

**City Manager**  
Tom Moran

**Port Director**  
Joy Baker

**Harbormaster**  
Lucas Stotts



**Nome Port Commission**  
Jim West, Jr., Chairman  
Charlie Lean, Vice Chairman  
Derek McLarty  
Shane Smithhisler  
Scot Henderson  
Russell Rowe  
Gay Sheffield

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**NOME PORT COMMISSION  
JOINT WORK SESSION WITH  
NOME COMMON COUNCIL & NOME PLANNING COMMISSION  
THURSDAY, July 19, 2018 @ 5:30 PM  
COUNCIL CHAMBERS IN CITY HALL**

**AGENDA**

UPDATE FROM U.S. ARMY CORPS OF ENGINEERS (USACE) ALASKA DISTRICT ON PORT OF NOME MODIFIED FEASIBILITY STUDY

- STUDY PROGRESS
  - Alternatives Milestone Achievement
  - Alternatives Update
  - Budget
  - Schedule
  - Economics Analysis
  - Environmental & Geotech Analysis
  - Next Steps

# Port of Nome Modification Feasibility Study Progress

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U.S. Army Corps of Engineers – Alaska District  
19July2018

*“The views, opinions and findings contained in this report are those of the authors(s) and should not be construed as an official Department of the Army position, policy or decision, unless so designated by other official documentation.”*



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# AGENDA

- Introductions
- Study Scope & Budget
- Study Overview
- Plan Formulation & Initial Screening
- Final Array of Alternatives
- Next Steps to Tentatively Selected Plan Milestone
- Conclusions, Discussion & Next Steps

# PORT OF NOME MODIFICATION FEASIBILITY STUDY

SCHEDULE / MILESTONES 24-month	
Milestone	Date
FCSA Execution	02 Feb 2018
Alternatives Milestone	27 Jun 2018
Tentatively Selected Plan	13 Nov 2018
Agency Decision Milestone	26 Mar 2019
MSC Transmittal of Final Report	21 Oct 2019
Chief's Report Signed	18 Feb 2020



# BUDGET ~ \$2.9M

Year	Estimated Total Study Cost	Percentage	Non-Federal Cash	Federal Cash
FY18	\$ 1M	34%	\$ 0.5M	\$ 0.5M
FY19	\$ 2M	66%	\$ 1M	\$ 1M
Total	\$ 3M	100%	\$ 1.5M	\$ 1.5M

As of today

Federal: \$173K

Non-Federal: \$150K

Total: \$323K



# City's Contribution

City has \$1.5M set aside through a State of Alaska legislative grant authorized in 2016.

## Contributed to Date:

- \$150K – FCSA Execution
  - \$ 23K – Balance owed through City FY18
  - \$300K – Funding cost-share through COE FY18
- \$473K

## Planned In-Kind Credit:

- Vessel for Environmental Work, Summer 2018
- Third Party Economic Analysis (Consultant)
- Third Party Design Analysis (Consultant)
- Project Management/Coordination (City staff)



### **Problem Statement**

Vessel traffic in the Arctic, coupled with limited marine infrastructure and available draft in Nome and the region, results in:

- Operational inefficiencies
- Vessel damages
- Decreased safety
- Increased costs of goods and services
- Threats to the long-term viability of surrounding communities

### **Opportunities**

- Ensure health and safety of smaller communities that rely on Nome
- Long-term economic growth and stability in Nome
- Improve navigation access to community
- Increase investment in infrastructure
- Decrease economic damages
- Reduce life safety risk
- Improve system reliability
- Separate various types of harbor activities and associated foot traffic



## Objectives:

Provide safe, reliable, resilient and efficient waterborne transportation systems for movement of commerce, national security, subsistence, and recreation to:

- Reduce draft limitations to increase fuel transport capabilities to better satisfy fuel demand
- Support multiple maritime missions: cargo transportation, search and rescue, emergency and oil spill response, natural resource exploration.
- Support access to natural resources for subsistence purposes within Nome and the region
- Allow for sufficient development of upland facilities
- National Ecosystem Restoration (NER) benefits

## Constraints:

- Max depth of existing harbor limited to 28' due to sheet pile wall
- Minimize adverse impacts to:
  - Threatened and endangered species and essential fish habitat
  - Cultural resources, food security, and access to natural resources



# SCREENING CRITERIA FOR MEASURES

Criteria	Definition	Metric
Effectiveness	Does this measure work towards addressing at least one of the planning objectives? Does it meet ALL objectives? If so, it's a standalone alternative.	Y/N
Constructability	Can it be built from a technical standpoint given existing site conditions?	Y/N
Acceptability	Is it legal and does it meet policy/guidelines? May also consider political or social acceptability.	Y/N
Avoids Constraints	Does the measure avoid or minimize the impacts outlined in the planning constraints?	Y/N



# STRUCTURAL MEASURES IDENTIFIED AND RETAINED

## Inner Harbor

- Deepen basin to -12' MLLW (due to existing sheet pile)

## Outer Harbor

- Deepen basin (>22' MLLW with Max at -28' MLLW)
- Increase entrance width by modifying breakwater and / or causeway
- Add more dock space to causeway
- Salvage and relocate east breakwater aligned with F-Street
- Convert portion or all of east breakwater to a causeway with docks
- Increase small boat moorage opportunity

## New Deep-Water Basin

- Extend causeway with dock(s) to deeper water
- Dredge deep-water basin (>28'MLLW), turning basin, and entrance channel as needed for design vessel
- Add marine header with pipeline to land-based storage

## Dredged Material Disposal Options

- Beach nourishment east of Harbor as is current O&M Corps practice
- On-land use as recently done by the Port
- Off-shore zone can still be considered



## NON-STRUCTURAL MEASURE IDENTIFIED

Measures	Retained	Screening Considerations
Creative navigation/mooring options	Ongoing	Best Practice Plan (BPP)
Prioritizing vessel operational needs	Ongoing	BPP
Vessel rafting	Ongoing	Attempting to reduce
Time constraints on dock access	Ongoing	Attempting to reduce
Usage of new areas for shore access	Ongoing	Attempting to reduce
Revision to PONS DP to address congestion/delays	Ongoing	BPP



## SCREENING CRITERIA FOR ALTERNATIVES

Criteria	Definition	Metric
Completeness	Does the alternative meet all study objectives	Y/N
First Cost	Rough order of magnitude estimate	H/M/L
Maintenance Costs	Rough order of magnitude estimate	H/M/L
Acceptability	Is it socially acceptable and legal?	Y/N
Avoids Constraints	Does the measure avoid or minimize the impacts outlined in the planning constraints?	Y/N

Note: Approximately 10 to 12 alternatives were developed during the charette. Various alternatives had common themes and measures.

These initial alternatives were evaluated and grouped in to 7 alternatives for further evaluation. Of these, 3 have already been screened out as shown in the next slide.



# ALTERNATIVES SCREENING

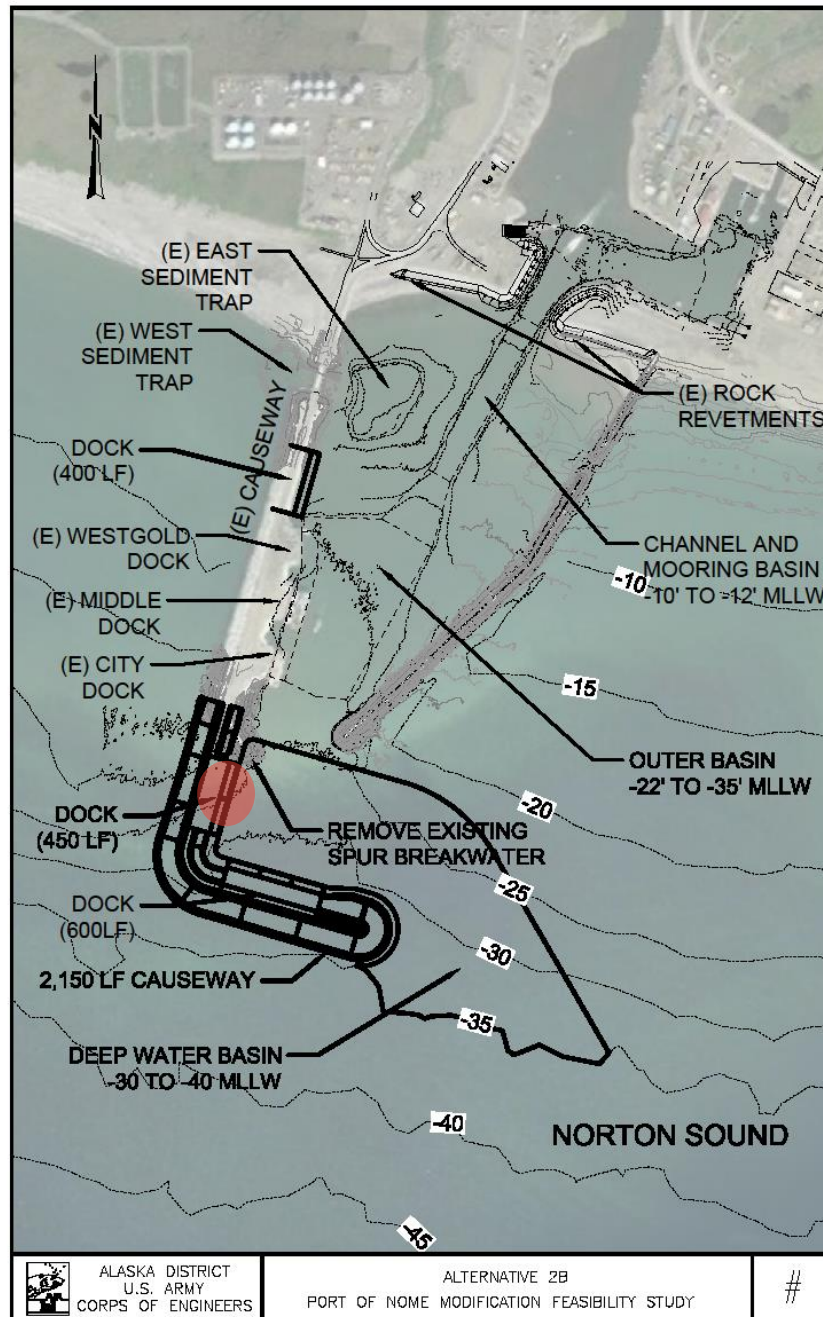
12

Alternatives	Carried Forward	Comments / Screening Considerations
<b>Alt.1:</b> No Action	Yes	Evaluated further in order to inform the FWOP condition.
<b>Alts. 2:</b> “L” Shaped Causeway Extension with Dock(s)	No	These alternatives are screened out because they do not increase the entrance width to the existing Outer Harbor
<b>Alt. 3:</b> “L” Shaped Causeway Extension with Increased Harbor Entrance Width	Yes	Same as Alts 2 but with Main Breakwater end modified to increase width of Outer Harbor entrance which has been identified as navigation concern
<b>Alts. 4:</b> Same as Alts 2 except: Portion of breakwater converted to causeway	Yes	Main difference is amount of breakwater converted to causeway
<b>Alt. 5:</b> Relocate Main Breakwater to east to create larger and deeper Outer Harbor	No	Current concept does not protect harbor entrance from waves and there is a high cost to salvage the existing breakwater. Bedrock may be encountered, and infilling of channel and basin likely excessive
<b>Alt. 6:</b> Detached Breakwater across Outer Harbor Entrance in Deepwater	No	High cost to construct in deep water, creates entrance navigation challenge, and does not meet most objectives
<b>Alt. 7: Same as Alt. 5 except;</b> Extend Causeway to deep water.	Yes	Shape of Causeway extension can be straight or an “L”. Relocate east breakwater from Alt 5 can be a optimization.

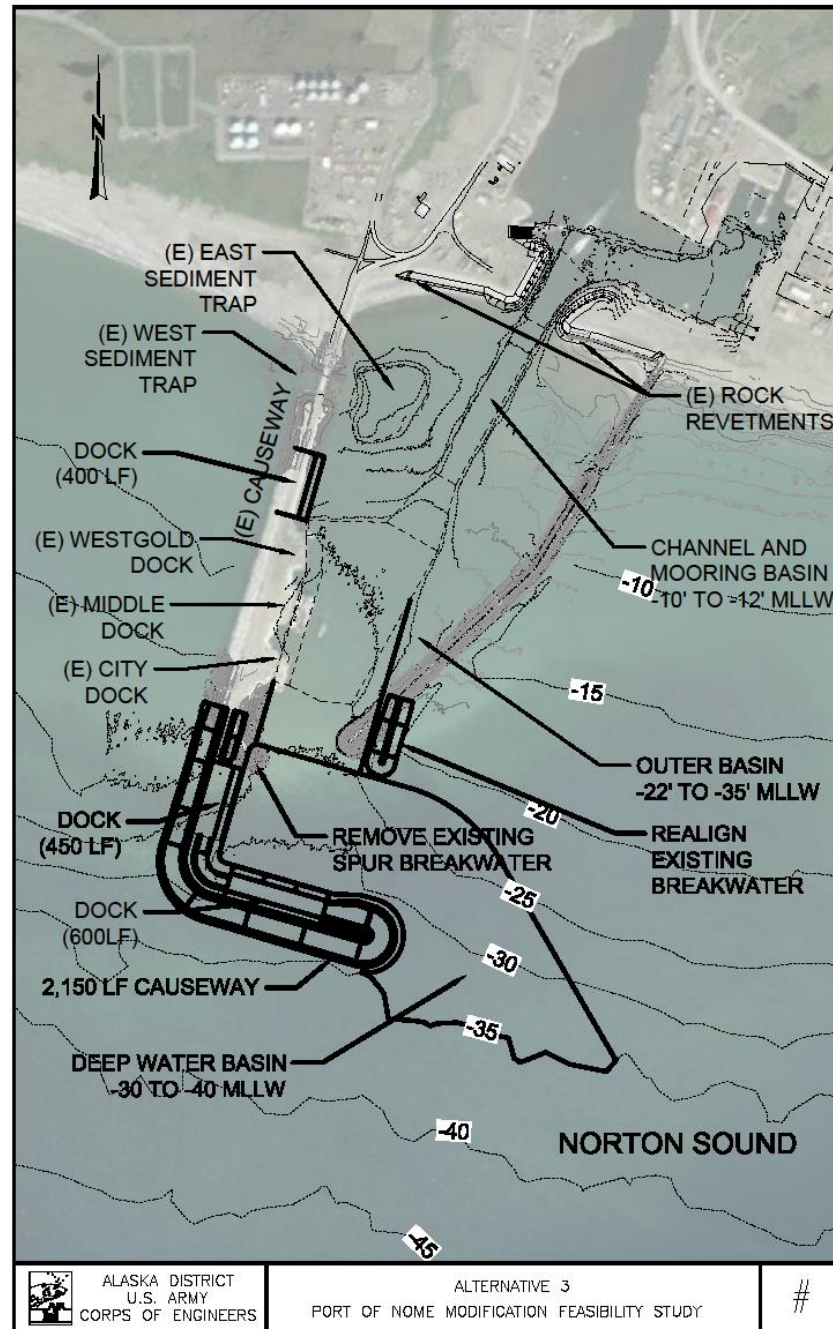
Note: All alternatives include increasing dredge depths to some degree and creating a deep water basin.



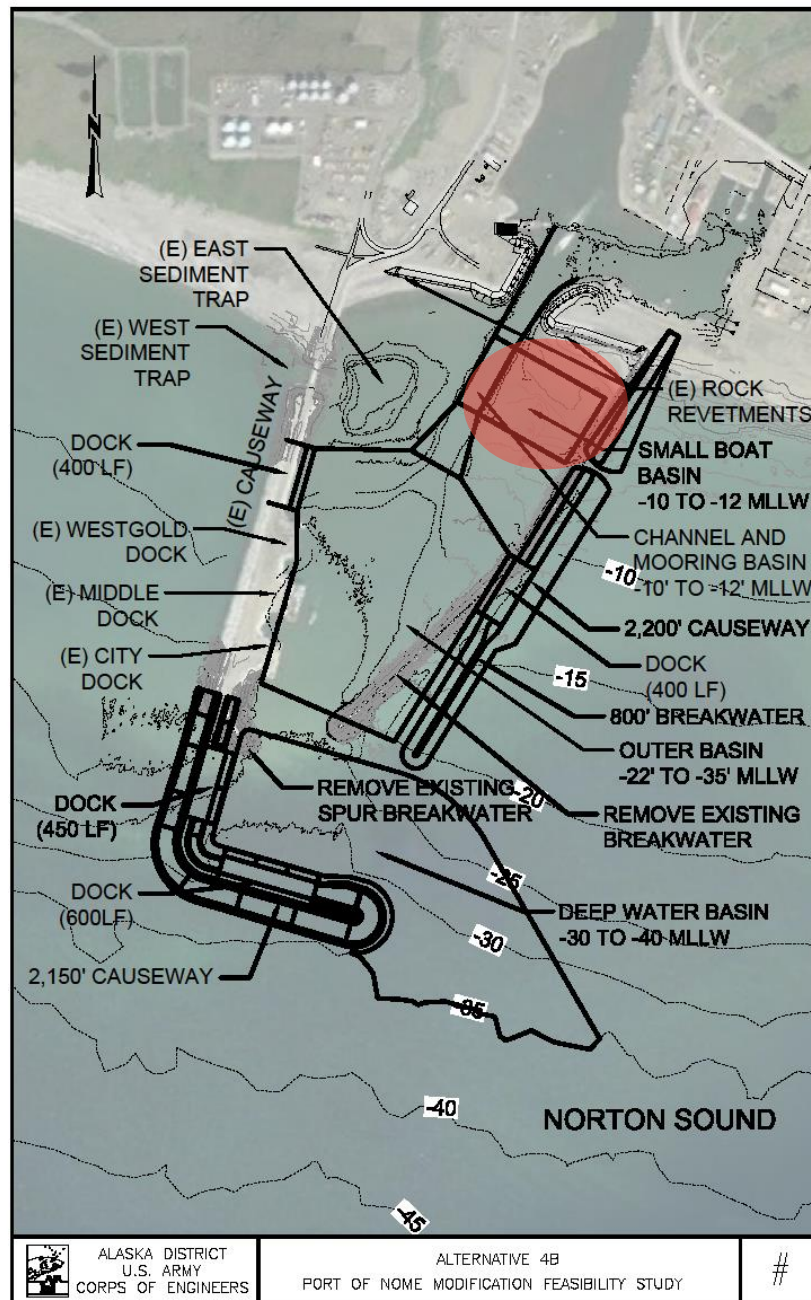
# ALT. 2

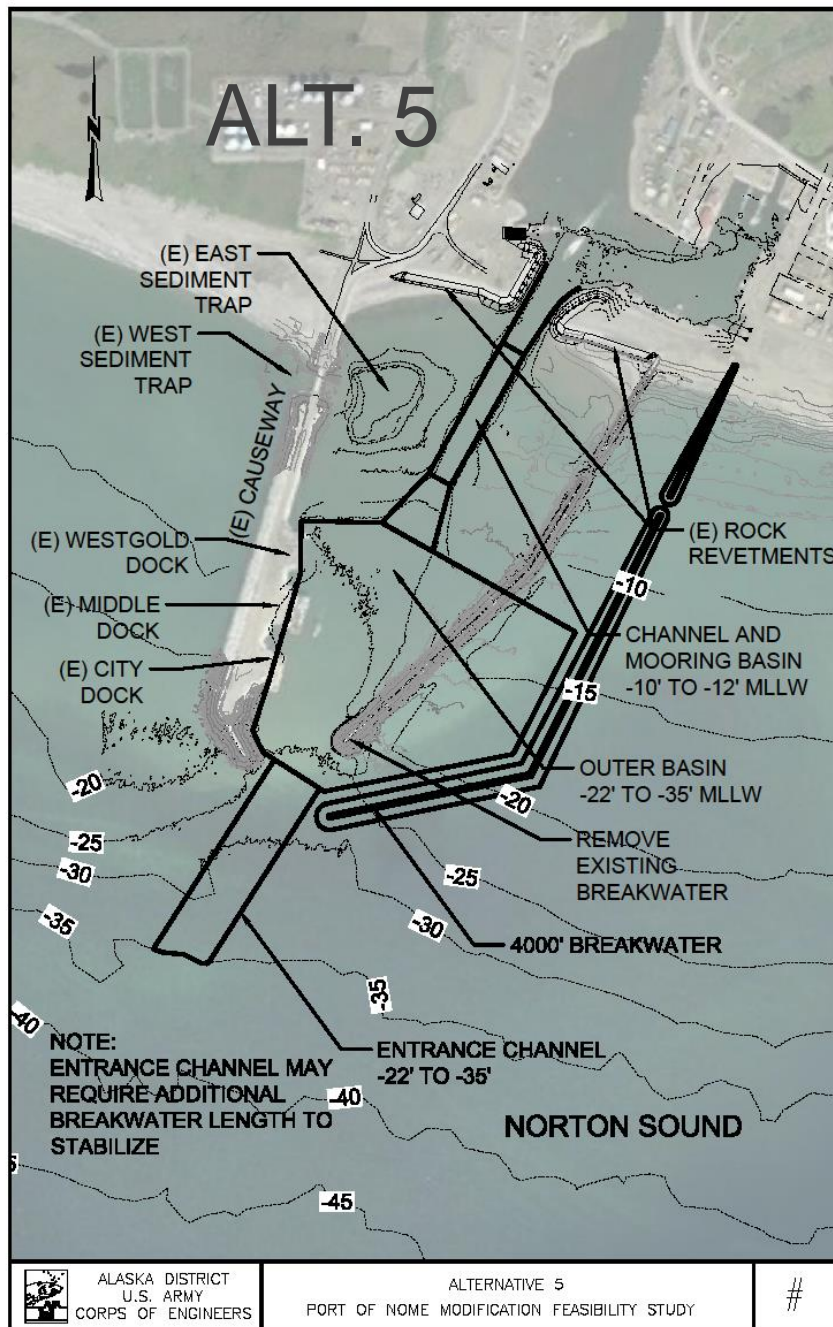


# ALT. 3



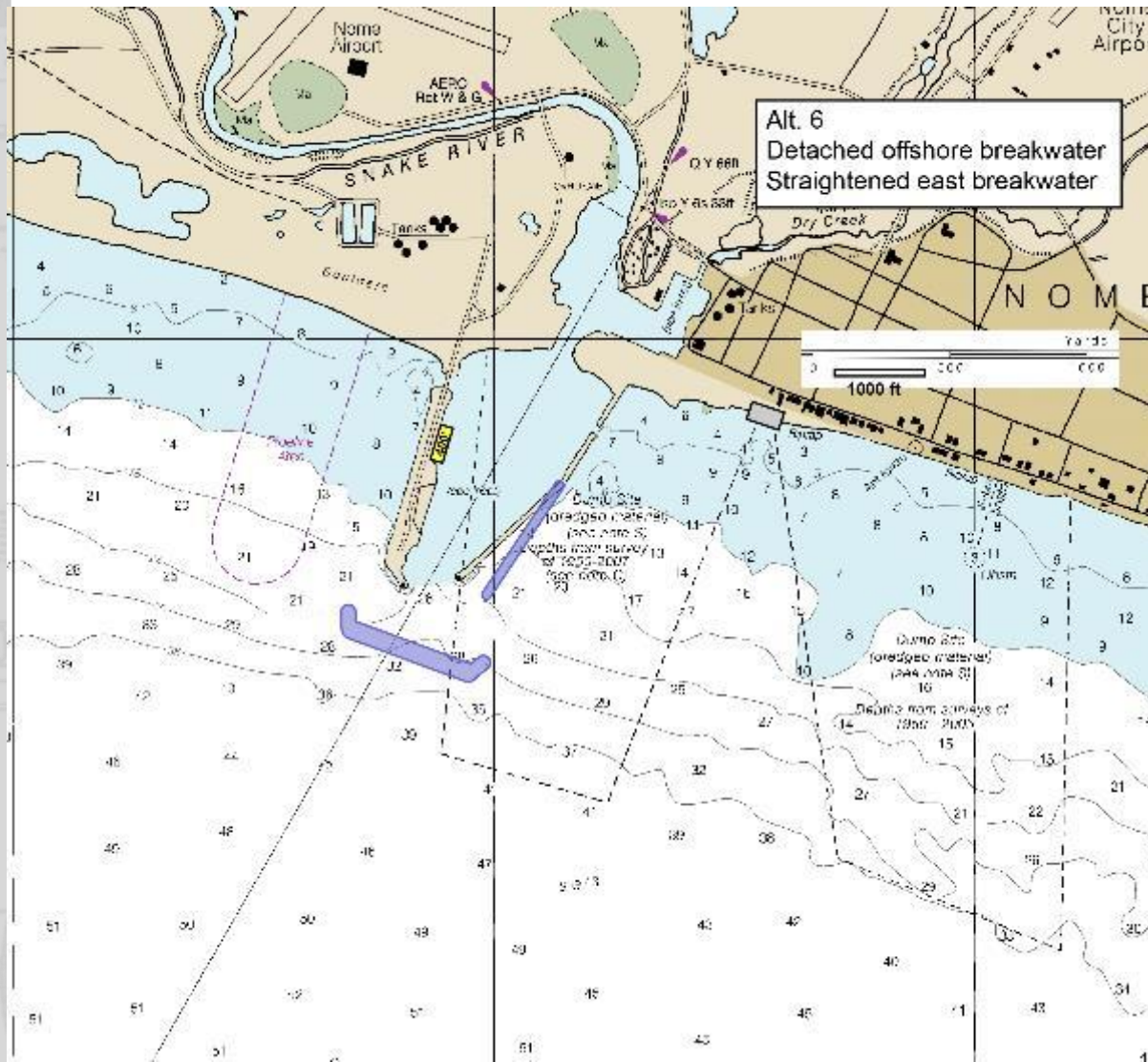
# ALT. 4





Early PDT comments suggest this alternative will be screened out before TSP.

- Current concept does not protect harbor entrance from waves
- There is a high cost to salvage the existing breakwater.
- Bedrock, if encountered, may increase dredge cost.
- O&M Dredging frequency maybe excessive
- Current docks would have to be reconstructed for dredge depths greater than -28 ft MLLW



## ALT. 6

Detached Breakwater Alternative already screened out by PDT.

### Concerns:

- Complicates navigation in and out of Outer Harbor
- Deep draft fuel tankers will still need to lighter or underwater pipeline constructed
- High cost to construct without meeting objectives



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# ALT. 7 ENTRANCE CHANNEL CONCEPT

Shows approximate entrance channel plan view depending on design vessel draft

## Entrance Channel

Length @ -50' MLLW= 2,000'

Length @ -55' MLLW= 5,200'

Length @ -60' MLLW= 9,400'

O&M dredging frequency could be cost prohibitive due to expected infilling rates



# LARGER OFFSHORE TANKER VESSEL



## MISS BENEDETTA

LOA: 600 ft

Beam: 106ft

Draft: 43.3ft

DWT: 50,895 LT



# PATH FORWARD

- TSP - Select a the best alternative for the study (Tentatively Selected Plan) based on Economic, CE/ICA, Environmental, and Hydrological data
- Finish coordination with State, Federal, Tribal, and Public entities
- Send feasibility study out for public comment (Jan-Feb 2019)



# PATH TO TSP: DATA COLLECTION

## FY18 Summer

- Update Bathymetry
- Determine Design Vessel – calculate potential dredge depths/volumes
- Environmental Studies – bottom substrate surveys
- Real Estate Plan Development

## FY19 Winter/Spring

- Ship Simulation of Alternatives – determine what alternatives will require tug-assist
- Plan Optimization

## FY19 Summer

- Environmental Surveys – Fish / Crab surveys
- Plan Optimization

## FY19 Fall / Winter Data Reduction/Analysis

- Alternative Evaluation
- Cost Engineering / Cost Risk Analysis



# PATH TO TSP: ECONOMICS

## NED Analysis Needs

- Commodity and Fleet
  - Analysis of historical data
  - Establish a baseline for forecasting
  - Develop commodity and fleet forecasts

## If HarborSym analysis yields sufficient benefits:

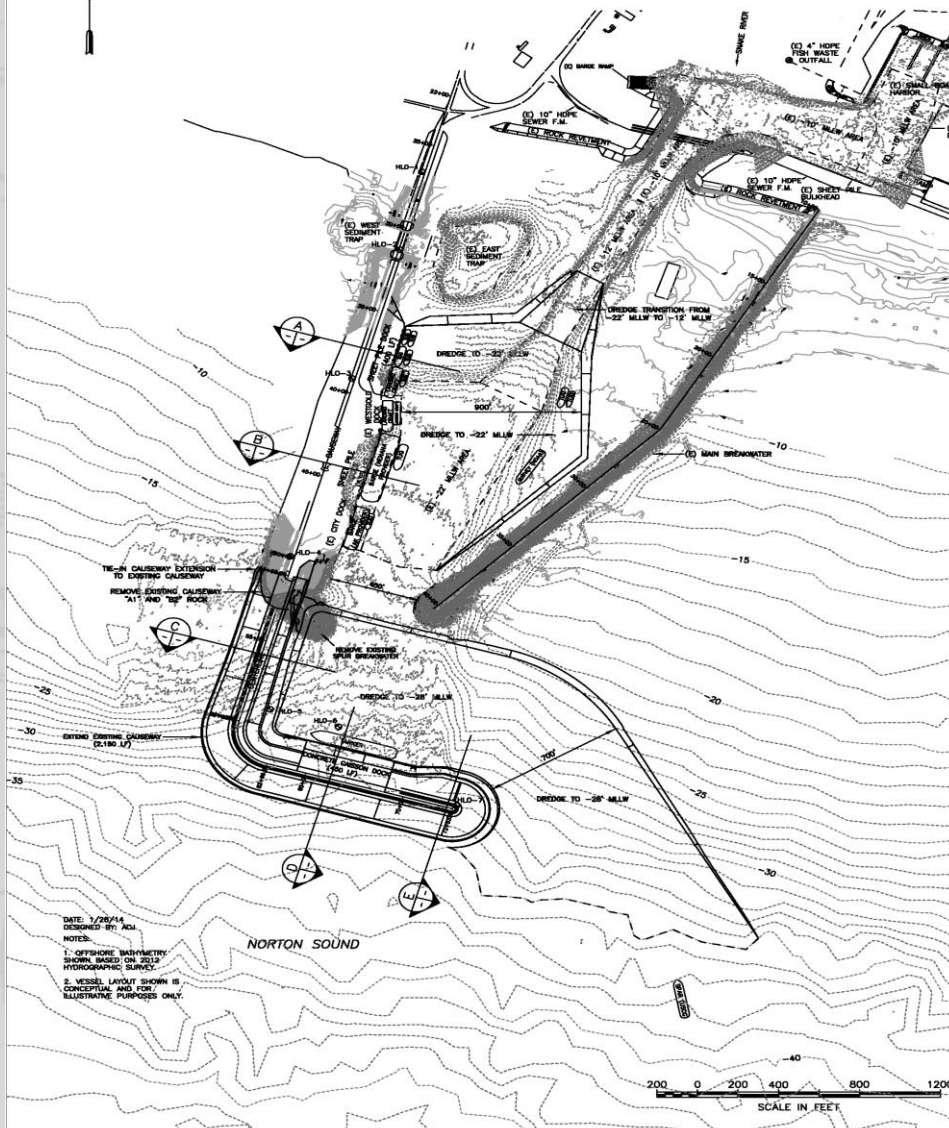
- Port-specific data on small vessel damages via focus group collection
- Spreadsheet model will be developed to quantify additional benefits

## If HarborSym analysis does not yield sufficient benefits:

- Evaluate need for port-specific data/focus group
- Forego spreadsheet model
- Begin Cost Effectiveness/Incremental Cost Analysis (CE/ICA) for Remote and Subsistence justification



# PREVIOUS STUDY ROM COSTS & BENEFITS



Scenario Name	2015 Base Case
Present Value Benefits	\$ 29,280,000
Average Annual Benefits	\$ 1,220,000
Present Value Costs	\$ 242,558,000
Average Annual Costs*	\$ 10,109,000
Benefit to Cost Ratio	0.12
Net Annual NED Benefits	\$ (8,889,000)

Numbers were taken from 2015 Arctic Deep Draft Ports Study

\*Recommended Plan for Nome Harbor Modification

FY15 Federal Discount Rate = 3.375%



ALASKA DISTRICT  
U.S. ARMY  
CORPS OF ENGINEERS

PORT OF NOME ALTERNATIVE 1A  
ALASKA DEEP DRAFT ARCTIC PORT FEASIBILITY STUDY

1A-1



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# ECONOMIC ANALYSIS SO FAR

- **Data show:**
  - The frequency of offshore anchoring has increased
  - The size of those vessels anchoring is increasing
- **Current Analysis indicate similar NED benefits to previous study**
  - Conducting HarborSym
  - Going to conduct CE/ICA analysis to determine regional viability



# PATH TO TSP: ENVIRONMENTAL & CULTURAL RESOURCES

- Continued coordination with agencies
  - NMFS, USFWS, ADFG, SHPO
  - If certain alternatives appear likely, begin Memorandum of Agreement (MOA) coordination for cultural resources
- 11 July – met with NMFS Habitat to identify data gaps, potential dredge disposal location, and project impacts on fish/crab habitat.
- An EA is anticipated. Coordination will clarify if any thresholds are met for an EIS prior to TSP



# ENVIRONMENTAL DATA GAPS / CONCERNS

- **Volume and composition of seabed material to be dredged, and ultimate dredged material placement.** (e.g., will the beach nourishment site be adequate for construction needs, and will the dredged material be amenable to hydraulic transport?)
- **Existing conditions of nearshore marine environment.** Gold-dredging, subsistence crabbing, and possible crab nursery compete with project use of <40-ft MLLW zone, but little is known about this area.
- **Benthic environment in offshore disposal areas.** Much additional data needed if new MPRSA site must be opened.

# PROJECT CHALLENGES/ISSUES

- Federal project may be justified with non-NED benefits as outlined in Section 2006 of WRDA '07 and Section 2105 of WRRDA '14.
- CE/ICA metric determination
  - Definition of Region
- Design vessel and associated project dredge depths
- Bedrock depth potentially shallow enough in Outer Harbor to limit conversion to a deep draft basin
- 24-month schedule is assertive



## LOW

- Moratorium on benthic trawling in region
- Moratorium on commercial fishery in high Arctic (not in region)
- Ship simulation IDs no need for tug
- Changes in Arctic traffic or oil industry activities

## HIGH / INSTRUMENTAL

- 24-month schedule is assertive
- Bedrock depth potentially shallow enough in Outer Harbor to limit conversion to a deep draft basin

## MEDIUM

- Discovery of human remains or subterranean features
- Disposal location/method
- No site-specific geotechnical data for new main breakwater alignment
- Geotechnical investigation in PED results in unexpectedly high dredge costs

# RISK ITEMS





# QUESTIONS?

**Jenipher Cate, Project Manager**  
**Alaska District**  
**U.S. Army Corps of Engineers**



***“Building and Preserving Alaska’s Future”***

# USACE PLANNING ASSOCIATES PROGRAM DEEP DRAFT NAVIGATION ECONOMICS

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## HarborSym Corporate Model

A discrete event Monte-Carlo simulation model designed to facilitate economic analyses of proposed navigation improvement projects in coastal harbors.

### Capabilities:

- Calculates vessel transiting time in harbor
- Captures inefficient delay times
- Calculates transportation cost from prior/next port and overseas distance
- Incorporates risk and uncertainty



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