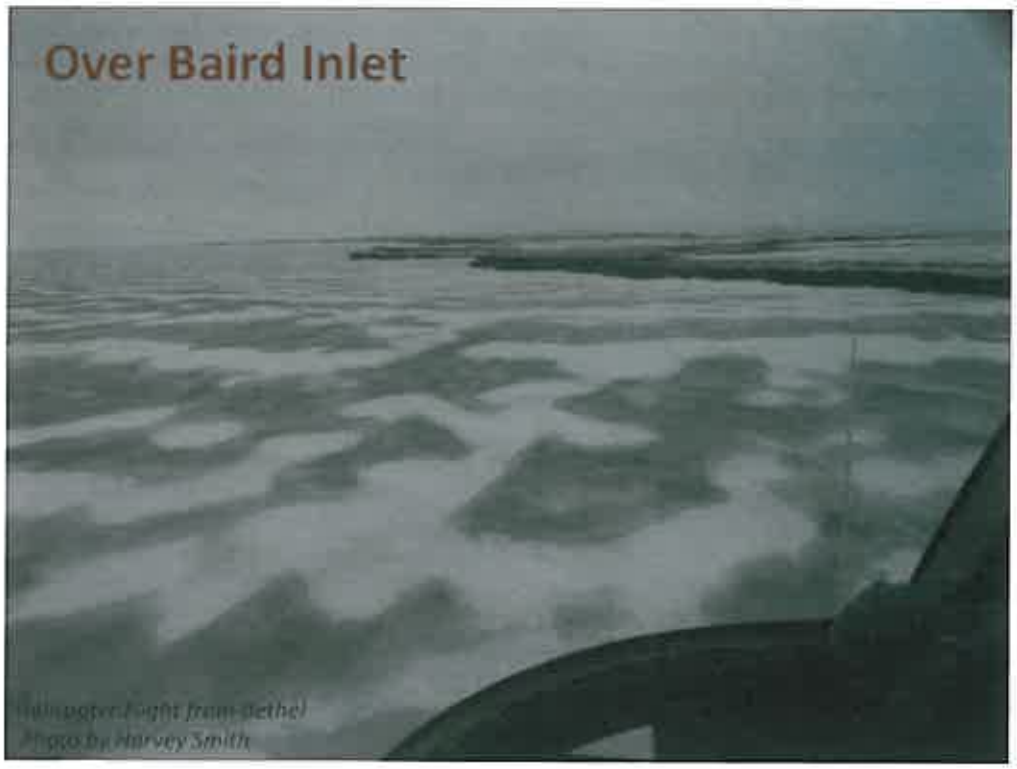
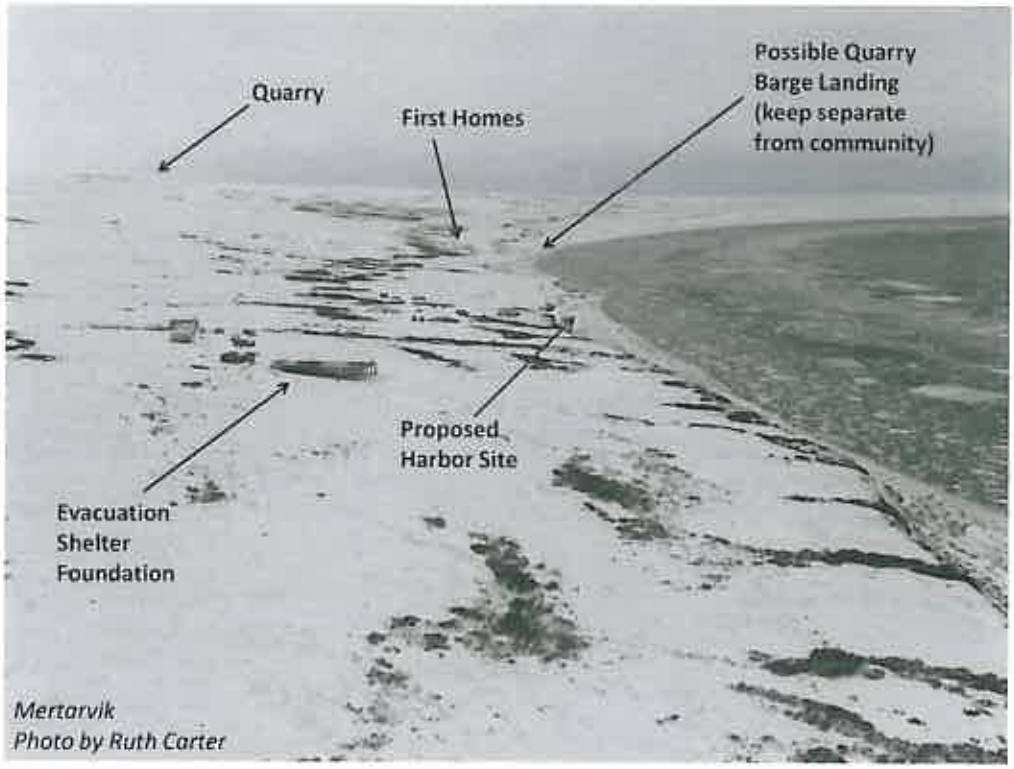


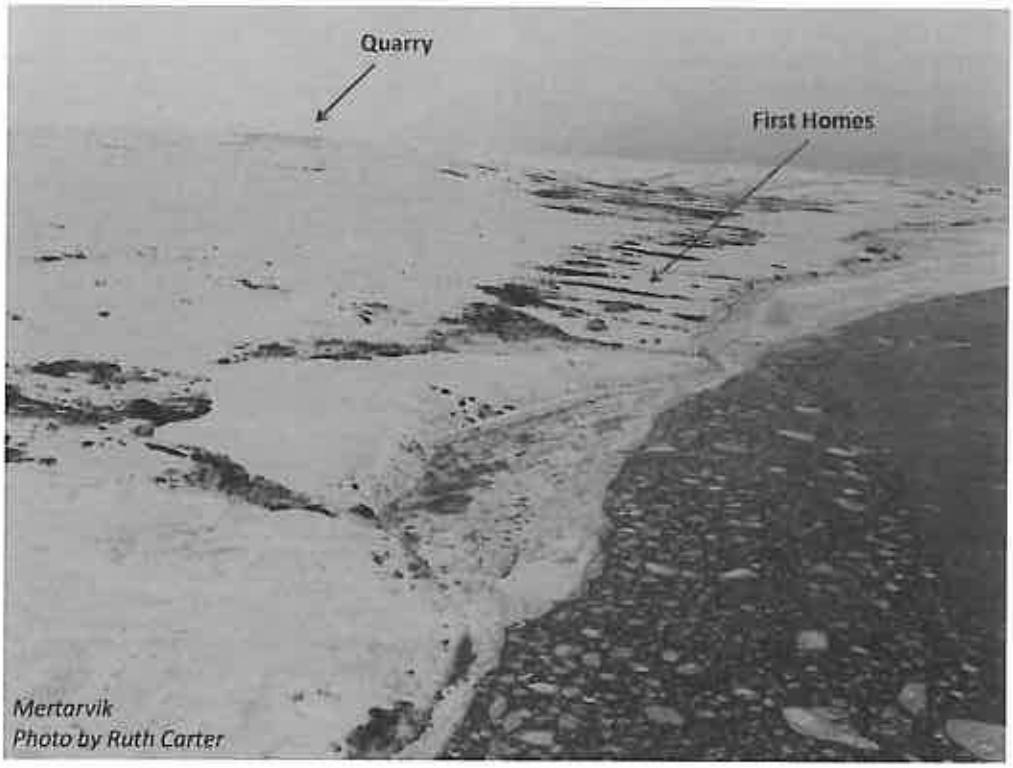
Photo by Harvey Smith

Photo by Harvey Smith

Helicopter Flight from Bethel
Photo by Harvey Smith



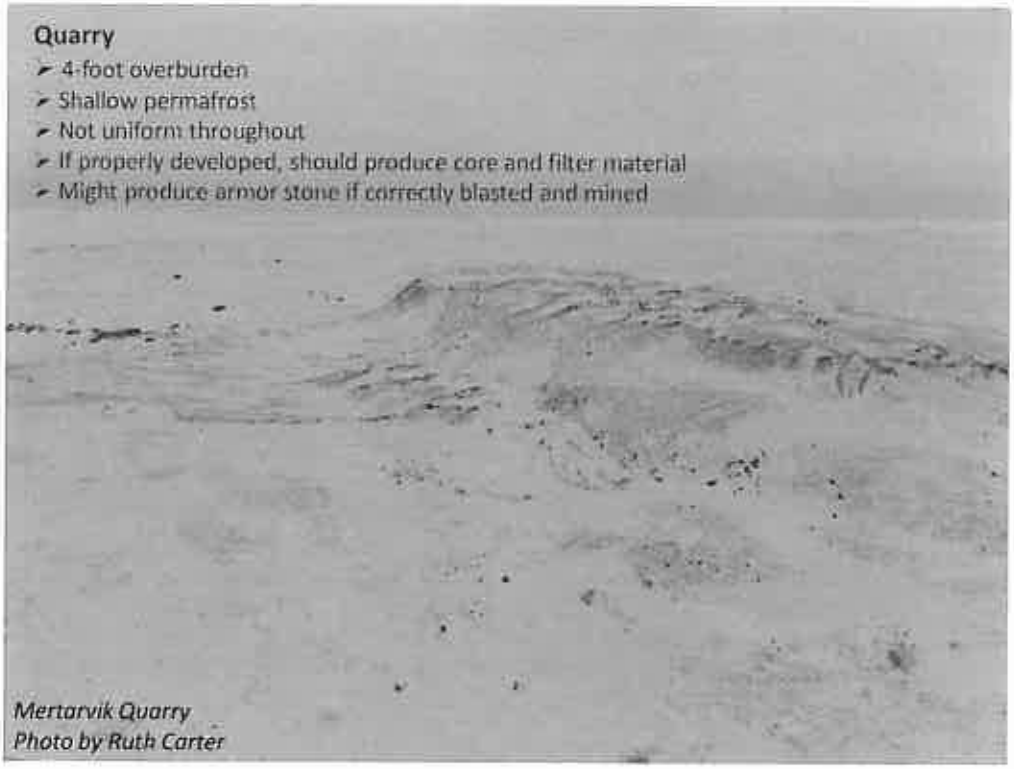
Mertarvik
Photo by Ruth Carter



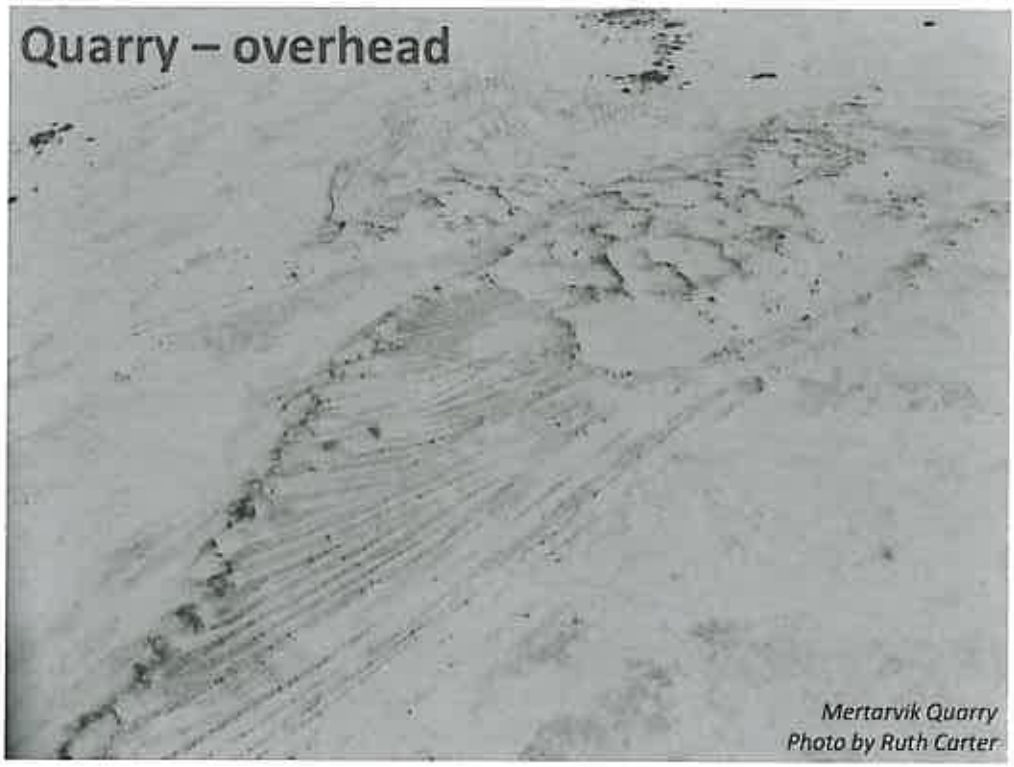
Mertarvik
Photo by Ruth Carter

Quarry

- 4-foot overburden
- Shallow permafrost
- Not uniform throughout
- If properly developed, should produce core and filter material
- Might produce armor stone if correctly blasted and mined



Mertarvik Quarry
Photo by Ruth Carter


Quarry – overhead
Mertarvik Quarry
Photo by Ruth Carter


Quarry – face
Mertarvik Quarry
Photo by Harvey Smith

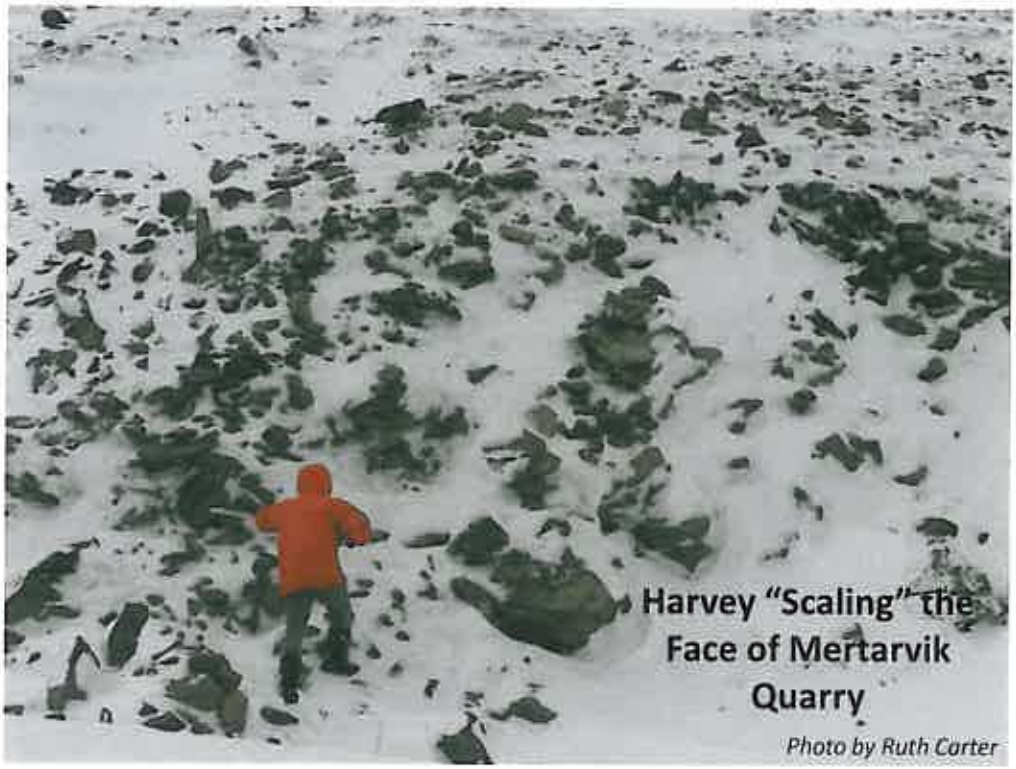
Ruth at Mertarvik
Photo by Harvey Smith

Harvey Smith at Mertarvik Quarry, Photo by Ruth Carter

Estimated Yield (based on visible rock and geotech)

- 5% Large Rock (2 to 3-foot)
  (More could be produced with different blasting pattern, per Geotech memo)
- 20% 8 to 12-Inch Rock
- 65% smaller than 6-Inch Minus

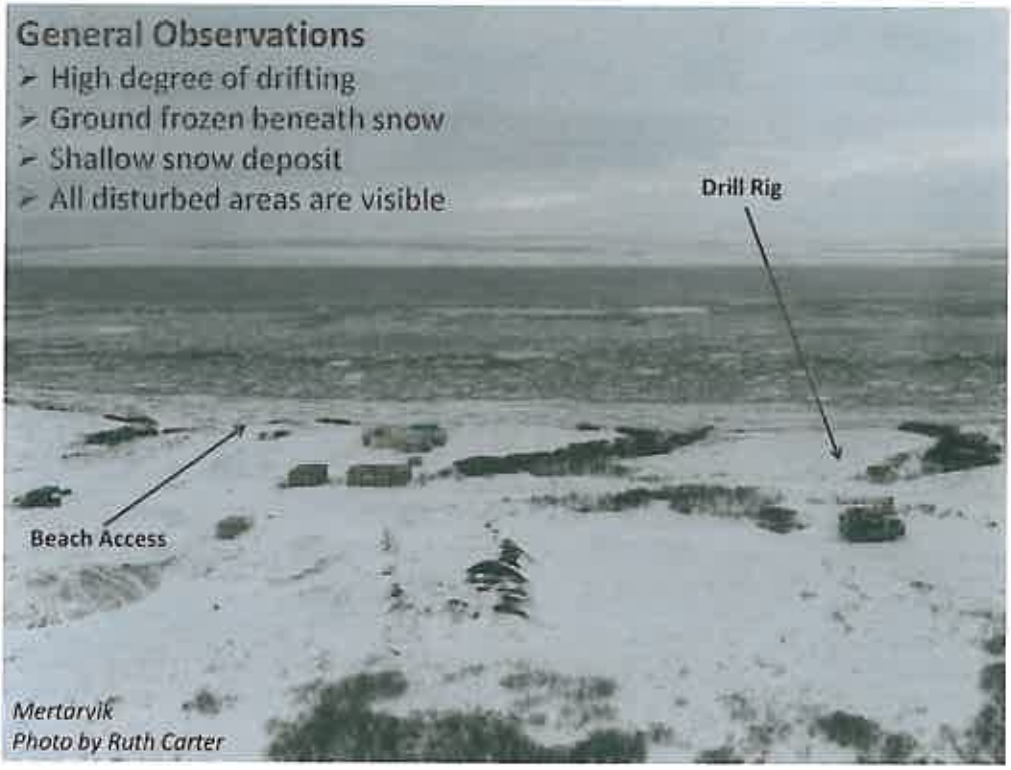
Mertarvik Quarry
Photo by Ruth Carter



Harvey "Scaling" the Face of Mertarvik Quarry

Photo by Ruth Carter

Mertarvik Quarry
Photo by Ruth Carter

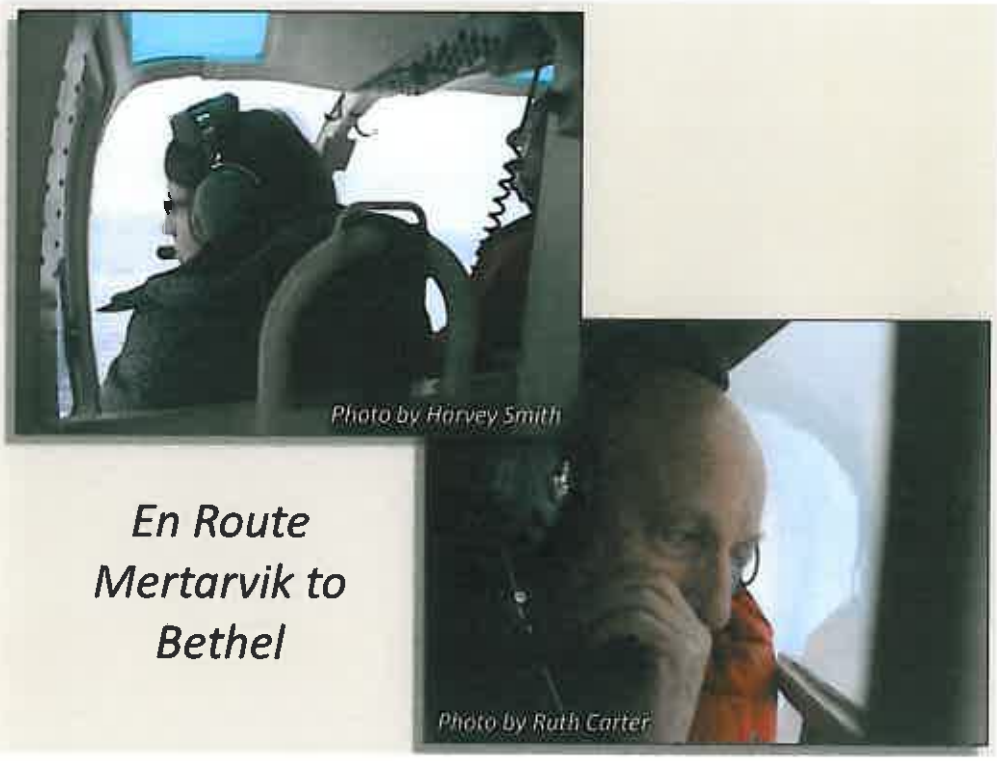


Mertarvik
Photo by Ruth Carter

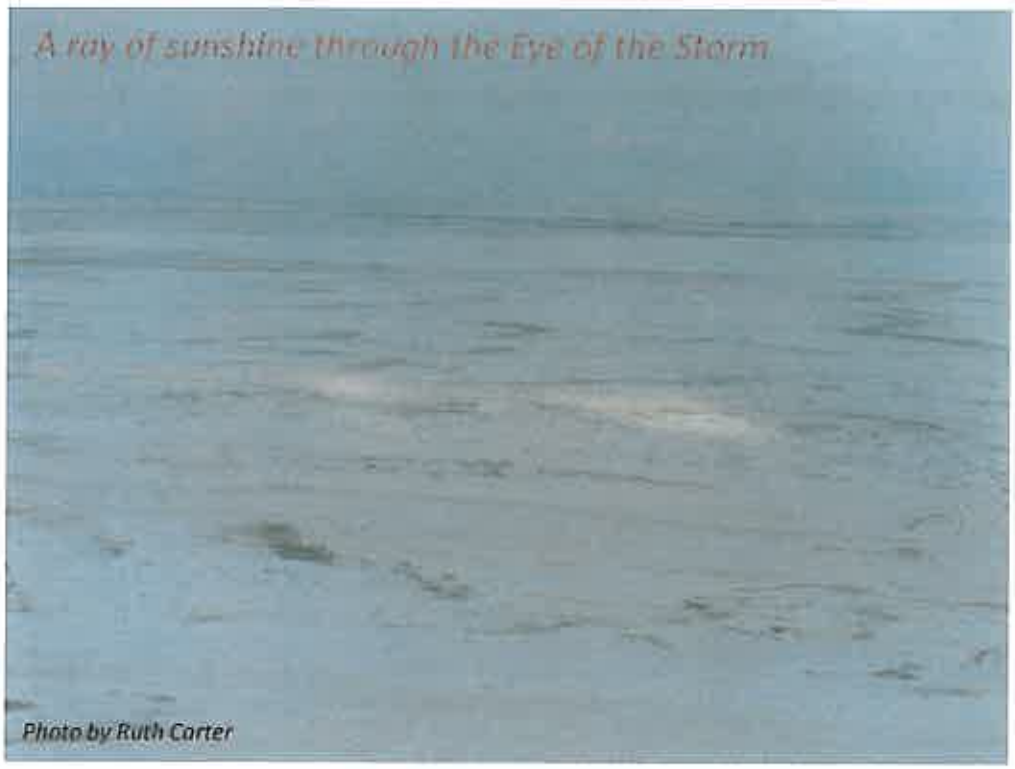
Mertarvik
Photo by Ruth Carter

Early Winter View of Mertarvik
- showing ice formation in Ninglick River

Mertarvik
Photo by Ruth Carter



En Route Mertarvik to Bethel


A ray of sunshine through the Eye of the Storm
Photo by Ruth Carter


Y-K Delta
Photo by Ruth Carter
Y-K Delta

APPENDIX D-c
AUGUST 2012 – may be added

APPENDIX D-c
AUGUST 2012 – may be added

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APPENDIX E
CORRESPONDENCE

a. Status and Draft Report cover sheet
b. Letter to Stanley Tom with revised schedule

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STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES
STATEWIDE DESIGN & ENGINEERING SERVICES
COASTAL ENGINEERING SECTION
5800 East Tudor Road, Anchorage, AK 99507
907-269-6239; Fax 907-269-6478

STATUS and PRELIMINARY DESIGN

PROJECT NAME: Mertarvik Waterfront Development

PROJECT NO.: 80861

DATE: March 21, 2012

PRESENTED TO: Newtok Traditional Council
(Acting for the Village of Newtok)

PREPARED BY: Ruth Carter, P.E., Coastal Engineer
Harvey Smith, P.E., State Coastal Engineer

This document summarizes preliminary engineering work completed for Mertarvik Waterfront Development. This work is being done for Newtok Traditional Council, acting for the Village of Newtok. Newtok is relocating to a new village site called Mertarvik. This effort was funded through a Bureau of Indian Affairs grant that obtained by the Village of Newtok.

Summary - The following has been completed as of February 2012

- **A conceptual design**
- **Preliminary Fetch Analysis**
- **Preliminary Wind and Wave analysis**
- **A more detailed engineering design of the basin planform requirements for the fleet**
- **More detailed cross-sections of the breakwater**
- **Local Quarry Investigation (quarry has good potential, if properly shot, to provide all the material for the breakwater)**
- **Site visits to Newtok and Mertarvik**

Modifications will be made to the preliminary design as additional surveying and geotechnical data becomes available. The department has negotiated a contract for completion of a shoreline survey that will include bathymetric data and is in the process of establishing a new contract for geotechnical work at the site.

It is anticipated that drilling will be accomplished as early as April; surveying will be completed in May or June. It is anticipated that the overall project will be completed in September 2012.

STATE OF ALASKA

DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

Sean Parnell, Governor

DIVISION OF DESIGN AND ENGINEERING SERVICES
COASTAL ENGINEERING SECTION

5800 East Tudor Road
Anchorage, Alaska 99507-1286
(907) 269-6239 FAX (907) 269-6478

March 30, 2012

Stanley Tom
Tribal Administrator
Newtok Traditional Council
P.O. Box 5545, Newtok, Alaska 99559
237-2314 or 2316, cell 237-6015

Re: STATUS and PRELIMINARY Draft Mertarvik Waterfront Development Plan

Dear Mr. Stanley Tom:

Per our agreement during the March 21 meeting with the Bureau of Indian Affairs, I've enclosed a copy of the Preliminary Draft Mertarvik Waterfront Development Plan. The document summarizes preliminary engineering work completed in support of Newtok's relocation to the Mertarvik.

The report summarizes work completed as of March 21, 2012 and includes the appendices, which you have not previously received. An electronic copy of the main text was sent to you prior to the meeting.

As indicated in the report, we have completed the preliminary design. Early this summer we will have a completed bathymetric survey and hopefully a geotechnical study as well. We anticipate that the overall project will be completed in September 2012.

I've also attached a copy of our original and proposed deliverables. The original schedule couldn't be met due to contracting difficulties for the bathymetric and geotechnical work.

As always, feel free to contact our office with comments, concerns or questions regarding this document.

Best regards,

Harvey Smith, P.E.
State Coastal Engineer
harvey.smith@alaska.gov

Ruth A. Carter, P.E.
Coastal Engineer
rutha.carter@alaska.gov

attachment: as noted

These tables show the **Deliverables** presented in the Memorandum of Agreement between the Department and Newtok Traditional Council and the **Proposed Deliverables** based on completed and outstanding tasks. The schedule may be modified once a geotechnical contract is in place.

Deliverables			
Task	**Description**	**Scheduled Completion Date**	**Cost Estimate**
1	First site visit	Jun-11	$4,000
2	Hydrographic Survey (consultant)	Jun-11	$65,000
3	Technical Memo 1: Wind Wave Water Analysis	Jul-11	$35,000
4	Technical Memo 2: Design Fleet and Alternative Analysis	Jul-11	$26,000
5	Draft Report to include Tasks 1-4	Aug-11	$5,000
6	Second site visit to present draft report to Village of Newtok	Aug-11	$4,000
7	Geotechnical Investigation (consultant)	Dec-11	$180,000
8	Technical Memo 3: Preliminary Environmental Considerations	Jan-12	$8,000
9	Technical Memo 4: Uplands Development Plan	Jan-12	$3,600
10	Draft Final Report to include Tasks 1-9	Feb-12	$10,000
11	Final Report	Mar-12	$3,000
		Subtotal	$343,600
		ICAP @ 2%	$6,872
		Total Cost	$350,472

Deliverables - PROPOSED			
Task	**Description**	**Scheduled Completion Date**	**Cost Estimate**
1	First site visit	Jun-11	$4,000
2	Second site visit winter (inc. helicopter)	Jun-11	$8,000
3	Draft Report (done by DOT)	Mar-12	$48,822
	- Preliminary Wind Wave Water Analysis		
	- Design Fleet and Alternative Analysis		
	- Preliminary Environmental Considerations		
	- Uplands Development Plan		
4	Geotechnical Investigation (DOT - possibly May)	Jul-12	$180,000
5	Hydrographic Survey (consultant, contract in place, to be completed following breakup)	Jul-12	$80,778
6	Third site visit to present draft report to Village of Newtok (around August 15)	Aug-12	$4,000
7	Draft Final Report	Aug-12	$10,000
8	Final Report	Sep-12	$8,000
		Subtotal	$343,600
		ICAP @ 2%	$6,872
		Total Cost	$350,472