Pre-Application Alternatives Analysis

State of Maine Offshore Wind Port

Searsport, Maine

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List of Abbreviations

BOEM	Bureau of Ocean Energy Management
°C	Degrees Celsius
CAD	Contained Aquatic Disposal (Cell)
CDC	Centers for Disease Control and Prevention
CEQ	Council on Environmental Quality
CIA	Community Impact Assessment
CJEST	Climate and Economic Justice Screening Tool
CPKC	Canadian Pacific Kansas City Railroad
CWA	Clean Water Act
CY	Cubic Yard
DACF	Department of Agriculture, Conservation, and Forestry (Maine)
DEP	Department of Environmental Protection
DMR	Department of Marine Resources
DOC	Department of Commerce
DOE	Department of Energy
DOI	Department of Interior
DOT	Department of Transportation
DOW	Diamond Offshore Wind
EIS	Environmental Impact Statement
EOEEA	Executive Office of Energy and Environmental Affairs
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FOSW	Floating Offshore Wind
GEO	Governor's Energy Office
GHG	greenhouse gas
GW	Gigawatt
HCP	Highway Corridor Priority
IRS	Internal Revenue Service
JUPC	Joint Use Planning Committee
LEDPA	Least Environmentally Damaging Practicable Alternative
LFA	Lead Federal Agency
LD	Legislative Document
MaineDOT	Maine Department of Transportation
MARAD	Maritime Administration
MDEP	Maine Department of Environmental Protection
MDIFW	Maine Department of Inland Fisheries and Wildlife
MDMR	Maine Department of Marine Resources
MHPC	Maine Historic Preservation Commission
MeRA	Maine Research Array
ME	Maine
MHF	Material Handling Facility

MLLW	Mean Lower Low Water
MPA	Maine Port Authority
MRS	Maine Revised Statutes
MPUC	Maine Public Utilities Commission
MWh	Megawatt Hours
NAVD	North American Vertical Datum
NEPA	National Environmental Policy Act
NM	Nautical Mile
NMFS	National Marine Fisheries
NOAA	National Oceanic and Atmospheric Administration
NREL	National Renewable Energy Laboratory
NRPA	Natural Resources Protection Act
NWI	National Wetland Inventory
O&M	Operations and Maintenance
OEM	Original Equipment Manufacturer
OSW	Offshore Wind
OSWP	Offshore Wind Port
PAH	Polycyclic Aromatic Hydrocarbon
PDS	Portland Harbor Ocean Disposal Facility
PL	Public Law
PSF	Pounds per Square Foot
PTOW	Pinetree Offshore Wind
RI	Rhode Island
RDS	Rockland Ocean Disposal Facility
RPS	Renewable Portfolio Standards
S&I	Staging and Integration
SIPI	Sears Island Planning Initiative
SR	State Route
SSB	Semisubmersible Barge
STB	Surface Transportation Board
SWH	Significant Wildlife Habitat
UN	United Nations
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
USMRC	U.S. Maritime Resources Center
WEA	Wind Energy Area
WOSS	Wetlands of Special Significance
WOTUS	Waters of the U.S.
WTG	Wind Turbine Generator

Executive Summary

On behalf of the State of Maine, the Maine Department of Transportation (MaineDOT) and the Maine Port Authority (MPA) are evaluating alternatives for a marshalling wind port facility in Maine to support the commercial scale development of the floating offshore wind (FOSW) industry. Development of an offshore wind port (OSWP) in Maine that meets the unique requirements of FOSW is needed to unlock the potential of offshore wind energy in the Gulf of Maine and ensure that Maine businesses and residents share in the economic benefits of this emerging industry. The proposed OSWP would be a transformational step towards meeting the clean energy demands of the region; reducing harmful emissions and the State's dependence on fossil fuels; and supporting the advancement of climate and economic goals, plans and initiatives.

This Draft Pre-Application Alternatives Analysis for the State's proposed floating OSWP presents the State's OSWP goals, defines the minimum design criteria and other practicability considerations associated with the successful development of an OSWP in Maine, and details the results of engineering and planning analyses at 23 sites throughout the state. The site selection process was completed in three rounds: an initial site screening based on minimum design criteria and navigation channel characteristics (Section 8); a second round that included further analysis on sites that could be made to meet minimum design criteria (Section 9); and a third round that analyzes the two best options, Mack Point and Sears Island (Section 10).

Consistent with the goals and strategies outlined in the *Maine Offshore Wind Roadmap* (2023) (Roadmap), providing access to improved job prospects and spurring economic development, particularly in economically distressed areas, are important considerations in OSWP siting. The communities in and around Searsport (Waldo County) and Eastport (Washington County) qualify as disadvantaged for multiple federal economic and environmental criteria (Section 9.2). Waldo County presents a favorable combination of available labor force and affordable housing options making it an attractive host community for the proposed OSWP.

Projects that propose to impact waters of the U.S. (WOTUS) must meet the Clean Water Act (CWA) Section 404(b)(1) guidelines (40 CFR 230). The U.S. Environmental Protection Agency (EPA) established the guidelines that constitute the substantive environmental criteria used in evaluating activities regulated under Section 404 of the CWA. The regulation defines an alternative as practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics considering overall project purposes. The State identified four factors that frame the practicability of a particular site based on this definition: (i) availability of land, (ii) constructability, (iii) operational functionality, and (iv) cost (Section 9.1).

These factors were applied to seven alternatives that meet the minimum design criteria: Cousins Island, Mitchell Field, Estes Head Terminal, Sears Island and Mack Point Hybrid, Mack Point, and Sears Island. The "Sprague Alternative" was presented to the State in the fall of 2023 and is also addressed in this document. The results of the analyses are summarized in a matrix format which is included as Attachment A. Each of these alternatives was eliminated for failure to meet key constructability or operational functionality criteria.

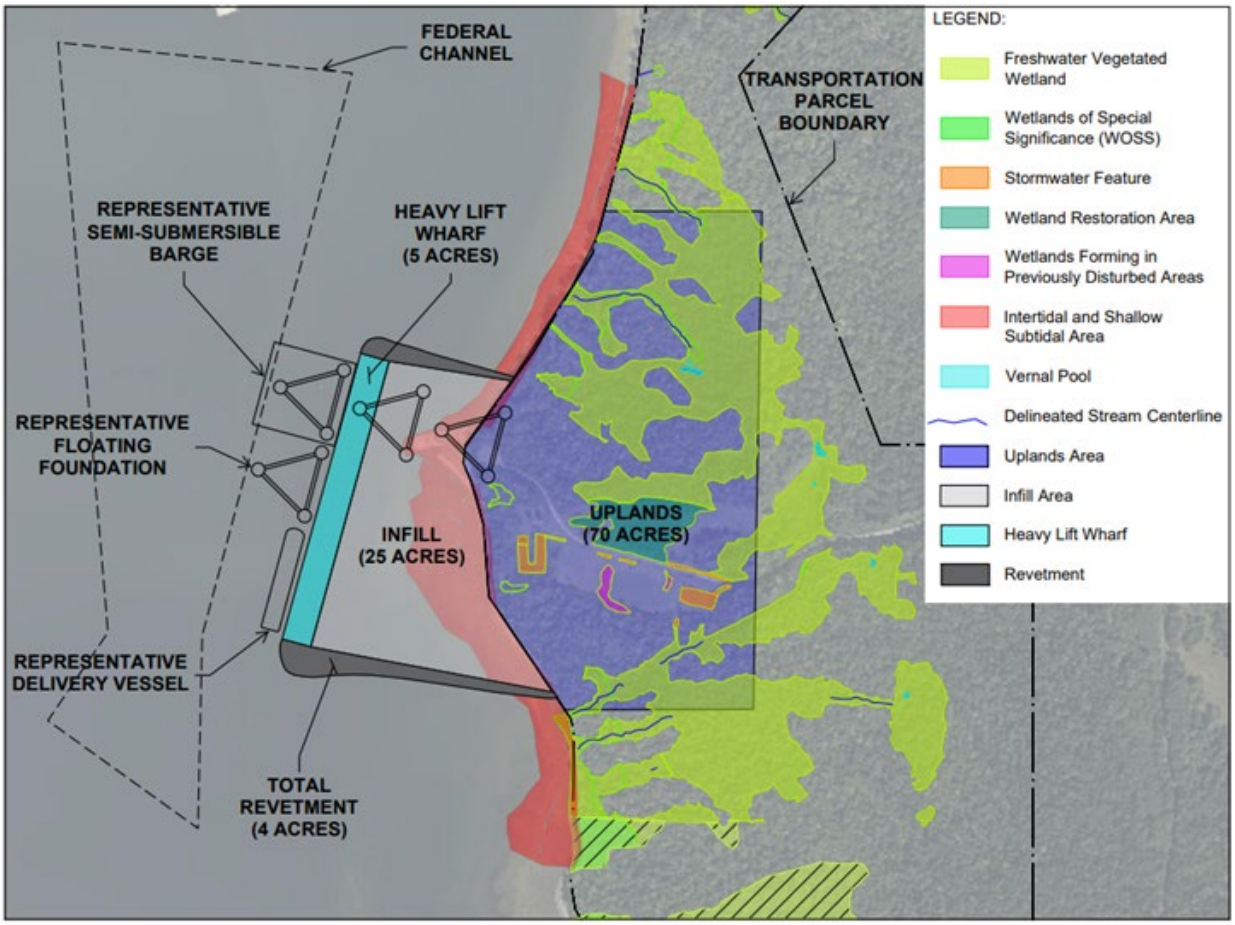
Mack Point and Sears Island were carried forward for a detailed analysis (Section 10), including evaluation of preliminary detailed cost estimates and preliminary impacts to surface waters (Exhibit ES-1). These two options (Exhibit ES-2 and Exhibit ES-) will be carried forward for analysis in a Draft Environmental Impact Statement (EIS) in accordance with the National Environmental Policy Act (NEPA). As detailed in this Pre-Application Alternatives Analysis, Sears Island is the preferred OSWP alternative for the State of Maine.

Exhibit ES-1. Summary Comparison of an OSWP on Sears Island and Mack Point

	Preferred Alternative - Sears Island	Optimized Mack Point Alternative
Dredging	None	22 acres (200,000-300,000 cubic yards)
Ocean Fill	34 acres	39 acres
Freshwater Wetlands	30 acres	10 acres
Site Ownership/Site Control	State owned	Privately owned (lease required)
Relocation of Infrastructure	None required	Yes (Rail, Tanks, Warehouses)
Material Export	440,000 cubic yards	640,000 cubic yards
Cost[1]	$525M	$614M
[1]These cost estimates are preliminary and subject to change. They do not include land acquisition costs, which for the optimized Mack Point Alternative are estimated to be between $295 million and $490 million over the life 50-year design life of the project, or environmental and mitigation costs.		

Exhibit ES-2. Optimized Mack Point Alternative (Option B.2)

Exhibit ES-3. Preferred Sears Island Alternative



Impacts to the natural environment are unavoidable for a project of this scope and significance, and the State has weighed several factors into its identification of Sears Island as the most preferred alternative. Of primary importance is the development of an efficient and versatile port facility that is worthy of the significant financial investment–estimated between $500 million and $750 million–and attractive to future OSW developers over the useful 50-year design life of the port. The OSWP must be versatile and adaptable to handle the rapidly changing market for floating OSW technology and deliver OSW projects safely and without production delays. A port facility that can accommodate only a single use or certain type of floating OSW technology will have limited practical use. In contrast, an adaptable well-designed OSWP will be capable of attracting a wide range of potential OSW project developers and accommodate a range of technologies, thereby maximizing the benefits of the State's significant investment of resources. Such a facility requires a linear and contiguous heavy-lift wharf that will allow for the OSWP to handle a variety of different types of FOSW technology without placing constraints on the maximum size of floating foundations that can be fabricated at the port. Limiting the berthing, foundation launching, or delivery area at the wharf will unnecessarily constrain and limit the range and efficiencies of activities that can occur at the OSWP.

Another key consideration in evaluation of alternatives has been to limit the dredging associated with the OSWP. Previous efforts to dredge Searsport Harbor have met opposition from residents, fishermen, and environmental groups. Opponents argued that there are legacy contaminants in the upper Penobscot Bay that would be disturbed and re-suspended resulting in contamination of the entire Penobscot Bay food web, creating an environmental and human crisis in the region (Sierra Club 2015). Dredging would be required to meet minimum design criteria at many of the alternative sites work, including Mack Point Terminal. Dredging is not required for the Sears Island site.

Private ownership of the potential development site introduces additional complications for construction and operation of an OSWP. Privately owned land must be leased by the State to develop, and federal grant agreements require site control for long periods of time to ensure that federal funds are being used for the intended purpose (i.e. construction and operation of the port). To gain ownership or control of a privately owned site would add a significant cost to the project. Preliminary market data and discussions with OSW developers indicate the lower end of expected lease costs would require the payment of more than $290 million over 50-years.

Finally, cost is also a key factor that limits available alternatives. One driver of projects costs is the availability of land. Another significant and costly challenge at Mack Point is the presence and location of Canadian Pacific-Kansas City Railway (CPKC) trackage in the terminal. For the successful development of an OSWP at Mack Point while keeping the railroad whole, would require the relocation of the existing track, the cost of which is currently unknown. To date, there has been no interest in a sale or relocation of the CPKC owned track. In fact, CPKC has recently invested in track upgrades at Mack Point Terminal to handle land-based WTG components. Mack Point also has additional infrastructure that would have to be demolished and potentially relocated.

An OSWP at Sears Island would not include additive costs associated with land acquisition and the demolition and relocation of existing assets. Moreover, lease payments collected by the State from private OSW developers using the Sears Island OSWP would become a revenue stream that would support the continued operation and maintenance of the port. Further, these lease payments from OSW developers would help the State (and its taxpayers) recover some of the construction costs as opposed to being a pass through for lease payments to a private company.

Taken in whole, these factors, and others elaborated on within this document, are expected to facilitate the deployment of renewable OSW energy in the most efficient manner possible with the capacity to accommodate new and evolving OSW technologies. By so doing, Maine's proposed OSWP will deliver the most affordable green energy to the people of Maine and New England and result in broad economic benefits for the State. Specifically, the State anticipates the OSWP to result in significant benefits to Mainers by way of good-paying jobs, providing an anchor for growth of a clean energy economy, and launching affordable renewable energy that will contribute to a clean energy future with far-reaching benefits.

This Draft Pre-Application Alternatives Analysis provides information to support analysis pursuant to Section 404(b)(1) Guidelines (40 CFR 230) of the Clean Water Act (33 USC 1344) and the NEPA as amended (42 USC 55) but does not fulfill these requirements as a standalone document. The State acknowledges that significant work remains to be done prior to the identification of the least environmentally damaging practicable alternative (LEDPA) and permit authorizations. Detailed environmental analysis of the project's potential to affect the human, cultural, natural, physical, and economic environments will be contained in a Draft EIS, which is expected in Q1 2025.

1. Introduction

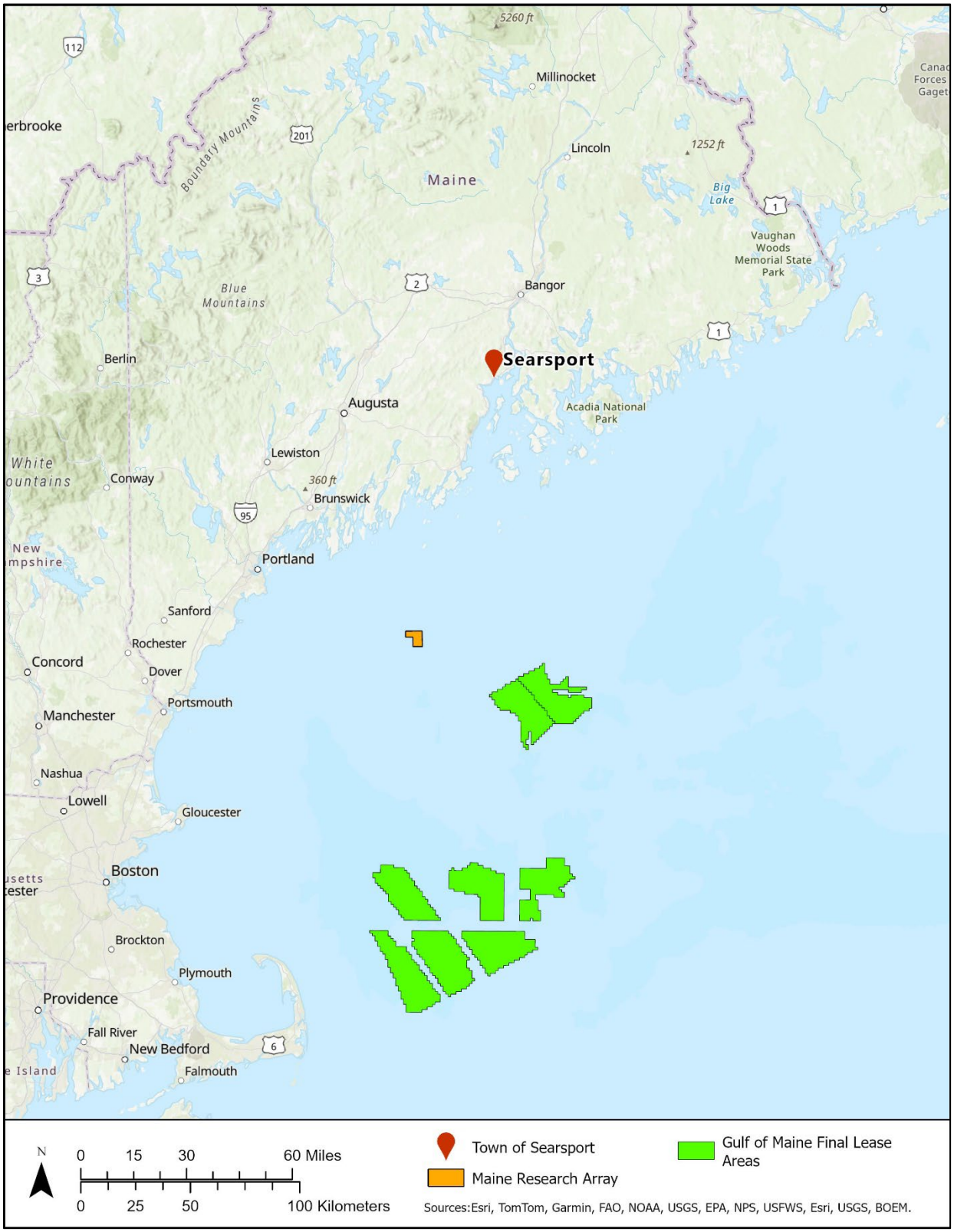
On behalf of the State of Maine, the Maine Department of Transportation (MaineDOT) and the Maine Port Authority (MPA) are evaluating alternatives for a marshalling wind port facility (i.e., a port used for the delivery, storage, assembly, and integration of complete wind turbines) in Maine to support the commercial scale development of the floating offshore wind (FOSW) industry. An offshore wind port (OSWP) in Maine is required to install FOSW in the Gulf of Maine in a cost-effective manner. With its proximity to the Gulf of Maine and with much of its coastline having access to deepwater, Maine is well positioned to facilitate FOSW within the region.

This project has been under development for several years and represents a one-of-a-kind opportunity for the State of Maine. The MaineDOT and MPA initiated analysis of an OSWP at the direction of Governor Mills in March of 2020. The *Maine Department of Transportation: Offshore Wind Port Infrastructure Feasibility Study* (Feasibility Study) was released in November 2021 (Moffatt & Nichol 2021). The Feasibility Study focused on those locations that meet the minimum design criteria (defined in Section 4) and present the opportunity to develop an efficient and versatile FOSW port facility. The Feasibility Study identified two sites in the port of Searsport–Sears Island and Mack Point–that meet the minimum design criteria for an OSWP facility needed to construct and deploy the FOSW turbines that would be installed in the Gulf of Maine (Exhibit 1). Sears Island and Mack Point have been studied in further detail since and, in February of 2024, Governor Mills announced Sears Island as the State's preferred site for the proposed OSWP.

This Draft Pre-Application Alternative Analysis compiles and elaborates on the planning and engineering studies that informed the Feasibility Study (Moffatt & Nichol 2021) and project development to date. This Draft Pre-Application Alternatives Analysis provides information to support analysis pursuant to Section 404(b)(1) Guidelines (40 CFR 230) of the Clean Water Act (33 USC 1344) and the National Environmental Policy Act (NEPA) as amended (42 USC 55).

MaineDOT and MPA have initiated detailed studies to understand the existing conditions in and around Searsport and to inform decision making. Several technical studies have been completed and others are ongoing at the time of this Draft Pre-Application Alternatives Analysis. Studies characterizing the natural environment, including the practicability and cost associated with the potential for dredging at Mack Point, and navigation conditions are summarized and attached to this document. Other ongoing studies of the human, cultural, natural, physical, and economic environments, and tribe and agency consultation will be summarized in a Draft Environmental Impact Statement (EIS) which is expected in the first quarter of 2025.

Exhibit 1. Project Location Map



2. Purpose & Need

The proposed OSWP would be a transformational step towards meeting the clean energy demands of the region, reduce harmful emissions and the State's dependence on fossil fuels, and support the advancement of climate and economic goals, plans and initiatives, including realizing the economic benefits of FOSW. To justify the expenditure of between $500 million and $750 million, the proposed OSWP must attract investment by private OSW developers to ensure the port is economically viable.

2.1 Purpose

The purpose of the proposed action is to construct a marshalling port facility in Maine to support the development of the floating offshore wind industry at a commercial scale in a manner that benefits the citizens of Maine.

Marshalling is a marine transportation function synonymous with staging and the methodical arrangement and assembly of component parts.

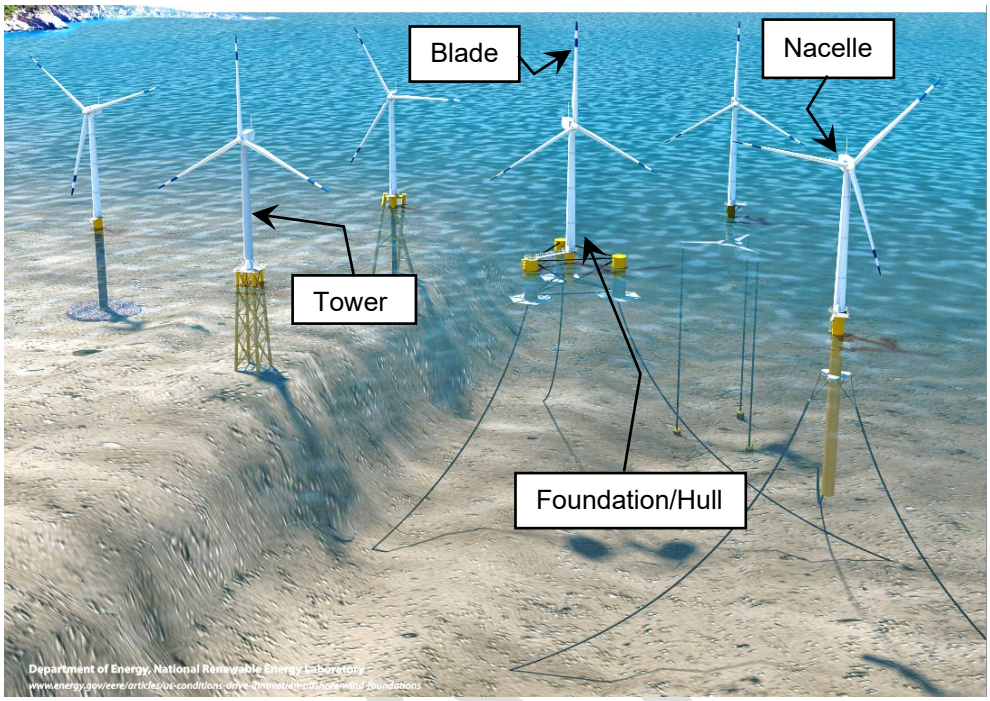
2.2 Need

Development of an OSWP in Maine that meets the unique requirements of FOSW is needed to unlock OSW in the Gulf of Maine and ensure that Maine businesses and residents share in the economic benefits of this emerging industry. The depth of Maine's coastal waters are routinely over 250 feet deep at distances of 10 nautical miles (nm) from the shoreline. Further, Bureau of Ocean Energy Management's (BOEM) Gulf of Maine lease area is entirely within waters deeper than 250 feet. This requires the deployment of FOSW for the entire lease area in the Gulf of Maine because the water is too deep for fixed-bottom WTGs. FOSW turbines have emerged as a solution for deepwater (Exhibit 2); these FOSW turbines require a purpose-built port that is designed to support the construction, deployment and operation and maintenance of floating wind turbine generators (WTGs). Port requirements for FOSW turbines differ considerably from fixed-bottom WTGs because a FOSW port needs to fabricate and launch the floating foundation on site. Because the FOSW turbines are assembled in the water at the port before being towed to the open ocean, port facilities need a large flat area immediately adjacent to deepwater to allow assembly of the WTG. Additionally, due to the size of the fully assembled WTG, there can be no overhead restrictions between the port and OSW farm installation sites. New England does not have a marshalling port facility that can accommodate the unique needs of FOSW turbines and the FOSW industry.

Recognizing the critical threat of climate change, Governor Janet Mills has committed Maine to an ambitious set of policies to reduce Maine's greenhouse gas (GHG) emissions, transition to renewable energy, and grow the State's clean energy economy. The State has established statutory GHG reduction requirements of 45% below 1990 levels by 2030 and 80% by 2050, as well as a requirement for carbon neutrality by 2045. Maine has also established a Renewable Portfolio Standards (RPS) requiring 80% of electricity used in the State be generated by renewable sources by 2030. In 2023, recognizing the progress made to date and the key role of clean energy in controlling costs for consumers and reducing fossil fuel dependence, Governor Mills announced a new accelerated goal of 100% clean energy by 2040.

Maine as well as other states in the region have established ambitious clean energy requirements in statute, with significant focus on OSW (GEO 2023). Decarbonization models for Massachusetts indicate the need for 23 gigawatts (GW) of OSW power by 2050, including 13 GW from FOSW (EOEEA 2024). The "Maine Energy Plan: Pathway to 2040" identifies the need for at least 3 GW of OSW in multiple scenarios with the goal of 100% clean energy by 2040. Maine has statutory authority to procure 3 GW of OSW power by 2040 (GEO 2024). OSW energy is a powerful renewable energy source and important component of the region's clean energy plans to improve energy security, grow a renewable energy economy, and contribute to net zero GHG emission targets to mitigate climate change.

Exhibit 2. WTG Components and Potential Floating OSW Foundations.



Note that the fixed foundations (at left) are attached to the ocean floor in waters of 200 feet or less. Floating foundations (at right) have emerged as a solution for water depths greater than 200 feet. (Source: NREL)

Development of OSW in the Gulf of Maine is a key means for advancing State, regional, federal, and international climate change, renewable energy, and OSW goals and commitments (Exhibit 3).

To meet the State's and region's climate and clean energy goals, reduce GHG emissions, and realize the economic benefits of OSW, the State of Maine needs an OSWP. Port infrastructure is a major chokepoint impeding the expansion of OSW as a source of clean reliable power to the electric grid and as an economic catalyst for clean energy workforce and supply chain development.[1] Moreover, FOSW requires unique port capacities, such as deepwater draft, high load capacity, significant upland area, and no air restrictions, that are even more rare and significantly underinvested. There is no existing port infrastructure in the region that meet FOSW requirements (refer to Section 7 for more discussion).

The *Maine Offshore Wind Roadmap* (2023) and industry-specific studies[2] have concluded that development of an OSWP in Maine that meets the unique requirements of FOSW is necessary to unlock OSW in the Gulf of Maine. The BOEM has initiated important first steps on the path towards OSW development in the Gulf of Maine, underlining broad commitment to the technology and an urgency to deliver port infrastructure to meet demands. (Exhibit 4 summarizes BOEM's project development process.) Recently, BOEM announced:

- a scheduled commercial lease auction in the Gulf of Maine for October 2024 (i.e., "publishing leasing notices" in Exhibit 4).
- the approval of the State of Maine's application for a research lease (i.e., "lease granted" in Exhibit 4), which is the first FOSW research lease approved in federal waters of the U.S.

[1] See *Maine Offshore Wind Roadmap* (2023), NREL (2023), Royal Haskoning (2024), U.S. DOE (2024), Columbia Climate School (2022), etc.
[2] Ibid.

Exhibit 3. Summary of State, Federal, and International Climate Goals and Commitments

Name	Agency(ies)	Description
Maine Offshore Wind Initiative (2019)	State of Maine Governor's Energy Office, Governor's Office of Policy Innovation and the Future, Department of Marine Resources, Department of Inland Fish and Wildlife, Department of Transportation, Department of Environmental Protection, and Department of Economic and Community Development	Explore thoughtful development of FOSW energy in the Gulf of Maine, while ensuring balance with the State's maritime industries and environment. The *Maine Offshore Wind Roadmap* is one result of this initiative (GEO 2023).
An Act Regarding the Procurement of Energy from Offshore Wind Resources	State of Maine	The legislature passed Public Law (PL) 2023, Ch. 481 to responsibly develop OSW in the Gulf of Maine and encourage new deepwater port construction while maintaining strong standards to ensure good-paying jobs for Maine workers and protections for wildlife, incentivizing the avoidance of important fishing grounds, and fostering broad stakeholder engagement and inclusive community benefits. The law sets a procurement schedule for a goal of 3 GW of installed OSW power in the Gulf of Maine by 2040 to meet Governor Mills' proposed goal of 100% renewable energy by 2040. Specifically, the law requires: • The State shall establish a phased OSW procurement schedule and shall initiate a first competitive solicitation under this subsection no later than June 1, 2025. • The State shall ensure that solicitations under this legislation result in the approval of contracts for energy in the following amounts: (1) By February 1, 2030, 1,000 megawatts (MW) of aggregate nameplate capacity (2) By February 1, 2035, 2,800 MW of aggregate nameplate capacity. This procurement schedule for solicitation of floating extraterritorial wind projects will be phased. It ensures that any subsequent solicitation occurs within 24 months of a previous solicitation. This allows for significant additional capacity to be procured after the initial solicitation. This law also ensures that all OSW power solicitations shall be a minimum of 600 MW. This level of solicitation is considered a commercial size project that will require significant port and transmission infrastructure support. Ensuring that the State's OSW power projects generate revenue for the State and provide career opportunities with family-sustaining and community-enhancing wages and benefits across multiple industries and populations. (State of Maine 2023)

Exhibit 3. Summary of State, Federal, and International Climate Goals and Commitments

Name	Agency(ies)	Description
Maine Climate Council (2019), Maine Climate Action Plan (2020) & 2023 Progress Report	State of Maine Governor's Office of Policy Innovation and the Future	The Maine Climate Council was formed of scientists, industry leaders, bipartisan local and State officials, and engaged citizens with the mission to develop a four-year plan to put Maine on a trajectory to reduce emissions. *Maine Won't Wait* is Maine's four-year climate plan containing actionable strategies and goals to reduce carbon emissions, produce energy from renewable sources and protect natural resources, communities, and people from the effects of climate change (Maine Climate Council 2020). The 2023 Progress Report highlighted the following OSW progress in Maine: • In February 2023 the *Maine Offshore Wind Roadmap* (Roadmap) was published after an 18-month stakeholder engagement process. The Roadmap outlines strategies and actions to take in order to develop an OSW industry in Maine that will help the State meet its climate, clean energy, and economic goals while protecting the environment and existing ocean users. • Informed by the Roadmap, the State is engaging with the BOEM planning process for the Gulf of Maine in advance of a commercial lease auction targeted for late 2024. • A key milestone was met over the summer when Governor Mills signed LD 1895 ("An Act Regarding the Procurement of Energy from Offshore Wind Resources", see detail above) into law. • Per PL 2021, Ch. 407, Section 2, the Maine Offshore Wind Research Consortium and Advisory Board were established and began meeting in February 2023. Over the course of four meetings, the Consortium Advisory Board identified a prioritized research strategy for responsible FOSW development in the Gulf of Maine and issued the first Request for Proposals in November 2023. • The State is also working to advance the proposed research lease in federal waters with BOEM with the intent to gain experience and knowledge for responsible floating offshore wind development ahead of commercial projects. (Note that BOEM offered the research lease to the State in May 2024.)
100% Clean Energy by 2040	State of Maine	Governor Mills calls for accelerating Maine's trajectory to using 100% clean electricity by 2040. (GEO 2024)

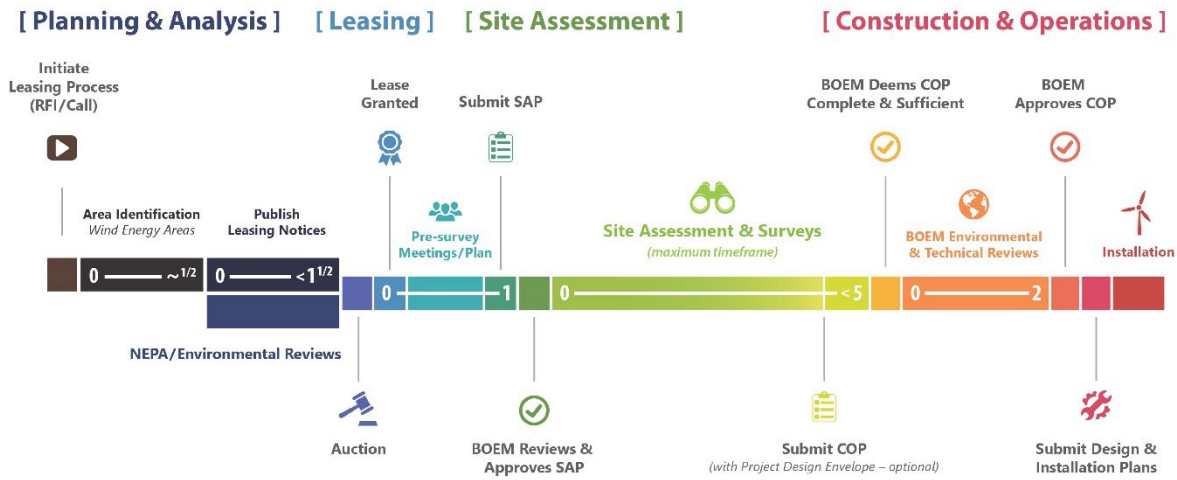
Exhibit 3. Summary of State, Federal, and International Climate Goals and Commitments

Name	Agency(ies)	Description
An Act to Encourage Research to Support the Maine Offshore Wind Industry	State of Maine	This law authorizes the State to pursue the development of a FOSW research array of up to 12 turbines in federal waters of the Gulf of Maine, the Maine Research Array (MeRA). The law also authorizes the Maine Public Utilities Commission to order the negotiation of and direct an investor-owned transmission and distribution utility to enter a long-term contract for up to 144 MW of offshore wind energy with a designated developer if the commission determines the contract furthers the Act and is in the public interest. (State of Maine 2021)
Greenhouse gas emissions reductions	Maine Legislature	This State law codifies Maine's goals to reduce emission levels and reach carbon neutrality by 2045. This law also requires monitoring, reporting, and compliance by State agencies. (M.R.S. Title 38 §576-A)
Renewable resources	Maine Legislature	This State law establishes policy to encourage the generation of electricity from renewable and efficient sources and to diversify electricity production to ensure an adequate and reliable supply of electricity for Maine residents and to encourage the use of renewable, efficient, and indigenous resources. The law sets industry-wide goals for consumption of electricity from renewable resources. This includes an 80 % RPS by 2030 and a goal of 100% by 2050. (M.R.S. 35-A §3210)
Gulf of Maine Intergovernmental Renewable Energy Task Force	U.S. Bureau of Ocean Energy Management (BOEM)	The Task Force is composed of Tribal, Federal, State, and local government officials. It is tasked with facilitating the coordination of renewable energy planning activities on the Outer Continental Shelf in the Gulf of Maine. It serves as a forum to discuss potential issues and concerns, as well as exchange data and information about ocean resources and uses.
Floating Offshore Wind Shot	U.S. Departments of Energy (DOE), Interior (DOI), Commerce (DOC), and Transportation (DOT)	Part of DOE's "Energy Earthshots Initiative" to tackle key remaining technical challenges to reaching U.S. climate goals while creating jobs and economic opportunities for U.S. communities. DOE summarized its role in the nationwide effort to deploy 30 GW of offshore wind energy by 2030 and set the nation on a pathway to 110 GW or more by 2050. Floating Offshore Wind Shot goals are: reducing the cost of floating offshore wind energy in deepwaters far from shore to $45/MWh (megawatt hours) by 2035; support the development of a domestic supply chain to facilitate deployment of 15 GW of floating offshore wind by 2035; and to inform just, sustainable, and timely development of floating offshore wind energy in deepwaters. (DOE 2024)

Exhibit 3. Summary of State, Federal, and International Climate Goals and Commitments

Name	Agency(ies)	Description
Biden-Harris Administration	White House	In support of the rapid deployment of offshore wind and job creation, the Biden Administration announced the advancement of ambitious wind energy projects to create good-paying, union jobs; investment in American infrastructure to strengthen the domestic supply chain and deploy offshore wind energy; and supported critical research and development and data-sharing. Through this action, the Administration established a goal of 30 GW of offshore wind energy by 2030. (The White House 2021)
The Paris Agreement	U.N. Climate Change Conference	A legally binding international treaty on climate change to which the U.S. is a party. The overarching goal is to hold the increase in the global average temperature to below 2° Celsius (C) above pre-industrial levels and pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels. (U.N. 2016)

Exhibit 4. "The Renewable Energy Process: Leasing to Operations"



Source: BOEM 2024

Another important development is the anticipated agreement in 2024 between Maine Public Utilities Commission (MPUC) and Diamond Offshore Wind (DOW) to purchase OSW power from the Maine Research Array (MeRA).

As the first project of its kind in the U.S., the research array would foster cutting-edge research into the cost-effective operation of FOSW and how it interacts with the marine environment, wildlife, the fishing industry, shipping, navigation routes, and more. The MeRA is proposed to include 10-12 turbines on semi-submersible floating concrete platforms known as VolturnUS, designed by the University of Maine's Advanced Structures and Composite Center (ASCC). To deliver on executive and legislative commitments for that project, construction of the first Phase of the OSWP must be completed by 2030 (Exhibit 5).

Exhibit 5. Proposed OSWP Delivery Schedule (Preliminary)

Key Milestones	Anticipated Completion
MaineDOT Submits Permit Pre-Application	Q4 2024
Draft Environmental Impact Statement (EIS) Published	Q1 2025
Secure Additional State and Federal Funding	Q4 2025
Complete Design	Q1 2026
Final EIS Submitted	Q1 2026
MaineDOT Obtain Permits	Q4 2026
Advertise for Construction	Q1 2027
Complete Construction	Q4 2029
Closeout	Q1 2030
Note: This schedule is preliminary and subject to change. This schedule does not account for unforeseen delays and represents a best-case scenario with regards to permitting and fundraising.	

As demonstrated in Exhibit 5 above, there is a temporal component to OSWP development that is critical to the success of the OSW industry in the Gulf of Maine. A delay in the delivery of an OSWP would result in a delay in the implementation of renewable energy in the Gulf of Maine. For Maine to guarantee success in meeting its OSW procurement targets, an OSWP in Maine is required by 2030.

3. Offshore Wind Port Operations

To accomplish the project's purpose and need, the proposed OSWP would need to accommodate three functions: marshalling, foundation fabrication and/or assembly, and integration of the WTG components onto the floating foundation. In addition, the port may be used for tow back operations and maintenance of the installed units. Wet storage areas are also introduced in this section as a highly desirable asset associated with the development of an OSWP.

3.1 Marshalling

Both wind turbine generation (WTG) components and floating foundation components or materials will be marshalled at the port. WTG components will be manufactured offsite and will arrive at the port on multipurpose or OSW dedicated cargo vessels. These vessels will berth at the port and unload the components onto the wharf. The components are then brought from the wharf to the storage yard via self-propelled modular transporters (SPMTs). One set of WTG components (i.e., one nacelle, four to five tower sections and three blades) are then moved to the preassembly area just inshore of the integration berth.

The foundations can be comprised of concrete or steel. The raw materials for the concrete can arrive at the port via truck, vessel or barge. The concrete materials are then moved, via conveyors to an onsite mobile batch plant where the foundations are cast. The steel foundations are comprised of multiple large steel components. These components will arrive at the port on a cargo vessel or barge. They will be offloaded onto SPMTs and transported to the foundation assembly yard.

At the berth (i.e. parking space adjacent to the heavy-lift wharf) the tower sections are bolted together to build out the full tower. These components are then integrated onto the floating foundation via a large ring crane. This crane lifts the fully built tower, nacelle and blades into final position on top of the floating foundation.

Exhibit 6 illustrates the five stages of OSW foundation fabrication.

Exhibit 6. Illustration of Five Stages of Floating OSW WTG Assembly

Steps Involved in the Construction of a FOSW Turbine

- Receive and store raw materials and/or pre-assembled parts for floating foundation fabrication and WTG components at dedicated delivery berth.
- Fabricate and assemble floating foundation.
- Transport assembled floating foundation from uplands onto a semi-submersible barge at the wharf using self-propelled modular transporters (SPMTs) or a rail system, aka, "loadout".
- Move loaded semi-submersible barge to deep water or dedicated sinking basin, submerge the barge, and "float off" the floating foundation.
- Floating foundation is towed back to wharf by tugboats and docked at the dedicated integration berth; semi-submersible barge is moved back to dedicated load-out berth at wharf.
- Floating foundation and pre-assembled WTG components are integrated (i.e., put together) in the water using a large ring crane placed on the heavy-lift wharf; the complete FOSW turbine is then pre-commissioned (i.e., inspected).
- A complete FOSW turbine is towed to the installation site or wet storage area by tugboats.

3.2 Foundation Fabrication/Assembly

As stated above the floating foundations can be comprised of concrete or steel. The foundations will be fabricated and/or assembled on the uplands and moved towards the wharf face. This will likely be accomplished via a serial assembly production line or lines. This methodology starts in the uplands where parts of the foundation are cast or assembled. The partially completed foundation is then moved (via SPMT or rail) towards the berth through multiple casting or assembly stations to complete the fabrication process. The completed foundation is then moved to the face of the wharf for launching. Launching (moving foundation from the wharf deck to the water) can be achieved using multiple techniques such as lifting in with a crane or use of a semisubmersible barge (SSB). If an SSB is used the completed foundation will be moved from the wharf via SPMT or rail, onto the deck of the SSB. The SSB will then be moved, under tug power from the wharf to the sinking basin where it will submerge. The SSB submerges to a depth where the foundation becomes buoyant and floats off the SSB. This foundation is then towed, via tug, to the foundation wet storage area.

For a commercial scale project this process will continuously repeat itself. The stated industry goal is to launch one completed foundation per week. This rate of foundation launch is the current industry accepted rate. This rate may vary as the industry gains more experience. The OSW developer or foundation manufacturer may choose to fabricate/assemble and launch multiple foundations before beginning the integration process.

Steps Involved in Floating Foundation Fabrication

- Receive and store raw materials (e.g., gravel, sand, etc.).
- Mix concrete in batch plant at OSWP.
- Fabricate rebar sections in warehouse at OSWP.
- Move rebar sections to assembly line via crawler cranes.
- Foundations are cast in place.
- Foundations are moved from wharf to semisubmersible barge.

3.3 WTG Component Integration onto Completed Floating Foundation

The integration process begins with towing, under tug power, a completed foundation to the integration berth. The foundation is secured to the berth and the integration process begins. At the integration berth the WTG components are lifted from the preassembly area via a large crawler or ring crane onto the floating foundation. The tower or tower sections are added first, then the nacelle, followed by the blades. The time required to complete this activity will vary based on methodology and weather conditions.

Once the full WTG set is secured to the foundation it is considered a fully integrated, complete floating offshore wind turbine. There is additional commissioning of the unit that also occurs at this berth. The fully completed and commissioned unit will then be either towed directly out to the project installation site or place in fully integrated wet storge. The tow-out or wet storage decision will be dictated by the weather at the time of the unit's completion. To tow the integrated unit to the project installation site the significant wave height and wind must be below prescribed thresholds. If these thresholds are exceeding the unit will be placed in wet storage until an acceptable tow out weather window occurs.

3.4 Operations and Maintenance

The FOSW projects installed in the Gulf of Maine will be serviced and maintained by Service Operation Vessels (SOVs). These vessels will spend 3 to 3.5 weeks per month at the installed project location and return to port the remaining time to resupply and load required parts. The OSWP at Sears Island can facilitate this activity, however, this activity will likely be based at a different location.

Due to the harsh offshore environment, there is the potential that the installed floating turbines may require to be towed back to port for a major overhaul/component replacement. This will require the turbine unit be brought back to the port and berthed at the integration wharf where the major overhaul servicing and/or component swap out will occur.

This activity presents a good alternative use for the port when a project is not being marshaled at the facility. Major overhaul servicing can occur between scheduled project installations.

3.5 Wet Storage Areas

Wet storage areas in proximity to the OSWP are highly desirable for proposed port operations due to shortened sail times. A wet storage area is a designated area where floating foundations and floating WTGs can be anchored temporarily. It is commonly the responsibility of the future OSW developers to find a wet storage site compatible for their project. Floating foundations may be anchored prior to integration and floating WTGs may be anchored to the ocean floor to await windows of fair weather to transit to the lease site, typically called "weather windows". The Gulf of Maine will require careful navigation and handling in rough weather when towing massive, fully assembled floating WTGs. This makes the distance to a FOSW installation site an important consideration in OSWP placement. The dimensions, duration of storage, and anchoring systems associated with wet storage are unknown and would be OSW project specific.

4. Design Criteria for an Offshore Wind Port

All FOSW components are too large to be moved on road or rail. Therefore, floating WTG components and FOSW foundation components requires specialized equipment and port infrastructure to facilitate its installation. This port infrastructure requires a heavy load bearing key, a large flat uplands area, location near a maintained deepwater channel and there can be no overhead obstructions (unlimited air draft) between the port and installation site. These requirements inform the minimum design criteria and port alternative assessment (Exhibit 7). These criteria are further defined in this section.

Exhibit 7. OSWP Minimum Design Criteria

Contiguous Upland Area	≥100 acres of total space in a usable configuration
Water Frontage	≥1,500 feet
Federally Maintained Navigation Channel Access	Channel depth ≥ 35 feet mean lower low water (MLLW) and minimum width of 600 feet
No Air Draft and Direct Access to Open Water	Unlimited air draft with direct access to open water
Upland and wharf live load ratings (i.e., the amount of weight the surface is designed to support)	3,000 and 6,000 pounds/square foot (psf), respectively

The proposed OSWP is being designed to accommodate 20 MW WTG components. This will provide an appropriate level of futureproofing without overbuilding. Exhibits 8 and 9 define the approximate geometry and weight of typical 15 to 20 MW turbines and the floating foundations required to support them. Exhibit 10 illustrates the relative scale of these OSW turbines.

Exhibit 8. Floating Wind Turbine Generator Typical Dimensions

Component	Length (ft)	Width (ft)	Height (ft)	Weight (T)
Nacelle	80 – 95	35 - 45	35 – 45	800 - 1200
Tower Section (Avg)	115 - 145	25 - 35	25 – 35	300 - 350
Blades	330 - 425	15 - 20	15 – 20	75 - 125

Exhibit 9. Floating Wind Turbine Generator Foundation Typical Dimensions

Material	Length of Side (ft)	Height (ft)	Weight (T)
Concrete Foundation	350 – 400	100 - 130	17,000 - 25,000
Steel Foundation	350 – 400	100 - 130	4,000 - 9,000

4.1 Versatile Long-Term Asset for the State of Maine

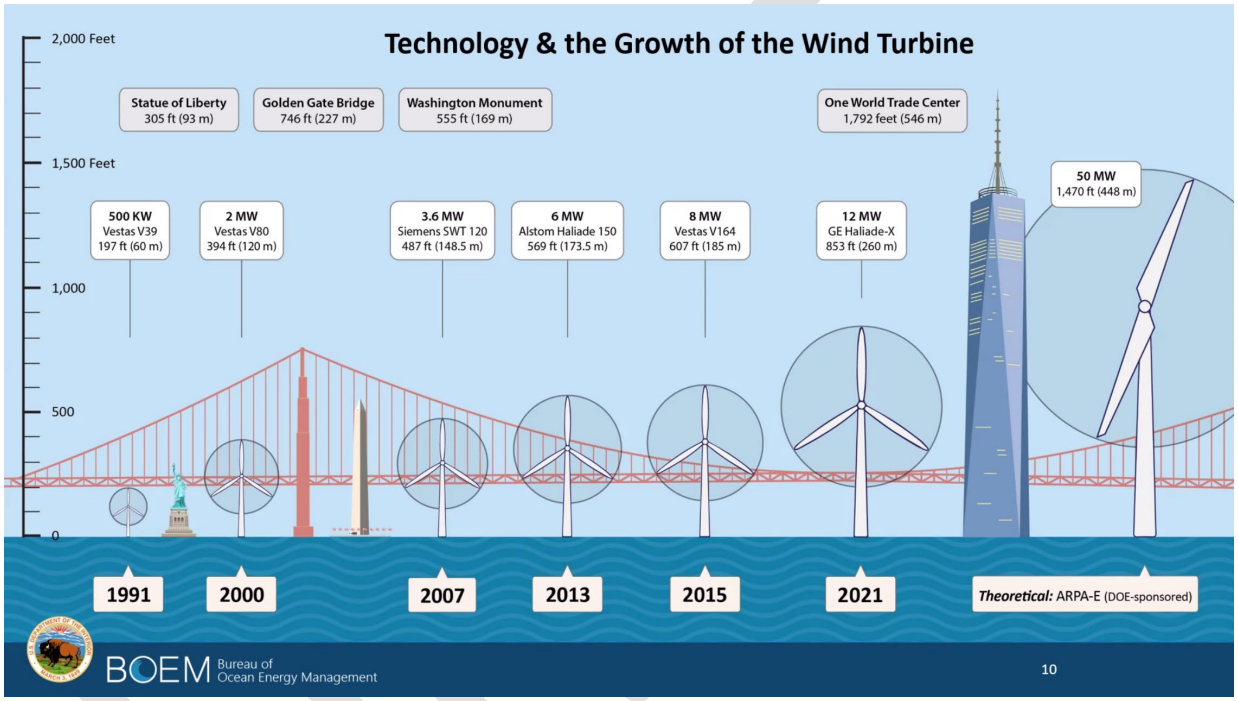
The proposed OSWP will be a versatile asset for the State of Maine for its full 50-year design life. It will be able to support both floating and fixed bottom OSW projects as well as other marine transportation uses compatible with the Joint Use Planning Committee's (JUPC) Consensus Agreement (2007). Due to the extreme geometrical and loading requirements, a port designed for FOSW can support all other forms of marine port usage. This includes containers, bulk cargo, out of gauge cargo and automobiles.

In addition, the marine terminal will be designed and constructed with efficiency in mind. The logistics of moving OSW components in and out of the port are complex and the efficiency of the terminal will lower costs for the end user and present an attractive foundation fabrication/assembly and marshaling facility in the OSW marketplace, which in turn will lower cost pressure on the resulting electricity produced.

Port Versatility

The proposed OSWP is being designed to accommodate commercial scale FOSW projects. Typically, these projects will last from 2 years (single project) to +/- 6 years (multiple projects strung together). The proposed OSWP will be used by OSW developers and their selected original equipment manufacturer (OEMs). These entities will typically lease the port to install a single project or string of projects and then depart the site. The port will be designed and constructed to accommodate the different operational models of the many potential end users. The proposed OSWP should be a large, open, level space with a long straight heavy lift wharf to ensure that it is adaptable to numerous marshalling, foundation fabrication and launching, and WTG integration strategies. The OSWP can then be configured by each user according to their needs.

Exhibit 10. Illustration of the Scale of WTG.



Source: BOEM

The versatility of the port will also allow it to support other OSW related activities for both floating and fixed bottom OSW. An example of an alternative activity is the marshalling of foundation elements for fixed bottom wind installations. Due to the recent Jones Act Ruling by Customs and Border Patrol which allows foreign flagged vessels to load and install fixed bottom OSW foundations from U.S. ports, there is significant demand for port laydown space for these elements.

In addition, the design criteria elaborated on in this section assures the proposed OSWP would be able to support alternative marine transportation uses, consistent with the JUPC Consensus Agreement (2007), between OSW projects or after OSW development has run its course, which is expected to be decades from now.

Port Efficiency

There are two key efficiencies considered in the proposed OSWP design: (1) the ability to combine the two main activities associated with FOSW onto one site, and (2) the capability to support simultaneous activities at the wharf.

The main activities at a FOSW port consist of foundation fabrication (Section 3.2) and launching and WTG component marshalling and integration onto the floating foundation (Section 3.1). Co-locating these

two activities creates the most efficient logistical chain. With this configuration the floating foundations can be fabricated directly next to the integration site as shown Exhibit 11. As the floating foundations are completed, they can be placed into wet storage or be moved directly to the integration berth. This system eliminates the need for long ocean tows of floating foundations from a fabrication site to an integration site. This tow is heavily weather dependent and can significantly increase the time to construct a project as well as the project risk levels.

To ensure an efficient OSWP, it is critical that the production of fully integrated WTGs maintain an acceptable pace. Currently the industry goal for this pace is approximately one fully integrated WTG per week. To meet this requirement, the proposed OSWP should be designed to support the following simultaneous activities:

- Delivery of WTG and floating foundation components to the port
- Serial production assembly of floating foundations on the deck
- Launch of completed foundation units from the deck into the water
- Integration of WTG components onto the completed floating foundation at the wharf

This requirement for simultaneous activities drives the need for the size of the uplands and length of the continuous wharf.

Exhibit 11. Rendering of the proposed 400-acre Pier Wind OSWP at Long Beach, California.

Note that the Pier Wind OSWP is designed to include multiple OSW terminals that can support the simultaneous activities described in this section. Source: Moffatt & Nichol 2024.

4.2 Site of 100 Acres

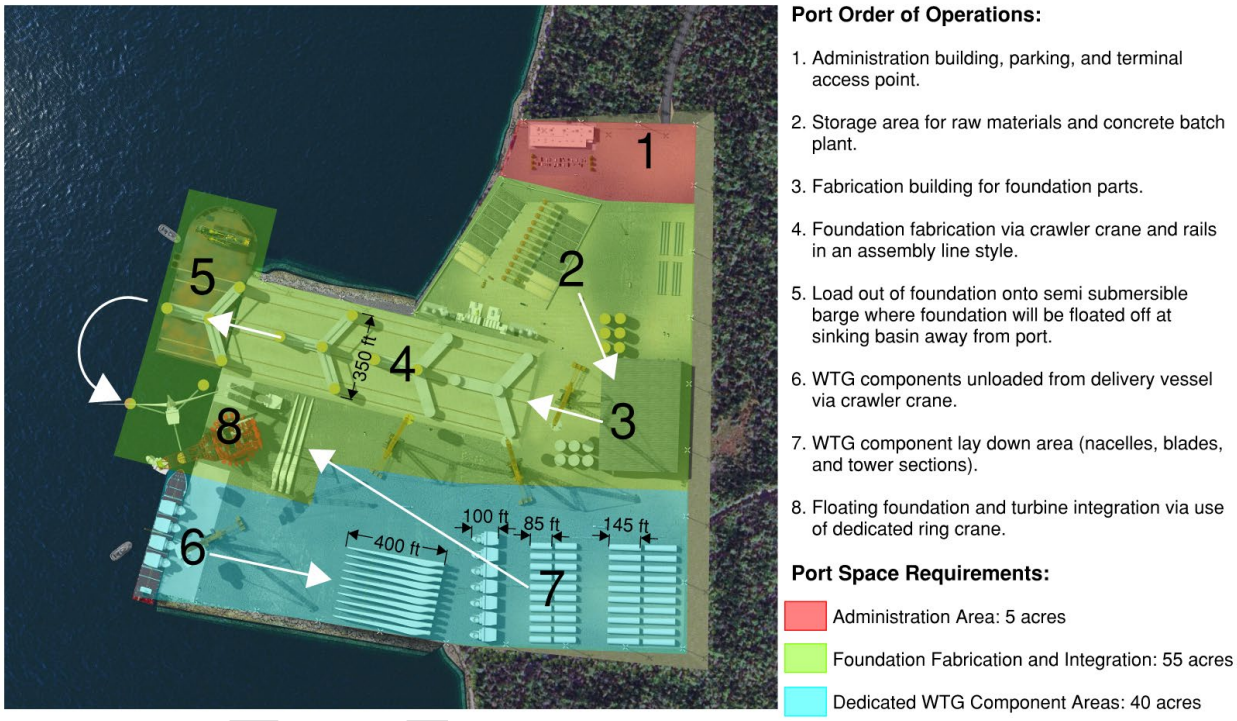
It is important for the selected port location to have a minimum of approximately 100 acres. This area is required to accommodate the storage and movement of the large foundations as well as the WTG components. The sizing of the OSWP is also driven by supply chain risk mitigation measures. The port user will require that a certain number of foundations and WTG components are consistently on the uplands as the project progresses. This requirement is usually given as a percentage of the total number of units that will be installed. The typical end user will require approximately 20% to 45% of the total number of units on the uplands at all times. This quantity of items mitigates the risk of a supply chain disruption. If a delivery vessel is delayed or other supply chain inputs are disrupted, the port user can continue operations with the components stored in the uplands. Exhibit 12 summarizes the acreage devoted to each port activity and Exhibit 13 illustrates a conceptual OSWP layout with potential acreage and WTG component movements across the site.

Exhibit 12. Foreseeable OSWP Configuration of Uses

Facility/Use	Acre
Port Administration Building, Parking, and Access	5
Foundation Fabrication and Integration[1, 2]	55
Storage/Laydown area for WTG Components[2]	40
Total	100

[1]This area is based on the following activity areas (and sizes): batching plant (10-15 acres); steel reinforcement (5-10 acres); precast yard (5-10 acres); foundation production line (15-20 acres); includes preassembly area outside wharf. (BW Ideol, 2023; Shields 2023; Renewable U.K. 2023)
[2]A five-acre heavy lift wharf would support both OSWP operations simultaneously and would include a (i) delivery vessel berth, (ii) WTG integration berth, and (iii) area for foundation loadout.

Exhibit 13. General Operational OSWP Space Requirements and Order of Operations



The largest space requirements are for the storage/laydown area (35 acres) and the concrete foundation fabrication process (55 acres). The laydown area is designed to accommodate approximately 15 to 20 full sets of WTG components on site at a time (refer to Exhibit 8 for WTG component sizes). The foundation fabrication/assembly area is designed as a serial production line with numerous assembly stations (refer to Section 3.2). As concrete or steel elements are added the foundation is pushed closer to the face of the wharf.

Of the remaining 10 acres, five acres will accommodate a wharf of sufficient length and width to support the transfer of WTG components onto and across the wharf, including the placement of the items onto the wharf and the cranes used to make these lifts. The three-acre preassembly area will facilitate integration of WTG components onto floating foundations while the two-acres devoted to the administration building and parking will accommodate OSWP offices and workers.

In addition to the quantity of area required, this area must be laid out in a usable configuration. OSW components require a large square or rectangular area to allow for the most efficient load-in, storage and loadout of components. Noncontiguous areas, areas with narrow corridors and small pockets of areas do not meet the geometric requirements of moving the components and are not suitable for the required activities.

4.3 1,500 Feet of Water Frontage

The quay, or wharf, is sized to accommodate the following activities:

- Delivery of WTG and foundation components and/or raw materials to the port.
- Launching of the fully fabricated/assembled foundation from the wharf to the waterway.
- Integration of the WTG components onto the floating foundation.
- Commissioning of the fully integrated turbine unit (can be shared space with integration berth).

Each of these activities, except for commissioning, will have its own dedicated area on the wharf. To maintain the required throughput and efficiency these activities will occur simultaneously. The required length of the berth is directly related to the length of the vessels and foundations and required spacing between them (Exhibit 14).

Exhibit 14. Required Length of Wharf

Element	Length (ft)
Foundation	350 - 400
Semi-submersible barge	400 - 500
Delivery Vessels	525 - 610
Required Spacing Between Elements	50 - 100
Total	1,400 - 1,600

As noted above all WTG components as well as steel foundation components will be delivered to the port via waterborne transport. These components are too large and heavy to travel on road or rail systems. A location at the wharf must be reserved for the deliveries of these components.

The launching of the completed foundation from the uplands to the water will require the unit to be moved to the face of the wharf. There are differing proposed foundation launching mechanisms such as cranes, semi-submersible barges and elevator platforms. It is unknown which mechanism will be used for which foundation type. Therefore, the wharf is designed to be a straight wharf with a uniform berthing face. The semi-submersible barge methodology has been used to launch 100% of the installed floating OSW capacity (excluding China).

A semi-submersible barge needs to be long enough to fit an entire, 400-foot-wide foundation on to it for stability purposes and to account for SPMTs moving the floating foundation onto the barge and returning to the port. The 500-foot barge width is conservative (because no barge for this specific purpose has been built before) to allow for future technology growth. At a fully operational OSWP this loadout activity, requiring 500 feet at the berth (plus 50-100 feet of spacing), would occur simultaneously, and side-by-side, as the delivery of WTG components by water and the integration of WTG onto floating foundations at the berth.

4.4 Direct Access to a Deepwater Navigation Channel

Direct access to a maintained deepwater channel is needed for the following activities:

- Delivery vessels/barges bringing foundation components (and/or raw materials) and WTG components to the port
- Semi-submersible barge carrying fully assembled turbine unit transiting from the wharf to the sinking basin
- Tow out of the fully assembled floating turbine unit from the port to the installation site.

Delivery vessels would consist of large cargo carriers and/or barges bringing both floating foundation and WTG components, and in some instances raw materials, to the site. These vessels will transit from the component manufacturer to the FOSW port continuously throughout the project.

The semi-submersible barge will be home ported at the port of an adjacent location. Once the completed turbine unit has been loaded onto its deck, it will be towed via tugboats to the sinking basin. The foundation will be floated of the barge and the barge will be returned to the wharf.

After the commissioning, the fully assembled turbine unit is ready to be towed, via tug to the project installation site. The large size of the foundation requires a wide deepwater channel directly adjacent to the port.

Vessel and foundation dimensions are shown in exhibits 15, 16, and 17. For the OSWP, the following design vessels were used:

- Floating Foundation Loadout Vessel: Purpose-built (or modified) semi-submersible barge;
- Bulk Delivery Vessel: Large bulk carrier (ex: SAL Type 183);
- Barge Delivery Vessel: Crowley 455 Series Barge; and
- Foundation with 400-foot leg.

Exhibit 15. Floating Foundation Loadout Design Parameters

Purpose-built Semi-sub	Feet
Length overall	400 - 500
Beam	400 - 500
Draft	25 - 40

Exhibit 16. Delivery Bulk Vessel Design Parameters

Item	Feet
Length overall	525 - 610
Beam	80 - 100
Draft	25 - 40

Exhibit 17. Delivery Barge Design Parameters

Crowley 455 Series Barge	Feet
Length overall	400
Beam	105
Draft	19

A fabricated foundation would float next to and be moored at the berth during the installation of the WTG components. The exact draft, i.e., the distance between the waterline and the deepest point of the boat or, in this case, the floating foundation, of different foundation systems is proprietary information and unknown

but anticipated to require between 25 to 30 feet of water at the berth. For the proposed OSWP, it is assumed that the water required for delivery vessels and the floating foundation at the berth would be 35 feet mean lower low water (MLLW).

Typical international standards call for an under-keel clearance allowance of 10% of the draft in sheltered conditions and up to 15% of the draft in more exposed conditions, both along the approaches to the berth and at the berth. The minimum required water depth is -35 feet MLLW for the navigation channel, site approach channel, and berth. This minimum water depth would ensure access to and from the port, as well as the continual operability of the port in all tidal cycles and foreseeable flood conditions. The deck height was set at the FEMA flood elevation height for all port alternatives.

The access navigation channel to the OSWP should maintain a minimum 600-foot width to safely transport completed FOSW turbines to the Gulf of Maine. A complete FOSW turbine would sit on a 350- to 400-foot floating foundation leg. A 600-foot channel width was based on a foundation width of 400 feet and a 25% buffer per side for navigation safety.

4.5 Unlimited Air Draft

Once the WTG components are assembled on the floating foundation, the height of the unit is anticipated to be approximately 1,000 feet above the waterline. These units are towed to the installation site in this finished configuration. Thus, unlimited air draft between the proposed OSWP and the WEA is required. There can be no bridges or overhead electrical wires on the route between the OSWP and the installation site. OSW projects are sensitive to nearby power transmission lines, utility cables, and telecom lines in proximity to the port, which add risks to a project and may be a determining factor in whether a project is considered practicable. Ideally, care would be taken in the planning process for port development to route new utility and telecom cables in ways that do not interfere with OSW projects being constructed at the proposed OSWP.

4.6 Upland and Wharf Live Load Ratings

For the anticipated activities at the OSWP, the upland area and the wharf have high load rating criteria (i.e., the amount of weight the surface is designed to support). Design load ratings were assigned based on specific FOSW port operations.

The movement of WTG components and fabricated foundations at the OSWP are anticipated to be via SPMT. This approach is used extensively in the OSW industry due to its ability to handle and efficiently spread significant loads to achieve manageable applied loads on the structures below. SPMTs are built using a series of axles that are connected to form a “train”. Each axle can support between 40 and 60 tons. If this loading level is distributed over the areas of the SPMT units in the train, the maximum applied uniform load is approximately 3,000 pounds per square foot (psf). Therefore, the uplands loading requirement is set at 3,000 psf.

A typical state of the art container terminal has a loading capacity of approximately 1,000 psf on the uplands and the wharf. A solid bulk terminal may reach loading levels of 1,500–2,000 psf.

OSW, and specifically FOSW, requires port facilities with the largest load bearing capability in the world.

WTG components would be preassembled in the area directly behind the wharf. These preassembled components would be lifted onto the floating foundation using a land-based crawler or ring crane. The heaviest load is when the crane is fully loaded and extended past its base, a condition that would be routinely met during WTG integration. These activities increase the loading demand significantly. As a result, the wharf needs to support 6,000 psf.

5. Discussion of Ocean Fill and Dredging

To meet the design criteria described above, the State is considering a transformational investment in port infrastructure. The State of Maine established a “three-port strategy” in 1978 that has since directed port investment and industrial port development at the three strategically located deepwater seaports of Portland, Searsport, and Eastport. The purpose of the strategy is to preserve the coast of Maine's resources and small-to-medium sized fishing ports that have existed for hundreds of years.

At this stage of design development, and in consideration of other design and planning initiatives for FOSW ports internationally, MaineDOT and MPA expect that OSWP construction would require a balance of ocean fill and dredging to meet the minimum design criteria. This section elaborates on these construction techniques and the challenges associated with each.

5.1 Ocean Fill

Due to the size and of the foundations and WTG components, as well as the draft requirements of fully integrated turbine units, delivery vessels and the semi-submersible barge, current and future planned OSWPs have required the use of ocean fill to meet the required operational depth and total acreage. Ocean fill is used mainly for two reasons: (1) to create more upland area in locations where there is not sufficient availability, and (2) to minimize the amount of dredge required to achieve the operational depth, which would substantially raise costs and the environmental impact of a port project. Both reasons are true for the proposed Maine OSWP.

Below are three examples of current OSWP projects (in varying stages of completion) that have used or proposed the use of ocean fill (exhibits 18, 19, and 20).

Exhibit 18. The Scapa Deep Water Quay, Orkney Islands, Scotland, proposes 26 acres of ocean fill.

Exhibit 19. Pier Wind, Port of Ling Beach, California, is proposing 400 acres of ocean fill.

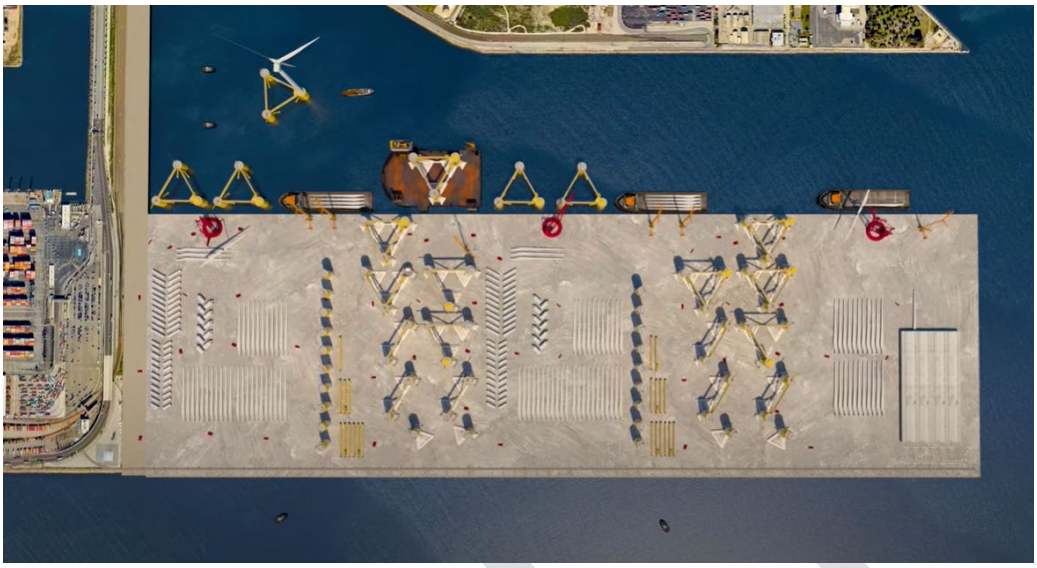


Exhibit 20. Marine Renewable Energy Terminal, Brest, France required 35 acres of ocean fill.

5.2 Dredging

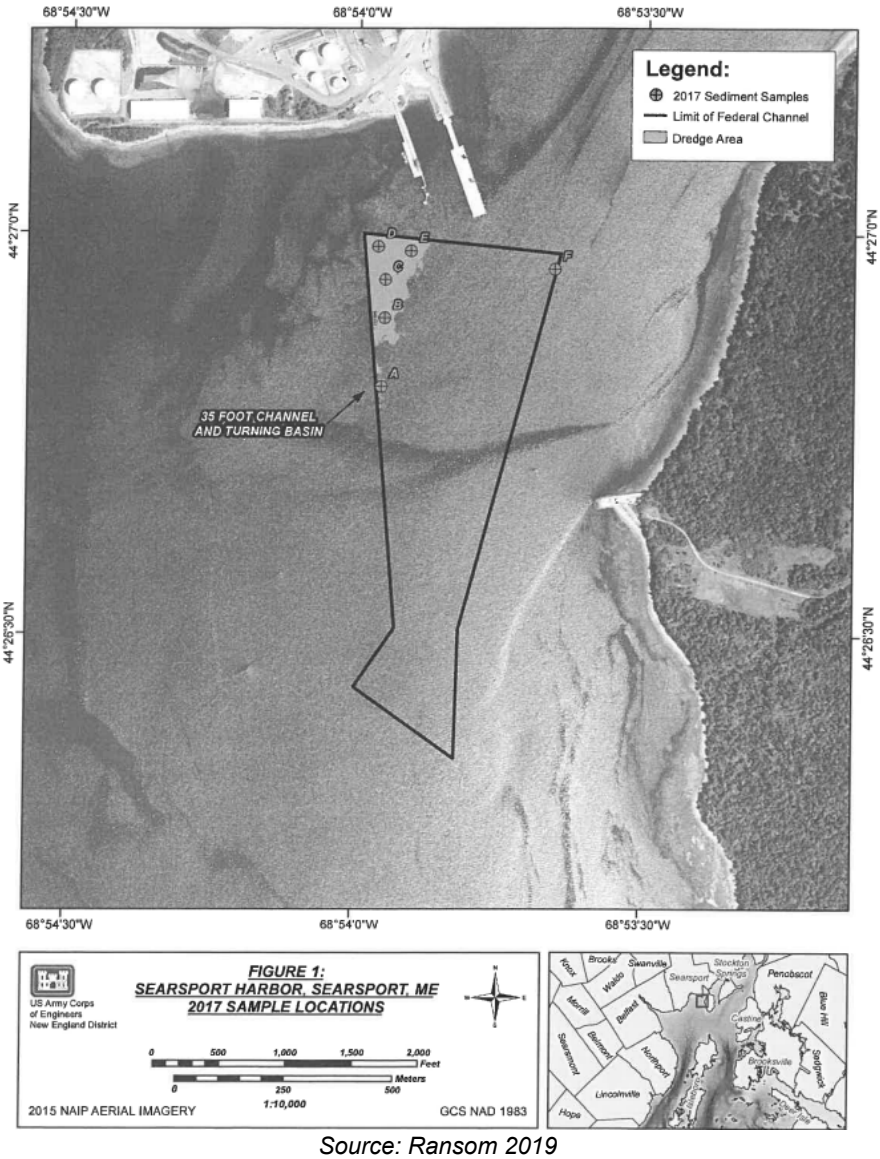
If ocean fill is not used to reach water depths required for OSWP operations, dredging would be necessary to achieve the minimum water depth. Historically, dredging on Maine's coast has been a time-consuming and controversial process. Ongoing dredging projects in the ports of Portland and Searsport have taken decades to plan and are not completed yet. This track record of delay is partially due to public opposition to dredging. The potential for effects to the lobster and fishing industries due to suspended sediments in the water column is unpopular and threatens the marine economy which is so important to Mainers. The disposal of potentially contaminated sediments, either upland or in the ocean, is likewise controversial.

The federal navigation channel that accesses the port of Portland receives regular maintenance dredging on a ten-year cycle. Completing dredging at individual berths and piers (both private and public) on the other hand has proven far more challenging and costly. Siltation along the waterfront forces vessels to wait for the incoming tide to satisfy under keel clearance requirements several times per month and generally

affects the operations of dozens of private marine businesses. A decades long effort to dredge the Portland waterfront has proven unsuccessful. The U.S. Army Corps of Engineers (USACE) recently identified a preferred dredged material disposal method in a confined aquatic disposal (CAD) cell. However, the full estimated cost of $34 million to complete the project has not been secured.

The federal navigation channel that accesses the port of Searsport has not been dredged since it was initially constructed in 1964. Siltation over the past 60 years has resulted in a condition in which the northwestern section of the federal navigation channel no longer meets the minimum depth requirements for commercial traffic in the port of Searsport (Exhibit 21). In and outbound vessels must wait for the incoming tide to satisfy under keel clearance requirements several times per month. This condition has caused disruptions to vessel schedules and is generally inconvenient for commerce at the existing Mack Point Terminal. Sprague Operating Resources, LLC (Sprague), the landowner and commercial operator at Mack Point, has used private finding to dredge their piers several times over the last decade and has disposed of the sediments on their upland property. MaineDOT was not involved in the private Sprague dredging projects.

Exhibit 21. Searsport Federal Navigation Project Dredge Area



Source: Ransom 2019

The Searsport Federal Navigation Project–which will address the channel depth in the northwest corner of the navigation channel at Mack Point–has been under development since 2001. The project was scaled back to a maintenance dredge with upland disposal due to local opposition. The USACE is currently working on a solution to design and construct a CAD cell to complete this maintenance project and dispose of the dredged sediments. MaineDOT has not been involved in the USACE project to date but has discussed plans to complete the project in the next several years, with no definitive timeline. CAD cell ocean disposal has been opposed by area residents in the past, including fisherman and year-round and summer residents of Islesboro.

MaineDOT constructed a dredge pocket off the west coast of Sears Island in the 1980s as part of a previous plan for maritime transportation development. This dredge pocket is adjacent to the federal navigation channel, is approximately 40 feet deep and about 500 feet west of the shoreline. The current project would use the existing dredge pocket to access the federal navigation channel.

Because of the significant permitting challenges, uncertainty and schedule risks that have plagued other dredging projects, as well as the additional associated costs, minimizing dredging is one of the key selection criteria considered in evaluating alternatives. By way of example, previous efforts to dredge Searsport Harbor have met opposition from residents, fishermen, and environmental groups. Opponents argued that there are legacy contaminants in the upper Penobscot Bay that would be disturbed and re-suspended resulting in contamination of the entire Penobscot Bay food web, creating an environmental and human crisis in the region (Sierra Club 2015).

6. No Build Alternative

Though the No Build Alternative does not meet the purpose and need for the proposed project, it is retained as a baseline against which to measure future potential impacts, both positive and negative, of the Build Alternatives. A full assessment of a future condition without the proposed project, i.e., No Build, would be completed in the Draft Environmental Impact Statement (EIS) in compliance with the NEPA and applicable State and federal permit requirements.

There is no existing port infrastructure in New England that can support the criteria stated above and meet the purpose and need of this project. Therefore, an existing marine terminal must be retrofitted, or a new facility built to support the stated purpose and need of this project. Without the construction of a port facility that meets the unique design criteria for FOSW turbines, Maine will not reach the OSW procurement goals set in Legislative Document No.1895 nor achieve the economic benefits called for in the Maine Wind Energy Act.

Maine has studied the OSW industry thoroughly and with the release of the *Maine Offshore Wind Roadmap* in February 2023, a port dedicated to OSW within the State of Maine was recommended for development for the State to meet its renewable energy goals.

7. East Coast Alternatives

At the time of initial proposed OSWP site screening in 2021, the following existing ports that were pursuing service for OSW were considered for their potential to support a floating OSWP (Exhibit 22). None of these port facilities are practicable or meet the project purpose and need. They do not meet the minimum design criteria for FOSW in their current or planned configuration, and only Portsmouth Marine Terminal in Virginia could support simultaneous activities of staging and integration (S&I) and foundation fabrication. Portsmouth Marine Terminal is approximately 615 miles from the MeRA lease area. Towing integrated floating turbines at such distances would greatly diminish project efficiency and is not considered a practical solution to installing FOSW in the Gulf of Maine. The towing of integrated turbines requires periods where environmental factors such as wind and wave loads are constantly under a certain threshold. Longer towing distances require longer weather windows, which statistically happen less often due to the lengthened period. OSW developers typically aim to get the shortest weather windows as this improves expected project completion and limits project risk relative to man hours, fuel costs, and insurance costs, etc.

Exhibit 22. East Coast Alternative Wind Ports

Terminal Name	Location	Port Operation	Area (acres)	Quay Length (feet)	Status	Potential FOSW Uses and Challenges
Salem Offshore Wind Terminal[1]	Salem, MA	Fixed bottom marshalling	42	1,200	Construction started July 2024. Completion expected early 2027.	Either S&I or foundation fabrication- but not both. Channel widening required for 20 MW foundations.
New Bedford Commerce Terminal[1]	New Bedford, MA	Fixed bottom marshalling	29	1,200	Operational	None. Limited by hurricane barrier width.
State Pier Offshore Wind Terminal[1]	New London, CT	Fixed bottom marshalling	40	1,000	Operational	Either S&I or foundation fabrication- but not both.
South Brooklyn Marine Terminal	Brooklyn, NY	Fixed bottom marshalling (Feeder Barge) and O&M	73	1,300	Construction started June 2024. Completion expected early 2027.	Limited to foundation fabrication due to air draft restrictions.
New Jersey Wind Port	Lower Alloways Creek, NJ	Fixed bottom marshalling and manufacturing	35	1,300	Operational	Either S&I or foundation fabrication- but not both.
Portsmouth Marine Terminal	Portsmouth, VA	Fixed bottom marshalling and manufacturing	70	1,500	Operational	S&I and foundation fabrication

[1]These ports represent all New England's purpose-built *fixed-bottom* OSWPs. These three ports, in addition to Providence Port which will be acting in a secondary port capacity, will have tenants through 2032 based on the selection of three projects to provide 2,878 MW of OSW energy to Massachusetts and Rhode Island (Healey & Driscoll 2024).

The other alternative besides constructing a port facility in Maine would be to use two different ports that are currently operational, such as State Pier Offshore Wind Terminal for S&I, and South Brooklyn Marine Terminal for foundation fabrication. While towing distance is less of a concern from State Pier, the potential availability of two out of six OSWPs being available for one project is extremely unlikely. Based on current OSW procurement targets set out by the federal government and east coast states, the six terminals are

expected to be in almost constant use through the State of Maine's OSW target date.[3] To meet these targets, more port facilities will need to be built aside from the proposed port in Maine. For Maine to guarantee success in meeting its OSW procurement targets, an OSWP in Maine is required.

[3] See Healey & Driscoll (2024), USDOE (2024), etc.

8. Maine Alternatives Considered and Dismissed Based on Design Criteria

The site selection process was completed in three rounds: an initial site screening based on minimum design criteria and navigation channel characteristics (Section 8); a second round that included further analysis on sites that could be made to meet minimum design criteria (Section 9); and a third round that analyzes the two best options, Mack Point and Sears Island (Section 10).

The initial identification of possible OSWP locations in Maine was based on extensive research and discussions between MaineDOT, MPA, Moffatt & Nichol, and other stakeholders. The minimum design criteria (Section 4) were applied to potential OSWP sites on the coast of Maine. Exhibit 23 summarizes the design criteria and MaineDOT and MPA's application of the criteria to individual sites. These sites are depicted in Exhibit 24. If a possible OSWP location did not meet all design criteria, it was dismissed from further analysis. Each of these design criteria are needed to successfully build an OSWP that complies with the State of Maine's FOSW procurement targets.

Exhibit 23. Design Criteria Applied in Initial Screening of Potential OSWP Locations in Maine

Design Criteria	Description
Unlimited air draft between site and open water	A 20MW FOSW turbine is projected to be roughly 1,000 ft tall. Unlimited vertical clearance between the port and open water is essential for OSWP site selection.
100 acres of total space in usable configuration	100 acres is required for marshalling a commercial FOSW project. The 100-acre area did not consider site topography in the initial screening.
1,500 ft of developable waterfront	A straight wharf length of 1,400 to 1,600 ft is required to complete operations associated with a commercial scale FOSW project. Sites were included in the initial screening if a straight wharf length of 1,500 ft could fit on site, with or without reasonable ocean fill.
Navigation channel to open water meets minimum width of 600 ft	FOSW foundations are expected to be around 400 ft wide. A 600-ft-wide channel allows a safe buffer for floating foundations to pass through. Tidal ranges and current were not considered in the initial screening of access channels.
Navigation channel meets minimum depth of 35 ft MLLW	Delivery vessels and floating foundations require a minimum depth of 35 ft to navigate safely. The access channel must support this minimum depth requirement.
Does the navigation channel require dredging to meet minimum channel characteristics?	If the navigation channel to the possible OSWP location does not meet minimum channel width and depth criteria, could a reasonable amount of dredging (i.e., less than 0.5 mile) be applied to meet criteria? Dredging of more than 0.5-mile distance would add significant cost, time, and permitting delay and is therefore, not be considered practicable to meet the State of Maine's OSW target.

Exhibit 25 summarizes the results of the initial screening process. An answer of "No" (**bolded** in exhibit 25) means the site does not meet the State's application of the minimum design criteria. Out of the 23 possible OSWP locations, five met all design criteria. These sites, Cousins Island, Estes Head Terminal, Mack Point, Mitchell Field, and Sears Island are further analyzed in Sections 9 and 10. The remainder of Section 8 discusses the 18 possible OSWP locations dismissed in the initial screening and identifies the known challenges that would affect the practicability of the site, along with some unique site-specific challenges.

Exhibit 24. Sites Considered in Initial Screening of Potential OSWP Locations in Maine

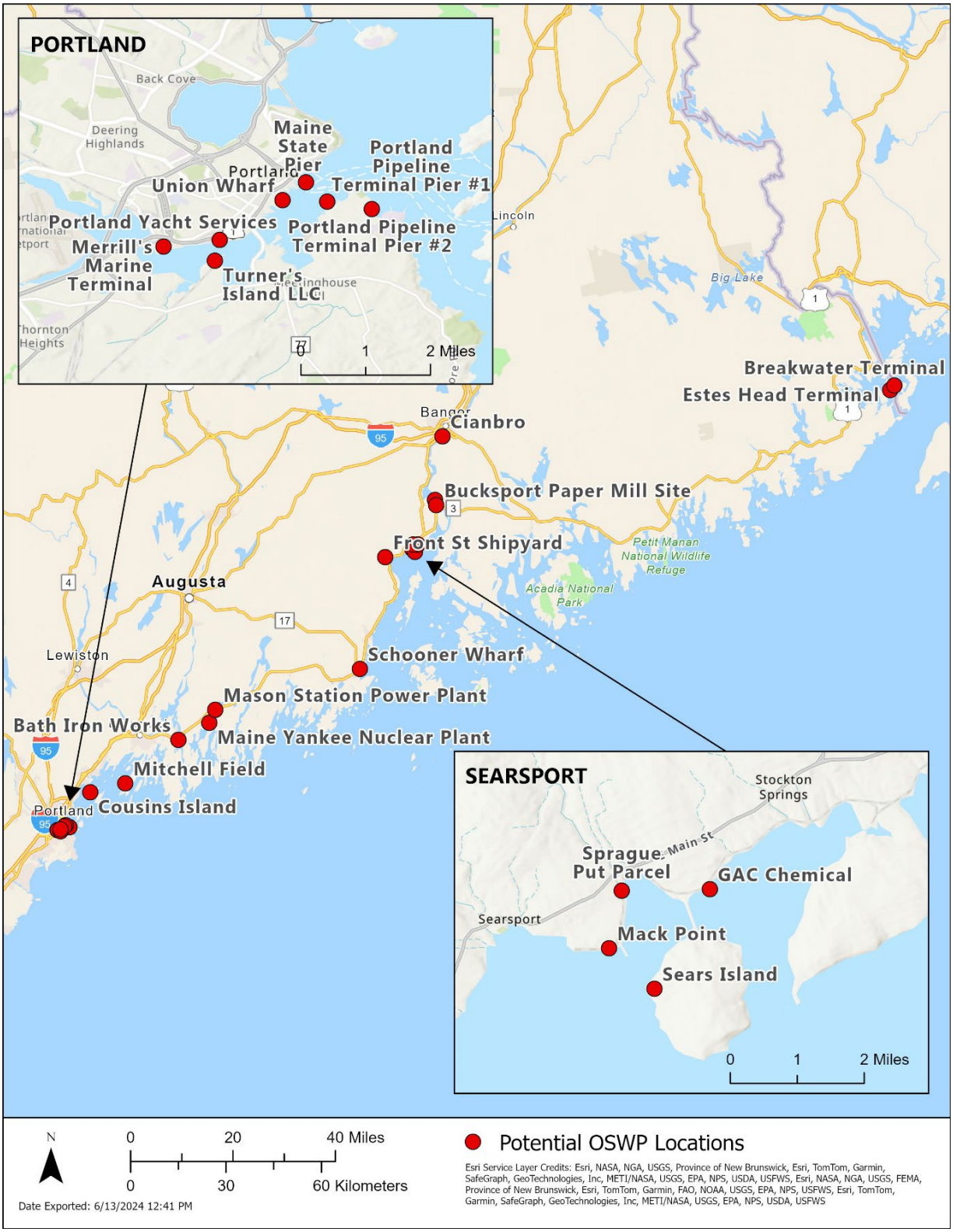


Exhibit 25. Initial Screening of Potential OSWP Sites on the Coast of Maine

Site Name (Town)	Design Criteria (explained in Exhibit 23)					
	Unlimited air draft between port site and open water?	Minimum 100 acres of total space in usable configuration?	Minimum 1,500 ft of developable waterfront?	Minimum access channel width of 600 ft?	Minimum access channel water depth of 35 ft?	Extensive dredge *is not* required to meet minimum access channel width/depth?
Bath Iron Works (Bath)	Yes	**No**	Yes	**No**	**No**	**No**
Breakwater Terminal (Eastport)	Yes	**No**	**No**	Yes	Yes	Yes
Cianbro (Brewer)	Yes	**No**	Yes	**No**	**No**	**No**
Cousins Island (Yarmouth)	Yes	Yes	Yes	Yes	Yes	Yes
Estes Head Terminal (Eastport)	Yes	Yes	Yes	Yes	Yes	Yes
Front St Shipyard (Belfast)	Yes	**No**	**No**	**No**	**No**	**No**
GAC Chemical (Searsport)	Yes	Yes	**No**	Yes	Yes	**No**
Mack Point (Searsport)	Yes	Yes	Yes	Yes	Yes	Yes
Maine State Pier (Portland)	Yes	**No**	**No**	Yes	Yes	Yes
Maine Yankee Nuclear Plant (Wiscasset)	**No**	Yes	Yes	**No**	**No**	**No**

Exhibit 25. Initial Screening of Potential OSWP Sites on the Coast of Maine

Site Name (Town)	Design Criteria (explained in Exhibit 23)					
	Unlimited air draft between port site and open water?	Minimum 100 acres of total space in usable configuration?	Minimum 1,500 ft of developable waterfront?	Minimum access channel width of 600 ft?	Minimum access channel water depth of 35 ft?	Extensive dredge *is not* required to meet minimum access channel width/depth?
Mason Station Power Plant (Wiscasset)	Yes	**No**	Yes	**No**	Yes	**No**
Merrill's Marine Terminal (Portland)	Yes	**No**	**No**	**No**	Yes	**No**
Mitchell Field (Harpswell)	Yes	Yes	Yes	Yes	Yes	Yes
Portland Pipeline Terminal Pier #1 (South Portland)	Yes	**No**	**No**	Yes	Yes	Yes
Portland Pipeline Terminal Pier #2 (South Portland)	Yes	**No**	**No**	Yes	Yes	Yes
Portland Yacht Services (Portland)	Yes	**No**	Yes	**No**	Yes	**No**
Schooner Wharf (Rockland)	Yes	**No**	**No**	**No**	**No**	**No**
Sears Island (Searsport)	Yes	Yes	Yes	Yes	Yes	Yes

Exhibit 25. Initial Screening of Potential OSWP Sites on the Coast of Maine

Site Name (Town)	Design Criteria (explained in Exhibit 23)					
	Unlimited air draft between port site and open water?	Minimum 100 acres of total space in usable configuration?	Minimum 1,500 ft of developable waterfront?	Minimum access channel width of 600 ft?	Minimum access channel water depth of 35 ft?	Extensive dredge *is not* required to meet minimum access channel width/depth?
Sprague North (Bucksport)	**No**	**No**	**No**	**No**	**No**	**No**
Sprague Put Parcel (Searsport)	Yes	**No**	**No**	Yes	Yes	**No**
Turner's Island, LLC (South Portland)	Yes	**No**	**No**	**No**	Yes	**No**
Union Wharf (Portland)	Yes	**No**	**No**	Yes	Yes	Yes
Verso Paper Mill (Bucksport)	**No**	Yes	Yes	**No**	Yes	**No**

8.1 Bath Iron Works (Bath) Alternative

Bath Iron Works was dismissed from further analysis for the following reasons:

- Less than 100 acres of usable upland
- Less than 35 feet of water depth
- Less than 600-foot-wide channel
- Active naval shipyard
- Currently occupied by fourth largest employer in Maine

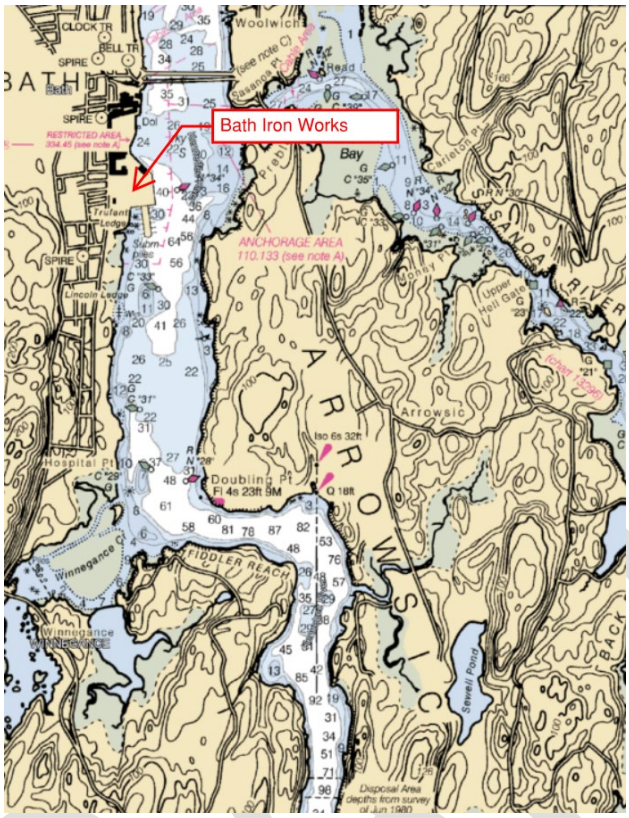
The General Dynamics Bath Iron Works (BIW) site consists of 60 acres on the west bank of the Kennebec River in the City of Bath (Exhibit 26). The site is currently in use as a shipbuilding facility, primarily engaged in U.S. Navy surface combat vessels. BIW has unlimited air draft to open water and more than 1,500 feet of developable waterfront. The site is also located adjacent to a major freeway (U.S. 1).

The federally maintained navigation channel adjacent to the site is dredged to 27 feet and is only 500 feet wide (Exhibit 27). There are several points on the route to open water which are narrower than 500 feet, which increases the risks associated with towing completed WTG's out to sea. BIW falls short of the necessary upland area by approximately 40 acres. The surrounding area is densely residential, and expansion to meet the 100-acre minimum design criteria would require the demolition of approximately 100 homes, numerous businesses, and a public school.

Additionally, BIW is considered vital to U.S. national security interests and redevelopment would likely not be considered by the Department of Homeland Security. At over 6,000 employees, BIW is the largest single-site employer in Maine and has been in operation for 140 years. Further, it is assumed that the facility could not accommodate continued use as a naval shipyard and an OSWP. For these reasons, BIW was dismissed from further analysis and is not considered a viable site for OSW development.

Exhibit 26. Bath Iron Works, City of Bath

Exhibit 27. Bath Iron Works, located on the Kennebec River.



Note that the navigation channel does not meet minimum design criteria for depth or design criteria for width.

8.2 Breakwater Terminal (Eastport) Alternative

Breakwater Terminal was dismissed from further analysis for the following reasons:

- Less than 100 acres of usable upland
- Less than 1,500 feet of developable waterfront
- Lack of usable access road

Breakwater Terminal is located on the eastern waterfront of Eastport, a city located on an archipelago at the easternmost coastal point in Maine. The existing facility consists of an 'L' shaped pier extending 300 feet from shore with a 400-foot face and a width of 100 feet (Exhibit 28). The pier is currently in use primarily as a facility for commercial fishing and a recreational marina. Small cruise ships also occasionally berth at this pier. The site is currently zoned for commercial use and is owned in part by the city of Eastport and the Eastport Port Authority. The pier is adjacent to deepwater, though not a federally maintained channel, and possesses unrestricted air draft to open water, though passage through Canadian waters would be necessary.

The facility is approximately one acre in size and buildout of 100-acres of usable upland is considered impractical. Breakwater terminal is located adjacent to the city's main business district and residential communities. To meet the minimum 100 acres of usable upland, over 100 residential buildings and 30 businesses would be demolished, effectively eradicating the City of Eastport. Further, the site falls short of the required 1,500 feet of developable waterfront with a 400-foot pier currently in place and a maximum buildout of less than 800 feet due to adjacent facilities like the Eastport Commercial Pier, the primary commercial fishing pier, and a major economic driver in this area, to the south. The roadway access to Breakwater Terminal is also considered inadequate for OSWP buildout and operations. The site is

accessible by a two-lane road and is over seven miles from the nearest state highway and approximately 100 miles from the nearest major freeway. For these reasons, Breakwater Terminal was dismissed from further analysis and is not considered a viable site for OSW development.

Exhibit 28. Breakwater Terminal Parcel (shaded blue green) in Eastport, Maine.

Note that the Eastport Commercial Pier, a major economic driver in this area, is about 250 feet to the south (bottom of frame).

8.3 Cianbro (Brewer) Alternative

Cianbro was dismissed from further analysis for the following reasons:

- Lack of unrestricted air draft
- Less than 100 acres of usable upland
- Less than 35 feet of water depth
- Less than 600-foot-wide channel

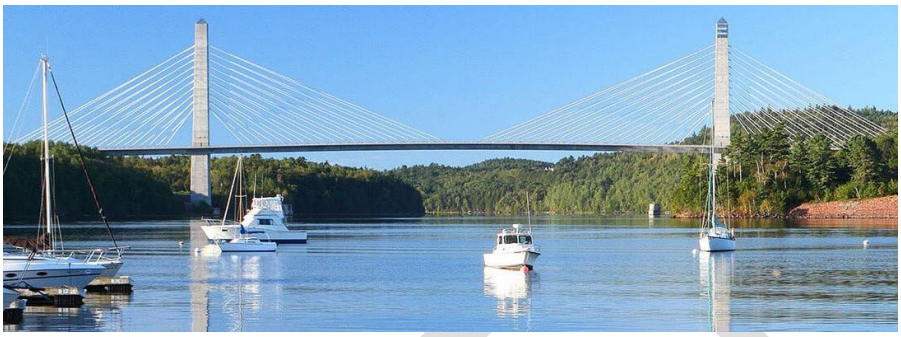
Cianbro is a 41-acre site located on the east bank of the Penobscot River in the Town of Brewer, approximately two miles south of Bangor. The site is currently occupied by Cianbro, a construction and manufacturing company, and primarily used for the construction of modular components for the petrochemical and electric power industries. The mostly open-space facility includes a small wharf of less than 400 feet in unknown condition and more than 1,500 feet of developable waterfront.

The site is constrained to the north, east, and south by public infrastructure, including Brewer City Waste Treatment Plant, State Route 15 (S. Maine Street), and Maine Central Railroad, residential neighborhoods, office buildings and commercial/retail businesses. To meet the 100-acre minimum design criteria would require the displacement of the current Cianbro business, public infrastructure, and over 100 homes and business properties. Further, the Sedgeunkedunk Stream confluence with the Penobscot River is located directly south of the site and would be impacted.

The Cianbro site does not have access to open water with unlimited air draft and is, therefore, not a suitable OSWP location. The Penobscot Narrows Bridge, a large cable-stayed bridge carrying U.S. 1 over the Penobscot River about 17 miles south of the site, has a horizontal clearance of 143 feet and a vertical

clearance of 428 feet (Exhibit 29). Overhead cables with a vertical clearance of 131 feet also obstruct the channel. Further, the existing channel depth (15 feet in places) and width (350 feet) are inadequate. If these essential site characteristics were met, the site would still need to be expanded by approximately 60 acres into a residential community to the east. For these reasons, Cianbro was dismissed from further analysis and is not considered a viable site for OSW development.

Exhibit 29. The Penobscot Narrow Bridge restricts the path between Cianbro and open water.



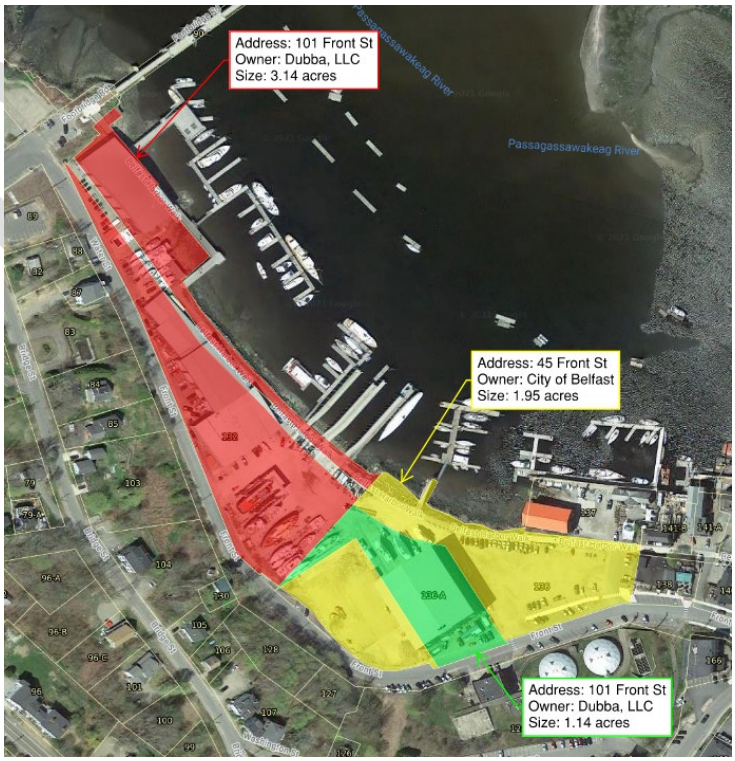
8.4 Front Street Shipyard (Belfast) Alternative

Front Street Shipyard was dismissed from further analysis for the following reasons:

- Less than 100 acres of usable upland
- Less than 1,500 feet of developable waterfront
- Less than 35 feet of water depth
- Less than 600-foot-wide channel

The Front Street Shipyard site is 6.2 acres located adjacent to Downtown Belfast on the west bank of the Passagassawakeag River (Exhibit 30). The site is currently in use as a marina and by shipbuilder(s) focused primarily on custom yachts. The site has unrestricted air draft but does not meet other design criteria. Expanding the site to meet the 100-acre requirement would result in the demolition of over 70 residential properties, dozens of businesses, and a graveyard. A 1,500-foot wharf would extend from the Belfast Armistice Bridge (Belfast Rail Trail) to Marshall Wharf. Further, the navigation channel approaching the site is 200 feet wide and 14.5 feet deep as of 2018. Due to the extent of dredge, improvement to the channel is considered impracticable. For these reasons, Front Street Shipyard was dismissed from further analysis and is not considered a viable site for OSW development.

Exhibit 30. Front Street Shipyard, Belfast



8.5 GAC Chemical (Searsport) Alternative

The GAC Chemical site was made available for study and previously addressed in the Feasibility Study (Moffatt & Nichol, 2021).

The GAC Chemical site was dismissed from further analysis for the following reasons:

- Less than 1,500 feet of developable waterfront
- Less than 35 feet of water depth
- Less than 600-foot-wide channel
- Greater than 0.5-mile of dredge required

GAC Chemical Corporation is currently in use as an industrial chemical manufacturing facility located on Stockton Harbor in Searsport. The facility consists of approximately 17 acres of waterfront and 130 acres of upland separated by a three- to four-track rail spurs of the Canadian Pacific-Kansas City Railway (CPKC). The facility is in active use (Exhibit 31). The parcel has unobstructed air draft to open water and a deepwater navigation channel is located one mile from the waterfront.

It is unlikely that 1,500 feet of waterfront is developable due to the proximity of the active rail spur to the waterfront, as little as 100 feet in places. Stockton Harbor is a small bay on the northern part of Penobscot Bay consisting mostly of mudflats and shallow water of 15 feet or less (Exhibit 32). Vessel access to the site would require over one mile of dredge and is, therefore, considered impracticable due to the cost of dredging and disposing of sediments. The large dredge quantity also would add a significant amount of time to the project's construction schedule. Due to the surrounding shallow water and soil composition, the area would rapidly silt back in and require continuous maintenance dredging for the rest of the useful life of the project. For these reasons, GAC Chemical was dismissed from further analysis and is not considered a viable site for OSW development.

Exhibit 31. The GAC Chemical Site is about 2 miles east of downtown Searsport.

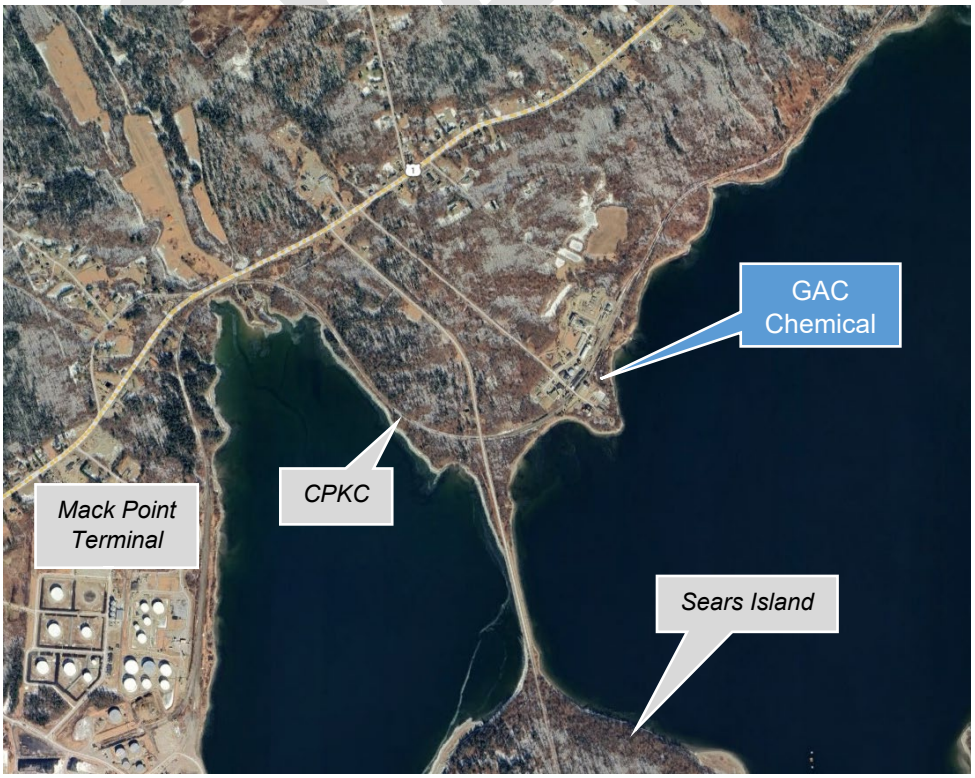
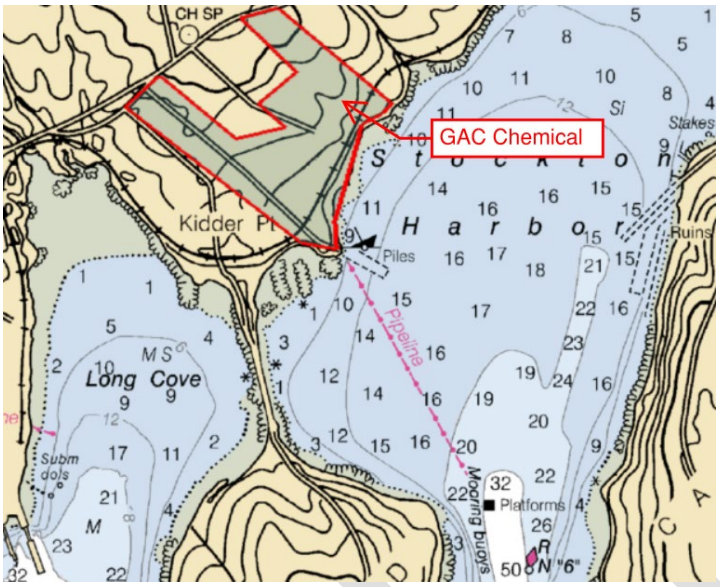


Exhibit 32. The GAC Chemical Site



Note the expanse of shallow water that would require an unreasonable quantity of dredge.

8.6 Maine State Pier (Portland) Alternative

Maine State Pier was dismissed from further analysis for the following reasons:

- Less than 100 acres of usable upland
- Less than 1,500 feet of developable waterfront

Maine State Pier is currently in use as a ferry terminal and concert venue adjacent to downtown Portland. The site has unrestricted air draft and direct access to an adequate navigation channel but does not meet other design criteria. The site is less than five acres in size and has less than 1,500 feet of developable waterfront. Neither upland area nor waterfront expansion is practicable because the site is located amongst dense waterfront development in the heart of Downtown Portland (Exhibit 33). For these reasons, Maine State Pier was dismissed from further analysis and is not considered a viable site for OSW development.

Exhibit 33. Maine State Pier is located on Casco Bay along Portland's historic waterfront.

8.7 Maine Yankee Nuclear Plant (Wiscasset) Alternative

Maine Yankee was dismissed from further analysis for the following reasons:

- Less than 35 feet of water depth
- Less than 600-foot-wide channel
- Greater than 0.5-mile of dredge required
- Nuclear waste storage

Maine Yankee Nuclear Plant, a shuttered nuclear power generating station, consists of a 140-acre site located on the west bank of the Back River, approximately four miles south of Wiscasset (Exhibit 34). The site also contains more than 1,500 feet of developable waterfront. Over 500 metric tons of spent nuclear fuel waste are stored at the site that would have to be managed by the project, introducing cost, time, and risk. While the Yankee Nuclear Plant site has adequate uplands and developable waterfront, there is no federally maintained channel and there are substantial portions of the approach route (via the Back River, Sassanoa River, and Sheepscot River) that are less than 20 feet deep and less than 200 feet wide for over one mile, surrounded by mud flats (Exhibit 35). There are some areas on the route that provide only slightly more than 600 feet of width between shorelines. Regardless, dredging is considered impracticable due to the cost of dredging and disposing of sediments at this scale. The large dredge quantity also would add a significant amount of time to the project's overall timeline to complete construction. For these reasons, Maine Yankee Nuclear Plant was dismissed from further analysis and is not considered a viable site for OSW development.

Exhibit 34. The Maine Yankee Nuclear Plant Site

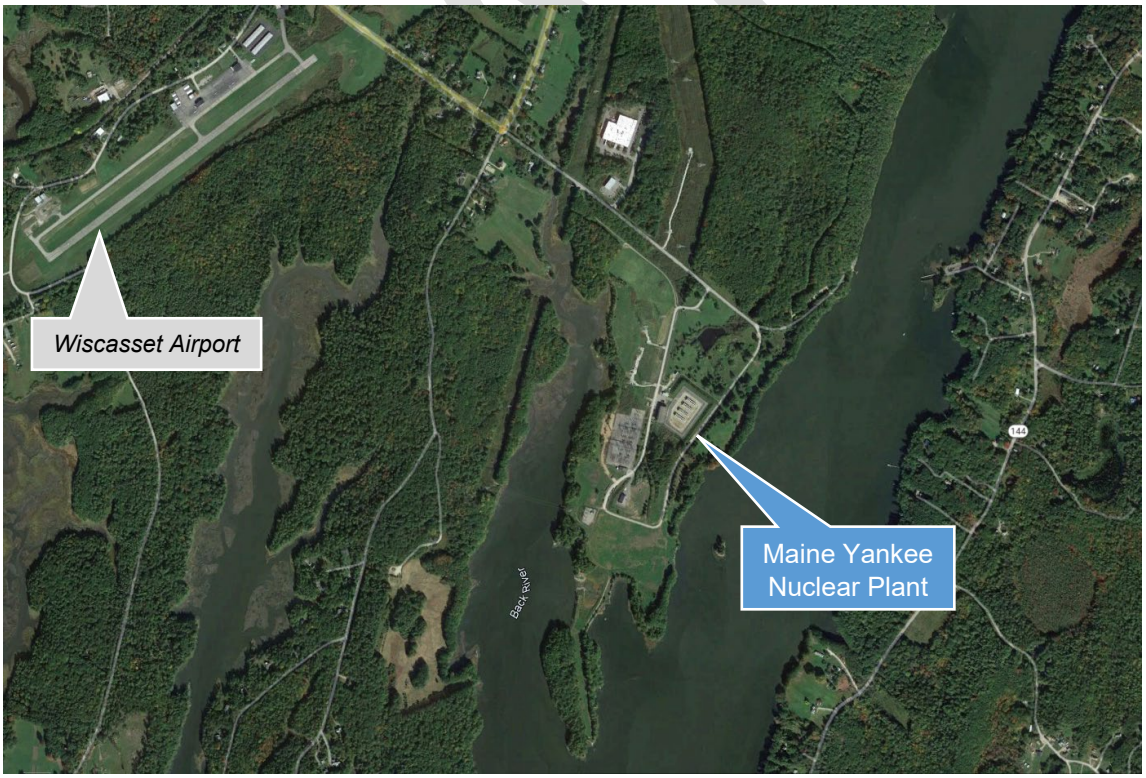
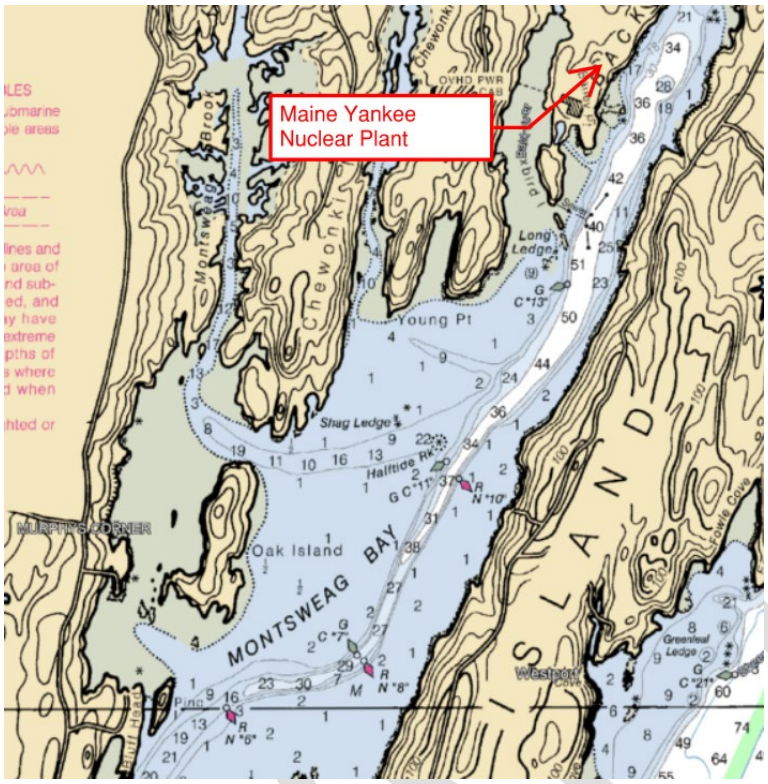


Exhibit 35. Maine Yankee Nuclear Plant, Access Channel Approach



8.8 Mason Station Power Plant (Wiscasset) Alternative

Mason Station was dismissed from further analysis for the following reasons:

- Less than 100 acres of usable upland
- Less than 35 feet of water depth
- Less than 600-foot-wide channel
- Greater than 0.5-mile of dredge required

Mason Station Power Plant is an inactive coal/oil burning power plant on the west bank of the Sheepscot River approximately one mile south of the Town of Wiscasset (Exhibit 36). The site consists of approximately 8.3 acres of waterfront and an existing 200-foot by 40-foot pier located 100 feet from the shoreline. There is an adjacent seven-acre parcel owned by Central Maine Power, the operational status of which is unknown. The pier is accompanied by several mooring and breasting dolphins. Though the existing pier is in poor condition, there is at least 1,500 feet of developable waterfront. There is also unrestricted air draft along the route to open water and the site is adjacent to a federally maintained deepwater channel of 40 to 60 feet in depth. The parcel is surrounded by numerous small residential and commercial parcels with various owners.

Mason Station falls substantially short of the required 100 acres of usable upland area. Expansion of the site would require the demolition of at least 12 homes and three businesses (Exhibit 37). The surrounding uplands consist of at least 13 acres of wetlands and a 147-acre nature preserve. While there is a deepwater, federally maintained channel adjacent to the site, the width of the channel is inadequate with many portions less than 200 feet wide over more than five miles of the Sheepscot River (Exhibit 38). With a floating foundation anticipated to be 350 to 410 feet wide, navigating this channel while towing a foundation is considered infeasible. Widening the channel to the required 600 feet is considered impractical both due to the scale of the dredge required as well as limited room for expansion. Several areas of the Sheepscot

River are only 600 feet wide between riverbanks. There is likely soil contamination on site, however little data is available as the current owner has refused to allow a Maine Department of Environmental Protection (MDEP) inspection. Two separate site plans were considered which did not account for ownership status of the surrounding parcels (see Attachment B).

Exhibit 36. Mason Station, an inactive coal/oil burning power plant, on the Sheepscot River.

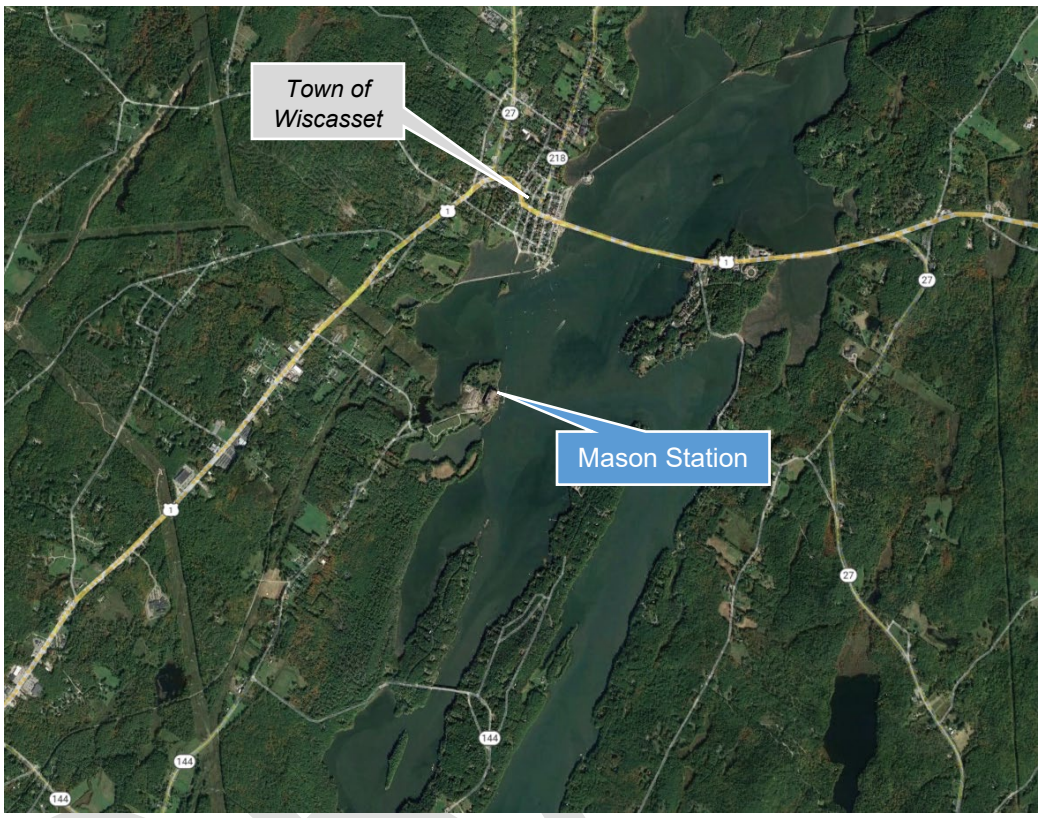
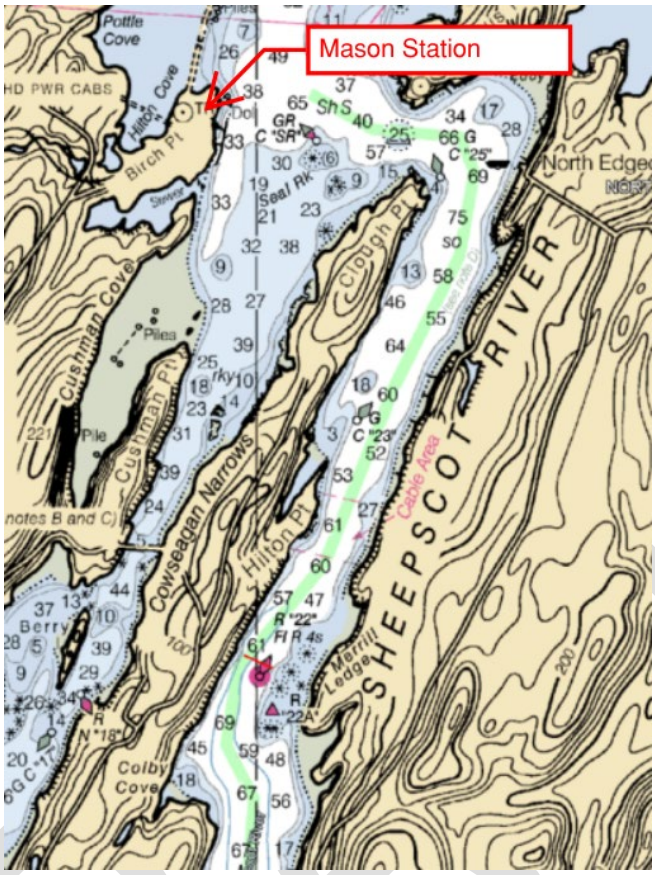


Exhibit 37. Available Acreage at Mason Station and Adjacent Parcels

Exhibit 38. Mason Station, Access Channel Approach



Additionally, a redevelopment joint venture has signed an exclusion options agreement to acquire the site by 2025. Planned use includes a marina, commercial fishing facilities, battery energy storage systems, and a biofuel depot. For these reasons, Mason Station Power Plant was excluded from further analysis.

8.9 Merrill's Marine Terminal (Portland) Alternative

Merrill's Marine Terminal was dismissed from further analysis for the following reasons:

- Less than 100 acres of usable upland
- Less than 35 feet of water depth
- Less than 600-foot-wide channel

Merrill's Marine Terminal is an approximately 30-acre site located on the north bank of the Fore River at 92 Cassidy Point Drive, approximately two miles southwest of downtown Portland. The site is currently used primarily for dry-bulk shipping. Merrill's Marine Terminal lacks the required upland area and the potential for expansion is restricted due to the adjacent Fore River Parkway/W. Commercial Street corridor, both of which are key thoroughfares in the City of Portland, as well as an active railroad corridor. In addition to the relocation of this transportation infrastructure, meeting the 100-acre minimum design criteria would require cutting into the hillside to the northeast of the site and displacement of the historic Western Cemetery in Portland's West End neighborhood.

While located adjacent to a deepwater channel, the channel lacks the required 600 feet of horizontal clearance and is separated from open water by the Casco Bay Bridge (Exhibit 39). The Casco Bay Bridge opens for unlimited air draft but has a horizontal clearance of less than 200 feet which further restricts the

navigation channel width. For these reasons, Merrill's Marine Terminal was dismissed from further analysis and is not considered a viable site for OSW development.

Exhibit 39. Casco Bay Bridge restricts the navigation channel width to 200 feet.

8.10 Portland Pipeline Terminal Pier #1 and #2 (South Portland) Alternative

Portland Pipeline Terminal Pier #1 and #2 were dismissed from further analysis for the following reasons:

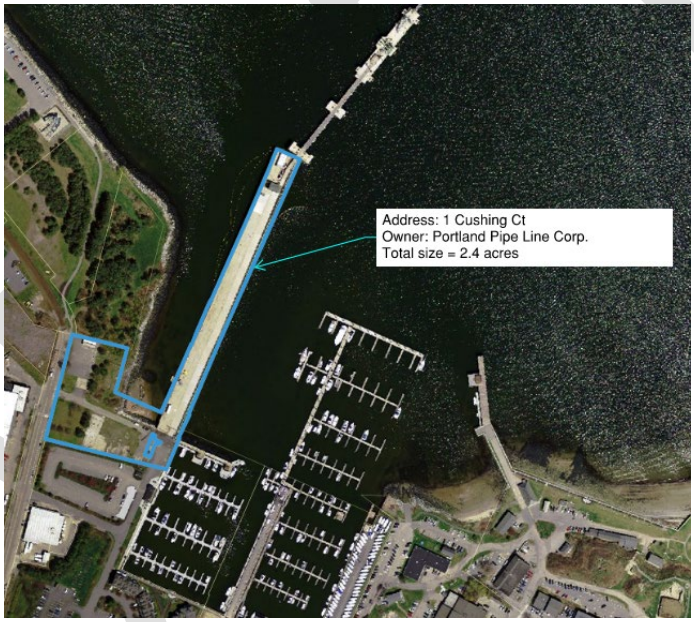
- Less than 100 acres of usable upland
- Less than 1,500 feet of developable waterfront

The Portland Pipeline Terminals are mostly retired terminals used to transport oil from Portland to Quebec. Both sites have unrestricted air draft and access to an adequate navigation access channel. However, the sites, located approximately 1,500 feet apart, encompass less than 10 acres of usable upland and contain less than 1,500 feet of developable waterfront (Exhibit 40 and Exhibit 41). To achieve a 100-acre site would require the purchase and displacement of commercial, industrial, and public properties, including a commercial fishing charter pier, Gulf Oil Terminal and liquid bulk pier, Bug Light Park (including the Portland Breakwater Lighthouse and Liberty Ship Memorial) and public boat ramp, portions of the South Portland Greenbelt Pathway, and about five businesses. Thirteen liquid tanks within this area would have to be removed and remediated.

Located adjacent to the densely developed, and historic, South Portland neighborhoods, and directly across Portland Harbor from the historic Portland waterfront, expansion is considered impracticable due to the impact it would have on the community. For these reasons, both Portland Pipeline Terminals were dismissed from further analysis and is not considered a viable site for OSW development.

Exhibit 40. Portland Pipeline Terminal Pier #1, 11 Portland Street Pier

Exhibit 41. Portland Pipeline Pier #2, at the corner of Maine Drive and Cushing Court.



8.11 Portland Yacht Services (Portland) Alternative

Portland Yacht Services was dismissed from further analysis for the following reasons:

- Less than 100 acres of usable upland
- Less than 35 feet of water depth
- Less than 600-foot-wide channel

Portland Yacht Services (100 W. Commercial Street) is an active boatyard located on the north bank of the Fore River approximately one mile southwest of downtown Portland. Located approximately one-half-mile downstream (east) of the Merrill's Marine Terminal site, the eight-acre Portland Yacht Services site is deficient in the same manner as its neighbor. The site lacks the required upland area and the potential for expansion is restricted due the adjacent W. Commercial Street corridor, a key thoroughfare in the City of Portland, an adjacent, active railroad corridor through Maine Central Railroad Company's West End Yard, and topography (approximately 100 feet of elevation gained between W. Commercial Street and Danforth

Street). In addition to the relocation of this transportation infrastructure and the topography, approximately 300 properties would be displaced southeast of Spring Street to meet the 100-acre minimum design criteria. The properties are mostly residences in the historic West End neighborhood but also include the recently constructed VA Outpatient Clinic, businesses, a private school, and a public park.

There is deepwater access, but the Casco Bay Bridge (refer to Exhibit 39) restricts the navigation channel to 200 feet. For these reasons Portland Yacht Services was dismissed from further analysis and is not considered a viable site for OSW development.

8.12 Schooner Wharf (Rockland) Alternative

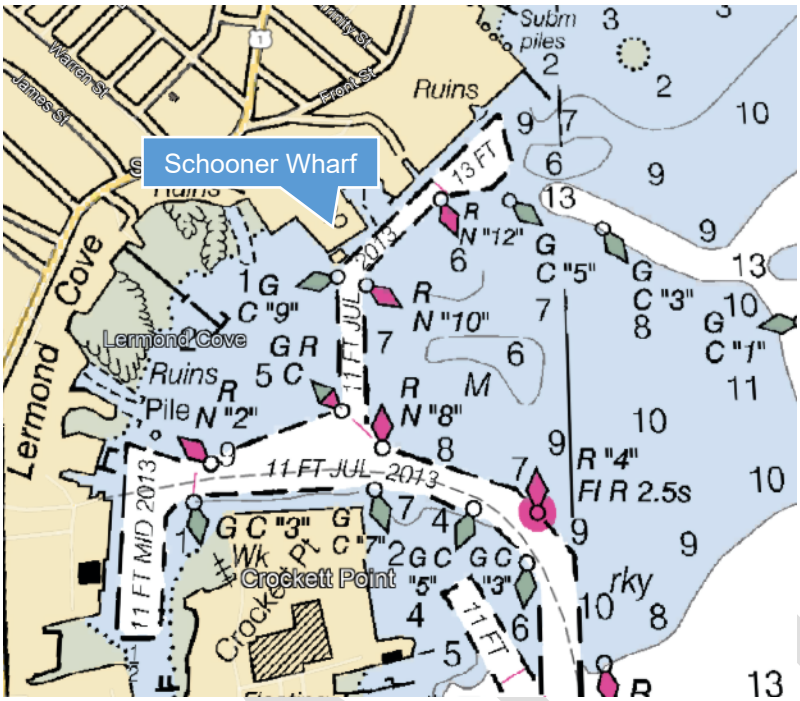
Schooner Wharf was dismissed from further analysis for the following reasons:

- Less than 100 acres of usable upland
- Less than 1,500 feet of developable waterfront
- Less than 35 feet of water depth
- Less than 600-foot-wide channel
- Greater than 0.5-mile of dredge required

Schooner Wharf is a multi-use waterfront property located at 11 Front Street, approximately one-half-mile north of downtown Rockland. While there are no air draft restrictions, at nine acres the property does not have 1,500 feet of developable waterfront and it lacks the required usable upland area. Expansion to meet the 100-acre and 1,500-foot wharf minimum design criteria would require the demolition and relocation of over 100 residential properties and several businesses (Exhibit 42). The site does not have deepwater access. The existing access channel is 11 feet deep and less than 100 feet wide with over 1.5 miles to open water (Exhibit 43). A dredge to meet access requirements is considered impracticable due to the cost of dredging and disposing of sediments. The large dredge quantity would also add a significant amount of time to the project's overall construction timeline. For these reasons Schooner Wharf was dismissed from further analysis and is not considered a viable site for OSW development.

Exhibit 42. Schooner Wharf, approximately one-half mile north of downtown Rockland

Exhibit 43. Navigation chart showing existing navigation channel access to Schooner Wharf.



8.13 Sprague North (Bucksport) Alternative

Sprague North was dismissed from further analysis for the following reasons:

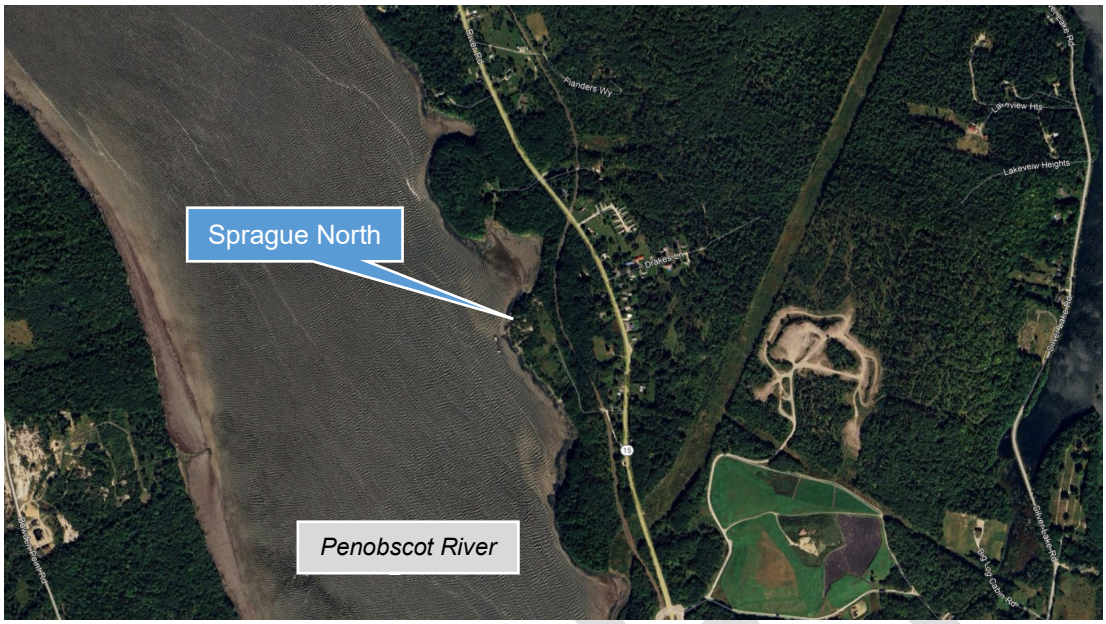
- Lack of unrestricted air draft
- Less than 100 acres of usable upland
- Less than 1,500 feet of developable waterfront
- Less than 35 feet of water depth
- Less than 600-foot-wide channel

Sprague North is a 13-acre abandoned site located on the Penobscot River in Bucksport (Exhibit 44). Like the Cianbro site located approximately 16 miles upstream in Brewer, the Sprague North site is north of the fixed Penobscot Narrows Bridge (refer to Exhibit 29) with a vertical clearance of 143 feet. The existing channel depth and width are inadequate, with sections in the middle of the river at 15 feet deep, and channel width restricted to 350 feet in the lower reaches of the river.

To meet the 100-acre of useable upland and 1,500 feet of developable waterfront would require relocation of public infrastructure and about 30 residences and 15 mobile homes. The Maine Central Railroad and State Route 15 (River Road) parallel the east bank of the Penobscot River about 500 feet and 1,000 feet to the west through this area each of which would require realignment. Impacts to the overhead power transmission lines would also be expected.

For these reasons Sprague North was dismissed from further analysis and is not considered a viable site for OSW development.

Exhibit 44. The Sprague North Site is on the east bank of the Penobscot River in Bucksport.



8.14 Sprague Put Parcel (Searsport) Alternative

The Sprague Put Parcel was made available for study and previously addressed in the Feasibility Study (Moffatt & Nichol, 2021).

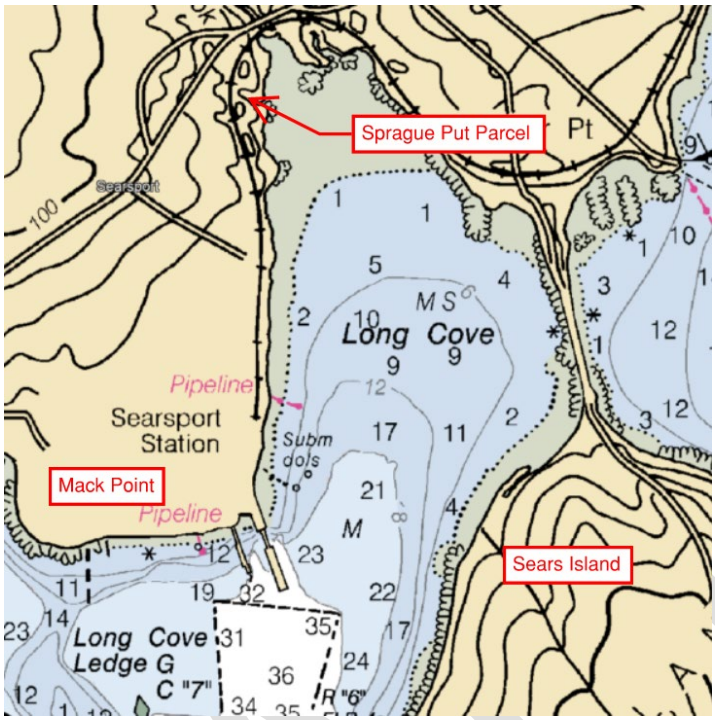
The Sprague Put Parcel was dismissed from further analysis for the following reasons:

- Less than 100 acres of usable upland
- Less than 1,500 feet of developable waterfront
- Less than 35 feet of water depth
- Less than 600-foot-wide channel
- Greater than 0.5-mile of dredge required

The Sprague Put Parcel is a 29-acre undeveloped site located in Searsport on Long Cove, north of Mack Point. There are no existing facilities on the parcel other than the active CPKC Railway spur that terminates at Mack Point. Given the parcel's size, 1,500 feet of developable waterfront is not present and, if it could be made available, the active rail spur would have to be relocated. The Sprague Put Parcel bounds U.S. 1 (E. Maine Street) at its northeast corner. A 100-acre parcel would require the relocation of about five residences and ten business on the south side of U.S. 1 and would likely require the realignment of Station Road.

The parcel has unobstructed air draft to open water and a deepwater navigation channel is located more than one mile from the waterfront. Long Cove is located off Penobscot bay and consists mainly of shallow water and mudflats (Exhibit 45). Connecting the site to the deepwater navigation channel south of Mack Point would require over one mile of dredging through mudflats and water that is less than 10 feet deep. Like the GAC Chemical site, the large dredge quantity would add a significant amount of time to the project's overall timeline to complete construction. Due to the surrounding shallow water and soil composition, the area would silt back in and require continuous maintenance dredging for the rest of the useful life of the project. For these reasons Sprague Put Parcel was dismissed from further analysis and is not considered a viable site for OSW development.

Exhibit 45. In addition to being too small, the Sprague Put Parcel's water access is inadequate.



8.15 Turner's Island LLC (South Portland) Alternative

Turner's Island was dismissed from further analysis for the following reasons:

- Less than 100 acres of usable upland
- Less than 1,500 feet of developable waterfront
- Less than 35 feet of water depth

Less and 600-foot-wide channel Turner's Island, LLC (40 Mechanic Street) is a marine rail cargo facility on the south bank of the Fore River approximately one mile southwest of Downtown Portland (Exhibit 46.). Like other nearby possible OSWP sites in Portland discussed above (e.g., Merrill's Marine Terminal, Portland Yacht Services), the Turner's Island, LLC site does not meet design criteria for project development. While located adjacent to a deepwater channel, the channel lacks the required 600 feet of horizontal clearance and is separated from open water by the Casco Bay Bridge (refer to Exhibit 39) which restricts navigation channel width to 200 feet.

At eight acres, the site does not meet the minimum requirement of 100 acres of usable upland and lacks the required 1,500 feet of developable waterfront. Expansion of the site to meet the 100-acre requirement would encroach on existing business, including the CITGO South Portland Terminal consisting of a 1,300-foot liquid pier and ten tanks, and approximately 150 parcels north of Broadway between roughly N. Kelsey Street and Morse Street in the Pleasantdale neighborhood of South Portland.

For these reasons, Turner Island LLC was dismissed from further analysis and is not considered a viable site for OSW development.

Exhibit 46. Turner's Island, LLC Site, Portland

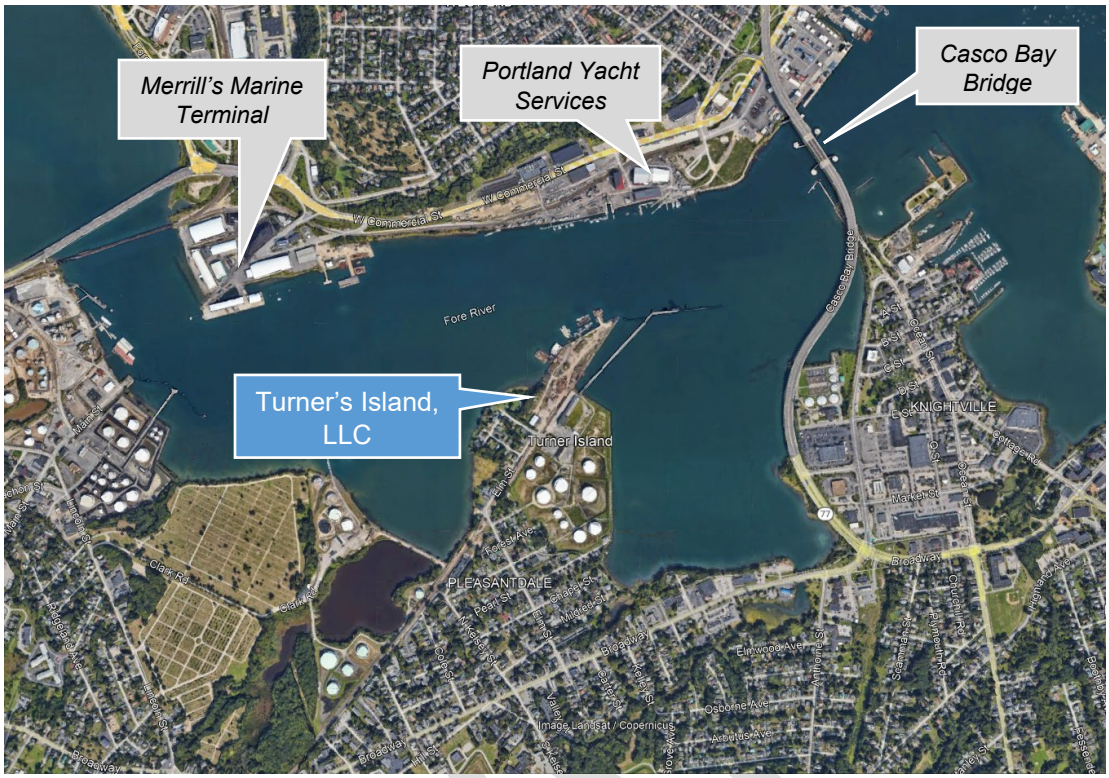


Exhibit 47. Union Wharf Site, Portland

8.16 Union Wharf (Portland) Alternative

Union Wharf was dismissed from further analysis for the following reasons:

- Less than 100 acres of usable upland
- Less than 1,500 feet of developable waterfront

Union Wharf is a privately owned site located on the north bank of the Fore River about one-half mile from downtown Portland and one-quarter mile west of Maine State Pier (refer to Exhibit 44). The site is currently occupied by numerous marine businesses including several commercial fishing operations.

The site has unrestricted air draft and direct access to an adequate navigation channel but does not meet other design criteria. The site is less than five acres in size and has less than 1,500 feet of developable waterfront. The existing wharf is 900 feet long on the west face, 575 feet on the east, and 190 feet on the south. The distance between Union Wharf and adjacent piers is less than 90 feet which would prohibit access for large vessels. To meet minimum design criteria, significant expansion would be required resulting in the demolition and relocation of numerous business establishments along the dense waterfront in the heart of downtown Portland. For these reasons, Union Wharf was dismissed from further analysis and is not considered a viable site for OSW development.

8.17 Verso Paper Mill (Bucksport) Alternative

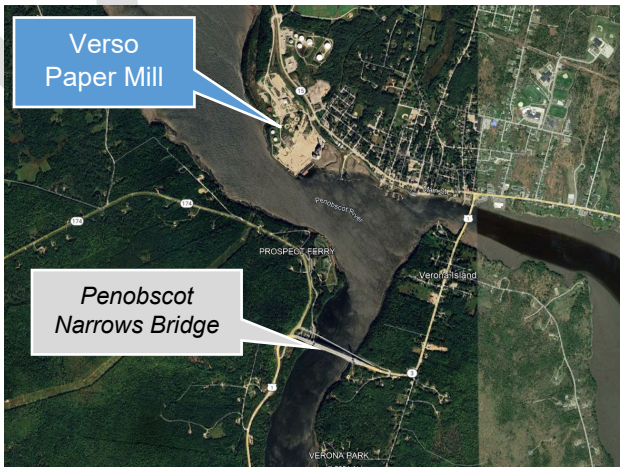
Verso Paper Mill was dismissed from further analysis for the following reasons:

- Lack of unrestricted air draft
- Less than 35 feet of water depth
- Less than 600-foot-wide channel

The Verso Paper Mill site encompasses 122 acres on the east bank of the Penobscot River at 2 River Road in Bucksport (Exhibit 48). The property was formerly occupied by a large paper manufacturing facility. Since closing, the site has been subdivided into four parcels, all of which have developments proposed or underway including a large-scale salmon farm and Maine Maritime Academy facilities.

The site meets minimum acreage requirements and has adequate developable waterfront. However, like the Cianbro site and the Sprague North site, the Penobscot Narrows Bridge (Exhibit 29) restricts the navigation channel width to 428 feet and the vertical clearance to 143 feet; therefore, the site does not meet the essential unrestricted air draft criteria. For these reasons, Verso Paper Mill was dismissed from further analysis and is not considered a viable site for OSW development.

Exhibit 48. Verso Paper Mill Site, Bucksport



9. Alternatives that Meet Minimum Design Criteria and Are Dismissed from Further Consideration

Six alternatives met the minimum design criteria detailed in Section 8 and required further analysis. These alternatives are Cousins Island, Mitchell Field, Estes Head Terminal, Sears Island/Mack Point Hybrid, Mack Point, and Sears Island. As the two most viable alternatives, Mack Point and Sears Island are evaluated in detail in Section 10. Five potential OSWP locations that meet the minimum design criteria are evaluated in this section. The "Sprague Alternative" was presented to the State in the fall of 2023 and is also addressed in this section.

For the port locations that met the minimum design criteria or could reasonably be made to meet minimum design criteria (refer to Exhibit 7), the State conducted further analysis and considered additional factors that impact the practicability of a potential site. These factors include (i) availability of land, (ii) constructability, (iii) operational functionality, and (iv) cost. Each of these potential sites was also evaluated for potential impacts to waters of the U.S. (WOTUS), including streams, and freshwater and coastal wetlands. The environmental data was based on the best available information and in most instances did not include site specific surveys. Site specific surveys were conducted for the two alternatives discussed in Section 10.

9.1 Practicability Discussion

Projects that propose to impact WOTUS must meet the Clean Water Act (CWA) Section 404(b)(1) guidelines (40 CFR 230). The U.S. Environmental Protection Agency (EPA) established the guidelines that constitute the substantive environmental criteria used in evaluating activities regulated under Section 404 of the CWA.

The regulation defines an alternative as practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics considering overall project purposes. The State identified four factors that frame the practicability of a particular site based on this definition.

Availability of Land

Site availability can pose a major challenge to the port construction cost and timeline. Acquisition of ocean-front property is an expensive proposition that would add significant costs to the project and could add time and uncertainty to the development schedule, which would be compounded by the complexity of ownership (e.g., multiple parties). If an agreement cannot be reached for the acquisition of private property, State law makes available to MaineDOT the eminent domain process (MRS 23 §154).

There are two notable exceptions in Maine law to this process for public utilities and railroads that may apply to potential OSWP site locations. Under MRS 23 §154.4, MaineDOT is prohibited from unilaterally determining the amount of just compensation involving the facilities of a public utility located outside of an established highway right of way. Instead, MaineDOT must negotiate and reach agreement with the utility on the amount of compensation. Negotiations can be lengthy and may be unsuccessful.

With respect to railroads, any acquisition of railroad property, including by eminent domain, would first require the approval of the federal Surface Transportation Board (STB) in what would be a likely lengthy and contested proceeding, in part due to MaineDOT's limited authority under Maine law for the taking of railroad property. Maine law contains provisions dealing with the eminent domain taking of railroads, including federally regulated railroads (MRS 23 §7154). Even when MRS 23 §7154 does apply, STB must still approve any railroad acquisition, whether by purchase or eminent domain taking.

Even in those circumstances in which MaineDOT possesses statutory eminent domain authority, there may be practical and public policy limits to its ability to exercise that authority.

The State has applied for discretionary grant funds from the USDOT and other federal agencies. Federal grant agreements require that the State possesses site control, e.g., ownership, long-term lease agreement, to ensure federal funds are being used for the intended purpose (i.e. construction and operation of the port).

While not an excluding factor, a rezoning process introduces additional uncertainty to the project schedule and could affect the OSW timeline (refer to Exhibit 5). For this reason, current zoning status is noted.

MaineDOT and MPA also considered future, potential port expansion in the context of availability. Having the option for expansion provides the State flexibility should the need and opportunity arise in the future. Building an OSWP adjacent to established or planned development would limit this opportunity for expansion.

Constructability

The major elements of the proposed OSWP construction consist of ocean fill and dredging (refer to Section 5). As discussed in Section 5, dredging has historically been a contentious and time-consuming prospect on the Maine coast introducing permitting challenges, uncertainty and schedule risks, and additional associated costs. To ensure the facility can be built in a timeframe that meets the project purpose, it is critical to minimize dredging.

Ocean fill will require the deposition of materials (e.g., rock, soil) into the ocean. These materials will need to come from on-site or be brought to the site from elsewhere. The use of materials sourced on-site is preferable from a cost and logistics perspective as bringing materials from off-site would require more trucking (from an unknown source), cost and material staging during construction. All OSWP alternatives would require excavation and grading of the uplands area which would generate some volume of potential fill materials on-site. A balanced project would generate enough fill material on-site to supply the project's fill requirements (e.g., ocean fill). A net export project would result in the need for materials to be removed from the site during construction; a net import project would result in the need for materials to be brought to the site during construction. Net import and net export projects add transportation and potential material sourcing and disposal costs and require availability of storage areas. Net import and export projects also add time to the project schedule. The text box at right summarizes the time and cost assumptions for OSWP import and export assumptions.

Time & Cost Associated with Material Import & Export, Assumptions

- One dump truck carries 15 CY.
- 30-minute roundtrip from suitable waste site to/from OSWP.
- 200 truck trips would remove 3,000 cubic yards (CY) per day.
- Approximately 1 million CY would be removed by truck per year.
- Import Cost: $20-$35/CY
  a. direct cost estimate (i.e., no overhead, profit, etc.) developed in association with the preliminary, detailed cost estimates prepared for Mack Point Option B.2 and Sears Island Preferred Option.
  b. Accounts for trucking of suitable fill material from available sites in Maine.
- Export Cost: $35-$50/CY
  a. direct cost estimate (i.e., no overhead, profit, etc.) developed in association with the preliminary, detailed cost estimates prepared for Mack Point Option B.2 and Sears Island Preferred Option.
  b. Accounts for material excavation and trucking to suitable disposal sites in Maine.

Construction of the OSWP will require a soil improvement process known as surcharging. Surcharging consists of applying load on the ground surface more than that associated with the long-term development conditions to accelerate consolidation. This can take the form of temporary fill embankments, constructed to a height that exceeds the design finished surface level, which are cut back to the design level following an appropriate period of consolidation settlement (CMW 2023). This process is used to compress construction fill. The fill used for surcharging must then be disposed of either on- or off-site but cannot be used as ocean fill or fill to achieve necessary upland grades due to the sequencing of construction activities.

Current designs for the OSWP propose the use of fill material (e.g., soil) to accomplish surcharging at the site. This requirement for additional fill materials is accounted for in a determination that a given site is a net export or net import project.

Most alternatives would require the demolition of existing assets at the site, and, in many cases, these assets are associated with probable hazardous materials (e.g., fuel storage) within an industrial context. Acquisition and development of properties with known or suspected hazardous waste contamination further complicates the construction process and would require that materials be handled according to applicable State and federal regulations, adding cost and risk to any project. As discussed in Availability of Land (above), there are additional constraints associated with demolishing and potentially relocating public utility or railroad assets.

Lastly, access to suitable roads is an important consideration for the variety of vehicles that will be accessing the OSWP during construction and operation. MaineDOT's Highway Corridor Priority (HCP) System categorizes the State's roadway system into six levels of priority, with HCP 1 being the highest order road and HCP 6 the lowest. HCP 1 are designed and maintained to accommodate high traffic volumes and heavy commercial (truck) traffic, whereas HCP 6 are local roads and streets. Exhibit 49 shows examples of HCPs 1-4, which encompass the roadways discussed in this section. A site's distance to an HCP 1 is noted in the following analysis because greater distances between and OSWP and an HCP 1 suggests relatively more potential roadway improvements to adequately connect the port to a suitable highway. The distance to an HCP 1 does not eliminate a site but increases the cost and schedule risks to complete any necessary roadway improvements prior to port construction.

Exhibit 49. Examples of MaineDOT's Highway Corridor Priority 1 through 4

Source: MaineDOT 2024

Operational Functionality

The design criteria discussed in Section 4 are the minimum necessary to meet the performance requirements for a purpose-built OSWP that can accommodate floating WTGs. There are additional considerations, however, that impact the operational functionality of the OSWP and its ability to operate in an efficient manner, meet the needs of the end-users, and provide a versatile asset worthy of the significant investment by the State of Maine. Operational functionality is a measure of a port's overall efficiency and versatility and also takes into account other factors that impact operations, such as navigation safety,

compatibility with current uses at the site and with adjacent land uses, and access to labor markets. These factors contribute to the marketability of the proposed port to future OSW developers. A straight, linear wharf adjacent to 100-acres of land with the required bearing capacity and in a usable configuration will provide for the versatility to arrange activities and accommodate simultaneous launchings for different (and evolving) floating OSW technologies. These features will be required by OSW developers and are in the best interest of the public as efficiency and versatility will drive the cost of floating WTG down.

Navigation safety is an important consideration for any port facility. Generally, eliminating and reducing any vessels exposure to risks is a benefit to port operations. Prevailing weather patterns (i.e., wind and wave) are environmental factors that affect navigation and, depending on their severity, can lower risk thresholds that operators are willing to assume.

Existing uses are important considerations for a site's suitability for the proposed OSWP. First, it is not feasible to share the port with other ongoing or proposed uses. The land requirements are the minimum needed for a purpose-built OSWP and assumes no interference from other uses. If there are other activities, then the minimum space needs would increase. The most efficient port configuration, with no interference from other users, will result in the most cost-effective deployment of OSW energy.

Adjacent land uses are also a consideration. Placement of an OSWP next to established residential land uses is expected to result in challenges by residents and communities, introducing additional uncertainty to the project schedule. In contrast, locating the facility in an industrial location is expected to present fewer conflicts with existing uses.

Access to a labor market is a logistical issue that the MaineDOT and MPA have considered which extends to a community's ability to reasonably accommodate an influx in residents in the short term (construction workers to build the port) and long-term port employees and their families. Community characteristics like unemployment rates, median income, and housing affordability and availability are considered for each proposed port location.

Maine's three port strategy must also be recognized in the discussion of OSWP siting. Maine's three port strategy has guided port investment in Maine for nearly 50 years and has successfully funneled port investment into the established industrial/commercial ports at Portland, Searsport, and Eastport. This investment strategy has positioned these ports as the most suitable locations for an OSWP because they have been developed to handle intensive port uses and generally have ready access to all requirements for a successful commercial port facility.

Cost

The proposed OSWP is a transformational infrastructure investment unlike any other on the U.S. east coast and with few comparisons nationally or internationally. Preliminary construction cost estimates developed for an OSWP at Mack Point and Sears Island (see Section 10) conclude that the project would cost more than $500 million (see Attachment H). In addition to facilitating the deployment of renewable FOSW energy in the Gulf of Maine, investment in the proposed OSWP is expected to pay substantial dividends for Mainers by growing and diversifying the State economy and creating good-paying jobs (GEO 2023).

Accepting that an OSWP in Maine would cost more than half a billion dollars, the State must be conscientious of available funding opportunities and continue to work on cost containment measures. The major construction cost drivers for any location are land acquisition and/or lease agreement, material import and/or export, and dredging (discussed above). To the greatest extent practical, the State has developed and applied reasonable cost ranges for each of these major construction elements and includes estimates for the proposed OSWP locations evaluated in this section. These cost data provide a comparative touchpoint for each potential site without the need for a detailed cost estimate.

There are other unknown construction elements that could add to costs at a given site, including but not limited to potential contamination and remediation. Several locations evaluated in this section are on active industrial sites with expected contamination. The State has not conducted investigations at each of these

sites to determine the type and extent of contamination. The potential for contamination and remediation is addressed qualitatively as an element that adds uncertainty to schedule and likely an increase in costs.

As described in the Constructability section above, roadway access improvements would be expected at any OSWP location, resulting in additional costs. By providing the distance to an HCP 1 from a OSWP location, the State is presenting a comparative, qualitative data point for cost consideration. In general, the closer a site is to an HCP 1 the lower the expected roadway access improvement costs would be.

The following section details the State's evaluation of the Cousins Island, Mitchell Field, Estes Head Terminal and two alternatives using Mack Point: the Mack Point and Sears Island Hybrid Alternative and the "Sprague Alternative". All alternatives discussed below meet the minimum design criteria (refer to Exhibit 7 and Exhibit 23). A summary matrix of the Pre-Application Alternatives Analysis is available in Attachment A.

9.2 Socioeconomic Considerations

The *Maine Offshore Wind Roadmap* (2023) (Roadmap) outlines strategies and actions to successfully develop an OSW industry in Maine that will help the State meet its climate, clean energy, and economic goals while protecting the environment and existing ocean users.

The Roadmap recognized that OSW offers an opportunity to improve job prospects and deliver economic development in disadvantaged areas of Maine. It commits to tracking Roadmap implementation across the equity factors in the Maine Climate Council's Equity subcommittee and nationally recognized tools and definitions, in particular the Council for Environmental Quality's (CEQ) Climate and Economic Justice Screening Tool (CJEST).

The State reviewed available demographic and community data for the port locations that met the minimum design criteria or could reasonably be made to meet minimum design criteria. Of the locations, the Eastport (Washington County) and Searsport (Waldo County) had indicators of disadvantaged areas.

Eastport is a disadvantaged community as defined by the CEQ CJEST in the areas of low income, health, and legacy pollution. It is also considered a historically disadvantaged community by the U.S. Department of Transportation (USDOT) and is adjacent to areas of persistent poverty in Perry and Robbinston. Eastport is adjacent to an Internal Revenue Service (IRS) "Opportunity Zone", an economic development tool to spur economic growth and job creation in low-income communities while providing tax benefits to investors (GEO 2023, IRS 2024). Washington County meets federal economic distress criteria (GEO 2023). Exhibit 50 summarizes available economic, labor, and housing data for Washington County as compared to the State of Maine.

Exhibit 50. Summary Comparison, Labor Force, Income, Housing Characteristics in Potential OSWP Host Communities

	Civilian Labor Force (2023)	*Annual Unemployment Rates (2023)*	*Median Household Income (2022)*	*Poverty Rates (2022)*	*Median Home Value (2022)*	*Median Rent (2022)*
Cumberland County	*166,000*	*2.4%*	*$87,710*	*7.2%*	*$372,900*	*$2,188*
Waldo County	*20,329*	*3.0%*	*$62,694*	*12.9%*	*$210,600*	*$886*
Washington County	*13,400*	*3.7%*	*$51,669*	*17.5%*	*$135,400*	*$687*
State of Maine	*687,000*	*2.9%*	*$68,251*	*10.9%*	*$244,800*	*$1,009*
Sources: Maine Department of Labor (2024), State of Maine Housing Data Portal (2024).						

Searsport is a disadvantaged community as defined by the CEQ CJEST in the areas of low income, energy costs, health, legacy pollution, and transportation. It is also considered a historically disadvantaged

community by USDOT and is adjacent to areas of persistent poverty in Brooks and Unity. Searsport is adjacent to an IRS “Opportunity Zone”, an economic development tool to spur economic growth and job creation in low-income communities while providing tax benefits to investors (GEO 2023, IRS 2024). Waldo County meets federal economic distress criteria (GEO 2023). Exhibit 50 above summarizes available economic, labor, and housing data for Waldo County as compared to the State of Maine.

A successful OSWP will contribute to opportunities and affordable renewable energy for all Mainers, including historically disadvantaged communities and low-income residents. The Draft EIS will summarize the Community Impact Assessment (CIA) and Economic Impact Assessment, currently in development, and compare potential community and socioeconomic effects of the Mack Point and Sears Island alternatives. The CIA will address the potential for disproportionate adverse effects to environmental justice populations.

9.3 Cousins Island (Yarmouth) Alternative

The Cousins Island site consists of 117 acres on the southernmost portion of Cousins Island in Yarmouth (Exhibit 51 and Exhibit 52). The parcel is currently occupied by Wyman Station, a 610 MW oil-burning “peak shaving” power plant that provides backup power during periods of high demand. Wyman Station also houses a battery storage facility. Cousins Island meets the acreage, waterfront, and navigational access requirements with no air draft restrictions. The waterfront consists of an existing 450-foot by 40-foot pier with two mooring dolphins in unknown condition.

Exhibit 51. View of Wyman Station, Cousins Island, looking north.

Exhibit 52. Aerial photograph of the Wyman Station, cooling ponds, and fuel storage areas.

Availability of Land

Cousins Island is not reasonably available. Of the 117 acres, approximately 57 acres on the waterfront are occupied by the existing power generating station, its cooling ponds, and fuel storage. High voltage, high-tension power lines connecting the station to the grid are also present. To meet the minimum design criteria, the power plant and transmission lines would have to be decommissioned and demolished. There are no plans to close Wyman Station. The facility is considered an important power provider during peak demand, especially during winter months. The generating station is owned by NextEra, a private company. Additionally, transmission facilities on the site may be considered facilities of a public utility (i.e., Central Maine Power). Any acquisition of transmission facilities by eminent domain would, therefore, be complicated by State law prohibiting MaineDOT from unilaterally determining the amount of just compensation involving a public utility located outside of an established highway right of way (MRS 23 §154.4).

Although there are no plans for decommissioning Wyman Station, the Town of Yarmouth has included this possibility in its 2024 Comprehensive Plan. The Town has identified the site as a "growth area" for economic development and emphasize environmental and recreational uses should the site become available. As part of the local plan, a survey of residents indicated preference for preservation and recreation uses. Use as an OSW cable landing site has also been proposed.

Constructability

Constructability factors for the redevelopment of the facility to an OSWP include the demolition of the existing power station and environmental remediation, the scope of which is currently unknown. Some grading of the site would also be required, though the extent is unknown, managing potentially contaminated soils would add risk and cost to the project. It is reasonable to assume some ocean fill would be required at the site and the potential for dredging exists, as the site is about 0.25-mile from the federal navigation channel (NOAA 2024).

Further, access to the site is 5.5 miles from I-295 via Tuttle Road, State Route 88 (Foreside Road/Lafayette Street) and Gilman Road/Cousins Street, none of which exceed HPC 3. The roadway provides access to primarily residential areas. Widening this road could impact over 50 residential properties and several businesses. The 2,000-foot Ellis C. Snodgrass Memorial Bridge is a pinch-point on this access roadway. The bridge, constructed in 1955, is 22 feet wide and has a sufficiency rating of 46. To meet minimum roadway requirements for OSWP access and considering the age and sufficiency rating of this bridge, it is likely that this major structure would require replacement prior to construction of the OSWP, adding cost and delay to the project schedule.

Operational Functionality

Considering the above factors and potential costs, operational functionality was not evaluated for Cousins Island.

Cost

Cost drivers at Cousins Island include the purchase of land, demolition of existing assets, and remediation of the site. Further, significant roadway access improvements would be required.

Environmental

Potential environmental impacts were not evaluated at Cousins Island due to the above factors that exclude the site as a practicable alternative. However, a desktop review of available environmental data identified the presence of roughly 4 acres of freshwater wetlands, 9 acres of coastal wetlands, and zero streams at the site (NWI 2024; USGS 2021).

Cousins Island is not a practicable alternative because the following key factors:

- Site not reasonably available due to existing active power plant (Wyman Station) and there is no known plan to decommission that plant.
- OSWP not compatible with the Town's long-range plans for the site.

- Access roadway improvements are significant.
- Inconsistent with Maine's three port strategy.

9.4 Mitchell Field (Harpswell) Alternative

Mitchell Field is a 119-acre parcel located in the Town of Harpswell, about 11.5 miles south of the Town of Brunswick. The site was previously used as a fuel depot by the U.S. Navy. The site is currently owned by the Town of Harpswell and is used primarily as a recreational area. Mitchell Field is currently zoned as shoreland residential and has over 2,200 feet of developable shoreline. Since the site was purchased, the Town has invested in planning activities to establish Mitchell Field for recreational and business uses. The site is bounded by residential properties to the north and east; the south boundary is primarily forested. This site has access to a deepwater channel with two possible routes to open water. The minimum channel widths meet or exceed the minimum 600-foot criteria.

Design analysis focused on different approaches to access deepwater from Mitchell Field. Based on NOAA bathymetric data, a 20-acre dredge footprint or 20-acre ocean fill would be required to connect a potential OSWP to deepwater at the site. Both options were considered for this site:

- **Mitchell Field Option A** (Exhibit 53) would require no dredge but would reach deepwater with 28 acres ocean fill; 75 acres of uplands would be required to meet the 100-acre minimum design criteria.
- **Mitchell Field Option B** (Exhibit 54) would require five acres ocean fill but would require 20 acres of dredge. To meet the 100-acre minimum design criteria, 95 acres of upland would be required leaving approximately 5 acres unused

Exhibit 53. Mitchell Field Option A

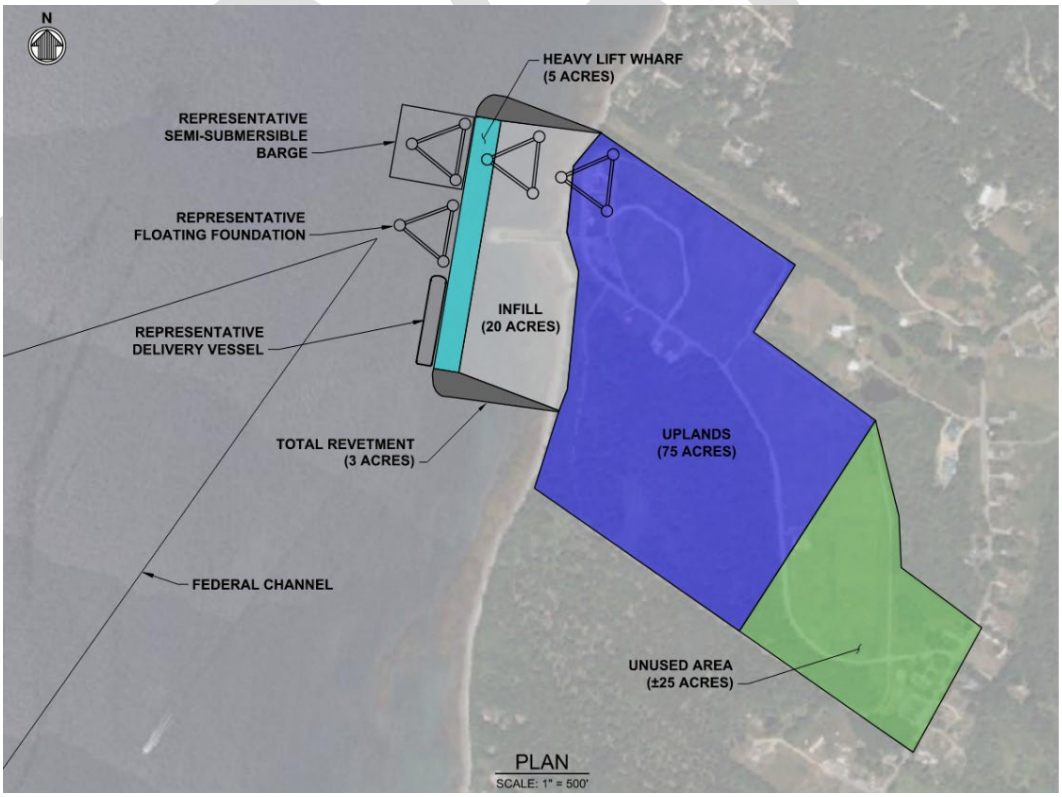
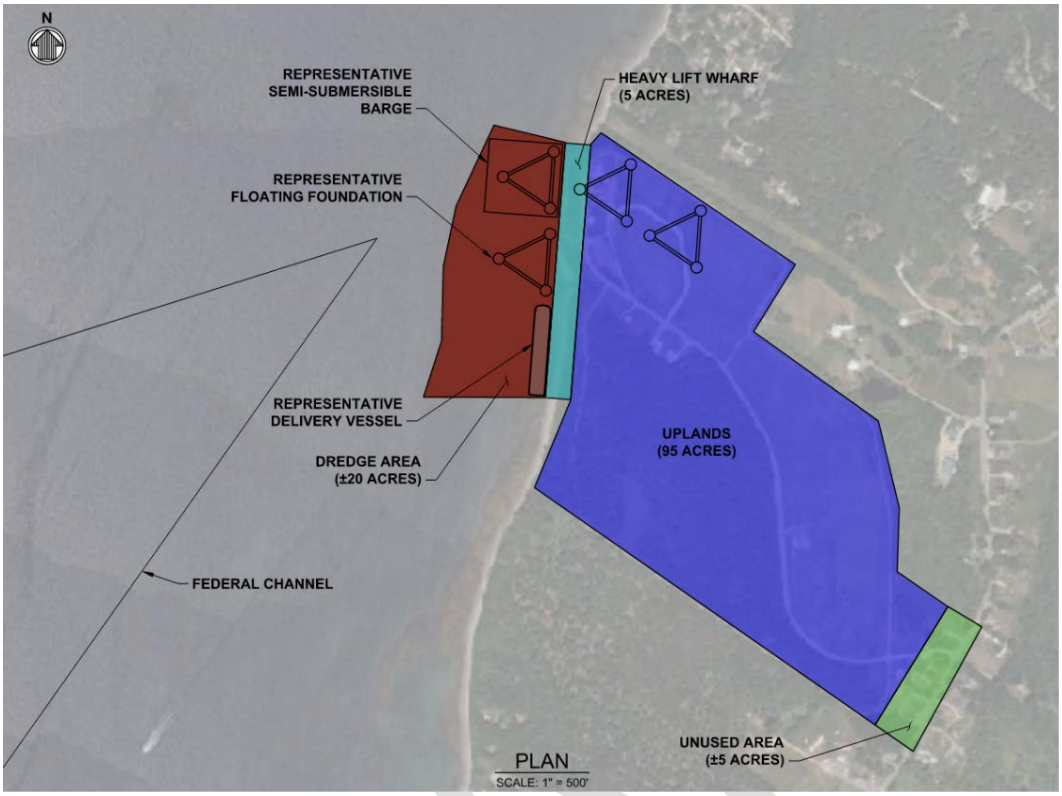


Exhibit 54. Mitchell Field Option B



Availability of Land

Mitchell Field is not reasonably available. MaineDOT and MPA approached the Town of Harpswell circa 2020 regarding suitability of Mitchell Field for an OSWP. The Town referred the State to their Master Plan and indicated they would not support development of an OSWP at Mitchell Field. This is consistent with a 2022 survey issued by the Town in which most of the 756 respondents voiced opposition to development at Mitchell Field except for more parking and limited marine business development to support the conservation of the rest of the 100 acres. Two existing buildings near the waterfront are currently occupied by Merrymaking Shellfish Company.

The Town of Harpswell has invested resources in the development and incremental execution of *The Mitchell Field Master Plan* (2019 Update) since the 2000s. The Master Plan lays out development goals for Mitchell Field which primarily includes conservation and the development, or redevelopment, of buildings on site for recreational use (e.g., pavilion for concerts, tennis courts, etc.). The Town also plans for roughly 9 acres and 550 feet of developable waterfront for Marine Business (Exhibit 55). Most recently, the Town prepared a MDEP Natural Resources Protection (NRPA) Permit Application for Boating Access Improvements.

The State has applied for discretionary grant funds from the USDOT. If USDOT funds are used, Section 4(f) of the USDOT Act would apply to the use of Mitchell Field. Section 4(f) protects public park and recreation lands, wildlife and waterfowl refuges, and historic sites during transportation project development. Mitchell Field is publicly owned and open to the public for recreational use and would, therefore, qualify for protections under Section 4(f). Section 4(f) prohibits a USDOT-funded transportation project from using a protected property unless no feasible and prudent alternative exists that avoids the Section 4(f) property.

Exhibit 55. Mitchell Field Master Plan

Source: Town of Harpswell 2019 Update

Constructability

Topography at the site rises about 80 feet in elevation across the site, from the waterfront on the west to State Route 123 on the east, resulting in the need for significant cut to achieve a level area. Based on the time associated with material export assumptions (page 51), 2.7 million cubic yards (CY) of net material export[4] would be required for Option A and would take over two and a half years to complete. Option B would double these requirements, resulting in 5.4 million CY of net material export which would take over five years to complete.

[4] The cut/fill analysis considers excavated material (cut) and fill material requirements at the site. The two quantities are balanced and result in a net material export if more material needs to be removed from the site after all fill activities on the site are completed.

Option A would not require dredging but would use ocean fill to reach the federal navigation channel. Option B, on the other hand, would require about 700,000 CY to 800,000 CY of dredging.

The four remaining structures and the pier at Mitchell Field would need to be demolished for the OSWP, resulting in the displacement of one business and conflicts with the Town's planned boat access improvements. As discussed below, preliminary assessments of the site by others identified areas of concern for hazardous materials (Exhibit 56) which would have to be managed should development of an OSWP occur at the site.

Access to the site via State Route 123 is not preferred for port construction. The site is approximately 12 miles from U.S. 1 via Cressey Road, Federal Street, and State Route 123 (Sills Drive/Harpswell Road/Harpswell Neck Road) and Foreside Road/Lafayette Street, mostly HPC 4 roadways. This roadway route traverses Downtown Brunswick and mostly rural residential properties, though some commercial, institutional, and recreational properties are intermixed with undeveloped forest lands and agricultural fields.

Operational Functionality

Based on conceptual layouts at Mitchell Field, a port configuration that meets minimum design criteria could be achieved. The site is not currently zoned for industrial use and is surrounded by residential development within a community that is opposed to OSWP development according to Town planning initiatives.

Cost

The costs to develop an OSWP at Mitchell Field would involve land acquisition, potential roadway improvements, demolition and remediation, material export, and dredging (Option B only). The Mitchell Field site would require the negotiated acquisition of land at an unknown cost. Roadway access is not ideal and introduces the potential for roadway improvements along the 12-mile route to U.S. 1. There would also be the cost associated with demolition and likely environmental remediation at the site. Based on the cost associated with material export assumptions (page 51), Option A net material export would cost an estimated $95 million to $135 million, and Option B would cost an estimated $190 million to $270 million. Dredging associated with Option B would cost approximately $125 million to $145 million.

Environmental

The Town of Harpswell has undertaken some environmental assessments at Mitchell Field to inform local planning initiatives. Exhibit 56 summarizes potential impacts to resources identified by Stantec's 2017 natural resources assessment (Exhibit 57) and Summit's 2006 limited Phase IA assessment, survey methods, notes from the surveys, and measurements where possible. Stantec (2017) characterized natural communities present as follows: Oak-Northern Hardwood Forest, White Pine Forest, Red Maple Swamp, and Open Field.

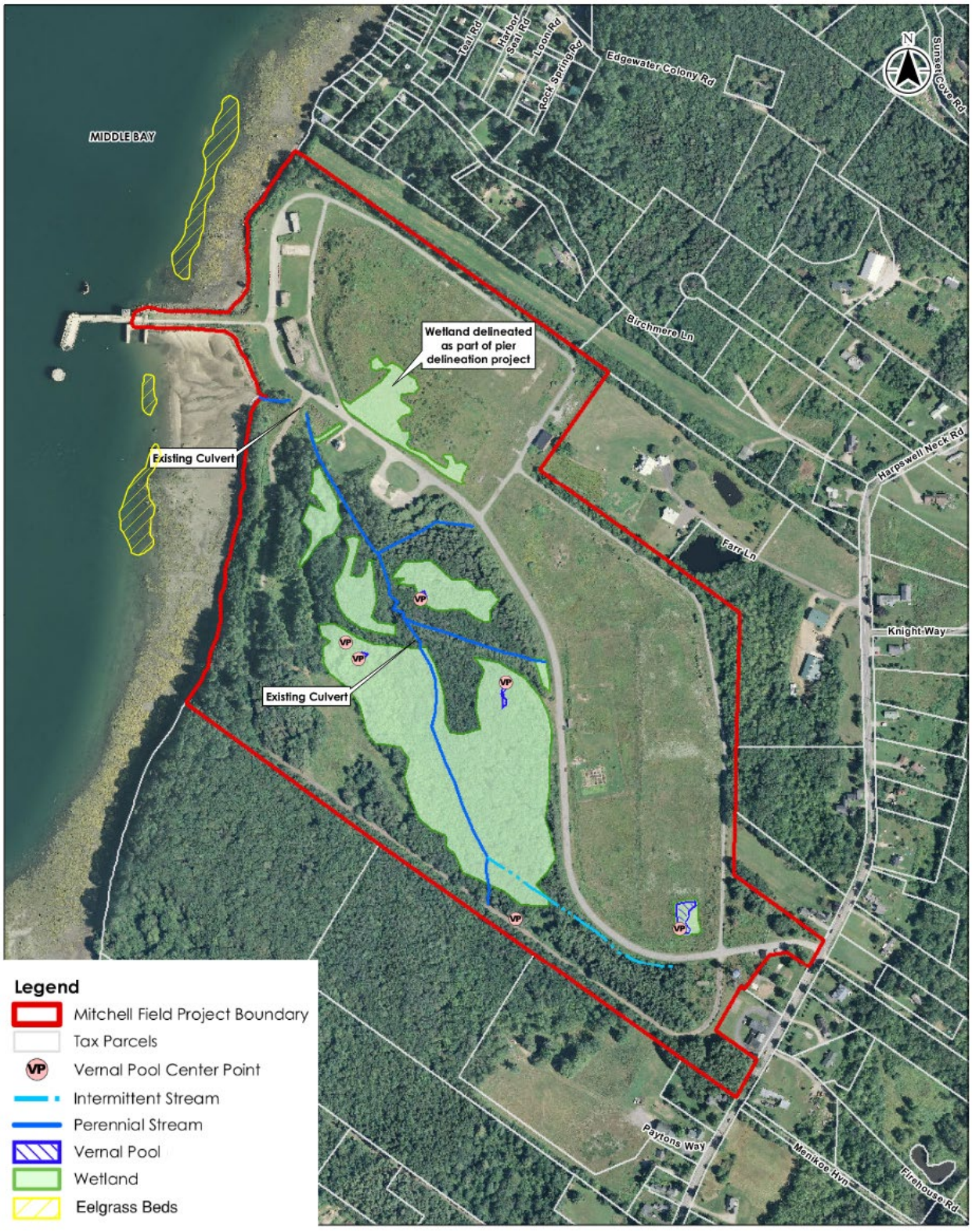
Exhibit 56. Summary of Potential Impacts of an OSWP at Mitchell Field

Resource	Survey Method[1,2]	Potential Impact[3]		Notes
		Option A	Option B	
Freshwater Wetland	Recon-level field survey	15 acres	16 acres	PFO wetlands associated w/Red Maple Swamp natural community. Hydrology indicators: soil saturation, surface water, wetland drainage patterns associated w/ perennial and intermittent streams. PEM wetlands in Open Field associated w/ excavated drainage features, some of which have naturalized and dominated by herbaceous wetland plants. Hydrology indicators: surface water, saturated soils.
Coastal Wetland		25 acres	25 acres	Western boundary of property, includes area between upland shore and Middle Bay.
Vernal Pool	Vernal pool survey	6		4 naturally occurring forested depressions in forested wetlands; 2 in man-made excavations. None considered SVP though 1 vernal pool in previously excavated area had 20 spotted salamander egg masses.
Stream	Recon-level field survey	3,100 feet	4,000 feet	Stream complex comprises of 1 main, perennial stream channel w/2 perennial tributaries and 1 intermittent tributary. Flows to Middle Bay. Perennial stream likely altered in past, shows ditching, channelization, w/in forested wetlands.
Eelgrass	DMR Mapped (2013), no survey	2 acres		1 area mapped north of existing pier and 2 areas south of existing pier.
Species	Recon-level RTE habitat survey; Desktop; MNAP, MDIFW, USFWS	Unknown		No known plants present; Northern Brown Snake present; 8 bat species may be present (MDIFW). Habitat survey conducted out of season. MNAP–no known RTE plant species on site.
Hazardous Materials	Limited Phase I ESA	Unknown		Areas of concern: petroleum contaminated soils; lead contamination; potential UST.

[1]*Mitchell Field Natural Resources Assessment* (Stantec 2017) (also see Exhibit 54); [2]*Limited Phase I Environmental Assessment, Mitchell Field, Route 123, Harpswell, Maine* (Summit 2006); [3]All measurements are approximate and sourced from Stantec 2017. Measurements were taken for the purposes of the OSWP alternative analysis.

PFO= Palustrine forested; PEM= palustrine emergent; SVP=Significant Vernal Pool; DMR=Department of Marine Resources; OGIS=Office of GIS; RTE=Rare, Threatened, and Endangered; MNAP=Maine Natural Areas Program; MDIFW=Maine Department of Inland Fisheries and Wildlife; USFWS=U.S. Fish and Wildlife Service; ESA=Environmental Site Assessment; UST=Underground Storage Tank.

Exhibit 57. Natural Resources Assessment, Mitchell Field



Source: Stantec 2017

Mitchell Field is not a practicable alternative because the following key factors:

- Site is not reasonably available, Town of Harpswell (property owner) does not want OSWP, site is not appropriately zoned.
- Conflicts with adjacent residential land uses.
- Material export is cost and schedule prohibitive.
- Access roadway improvements.
- Inconsistent with Maine's three port strategy.

9.5 Estes Head Terminal Alternative (Eastport)

Estes Head Terminal, located in Eastport, was evaluated as a practicable alternative because it meets all design criteria. The uplands have a contiguous area of 90 acres and the water frontage would accommodate a 1,500-foot-long wharf. While it is not on a federally maintained channel, it does have access to at least 65 feet of water depth, which exceeds the 35-foot depth required; therefore, no dredge would be required. There are no vertical or horizontal navigation restrictions; however, vessels would need to travel through Canadian waters for access to open water. This transit is not considered disqualifying for the purposes of this analysis.

Design analysis focused on different approaches to manage the steep slope at Eastport. Due to topography, significant leveling to meet the maximum 3% slope requirement would be required. To address this condition, two options were considered for this site:

- **Estes Head Option A** Exhibit 58) evaluated the potential to maximize port development on land (90 acres) and minimize ocean fill (12 acres).
- **Estes Head Option B** (Exhibit 59) evaluated the potential for a net zero waste project to use all excavated material in the construction of the site, resulting in 54 acres of ocean fill.

Exhibit 58. Estes Head Option A

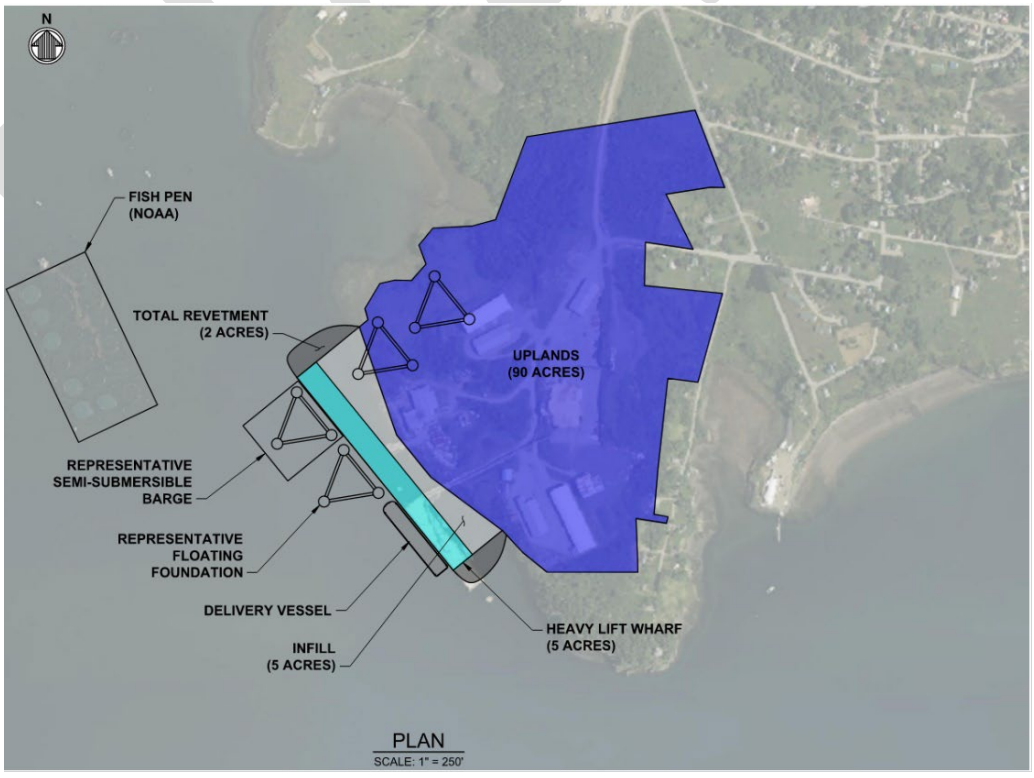
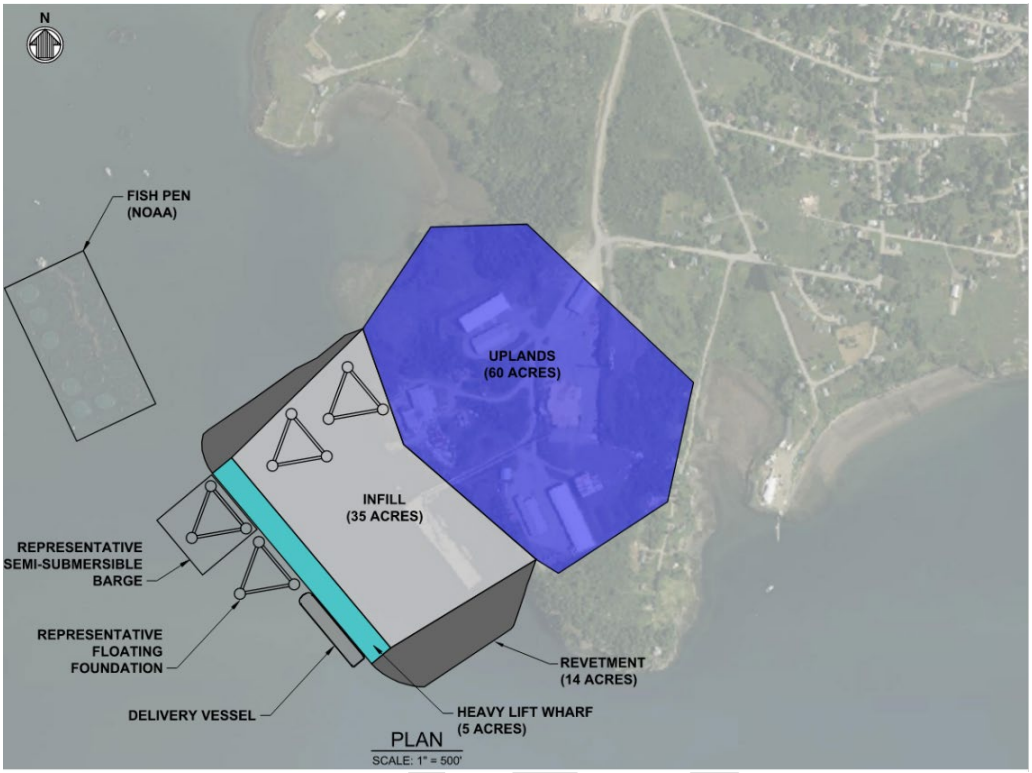


Exhibit 59. Estes Head Option B



Availability of Land

Estes Head is an active marine terminal owned by Eastport Port Authority. Development of an OSWP at Estes Head would require the acquisition of, or long-term lease agreement with, the local port authority and displacement of existing operations.

Constructability

The Estes Head site has access to deepwater relatively close to the shoreline, eliminating a need for dredging at the site. This is due to the steep topography that characterizes this area of Maine's coast and contributes to unique constructability issues.

Prior to excavation at Estes Head, demolition of existing assets at Estes Head would be required, including 8 structures and the existing wharf. The existing wharf does not meet minimum design criteria for length of bearing load capacity. Extensive blasting operations would be required here to achieve the flat port surface because the site has shallow soil overburden directly underlain by bedrock. Topography at Estes Head rises relatively sharply from sea level in the east to roughly 80 feet above mean sea level in the west. Option A would require that approximately 7.1 million CY of soil and bedrock be excavated and/or blasted. Approximately 1.7 million CY of this material could be used as material for ocean fill leaving 5.4 million CY of rock to be exported from the site and disposed of. Based on material export assumptions, removal of materials would take over five years to complete with regular truck cycles. Option B would require that 3.9 million CY soil and bedrock be excavated and/or blasted at Estes Head; however, this material would not be exported but used on site to create 54 acres of ocean fill.

The site also adjoins residential properties, limiting future potential expansion, and is about 1 mile from State Route (SR) 190 the nearest HCP 1. Access to the port would traverse Sipayik (Pleasant Point) of the Passamaquoddy Tribe.

Operational Functionality

An OSWP could be configured at Eastport to meet the minimum design requirements and, considering the depth of waters, no navigational safety issues are foreseen. However, site conditions relative to tidal range and FEMA flood elevation combine to pose significant operational challenges. The FEMA flood elevation for Eastport is +22 feet NAVD88, which is what the deck height of the proposed port would be recommended to be set at (7 feet higher than that of Sears Island and Mack Point). Coupled with a MLLW elevation of -9.93 feet NAVD88 due to the large tidal range, vessels and/or a semisubmersible barge would be subject to a daily maximum 32-foot height difference between the vessel and the port deck. A gap of this size would affect terminal efficiency due to limiting the time for WTG component delivery and for foundation loadout from deck to semisubmersible. Each extra foot of difference would raise cost and increase difficulty for foundation transfer.

Proximity to, and orientation of, the Eastport Municipal Airport less than 1 mile to the northwest would require additional evaluation to determine what, if any, steps would need to be taken to avoid impacts to air traffic. The height of a completed FOSW turbine at the integration berth can reach about 1,000 feet. This height would be in direct conflict with the flight paths at the Eastport Municipal Airport

Cost

The costs to develop an OSWP at Estes Head Terminal would include land acquisition, or long-term land lease, potential roadway improvements to SR 190, demolition, and material export. For Option A, the cost of material export from the site, not including the cost of rock blasting, would add approximately $190 million to $270 million. While Option B eliminated the costs associated with material export it required 54 acres of ocean fill in deepwaters—reaching about 45 feet of water depth approximately 500 feet from the shoreline—resulting in 3.5 million CY of ocean fill volume.

Environmental

The Estes Head Terminal at Eastport was presented to the State's OSWP Advisory Group (Advisory Group) (see Section 12) as a viable OSWP alternative but ultimately dismissed from further consideration. As part of the Advisory Group process, the State screened the property for the presence of environmental resources using available data; no surveys were conducted. In addition to the above physical and environmental constraints, Exhibit 60 summarizes the results of the desktop environmental screening.

Exhibit 60. Summary of Potential Impacts of an OSWP at Estes Head Option A

Resource	Potential Impact[1]	Notes
Freshwater Wetland	3 acres	2 wetlands (NWI data)
Coastal Wetland	10 acres	(NWI data)
Vernal Pool	Unknown	
Stream	1,200	2 streams (NWI)
Eelgrass	None	DMR Mapped (2010)
Species	Unknown	Bald eagle nest (0.5 mile west); endangered sea turtles' range; endangered bat and bird species may be present (USFWS IPaC).
Hazardous Materials	None	OGIS identified 5 brownfields within 1 mile, none at terminal.
Residential Relocations	8	Prime Street, east of the terminal, would be likely displaced due to proximity to the extreme downcutting required to level the site
Business Relocations	7	Federal Marine Terminals, Ltd, five warehouses, Cooke Aquaculture Atlantic Salmon

[1]All measurements are approximate, rounded, and based on the best available data.
NWI=National Wetland Inventory; USFWS=U.S. Fish and Wildlife Service; IPaC=Information for Planning and Consultation.

Estes Head is not a practicable alternative because the following key factors:

- Land acquisition/lease agreement required.
- Removal of 5.4 million CY of soil and bedrock from site would cost between $190 million and $270 million and take about five years to complete.
- Alternative to minimize removal of soil and bedrock (i.e., Option B) resulted in large (54 acre) ocean fill.
- Extreme tidal range coupled with FEMA flood elevation limits the viability of the site for its intended use.
- Potential for access roadway improvements.
- Potential conflicts with Eastport Municipal Airport.

9.6 Hybrid and Sprague Alternatives Using Mack Point Terminal

Consistent with the recommendations of the Sears Island Planning Initiative Consensus Agreement (Consensus Agreement), the State has been coordinating independently and through the Offshore Wind Port Advisory Group (OSWPAG) Process (Section 12) with Sprague to identify options for developing Mack Point for use as an OSWP.

In 2007, the Sears Island Planning Initiative (SIPI) released a set of recommendations for the use of Sears Island (the "Consensus Agreement"). The 45-plus member steering committee represented a wide variety of interests and worked to develop a consensus report on recommended future uses of Sears Island. Their recommendations included setting aside a portion of Sears Island for recreation, education, and conservation activities, and reserving a portion of the island for future port development. The Consensus Agreement states that that "Mack Point shall be given preference as an alternative to port development on Sears Island" and directed MaineDOT to investigate and share information on the extent to which Mack Point could accommodate future marine transportation needs. The JUPC was then charged with implementing the directive of the Consensus Agreement to establish a line of demarcation between potential transportation and conservation areas on Sears Island and to develop a conservation easement for the conservation areas. The JUPC Final Report was presented to and accepted by the Joint Standing Committee on Transportation of the Maine Legislature and implemented by the Governor pursuant to Executive Order 24 FY 08/09. The Executive Order provided that MaineDOT would establish the boundaries between the transportation and the conservation parcels as set forth in the JUPC Final Report, establish a Sears Island Advisory Group to provide input on future land use and guidance on the protected parcel, and work with the MPA and other interested parties to initiate the process of marketing and development of a cargo/container port on Mack Point and Sears Island in a manner that would minimize impacts to environmental resources and create significant economic opportunity for the citizens of the State of Maine.

MaineDOT and the MPA have devoted significant resources to evaluating options for development of an OSWP at Mack Point. The State has explored alternative wharf designs, made different assumptions on the acreage that would be available for development, and evaluated options that utilize Mack Point in combination with Sears Island to satisfy the requirements for a successful OSWP. The State evaluated several alternative configurations (see Section 10.1), including the design proposal put forth by Sprague (i.e., the "Sprague Alternative"), as well as optimized Mack Point design alternatives developed by the State. The Mack Point and Sears Island Hybrid Alternative and the Sprague Alternative are discussed in Section 9.6.1 and 9.6.2 below, respectively, and were dismissed for failure to achieve key operational requirements for an OSWP. The optimized designs developed by the State at Mack Point reduce the operational flaws associated with the Sprague proposal and are carried forward in Section 10 for additional, detailed consideration.

Overview of Operations at Mack Point

The 140-acre marine terminal at Mack Point in Searsport is owned and operated by Sprague and handles a variety of liquid and dry cargoes. The terminal has infrastructure to handle and store petroleum and other liquid bulk, dry bulk, break bulk, and project cargo. The Mack Point Terminal property also includes parcels owned by CPKC Railway which operate a siding and switching yard here and work closely with Sprague in the movement of commodities. Additionally, several tanks owned by the MPA are under a long-term lease to Irving Oil Company (Exhibit 61). The Irving Oil Company signed a lease agreement in 2003 which expired in December 2023. The agreement includes four renewal terms of 20 years, the first of which they entered in January 2024. Under the current lease agreement, Irving Oil Company has the option to extend through 2103.

Exhibit 61. Parcel Ownership at Mack Point Terminal

For the purposes of OSWP development, 65 acres of the Mack Point site were made available to study the wind port concept.

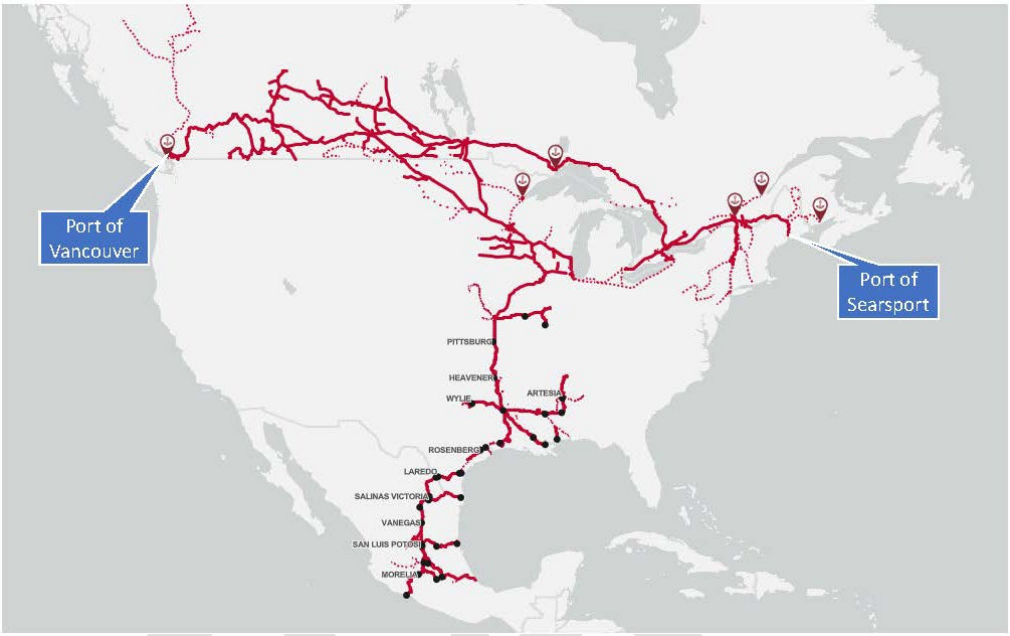
Availability and Cost of Land at Mack Point

As discussed in Section 9.1 above, one of the key considerations impacting the practicability of an alternative is the availability and cost of land. Sprague owns most of the site (Exhibit 61) and has expressed its willingness for the State to use Mack Point for an OSWP. Significant uncertainty exists, however, on (i) how much land Sprague would make available for use by the State for an OSWP, (ii) the cost to lease the land, (iii) and the ability of the State to demolish and potentially relocate the CPKC track.

CPKC was contacted by MaineDOT during initial OSWP planning efforts at Mack Point and indicated that there are no current plans to move their track or re-arrange the current configuration of track at Mack Point. CPKC provides international freight rail service with uninterrupted connections between the east and west coasts as well as connections to Mexico (Exhibit 62). The Port of Searsport is a major asset to the CPKC and the CPKC is a major asset to Sprague operations at Mack Point Terminal. The CPKC-owned railroad within the Mack Point Terminal includes a rail yard along the eastern side of Mack Point,

a loading rack for the load out of asphalt and caustic soda from vessel to rail, and a spur line that extends along the south-facing shoreline at Mack Point. It is in the process of being improved for uses unrelated to OSW at a cost of $5 million. The railroad project includes upgrades to the corridor between Mack Point and Bangor and includes improvements in the Mack Point Yard. Any demolition and potential relocation of railroad facilities would likely be lengthy, due in part to the need for STB approval, adding uncertainty to the project cost and schedule.

Exhibit 62. CPKC Railroad connects the Port of Searsport to three countries and west coast (Port of Vancouver).



Source: CPKC 2023.

Based on initial discussions and feedback from Sprague, the State presented a proposal for development at Mack Point in its November 2021 Feasibility Study. At that time, Sprague indicated that it would make up to 85-acres available for use as an OSWP (Moffatt & Nichol 2021). The available space included 2,060 linear feet of undeveloped, available water frontage for a continuous wharf. The design required significant dredging to achieve the required water depths and would have displaced existing commercial facilities at Mack Point. Sprague and the State continued to explore alternative design options at Mack Point, including several options presented to the OWPAG in September 2022 (Attachments C and I).

In November 2022, Sprague announced the closing of a merger with an affiliate of Hartree Partners, LP (Hartree), in which Hartree acquired the remaining outstanding common units of Sprague. As a result, Sprague become a private company owned by Hartree (Sprague 2022). Following the Hartree merger, Sprague began to advocate for locating the OSWP at Mack Point and pushed for changes to the designs developed by the State. These included changes that moved away from the continuous wharf design, which is a highly desirable operational criterion. Sprague presented concepts for an OSWP at Mack Point to the State in March, April and October of 2023 (Attachment D).

Operations at Mack Point are expected to continue if an OSWP is constructed there and would significantly limit the space that is made available to the State. Likewise, co-locating an OSWP at Mack Point would limit any future plans for growth at Mack Point. Currently, Sprague has indicated that a maximum of 65 acres is available for use by the State. Even that space requires relocation of existing facilities. If available uplands are reduced (the available land discussed by Sprague as available for the OSWP has changed over time), the Mack Point alternative would not meet the minimum design criteria or would require additional ocean fill to meet the 100-acre minimum design criteria.

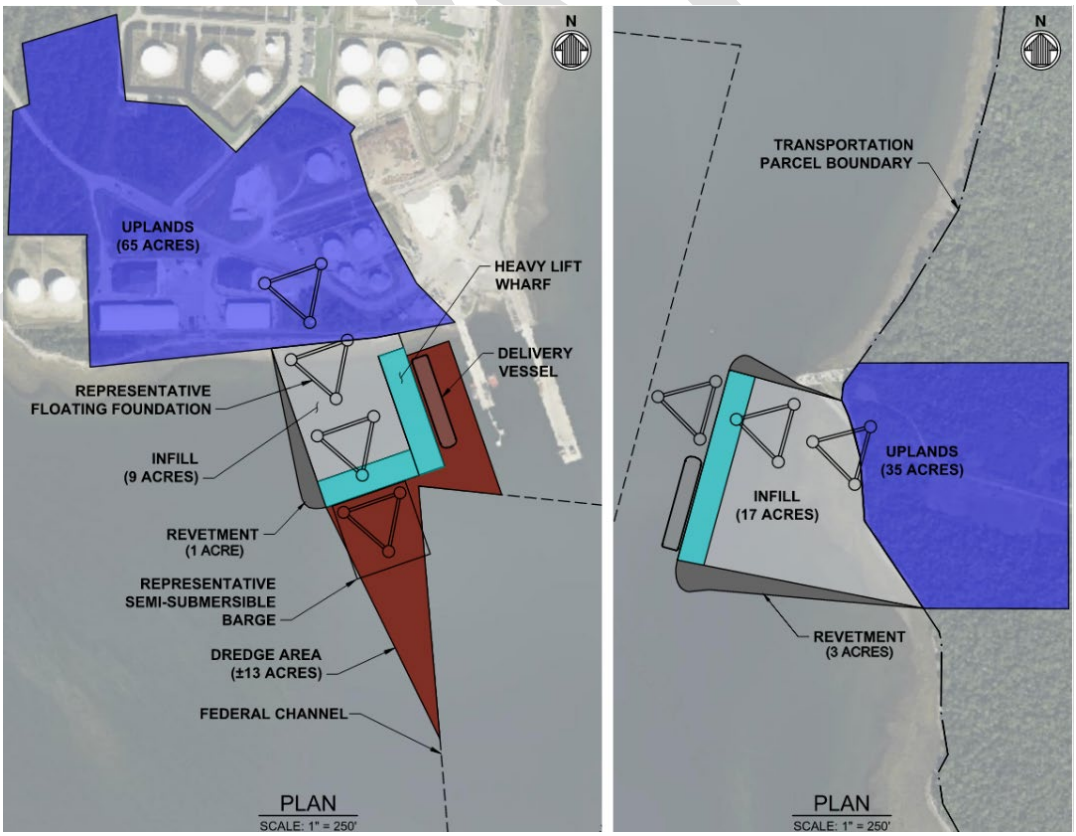
Even if the full 65 acres is made available, the lease terms required by Sprague may render the alternative cost prohibitive. While it is not clear how much Sprague would charge the State for lease of space at Mack Point, it is reasonable to assume based on current market rates that the lower end of lease costs would exceed $5.5 million annually and more than $290 million over the 50-year term. On the higher end of lease costs, a lease agreement may be in the range of $10 million annually and more than $500 million over the 50-year term.

Notwithstanding the uncertainty as to how much upland would be available for use by the State, for purposes of this pre-application alternatives analysis the land associated with each of the Mack Point alternatives is considered available, but the price and terms unknown. To exhaust all options for successful development of an OSWP at Mack Point, the State evaluated the proposal put forth by Sprague, a Mack Point and Sears Island Hybrid Alternative, as well as optimized designs developed by MaineDOT and MPA that better achieve the project purpose (see Section 10.1).

9.6.1 Mack Point and Sears Island Hybrid (Searsport) Alternative

A hybrid alternative using both the Mack Point and Sears Island sites was investigated. In this alternative Mack Point would be utilized for the foundation fabrication and assembly and Sears Island utilized for the S&I of the WTG components onto the floating foundation (Exhibit 63). The Mack Point, Option B.1 layout (see Section 10.1) was used in this alternative. The total combined acreage for this alternative is 136 acres. This exceeds the required 100 acres due to the inability of the two activities to potentially share space at a terminal with both activities.

Exhibit 63. Mack Point and Sears Island Hybrid Alternative Layout



Availability of Land

Maine's three port strategy includes the port of Searsport. Sears Island is owned by MaineDOT and Mack Point Terminal is owned by Sprague Energy. As discussed above, use of the land at Mack Point Terminal would require a long-term lease agreement with Sprague. CPKC also owns right of way on Mack Point, including a spur line that parallels the southern shoreline and traverses the width of the proposed port footprint at Mack Point. Despite uncertainty around the ability of the State to demolish and relocate the railroad spur and the cost of land acquisition, the land was assumed to be available for this alternative.

Constructability

The hybrid alternative would require the duplication of many constructability factors at two sites. In the hybrid alternative, 65 acres of uplands and 14 acres of ocean fill would be required at Mack Point and 60 acres of upland, and 24 acres of ocean fill at Sears Island. A four-acre heavy-lift wharf at both Mack Point and at Sears Island (resulting in eight-acres of pile supported, heavy-lift wharf structure) accounts for the total ocean fill area of 38 acres for the hybrid alternative. To complete the ocean fill and surcharging program, the hybrid alternative would require about 355,000 CY of materials be imported and 555,000 CY of materials be exported

As with all alternatives using Mack Point, dredging would be required to achieve the required water depth at the berths and to access the federal navigation channel.[5] The hybrid alternative would require about 200,000 CY to 300,000 CY of dredging to reach the navigation channel.

Demolition and possible remediation would be required at Mack Point for five existing liquid petroleum storage tanks and two warehouse structures. Further, the CPKC spur traversing the southern shore at Mack Point would need to be demolished and potentially relocated because an OSWP dissected by an active railroad spur is not practicable. Though it is possible to upgrade railroad crossings to accommodate the passage of heavy floating OSW components, it is neither ideal as a matter of daily operations nor is it practicable for rail cars to be parked within the port as this would interfere with OSWP operations, thus interfering with port efficiency.

Potential roadway access improvements would be required at Mack Point and at Sears Island; Mack Point is about 0.5-mile from U.S. 1 and Sears Island about 2 miles. A new heavy haul road would also be proposed to reach the Sears Island site (discussed in detail in Section 10.1.2).

Operational Functionality

In this alternative the two sites are separate and distinct and therefore berth sharing is not possible. To meet the functional requirements of each activity (foundation fabrication and launch and S&I) an 1,100-foot heavy-lift wharf is required at each location to handle inbound and outbound items simultaneously. This brings the total length of wharf to 2,200 feet, which is 700 feet more than the minimum requirement.

In the hybrid alternative, the Mack Point site would accommodate foundation fabrication and launching, and Sears Island would serve marshalling and integration functions (aka S&I). Sears Island would handle delivery of all WTG components and provide the laydown/storage area for these. Once a floating foundation was completed at Mack Point, it would be launched and pulled to the integration berth at Sears Island. A large ring crane would be used at Sears Island to fully assemble the floating WTG in the water.

This two-port arrangement fails to achieve key operational efficiencies for an OSWP. The hybrid alternative would neither combine the two main activities associated with FOSW onto one site nor would it provide the capability to support simultaneous foundation fabrication and WTG integration activities at a single wharf. Though the two sites are close to one another, coordinating operations at two sites would reduce port efficiency.

[5] Note that the Searsport maintenance dredge project is not included in any Mack Point dredge quantities or costs. The Searsport maintenance dredge will be completed separately from, and independently of, the OSWP project. The state expects this maintenance dredge would be completed before the proposed OSWP opens.

Navigation safety in the hybrid alternative maximizes the benefits allotted by the north/south-oriented wharf at the Sears Island site for the delivery of WTG components. Launching complete floating foundations would be subject to prevailing winds and waves at the east/west-oriented wharf at Mack Point.

Cost

The buildout of the wharf is a significant construction cost driver due to the increased loading requirements compared to the uplands or ocean fill areas of the port (refer to Section 4.6). This additional cost, combined with the need to construct two independent ports simultaneously, is anticipated to increase the project costs by roughly double to approximately $800 million to $1 billion. This estimate does not include relocation and possible remediation costs associated with existing liquid storage tanks at Mack Point nor does it include any land acquisition at Mack Point (i.e., land lease agreement with Sprague and right of way acquisition, and possible relocation costs, associated with the CPKC spur).

As described in the Constructability section above, the hybrid alternative requires the import and export of materials at a combined cost of $26 million to $40 million.[6] Dredging associated with the hybrid alternative would cost approximately $36 million to $54 million.[7]

Environmental

The hybrid alternative was presented to the State's OSWP Advisory Group (Section 11) as a viable OSWP alternative but ultimately dismissed from further consideration. As part of the Advisory Group process, the State screened the property for the presence of environmental resources. Since the OSWP Advisory Group concluded, MaineDOT has completed several natural resources field studies. Exhibit 64 summarizes the potential impacts of the hybrid alternative based on field delineated water resources.

Exhibit 64. Summary of Potential Impacts of an OSWP for the Hybrid Alternative

Resource	Potential Impact[1]		Notes
Freshwater Wetland	18 acres		Includes about 1 acre of WOSS.
Coastal Wetland	Ocean Fill	38 acres	About 13 acres intertidal and 26 acres subtidal.
	Dredge	13 acres	<1 acre intertidal and 13 acres subtidal at Mack Point.
Vernal Pool	1		Located on Mack Point
Stream	700 feet		4 streams, 2 on Mack Point and 2 on Sears Island
Eelgrass	None		Stantec 2024
Species	Not applicable		Bald eagle nest (0.5 mile west); endangered sea turtles' range; endangered bat and bird species may be present (USFWS IPaC).
Hazardous Materials	None		No known hazardous waste sites, however, excavation on Mack Point may result in the terminal being considered a brownfield or grayfield site.
Relocations	5 liquid petroleum storage tanks and 2 warehouses (Sprague); CPKC spur		

[1]Measurements based on field delineated resources (VHB 2024); impacts are preliminary and rounded to the nearest whole number. WOSS=wetlands of special significance; NWI=National Wetland Inventory; USFWS=U.S. Fish and Wildlife Service; IPaC=Information for Planning and Consultation.

The Mack Point and Sears Island Hybrid is not a practicable alternative because the following key factors:

- Land lease agreement required at Mack Point Terminal with Sprague.
- It is cost prohibitive to develop and operate two ports.

[6] A unit cost of approximately $35/CY to $50/CY for material export and $20/CY to $35/CY for material import was produced in association with preliminary detailed cost estimates prepared for Mack Point Option B.2 and Sears Island Preferred Alternative (Attachment H).

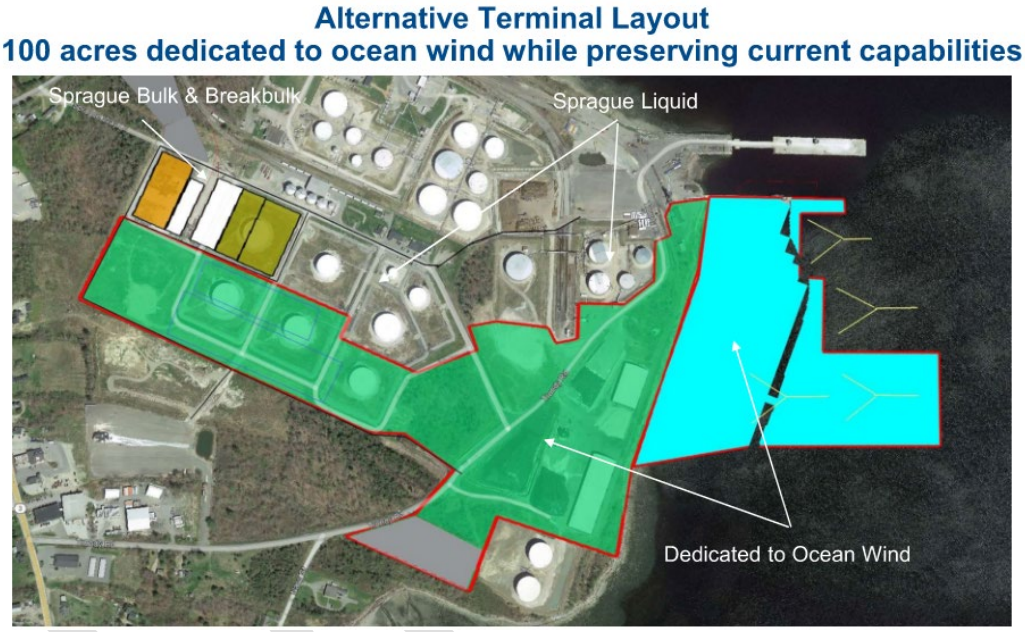
[7] A unit cost of approximately $180/CY was derived through use of the detailed study of dredge material management at Mack Point (Haley Aldrich 2024; Attachment F).

- Having the two key functions (foundation fabrication and WTG integration onto floating foundations) occur at separate sites is highly inefficient and fails to meet a key design objective.
- Uncertainty surrounding the demolition and relocation of rail assets and land acquisition costs.
- Potential for access roadway improvements for both sites.

9.6.2 Sprague Alternative (Searsport)

The Sprague Alternative evaluated here corresponds to the conceptual design presented to the State in October 2023. Sprague attended and provided handouts that displayed (Exhibit 65) the Sprague Alternative at the October 2023 Information Public Meeting (Section 13). The Sprague Alternative adjusted the upland area footprint from what was previously presented to the State and consists of an alternative wharf design. Detailed design information has not been made available to the State; the following evaluation is based on the best available information. The Sprague Alternative layout meets the 100-acre minimum design criteria with 65 acres of uplands and 35 acres of ocean fill.

Exhibit 65. Sprague Alternative



Source: Sprague 2023

Availability of Land

Maine's three port strategy includes the port of Searsport. As discussed above, use of the land at Mack Point Terminal would require a long-term lease agreement with Sprague. The Sprague Alternative would also involve the CPKC-owned right of way on Mack Point, specifically the spur line that parallels the southern shoreline and traverses the width of the proposed port footprint.

Constructability

The Sprague Alternative includes a 68-acre upland area that is long and narrow extending the port footprint further inland than the State's OSWP design at Mack Point (see Section 10.1). However, the port footprint would still require the demolition and remediation of three existing liquid petroleum storage tanks and two warehouse. Based on the *Searsport, ME 2021* U.S. Geological Survey (USGS) quadrangle, the Sprague Alternative intersects the 50-foot topography line. To achieve the flat port surface, the northern edge of the Sprague Alternative would be approximately 65 feet below ground surface. A cut/fill analysis resulted in the need to remove 1.2 million CY of material. It is likely this cut could be managed with a 2:1 or 3:1 side slope on the north and east edges, but this would result in additional impacts outside of the concept's footprint.

The west edge, however, is adjacent to existing port assets including liquid storage tanks, access roads, and parking lot. To avoid impacts to these assets an armored slope or retaining wall would be required for approximately 2,000 feet varying in height from about 20 to 65 feet.

Demolition and possible remediation would be required at Mack Point for three existing liquid petroleum storage tanks and two warehouse structures. Further, if a settlement were reached with CPKC, the rail spur would likely have to be relocated to continue to service Sprague operations at the terminal.

Sprague proposes to collocate their existing liquid bulk dock, used primarily for petroleum products, to the existing dry bulk dock and add the OSWP delivery berth to this new pier. The pier in its existing configuration would not be able to handle WTG components due to its shape, loading capacity, and orientation, and would have to be redesigned and reconstructed as part of this project.

The angular wharf configuration proposed in the Sprague Alternative amounts to about 3,500 feet of heavy-lift wharf opposed to the minimum design criteria of 1,500 feet used in MaineDOT's design concepts. Further, the proposed wharf includes eight ninety-degree angles which would significantly increase the level of difficulty during construction. Twenty-six acres of ocean fill are included behind the complex 6-acre wharf (Exhibit 65).

According to Sprague, the required dredge footprint is approximately 16.5 acres. MaineDOT and MPA's review of the Sprague Alternative resulted in comparable dredging impacts based on bathymetry and the assumptions used for dredging calculations at Mack Point (see Section 10.1) and accounting for improvements between berths (Exhibit 66). The State's review resulted in approximately 15 acres and 150,000 CY to 250,000 CY of dredging associated with the Sprague Alternative.

Exhibit 66. Sprague Alternative, Dredge Evaluation

Operational Functionality

The Sprague Alternative presents problematic design features that greatly reduce its operational functionality and effectively preclude its use. The port shape does not provide 800 feet of minimum width and, therefore, does not meet a key OSWP design criterion. In addition to requiring additional cut into the uplands area and evaluation of an armored slope or retaining wall, the northern reaches of the Sprague Alternative is about 600 feet wide with a pinch point that is less than 500 feet wide. As described in Section 4.1, moving WTG components is most optimal to a delivery berth adjacent and parallel to the upland area, not perpendicular as in this Sprague Alternative. Further, sharing one pier for liquid/dry bulk and WTG component delivery would require competing operations to cooperate in a constrained location, compromising operational efficiencies for all parties.

An alternate option may be moving the delivery berth to the left side of the ocean fill area. However, this would increase the dredge volume and result in a greater dredge footprint than the “optimized” dredge layout for Mack Point Option B.2 (discussed in Section 10.1). Designing a new, wider pier in the place of the existing dry bulk pier would also significantly increase project cost as wharf construction is a cost driver in port design due to the load bearing requirements being close to double that of the uplands area.

The angular wharf proposed in the Sprague Alternative would result in a greater wharf construction cost than a straight wharf and minimizes future terminal usage. While floating foundations for FOSW projects are estimated to be around 400 feet wide for a 20 MW turbine, it is generally believed that this width would increase as FOSW technology evolves. Designing and building a complicated wharf structure to handle a maximum of 400-foot-wide foundations could potentially limit the port’s viability for future FOSW projects. A straight wharf configuration also allows for alternative uses at the port in the case there are no OSW projects happening, maximizing economic flexibility for the port operator.

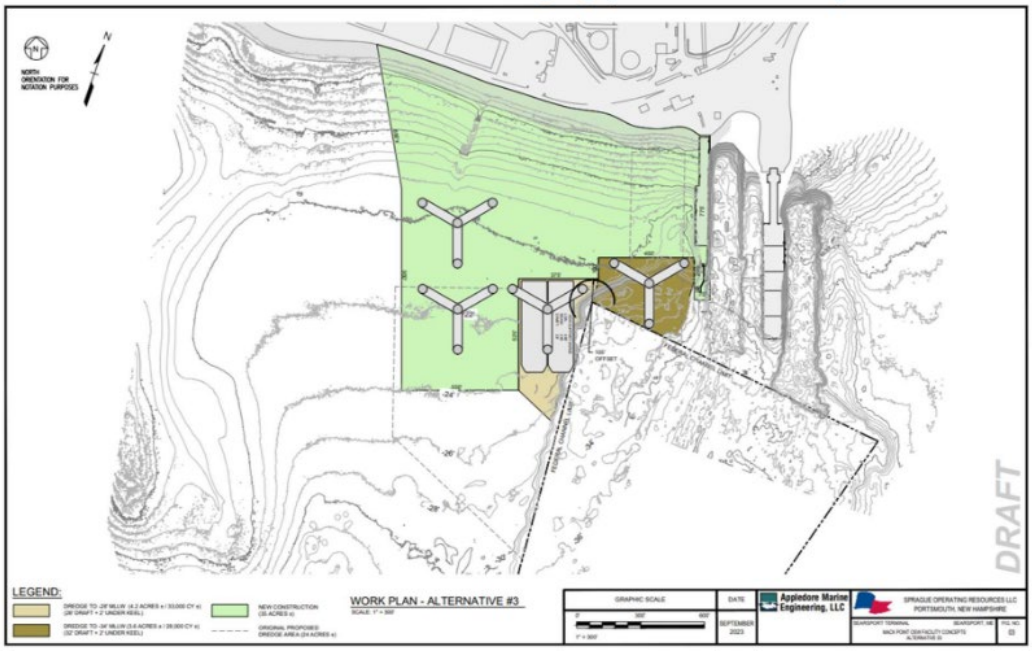
In the Sprague Alternative layout, simultaneously launching a floating foundation and integrating a foundation with WTG components would not be feasible due to the proposed proximity of the foundations (Exhibit 67). To provide future OSW developers the greatest flexibility, and to maximize OSWP operation efficiency, it is expected that a future OSWP would be able to execute both tasks simultaneously. A ring crane for the integration of the floating foundation and WTG is required. In the current layout the ring crane would sit on the wharf edge in front of the floating foundation. In this format, the ring crane would be sitting in the WTG component delivery area due to the berth having two 90-degree sections, reducing the efficiency of the terminal. Rearranging the concept layout due to either the crane position or the crane’s proximity of the foundations would require more dredge, effectively bringing the dredge footprint once again to a similar range as the Mack Point Option B.2 (see Section 10.1).

The CPKC spur traversing the southern shore at Mack Point would need to be relocated because an OSWP dissected by an active railroad spur is not practicable. Though it is possible to upgrade railroad crossings to accommodate the passage of heavy floating OSW components, it is neither ideal as a matter of daily operations nor is it practicable for rail cars to be parked within the port as this would interfere with OSWP operations, thus interfering with port efficiency.

The potential for future expansion at Mack Point to meet the needs of the evolving OSW industry is constrained. Though future expansion is unknown and not a criterion in the siting of a floating OSWP, it does speak to practicability and the future planning of port development for the industry to successfully continue. The potential for expansion for OSW at the Sprague site is extremely limited.

Though the Sprague Alternative includes a north/south oriented delivery berth, the proposed foundation launch and integration berths are oriented east/west, which introduces risk due to prevailing southerly winds and waves. Based on the Ship Simulation Study (see Section 10), the east/west wharf orientation would affect port operations in 20- to 25-knot wind conditions, which is about 15% of the time. Both maneuvers are feasible under calm conditions.

Exhibit 67. Sprague Alternative, detail of wharf arrangement.



Source: Sprague 2023

The most challenging simulation at Mack Point included 22-knot gusting winds. While the pilots were able to complete the maneuver, they noted that it was challenging and there were little opportunities to abort, with the only option being to reverse course in a limited maneuvering area. Limited clearance for tugs from the adjacent pier was also noted as well as unfavorable tug positioning on approach.

With elevated wind conditions, the berth orientation at Mack Point is not ideal because the wind (often from SW or SSW) tends to catch the stern of the vessel just as it initiates the final turn and alignment with the berth. As noted above, this is a similar effect to what is experienced currently with vessels at the existing berths; however, with the larger sail-area of cargoes expected for the wind industry the effect is even more pronounced and would likely lead to some limitation in wind conditions for the operation (i.e., in the 20 to 25 knot range).

Cost

The buildout of the wharf is a significant construction cost driver due to the increased loading requirements (refer to Section 4.6). The Sprague Alternative proposes 2.5-times as much wharf area as the minimum design criteria of 1,500 feet and introduces eight ninety-degree angles. The length and geometrical complexity of the wharf would add considerable cost to the project.

Based on the independent uplands cut and fill and dredging analysis, upland material export would cost about $42 million to $60 million and dredging about $27 million to $45 million. The land lease agreement with Sprague for the 65 acres of land, as described above, could reasonably be expected to be more than $290 million over the 50-year design life of the OSWP. Additional unquantified costs include the demolition of the existing liquid dock and dry bulk dock and construction of a replacement dock to support Sprague's liquid and dry bulk operations and WTG component delivery. Additional costs would be associated with the CPKC right of way and possible relocation. Costs associated with demolition and remediation of the three existing liquid petroleum storage tanks and two warehouse are unknown. As is the case with all alternatives, potential improvements along the roadway access routes would result in additional costs to the project.

Environmental

Can chat after 4 The State also overlaid field delineated stream and wetlands data (VHB 2024) collected for the project on the Sprague Alternative. Exhibit 68 summarizes the Sprague Alternative's potential impacts WOTUS.

Exhibit 68. Summary of Potential Impacts of an OSWP by the Sprague Alternative

Resource	Potential Impact[1]		Notes
Freshwater Wetland	7 acres		Includes <1 acre of WOSS.
Coastal Wetland	Ocean Fill	35 acres	About 5 acres of intertidal and 30 acres of subtidal.
	Dredge	15 acres	<1 acre intertidal and about 15 acres subtidal.
Vernal Pool	0		
Stream	50 feet		1 stream. About 400 feet of manmade ditches would also be potentially impacted.
Eelgrass	None		Stantec 2024
Species	Unknown		Bald eagle nest (0.5 mile west); endangered sea turtles range; endangered bat and bird species may be present (USFWS IPaC).
Hazardous Materials	TBD		No known hazardous waste sites, however, excavation on Mack Point may result in the terminal being considered a brownfield or grayfield site.
Relocations	3 liquid petroleum storage tanks and 2 warehouses (Sprague); CPKC spur		

[1]Measurements based on field delineated resources (VHB 2024); impacts are preliminary and rounded to the nearest whole number. WOSS=wetlands of special significance; USFWS=U.S. Fish and Wildlife Service; IPaC=Information for Planning and Consultation; TBD=to be determined

The Sprague Alternative is not a practicable alternative because the following key factors:

- Delivery berth not being adjacent and parallel to upland area.
- Wharf not straight for 1,500 feet, multiple 90-degree faces.
- In current layout, wharf limited to handling foundation sizes of maximum 400 feet.
- Launching of floating foundation and integration of WTG components not possible simultaneously, ring crane location also affects efficiency.
- The dry bulk pier, shown as the delivery berth, is not adequate in terms of shape or load capacity due to the weight and dimensions of current WTG components.

10. Optimal Mack Point and Preferred Sears Island (Searsport) Alternatives

Two OSWP sites warranted additional detailed study to evaluate their ability to meet the State's OSWP objectives: the optimized Mack Point Alternative (Option B.2) and the Preferred Sears Island Alternative. These sites will be carried forward for detailed engineering and environmental study, which will be documented completely in an EIS in accordance with the NEPA.

Both sites meet minimum design criteria (Exhibit 7 and Exhibit 23) and present the least additional potential practicability challenges that were evaluated in Section 9. Searsport is one of the three industrial ports identified in Maine's three port strategy, has robust roadway infrastructure access via major highways (HCP 1), including SR 3 and U.S. 1, and both sites are currently zoned for industrial use.

The State prefers the Sears Island site over Mack Point for the following reasons:

- Sears Island is owned by the State of Maine. No lease payments or property acquisition is needed.
- Dredging is not required to access the navigation channel.
- Ocean fill footprint is less than Mack Point.
- Construction costs are significantly less.
- Wharf orientation and location of OSWP on Sears Island reduces wave and wind impacts to navigation.

Detailed descriptions of the Mack Point and Sears Island alternatives follow, including the reasoning behind the State's preference for Sears Island over Mack Point.

MaineDOT and MPA have initiated detailed studies to understand the existing conditions in and around Searsport and to inform decision making. Several technical studies have been completed and others are ongoing at the time of this Pre-Application Alternatives Analysis. Studies characterizing the natural environment, including the practicability and cost associated with the potential for dredging at Mack Point, and navigation conditions are summarized below and referenced in the discussion of the Sears Island and Mack Point alternatives.

The State understands and acknowledges that Sears Island has cultural significance to the Penobscot Indian Nation and may have significance to other tribes. This Pre-Application Alternatives Analysis does not address the presence of historic and cultural properties and is not intended to be a comprehensive assessment of the potential effects associated with the State's proposed OSWP. The State acknowledges that significant work remains to be done prior to the identification of the least environmentally damaging practicable alternative (LEDPA) and preparation of permit applications, including coordination with and formal consultation with Native American tribes with history and interest in the proposed location of an OSWP on Maine's coast. The cultural significance of Sears Island and other alternatives will be evaluated and documented as part of the NEPA process. Additionally, the State will continue to consult with the tribes to evaluate the cultural significance of Sears Island and other alternative sites and will incorporate that information into its State and federal applications.

The Draft EIS will incorporate all detailed studies and analyze potential impacts of the Build Alternatives at Mack Point and Sears Island on the human, cultural, natural, physical, and economic environments in addition to the consequences associated with a No Build Alternative.

Natural Resources

MaineDOT contracted and completed comprehensive natural resources surveys and functions and values assessments at Mack Point and Sears Island. The following summarizes the natural resources reports findings; the full reports are included as Attachment E.

Hydrographic and Marine Geophysical Characteristics

Steel Associates Marine Consultants (2023) performed multibeam bathymetry, side-scan sonar, marine magnetics, and sub-bottom profiling surveys at Mack Point and Sears Island to aid in preliminary design efforts. These surveys were performed between October 23-26, 2023, and form the baseline data for preliminary design, dredging estimates, and marine habitat assessments.

The bathymetry survey mapped the "topography" of the ocean floor using broadband multibeam sonar. Depths below mean sea level from this survey ranged from -54 feet to 6 feet and the data was used to create underwater contour maps.

The side-scan sonar survey collected fine-grained data of individual features on the ocean floor, revealing relict structures, boulders, debris, etc. Post-processing this data was also used to generate a "backscatter mosaic" which differentiates between ocean floor types (e.g., mud, sand, shell beds, etc.).

The marine magnetics survey was conducted using a magnetometer to detect local magnetic anomalies and generate a contour map of magnetic data. This revealed the presence of manmade ferrous objects (e.g., navigational aids, pipelines, fishing traps) and larger magnetic trends.

Sub-bottom profiling was conducted to collect data on ocean floor sediment thickness using a parametric sub-bottom profiling system. Surveyors were able to capture data of two distinct layers of sediment/rock above the cemented carbonate seabed, which range from 0 to greater than 20 feet thick.

Coastal Wetland Habitat Functions and Values

Stantec (2024) assessed coastal wetland habitat in Fall of 2023 at Mack Point and Sears Island. The assessment of the intertidal zone included visual qualitative surveys, photography, quantitative quadrat sampling, and biological data collection. The subtidal zone assessment included diver surveys, underwater photography/video recording (Spring 2024), and sediment grabs. During these surveys, observations of species composition, abundance, and distribution were recorded. Eelgrass and lobster and urchin surveys are detailed in separate reports. Quadrat sampling was performed to delineate areas of distinct substrates across the intertidal zone. Sediment grabs were performed to analyze marine macroinvertebrate communities. Species identification was carried out by Haley Ward (consulting firm) if not possible in field.

The substrate and habitat types that characterize the coastal wetlands present in the Mack Point and Sears Island study areas are present throughout Penobscot Bay. The assessments include a characterization of the overall habitat function and value, noting a wide mix of substrates providing a range of habitats, dense macroalgae communities, and sandy silt subtidal flats supporting marine worms, shellfish, and crustaceans. No State or federally protected or sensitive species were observed during field surveys. Surveyors did note the presence of invasive green crabs in both study areas and reported bald eagle sitings.

Freshwater Habitat Functions and Values

VHB (2024) performed wetland and waterbody delineation for the onshore (i.e. freshwater) portions of the Mack Point and Sears Island study areas in March 2022, August 2023, and September 2023, with an April 2024 follow-up for vernal pool identification. Wetlands and streams meeting certain criteria are regulated under Section 404 of the CWA, and Maine's NRPA. Utilizing a field survey and visual observations of soil from soil pits, wetlands and streams were delineated with GPS data collection and further characterized on data forms.

The Mack Point survey delineated approximately 33 acres of wetland in the study area, which encompasses an area beyond anticipated project impacts. Of those 33 acres, about 1.5 acres were delineated as wetlands of special significance (WOSS)[8], which are regulated under the Maine NRPA. WOSS on Mack Point include freshwater wetlands located within the shoreland zone and within 25 feet of streams. Four streams were identified, totaling approximately 1,100 feet. Three vernal pools were preliminarily identified in the Spring

[8] MDEP defines WOSS as all coastal wetlands, great ponds, and certain freshwater wetlands (NRPA Chapter 310 Section 4).

2024 field survey. There are several delineated man-made stormwater features which are not identified jurisdictional by VHB (not included in acreage totals).

The Sears Island survey delineated approximately 61 acres of freshwater wetland in the study area, which encompasses an area beyond anticipated project impacts. This acreage includes a wetland restoration area and wetland forming in previously disturbed area; it does not include stormwater features or man-made ditches. Nine streams, totaling approximately 4,400 feet, were identified in the study area. Eight vernal pools were preliminarily identified in the Sears Island study area. Of the 61 acres of freshwater wetland, approximately 11 acres were initially identified as WOSS because of their location within the shoreland zone or association with streams. NRPA also defines wetlands that contain Significant Wildlife Habitat (SWH) as WOSS. Vernal Pool data is currently under review by the Maine Department of Inland Fisheries and Wildlife (MDIFW), but the State expects that at least one of the vernal pools meets the definition of significant. To the extent that the WOSS definition extends to all wetlands hydrologically connected to SWH, about 36 acres of freshwater wetland could be considered WOSS. The report in Attachment E includes a map of delineated features with corresponding data forms and field photos.

Eelgrass and Shallow Substrate Characteristics

Stantec (2024) completed a dive survey to map eelgrass presence and characterize substrate at Mack Point and Sears Island on September 20, 2023. Eelgrass (a shallow subtidal marine plant) and its habitat are given special consideration by MDEP, the USACE, and the National Marine Fisheries Service (NMFS). In addition to the presence of eelgrass, divers examined general sediment substrate type (e.g., mud, sand, boulder, shell, etc.) and aquatic plant (i.e., epiphyte) coverage.

No eelgrass was identified within the Mack Point or Sears Island study areas, though surveyors noted that both locations include appropriate depths and substrate types for eelgrass. Photographs of substrate and habitat, and a list of species observed in the study areas are included in the reports. No protected species were observed at either location.

Lobster and Urchin Survey

Stantec (2024) completed dive surveys to estimate the density of American lobsters and green sea urchins present at the Mack Point and Sears Island study area on November 20 and December 5–7, 2023. Impacts to these species are considered by Maine Department of Marine Resources (MDMR) during permitting. Divers completed visual surveys, recorded the number of observed lobsters, lobster burrows, and urchins along transects within the study area.

Divers observed one lobster and 3,996 urchins in the Mack Point study area. The lobster and all urchins were observed along the closest transect to shore. Unoccupied lobster burrows were observed along all transects in the study area.

Divers did not observe lobsters in the Sears Island study area; however, unoccupied burrows were observed along each transect. Divers observed a total of 1,442 urchins in the Sears Island Study Area, all along the closest transect to the shore.

Dive surveys, which are considered in-water work, are permitted in Maine's tidal waters between November 8 and April 9 which corresponds to a period when many lobsters are expected to have moved out of the Mack Point and Sears Island study areas into deeper offshore waters due to seasonal migration. Higher lobster densities would be expected at both locations during summer and fall seasons.

Surveyors did not observe protected marine species during any of the surveys.

Sand Dunes

Stantec (2024) completed field survey in December 2023 and April 2024 to identify and delineate sand dunes in the Sears Island study area. Coastal sand dunes are regulated by Maine's NRPA, and Maine Geological Survey maintains a geographic database of sand dunes which may meet this definition. Their database identified a portion of the study area near the existing jetty as a sand dune.

One coastal sand dune system was identified on the south side of the existing jetty on Sears Island that meets the NRPA definition of a coastal sand dune. The dune's presence is likely an effect of the jetty's placement and predominant tidal patterns. The dune system is comprised of a narrow dune berm subject to occasional tidal inundation during extreme high tide, a frontal dune ridge, and a back dune trough, also periodically inundated. The report includes a map of the dune with corresponding photos.

Dredge Material Management

The USACE completed construction of the federal navigation channel in Searsport Harbor in 1964. The construction operations included the mechanical removal of 487,500 CY of material and disposal of dredged material at the Belfast Bay Disposal Site, which is now closed. Maintenance dredging in the federal navigation channel has not been performed in Searsport Harbor since construction of the channel. Shoaling over the past five decades has reduced the depth of the channel in some areas to 33 feet or less, particularly in the northwest reaches of the channel near the Mack Point Terminal. Shallow water depths hinder navigational access, compromising vessel safety. Shallow spots in the federal navigation channel are the subject of the ongoing Searsport Federal Navigation Project (refer to Section 5.2) which would occur with or without the OSWP project.

Dredging would be necessary between the federal navigation channel and a new proposed heavy-left wharf at Mack Point to meet minimum design criteria (water depth of 35 feet) for the operation of an OSWP. Conceptual design estimates suggest that as much 225,000 CY would need to be removed from the Mack Point location to construct an OSWP. At an average production of 1,000 CY to 2,500 CY per day and in anticipation of work-in-water restrictions (November 8–April 9), dredging operations are anticipated to require 200 days over two construction seasons. More rapid production, or the deployment of more than one dredging operation may be able to reduce the total construction time (Haley Aldrich 2024).

The Searsport Federal Navigation Project, which is designed to address the channel depth at Mack Point, has been under development since 2001 (see Section 5.2). Sediment investigation related to this ongoing project were performed by USACE in 2008, 2015, 2017, and 2021, with the collection of sediment samples from across Searsport Harbor. These investigations characterized the sediment that would be removed during maintenance dredging and assessed the suitability for open water disposal in Penobscot Bay and/or for the construction of a Confined Aquatic Disposal (CAD) cell in Searsport Harbor. The State reviewed and analyzed these previously collected data in relation to the dredge areas associated with an OSWP at Mack Point (Attachment F).

In general, the deeper underlying material in the Searsport Harbor navigation channel and in the vicinity of Mack Point consists of native material that has not been exposed to significant anthropogenic sources of contamination. However, surface sediments (defined in these investigations as the top three feet) consistently showed slightly elevated concentrations of individual metals and polycyclic aromatic hydrocarbons (PAHs) (Haley Aldrich 2024).

> **Polycyclic Aromatic Hydrocarbon (PAH)**
>
> Polycyclic aromatic hydrocarbons (PAHs) are a class of chemicals that occur naturally in coal, crude oil, and gasoline. They also are produced when coal, oil, gas, wood, garbage, and tobacco are burned (CDC 2009).

Based on the available data, including results from previous investigations, recent bulk sediment chemistry data, and subsequent water column modeling, material deeper than three feet below sediment surface from Searsport Harbor in the vicinity of Mack Point is considered suitable for unconfined open-water placement according to the testing and evaluation requirements set forth in Section 404 of the CWA. However, surface and deeper materials alike from the Searsport Harbor federal navigation channel can be effectively isolated according to 40 CFR §230.72 through disposal and containment in a CAD cell. (Haley Aldrich 2024)

The following available dredged material management options were evaluated (Haley Aldrich 2024):

- Upland disposal includes the construction of a materials handling facility (MHF) at Mack Point for the dewatering (i.e., drying) and stabilization of dredged materials–specifically the top three feet of

potential dredged materials which are assumed not appropriate for open-water ocean disposal based on chemical analysis–before off-site transport by truck to an appropriately regulated landfill. Local landfills at Juniper Ridge and Crossroads are regulated but neither currently have sufficient capacity to accommodate all the anticipated dredged materials, nor the facilities to manage the anticipated daily waste stream from this proposed project (i.e., 1,000+ CY per day) in addition to their normal public and required municipal and State sources. Although they may have the potential for expansion, that process is highly speculative and would be well outside the timeline for the completion of an OSWP. As a result, upland disposal could only be used as part of a hybrid disposal alternative.

- Open-water ocean disposal includes the transport of dredged materials in an open scow to a deep-water open disposal location. MaineDOT and MPA considered the Portland Harbor ocean disposal facility (PDS), Rockland ocean disposal facility (RDS), and Cape Arundel ocean disposal facility for disposal. Only the PDS appears to be available based on capacity and use. However, the top three feet of sediment would likely not be accepted based on its contamination profile. As a result, open-water ocean disposal could only be used as part of a hybrid disposal alternative.
- Construction of a CAD cell requires the removal of native or resident sediment from a nearby location to create storage space for targeted sediments removed from another location. A CAD cell would increase the volume of dredged materials requiring management and would likely extend the construction schedule by a minimum of one additional construction season. Further, siting of a CAD has not been determined though is assumed to be in proximity to the dredging project. As a result, similar sediments would be expected in association with construction of a CAD cell in Searsport Harbor. As a result, a CAD cell could only be used as part of a hybrid disposal alternative.
- Beneficial reuse could be an option for a small portion of the dredge materials (3,800 CY) from Mack Point. Native till materials below three feet are considered potentially available for beneficial reuse. However, because of the need for further characterization, and the difficulty in segregating what is less than 1% of the overall dredge volume at the very bottom of the dredge area, this is not considered practicable.

There are limitations related to each retained dredged material management option that preclude them from being used as the sole alternative for the disposal of dredged materials associated with Mack Point. Two hybrid alternatives, relying on two or more of the retained disposal options, were developed (Haley Aldrich 2024):

- Dredged Material Management Alternative 1: The top three feet of materials in the dredge area adjacent to Mack Point are dewatered and stabilized for disposal at an upland disposal facility. The remainder of the dredge volume is sent to either the PDS or RDS for ocean disposal.
- Dredged Material Management Alternative 2: A nearby CAD cell is constructed with the top three feet of the CAD cell area dewatered and stabilized for disposal at an upland disposal facility. The top three feet of materials in the dredge area adjacent to Mack Point are placed in the CAD cell. The remainder of the materials from construction of the CAD cell and the dredge area adjacent to Mack Point are sent to either the PDS or RDS for ocean disposal.

Exhibit 69 summarizes the costs associated with each dredged material management alternative.

Exhibit 69. Dredge Material Management Alternatives, Cost Estimates

Dredged Material Management Option	Dredged Material Disposal Option			Total Cost (millions)
	Upland Disposal (CY)	CAD Cell (CY)	Portland Ocean Disposal (CY)	
Alternative 1	92,000	0	133,000	$52-$55
Alternative 2	33,700	92,000	225,000[1]	$37-$42

Source: *Mack Point Dredged Material Management Plan* (Haley Aldrich 2024) (Attachment F)
General note: Dredging depth varies across the site. In some places the required dredging depth is less than 3 feet.
[1]Includes clean materials from the dredge area plus the clean portion of materials removed from CAD cell.

Ship Simulation Study

The ability of vessels to safely arrive and depart under a wide variety of weather conditions is one of the critical characteristics of any marine terminal, and thus, one of the critical comparisons to be made when deciding between two alternative marine terminal options for the project. The navigation conditions for Mack Point and Sears Island vary only with respect to the final approach, turning, and berthing (i.e., transit from the ocean is the same for both berths). To inform this comparison, full mission bridge ship simulations were conducted at the United States Maritime Resources Center (USMRC) in Middletown, RI in June 2024. Fourteen simulations were performed, including inbound and outbound maneuvers and turning both to port and to starboard. All simulations were conducted by active Penobscot Bay and River pilots. (Moffatt & Nichol 2024; Attachment G)

Mack Point

The approach and departure maneuvers for the Mack Point Terminal concept are comparable to the maneuvers at the existing liquid bulk and dry bulk terminals at Mack Point. Due to the nature of the cargo and crane configurations, vessels may need to berth port-side-to and starboard-side-to, which would dictate whether the vessel turns on arrival or departure. However, both maneuvers are feasible under calm conditions.

The most challenging simulation at Mack Point included 22-knot gusting winds. While the pilots were able to complete the maneuver, they noted that it was challenging and there were little opportunities to abort, with the only option being to reverse course in a limited maneuvering area. Limited clearance for tugs from the adjacent pier was also noted as well as unfavorable tug positioning on approach.

With elevated wind conditions, the berth orientation at Mack Point is not ideal because the wind (often from SW or SSW) tends to catch the stern of the vessel just as it initiates the final turn and alignment with the berth. As noted above, this is a similar effect to what is experienced currently with vessels at the existing berths; however, with the larger sail-area of cargoes expected for the wind industry the effect is even more pronounced and would likely lead to some limitation in wind conditions for the operation (i.e., in the 20-25 knot range).

Sears Island

The alignment of the Sears Island terminal is parallel to the existing navigation channel and parallel to the shoreline of Sears Island. The most challenging simulation at Sear's Island included 25-knot gusting winds. Pilots noted that the wind added complexity, but that there was plenty of space available to maneuver and react to the conditions. Additionally, Sears Island provided numerous opportunities to abort the maneuver, with open water to the north, south, and west should issues occur. The following observations were made during the study about the terminal concept at Sears Island:

- There are no adjacent structures, resulting in larger navigation clearances, and associated safety when compared to Mack Point. The wind farm components moored to the Sears Island berth were the only navigation obstacles of concern for these maneuvers.
- The terminal is near open deepwater to the south with nearly unrestricted turning area. This provides a safety margin for the turning maneuver and would allow the maneuver to be performed at higher wind speeds than comparable maneuvers at Mack Point. For the Mack Point Terminal, there is sufficient space to turn the vessel, but maneuvering is confined to a defined area with hard structures adjacent.
- The terminal concept at Sears Island aligns reasonably well with the dominant wind direction (i.e., from SSW to SW). Wind conditions evaluated ranged from 15 knots steady to 25 knots gusting and directions from SSE to NW. While the exact wind limits may depend on the type and size of vessel, the pilots indicated clearly that for comparable vessels the wind speed limits for the Sears Island terminal would be higher than for the Mack Point Terminal. This would result in increased berth availability for a terminal built at Sears Island.

- The terminal aligns with the shore, meaning the currents (though generally a minor effect) would tend to run parallel to the berth. In contrast, the currents at Mack Point tend to run across the berth, which is a more adverse condition.

In summary, the following conclusions were determined relative to the comparative performance of Mack Point and Sears Island after two days of simulations under a wide variety of conditions:

- It is feasible to safely navigate to and from both terminals under typical environmental conditions, e.g., wind speeds less than 20 knots occur approximately 85% of the time and appear feasible for both terminals.
- The Sears Island terminal is a preferred location from a navigation perspective, providing for safer approach and departure maneuvers (increased clearances and better alignment with environmental conditions).
- Due to the lack of surrounding navigational obstacles, the Sears Island terminal concept allows for higher allowable wind speeds for vessel transit and would allow for less environmental restrictions for vessel maneuvering.

It is important to note that wind limits and restrictions discussed here are preliminary and approximate. The actual environmental restrictions will vary for individual vessels and operators. Overall, less environmental restrictions would be expected at Sears Island and complex maneuvers would be of considerably lower risk than at Mack Point.

10.1 Mack Point Alternative (Searsport)

As discussed in Section 9.6 above, the State explored all possible options for an OSWP at Mack Point. Mack Point is currently owned and operated by Sprague. Mack Point satisfies the minimum design criteria (refer to Exhibit 7 and Exhibit 23). Because the Mack Point and Sears Island Hybrid Alternative and Sprague Alternative (described in Section 9.6) fail to achieve key design objectives, MaineDOT and MPA developed an optimized Mack Point for additional detailed consideration. The analysis that follows focuses on the State's optimized development at Mack Point.

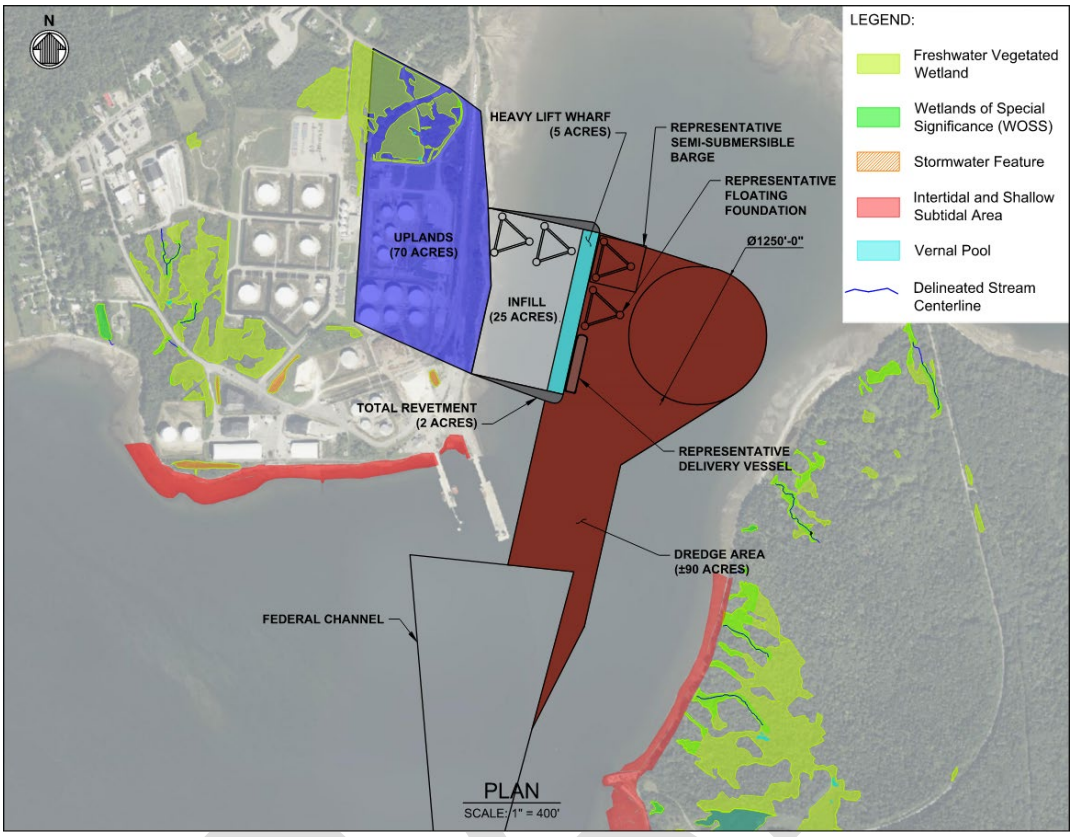
Sprague currently operates two piers perpendicular to the south facing shore, one for liquid bulk and the other for dry bulk, at Mack Point. The use of these piers for OSW were analyzed but ruled out due to their orientation, availability (liquid bulk pier unavailable), and loading capacity of the piers (1,000 psf) which is inadequate for use by FOSW developers. Because of these inadequacies, a heavy-lift wharf parallel to the uplands is proposed to efficiently facilitate the movement of floating foundations and WTG components from the water to the deck and vice versa.

Two locations on Mack Point were investigated: Option A and Option B.

10.1.1 Mack Point Option A

Mack Point Option A would use 70 acres of uplands along the east side of Mack Point and 30 acres of ocean fill to achieve the 100-acre minimum design criteria (Exhibit 70). Additional two acres of ocean fill related to the revetment, resulting in 32 acres total ocean fill.

Exhibit 70. Mack Point Option A



Availability of Land

This area of the Mack Point Terminal is owned by MPA (refer to Exhibit 61) and potentially encumbered through 2103 under the current lease agreement with Irving Oil Company. CPKC also owns a swath of right of way in this area that currently accommodates five parallel tracks in its Mack Point Yard.

Constructability

The most significant constructability issue with Mack Point Option A is its location along the eastern side of Mack Point where the water is extremely shallow–the mudflat becomes visible at MLLW. Even with 25 acres of ocean fill, 2 million CY to 2.2 million CY of dredge would be required to construct the five-acre heavy-lift wharf, and then maintain the berths, the vessel maneuvering basin (aka turning basin), and access channel extending approximately 0.75-mile north of the federal navigation channel. In total, Mack Point Option A would require 32 acres of ocean fill.

CPKC's Mack Point Yard is located between 100 and 200 feet west of, and parallel to, the shoreline. Up to six parallel railroad sidings are located within about 100 feet of rail right of way and stretches across the footprint of the site for about 2,500 feet. Immediately west of the railroad yard are eleven existing liquid petroleum storage tanks that would need to be demolished and remediated. It is likely that this existing infrastructure would have to be relocated by the project.

Operational Functionality

The CPKC Mack Point Yard presents the most significant operational challenge for Mack Point Option A. Due to the weight and size of FOSW components and foundations, navigating over rail on a consistent basis is not considered practicable. Even if a system to consistently cross the track were engineered,

efficiency of OSW operations would be diminished due to conflict in uses as the railroad would still presumably operate on the tracks.

The potential for future expansion at Mack Point to meet the needs of the evolving OSW industry is constrained. Though future expansion is unknown and not a criterion in the siting of a floating OSWP, it does speak to practicability and the future planning of port development for the industry to successfully continue. The potential for expansion for OSW at the Sprague site is extremely limited.

Cost

Mack Point Option A would cost significantly more than the State's optimized Mack Point layout described in Section 10.1.2. This is primarily due to the significant dredging requirements at the site which would cost an estimated $360 million to $396 million to complete. Though owned by the State, Irving Oil Company's lease for the use of the property may extend through 2103. For this site to become available, the State would need to buy the lease out (at an unknown cost) through negotiations with Irving Oil. If negotiations were successful, this site would involve the most demolition, possible remediation, and relocation costs of any Mack Point alternative involving 11 existing liquid petroleum storage tanks and about 2,500 feet of CPKC Railway. As is the case with all alternatives, potential improvements along the roadway access routes would result in additional costs to the project.

Environmental

Due primarily to the extent of dredging required, but also to the built-up nature of the site, the State dismissed Mack Point Option A from further consideration and did not evaluate the potential for impacts to environmental resources.

10.1.2 Mack Point Option B

Mack Point B utilizes the 65-acres of upland area identified by Sprague as available for this alternative. To satisfy the minimum 100-acre upland requirement, 35 acres of ocean fill would be required plus revetments. The heavy-lift wharf would be located west of the existing liquid and dry bulk piers. Option B was further divided into two potential layouts which vary only in wharf configuration and dredging amount, i.e., both options include the same uplands area:

- **Mack Point Option B.1:** This layout includes an optimal wharf configuration, vessel maneuvering basin, and vessel approach, resulting in a large dredge area (approximately 90-acre footprint) (Exhibit 71).
- **Mack Point Option B.2.**: This layout shares a vessel turning basin with the existing Sprague liquid and dry bulk dock operations and shifts the delivery berth to the east side of the ocean fill, parallel to the existing liquid bulk dock, and minimizes dredging requirements at Mack Point (Exhibit 72).

For the purposes of NEPA, Option B.2 will be carried forward for detailed comparison in the Draft EIS.

In most cases, the practicability factors identified in Section 9.1 are the same for both options; however, the evaluation below differentiates between Mack Point Options B.1. and B.2. as appropriate.

Availability of Land

As previously discussed, use of the land at Mack Point Terminal would require a long-term lease agreement with Sprague. CPKC-owned right of way would also be involved, specifically related to the rail spur that parallels the southern shoreline at Mack Point and traverses the width of the proposed port footprint. These factors apply to both Option B.1. and Option B.2.

Exhibit 71. Mack Point Option B.1

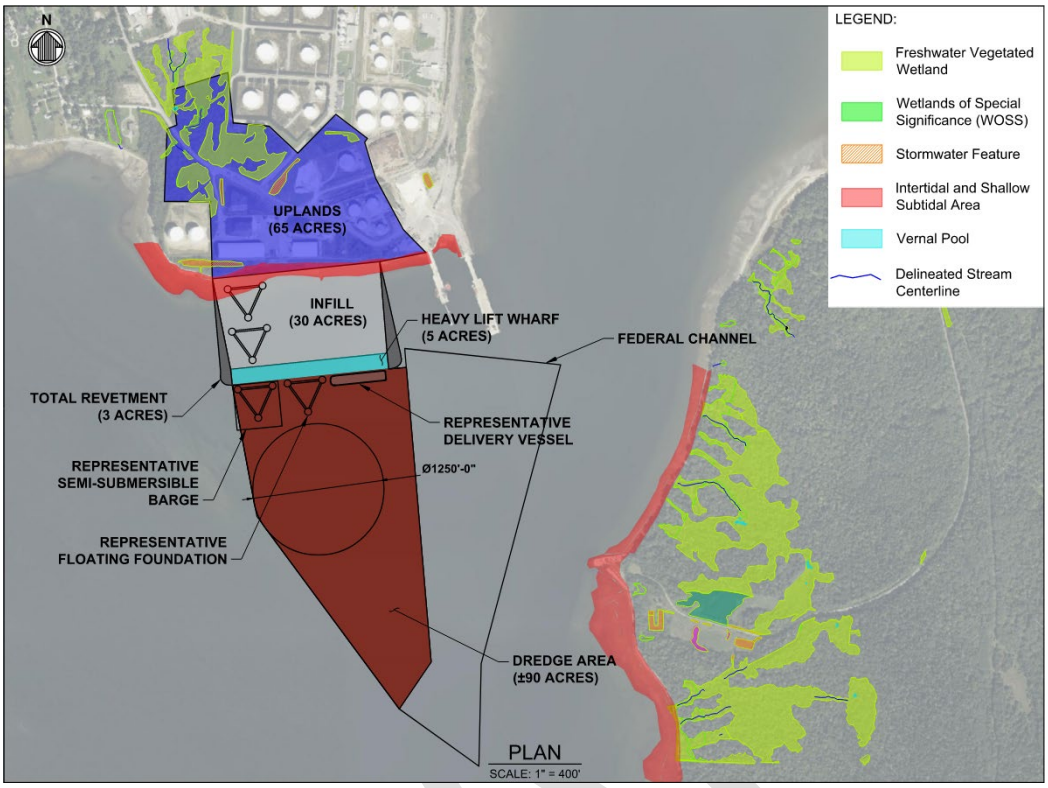
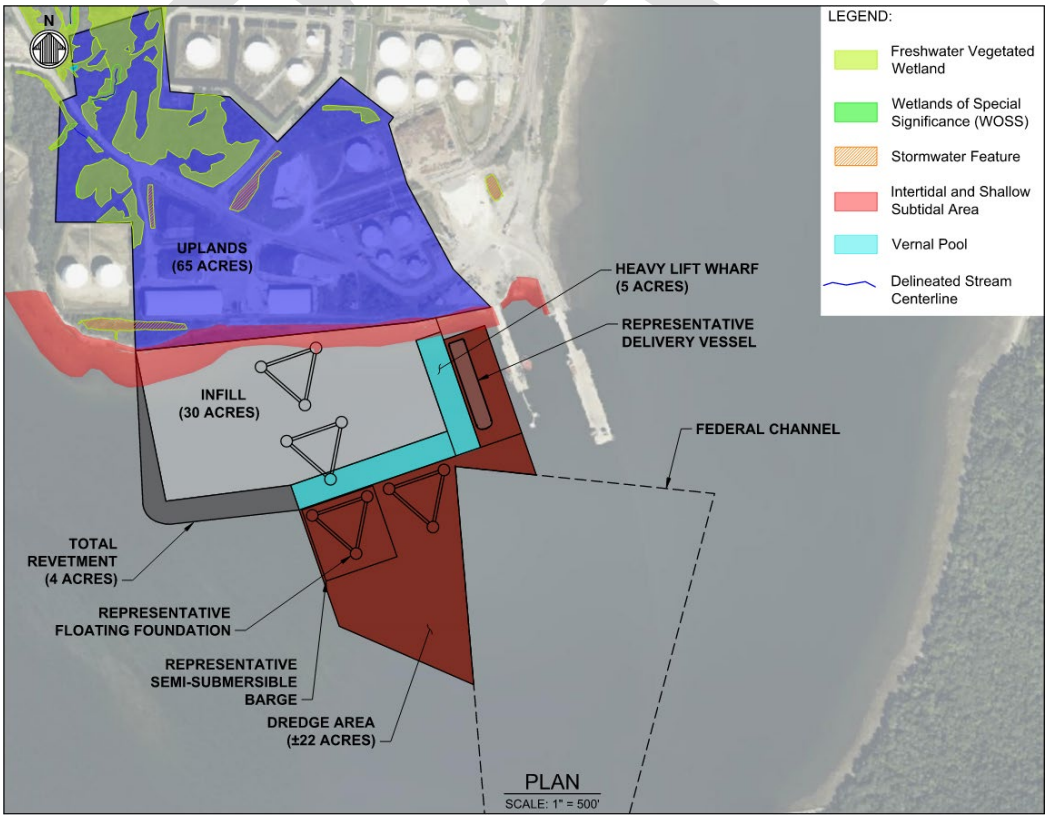


Exhibit 72. Mack Point Option B.2, MaineDOT's Mack Point Alternative



Constructability

Like the Hybrid Alternative (Section 9.6.1), an OSWP at Mack Point would require existing infrastructure to be demolished, remediated and possibly relocated. Options B.1. and B.2. would require the demolition of five liquid storage tanks, two storage buildings, and the displacement of the CPKC rail spur. The CPKC spur traversing the southern shore at Mack Point would need to be relocated because an OSWP dissected by an active railroad spur is not practicable.

Based on design evaluation, Mack Point Options B.1. and B.2. would result in a net material import project. About 1.3 million CY would be required to complete the ocean fill and the surcharge process (refer to Section 9.1, Constructability for explanation of surcharge). About 670,000 CY of upland materials would be excavated at the site and used for ocean fill (for the purposes of this study, it is assumed soils excavated from the Mack Point Terminal could be used for ocean fill). Another 640,000 of materials (e.g., soil) would need to be imported to complete the surcharge program and then exported from the site and disposed of. The ocean fill area for Mack Point Options B.1. and B.2. are 38 and 39 acres, respectively.

Dredging is required at Mack Point to connect an OSWP to the navigation channel. Analysis conducted for this project concluded that the dredged materials within the first three feet below sediment surface is not suitable for reuse in the ocean fill area or for unconfined open-water placement because it is expected to contain significant hydrocarbon contamination (Haley Aldrich 2024; Attachment F).

The State evaluated several options to minimize dredge requirements at Mack Point in coordination with Sprague (Attachment C). The objective was to evaluate ways to balance the dredge quantity and ocean fill, without driving construction costs upwards significantly. Option B.1 would require about 900,000 CY to 1 million CY of dredging to access the navigation channel. Option B.2 minimizes the dredging needs and requires about 200,000 CY to 300,000 CY of dredging to reach the navigation channel.

Mack Point is about 0.5-mile from U.S. 1. Some roadway access improvements between U.S. 1 and the proposed OSWP are possible.

Operational Functionality

Though it is possible to upgrade railroad crossings to accommodate the passage of heavy floating OSW components, it is neither ideal as a matter of daily operations nor is it practicable for rail cars to be parked within the port as this would interfere with OSWP operations. Further, due to the proximity of existing, fixed structures (i.e., the liquid and dry docks) to the proposed OSWP berth and federal navigation channel at Mack Point, navigation to and from the site is constrained. Specifically, the navigational safety margin for turning maneuvers is lower than that at Sears Island (Attachment G). Berthed vessels and floating foundations at an east/west-oriented wharf would take the brunt of prevailing wind and waves from the SW or SWW. This is a marine safety issue that can be mitigated by berthing arrangements that face north/south, parallel to prevailing wind and waves. While Mack Point Option B.2 can partially accommodate this, the full 1,500-foot wharf length cannot be achieved without east/west-oriented berths.

Due to the existing development and use of the Mack Point Terminal, the State would not have the ability to expand the footprint of the proposed OSWP at Mack Point without further demolition in the future should OSW market conditions require more than 100 acres. As the FOSW industry matures it is possible that expanded or additional port facilities would be necessary to keep up with demand.

Cost

Detailed cost estimates were prepared for the Mack Point Option B.2 conceptual design (Attachment H). Option B.1 would be comparable to Option B.2 but include higher dredging costs ($162 million to $180 million). Exhibit 73 summarizes the cost by major project stage.

Exhibit 73. Mack Point Option B.2 Cost Estimate

	Cost[1] (millions)
Land Acquisition[2]	$295-$490
Construction[3]	$572
Dredging	$36-$54
Environmental Mitigation[4]	$18
Total	**$921-$1,134**

[1]Cost estimates are preliminary and subject to change. [2]Land acquisition (and/or lease costs) are based on preliminary discussions between MaineDOT, MPA, and Sprague resulting in lease costs of between $90,000-$150,000 per acre per year, which is consistent with market rates (2023) for comparable properties. The State anticipates a 50-year lease on about 65 acres, resulting in a cost of $295M-$490M over the life of the port. No negotiations or agreements have occurred between the State of Maine and Sprague regarding these costs. Costs associated with CPKC right of way acquisition are unknown. Acquisition of rail right of way is a lengthy process requiring approval by the federal STB. MaineDOT owns Sears Island and there would be no associated land costs. [3]Demolition and remediation costs associated with five existing liquid petroleum storage tanks and two warehouses at Mack Point Terminal are not included, nor are any costs associated with potential relocation of existing CPKC infrastructure. [4]Assumes no mitigation costs associated with dredging impacts based on initial USACE and MDEP feedback.

Environmental

The potential environmental impacts for Mack Point Option B.1 and Option B.2 are the same except for the dredging requirements which are discussed above. Potential impacts are based on field delineated resources (VHB 2024). Exhibit 74 is specific to MaineDOT's optimized Mack Point Alternative (i.e., Option B.2).

Exhibit 74. Summary of Potential Impacts of an OSWP at Mack Point (Option B.2)

Resource	Potential Impact[1]		Notes
Freshwater Wetland	10 acres		Includes <1 acre of WOSS.
Coastal Wetland	Ocean fill	39 acres	About 7 acres of intertidal and 32 acres of subtidal.
	Dredge	22 acres	<1 acre of intertidal and 22 acres of subtidal.
Vernal Pool	0		
Stream	400 feet		1 stream
Eelgrass	None		Stantec 2024
Species	Unknown		Bald eagle nest (0.5 mile west); endangered sea turtles range; endangered bat and bird species may be present (USFWS IPaC).
Hazardous Materials	TBD		No known hazardous waste sites, however, excavation on Mack Point may result in the terminal being considered a brownfield or grayfield site.
Relocations	5 liquid petroleum storage tanks and 2 warehouses (Sprague); CPKC spur		

[1]Measurements based on field delineated resources (VHB 2024); impacts are preliminary and rounded to the nearest whole number. WOSS=wetlands of special significance; USFWS=U.S. Fish and Wildlife Service; IPaC=Information for Planning and Consultation; TBD=to be determined

The following are the key factors that impact development of Mack Point as an OSWP by the State:

- The need to import significant amounts of clean fill material to complete the ocean fill and surcharge program and subsequent need to export approximately 640,000 CY of excess materials from the surcharge program and the significant costs associated with these requirements.
- The requirement to dredge in excess of 225,000 CY of material, including some contaminated material that requires either upland or CAD cell disposal, and the resulting significant cost, schedule delays and uncertainty.

- Navigational difficulties and safety associated with east/west wharf orientation due to prevailing southerly winds and waves; the optimal position to be moored at a berth in the upper reaches of the Penobscot Bay is parallel to the prevailing southerly winds, i.e., north/south.
- Lack of site control due to not being State owned, and the requirement and associated costs for long term lease payments to the landowner.
- The need to demolish existing infrastructure, including existing rail facilities, and the costs and time associated with doing so.

While Mack Point is not viable for development of an OSWP, as part of this study the State has identified a multitude of FOSW services the existing Mack Point Terminal could provide, including but not limited to equipment and component laydown and transshipment support (e.g., anchors, cable, WTG components, subsea equipment, etc.), O&M (e.g., crew transfer, service operating vehicles, etc.), factory site location (e.g., blades, towers, nacelles, etc.), and construction support. The Mack Point Terminal could recognize increased utilization and economic activity with a commercial-scale OSWP at Sears Island.

10.2 Sears Island Alternative (Searsport)

The State evaluated several potential OSWP layouts at Sears Island. Each of these layouts adhere to the minimum design criteria (refer to Exhibit 7 and Exhibit 23). The deck height was set at 15 feet NAVD88. The minimum terminal width for any edge is not less than 800 feet.

10.2.1 Sears Island Layout Options Evaluated and Dismissed

The State evaluated the following layouts at Sears Island:

- **Sears Island Option A**: This option limits ocean fill requirements to 5 acres but would require approximately 22 acres of dredge to access the federal navigation channel Exhibit 75).
- **Sears Island Option B**: This option minimizes potential impacts to waters of the U.S. (WOTUS) while keeping an operable terminal shape (Exhibit 76). The uplands-to-ocean fill ratio of 70:30 acres is comparable to the other Sears Island layouts and would reach the federal navigation channel without the need for dredging.
- **Sears Island Option C**: This option was laid out to minimize potential impacts to WOSS while keeping an operable terminal shape (Exhibit 77). The uplands-to-ocean fill ratio of 70:30 acres is comparable to the other Sears Island layouts and would reach the federal navigation channel without the need for dredging.
- **Sears Island Option D**: This layout is the optimal terminal shape based on terminal logistics (Exhibit 78). The terminal shape follows the length of the wharf, with the narrowest section of the port being 1,500 feet along the eastern edge of the uplands. Because of the terminal shape, slightly more ocean fill is required. No dredging would be required to reach the federal navigation channel.
- **Sears Island Option E**: This layout minimizes the amount of net material export while keeping an operable terminal shape (Exhibit 79). The southern and northern edges of the terminal were set at 800 feet to meet this criterion. The uplands-to-ocean fill ratio of 70:30 acres is comparable to the other Sears Island layouts and would reach the federal navigation channel without the need for dredging.

Exhibit 75. Sears Island Option A

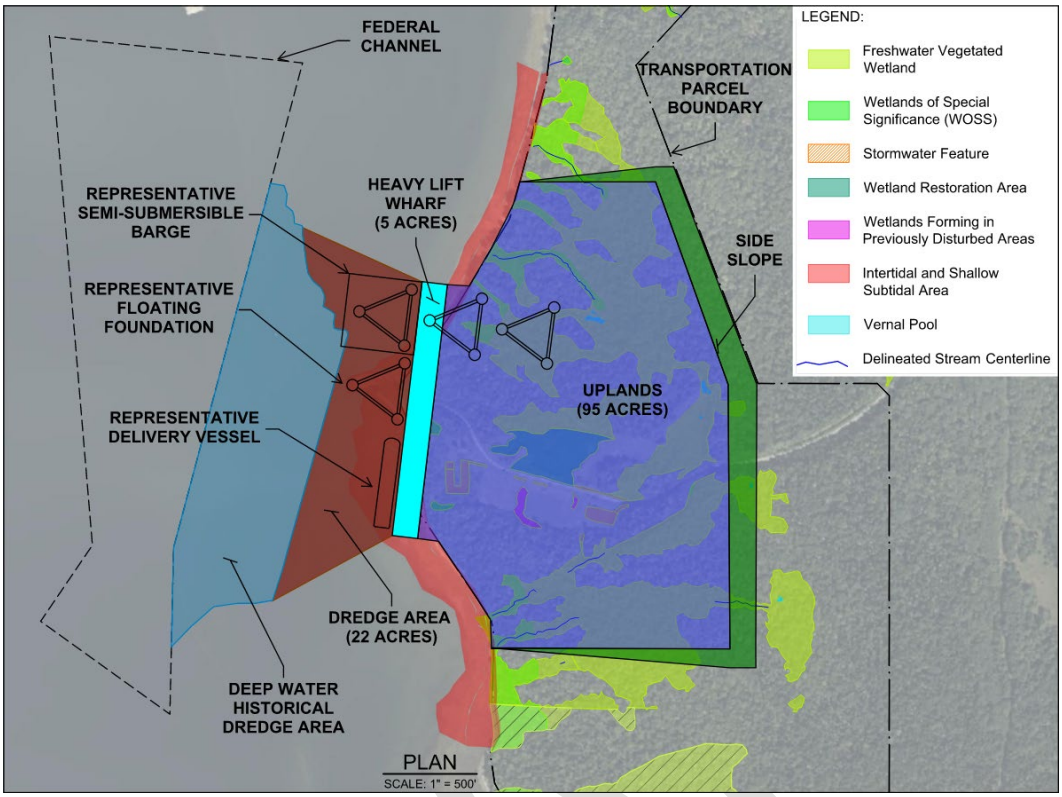


Exhibit 76. Sears Island Option B

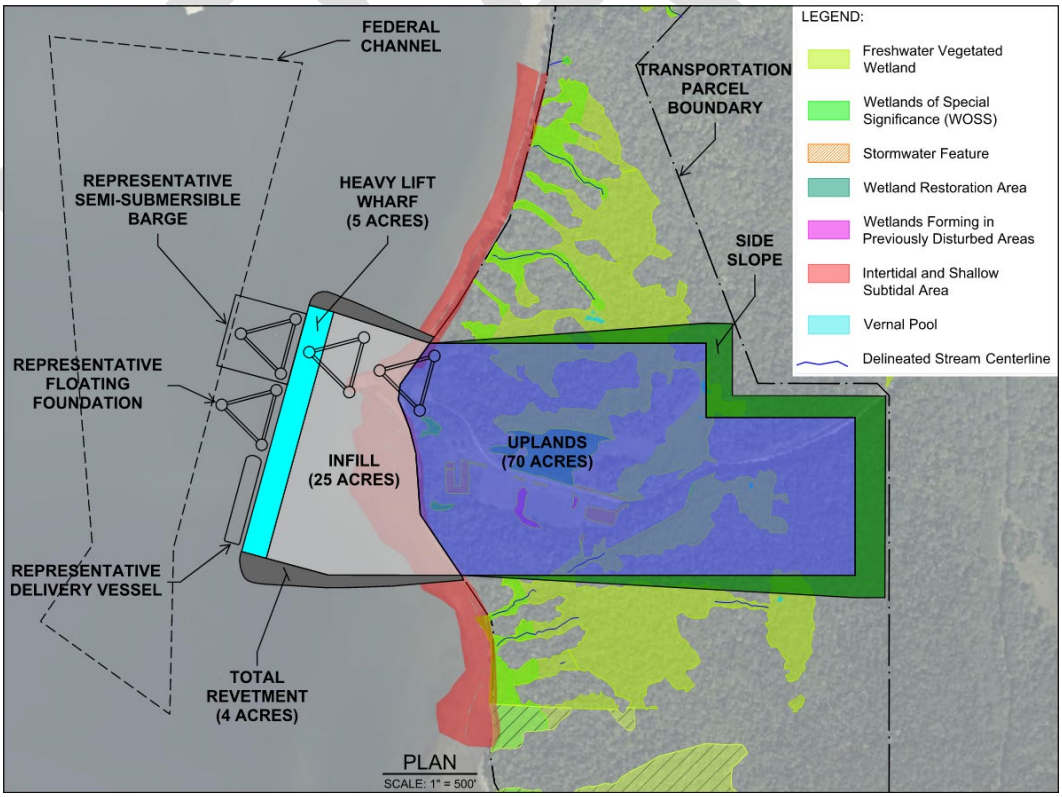


Exhibit 77. Sears Island Option C

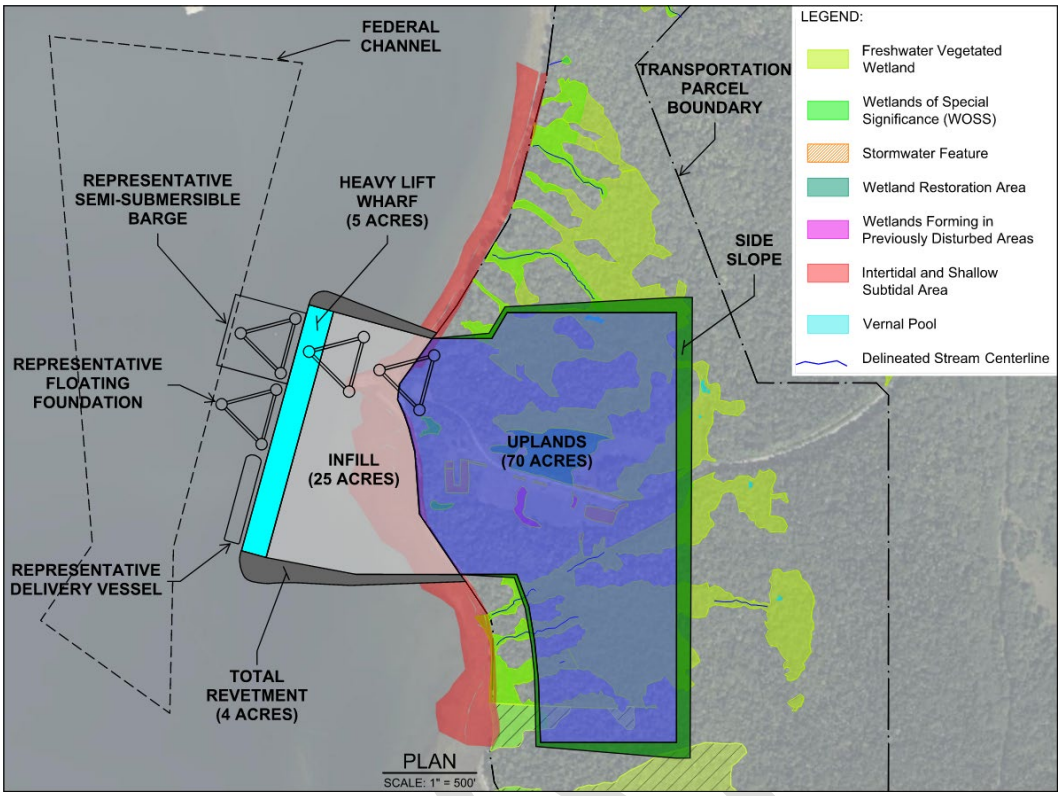


Exhibit 78. Sears Island Option D

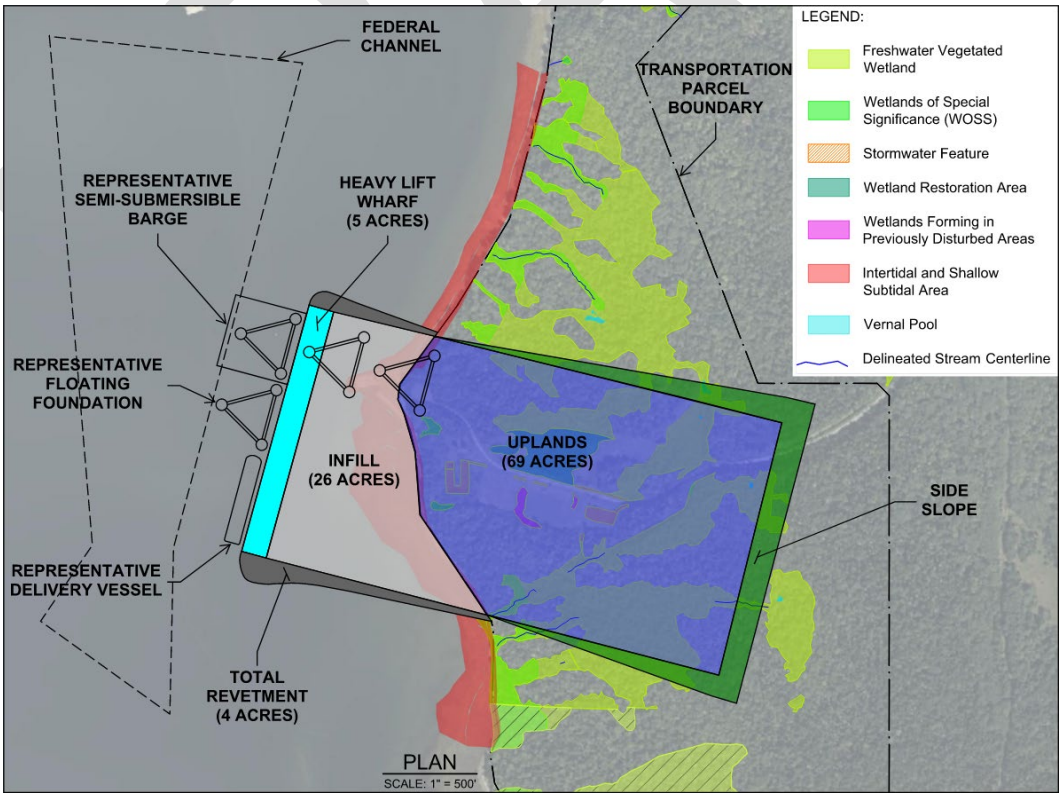
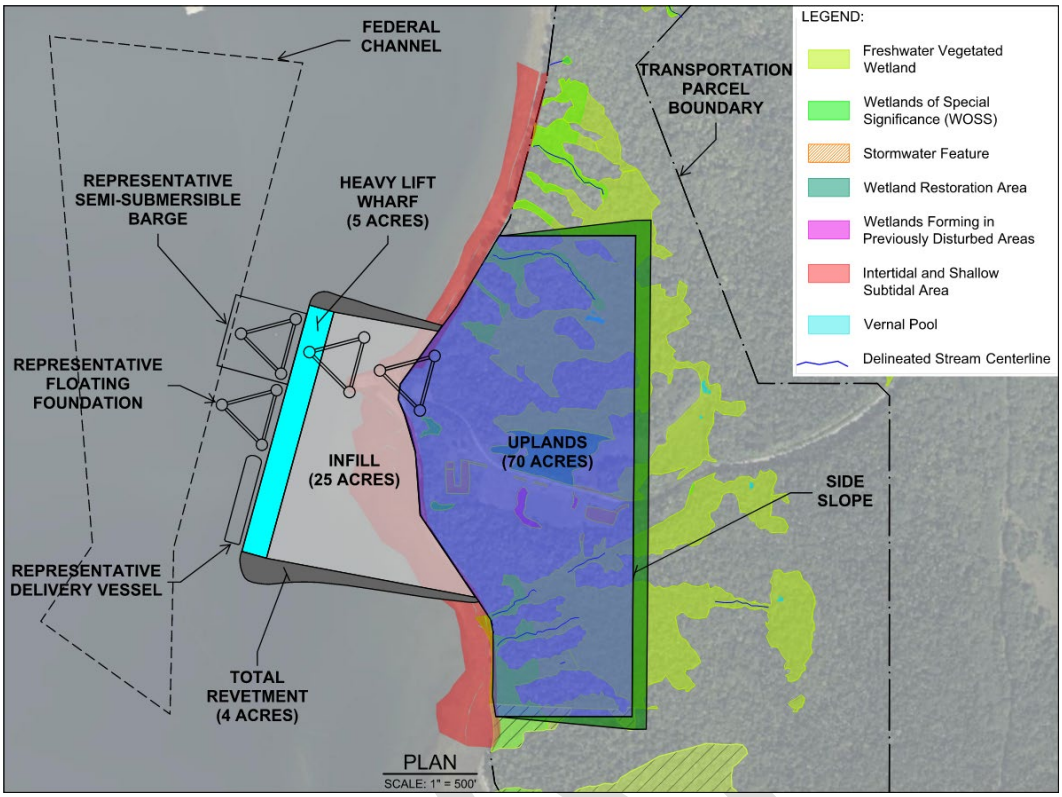


Exhibit 79. Sears Island Option E



The practicability factors identified in Section 9.1 are substantially the same for all Sears Island options and are addressed once for the State's preferred Sears Island Alternative in Section 10.2.2 below.

10.2.2 Preferred Sears Island Alternative

After careful analysis and multiple iterations, the Preferred Sears Island Alternative is forwarded as the State's preferred OSWP location based on the combination of the following factors:

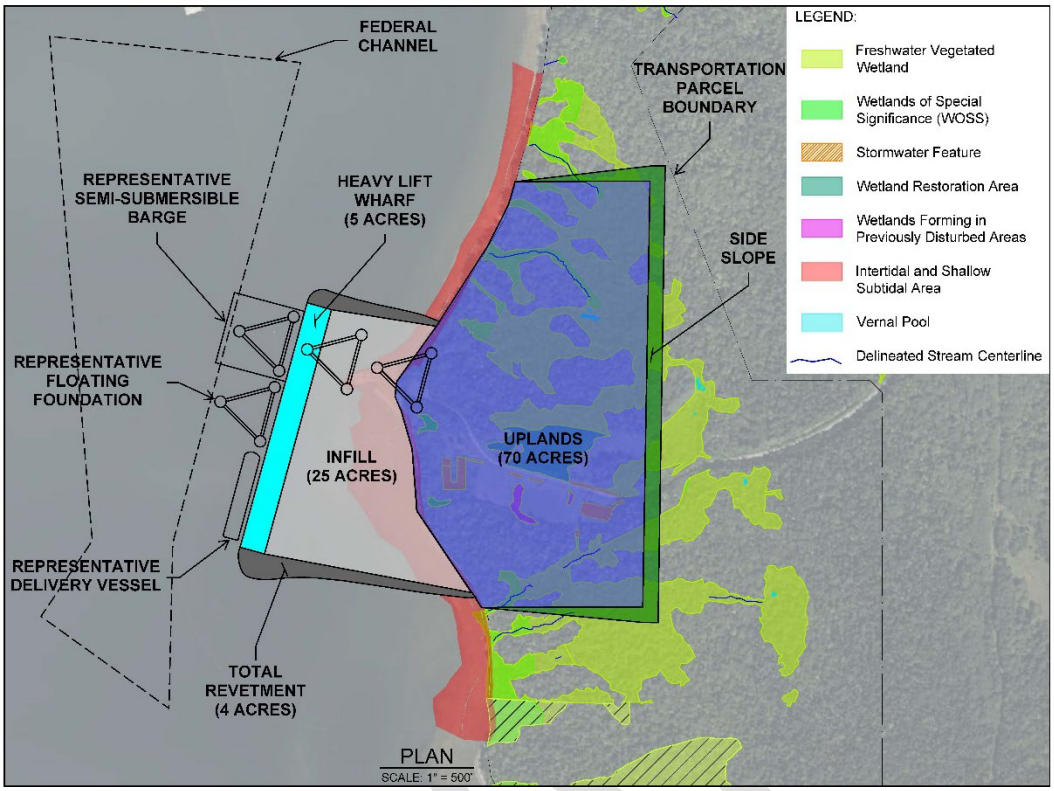
- Meets minimum design criteria
- Meets key design criteria for and efficient and viable OSWP
- Most cost effective
- Avoids the need for dredging for access to navigation channel
- Minimizes net material export

The following considerations were weighed in the identification of the preferred Sears Island layout:

- Minimization of net material export: Net material export is a significant cost driver in port construction due to cost of transportation off-site and limited locations to bring the material.
- Minimization of environmental impacts: Minimization of impacts to WOTUS.
- Avoidance of dredging for access to navigation channel: In addition to the negative environmental impacts of dredge, dredging adds significant cost and risk to the project timeline.
- Terminal logistics: Terminal shape must be conducive to terminal logistics.

The Preferred Sears Island Alternative requires 70 acres of uplands and 34 acres of ocean fill, including revetments (Exhibit 80). Note that Exhibit 80 shows a proposed new heavy haul road. The alignment of the road has not been determined. The heavy haul road is discussed in detail below.

Exhibit 80. Preferred Sears Island Alternative



Availability of Land

Sears Island is owned by MaineDOT. The 330-acre transportation parcel is dedicated to marine transportation use. The transportation parcel is currently informally used for recreation. The transportation parcel is adjacent to the roughly 660-acre conservation parcel which offers the public hiking trails and beach access. This applies to all Sears Island options.

Constructability

Each Sears Island option has different ocean fill, upland material export and dredging requirements and costs. These are summarized in Exhibit 81 (refer to exhibits 75, 76, 77, 78, 79, and 80).

Side slopes of 2:1 or 3:1 would be required along the terminal's upland edges. Containment dikes (i.e., revetments) would also be required around the ocean fill with side slope angles determined based on geotechnical data during final design.

A significant benefit at Sears Island is that no dredge would be required in the preferred layout, resulting in less environmental impacts because of dredge activity, cost savings, and less time for permitting. The preferred Sears Island layout takes advantage of a dredge pocket previously dredged in the 1980's for a proposed container terminal on the island. With the placement of the 1,500-foot wharf on the edge of the dredge pocket, 25 acres of ocean fill would be needed to connect the five-acre wharf to the uplands. Based on a cut and fill analysis, a net export of 440,000 CY is anticipated for the preferred Sears Island layout. Due to being previously undeveloped land, this clean export could potentially be reused for another purpose in Maine.

The Sears Island port location is approximately 2 miles from the nearest HCP 1, U.S. 1. The potential for roadway improvements exists along this route. A portion of the route, however, is included in the MaineDOT's proposed new heavy haul road that would begin south of the Sears Island causeway and continue to the OSWP.

Exhibit 81. Summary of Material Export, Dredging, and Cost Estimates for Sears Island Options

Sears Island OSWP Layout	Ocean Fill (acres)	Upland Material Export		Dredging	
		Quantity (millions of CY)	Cost[1] (millions)	Quantity (millions of CY)	Cost[2] (millions)
Option A Exhibit 75)	5	4.2	$147-$210	0.9-1	$162-$180
Option B (Exhibit 76)	34	4	$140-$200	0	$0
Option C (Exhibit 77)	34	1.7	$60-$85		
Option D (Exhibit 78)	35	2.4	$84-$120		
Option E (Exhibit 79)	34	0.8	$29-$41		
Preferred (Exhibit 80)	34	0.4	$15-$22		

[1]Upland material export cost of $35/CY-$50/CY is an estimate of direct costs (i.e., no overhead, profit, etc.) and was derived from the preliminary, detailed cost estimates prepared for Mack Point Option B.2 and Sears Island Preferred Option. This cost range estimate accounts for material excavation and trucking to suitable disposal sites in Maine.
[2]Dredge cost of $180/CY is the average of a unit cost range ($167/CY-$192/CY) developed for the dredge material management strategy that includes dredging and a hybrid disposal plan using an uplands landfill, a CAD cell, and open ocean disposal for the Mack Point Alternative (Haley Aldrich 2024). MaineDOT considers this dredge material management strategy a reasonable and feasible disposal alternative.

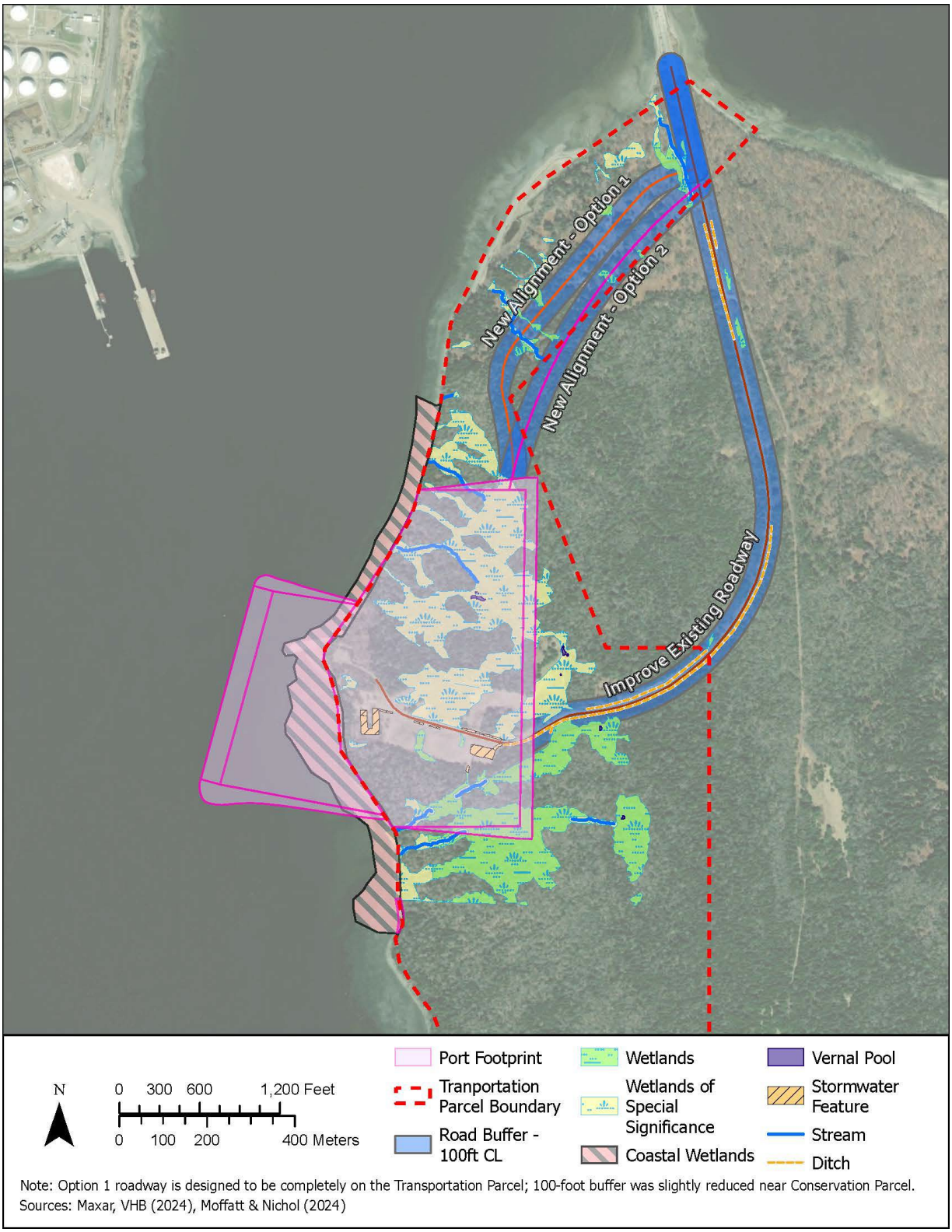
Heavy Haul Road

MaineDOT and MPA are exploring options to connect the proposed OSWP on Sears Island to the Stetson Hills Road (State Route 252, aka Sears Island Road and Jetty Road) causeway with a new heavy haul road. The roadway is expected to include about 40-44 feet of pavement to accommodate two through lanes and wide shoulders for trucks to be able to pull out of the travel lane into a safe waiting area prior to entering or exiting the port. Depending on the Sears Island port layout and which roadway option were to be pursued, roadway improvements on Sears Island would be between roughly 0.5 and 1 mile in length. Three roadway alignments are currently under consideration (Exhibit 82):

- Improve existing alignment: The existing roadway does not meet the standards for a heavy haul road. This option would improve the existing Stetson Hill Road alignment to meet these standards from the south end of the causeway to the proposed port.
- New alignment roadway option 1: Build a new alignment roadway from the south end of the causeway to the proposed port along the northwestern shore of Sears Island. This option would remain entirely on the transportation parcel.
- New alignment roadway option 2: Build a new alignment roadway from the south end of the causeway to the proposed port parallel to the northwestern shore of Sears Island. This option would minimize and/or avoid impacts to coastal features but would encroach on the conservation easement. Additional coordination would be required to determine whether this is a viable alignment option as it would require a land swap between the transportation and protected parcels and/or an amendment to the existing easement governing the conservation parcel.

Though a new alignment roadway would add cost to the project, MaineDOT and MPA have identified the solution as a potential betterment for the continued compatible use at Sears Island. A new alignment roadway would improve safety of all users by separating port and recreational traffic and result in a contiguous conservation parcel not bisected by a heavy haul road on the existing Stetson Hills Road alignment.

Exhibit 82. Three Heavy Haul Road Concepts on Sears Island



Note that the Preferred Sears Island Layout Option is included in this illustration.

Environmental impacts for each conceptual roadway alignment option are based on the natural resources surveys and assessments conducted by VHB (2024) and are summarized in Exhibit 83.

Exhibit 83. Potential Impacts to Surface Waters, Proposed Heavy Haul Road Options on Sears Island[1, 2]

Roadway Alignment	Wetlands (acre)	Vernal Pools (#)	Streams (feet)
Improve Existing Roadway[3]	1	0	400
New Alignment Roadway – Option 1	1	0	500
New Alignment Roadway – Option 2 (MaineDOT's Preferred if determined to be viable)	<1	0	400

[1]The three roadway options are based on a centerline alignment (Moffatt & Nichol August 2024) plus a 100-foot-buffer (i.e., 200-foot corridor) (Exhibit 82). MaineDOT considers the 200-foot-wide corridor to be a conservative width to accommodate the roadway width, cut/fill activities, and potential drainage and utility requirements. [2]Potential impacts are calculated from the south end of the causeway to the Preferred Sears Island Option port footprint. [3]The existing Stetson Hill Road alignment on Sears Island includes drainage features (i.e., not natural). An additional approximately 6,000 feet of manmade ditches would be impacted by this alternative.

Operational Functionality

The Preferred Sears Island Layout Option meets all minimum design criteria and is configured to optimize operations at the OSWP. The rectangular shape includes no areas less than 800 feet wide and is aligned with the heavy-lift wharf to efficiently accommodate a floating foundation fabrication assembly line and S&I functions.

From a navigational safety perspective, an OSWP on Sears Island provides for safer approach and departure maneuvers when compared to Mack Point. The lack of surrounding navigational obstacles and alignment with prevailing wind and wave directions provides for higher allowable wind speeds for vessel transit and would result in less environmental restrictions for vessel maneuvering. These factors are desirable to OSW developers and private investment because they raise the tolerance threshold for use of the OSWP in inclement weather conditions, thus reducing delays (and unanticipated costs) and raising confidence that the site can accommodate the efficient delivery of OSW energy projects.

The 330-acre transportation parcel on the west side of Sears Island is reserved for maritime transportation uses. The proposed OSWP would use 100 acres of the transportation parcel. The availability of adjacent undeveloped land provides the State some flexibility for future expansion should changes in OSW technology require additional space.

Cost

Detailed cost estimates were prepared for the Preferred Sears Island Option design (Attachment H). Costs would be comparable for all Sears Island options, varying slightly with the costs associated with material export and dredging (refer to Exhibit 81). Exhibit 84 summarizes the cost by major project stage.

Exhibit 84. Preferred Sears Island Alternative Cost Estimate

	Cost[1] (millions)
Land Acquisition	$0
Construction[2]	$529
Dredging	$0
Environmental Mitigation[3]	$26
Total	**$555**

[1]Cost estimates are preliminary and subject to change. [2] Construction costs at Sears Island includes approximately $4 million for the proposed new heavy haul road. This estimate is based on MaineDOT bid history for per-mile construction cost of new alignment roadway. This cost *does not* include other potential roadway improvements between the proposed new heavy haul road and U.S. 1. [3]This estimate includes mitigation cost associated with about 9.25 acres of previously filled wetlands requiring after-the-fact authorization but does not include costs associated with impacts to the sand dune.

Environmental

Environmental impacts for each option including the side slopes and revetments are based on the natural resources surveys and assessments conducted by VHB and Stantec (2024). As a result of these surveys, no eelgrass beds were identified adjacent to the proposed Sears Island Alternative. All port options on Sears Island would impact an approximately 0.4-acre coastal sand dune system on the south side of the existing jetty. Exhibit 85 summarizes potential environmental impacts for each Sears Island layout.

Exhibit 85. Comparison of Potential Impacts, Sears Island Layouts

Sears Island OSWP Layout	Potential Impacts[1]							
	Freshwater Wetlands[2] (acres)	WOSS[3] (acres)	Coastal Wetlands (acres)			Vernal Pools (#)	Streams (# | feet)	Manmade Ditches[4] (feet)
			Ocean Fill	Dredge Area	Total			
Option A	41	29	5	22	27	7	6 | 2,300	1,000
Option B	21	15	34	0	34	4	1 | 200	2,700
Option C[4]	31	17	34	0	34	3	3 | 700	500
Option D	26	12	35	0	35	4	4 | 1,100	1,600
Option E[4]	31	22	34	0	34	3	4 | 1,900	100
Preferred	30	24	34	0	34	3	5 | 1,500	230

[1]Potential impacts are approximate, rounded, and based on field delineated water resources (VHB 2024). [2]All Sears Island Layouts include about 1-acre of man-made stormwater features which are not included in potential wetland impacts. [3]WOSS are a subset of freshwater wetlands, not additional. [4]Identified as existing roadway drainage features in the field; the USACE and DEP will determine the jurisdiction of these features. [5]Layout Options C and D footprints extend further to the south than the field delineation survey limits. Surveyed wetlands were georeferenced from historical mapping (Normandeau 1995) resulting in the addition of approx. 1 acre of potential wetland impacts at these locations.
WOSS=waters of special significance

For the reasons listed below, Sears Island was chosen as the most practicable alternative.

- No air draft or channel restrictions.
- More than 1,500 feet of developable waterfront.
- Over 100 acres of upland space in a usable configuration.
- The site is owned by the State of Maine and zoned for marine transportation use. No lease payments required to private entity.
- Wharf location and orientation on Sears Island minimizes wind and wave loads on vessels entering and/or berthed at the port, compared to other locations in Searsport.
- By taking advantage of previous dredge pocket, no dredge is required to access navigation channel, minimizing project cost, and avoiding environmental impacts and schedule delays and uncertainty.
- Ocean fill area is the least of other alternatives in Searsport.
- Construction costs are significantly less than the optimized Mack Point Alternative.

11. Maine's Preferred OSWP Location

Compared to the other alternatives, Sears Island emerges as the most practicable OSWP alternative for the State of Maine. Sears Island is the only site in the port of Searsport that does not require dredging and minimizes ocean fill. Sears Island has direct access to a federally maintained deepwater channel with no air draft and no horizonal limitations. The Sears Island Alternative is located on a 330-acre undeveloped parcel owned by the State of Maine which has been zoned and designated for industrial (marine transportation) use. For these reasons, the State of Maine's preferred alternative is Sears Island.

Exhibit 86. Conceptual Rendering of OSWP on Sears Island

Source: Moffatt & Nichol 2024

12. Offshore Wind Port Advisory Group

In early 2022, the State assembled an OSWP Advisory Group and established an engagement program and website (www.maine.gov/mdot/ofps/oswpag/) to provide the structure for the start of a robust and transparent stakeholder and public engagement process. This process was intended to help learn from one another and highlight potential issues and concerns to inform project development in accordance with the NEPA, Section 404 of the Clean Water Act, the Rivers and Harbors Act, and other federal and State regulations governing the consideration and protection of the environment, including people.

The OSWP Advisory Group was charged to provide advice to the State on the potential issues and impacts of offshore wind port development. This advice was used to help ensure that future offshore wind port site selection, development, and permitting decisions by federal and State agencies consider potential outcomes in determining what action would achieve the most benefit and the least adverse impacts.

OSWP Advisory Group member responsibilities were two-fold: to provide advice on potential issues and impacts of offshore development on the economy and the environment based on personal and professional knowledge; and to liaise with the organization or community from which they were appointed about potential impacts of offshore wind port development and sharing the State's advancements in the port planning process. The OSWP Advisory Group was not assembled to make decisions regarding the location and operation of the offshore wind port.

Representatives from 19 organizations and towns were invited to serve as members of the OSWP Advisory Group. Advisory group members were selected for their diverse viewpoints on port development including the environment, ports and marine transportation, fishing, labor and construction, and local concerns.

The State developed and led six day-long facilitated meetings. Meetings were designed to educate members about the rapidly evolving offshore wind industry; to present port design concepts at alternative locations in Searsport and Eastport; and to solicit advice on the potential issues and impacts to the natural, social, and economic environments of the alternative locations from members.

Meetings were conducted in-person in the Searsport area, at the University of Maine in Orono, and at MaineDOT headquarters in Augusta. The meetings were open to the public and included an option for members to participate virtually. Meeting notices were distributed to members and posted on Maine's Port Advisory Group website. Meeting agendas and materials were shared with members in advance. Following each meeting, presentations, a summary of meeting outcomes, and detailed meeting notes, were posted on the OSWP Advisory Group website. The July 26, 2023 "Offshore Wind Port Early Engagement Final Report" summarizes the advisory group program and is included in Attachment I.

13. Informational Public Meeting Summary

An informational public meeting for the project was held on October 25, 2023, in Searsport. Approximately 126 people attended the meeting. The meeting consisted of an informal, open house for small group conversation with displays and handouts. Representatives from MaineDOT and MPA were present to answer questions and gather input.

MaineDOT and MPA hosted an on-demand informational public meeting via their Virtual Public Involvement (VPI) web service concurrently. The on-demand informational public meeting went live October 10, 2023, and included a short video that introduced the project, links to other helpful information, and a comment function.

MaineDOT issued a Public Notice on October 11, 2023, to announce the VPI and Informational Public Meeting in local newspapers and on MaineDOT social media networks (e.g., Facebook). Additionally, 1,596 postcards were mailed one week prior to the meeting date.

Seventy-two written comments were received at the informational public meeting, by mail, and on-line before the close of the comment period on November 22, 2023. MaineDOT and MPA reviewed public comments and addressed substantive comments and broad comment themes in a Frequently Asked Questions (FAQs) document. Additionally, MaineDOT and MPA produced an Informational Public Meeting Summary. The public was notified by email (if available), postcard, and MaineDOT social media that the FAQ and Meeting Summary were available for review on the Project Website (“Searsport Offshore Wind Port”).

Attachment J includes the Informational Public Meeting Summary, public notice, sign in sheets, and materials presented.

14. Agency Meeting Summary

To date MaineDOT and MPA have conducted pre-scoping coordination with several State and federal resource and regulatory agencies. These meetings are summarized below:

Introduction Meeting 1, April 26, 2023

The purpose of this meeting was to introduce the OSWP project to regulatory and resource agencies; explain why the OSWP was needed; introduce what an OSWP may look like and how it may operate; discuss the project timeline and next steps; seek feedback from agencies relative to potential significant impacts and Lead Federal Agency (LFA) determination; and initiate coordination and communication for the sharing of information.

The following agencies were present:

- USEPA
- Maritime Administration (MARAD)
- USACE
- U.S. Coast Guard (USCG)
- Maine Historic Preservation Commission (MHPC)
- National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries (NMFS)
- USFWS
- Federal Highway Administration (FHWA)
- MDMR
- MDEP
- MDIFW
- Maine Natural Areas Program
- Maine Department of Agriculture, Conservation, and Forestry (DACF), Submerged Lands
- MPA
- MaineDOT

Introduction Meeting 2, June 14, 2023

The purpose of this meeting was to present additional information on port needs and operations; alternative analysis background; and design configurations on Mack Point. MaineDOT and MPA also sought agency comments and feedback relative to major concerns and/or perceived challenges and information needs.

The following agencies were present:

- USEPA
- USACE
- MHPC
- NOAA
- NMFS
- USFWS
- FHWA
- MDMR
- MDEP
- Maine Natural Areas Program
- Maine DACF, Submerged Lands
- MPA
- MaineDOT

Introduction Meeting 3, November 14, 2023

The purpose of this meeting was to respond to the requests for information from the agency meeting on June 26, 2023, and provide a general update on MaineDOT and MPA's progress on project development. MaineDOT and MPA sought agency comments and feedback relative to major concerns and perceived challenges, technical direction, and information needs.

The following agencies were present:

- USEPA
- USACE
- MARAD
- USCG
- NOAA, NMFS
- USFWS
- MDMR
- MDEP
- Maine Natural Areas Program
- Maine DACF, Submerged Lands
- MDIFW
- MPA
- MaineDOT

Maine DEP Coordination Meeting, March 4, 2024

The purpose of this meeting was to discuss project status, State permitting requirements and expectations from MDEP, and next steps. Representatives from MDEP and MaineDOT were present.

Introduction Meeting with Federal Aviation Administration, June 26, 2024

The purpose of this meeting was to introduce the project to Federal Aviation Administration (FAA), learn about the FAA obstacle clearing process, and discuss next steps. Representatives from MaineDOT, MPA, FAA, and Pinetree Offshore Wind (PTOW) were present.

Site Visit with USACE and Maine DEP, September 10, 2024

A site visit was conducted on September 10, 2024. Representatives from MDEP, USACE, and MaineDOT were present. The site visit included walking the Mack Point and Sears Island sites.

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