Alaska Department of Transportation & Public Facilities

Cascade Point Ferry Terminal Status Update

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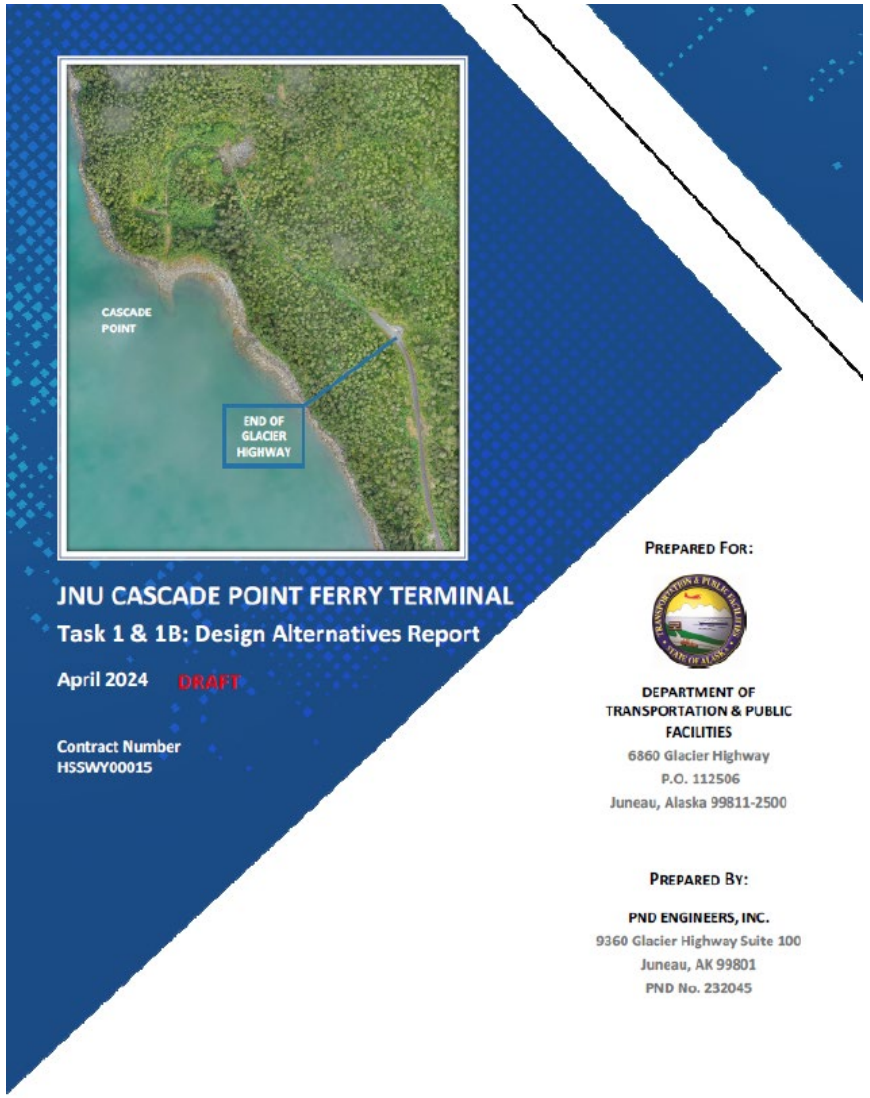
May 31, 2024

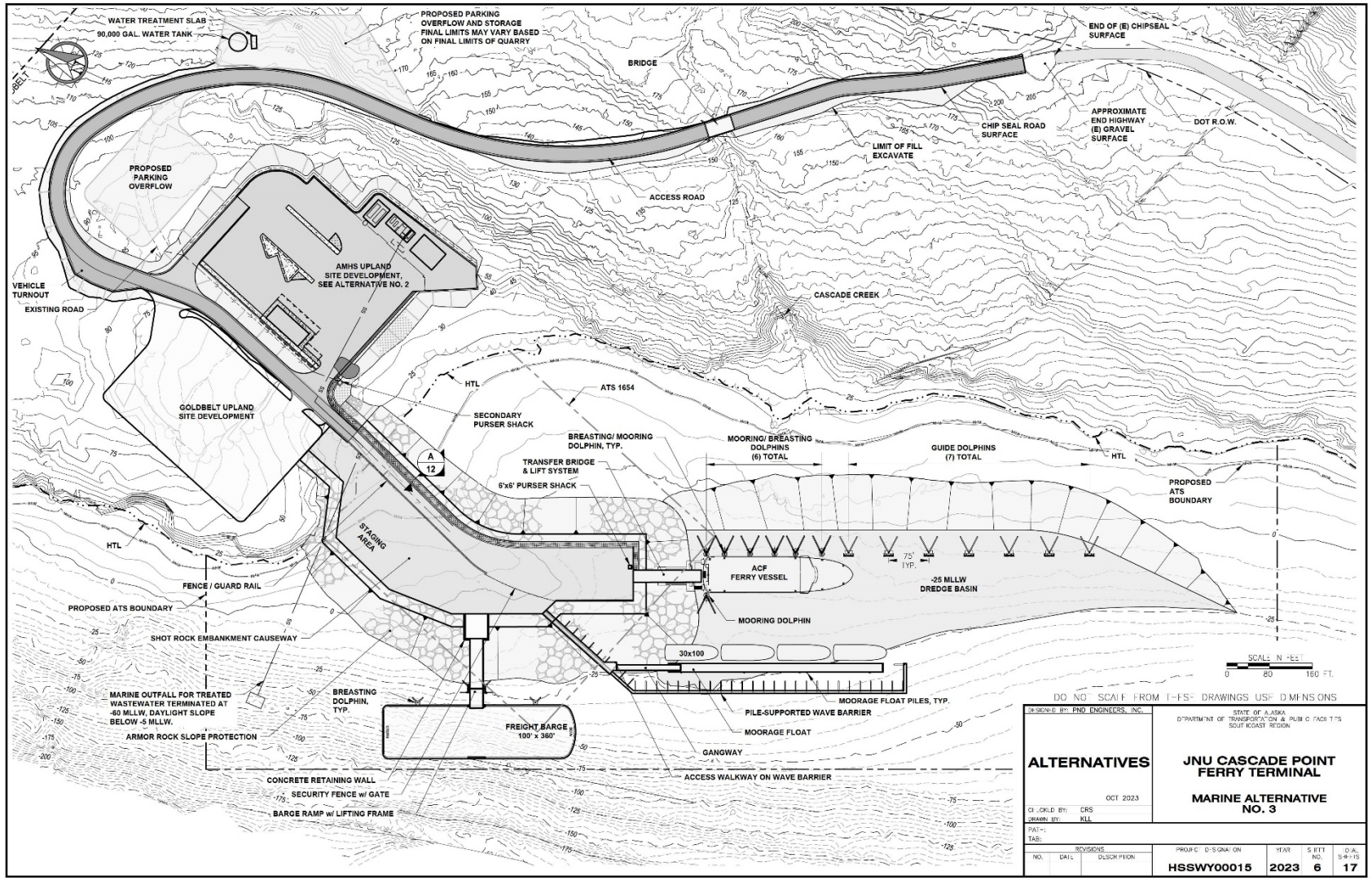
Cascade Point Status Update

- Presentation Based on Draft Design Alternative Report
- Evaluation of Four Alternatives
- Established an Objective Framework to Evaluate Alternatives
- Today's Focus:
  - Alternative Recap
  - Alternative Matrix
  - Wind and Wave Analysis Results
  - Next Steps



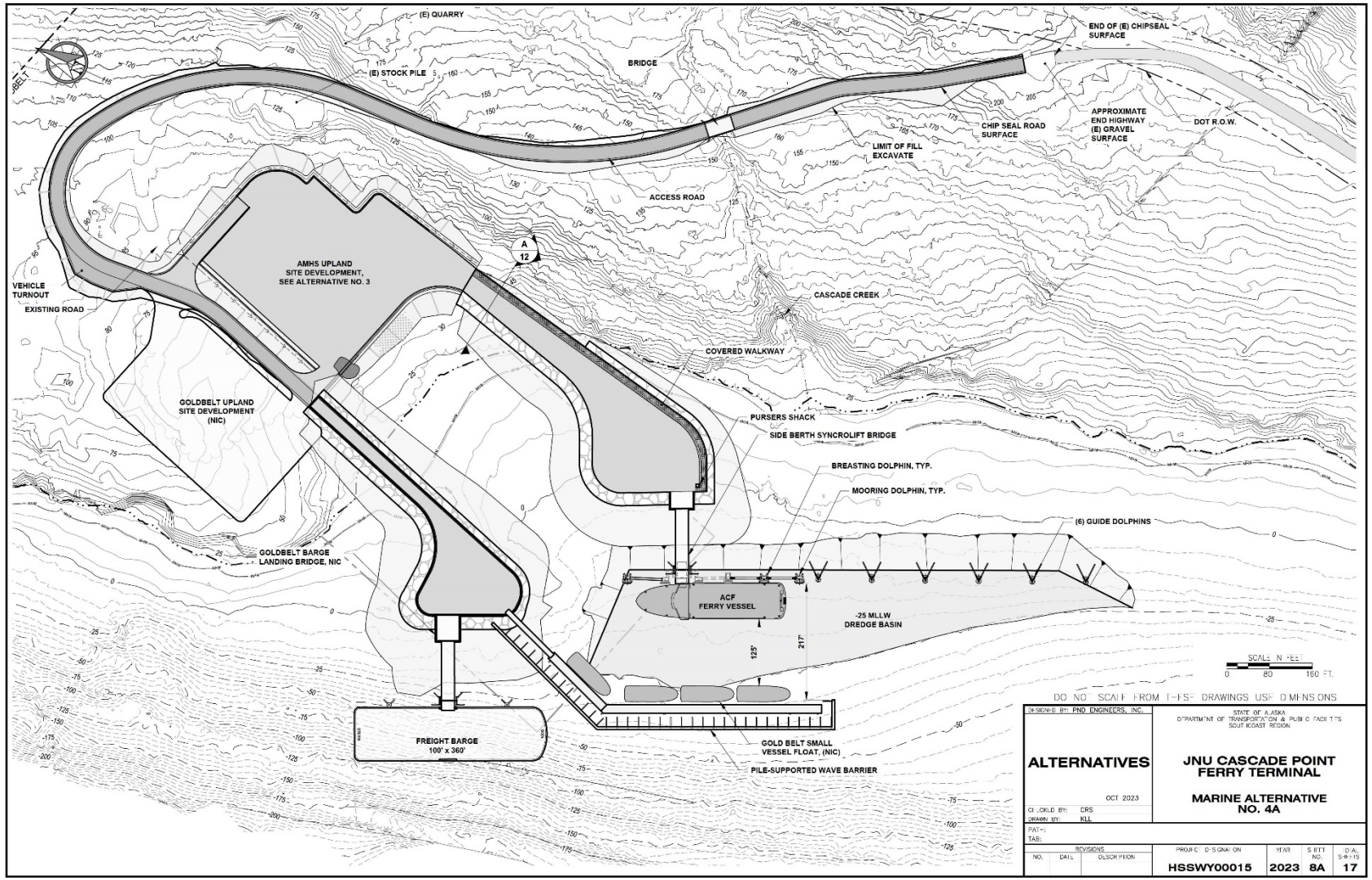
End Berth Alternative No. 3

- 3 Options were considered for end berthing
- Alternative No. 3 resulted in the preferred end berth alternative



Side Berth Alternative No. 4

- Alternative No. 4 was preferred Side Berth alternative
- Side Berth alternative generated to allow for direct evaluation of both vessel configurations at the site



Alternatives Decision Matrix

- Alternatives Decision Matrix provides an objective process to determine a preferred alternative for the project.
- The matrix examined and ranked 17 different project-specific criteria. (EXAMPLE SHOWN BELOW)
- **The matrix analysis concluded Marine Alternative No. 3 to be the Preferred Alternative.**
- The below matrix compares the leading criteria as an example, see hand out for the full matrix

CASCADE POINT FERRY TERMINAL - ALTERNATIVES DECISION MATRIX

Category		Decision Factors: Criteria	Weight %	Marine Alternative Scoring: Alternative 1 Input Score	Alt 1 Normalized Score	Alt 1 Weighted Score	Alternative 2 Input Score	Alt 2 Normalized Score	Alt 2 Weighted Score	Alternative 3 Input Score	Alt 3 Normalized Score	Alt 3 Weighted Score	Alternative 4 Input Score	Alt 4 Normalized Score	Alt 4 Weighted Score	Definition of Criteria
Cost	1	Construction Cost	30.0%	1.10	0.91	0.27	1.03	0.97	0.29	1.02	0.98	0.29	1.00	1.00	0.30	ROM estimated construction cost $ amount (ratio to lowest cost)
Operations	6	Facility Operability	10.0%	1.00	1.00	0.10	1.00	1.00	0.10	1.00	1.00	0.10	1.00	1.00	0.10	Wind and wave effects on seasonal operability if construction is phased without breakwater operations. 1 = Function as homeport (potential year-round operations) 2 =Summer seasonal service only (with some weather interruptions) 3 = Limited seasonal service
	9	AMHS Operational Preference	10.0%	3.00	0.33	0.03	3.00	0.33	0.03	1.00	1.00	0.10	2.00	0.50	0.05	Is this a preferred operational alternative for AMHS? 1 =Preferred operation 2 = Neutral operation 3 = Not practical for operation
	10	Impacts to Upland Area	1.0%	2.00	1.00	0.01	2.00	1.00	0.01	2.00	1.00	0.01	3.00	0.67	0.01	Does the alternative effect the upland area onsite? 1 =Minimal impact 2 = Neutral impact
Risk	15	Operational Risk	5.0%	3.00	0.67	0.03	3.00	0.67	0.03	2.00	1.00	0.05	2.00	1.00	0.05	Risk of operational limitations based on facility layout, Including vessel maneuverability, berthing layout, and loading/unloading operations. 1 = Low 2 = Moderate 3= High 4 = Very high
			100.0%	Overall Scores*		75.36			69.76			96.41			86.43	

Highest Scoring Alternative:	Alternative 3

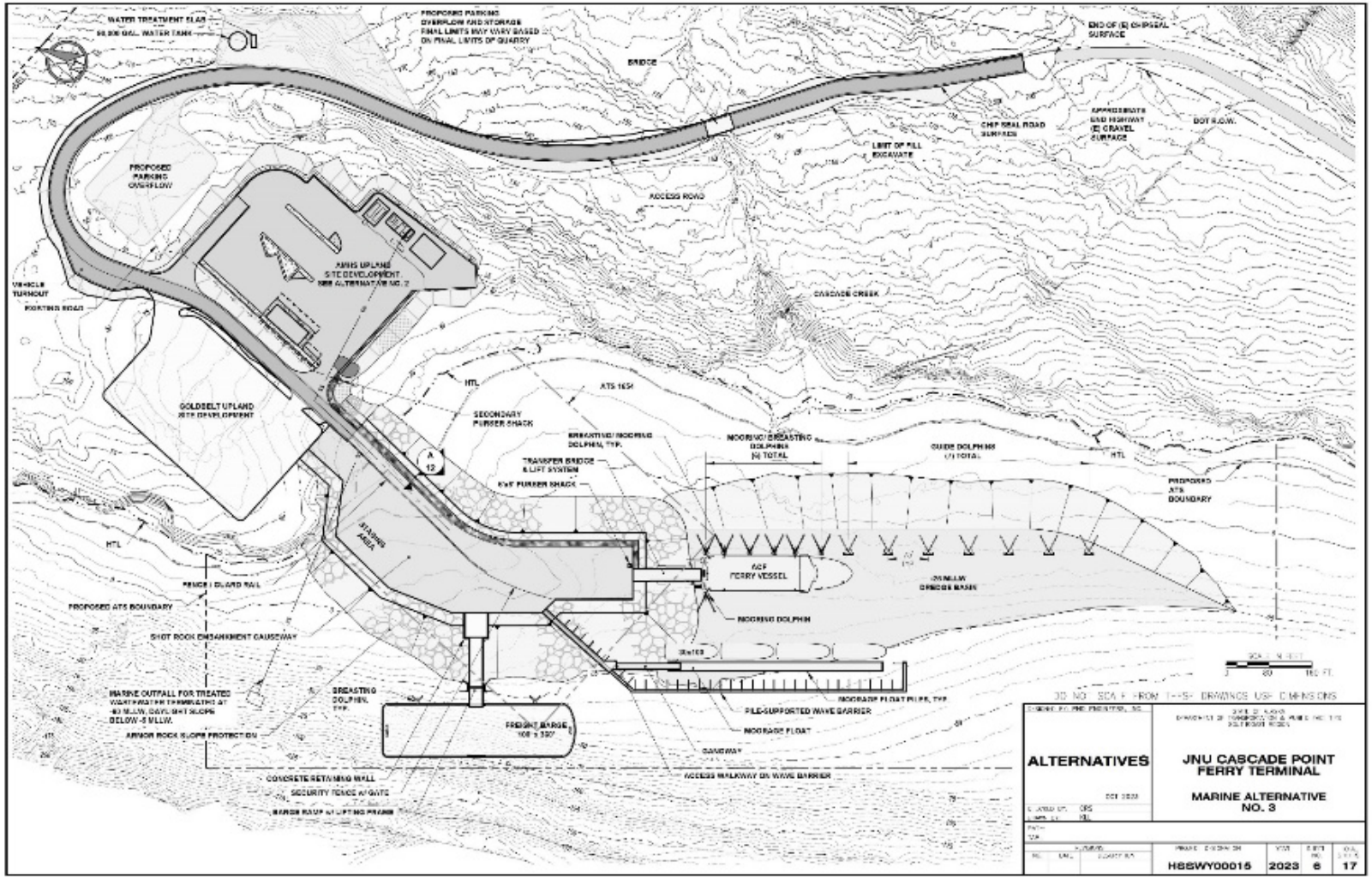
Score Summary by Category

Major Category	Total Weight	Alternative 1 Score*	Alternative 1 Rank	Alternative 2 Score*	Alternative 2 Rank	Alternative 3 Score*	Alternative 3 Rank	Alternative 4 Score*	Alternative 4 Rank
Cost	40.0%	37.40	2	33.47	4	39.43	1	37.26	3
Operation	42.0%	25.63	3	25.46	4	41.48	1	31.17	2
Expansion	8.0%	5.50	2	4.00	4	5.50	2	8.00	1
Risk	10.0%	6.83	3	6.83	3	10.00	1	10.00	1
Totals	100.0%	75.4	3	69.8	4	96.4	1	86.4	2

*Note matrix scores multiplied by 100 for clarity.

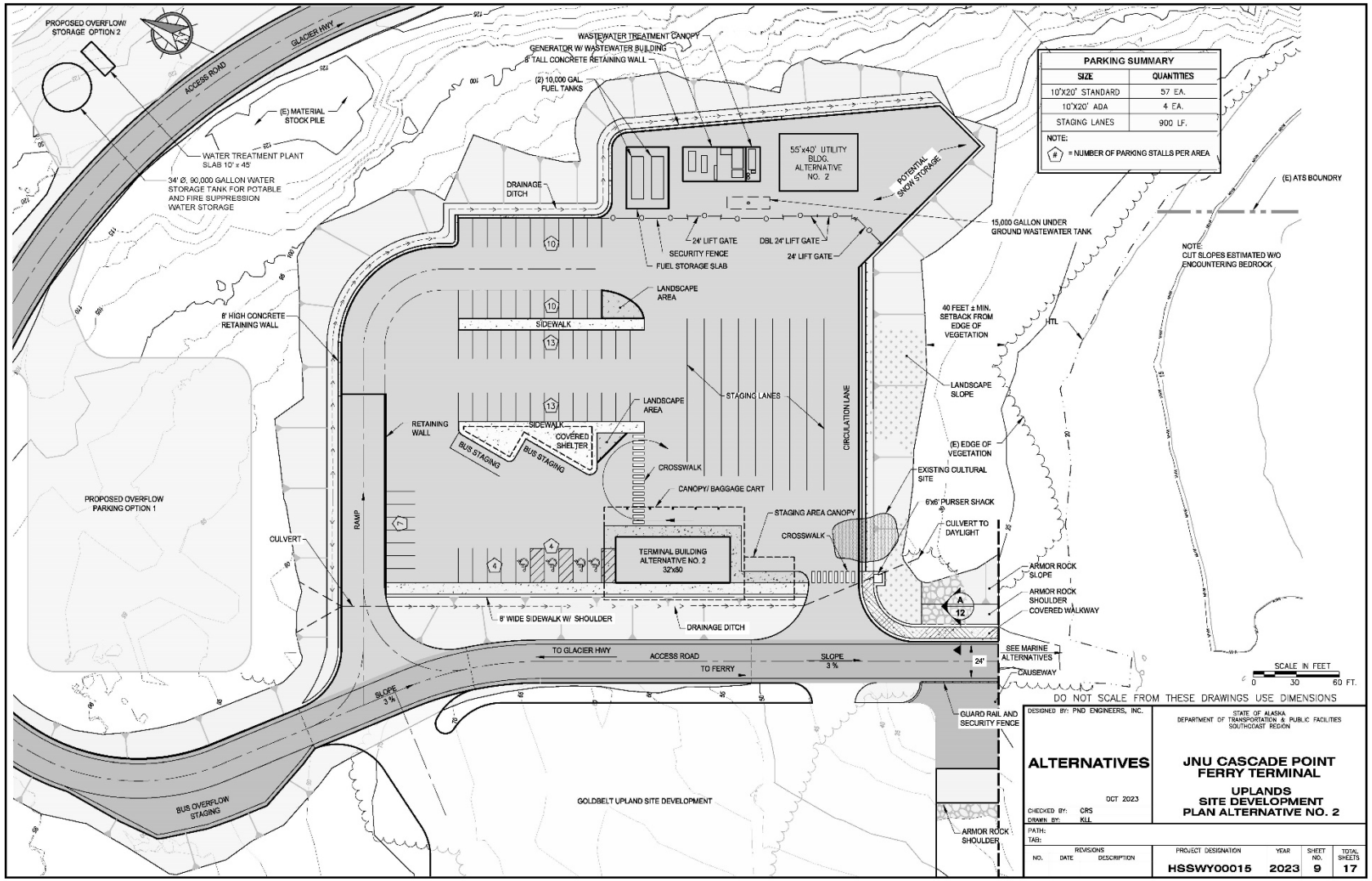
Preferred Alternative No. 3

- **Pro**
  - Preferred AMHS configuration
  - Provides an engineered all-season home port
  - Provides separation for user groups on causeway
- **Con**
  - Requires a large dredge area for vessel access (Potential extended permit timing)



Uplands

- General configuration of uplands improvements
- Full build out of site development, utilities, terminal and support buildings, and passenger ingress and egress shown
- Elements shown only associated with AMHS operations



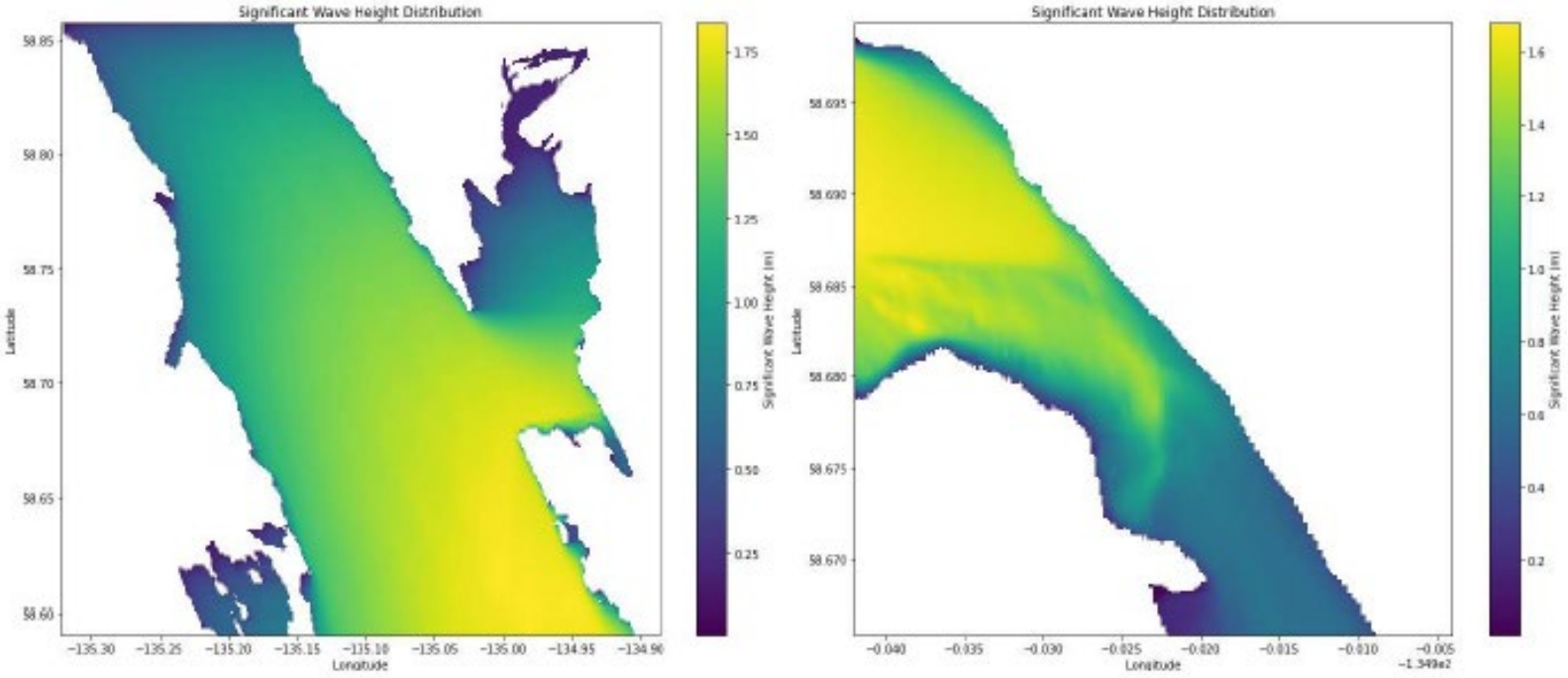
Alternative No. 3
Construction Contract Cost Estimate

Alternative No. 3 - Single Contract	
	Estimated Construction Contract Costs
Marine Facility	$65,000,000-75,000,000
Uplands Staging Area	$15,000,000-$20,000,000
Access Road	$2,500,000-$5,000,000
Sub-Total Construction Contract Costs	**~$90,000,000**

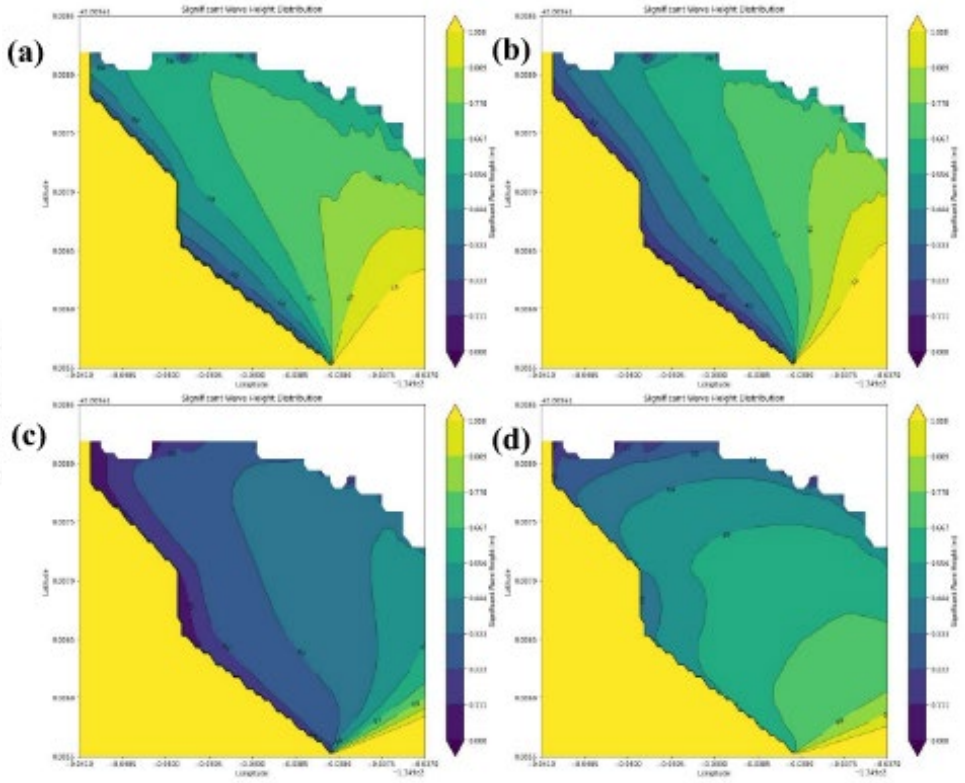
- The marine component includes all offshore development including the causeway
- Construction contract costs included above only AKDOT facility components (excludes barge landing and additional causeway fill)
- Due to the small range in construction contract costs between alternatives, Alternative No.3 was preferred due to operational preference as was shown in the decision matrix.

Wind and Wave Analysis

- **Marine Operability Analysis**
  - Site operability evaluated for functionality without breakwater/wave barrier construction
  - **Wave Barrier in Alternative No. 3 creates an engineered all-season port**
  - Without the wave barrier it is a seasonal port only



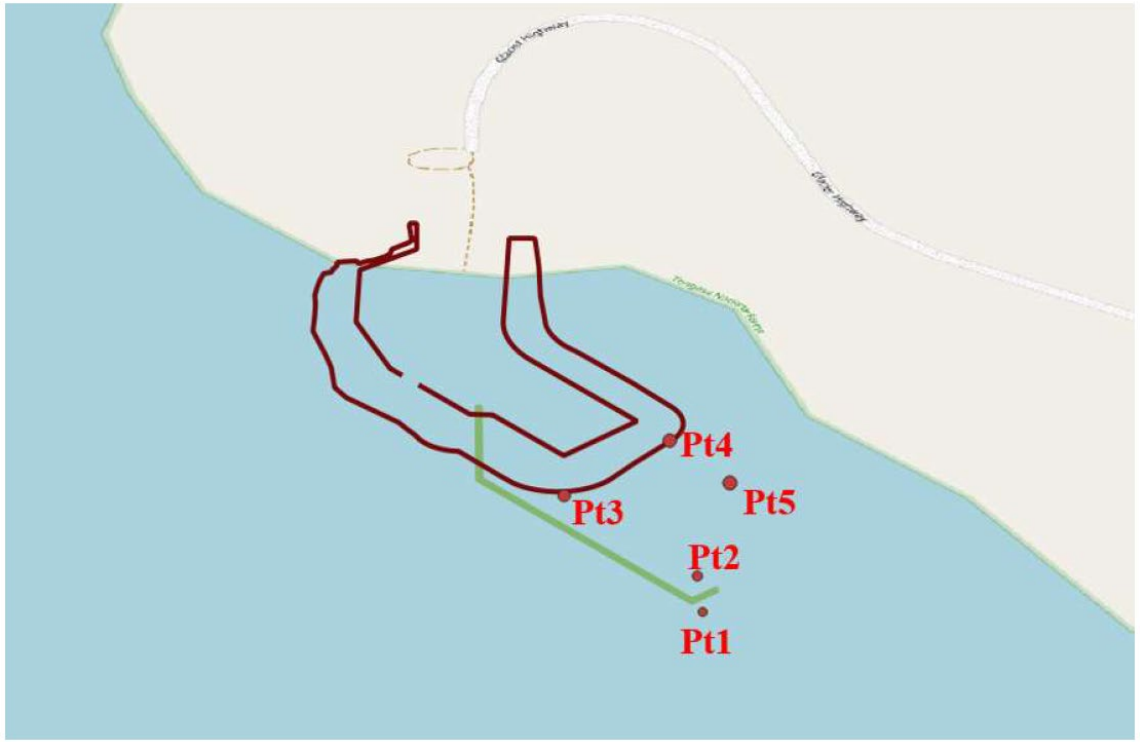
Significant Wave Height Distribution Maps



Wave propagation behind Breakwater from various directions

Wind and Wave Analysis

- **Breakwater Effectiveness**
  - Wave modeling used the wave barrier shown in Alternative No. 3
  - Report shows a **70-90% reduction in wave dissipation** from most directions.



Location Points for Measurements

Table 6 Northwest wind condition

Return Period (years)	Wind Speed (knots)	Measuring point	No wave barrier Hs (ft)	No wave barrier Tp (s)	With wave barrier Hs (ft)	With wave barrier Tp (s)	% Reduction
100	83.6	Pt1	11.93	7.36	11.61	7.41	2.7%
		Pt2	11.25	7.40	2.26	2.28	79.9%
		Pt3	11.53	7.32	1.85	2.06	84.0%
		Pt4	8.98	7.28	2.07	2.10	77.0%
		Pt5	9.28	7.40	2.22	2.25	76.1%

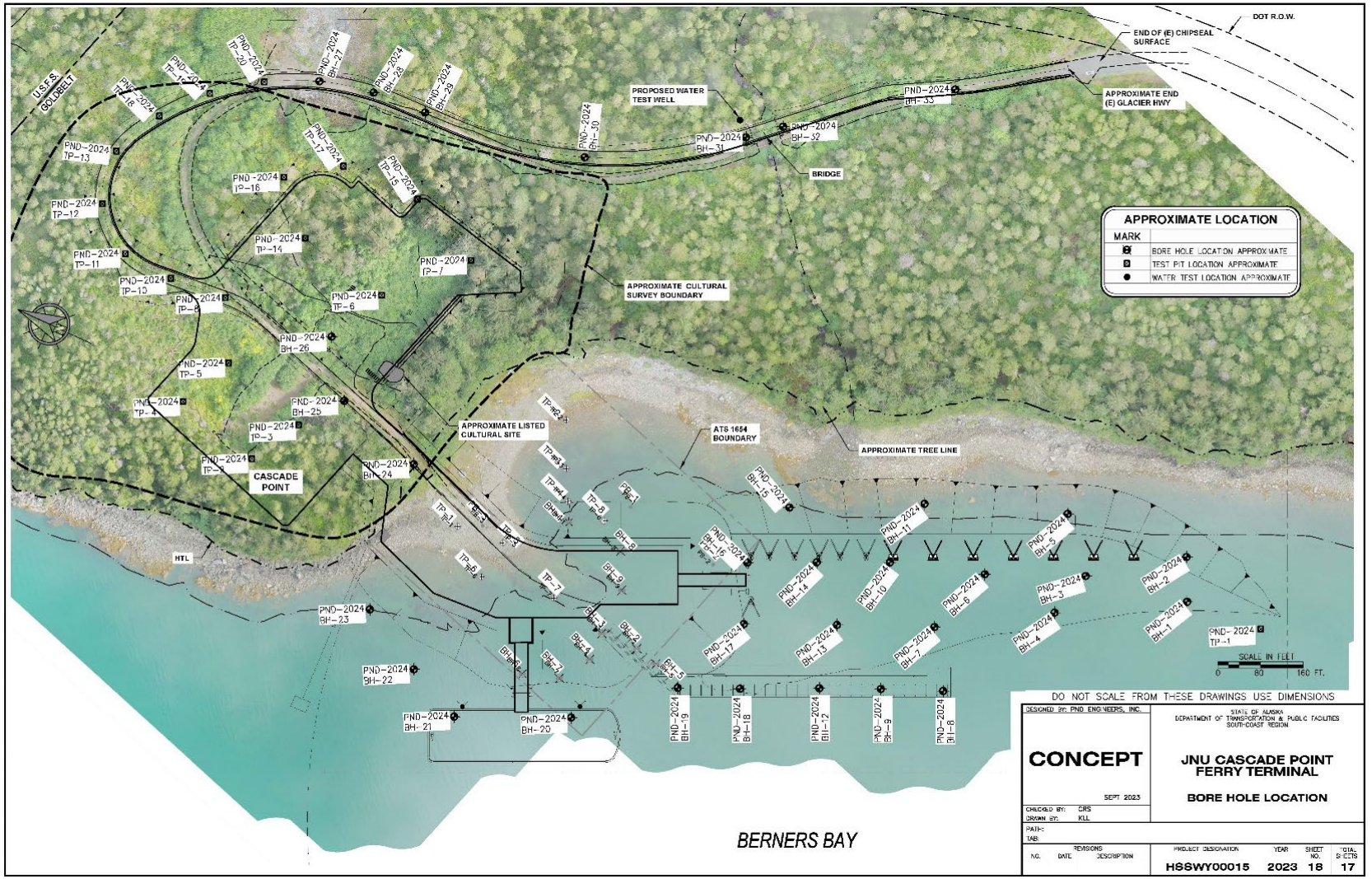
Table 3 South wind condition

Return Period (years)	Wind Speed (knots)	Measuring point	No wave barrier Hs (ft)	No wave barrier Tp (s)	With wave barrier Hs (ft)	With wave barrier Tp (s)	% Reduction
100	61.2	Pt1	4.71	3.45	4.68	3.45	0.8%
		Pt2	4.73	3.47	2.89	3.33	39.0%
		Pt3	4.88	3.50	1.40	3.08	71.4%
		Pt4	4.71	3.51	2.53	3.35	46.2%
		Pt5	4.63	3.48	2.86	3.33	38.1%

Typical Breakwater Effectiveness Table (South and NW Direction Shown)

Geotech Exploration/Offshore Bathymetry Survey

- On schedule for 2024 Summer geotechnical exploration and bathymetry survey
- Exploration Plan covers exploration for uplands and offshore structures Alternative No. 3 to define parameters for design and construction
- Bathymetry Survey establishes contours for development of dredge and pile quantities
- Next Step: Moving Design to 30% by fall



Thank you!

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Cascade Point Site Looking South to Echo Cove