

STATE OF MAINE
BOARD OF ENVIRONMENTAL PROTECTION

IN THE MATTER OF

NORDIC AQUAFARMS, INC

Belfast and Northport

Waldo County, Maine

A-1146-71-A-N

L-28319-26-A-N

L-28319-TG-B-N

L-28319-4E-C-N

L-28319-L6-D-N

L-28319-TW-E-N

W-009200-6F-A-N

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) APPLICATIONS FOR AIR EMISSION,

) SITE LOCATION OF DEVELOPMENT,

) NATURAL RESOURCES PROTECTION ACT,

) and MAINE POLLUTION DISCHARGE

) ELIMINATION SYSTEM (MEPDES)/

) WASTE DISCHARGE LICENSES

)

)

NORDIC AQUAFARMS, INC.'S POST HEARING BRIEF

Pursuant to Section 23 of Chapter 3 of the Maine Department of Environmental Protection's ("Department") Rules, the Presiding Officer's 13th and 14th Procedural Orders, and the April 10, 2020 email from Board Executive Analyst Bertocci to the Nordic Service List, Applicant Nordic Aquafarms, Inc. ("Nordic" or "Applicant") submits this post hearing brief and attached proposed Findings of Fact and Decisions ("Nordic Drafts")¹

SUMMARY

The record is clear. Nordic's applications for a Site Location of Development Act ("Site Law") permit, a Natural Resources Protection Act ("NRPA") permit, a Federal Water Pollution

¹ To assist the Commissioner in compliance with his statutory obligation to provide the Board with recommendations regarding the Applications, 38 M.R.S. § 342-A(11-A) ("the Commissioner shall make recommendations to the Board regarding [...] permit and license applications over which the Board has jurisdiction"), Nordic submits three separate Draft Decisions: a New Minor Source Air Emissions License pursuant to Chapter 115 of the Department's Air Rules (A-1146-71-A-N) ("Air License") (at Tab 1), authorizations pursuant to the Maine Pollutant Discharge Elimination System Permit and Waste Discharge License (ME0002771 and W-009200-6F-A-N) ("MEPDES/WDL Approval") (Tab 2), and a third pursuant to NRRPA, SLODA and WQC (A-1146-71-A-N; L-28319-26-A-N; L-28319-TG-B-N; L-28319-4E-C-N; L-28319-L6-D-N; L-28319-TW-E-N; and W-009200-6F-A-N) ("Land Approvals") (Tab 3).

Control Act Section 401 Water Quality Certification, New Minor Source Air Emissions License, and authorizations pursuant to the Maine Pollutant Discharge Elimination System Permit and Waste Discharge License (collectively, “Applications”) for the proposed construction and operation of a Recirculating Aquaculture System (RAS) for Atlantic salmon production in Belfast and Northport, Waldo County, Maine (the “Project”) meet each and all of the applicable permitting standards. Project opponents are unable to point to a single permitting standard or requirement that Nordic’s Applications do not meet. This post hearing brief reviews the relevant law and standards applicable to the Board hearing topics and provides a synopsis of the substantial evidence documenting compliance with the applicable statutes and regulations. Nordic met its burden of proof and the Board should grant its Applications² and issue the Draft Approvals.

BACKGROUND

Nordic proposes construction and operation of a state of the art, next generation RAS aquaculture farm in Belfast Maine (“Project”).³ The purpose of the Project is to provide 33,000 metric tons per year of safe, high quality and sustainable seafood to the consumers in the northeast of the United States.⁴

The Project is situated on approximately 54 acres of upland just off Route 1 at the entry to Belfast from Northport at the current Belfast Water District (“BWD”) property.⁵ The Project includes two production modules each comprised of one smolt module and three grow out modules.⁶ The Project also includes an office and maintenance building, central utility plant,

² Nordic’s submission of the Applications incorporated each application by reference into the other such that the Board can properly consider evidence submitted in the Applications with reference to any part of the Applications.

³ See Hearing Day 1 Transcript at 107:14-25; 108; 1-10 (Cotter).

⁴ Prefiled Direct Testimony of Elizabeth Ransom, Ransom Consulting, Inc. (“Ransom Direct”) at ¶¶ 4, 6; Site Law Application § 1.1.

⁵ NRPA Application § 1.1; Hearing Day 1 Transcript at 9:14-15 (Duchesne).

⁶ Site Law Application § 1.1; Hearing Day 1 Transcript at 21:18-24 (Cotter).

processing building, gatehouse, visitor's center and associated access, parking and delivery areas.⁷ Including these required impervious access drives, parking areas and delivery areas, the total new impervious area at the Site will be 27.4 acres after full Project build-out.⁸ The Project will be constructed in two phases.⁹ Phase 1 consists of all but the second production module, office and maintenance building and the visitor center.¹⁰

The Project includes significant supporting infrastructure including a water and wastewater treatment facility and three pipes (two 30" pipes for seawater intake and one 36" pipe for wastewater discharge) running approximately a mile from the facility under Route 1 and into the ocean to provide fish husbandry water.¹¹ The piping will be a very durable high density polyethylene with an approximately 3" wall thickness, predominantly side by side in a common trench within the buried zone (approximately the first 3200'), an area where the piping transitions from buried to above sea bottom (approximately 3200'-3600') and the area where it is suspended above the sea bottom in approximately 35-40 feet of water (from 3600' to terminus at first the discharge and then the intake).¹² The intake ends will have support structures and screens and the discharge will have a diffuser end.¹³ Piping construction under Route 1 will require construction of a temporary bypass on the Project site.¹⁴ The intertidal (mudflats) and submerged lands piping will be constructed during the late fall and winter season.¹⁵

Excavation associated with construction of the intake and outfall piping in the intertidal and submerged lands will entail handling of approximately 36,000 cubic yards of marine soils.

⁷ Site Law Application § 1.2; *see also* Hearing Day 1 Transcript at 9:20-24 (Duchesne).

⁸ Site Law Application § 1.2.

⁹ Site Law Application § 1.2; NRPA Application § 1.1; Hearing Day 1 Transcript 22:24-25 (Cotter).

¹⁰ Site Law Application § 1.2; NRPA Application § 1.1; *see also* Hearing Day 1 Transcript 22:25, 23:1-5 (Cotter).

¹¹ Site Law Application § 1.3.1; NRPA Application § 1.2.1A.

¹² NRPA Application § 1.2.1A; NRPA Application § 1.2.1A.

¹³ NRPA Application § 7.3.1.

¹⁴ NRPA Application § 7.3.1.

¹⁵ NRPA Application § 7.3.1.

Excavated marine soils will be used as backfill to the extent possible.¹⁶ Excess marine soils will be characterized and transported by barge approximately 5.5 miles to Mack Point in Searsport, Maine where the soils will be loaded onto dump trucks and transported and disposed of by properly licensed solid waste transporters and disposal facilities.¹⁷

The Project will require both potable domestic water for drinking and fish processing, and clean and cold fresh and salt water for fish husbandry.¹⁸ Freshwater sources include an on-site groundwater extraction well network, on-site surface water withdrawal from Belfast Lower Reservoir Number One (“Lower Reservoir”), and additional off-site supply from the BWD.¹⁹ Due to the water dependent nature of aquaculture, Project water use is intensive. The Project is anticipated to use approximately 1,205 gallons per minute (gpm) of freshwater and 3,925 gpm of saltwater at full operational capacity.²⁰ Treated wastewater will be discharged to Belfast Bay in compliance with the MEPDES/WDL Approval.²¹

Power currently enters the site from Route 1, runs to the BWD office building, and to the garage buildings.²² The Project includes a power connection from the Route 1 transmission line.²³ In order to support the constant power needs of fish husbandry, the Project also includes

¹⁶ Pre-filed Direct Testimony of Lauren Walsh, Cianbro Corporation (“Walsh Direct”) at § 4; Hearing Day 2 Testimony at 100:7-11 (Ransom); NRPA Application § 7; Site Law Application § 1.

¹⁷ Site Law Application § 18; NRPA Application §§ 1.2, 7.3.1; April 7, 2020 Department of Marine Resources’ “Addendum Comments on impacts to fishing activity during construction of intake and discharge pipes and haul route for transport of excavated material site” (“DMR Assessment”) at 1-2; *see also* Walsh Direct at § 4; Hearing Day 2 Testimony at 100:12-15 (Ransom).

¹⁸ Site Law Application § 1.2.

¹⁹ Site Law Application § 1.2.

²⁰ Site Law Application § 1.2.

²¹ Site Law Application § 1.2; NRPA Application § 1.1.

²² Site Law Application § 1.2.

²³ Site Law Application § 1.2.

eight generators for peak shaving and backup power generation the operation and emissions of which are addressed in the Air License.²⁴

By letter dated June 13, 2019, the Department accepted the Applications as complete for processing.²⁵ On June 20, 2019, the Board voted to assume licensing jurisdiction over the Applications and to hold a public hearing on the Project.²⁶ The Presiding Officer's Third and Fourth Procedural Order set the hearing topics which are the subject of this post-hearing brief.²⁷

Those topics are:

- (1) Site Location of Development and Natural Resources Protection Act Applications:²⁸
 - a. Site Location of Development
 - i. Financial Capacity;
 - ii. Stormwater Management and upland Erosion and Sedimentation Control, both during construction and post development;
 - iii. Impacts to existing uses from construction and operations, including blasting and odor;
 - b. Natural Resources Protection Act
 - i. Water Usage: groundwater and surface water withdrawals including potential impacts to existing uses such as nearby wells;
 - ii. Impacts to streams and associated freshwater wetlands; alternatives analysis (avoidance, minimization, compensation);
 - iii. Coastal Wetland Impacts: staging, erosion and sedimentation control during construction, potential impacts to water quality and protected natural resources including concerns about HoltaChem mercury, alternatives analysis.
- (2) Maine Pollutant Discharge Elimination System/ Water Discharge License Application:²⁹
 - a. Composition and characteristics of the effluent;

²⁴ Pre-filed Direct Testimony of Steven Whipple, Mainely Environmental LLC ("Whipple Direct") at §§ 3, 8, 11; Site Law Application §§ 1, 21 and Appendix 21-A; NRPA Application § 1.1; Hearing Day 3 Transcript at 215:22-25.

²⁵ June 13, 2019 Letter from Kevin Martin Compliance & Procedural Specialist Maine Department of Environmental Protection to Joanna Tourangeau.

²⁶ See First Procedural Order at pg. 1.

²⁷ Third Procedural Order at § 1(C); Fourth Procedural Order at §§ (1)(H), (I).

²⁸ Third Procedural Order at § 1(C).

²⁹ Third Procedural Order at § 1(C).

- b. Modeling of the discharge as submitted with the application; and
 - c. Impact of the discharge on the water quality of the Bay (Class SB) including potential impacts to fisheries, other marine resources, and other uses.
- (3) Chapter 115 New Minor Source of Air Emissions Application:³⁰
- a. Emissions of Air Pollutants from Stationary Sources
 - b. Ambient Air Quality and Modeling
 - c. Best Available Control Technology

Nordic submitted copious uncontroverted evidence in its Applications, responses to Department technical staff reviewers requests for additional information, response to comments from sister agencies, pre-filed Direct and Rebuttal testimony, and four days of Board hearings- all of which supports issuance of the Draft Approvals.

ANALYSIS

The questions before this Board vary based on the nature of the statutory and regulatory regime set forth in the land, water, and air laws which provide the basis for this Board to issue the Draft Approvals. The Land Approvals either contain specific enumerated criteria (such as for financial capacity³¹, stormwater³², erosion control³³, blasting³⁴ and odor³⁵) or (for impacts to natural resources like wetlands³⁶, streams³⁷, fisheries³⁸) look at the reasonableness of adverse Project impacts and whether there is a practicable alternative. In other words, the Site Law does not prohibit adverse impacts. The Board must consider the reasonableness of impacts and must

³⁰ Fourth Procedural Order at §§ (1)(H), (I).

³¹ 38 M.R.S. § 484; 06-096 C.M.R. Chp. 373 § 2(A) (hereinafter referred to as "DEP Chp.").

³² 38 M.R.S. § 484(4-A); DEP Chp. 500 § 4(C)(2).

³³ 38 M.R.S. § 420-C; 33 M.R.S. § 480-D § 2.

³⁴ 38 M.R.S. § 484(9); 38 M.R.S. § 490-Z(14).

³⁵ DEP Chp. 375 § 17(A).

³⁶ 38 M.R.S. § 480-D; DEP Chp. 310 § 5(A).

³⁷ 38 M.R.S. § 480-D.

³⁸ 38 M.R.S. § 480-D; DEP Chp. 335 § 3.

grant the requested permits if Applicant shows that the adverse impacts are not unreasonable or that there is no practicable alternative.

The Air License and MEPDES/WDL Approval, on the other hand, look at compliance with discharge/emissions parameters and the implementation of specific control technology to address those parameters. The question before the Board with regard to those approvals is whether the Draft Approvals contain limits and control technologies as required by the applicable regulations. If so, the Board must grant the requested permits.

While the questions before the Board differ by medium, the answers do not. The Project meets all applicable standards. The Project does not have unreasonable adverse impacts. There is no practicable alternative to the Project. The Project will not impact the water quality classification of Belfast Bay and will implement Best Practicable Treatment (“BPT”). The Project meets all Ambient Air Quality Standards and is implementing Best Available Control Technology (“BACT”). Thus, the Board should issue the Draft Approvals.

I. Nordic Demonstrated Compliance with all Site Location of Development Act Criteria.

The Site Location of Development Act (“Site Law”) and associated Department Rules contain specific standards applicable to financial capacity, stormwater management, erosion and sedimentation control, blasting, and odor. Nordic submitted documentation evidencing compliance with all of the standards applicable to each of these regulated areas.

A. Nordic Demonstrated Financial Capacity.

The Site Law specifies that the Department “shall approve a development proposal whenever it finds that: the developer has the financial capacity and technical ability to develop the project in a manner consistent with state environmental standards and with the provisions of

this article.”³⁹ Chapter 373 of the Department Rules elaborates on the financial capacity requirement, explaining that an applicant must demonstrate “financial capacity for all aspects of the development, and not solely the environmental protection aspects.”⁴⁰ Evidence demonstrating financial capability includes cost estimates, time schedule, and evidence of funds.⁴¹

Chapter 373 authorizes the Department to:

establish any reasonable requirement to ensure that the developer has and will maintain the financial capacity to meet permit requirements and state environmental standards, [...] Prior to the start of the first phase of construction and each subsequent phase, the permittee shall provide a cost estimate for that phase as well as evidence that the applicant has been granted a sufficient line of credit or a loan by a financial institution authorized to do business in this State or evidence of any other form of financial assurance determined by this Chapter to be adequate by the Department for review and approval.⁴²

Nordic demonstrated financial capacity and the Land Approvals include conditions requiring submission of cost estimates for each construction phase, documentation of financial capability for that cost estimate, and Department approval of that submission.

The total estimated Project cost is \$500 million.⁴³ The Phase I cost estimate is for \$269.75 million and Phase 2 is \$230.25 million.⁴⁴ Sources of funding are composed of equity and debt with the first tranche being \$20.25 million from equity.⁴⁵ An equity and debt mix will follow for tranches 2 and 3 of \$187.72 million and \$61.78 million respectively.⁴⁶ According to Carnegie Investment Bank Nordic can expect the debt portion to be \$80 million to \$120 million for tranche 2 and 3.⁴⁷

³⁹ 38 M.R.S. § 484.

⁴⁰ 06-096 C.M.R. Chp. 373 § 2(A).

⁴¹ DEP Chp. 373 §§ 2(B)(1)-(3).

⁴² DEP Chp. 373 § 2(C)(2).

⁴³ Pre-filed Direct Testimony of Brenda Chandler, Nordic Aquafarms, Inc. (“Chandler Direct”) at 2.

⁴⁴ Chandler Direct at pg. 2.

⁴⁵ Chandler Direct at pg. 2.

⁴⁶ Chandler Direct at pg. 2.

⁴⁷ Chandler Direct at pg. 2.

Nordic's prior projects demonstrate its ability to successfully raise capital, with share issues fully subscribed since the first in 2014.⁴⁸ Nordic Aquafarms AS raised in excess of \$63M from their shareholder group for projects and operations in the US, Denmark and Norway.⁴⁹ Nordic operates the largest land-based system in Europe and thus its US projects are attractive to investors.⁵⁰ Further, Nordic's Norwegian roots place it close to a highly competent aquaculture investment community.⁵¹ The largest stock exchange for salmon in the world is located in Norway reflecting investment capacities of many billion USD from Norwegian and international investors.⁵²

The Land Approvals at Tab 3 include conditions that comply with Chapter 373 and state that:

Applicant shall submit evidence that it has raised capital, been granted a line of credit or a loan by a financial institution authorized to do business in this State, or evidence of any other form of financing consistent with Department Rules, Chapter 373, § 2(B), in the amount needed for Phase I (currently estimated at \$269.75 million) to the Department for review and approval prior to the start of construction of Phase I. If the Phase I cost estimate requires revision, Nordic shall document the revised amount and provide evidence of financial assurance in that amount.

Applicant shall submit evidence that it has raised capital, been granted a line of credit or a loan by a financial institution authorized to do business in this State, or evidence of any other form of financing consistent with Department Rules, Chapter 373, § 2(B), in the amount needed for Phase II (currently estimated at \$230.25 million) to the Department for review and approval prior to the start of construction of Phase II. If the Phase II cost estimate requires revision, Nordic shall document the revised amount and provide evidence of financial assurance in that amount.⁵³

Given this demonstration of financial capacity and conditions compliant with the language of Chapter 373, the Department "shall approve" the Project.

⁴⁸ Chandler Direct at pg. 2.

⁴⁹ Chandler Direct at pg. 2.

⁵⁰ Chandler Direct at pg. 2.

⁵¹ Chandler Direct at pg. 3.

⁵² Chandler Direct at pg. 3; *see also* Hearing Day 1 Transcript 28:12-14 (Heim).

⁵³ Draft Land Approvals (Tab 3 to this Brief) at Conditions 5 and 6.

B. Nordic Complied with Department Stormwater Management and Upland Erosion and Sedimentation Control Requirements During Construction and Post Development.

Pursuant to the Site Law, the Department “shall approve a development proposal whenever it finds”⁵⁴ that “[t]he proposed development meets the standards for storm water management in section 420-D and the standard for erosion and sedimentation control in section 420-C.”⁵⁵ Similarly, the Department “shall approve a development proposal whenever it finds”⁵⁶ that “[t]he activity will not unreasonably cause or increase the flooding of the alteration area or adjacent properties nor create an unreasonable flood hazard to any structure.”⁵⁷

1. Nordic’s Stormwater Management Plan complies with the General and Flooding Standards of Chapter 500.

Chapter 500 of the Department’s Rules states that:

[t]o meet the general standards, the applicant must demonstrate that a project’s stormwater management system includes treatment measures that will provide pollutant removal or treatment, and mitigate for the increased frequency and duration of channel erosive flows due to runoff from smaller storms and potential temperature impacts, unless the Department determines that channel protection and/or temperature control are unnecessary due to the nature of the resource.⁵⁸

Channel protection and temperature control are achieved by using the Chapter 500 prescribed treatment level.⁵⁹ According to the treatment level, “[a] project’s stormwater management system must...[p]rovide treatment of no less than 95% of the impervious area and no less than 80% of the developed area.”⁶⁰ The types of treatment measures allowed are wetpond, vegetated soil filter, infiltration, buffers and innovative treatment measures.⁶¹

a. General Standards:

⁵⁴ 38 M.R.S. § 484.

⁵⁵ 38 M.R.S. § 484(4-A).

⁵⁶ 38 M.R.S. § 484.

⁵⁷ 38 M.R.S. § 484(7).

⁵⁸ DEP Chp. 500 § 4(C)(2); *see also* 38 M.R.S. § 484(7).

⁵⁹ DEP Chp. 500 § 4(C)(2).

⁶⁰ DEP Chp. 500 § 4(C)(2)(a)(i).

⁶¹ DEP Chp. 500 §§ 4(C)(3)(a) – (e).

Nordic submitted a Stormwater Management Report for the Project that includes the following stormwater management design strategies for compliance with Chapter 500 general stormwater management standards:

- (1) Divert runoff from upgradient of the site around the proposed development to avoid directing upgradient runoff to on-site stormwater treatment measures.
- (2) Provide treatment for 95% of new impervious surfaces and 80% of the developed area of the property in compliance with General Standards of Chapter 500. Treatment to be local to where stormwater occurs to minimize the relative size of treatment structures and ultimately reduce site disturbance.
- (3) Avoid stormwater discharge from the developed site towards Reservoir Number One to minimize phosphorus export.⁶²

The topography of the undeveloped site slopes generally from north to south/southwest into the Lower Reservoir.⁶³ Project grading generally maintains the pre-development flow pattern from the north to the south/southwest.⁶⁴ Upgradient runoff is diverted using a stormwater channel.⁶⁵ The proposed channel will be constructed early in Project construction as a stone cutoff channel to divert upgradient stormwater and groundwater around the site and back into intermittent streams during construction.⁶⁶ Once construction is complete, the channel will be mulched, loamed and seeded and converted to multiple collection basins.⁶⁷ Upgradient runoff will be diverted around the Project via this system and redeposited downgradient to plunge pools allowing the stormwater to flow over land to the streams discharging to the Lower Reservoir.⁶⁸

⁶² Pre-filed Direct Testimony of Maureen McGlone, P.E., Ransom Consulting, Inc. (“McGlone Direct”) at § 3; Site Law Application § 12; Hearing Day 3 Transcript at 73:8-23 (McGlone).

⁶³ McGlone Direct at § 5; Hearing Day 3 Transcript 72:13-15 (McGlone).

⁶⁴ McGlone Direct at § 5; Hearing Day 3 Transcript 72:25, 73:1-2 (McGlone).

⁶⁵ McGlone Direct at § 6; Hearing Day 3 Transcript 73:24-25, 74:1 (McGlone).

⁶⁶ McGlone Direct at § 6.

⁶⁷ McGlone Direct at § 6.

⁶⁸ McGlone Direct at § 6.

An additional channel will divert upgradient stormwater to Stream #9 north of the developed Project area.⁶⁹

Implementation of several BMPs allow the Project to meet the water quality objectives.⁷⁰ These BMPs include: subsurface sand filters, grassed underdrained soil filters, manmade pervious paver systems, and the green roof system.⁷¹ As designed, treatment measures provide treatment of approximately 96% of all new impervious surfaces and approximately 84% of the developed area, which exceeds the required 95% and 80% of the Chapter 500 General Standards.⁷²

b. Flooding Standard:

Chapter 500 requires that the Project meet the flooding standard.⁷³ To meet the flooding standard, Applicant must demonstrate the Project's stormwater management systems will meet specific flooding standards including that the Project will:

- (1) detain, retain, or result in the infiltration of stormwater from 24-hour storms of the 2-year, 10-year, and 25-year frequencies such that the peak flows of stormwater from the project site do not exceed the peak flows of stormwater prior to undertaking the project;
- (2) design of piped or open channel systems must be based on a 10-year, 24-hour storm without overloading or flooding beyond channel limits;
- (3) areas expected to be flooded by runoff from a 10-year or 25-year, 24-hour storm must be designated in the application, and no buildings or other similar facilities may be planned within such areas. This does not preclude the use of parking areas, recreation areas, or similar areas from use for the detention of storms greater than the 10-year, 24-hour storm. The applicant shall secure drainage easements from any downstream property owners across whose property may be flooded by runoff pursuant to Section 4(G)(2)(a);

⁶⁹ McGlone Direct at § 6.

⁷⁰ McGlone Direct at § 7; Hearing Day 3 Transcript at 74:5-8 (McGlone).

⁷¹ McGlone Direct at § 7; Hearing Day 3 Transcript at 74: 8-20 (McGlone).

⁷² McGlone Direct at § 8; DEP Ch. 500 § 4(C)(2)(a)(i); Hearing Day 3 Transcript at 74: 21-25, 75:1 (McGlone).

⁷³ DEP Chp. 500 § 4(F)(1).

- (4) runoff from the project may not flood the primary access road to the project and any public roads bordering the project as a result of a 25-year, 24-hour storm; and
- (5) wetponds utilized for stormwater quality treatment under Section 4(C)(3)(a) of this Chapter, detention to meet the flooding standard must be provided above the permanent pool.⁷⁴

Alternatively, a project is eligible for a waiver from the flooding standards when Applicant demonstrates that the Project in a watershed of a coastal wetland, a great pond, or a major river segment provided Applicant demonstrates that the project conveys stormwater exclusively in sheet flow, in a manmade open channel, or in a piped system directly into one of these resources.⁷⁵ In addition, waivers are appropriate for a project discharging directly into a river that is not a major river segment if the Department determines that the increase in peak flow from the site will not significantly affect the peak flow of the river or result in unreasonable adverse impact on any wetlands.⁷⁶

Nordic will collect and transport treated stormwater flows and flow from larger volume storms from the portion of the Project that is in the watershed of a great pond and coastal wetland and which is discharging to a coastal wetland, for discharge below the dam through the existing on-site settling tank.⁷⁷ This allows for a waiver of the flooding standard and reduces the need for large retention structures thereby reducing overall Project impacts.⁷⁸

Nordic did not request a waiver from the flooding standard for the balance of the Project which is located in the watershed of a coastal wetland but upstream from an existing culvert on Route 1.⁷⁹ For this portion of the Project, stormwater calculations using Hydrocad stormwater

⁷⁴ DEP Chp. 500 § 4(F)(2).

⁷⁵ DEP Chp. 500 § 4(F)(3)(a).

⁷⁶ DEP Chp. 500 § 4(F)(3)(a).

⁷⁷ McGlone Direct at § 4; 9; Hearing Day 3 Transcript at 75:2-6 (McGlone).

⁷⁸ McGlone Direct at § 4; Hearing Day 3 Transcript at 75:6-9 (McGlone).

⁷⁹ McGlone Direct at § 9.

modeling software demonstrate that runoff peak flow to the existing culvert after development will be below the pre-development peak runoff rates for the 2-year, 10-year, and 25-year storm events as well as the 100-year frequency storm.⁸⁰ As such, the Project meets the Flooding Standards of Chapter 500.⁸¹

2. Nordic's Soil Erosion and Sediment Control Plan Exceeds Site Law Requirements.

The Site Law requires that projects which include:

an activity that involves filling, displacing or exposing soil or other earthen materials shall take measures to prevent unreasonable erosion of soil or sediment beyond the project site or into a protected natural resource as defined in section 480-B. Erosion control measures must be in place before the activity begins. Measures must remain in place and functional until the site is permanently stabilized. Adequate and timely temporary and permanent stabilization measures must be taken and the site must be maintained to prevent unreasonable erosion and sedimentation.⁸²

Nordic submitted a site specific, extensive Soil Erosion and Sediment Control Plan (“SESC Plan”)⁸³ that exceeds the requirements of Section 420-C.

Atlantic Resource Consultants, LLC (“ARC”) assessed the soil conditions and earthwork requirements for the proposed facility and designed the SESC Plan.⁸⁴ The SESC Plan includes detailed construction phasing plans, project-specific construction methods, and BMPs that will minimize soil exposure, manage potential risks, and capture and treat runoff and dewatering discharge from the Project work area.⁸⁵ Implementation of the SESC Plan will minimize erosion of soil materials from the site and protect downstream resources and receiving waters from unreasonable sedimentation.⁸⁶

⁸⁰ McGlone Direct at § 9; Hearing Day 3 Transcript at 114:20-25; 115:1-6 (McGlone).

⁸¹ McGlone Direct at § 8.

⁸² 38 M.R.S. § 420-C.

⁸³ Site Law Application § 14; Site Law Application Appendix 14-A.

⁸⁴ Pre-filed Direct Testimony of Andrew David Johnson, P.E., Atlantic Resource Consultants, LLC (“Johnson Direct”) at § 2; Hearing Day 3 Transcript at 76:14-20 (Johnson).

⁸⁵ Johnson Direct at § 10; Hearing Day 3 Transcript at 77:2-9 (Johnson); *see also* Johnson Direct at §§ 6-9.

⁸⁶ Johnson Direct at § 5; Hearing Day 3 Transcript at 77:9-11, 18-22 (Johnson).

The SESC Plan uses the following strategies to accomplish this objective:

- a. Proactive planning to divert water around the site and limit soil exposure to the maximum extent practical. This will minimize the potential for soil erosion;
- b. Design for capture, treatment and controlled discharge of water from the work area where this occurs; and
- c. Regular inspection, maintenance, evaluation and adaptation of protective measures to ensure protection is provided throughout the construction process.⁸⁷

Nordic will break construction into nine key phrases and use BMPs designed for each task.⁸⁸

This ensures control of major earthwork activities to minimize open area at any given time.⁸⁹

The Project implements project-specific methodology to achieve “rapid stabilization of excavated areas”, significantly reducing the potential for erosion of native soil materials.⁹⁰

The SESC Plan includes the following Best Management Practices (“BMPs”):

- a. Perimeter controls which will be installed at the site as soon as the work areas are accessible, providing immediate protection for downstream areas;
- b. Diversion BMPs will be installed to direct surface runoff and groundwater around the work area in advance of any major excavation work;
- c. Cover BMPs will be installed to achieve rapid, stable cover conditions and hence minimize exposure areas and timelines. The area of exposed native soil materials will be limited to 80,000 square feet at any given time;
- d. Treatment BMPs have been designed to capture and treat runoff and groundwater from exposed work areas and dewatering activities.⁹¹

All BMPs will be regularly inspected, reviewed and adapted to maintain effective protection of the site and downstream receiving waters until final Project site stabilization.⁹²

⁸⁷ Johnson Direct at § 5; Hearing Day 3 Transcript at 77:22-25, 78:1-8 (Johnson).

⁸⁸ Johnson Direct at § 7; Hearing Day 3 Transcript at 90:8-15 (Johnson).

⁸⁹ Johnson Direct at § 7.

⁹⁰ Johnson Direct at § 7; Hearing Day 3 Transcript at 78:9-21 (Johnson).

⁹¹ Johnson Direct at § 8; Hearing Day 3 Transcript at 78:9-21 (Johnson).

⁹² Johnson Direct at § 9; Hearing Day 3 Transcript at 78:22-25, 79:1-3 (Johnson).

Nordic's Site Law submissions regarding soil erosion and sedimentation and stormwater management meet or exceed all applicable Department standards.

C. Nordic Complied with All Department Standards regarding Unreasonable Adverse Impacts to Existing Uses from Construction and Operations, Including Blasting and Odor.

The Site Law requires the Department to approve the Project where “the development will not adversely affect existing uses.”⁹³ Chapter 375 of the Department's Rules implements this statutory standard dictating that the Department may find “adverse effect” and require mitigation where such adverse effect is “unreasonable.”⁹⁴ Chapter 375 delineates the specific standards applicable to ensure the reasonableness of blasting and odor impacts.

1. Project Blasting Complies with the Site Law and does not Have Unreasonable Adverse Impacts.

The Site Law requires that blasting be completed “in accordance with the standards in section 490-Z, subsection 14 unless otherwise approved by the department.”⁹⁵ Site Law Section 490-Z requires a preblast survey for all production blasting which must extend a minimum of a ½ mile radius from the blast site.⁹⁶ The preblast survey must document any preexisting damage to structures and buildings and any other physical features within the survey radius that could reasonably be affected by blasting.⁹⁷ Blasting may not occur in the period between sundown and sunrise the following day or in the period between 7:00 p.m. and 7:00 a.m., whichever is greater.⁹⁸ Blasting may not occur more than four times per day.⁹⁹ Sound from blasting may not exceed specific sound level limits (ranging from 129 decibels to 123 decibels) based on the

⁹³ 38 M.R.S. § 484(3).

⁹⁴ See, e.g., Ch. 375 §§ 14; 15(B), 15(D); see also *In re Spring Valley Development*, 300 A.2d 736, 751 (Me. 1973).

⁹⁵ 38 M.R.S. § 484(9).

⁹⁶ 38 M.R.S. § 490-Z(14)(F).

⁹⁷ 38 M.R.S. § 490-Z(14)(F).

⁹⁸ 38 M.R.S. § 490-Z(14)(G).

⁹⁹ 38 M.R.S. § 490-Z(14)(G).

number of blasts per day.¹⁰⁰ The maximum peak particle velocity at inhabitable structures that are not owned or controlled by Nordic, cannot exceed specific levels established in the United States Department of the Interior in “Bureau of Mines Report of Investigations 8507,” Appendix B, Figure B-1.¹⁰¹

The Project complies with these requirements. Maine Drilling & Blasting (“MDB”) completed a blast assessment and a blasting plan for the Project.¹⁰² As part of its assessment, MDB reviewed the potential for adverse effects on neighboring structures from Project blasting.¹⁰³ MDB’s assessment of adverse effects and vibration predictions confirms that neither the Upper nor Lower Dam will experience unreasonable adverse impacts as a result of Project blasting.¹⁰⁴ To ensure compliance with sound level limits, blasting will be monitored with seismographs at the closest protected natural resource or structure.¹⁰⁵ Preblast surveys will be completed prior to the start of blasting.¹⁰⁶

The blast plan details the means and methods for Project blasting to reduce impacts to neighboring structures and features.¹⁰⁷ These methods include limiting the pounds of explosives per delay, using blasting mats to cover the blasts, offering pre blast surveys to neighboring structures, and monitoring all blasts with seismographs at the nearest off site structure.¹⁰⁸ Compliant with Sections 490-Z(14) G and H, blasts are limited to a maximum of 4 blasts daily at the lowest decibel levels in the regulations.¹⁰⁹ Seismic monitoring at the nearest off site location

¹⁰⁰ 38 M.R.S. § 490-Z(14)(H).

¹⁰¹ 38 M.R.S. § 490-Z(14)(I).

¹⁰² Pre-filed Direct Testimony of Brett Doyon, Maine Drilling & Blasting (“Doyon Direct”) at § 2; Hearing Day 3 Transcript at 134:11-18 (Doyon).

¹⁰³ Pre-filed Rebuttal Testimony of Brett Doyon, Maine Drilling & Blasting (“Doyon Rebuttal”) at §§ 3, 5.

¹⁰⁴ Doyon Rebuttal at § 6.

¹⁰⁵ Doyon Rebuttal at § 5.

¹⁰⁶ Doyon Rebuttal at § 7.

¹⁰⁷ Doyon Direct at § 2; Hearing Day 3 Transcript at 134:19-22 (Doyon).

¹⁰⁸ Doyon Direct at § 2; Hearing Day 3 Transcript at 134: 23-25, 135:1-2 (Doyon).

¹⁰⁹ Doyon Direct at § 4.

to the Project will ensure compliance with Section 490-Z(14)(I) and no exceedance of maximum peak particle velocities.¹¹⁰ Nordic's blasting assessment and blast plan complies with all Department blasting standards.¹¹¹

2. Nordic made Adequate Provision for Controlling Odors as required by the Site Law.

Pursuant to Chapter 375 of the Department's Rules, Applicant "shall made adequate provision for controlling odors."¹¹² Any development likely to be the source of offensive odors shall provide evidence affirmatively demonstrating that Applicant made adequate provision for the control of odors, including, but not limited to, the following:

- (a) the identification of any sources of odors from the development;
- (b) an estimation of the area which would be affected by the odor, based on experience in dealing with the material or process used in the development, or similar materials or processes; or
- (c) proposed systems for enclosure of odor-producing materials and processes, and proposed uses of technology to control, reduce or eliminate odors.¹¹³

Compliance with the Chapter 375 odor standard can be met by submission of only one of these three categories of evidence. Nordic submitted the evidence requested in all three categories.¹¹⁴

Nordic identified potential sources of odor in land-based aquaculture operations, the area of those potential effects, and described systems for controlling, reducing or eliminating odors:¹¹⁵

- (a) Ensilage of mortalities. While best efforts are made to minimize mortalities, they are a natural part of any farming operation. Mortalities will be removed, ensiled and tank-stored in a weak organic acid solution to maintain a pH below 4. This

¹¹⁰ Doyon Direct at § 4.

¹¹¹ Doyon Direct at § 4; Hearing Day 3 Transcript at 135: 8-9 (Doyon).

¹¹² DEP Chp. 375 § 17(A).

¹¹³ DEP Chp. 375 § 17(B) (emphasis added).

¹¹⁴ Site Law Application § 22; *see* DEP Chp. 375 § 17(B) (noting Applicant can demonstrate adequate provision for the control of odors by including the information listed in subsection 1, 2 or 3).

¹¹⁵ Pre-Filed Direct Testimony of Cathal Dinneen, M.S., Nordic Aquafarms, Inc, ("Dinneen Direct") at § 9; Hearing Day 3 Transcript at 131:7-25, 132:1-25, 133:1-9 (Dinneen).

prevents spoilage and the accumulation of odiferous compounds. The ensiling tank is contained within an enclosed building which is ventilated through a carbon filter to capture any impurities in the air. Stored materials will be transported to an appropriate receiving facility regularly.¹¹⁶

- (b) Fish processing. After processing of the fish, the offal is immediately chilled or frozen and stored in insulated, for pick-up by disposal or by-product partners.
- (c) Filtrate from the Waste-Water Treatment Plant. Organic material removed by water filtration systems will be stored in a sealed tank and removed regularly.¹¹⁷
- (d) Feed. Due to the cost of feed and its importance to the health of the fish, preventing its spoilage is paramount. Feed will be stored indoors in enclosed silos in temperature- controlled rooms. Due to the constant use of feed during operations, the limited duration for which it is stored on site precludes spoilage and production of offensive odors.¹¹⁸

Nordic explains further that production of odiferous gases will be mitigated using appropriate storage and handling techniques and best management practices.¹¹⁹ Odors will be controlled through installation of proven air treatment infrastructure in key production buildings.¹²⁰ HVAC systems within these buildings will ensure air is appropriately treated.¹²¹ All air exiting areas with the potential for offensive odor is treated prior to expulsion.¹²² Potentially odiferous materials will be expediently and regularly conveyed off site by disposal partners to avoid on-site accumulation.¹²³ Disposal partners will have demonstrated experience in transportation, disposal and odor control of similar material.¹²⁴

¹¹⁶ Hearing Day 3 Transcript at 139:22-25, 140:1-16; 179:3-9 (Dinneen).

¹¹⁷ Hearing Day 3 Transcript at 144:2-35, 145:1-4, 146:4-9 (Dinneen).

¹¹⁸ Hearing Day 3 Transcript at 148:2-18 (Dinneen).

¹¹⁹ Dinneen Direct at § 4.

¹²⁰ Dinneen Direct at § 5.

¹²¹ Dinneen Direct at § 5.

¹²² Dinneen Direct at § 6.

¹²³ Dinneen Direct at § 8.

¹²⁴ Dinneen Direct at § 9.

In short, Nordic’s Site Law submissions comply with all three categories of odor submissions and Nordic has committed to the implementation of mitigating measures to address all applicable requirements.¹²⁵

II. Nordic Complied with all Natural Resource Protection Act Criteria.

NRPA provides that the applicant must demonstrate that “[t]he activity will not unreasonably interfere with existing scenic, aesthetic, recreational or navigational uses.”¹²⁶ Similarly, with regard to water resources, NRPA and Department regulations require grant of a permit where Project impacts are not unreasonable.¹²⁷

NRPA carries this reasonableness inquiry into review of proposed alternatives. The availability of practicable alternatives looks at whether the alternative is “[a]vailable and feasible considering cost, existing technology and logistics based on the overall purpose of the project.”¹²⁸ It is improper to treat a practicable alternative as determinative.¹²⁹ Instead, the Department must “consider the practicable alternatives as part of determining reasonableness: ‘Whether a proposed project’s interference with existing uses is reasonable depends on a multiplicity of factors, one of which is the existence of a practicable alternative. A balancing analysis inheres in any reasonableness inquiry.’”¹³⁰ This balancing analysis also is integral to the Department’s review of Nordic’s proposed compensation and mitigation.¹³¹

A. Nordic’s Fresh Water Usage (Groundwater and Surface Water) is Reasonable and there is No Practicable Alternative for Land Based Salmon Aquaculture.

¹²⁵ Pre-filed Rebuttal Testimony of Cathal Dinneen, Nordic Aquafarms, Inc. (“Dinneen Rebuttal”) at § 21.

¹²⁶ 38 M.R.S. § 480-D(1).

¹²⁷ 38 M.R.S. §§ 480-D(4), (5), (6), (10); DEP Chp. 375 §§ 6-8; DEP Chp. 310 § 5.

¹²⁸ See e.g., DEP Chp. 310 §§ 3(R), 5(A), 9; DEP Chp. 315 §§ 5(G), 9; DEP Chp. 335 §§ 2(D), 3(R).

¹²⁹ *Uliano v. Bd. of Env'tl. Prot.*, 977 A. 2d 400, 410 (Me. 2009).

¹³⁰ *Uliano v. Bd. of Env'tl. Prot.*, 977 A. 2d 400, 410 (Me. 2009) (quoting *Uliano v. Bd. of Env'tl. Prot.*, 876 A.2d 16, 19 (Me. 2005)).

¹³¹ DEP Chp. 310 § 5(C); DEP Chp. 335 § 3(D).

NRPA requires that the Project must not “unreasonably interfere with the natural flow of any surface or subsurface waters” nor “violate any state water quality law, including those governing the classification of the State's waters.”¹³² Further, significant groundwater wells must not have an undue unreasonable effect on waters of the State, as defined in section 361-A, subsection 7, water-related natural resources and existing uses, including, but not limited to, public or private wells within the anticipated zone of contribution to the withdrawal.”¹³³ Department findings on the reasonableness of Project impacts shall consider both the direct effects of the proposed withdrawal and its effects in combination with existing water withdrawals.¹³⁴

Chapter 342 of the Department’s Rules provides additional standards for assessment of significant groundwater wells and Chapter 587 provides the standards applicable to surface water withdrawal from the Lower Reservoir.

Aquaculture depends on intensive fresh and salt water use for proper husbandry of salmon. The Applications propose freshwater usage rates of: up to 455 gpm from site groundwater wells, up to 500 gpm from the BWD, and 70 gpm plus inflows from the Little River.¹³⁵ These rates allow Nordic considerable flexibility in utilization of available freshwater resources.¹³⁶ Nordic’s water usage flexibility allows adjustment of the total volume of water

¹³² 38 M.R.S. §§ 480-D(4), 480-D(5).

¹³³ 38 M.R.S. § 480-D(10).

¹³⁴ 38 M.R.S. § 480-D(10); *see also* 38 M.R.S. § 484(3)(F) (Noting that under the Site Law when determining whether applicant “made adequate provision for fitting the development harmoniously into the existing natural environment and that the development will not adversely affect existing uses, scenic character, air quality, water quality or other natural resources in the municipality or in neighboring municipalities” involving “a structure to facilitate withdrawal of groundwater, the department shall consider the effects of the proposed withdrawal on waters of the State, as defined by section 361-A, subsection 7; water-related natural resources; and existing uses, including, but not limited to, public or private wells, within the anticipated zone of contribution to the withdrawal. In making findings under this paragraph, the department shall consider both the direct effects of the proposed water withdrawal and its effects in combination with existing water withdrawals.”)

¹³⁵ Pre-filed Rebuttal Testimony of Thomas Neilson, Ransom Consulting, Inc. (“Neilson Rebuttal”) at § 6.

¹³⁶ Pre-filed Direct Testimony of Thomas Neilson, Ransom Consulting, Inc. (“Neilson Direct”) at § 17; Hearing Day 1 Transcript at 121:21-25 (Neilson).

from individual freshwater sources (i.e., the Belfast Water District, on-site groundwater, and the Lower Reservoir) within the allowed range for each resource in order to meet the total Project freshwater need at full buildout of approximately 1200 gpm while avoiding unreasonable impacts to the freshwater resources.¹³⁷

1. Nordic's Significant Groundwater Well Network Does not Unreasonably Impact Water Quality or Water Related Natural Resources or Existing Uses and Complies with Chapter 342 of the Department's Rules.

In order to establish a reasonable significant groundwater withdrawal well network, Nordic retained McDonald Morrissey Associates, LLC ("MMA") to assess the local groundwater system underlying and in the vicinity of the Project.¹³⁸ Nordic also retained Ransom Consulting, Inc. to undertake a Hydrogeologic Investigation ("HGI").

The HGI, included drilling a total of 13 bedrock wells at the site and four aquifer pumping tests.¹³⁹ The aquifer testing data gathered as part of the HGI allowed Nordic to establish that the fracture group that the northern on-site test wells were installed in was directly connected to some residential water supply wells located west of the site along Herrick Road.¹⁴⁰ Through careful testing, the pumping wells located in this fracture group were isolated and eliminated from the proposed production well field in order to avoid the potential for adverse impacts to private water users in the area.¹⁴¹

MMA identified a pumping configuration that could provide groundwater to the proposed facility while meeting the applicable regulations and avoiding interference with current use of private supply wells on neighboring properties.¹⁴² MMA developed a numerical groundwater

¹³⁷ Neilson Direct at § 17.

¹³⁸ Pre-filed Direct Testimony of Michael Mobile, Ph.D., McDonald Morrissey Associates, LLC ("Mobile Direct") at § 2.

¹³⁹ Neilson Direct at § 9; Site Law Application § 15 and Appendix 15-A.

¹⁴⁰ Neilson Direct at § 9.

¹⁴¹ Neilson Direct at § 9.

¹⁴² Mobile Direct at § 2.

flow model using available technology and data, including the HGI.¹⁴³ Modelling included multiple simulations using different combinations of potential supply well locations, with cumulative pumping rates ranging from a minimum of approximately 228 gallons per minute (gpm) to a maximum of 515 gpm.¹⁴⁴

The MMA model suggests the local groundwater system could support higher cumulative withdrawal rates under certain conditions, Nordic selected the 455 gpm pumping rate scenario in order to avoid reliance upon supply wells that produced hydraulic responses in certain private water supply wells located west of the proposed facility.¹⁴⁵

MMA presented the following recommendations:

- Conduct further assessment of residential supply wells located in the Site vicinity to better understand typical conditions (e.g., range of head fluctuations occurring under normal use) and physical characteristics (e.g., pump depth).
- Develop a plan for monitoring:
 - drawdown in bedrock supply wells located on- and off-Site;
 - drawdown of the water table near surface water features in the Site vicinity; and
 - in certain locations, water quality (e.g., total dissolved solids or TDS).
- Develop contingencies to address cases where current use changes (e.g., reduced well yield) can be attributed to effects caused by Site-related pumping.¹⁴⁶

Nordic's Project applications include a Water Resource Monitoring Plan ("WRMP") that addresses MMA's recommendations.¹⁴⁷ This WRMP underwent thorough review by the Department and Dr. John Hopeck. As part of this iterative process, Nordic further refined the WRMP.¹⁴⁸ The refined WRMP represents a thorough and adaptable program for establishing

¹⁴³ Mobile Direct at § 4.

¹⁴⁴ Mobile Direct at § 8.

¹⁴⁵ Mobile Direct at § 14.

¹⁴⁶ Mobile Direct at § 15.

¹⁴⁷ Mobile Direct at § 16.

¹⁴⁸ Mobile Direct at § 16.

baseline (i.e. pre-pumping) conditions and monitoring for potential post-development changes.¹⁴⁹

The WRMP also describes indicators and presents actions to avoid unforeseen adverse impacts from Nordic's groundwater withdrawals.¹⁵⁰ Specifically, the WRMP set the following objectives:

- Continue baseline data collection to document the range of pre-development background conditions influenced by natural variability and existing watershed and aquifer withdrawals;
- Collect a robust dataset able to capture changes in conditions due to the development, groundwater extraction and surface water withdrawal and natural variations that may occur;
- Evaluate a regularly updated dataset to assess potential impacts to existing groundwater users, natural resources, and waters of the State;
- Establish performance criteria and warning levels to serve as thresholds indicating increased potential risk of adverse impacts; and
- Trigger the implementation of an action plan to adjust operations should significant impacts be identified.¹⁵¹

The focus of the WRMP is achieving the above goals for protected resources such as groundwater and surface water bodies on and near the Project, and, importantly, on existing private water supply wells.¹⁵²

A key component of assessing change due to water withdrawal from surface or groundwater sources is to have a robust dataset of baseline, or pre-development, conditions.¹⁵³ In order to ensure that enough baseline data has been collected, Nordic has been collecting near continuous water level data in a subset of wells since August 2018 and will begin collecting

¹⁴⁹ Mobile Direct at § 17.

¹⁵⁰ Mobile Direct at § 17.

¹⁵¹ Neilson Direct at § 13; Hearing Day 1 Transcript at 120:16-15, 121:1-8 (Neilson).

¹⁵² Neilson Direct at § 14.

¹⁵³ Neilson Direct at § 15.

monitoring data at full-scale as soon as practical.¹⁵⁴ As described in the WRMP, the baseline period will begin pre-construction and follow through construction, a period expected to last approximately two years before production operations begin.¹⁵⁵ Production operations, and the required water withdrawals, will be phased, allowing for additional data to be collected prior to the proposed resources being utilized at their full proposed withdrawal rates.¹⁵⁶ As production operations begin, the monitoring program will continue uninterrupted and function as the operational monitoring program.¹⁵⁷ Thus, while the WRMP is currently focused on refining the existing understanding of baseline/pre-pumping conditions, as there is ample opportunity (i.e., several years) to establish a fulsome baseline before withdrawal rates approach those conservatively reflected in the Applications.¹⁵⁸ The WRMP is adaptable and information gathered through monitoring will be used to improve its quality and efficiency.¹⁵⁹

As a condition to the Land Approvals, Nordic proposes submission of an addendum to the WRMP.¹⁶⁰ The addendum will propose alert and action levels in appropriate locations (e.g., private water supply wells, key surface water and groundwater points, etc.) and consider the baseline data collected, groundwater model predictions, and appropriate thresholds.¹⁶¹ The addendum will also include remedial actions Nordic can undertake in the unlikely event that adverse impact is observed to be imminent or occurring.¹⁶² Implementation of the WRMP ensures the significant groundwater well network will avoid unreasonable adverse impacts.

2. Nordic's Withdrawal from the Lower Reservoir Complies with Chapter 587 of the Department's Rules.

¹⁵⁴ Neilson Direct at § 15.

¹⁵⁵ Neilson Direct at § 15.

¹⁵⁶ Neilson Direct at § 15.

¹⁵⁷ Neilson Direct at § 15.

¹⁵⁸ Neilson Direct at § 15.

¹⁵⁹ Neilson Direct at § 15.

¹⁶⁰ Neilson Direct at § 16.

¹⁶¹ Neilson Direct at § 16.

¹⁶² Neilson Direct at § 16.

Department Rules specify the allowable withdrawal from a surface water body such as the Lower Reservoir. The permissible amount is defined as up to 1.0 acre-foot of water per acre of the waterbody at normal high water between April 1 and July 31, and up to 2.0 acre-feet of water per acre of the waterbody at normal high water from August 1 to March 31 during any given year even without inflow.¹⁶³ Where there is inflow, Department rules allow inclusion of surplus water demonstrated to have been delivered to the Lower Reservoir beyond the maximum acre-foot withdrawals in the withdrawal.¹⁶⁴

In addition to informing groundwater withdrawal modeling, the HGI identifies surface water as a potential source of water supply for the proposed development.¹⁶⁵ The HGI includes calculation of a conservative baseflow for the Little River.¹⁶⁶ Given the acreage of the Lower Reservoir, the permitted minimum withdrawal rate is 70 gpm for the proposed surface water intake with additional allowable withdrawal equivalent to the discharge of the Little River into the Lower Reservoir.¹⁶⁷ In order to account for inflows into the Lower Reservoir, an estimated surface water withdrawal rate of 250 gpm is used, which is equivalent to the conservative estimate of baseflow of the Little River.¹⁶⁸

Given the unique hydrology of the Little River and associated Upper and Lower Reservoirs, the proposed surface water withdrawal from the Little River would operate primarily as a run-of-river withdrawal, except that even in the absence of inflow to the Lower Reservoir, withdrawal of 70 gpm is allowed.¹⁶⁹ Chapter 587 also allows withdrawal of additional inflows to

¹⁶³ Neilson Direct at § 4; DEP Chp. 587 § 6(A).

¹⁶⁴ Neilson Direct at § 4.

¹⁶⁵ Neilson Direct at § 4.

¹⁶⁶ Neilson Direct at § 4.

¹⁶⁷ Neilson Direct at § 4.

¹⁶⁸ Neilson Direct at § 4.

¹⁶⁹ Neilson Direct at § 5; Hearing Day 1 Transcript at 117:5-8 (Neilson).

the Lower Reservoir, and, because the Little River does not continue below the Lower Dam, up to 100% of the inflows into the Lower Reservoir can be withdrawn at any given time.¹⁷⁰ The withdrawal of inflows would not impact the level of the Lower Reservoir because the withdrawal would simply capture overflow not reduce the stored reservoir.¹⁷¹

The 250 gpm surface water withdrawal estimate for planning purposes is based upon calculation of the 5% duration flow, meaning that there is a 5% chance that stream flows will be 250 gpm or less in any given year.¹⁷² This is a conservative estimate of low-flow scenarios in the Little River and is a sensible number to plan around.¹⁷³ However, the estimated mean annual flow for the Little River is approximately 15,000 gpm, and the lowest monthly mean flow is approximately 2,500 gpm.¹⁷⁴ This means that during the vast majority of the year, inflow to the Lower Reservoir from the Little River will far exceed the total freshwater demand of the Project at full build-out and under optimal fish rearing conditions (estimated to be approximately 1,200 gpm).¹⁷⁵ The abundant flow means that Nordic's proposed surface water withdrawal will not have an unreasonable adverse impact on the level of the Lower Reservoir.¹⁷⁶ Withdrawal amounts that conservatively comply with the allowances of Chapter 587 in combination with implementation of the WRMP allow Nordic's surface water withdrawal to avoid unreasonable adverse impacts.

B. Nordic's Impacts to Streams, Freshwater Wetlands and Coastal Wetlands are Reasonable and without Practicable Alternative.¹⁷⁷

¹⁷⁰ Neilson Direct at § 6; Hearing Day 1 Transcript at 117:8-14 (Neilson).

¹⁷¹ Neilson Direct at § 6.

¹⁷² Neilson Direct at § 7; Hearing Day 1 Transcript at 117: 14-19 (Neilson).

¹⁷³ Neilson Direct at § 7; Hearing Day 1 Transcript at 117:14-19 (Neilson).

¹⁷⁴ Neilson Direct at § 7; Hearing Day 1 Transcript at 117:19-23 (Neilson).

¹⁷⁵ Neilson Direct at § 7; Hearing Day 1 Transcript at 117:23-25, 118:1-3 (Neilson).

¹⁷⁶ Neilson Direct at § 7.

¹⁷⁷ Nordic acknowledges that these are two separate hearing topics. However, because they are analyzed the same under NRPA and Chapter 310 of the DEP Rules, Nordic will discuss them together.

Chapter 310 of the Department’s Rules specifies that “[t]he activity will be considered to result in an unreasonable impact if the activity will cause a loss in wetland area, functions, or values, and there is a practicable alternative to the activity that would be less damaging to the environment.¹⁷⁸ Chapter 310 requires that “[t]h applicant shall provide an analysis of alternatives...in order to demonstrate that a practicable alternative does not exist.”¹⁷⁹ Chapter 310 defines “practicable” as “[a]vailable and feasible considering cost, existing technology and logistics based on the overall purpose of the project.”¹⁸⁰

1. No Practicable Alternative to Project Wetland Impacts.

The Project purpose is to provide 33,000 metric tons of high quality seafood to consumers in the northeastern United States.¹⁸¹ There is no alternative that is feasible considering cost, existing technology and logistics based on the overall Project purpose.

Nordic completed an exhaustive alternatives analysis looking at thousands of potential sites spanning the East Coast of the United States from Washington, D.C. to Canada.¹⁸² Nordic looked at over 500 sites on the Maine coast¹⁸³ and narrowed the list first to 40 properties then to four primary alternative sites.¹⁸⁴

Nordic identified a number of objectives for siting the project to ensure that the project is economically viable and commercially sustainable.¹⁸⁵ Specifically, these objectives included: production of 33,000 metric tons of salmon to meet 7% of the current U.S. demand and offset the high fixed investment cost to build the Project, reducing the carbon footprint of fresh, farmed

¹⁷⁸ DEP Chp. 310 § 5(A).

¹⁷⁹ DEP Chp. 310 § 5(A).

¹⁸⁰ DEP Chp. 310 § 3(R).

¹⁸¹ Ransom Direct at § 4; NRPA Application § 2.3.

¹⁸² Ransom Direct at §§ 3, 7.

¹⁸³ Ransom Direct at § 7.

¹⁸⁴ Ransom Direct at § 7; NRPA Application § 2.4.1; Hearing Day 2 Transcript at 96:22-25, 97:1-7 (Ransom).

¹⁸⁵ Ransom Direct at § 6.

Atlantic salmon to 1/3 of that for imported salmon, a production cost per unit of fish that is cost competitive with other suppliers, providing 100 direct jobs and other indirect jobs to the local community, providing opportunities for development of ancillary business opportunities (such as development of lobster bait or other uses from by-products), and limiting environmental impacts.¹⁸⁶

The alternatives analysis summarizes the scoring of the four primary alternatives in a site selection matrix.¹⁸⁷ These potential sites included Belfast, an alternative mid-coast site, a northern site, and a southern site.¹⁸⁸ Based on a potential score of 50 points, Belfast scored highest at 45 points resulting in selection for potential development.¹⁸⁹

The alternatives analysis also reviewed four potential site layouts for the upland portion of the Project¹⁹⁰ and six routes for the intake and outfall piping in order to avoid and minimize natural resource impacts to the greatest practical extent. Nordic evaluated each option with regard to the following criteria: regulatory requirements, environmental impacts, construction/ engineering/ operational feasibility, and financial feasibility, and compared the options in a weighted matrix.¹⁹¹

Criteria were scored with values 1 to 5 for each option.¹⁹² Regulatory requirements and financial feasibility were weighted higher than engineering feasibility, resulting in a total of 60 possible points for regulatory requirements, 60 possible points for financial feasibility, 45 possible points for environmental impacts, and 15 possible points for engineering feasibility.¹⁹³

¹⁸⁶ Ransom Direct at § 6; NRPA Application § 2.3; Hearing Day 2 Transcript at 94:17-25, 95:1-23 (Ransom).

¹⁸⁷ Ransom Direct at § 8; NRPA Application § 2.4.1; Hearing Day 2 Transcript at 97:18-9 (Ransom).

¹⁸⁸ Ransom Direct at § 8; Hearing Day 2 Transcript at 97:20-23 (Ransom).

¹⁸⁹ Ransom Direct at § 8.

¹⁹⁰ Ransom Direct at § 9; Hearing Day 2 Transcript at 98:4-9 (Ransom).

¹⁹¹ Ransom Direct at § 9; NRPA Application § 2.5.2; Hearing Day 2 Transcript at 98:14-19 (Ransom).

¹⁹² Ransom Direct at § 10.

¹⁹³ Ransom Direct at § 10.

Out of 180 possible points, Option 3, 6 modules on 54 acres of land, is the preferred alternative, with a score of 116.¹⁹⁴ Options 1 and 2 do not legally meet applicable regulatory requirements, and although these options scored 93 and 67 points, respectively, could not be built as they do not meet city setback and fire code requirements.¹⁹⁵ Options 1 and 4 are not feasible due to technical, logistical or financial constraints.¹⁹⁶

The alternatives analysis also considered layout alternatives for the three intake/outfall pipeline routes from Nordic's proposed facility.¹⁹⁷ Evaluation of the three pipeline routes independently from the project layouts used an approach that was similar to the one used to analyze the potential site layouts for the upland portion of the property.¹⁹⁸ The pipeline routes included the Little River (Option 1), the Eckrote Property (Option 2), and Tozier Road (Option 3).¹⁹⁹ The Eckrote property option included three possible configurations of the pipeline from the shoreline to the discharge and intake points, including a straight, slightly curved, and double curved route.²⁰⁰ Criteria assessed for each pipeline route included regulatory requirements, construction considerations, engineering design, challenges and risks, and financial feasibility.²⁰¹ Applying these criteria, the curved route within Option 2 is the preferred alternative for its logistical and technical advantages.²⁰²

The Alternatives Analysis demonstrates that the Project meets the Project purpose and there is no practicable alternative.²⁰³

¹⁹⁴Ransom Direct at § 10 NRPA Application § 2.5.4; Hearing Day 2 Transcript at 98:20-22 (Ransom).

¹⁹⁵ Ransom Direct at § 10; NRPA Application § 2.5.3.

¹⁹⁶ Ransom Direct at § 10; NRPA Application § 2.5.3.

¹⁹⁷ Ransom Direct at § 11; NRPA Application § 2.6.

¹⁹⁸ Ransom Direct at § 11; NRPA Application § 2.6.1.

¹⁹⁹ Ransom Direct at § 11; NRPA Application § 2.6.1.

²⁰⁰ Ransom Direct at § 11.

²⁰¹ Ransom Direct at § 11.

²⁰² Ransom Direct at § 12; NRPA Application §2.6.2.

²⁰³ Ransom Direct at § 13.

2. Nordic Avoided, Minimized, and Compensated for Wetland Impacts as required by Chapter 310 of the Department's Rules.

Applicant avoided impacts to wetlands and waterbodies through project design features such as: centralized building locations leaving the Project perimeter for buffering and via the burial and collared anchoring of the intake and outfall piping.

The Project site includes some wetland habitat, including intermittent streams.²⁰⁴ Due to the soils present on-site, these wetland and stream habitats have a minimal hydroperiod, limiting their value to wetland-dependent wildlife species that require more constant levels of inundation.²⁰⁵ However, the intermittent streams on-site do provide some suitable habitat for wetland-associated wildlife species adapted to a limited hydroperiod, including certain stream-breeding salamanders and aquatic invertebrates.²⁰⁶

The freshwater wetlands impacted by the Project are not unique, represent disturbed conditions from logging in the case of forested areas and agricultural activities in the case of the wet meadows.²⁰⁷ Additionally, the freshwater wetlands exhibit marginal wetland characteristics relative to soils and vegetation.²⁰⁸ The Project encompasses approximately 57 acres and the wetlands represent only 5.5 acres of the Project area.²⁰⁹ Based on Project needs (land area, salt and fresh water dependency) this level of wetland impact is not unreasonable.²¹⁰

There are no vernal pools on the Project site.²¹¹ Impacts to the coast wetlands are predominately temporary or, where permanent, are relatively small and therefore are not

²⁰⁴ Fiorillo Direct at § 8.

²⁰⁵ Fiorillo Direct at § 8.

²⁰⁶ Fiorillo Direct at § 8.

²⁰⁷ Fiorillo Direct at § 22.

²⁰⁸ Fiorillo Direct at § 22.

²⁰⁹ Fiorillo Direct at § 22.

²¹⁰ Fiorillo Direct at § 22.

²¹¹ Fiorillo Direct at § 24; Hearing Day 2 Transcript at 107:15-16 (Fiorillo).

unreasonable.²¹² Forested and meadow habitats are varied and therefore represent opportunity for wildlife species diversity.²¹³ However, the habitats are not unique and therefore do not represent an unreasonable or significant loss of habitat for any given species.²¹⁴

Tidal Waterfowl and Wading Bird Habitat will be temporarily impacted during the construction of the area to be trenched and the installation of the intake and outfall pipes.²¹⁵ This is not unreasonable given the temporary nature of the impact and the fact that there is ample similar habitat nearby that highly mobile species such as birds can easily access.²¹⁶ Additionally, because the work period will vary with tides, birds may acclimate to the presence of the equipment and use the area outside of the active work window.²¹⁷ Inland Waterfowl / Wading Bird Habitat is outside of the Project area.²¹⁸

The abundance of benthic organisms was relatively low.²¹⁹ Permanent impacts include loss of soft bottom habitat which will be converted to hard substrate with installation of the intake and outfall piping.²²⁰ The loss of this area is minimal considering the pipe anchoring design which reduces impacts to the substrate and the amount of similar available habitat throughout Belfast Bay.²²¹ The addition of hard substrate in the form of the intake and discharge pipes will provide a positive addition to the substrate for colonization.²²²

Nordic proposed an extensive Natural Resource Impact Compensation Plan, which compensates for unavoidable impacts and represents a combination of a payment to the in-lieu-

²¹² Fiorillo Direct at § 25.

²¹³ Fiorillo Direct at § 26.

²¹⁴ Fiorillo Direct at § 26.

²¹⁵ Fiorillo Direct at § 27.

²¹⁶ Fiorillo Direct at § 27.

²¹⁷ Fiorillo Direct at § 27.

²¹⁸ Fiorillo Direct at § 28.

²¹⁹ Fiorillo Direct at § 29.

²²⁰ Fiorillo Direct at § 29.

²²¹ Fiorillo Direct at § 29.

²²² Fiorillo Direct at § 29.

fee program and on-site compensation.²²³ All temporary impacts are to be restored in place and are not included in fee calculations.²²⁴ Under the Compensation Plan, Nordic will be responsible for 92,688.50 sq ft which offsets the calculated in-lieu-fee payment at a 1:2 ratio.²²⁵ This includes compensation such as riparian buffer restoration, revegetation with native plantings, slope stabilization, and stream bed protection.²²⁶ Nordic will also pay \$ 613,466.48 into the in-lieu-fee program.²²⁷

Applicant's wetland impact mitigation proposal includes maintenance of a minimum 75-foot deeded buffer along the Stream 9 as shown on Figure 10-1 to the NRPA Application. Stream 9 is the focus of Applicant's riparian restoration plan which extends up to 150' between the stream and Project development in some locations. The riparian restoration and deeded buffer will create quality wildlife habitat and a travel corridor along Stream 9.

Nordic compensated for Project wetland impacts by implementing restoration plantings along all sections of Stream 9 as well as replacement of a culverted driveway crossing on Stream 8 and another culverted driveway crossing on Drainage 7. These improvements will result in immediate improvement to instream cover and bank erosion through the planned planting of riparian vegetation and deeded protection of up to 75 feet wide adjacent to the bank of Stream 9 (the on-site stream with the highest (but still poor) habitat quality). These improvements will also result in improved substrate, channel morphology, and riffle/run scores for Stream 9 over time. Replacement of a currently hung set of three culverts and a hung single culvert with open bottom aluminum arches will provide not only improved stream characteristics for Drainage 7

²²³ Fiorillo Direct at § 34; Hearing Day 2 Transcript at 109:18-25, 110:1-25, 111:1-5 (Fiorillo).

²²⁴ Fiorillo Direct at § 34.

²²⁵ Fiorillo Direct at § 35.

²²⁶ Fiorillo Direct at § 34.

²²⁷ Fiorillo Direct at § 35; Hearing Day 2 Transcript at 111:4-5 (Fiorillo).

and Stream 8, but also to Stream 9, as well as the joiner of the three at the coastal wetland. This increased connectivity and improved instream cover will improve water quality and macroinvertebrate diversity. These improvements also provide connection to downstream fish habitat along the lower reaches of Streams 8 and 9.

Although Streams 3, 5 and 6 will be altered on the Project site, flow will be maintained in the off-site portions of these streams using groundwater from the interceptor trench on the northern property boundary. Applicant also proposes compensation and improvements to the lower portions of these streams. Specifically, Applicant will remove unnecessary piping from Streams 5 and 6, provide bank stabilization, and create improved trail crossings and stream bottoms along the Little River trail. Similar improvements are planned for Stream 3, where bank stabilization, slope stabilization, and other compensation measures are planned. With the projects described, Nordic proposes 225.5 linear feet (lf) of stream restoration measures.

The Project's impacts to freshwater wetlands and waterbodies are not unreasonable because the site resources are not unique, are generally of low function and value, and impacts have been avoided or minimized through site layout design. In addition, the Project Compensation Plan offsets permanent impacts through a combination of on-site compensation and payment of the in lieu fee of \$613,466.48.

3. Project Impacts to Water Quality and Protected Natural Resources in the Coastal Wetland are Reasonable, including concerns about HotraChem mercury, and are Mitigated through Construction Staging and Erosion and Sedimentation Control.

The Applications indicate Nordic will excavate approximately 36,000 cubic yards (dependent on water content and other physical characteristics) of marine soils for construction of its intake and outfall piping.²²⁸ Excavated marine soils will be used as backfill to the extent

²²⁸ Site Law Application § 18.

possible.²²⁹ Any estimation of the backfill amount is just that, an estimate dependent on water content and other physical variables. The balance of the excavated marine soils remaining after backfill of each construction segment will be characterized, managed, disposed of, and transported pursuant to the Department Rules.²³⁰

Normandeau collected marine soil samples in the vicinity of the intake and outfall piping construction area. Two of these samples were submitted for chemical and physical characteristics analysis.²³¹ Mercury concentrations for these two samples were 0.267 mg/kg for one sample and not detected (at a detection limit of 0.103 mg/kg) for the other sample.²³² The recreational use/ sediment exposure pathway standard set by the Maine Remedial Action Guidelines (RAGs) for mercury is 100.000 mg/kg.²³³ The mercury concentrations in marine soils in the area of the intake and outfall piping route are more than an order of magnitude below the applicable RAGs.²³⁴

Furthermore, the results do not indicate exceedance of the toxicity characteristic at 40 CFR 261.24.²³⁵ Based on the laboratory results and using the “rule of 20” for evaluating waste samples, no further sediment testing (e.g. EPA Method 1311 TCLP testing) is warranted and marine soils from the Project are expected to be acceptable as non-hazardous waste for disposal at either Crossroads or Juniper Ridge from whom Nordic obtained letters of disposal capacity.²³⁶

a. Construction Staging and Controls Will Minimize Turbidity and Sedimentation and Promote Erosion Control.

²²⁹ Walsh Direct at § 4; Hearing Day 2 Testimony at 100:7-11 (Ransom).

²³⁰ Site Law Application § 18; NRPA Application §§ 1.2, 7.3.1; DMR Assessment at 1-2; *see also* Walsh Direct at § 4; Hearing Day 2 Testimony at 100:12-15 (Ransom); *see generally* DEP Chp. 400, DEP Chp. 850.

²³¹ Ransom Direct at § 14.

²³² Ransom Direct at § 15.

²³³ Ransom Direct at § 15.

²³⁴ Ransom Direct at § 15.

²³⁵ Ransom Direct at § 17.

²³⁶ Ransom Direct at § 17; Site Law Application, § 18.

Project construction of the intake and outfall piping is sequenced to avoid and minimize erosion, sedimentation and turbidity issues within the coastal wetland.²³⁷ This construction sequencing includes placement of a timber mat access way the entire length of the pipe trench location within the intertidal zone.²³⁸ Mat access will be placed during low tide cycle but will remain in place as an active work travel way through the entire trench installation process.²³⁹ Timber mats provide a stable work surface for equipment and material.²⁴⁰ Leaving the access way in place reduces the risk siltation from repeated removal and placement of the mats over the coastal wetland.²⁴¹ Excavation equipment will travel out the full extent of the timber mat and begin trench excavation at the furthest point from shore.²⁴² This area, due to short low tide cycle, will not be kept dry for the full time to install and backfill the trench.²⁴³ Therefore, Nordic will use trench boxes to keep the excavation open and limit siltation and turbidity issues by extending the box walls above the excavation area.²⁴⁴

Nordic will excavate and set pipe in 20 to 40 foot sections, which will allow for efficient use of the total proposed temporary impact area.²⁴⁵ The temporary impact area is projected to be approximately a 100-foot area following the pipeline path.²⁴⁶ Through utilization of a phased excavation approach, use of jack up barges and moving the work/equipment areas with the excavation process, overall impacts to the 100' corridor are minimized.²⁴⁷ The entire width will not be impacted for the entire duration of the piping system construction process.²⁴⁸

²³⁷ Walsh Direct at § 3.

²³⁸ Walsh Direct at § 4.

²³⁹ Walsh Direct at § 4I; Hearing Day 2 Transcript at 122:13-21 (Walsh).

²⁴⁰ Walsh Direct at § 4.

²⁴¹ Walsh Direct at § 4.

²⁴² Walsh Direct at § 4.

²⁴³ Walsh Direct at § 4.

²⁴⁴ Walsh Direct at § 4.

²⁴⁵ Walsh Direct at § 4; Hearing Day 2 Transcript at 124:6-20, 124:24-25, 125:1-2 (Walsh).

²⁴⁶ Walsh Direct at §§ 4, 5.

²⁴⁷ Walsh Direct at § 5.

²⁴⁸ Walsh Direct at § 5.

Proposed turbidity mitigation measures include continuous visual monitoring for turbidity and use of turbidity curtains.²⁴⁹ The curtains will be of appropriate position, length and depth to cover the work area.²⁵⁰ Additionally, work crew supervisors will designate a trained team member to complete observations for turbidity periodically during any of the above mentioned work activities.²⁵¹ Should turbidity be observed beyond the turbidity curtains, notification to project management will be made and work will cease until the source is determined and mitigation measures applied.²⁵²

Use of these construction sequencing techniques will allow the Project to avoid unreasonable erosion of soil or sediment but will not unreasonably inhibit the natural transfer of soil from the terrestrial to the marine or freshwater environment.

b. Nordic Consented to all Recommendations in the DMR Assessment.

NRPA specifies that:

if the proposed activity involves dredging, dredge spoils disposal or transporting dredge spoils by water, the applicant must demonstrate that the transportation route minimizes adverse impacts on the fishing industry and that the disposal site is geologically suitable. If the proposed activity involves dredging, the Commissioner of Marine Resources shall provide the Department with an assessment of the impacts on the fishing industry of a proposed dredging operation in the coastal wetlands. The assessment must consider impacts to the area to be dredged and impacts to the fishing industry of a proposed route to transport dredge spoils to an ocean disposal site. The Department must consider this assessment in their determination.²⁵³

On February 14, 2020, DMR noticed a public hearing to be held March 2, 2020 in Belfast, Maine. On April 7, 2020 DMR issued its “Addendum Comments on impacts to fishing

²⁴⁹ Walsh Direct at § 6; *see also* Hearing Day 2 Transcript at 125:3-16 (discussing proposed utilization of trench box system), 126:1-16 (how excavated material would be handled on barges), 126:17-25 (turbidity curtains) (Walsh).

²⁵⁰ Walsh Direct at § 6.

²⁵¹ Walsh Direct at § 6.

²⁵² Walsh Direct at § 6.

²⁵³ 38 M.R.S. § 480-D(9).

activity during construction of intake and discharge pipes and haul route for transport of excavated material site” (“DMR Assessment”).²⁵⁴

The DMR Assessment considered the impacts to the fishing community associated with construction of the intake and outfall pipes as well as impacts from the transport of the excess marine soils from the excavation.²⁵⁵ The DMR Assessment discusses concerns regarding resuspension of historic deposition of mercury and other contaminants, and about gear entanglement with the piping and barge transport.²⁵⁶

The DMR Assessment included the following recommendations:

- Applicant use a closed bucket dredge, where practicable, for excavation activity in the sub-tidal to minimize the re-suspension of the sediments. This will minimize any potential impacts to shellfish and other marine species within the direct project location, including nearby aquaculture facilities. The use of turbidity curtains around the barge and excavation site will minimize impact to the nearshore marine environment.²⁵⁷
- Applicant is strongly encouraged to mark the location of the intake and outfall piping for navigational safety and to avoid entanglement in consultation with the United States Coast Guard.²⁵⁸
- Applicant conduct outreach via written notice thirty days in advance of the project start date to the local Lobster Zone Council, and coordinate with DMR staff who will send email notification to all Zone D members. Notice should include specific nautical bearings of the haul route and width for the safe travel of the spoils barge to avoid entanglement with fishing gear.²⁵⁹

²⁵⁴ Intervenor's argue that the Department should make various alterations to the DMR Assessment before considering it. The Department does not have statutory authority to do as Intervenor's request. NRPA is clear. DMR assesses impacts to the fishing community of dredge activity and transport of dredged materials for disposal at sea. The Department must consider that assessment in the NRPA review process. No more is permitted. There is no provision authorizing the Department to dictate how DMR conducts business nor is there any authority for the Department to ignore or set aside the DMR Assessment.

²⁵⁵ See generally DMR Assessment.

²⁵⁶ See generally DMR Assessment.

²⁵⁷ DMR Assessment at pg. 2.

²⁵⁸ DMR Assessment at pg. 3.

²⁵⁹ DMR Assessment at pg. 3.

- DMR further requests the anchorage of the barge at either the construction site or at a safe location off Mack Point, and the anchorages be included in the notice.²⁶⁰
- DMR also requests the construction company contracted by Nordic Aquafarm equip their barge with a VMS (Vessel Monitoring System) to track its transit activity along the haul route, and provide a mechanism by which area fishermen may seek compensation for lost gear should the barge deviate from the specified haul route.²⁶¹

The DMR Assessment noted that “the U.S. Army Corps of Engineers will determine appropriate sediment analysis needed. DMR is satisfied that this process will be adequate to resolve its concern regarding resuspension of contaminants.”²⁶² Nordic voluntarily consented to all of the recommendation contained in the DMR Assessment and includes those conditions in the Draft Land Approvals attached hereto at Tab 3.²⁶³ Adoption of the DMR Assessment recommendations ensures Nordic’s NRPA impacts to Maine’s fishing community from construction of the intake and outfall piping are not unreasonable.

III. Nordic Demonstrated Compliance with all Maine Pollutant Discharge Elimination System License and Waste Discharge License Criteria.

“No person may directly or indirectly discharge or cause to be discharged any pollutant without first obtaining a license therefor from the department.”²⁶⁴ The Department shall issue a license for the discharge of any pollutants only if it finds that:

A. The discharge either by itself or in combination with other discharges will not lower the quality of any classified body of water below such classification;

²⁶⁰ DMR Assessment at pg. 3. Notably, DMR voluntarily carefully reviewed and considered the haul route for upland disposal of the excavated marine soils even though this review is not required by NRPA, the plain language of which limits the required DMR assessment to “impacts to the fishing industry of a proposed route to transport dredge spoils to an ocean disposal site.” 38 M.R.S. § 380-D (9).

²⁶¹ DMR Assessment at pg. 3.

²⁶² DMR Assessment pg. 4.

²⁶³ Notably, the DMR Assessment considered impacts to the fishing community from transport of excavated marine soils for disposal at an upland facility even though this activity is outside NRPA jurisdiction.

²⁶⁴ 38 M.R.S. § 413(1).

B. The discharge either by itself or in combination with other discharges will not lower the quality of any unclassified body of water below the classification which the board expects to adopt in accordance with this subchapter;

C. The discharge either by itself or in combination with other discharges will not lower the existing quality of any body of water, unless, following opportunity for public participation, the department finds that the discharge is necessary to achieve important economic or social benefits to the State and when the discharge is in conformance with section 464, subsection 4, paragraph F. The finding must be made following procedures established by rule of the board pursuant to section 464, subsection 4, paragraph F;

D. The discharge will be subject to effluent limitations that require application of the best practicable treatment. “Effluent limitations” means any restriction or prohibition including, but not limited to, effluent limitations, standards of performance for new sources, toxic effluent standards and other discharge criteria regulating rates, quantities and concentrations of physical, chemical, biological and other constituents that are discharged directly or indirectly into waters of the State.

“Best practicable treatment” means the methods of reduction, treatment, control and handling of pollutants, including process methods, and the application of best conventional pollutant control technology or best available technology economically achievable, for a category or class of discharge sources that the department determines are best calculated to protect and improve the quality of the receiving water and that are consistent with the requirements of the Federal Water Pollution Control Act, as amended, and published in 40 Code of Federal Regulations. If no applicable standards exist for a specific activity or discharge, the department must establish limits on a case-by-case basis using best professional judgment, after consultation with the applicant and other interested parties of record. In determining best practicable treatment for each category or class, the department shall consider the existing state of technology, the effectiveness of the available alternatives for control of the type of discharge and the economic feasibility of such alternatives.²⁶⁵

A. The Composition and Characteristics of Nordic’s Effluent Are Best Practicable Treatment and will not Lower the SB Water Quality Classification of Belfast Bay.

The Project employs significant water treatment infrastructure to vastly reduce the quantity of water that is taken into the system and discharged compared to any currently operating facilities in Maine, including other Recirculating Aquaculture System (“RAS”) facilities.²⁶⁶ The water is treated within the facility and reintroduced into the process system

²⁶⁵ 38 M.R.S. § 414-A(1).

²⁶⁶ Pre-filed Direct Testimony of Edward Cotter, Nordic Aquafarms, Inc. (“Cotter Direct”) at § 4.

using internal treatment measures.²⁶⁷ Only a small portion of the overall system water is taken from the production system and piped to a separate wastewater treatment plant where solids and nutrients are removed and ultraviolet light treatments are used to neutralize any potential pathogens before it is discharged into the Penobscot Bay.²⁶⁸

The water treatment technology includes denitrification and other best in class technologies for nutrient removal even though there are not yet water quality standards for these nutrients.²⁶⁹ The flow rate of the proposed system is .337 m³/sec (7.7 mgd)²⁷⁰ The effluent concentrations Nordic anticipates for the discharge are:

- Total suspended solids (TSS)= 6.33 mg/l (185 kg/day)
- Biochemical Oxygen Demand (BOD)= 5.55 mg/l (162 kg/day)
- Total Nitrogen (TN)= 23.02 mg/l (673 kg/day)
- Ammonium Nitrogen (NH)= 0.0024 mg/l (0.07 kg/day)
- Phosphorus (P)= 0.20 mg/l (5.8 kg/day)²⁷¹

These levels represent Nordic's implementation of best practicable treatment. First, the Project will recycle and reuse 99% of the water²⁷² thereby limiting effluent quantity. There is no 100% recirculating aquaculture facility.²⁷³ The amount of water exchanged is usually 2-5% of the system volume and the precise amount depends upon capital investment in wastewater treatment technologies.²⁷⁴ When looking at production efficiencies of water use, the amount of water per pound of salmonid production on land, Nordic's system is "best in class."²⁷⁵ Nordic will have "one of the world's most sophisticated aquaculture waste treatment systems" that not

²⁶⁷ Cotter Direct at § 4.

²⁶⁸ Cotter Direct at § 4.

²⁶⁹ Cotter Direct at § 4.

²⁷⁰ Cotter Direct at § 4.

²⁷¹ Cotter Direct at § 4.

²⁷² Pre-filed Rebuttal Testimony of Simon Dunn and David Noyes, Nordic Aquafarms ("Dunn/Noyes Rebuttal") at § 2.

²⁷³ Pre-filed Direct Testimony of Dr. Carrie Byron, University of New England ("Byron Direct") at § 2.

²⁷⁴ Byron Direct at § 2.

²⁷⁵ Byron Direct at § 2.

only removes larger, settleable solids but also will employ “state-of the-art microfiltration screening” of such a small size (0.02 – 0.04 micrometers) that bacteria will be removed.²⁷⁶

Nordic is also installing nitrification units similar to all other recirculating aquaculture systems in the world today, which transform toxic ammonia-nitrogen from fish wastes through bacterial action to the non-toxic nitrate-nitrogen.²⁷⁷ All other commercial recirculating aquaculture systems stop here and discharge nitrate.²⁷⁸ Nordic takes wastewater treatment a step beyond and will employ denitrification technology - a very expensive and “innovative water treatment”.²⁷⁹ Denitrification transforms nitrate to nitrogen gas, a harmless gaseous discharge.²⁸⁰ Nordic will remove approximately 85% of total nitrogen which exceeds nitrogen removal of any wastewater treatment system of its size in the State of Maine. Overall, Nordic plans to remove 99% of the solids, 99% of the biological oxygen demand, 99% of the chemical oxygen demand, and 99% of the phosphorus via its state of the art wastewater treatment technologies.²⁸¹ The temperature of the discharge is expected to be consistently between 15 and 18 degrees centigrade (59 to 64 degrees Fahrenheit) based on requirements to support healthy salmon growth.²⁸² Thermal impacts from the discharge are expected to be minimal.²⁸³

DMR praised the composition and characteristics of Nordic’s proposed discharge noting that the proposed treatment “far exceeds regulatory expectations for [pathogen] amplification prevention,”²⁸⁴ that “the equipment they chose is much more compatible with that utilized for

²⁷⁶ Byron Direct at § 3.

²⁷⁷ Byron Direct at § 3.

²⁷⁸ Byron Direct at § 3.

²⁷⁹ Byron Direct at § 3.

²⁸⁰ Byron Direct at § 3.

²⁸¹ Byron Direct at § 3.

²⁸² Pre-filed Rebuttal Testimony of Nathan Dill, Ransom Consulting, Inc. (“Dill Rebuttal”) at § 9.

²⁸³ Pre-filed Direct Testimony of Nathan Dill, Ransom Consulting Inc. (“Dill Direct”) at § 17.

²⁸⁴ David Russell and Marcy Nelson on behalf of the Maine Department of Marine Resources Memo Re Preliminary Review of Nordic Aquaculture’s Discharge as it Pertains to Pathogens, February 5, 2020 (“DMR Memo”) at pg. 4.

quarantine systems”²⁸⁵ and that “Nordic’s denitrification filtration step at 8% of the RAS flow does not appear necessary for maintaining acceptable levels of nitrate in their rearing units, but allows for maintenance of a higher level of water quality for better fish welfare or may be for the purposes of reducing nitrogen discharge, evidencing environmental stewardship.”²⁸⁶

B. Modeling of the Discharge Demonstrates Negligible Impact.

Although no state statute or regulation require modeling for the Project discharge, Nordic completed near and far field modeling.²⁸⁷

The near field modeling objective was identification of an appropriate location (or depth) for the outfall and to support outfall configuration which would maximize discharge dilution.²⁸⁸ Near field modeling considered alternative locations for the outfall with various water depths and alternative outfall configurations with either a single-port discharge pipe of different diameters, or a multi-port diffuser outfall.²⁸⁹ Near field modeling used the CORnell MIXing zone expert system model (CORMIX).²⁹⁰ CORMIX is an EPA-supported model that is a standard tool for regulatory mixing zone analysis for wastewater discharge permitting studies throughout the country.²⁹¹ Initial discharge mixing of the discharge is dependent on the physical conditions of the receiving waterbody.²⁹² Thus, near field modeling requires review of available literature for information describing the ambient conditions in upper Penobscot Bay.²⁹³ This included evaluation of stratification profiles representative of four distinct seasons and considered a slack

²⁸⁵ DMR Memo at pg. 4.

²⁸⁶ DMR Memo at pg. 7.

²⁸⁷ Dill Direct at § 2.

²⁸⁸ Dill Direct at § 3.

²⁸⁹ Dill Direct at § 3.

²⁹⁰ Dill Direct at § 4.

²⁹¹ Dill Direct at § 4.

²⁹² Dill Direct at § 5.

²⁹³ Dill Direct at § 5.

tide current speed of 0.05 meters per second and a mid-tide (ebb or flood) current speed of 0.2 meters per second.²⁹⁴

The near field model predicts that Bay conditions least conducive to dilution occur during Spring when strong ambient stratification reduces mixing during all phases of the tide.²⁹⁵ This minimum dilution, predicted at the height in the water column where the plume stops rising from buoyancy, is estimated to be 10.1 at slack tide and 15.0 at mid-tide.²⁹⁶ Thus, according to 06-096 CMR 530 4.A.(2)(a) the acute and chronic dilution factors should be 10.1 and 15.0, respectively.²⁹⁷

Nordic also evaluated far field dilution of the discharge.²⁹⁸ This approach was based upon a combination of two-dimensional hydrodynamic modeling of tidal circulation and dynamic particle tracking to simulate transport and dispersion of the discharge over many tidal cycles, and to evaluate long-term evolution of the discharge plume.²⁹⁹

The ADCIRC model Nordic used simulates time-varying two-dimensional depth-averaged current velocity fields.³⁰⁰ Current velocity output from ADCIRC was used to drive a Maureparticle simulation configured for a continuous release of particles distributed along the proposed diffuser location.³⁰¹ The continuous release consists of imaginary particles that represent many small parcels of effluent released one at a time randomly along the diffuser.³⁰² A two-dimensional time history of the dilution is then estimated by summing the volume of effluent particles within reasonably sized control volumes across the model grid at hourly time

²⁹⁴ Dill Direct at §§ 6, 7.

²⁹⁵ Dill Direct at § 9.

²⁹⁶ Dill Direct at § 9.

²⁹⁷ Dill Direct at § 9.

²⁹⁸ Dill Direct at § 10.

²⁹⁹ Dill Direct at § 12.

³⁰⁰ Dill Direct at § 15.

³⁰¹ Dill Direct at § 15.

³⁰² Dill Direct at § 15.

snapshots.³⁰³ After about one week of simulation of the continuous discharge, the dilution in the vicinity of the outfall reaches a quasi-steady state condition that shows how dilution patterns evolve throughout a typical tidal cycle.³⁰⁴

Results for far field dilution modeling estimate nitrogen concentrations and show that nitrogen will be diluted to concentrations that will not be detectable above background concentration at nearby sensitive receptors (e.g. mapped eelgrass beds).³⁰⁵

The observed ambient temperature range considered in the analysis ranges from 0 degrees centigrade (32 degrees Fahrenheit) to 22 degrees centigrade (72 degrees Fahrenheit).³⁰⁶ The temperature of the discharge is expected to be consistently between 15 and 18 degrees centigrade (59 to 64 degrees Fahrenheit) based on requirements to support healthy salmon growth.³⁰⁷ Thermal impacts from the discharge are expected to be minimal.³⁰⁸

Nordic also provided further discussion of potential impacts to near-bottom Dissolved Oxygen (DO) in light of recent near-bottom DO observations that are below SB water classification criteria.³⁰⁹ Positive buoyancy of the discharge, particularly during times of strong stratification when problematic near-bottom DO occurs, will limit interaction of the discharge with the bottom water such that the discharge is unlikely to exacerbate low near-bottom DO occurring under existing conditions.³¹⁰

Following discussions with the Department, Nordic conducted additional modeling work to develop a deeper understanding of how far-field dilution is related to the age of the discharged

³⁰³ Dill Direct at § 15.

³⁰⁴ Dill Direct at § 15.

³⁰⁵ Dill Direct at § 16.

³⁰⁶ Dill Rebuttal at § 9.

³⁰⁷ Dill Rebuttal at § 9.

³⁰⁸ Dill Direct at § 17.

³⁰⁹ Dill Direct at § 17.

³¹⁰ Dill Direct at § 17.

water.³¹¹ The far field analysis was used to develop supplemental information based on the amount of time that elapsed since each particle was released in the waterbody.³¹² The results of this analysis show a ring-shaped area that moves about the outfall location with the phase of the tide, but overall remains relatively close to the outfall location.³¹³ With respect to nitrogen concentrations, dilution at this level would be sufficient to prevent a measurable increase above background concentration.³¹⁴

In short, the near field modeling allowed Nordic to design and locate the discharge point such that impacts will be negligible and the far field modeling demonstrates the success of this placement and design by showing that the discharge is indistinguishable from background conditions within a short distance from the outfall.

C. Nordic's Discharge Will not Reduce the Water Quality Classification of Belfast Bay (Class SB).

Discharges to Class SB waters, may not cause adverse impact to estuarine and marine life in that the receiving waters must be of sufficient quality to support all estuarine and marine species indigenous to the receiving water without detrimental changes in the resident biological community.³¹⁵ There may be no new discharge to Class SB waters that would cause closure of open shellfish areas by the DMR.³¹⁶

The facility plans to discharge up to 7.7 million gallons per day into Belfast Bay once Project construction is complete.³¹⁷ Water quality will be maintained via constant filtration during use within the RAS system and through treatment at the wastewater treatment plant.³¹⁸

³¹¹ Dill Direct at § 18.

³¹² Dill Direct at § 18.

³¹³ Dill Direct at § 18.

³¹⁴ Dill Direct at § 18.

³¹⁵ 38 M.R.S. § 465-B(2)(C).

³¹⁶ 38 M.R.S. § 465-B(2)(C).

³¹⁷ Pre-filed Direct Testimony of Tyler Parent, Normandeau Associates, Inc. ("Parent Direct") at § 25.

³¹⁸ Parent Direct at § 26.

Normandeau evaluated Project impacts to the freshwater and marine environment.³¹⁹ Normandeau found that based on the testimony regarding effluent concentrations and dilution modeling, the Project discharge is not expected to have an adverse impact on finfish or shellfish.³²⁰ The exhaustive filtration regimen will reduce potential pollutants and the discharge design will maximize dilution.³²¹ Further, no commercial shellfisheries are expected to be negatively affected by the project because the proposed project area is located within an area which DMR classified as a prohibited shellfish growing area.³²²

DMR provided extensive comment on potential discharge impacts.³²³ DMR noted that:

the concern regarding pathogens in a farming situation is that the farmed stock could amplify background levels of enzootic pathogens to levels capable of harming native species in the vicinity of the farm effluent.³²⁴ Influent and effluent treatment equipment to prevent the introduction and subsequent amplification and release of select enzootic pathogens of concern at levels that would be above that which is naturally expected to be found in state waters is one means of addressing the concern.³²⁵ Nordic's plans of using a UV dose of 300 mJ/cm² and micron filtration down to 0.4 microns, has proposed a level of effluent treatment that "far exceeds regulatory expectations for amplification prevention."³²⁶ "Although equipment suited for mitigating the effects of amplification would have been satisfactory, Nordic Aquafarms has opted to use equipment that is much more compatible with that utilized for quarantine systems. Their proposed effluent UV dose is 10 times and their microfiltration is 200 times the minimum level expected for amplification prevention. The level of microfiltration by itself, and without use of UV, is suitable biocontainment for most bacterial pathogens and parasites of concern. The UV dose is enough to address all salmonid pathogens of significance associated with the project."³²⁷

Specifically as to the infections salmon anemia virus ("ISAV") concern, DMR will require evidence of freedom from ISAV for that which is to be imported prior to import and again post import, prior to any fish being transferred from Nordic's

³¹⁹ Parent Direct at § 3.

³²⁰ Parent Direct at § 28.

³²¹ Parent Direct at § 29.

³²² Parent Direct at § 21.

³²³ DMR Memo at pg. 3.

³²⁴ DMR Memo at pg. 3.

³²⁵ DMR Memo at pg. 4.

³²⁶ DMR Memo at pg. 4.

³²⁷ DMR Memo at pg. 4.

quarantine to the main production areas of the facility.³²⁸ Nordic's biocontainment plan to filter solids to the 0.4 micron level followed by a UV disinfection dose of 300 mJ/cm² is significantly over designed for biocontainment of amplified pathogens of concern.³²⁹ In fact, it is more stringent than that used by the USFWS Craig Brook National Fish Hatchery, which utilizes a 37 micron drum filter for solids filtration followed by a UV dose of 45 mJ/cm² on their effluent for the purposes of ISAV biocontainment.³³⁰

Import and quarantine controls of the State combined with Nordic Aquafarm's influent treatment plans, biosecurity plans, and effluent biocontainment infrastructure will result in a situation wherein the potential threats posed by the proposed project will be far less than that of current threats for aquatic animal pathogen introduction to State waters.³³¹ The potential for the introduction and release of pathogens will be closely regulated by Maine DMR's stringent requirements for import, quarantine, and post import testing.³³² This combined with treatment of influent water, use of batch culture for early rearing phases, segregation of production units, use of biosecurity measures including; restricted staff movements between modules, use of veterinary services, and use of vaccination for select pathogens are some of the means in which Nordic Aquafarms is highly likely to avoid major pathogen problems.³³³

DMR noted that Nordic's MEPDES permit conditions seem to be designed for a high level of operational flexibility which makes it much easier to maintain healthy rearing environments.³³⁴ Further, that Nordic's denitrification filtration step at 8% of the RAS flow does not appear necessary for maintaining acceptable levels of nitrate in their rearing units, but allows for maintenance of a higher level of water quality for better fish welfare or may be for the purposes of reducing nitrogen discharge, evidencing environmental stewardship.³³⁵

DMR concluded that the onsite seafood processing facility and associated effluent treatment plans are sufficient to prevent the release of pathogens of concern.³³⁶ If the fish to be processed are only sourced from Nordic's RAS facility to be built in Belfast Maine, "the biocontainment plans far exceed the need."³³⁷

³²⁸ DMR Memo at pg. 2.

³²⁹ DMR Memo at pg. 3.

³³⁰ DMR Memo at pg. 3.

³³¹ DMR Memo at pg. 5.

³³² DMR Memo at pg. 5.

³³³ DMR Memo at pg. 5.

³³⁴ DMR Memo at pg. 7.

³³⁵ DMR Memo at pg. 7.

³³⁶ DMR Memo at pg. 7.

³³⁷ DMR Memo at p. 7.

In short, Nordic’s discharge will not adversely impact the SB water quality classification of Belfast Bay and discharge impacts to water quality will be negligible.

IV. Nordic’s Air Emissions Comply with all Chapter 115 Air Emissions License Criteria.

The Department shall approve a Project whenever it finds that “the development will not adversely affect...air quality”.³³⁸

A. Emissions of Air Pollutants from Stationary Sources

The Project includes eight engines capable of generating 14 MW of electricity.³³⁹ Nordic proposed construction of eight 2 MW diesel fired electrical generating engines of which only seven engines may fire simultaneously under an annual fuel limit of 900,000 gallons.³⁴⁰ This fuel limit represents about 10% of the amount of fuel that could be burned if all the engines ran at 100% capacity continuously all year long.³⁴¹ The engines will operate intermittently (roughly a maximum of 10% of the year) to offset electricity supplied by Central Maine Power during peak local regional demand periods and in emergencies.³⁴²

Chapter 115 identifies which equipment must be included in an application for a minor new source and Nordic’s application adhered to Department requirements and identified and addressed this equipment.³⁴³ Accordingly, non-emitting equipment (such as electrical heaters), mobile sources, and construction activities were not included.³⁴⁴

However, a license granted in accordance with Chapter 115 (like the Draft Air License) includes the following standard condition: “The licensee shall establish and maintain a

³³⁸ 38 M.R.S. § 484(3); *see also* DEP Chp. 115 *et. seq.*

³³⁹ Whipple Direct at § 3.

³⁴⁰ Whipple Direct at § 8; Hearing Transcript Day 3 at 215:22-25 (Whipple).

³⁴¹ Whipple Direct at § 8.

³⁴² Whipple Direct at §§ 3, 8.

³⁴³ Whipple Direct at § 5.

³⁴⁴ Whipple Direct at § 5.

continuing program of best management practices for suppression of fugitive particulate matter during any period of construction, reconstruction, or operation which may result in fugitive dust, and shall submit a description of the program to the Department upon request.”³⁴⁵ This requirement will address miscellaneous construction and operation activities.³⁴⁶

B. Ambient Air Quality and Modeling

Nordic’s potential emissions are below the applicable modeling thresholds identified in Chapter 115.³⁴⁷ Accordingly modeling was not performed as part of the initial application.³⁴⁸ The Department, however, did two rounds of in- house air dispersion modeling.³⁴⁹ The Department’s air dispersion modeling inputs included Nordic’s proposed emission rates and stack parameters, actual surrounding terrain parameters, 5 years of real measured representative meteorological data, and building parameters.³⁵⁰ The Department extensively modeled coverage of the surrounding areas including receptors adjacent to the Project at a density of 20 meter spacing .³⁵¹ Notably, the Department modeling included numerous receptors in areas of potential public access adjacent to the Lower Reservoir.³⁵²

The Department’s model included multiple conservative assumptions that overpredict air emissions.³⁵³ For example, the model assumes seven engines running simultaneously at full capacity all year long.³⁵⁴ As indicated in the Draft Air License, however, Nordic will only run the engines intermittently, such as during high local regional electrical demand periods such as

³⁴⁵ Whipple Direct at § 6; Hearing Day 3 Transcript at 214:24-25, 215:1-7 (Whipple).

³⁴⁶ Whipple Direct at § 6; Hearing Day 3 Transcript at 215:7-9 (Whipple).

³⁴⁷ Whipple Direct at § 8; Hearing Day 3 Transcript at 216:17-20 (Whipple).

³⁴⁸ Whipple Direct at § 8; Hearing Day 3 Transcript at 216:17-20 (Whipple).

³⁴⁹ Whipple Direct at § 9; Hearing Day 3 Transcript at 216:23-25 (Whipple).

³⁵⁰ Whipple Direct at § 9; Hearing Day 3 Transcript at 217:1-5 (Whipple).

³⁵¹ Whipple Direct at § 10; Hearing Day 3 Transcript at 217:6-20 (Whipple).

³⁵² Whipple Direct at § 10; Hearing Day 3 Transcript at 217:12-14 (Whipple).

³⁵³ Whipple Direct at § 11; Hearing Day 3 Transcript at 218:10-25, 219:1-12 (Whipple).

³⁵⁴ Whipple Direct at § 11; Hearing Day 3 Transcript at 218:10-12 (Whipple).

for a few hours in the late afternoons in the summer when many households are running air conditioners.³⁵⁵ Further, with regard to the most notable short-term ambient air quality standard, 1-hr NO, the 1-hr standard is actually based on an average of many hours of operation and meteorological conditions.³⁵⁶ Because the engines will only intermittently operate the likelihood of seven engines operating during the worst-case meteorological conditions that resulted in the averages calculated by the model are extremely unlikely.³⁵⁷

Even utilizing these conservative, overpredictive assumptions, the Department model documented compliance with applicable Ambient Air Quality (AAQ) and Class II Increment Standards.³⁵⁸ Department modeling shows that Nordic's proposed engines meet the Class II Increment standards.³⁵⁹ Increment standards are much more restrictive than health based AAQs and demonstrate that a project located in an "attainment area" will not consume a permissible fraction of the available Ambient Air Quality Standard.³⁶⁰

While modeling was not required, the Department's extensive modeling conservatively demonstrates compliance with all AAQs and the more restrictive Class II Increment Standards.³⁶¹

C. Best Available Control Technology

The engines are classified as Non-Emergency Compression Ignition (CI) New Stationary Engines Located at Area Source of Hazardous Air Pollutants (HAP), constructed on or after June 12, 2006 and are subject to 40 CFR part 60, subpart IIII (Standards of Performance for Stationary

³⁵⁵ Whipple Direct at § 11; Hearing Day 3 Transcript at 218:12-21 (Whipple).

³⁵⁶ Whipple Direct at § 11; Hearing Day 3 Transcript at 218:22-25, 219:1-5 (Whipple).

³⁵⁷ Whipple Direct at § 11; Hearing Day 3 Transcript at 21:5-12 (Whipple).

³⁵⁸ Whipple Direct at § 11.

³⁵⁹ Whipple Direct at § 12.

³⁶⁰ Whipple Direct at § 12.

³⁶¹ Whipple Direct at §§ 11, 13.

Compression Ignition Internal Combustion Engines).³⁶² As such, Nordic's engines are required to meet the most stringent Tier 4 Control Technology Standards.³⁶³

Further, a Best Available Control Technology (BACT) Analysis was completed and identified the following controls for the primary pollutants:

1. For Nitrogen Oxides – Selective Catalytic Reduction
2. For Particulate Matter – Diesel Particulate Filter
3. For Carbon Monoxide and Volatile Organic Compounds – Diesel Oxidation Catalysts³⁶⁴

These controls are BACT.³⁶⁵ The Project is a minor new source of air emissions and proposes state of the art air emission controls.³⁶⁶ The project meets all applicable Clean Air Act requirements, including Chapter 115 licensing standards.

CONCLUSION

Nordic and the Department engaged in an extensive and lengthy iterative review process for the Applications. Nordic exhaustively researched the Project site, provided thousands of pages of careful documentation, and painstakingly explained Project design and technology choices. The Department similarly spent hundreds (if not thousands) of hours deliberately and exhaustively reviewing the Applications, identifying areas where additional detail would be useful or was required. The Board heard hours of testimony from the parties and the public. Sister agencies assessed and commented on the Project. Throughout, Nordic's commitment to environmental stewardship shone through in its willingness and leadership in selecting technologies, partners, and agreeing to conditions and Project changes for no reason other than to ensure the most innovative and least disruptive version of the Project.

³⁶² Whipple Direct at § 8.

³⁶³ Whipple Direct at § 8; Hearing Day 3 Transcript at 216:8-9 (Whipple).

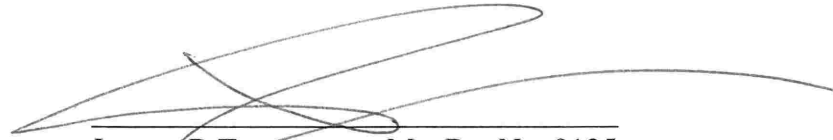
³⁶⁴ Whipple Direct at § 8; Hearing Day 3 Transcript at 216:9-16 (Whipple).

³⁶⁵ Whipple Direct at § 8.

³⁶⁶ Whipple Direct at § 13; Hearing Day 3 Transcript at 221:25, 222:1-4 (Whipple).

The Project meets and exceeds all applicable standards. The evidence supporting Board issuance of the Draft Approvals is overwhelming.

Dated: May 4, 2020

A large, stylized handwritten signature in black ink, appearing to be 'Joanna B. Tourangeau', written over a horizontal line.

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Departmental
Finding of Fact and Order
Air Emissions License
Initial License

PROPOSED FINDINGS OF FACT

After review of the air emission license application, staff investigation reports, and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 Maine Revised Statutes (M.R.S.) § 344 and § 590, the Maine Department of Environmental Protection (the Department) FINDS THE FOLLOWING FACTS:

I. REGISTRATION

A. Introduction

Nordic Aquafarms Inc (Nordic Aquafarms) applied for an Air Emissions License for the operation of emission sources associated with its land-based salmon aquaculture farm (NAICS Code: 112511).

The equipment addressed in this license is located at 295 Northport Ave. in Belfast, Maine.

B. Emission Equipment

The following equipment is addressed in this license:

Fuel Burning Equipment

<u>Equipment</u>	<u>Maximum Capacity (MMBtu/hr)</u>	<u>Maximum Output Capacity (KW)</u>	<u>Firing Rate (gal)</u>	<u>Fuel Type</u>	<u>Manufacture/Installation Date</u>
Electrical Generating Engines #1 - #8	19.91	2050	142.2	Distillate Fuel, 0.0015% Sulfur	2020/2020

Note: Nordic operates two 25,000 gallon distillate fuel oil storage tanks subject only to the record keeping requirements of NSPS Subpart Kb [40 CFR 60.116(b)].

C. Definitions

For the purposes of this license, *distillate fuel* means the following:

1. Fuel oil that complies with the specifications for fuel oil Numbers 1 or 2, as defined by the American Society for Testing and Materials (ASTM) in ASTM D396.
2. Diesel fuel oil numbers 1 or 2, as defined in ASTM D975;
3. Kerosene, as defined in ASTM D3699;
4. Biodiesel, as defined in ASTM D6751; or
5. Biodiesel blends, as defined in ASTM D7467.

D. Application Classification

A new source is considered a major source based on whether or not total licensed annual emissions exceed the “Significant Emission” levels as defined in the Department’s *Definitions Regulations*, 06-096 Code of Maine Rules (CMR) 100 (as amended).

Pollutant	Total Licensed Annual Emissions (TPY)	Significant Emissions Levels (TPY)
PM	0.5	100
PM ₁₀	1.0	100
SO ₂	0.1	100
NO _x	13.4	100
CO	51.0	100
VOC	2.8	50

The Department determined the facility is a minor source and the application has been processed through *Major and Minor Source Air Emission License Regulations*, 06-096 CMR 115 (as amended). With the annual operation limits on Engines #1-8 Nordic Aquafarms is licensed below the major source thresholds for both criteria and hazardous air pollutants (HAP) and is considered an area source of HAP.

II. BEST PRACTICAL TREATMENT (BPT)

A. Introduction

In order to receive a license, the applicant must control emissions from each unit to a level considered by the Department to represent Best Practical Treatment (BPT), as defined in *Definitions Regulation*, 06-096 C.M.R. 100. Separate control requirement categories exist for new and existing equipment as well as for those sources located in designated non-attainment areas.

BPT for new sources and modifications requires a demonstration that emissions are receiving Best Available Control Technology (BACT), as defined in 06-096 C.M.R. 100. BACT is a top-down approach to selecting air emission controls considering economic, environmental and energy impacts.

B. Project Description

Nordic Aquafarms operates Eight 2-MW reciprocating diesel engine sets. The power plant will be designed to generate 14 MWs of electricity using up to seven of the eight engines simultaneously. The eighth engine will be installed as a back-up. Distillate fuel usage will be limited to 900,000 gallons annually.

The electrical generating engines are part of a land-based salmon aquaculture farm on a 53-acre parcel located at 285 Northport Ave in Belfast, Maine. The facility is an end-to-end operation, from eggs to market size salmon, using Recirculation Aquaculture System (RAS) tank technology for maintaining optimal water quality for fish production. The plant is designed to produce up to 33,000 tons per year of salmon for consumers located in the Northeastern United States.

The RAS includes mechanically forced cleaning and degassing/aeration to replace carbon dioxide with oxygen vital for fish health and growth. The RAS module's water circulation, cleaning, degassing, and aeration systems require electricity to operate. Plant electrical needs will mainly be supplied by the local utility; however, Nordic Aquafarms will supplement this with a 14 MW reciprocating engine bank. No additional fuel burning equipment to be utilized for building or process heating. Licensable air emission units include Electrical Generator Engines #1 through #8.

The new non-emergency engines will burn ultra-low sulfur distillate fuel oil (15 ppm) and are subject to 40 C.F.R. 60 Subpart IIII. The engine sets each meet manufacturer mandated Tier 4 standards and are fitted with air pollution controls, which include Selective Catalytic Reduction, Oxidation Catalysts, and Particulate Filters.

C. Electrical Generating Engines #1 - #8

Nordic Aquafarms operates the electrical generating engines intermittently to offset electricity supplied by Central Maine Power during peak local regional demand periods or other occurrences to maintain critical equipment operation.

Equipment ID	Maximum Design Capacity	Electrical Generating Capacity	Fuel Type (Sulfur Content)	Control Equipment
	[MMBtu/hr]			
Electrical Generating Engines #1 - #8	19.91	2050 KW	Distillate Oil (15 ppm)	SCR, Oxidation Catalyst, & Particulate Filter

1. New Source Performance Standards (NSPS): 40 C.F.R. Part 60, Subpart IIII

Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, 40 CFR part 60, Subpart IIII is applicable to the engines listed above since the units were ordered after July 11, 2005, and manufactured after April 1, 2006. [40 C.F.R. § 60.4200]

By meeting the requirements of 40 C.F.R. part 60, Subpart IIII the units also meet the requirements found in the National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Compression Engines, 40 C.F.R. Part 63, Subpart ZZZZ [40 C.F.R. § 63.6590(c)]

Provided below is a summary of the currently applicable requirements of 40 CFR part 60, subpart IIII.

- a. **Manufacturer Certification Requirement**
The engines shall be certified by the manufacturer as meeting the emission standards for new nonroad compression ignition engines found in 40 C.F.R. § 60.4201. [40 C.F.R.4204(b)]
- b. **Ultra-Low Sulfur Fuel Requirement Fuel Requirements**
The diesel fuel fired in the Electrical Generator Engines #1 - #8 shall not exceed 15 ppm sulfur (0.0015%). Compliance with the fuel sulfur content limit shall be based on fuel records from the supplier documenting the type of fuel delivered and the sulfur content of the fuel. [40 C.F.R. §60.4207(b) and 06-096 C.M.R. ch. 115, BPT]
- c. **Monitoring Requirements**
The engines are equipped with diesel particulate filters necessary to comply with the emission standards in § 60.4204 and must be fitted with backpressure monitors that notifies the owner or operator when the high backpressure limit of the engines are approached. [40 C.F.R.§ 60.4209(b)]
- d. **Operation and Maintenance Requirements**
The engines shall be operated and maintained according to the manufacturer’s emission-related written instructions or procedures

developed by Nordic Aquafarms that are approved by the engine manufacturer. Nordic Aquafarms may only change those emission-related settings that are permitted by the manufacturer. [40 C.F.R. § 60.4211(a)]

- e. NSPS Subpart III Reporting and Recordkeeping
 - (1) No initial notification is required for certified non-emergency stationary engines less than or equal to 3,000 HP. [40 C.F.R. § 60.4214(a)]
 - (2) Because Nordic Aquafarm's engines are equipped with a diesel particulate filters, it must keep records of any corrective action taken after the backpressure monitor has notified the owner or operator that the high backpressure limit of the engine is approached. [40 C.F.R. § 60.4214(c)]

3. BACT Findings

Potentially applicable emission control technologies were evaluated as identified by reviewing technical literature, control equipment vendor information, and regional and federal permit/license findings. The air pollution control options available for generators of this size include the installation of add-on pollution control devices, the use of clean fuels, and good combustion practices.

The non-emergency engines proposed for Nordic Aquafarms are subject to 40 C.F.R. 60 Subpart III. New non-emergency engines must meet emission standards which require pollution controls to meet applicable NO_x, PM, CO, and VOC emission manufacturing standards. Fuel sulfur content rules require the use of 15 ppm sulfur fuel, thereby almost eliminating SO₂ emissions. Provided in the following paragraphs is a description of the top-level pollution control selected (essentially mandated by rule) for each pollutant.

a. PM/PM₁₀/PM_{2.5}

PM from fuel combustion is formed from non-combustible material in the fuel and from incomplete combustion. Potential control technologies for PM emissions from diesel engines include: 1. Add-on control (i.e., filter); and 2. good combustion practices.

Nordic Aquafarms selected a Diesel Particulate Filter (DPF) to control PM/PM₁₀/PM_{2.5} emissions from each of the engine sets. A DPF traps particulate matter that's carried in the exhaust stream, preventing it from being released into the atmosphere. Inside the DPF, particulate matter, sometimes referred to as "soot," is trapped until it is oxidized during regeneration.

The Department determined that BACT for PM/PM₁₀/PM_{2.5} emissions from each engine is the application of the DPF with an emission limit of 0.2 lb/hr

for PM and 0.3 lb/hr for PM₁₀ and PM_{2.5}. PM₁₀ and PM_{2.5} include condensable and filterable PM.

The BACT limits above are determined to be more stringent than the particulate matter limits found in *Fuel Burning Equipment Particulate Emission Standard* 06-096 C.M.R. 103 and are therefore the only PM/PM₁₀/PM_{2.5} standards contained in this license.

b. Sulfur Dioxide

Sulfur dioxide (SO₂) is formed from sulfur contained in the fuel used during combustion. The quantity of SO₂ released is entirely dependent upon the sulfur content of the fuel and is independent of the engine size or design. The SO₂ emissions associated with the Nordic Aquafarm's engines are incidental as there are only trace amounts of sulfur contained in the ultra-low sulfur distillate oil which combines with oxygen in the combustion process and exhausts through the stack. Additional sulfur controls are not justified for this project.

The Department determined that BACT for SO₂ emissions from the engines will be the use of ultra-low sulfur diesel (ULSD) with a sulfur content less than or equal to 15 ppm. Burning ULSD fuel combined with an emission limit of 0.03 lb/hr for each engine represents BACT.

c. Nitrogen Oxides

NO_x emissions may be created through the conversion and release of nitrogen bound in the fuel (i.e., Fuel NO_x) and/or by the thermal combustion process (i.e. Thermal NO_x).

Fuel NO_x is produced from the reaction of fuel-bound nitrogen compounds with oxygen and is typically in very small quantities in clean diesel fuel. Low nitrogen content diesel releases minimal fuel NO_x and is not a focus of controls as compared to thermal NO_x.

Thermal NO_x is the primary mechanism of NO_x formation from diesel fuel oil combustion. Thermal NO_x arises from reaction of nitrogen (N₂) and oxygen (O₂) molecules in the combustion of air and is formed at elevated temperatures and pressures and increases with combustion temperature.

Control technologies for NO_x emissions from diesel fired engines may include: 1. add-on controls such as Selective Catalytic Reduction (SCR); 2. combustion control techniques (i.e., injection timing retard, air/fuel ratio optimization, cooled intake air); and 3. combustion of clean fuels.

Nordic Aquafarms selected non-emergency engines that comply with EPA's Tier 4 emission standards for 40 CFR Part 60 N.S.P.S. Subpart III Engines. Each engine is fitted with a SCR catalyst, Ammonia Oxidation Catalyst (AMOX) and the Pump Electronics Tank Unit (PETU). These systems use a small amount of Diesel Exhaust Fluid (DEF) to convert NOx emissions in the exhaust into nitrogen and water. DEF is a solution of urea dissolved in deionized water to produce a concentration that is about 1/3 urea and 2/3 water.

In order to ensure sufficient NOx reduction, a small amount of excess DEF is injected into the exhaust stream. This excess DEF may pass through the SCR catalyst as ammonia. To prevent excess ammonia from entering the atmosphere, the exhaust gas flows through an Ammonia Oxidation Catalyst where the ammonia reacts with oxygen in the presence of this catalyst to form nitrogen and water.

The Department determined that BACT for NOx will be the application of SCR, AMOX, and DEF and each engine will meet a limit of 4.2 lb NOx/hr.

d. Carbon Monoxide

Carbon monoxide (CO) is a colorless, odorless, relatively inert gas formed as an intermediate product of combustion. CO emissions result when there is insufficient residence time or if there is insufficient oxygen available during combustion to complete the final step in hydrocarbon oxidation. In addition, combustion modifications taken to reduce NO_x emissions may result in increased CO emissions.

Potential control technologies for CO emissions from diesel fired engines include: 1. Add-on controls such as Catalytic Oxidation; and 2. Combustion Control Techniques (i.e., fuel injection timing, air to fuel ratios, cooled intake air, etc.).

Nordic Aquafarms selected a Tier 4 compliant non-emergency engines which use start-of-the-art Diesel Oxidation Catalysts (DOC). The DOC is the top level of control available and uses a chemical process to reduce hydrocarbons and carbon monoxide in the exhaust stream.

The Department determined that BACT for each engine is the application of the DOC control technology and a limit of 16.1 lb CO/hr.

e. Volatile Organic Compounds

Volatile organic compounds (VOCs) are generated in an internal combustion engine as a result of incomplete combustion. Quantities of

VOCs emitted are dependent on operating parameters such as temperature, residence time, and oxygen content.

Potential control technologies for VOC emissions from diesel fired engines include: 1. Add-on controls such as Catalytic Oxidation; and 2. Combustion Control Techniques (i.e., fuel injection timing, air to fuel ratios, cooled intake air, etc.).

Nordic Aquafarms selected a Tier 4 compliant non-emergency engines which use start-of-the-art Diesel Oxidation Catalysts (DOC). The DOC is the top level of control available and uses a chemical process to reduce hydrocarbons and VOC in the exhaust stream.

The Department determined that BACT for each engine is the application of the DOC control technology and a limit of 0.9 lb VOC/hr.

D. Annual Emissions

Nordic Aquafarms shall be restricted to the following annual emissions, based on a 12-month rolling total. The tons per year limits were calculated based on a total annual fuel limit of 900,000 gallons for the Electrical Generating Engines #1 - #8.

Total Licensed Annual Emissions for the Facility
Tons/year
(used to calculate the annual license fee)

	<u>PM</u>	<u>PM₁₀</u>	<u>SO₂</u>	<u>NO_x</u>	<u>CO</u>	<u>VOC</u>
Generators #1 - #8	0.5	1.0	0.1	13.4	51.0	2.8
Total TPY	0.5	1.0	0.1	13.4	51.0	2.8

III. AMBIENT AIR QUALITY ANALYSIS

A. Overview

The dispersion modeling analysis was performed to determine whether emissions from the operation of Nordic's fuel-burning equipment would cause or contribute to violations of National Ambient Air Quality Standards (NAAQS) for SO₂, PM₁₀, PM_{2.5}, NO₂ or CO or to Class II increment standards for SO₂, PM₁₀, PM_{2.5} or NO₂.

B. Model Inputs

The AERMOD-PRIME refined dispersion model was used to address NAAQS and increment impacts. The modeling analysis accounted for the potential of building

wake and cavity effects on emissions from all modeled stacks that are below their calculated formula Good Engineering Practice (GEP) stack heights.

A valid five-year hourly meteorological database was used in the AERMOD modeling analysis. The monitored parameters and their associated heights, as found in the below table were collected at the Verso Bucksport meteorological multi-level monitoring site during the five-year period January 1, 1988 to December 31, 1992.

TABLE III-1 : Meteorological Parameters and Collection Heights

Parameter	Sensor Height
Wind Speed	10 & 100 meters
Wind Direction	10 & 100 meters
Standard Deviation of Wind Direction (Sigma Θ)	10 & 100 meters
Temperature	10 & 100 meters

Surface data collected at the Bangor National Weather Service (NWS) site were substituted for any missing data in the primary surface dataset. All other missing data were interpolated or coded as missing, per USEPA guidance. In addition, hourly Bangor NWS data, from the same time period, were also used to supplement the primary surface dataset for the required variables that were not explicitly collected at the Verso Bucksport monitoring site.

The surface data was combined with concurrent hourly cloud cover and upper-air data obtained from the Portland NWS. Missing cloud cover and/or upper-air data values were interpolated or coded as missing, per USEPA guidance. Both the surface and upper-air meteorological data were concurrently processed using the AERMET meteorological pre-processor. AERMET also requires that site-specific surface characteristics around the meteorological and application sites be evaluated. Accordingly, the site surface characteristics values for albedo (r), surface roughness (z_0) and Bowen Ratio (B_0) were calculated using USEPA's AERSURFACE program for each of the twelve 30-degree sectors.

Per USEPA guidance, surface roughness values were calculated within a one-kilometer radius of the monitoring site, while values of albedo and Bowen ratio were developed over a 10 x 10 kilometer region, centered over the monitoring site. The seasonal categories for AERSURFACE were assigned in accordance with DEP modeling guidance.

Point-source parameters used in the modeling for Nordic Aquafarms are listed in Table III-2.

TABLE III-2 : Point Source Stack Parameters

Stack	Stack Base Elevation (m)	Stack Height (m)	GEP Stack Height	Stack Diameter (m)	UTM Easting NAD83	UTM Northing NAD83
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			(m)		(m)	(m)
PROPOSED						
Engine Stack #1	18.28	20.57	34.29	0.41	500542	4915990
Engine Stack #2	18.28	20.57	34.29	0.41	500541	4915990
Engine Stack #3	18.28	20.57	34.29	0.41	500545	4915990
Engine Stack #4	18.28	20.57	34.29	0.41	500545	4915991
Engine Stack #5	18.28	20.57	34.29	0.41	500548	4915992
Engine Stack #6	18.28	20.57	34.29	0.41	500548	4915993
Engine Stack #7	18.28	20.57	34.29	0.41	500551	4915993
Engine Stack #8	18.28	20.57	34.29	0.41	500551	4915994

Emission parameters for Nordic Aquafarms for NAAQS and Class II increment modeling are listed in Table III-3. Emission parameters for Nordic Aquafarms are based on the maximum license allowed operating configuration.

For the purpose of determining maximum predicted impacts, the following assumptions were used:

- NO_x emissions were conservatively assumed to convert to NO₂ using USEPA’s Tier II Ambient Ratio Method (ARM2) minimum and maximum ratios of 0.5 and 0.9, respectively.
- all particulate emissions were conservatively assumed to convert to PM₁₀ and PM_{2.5}.

TABLE III-3 : Stack Emission Parameters

Stack	Averaging Periods	SO ₂ (g/s)	PM ₁₀ /PM _{2.5} (g/s)	NO _x (g/s)	CO (g/s)	Stack Temp (K)	Stack Velocity (m/s)
MAXIMUM LICENSE ALLOWED							
Stacks #1 - #8	All	0.004	0.038	0.53	2.03	752.04	60.64

C. Single Source Modeling Impacts

Refined modeling was performed for the maximum case operating scenario that represented seven engines operating at 100% capacity. Nordic’s air license application states: “Nordic Aquafarms is planning to install eight 2-MegaWatt (MW) diesel engine sets. The power plant will be designed to generate 14 MWs of electricity using seven of the eight engines. The eighth engine will be designed as a back-up.” Therefore, the AERMOD analysis was set up to estimate impacts associated with the simultaneous operation of seven engines. The seven engines were conservatively modeled at their maximum design heat input rate for 8,760 hours per year.

The AERMOD-PRIME model results for Nordic Aquafarms shown in Table III-4. The maximum predicted AERMOD impacts, which were explicitly normalized to

the form of their respective NAAQS, were added with the conservative rural background values to obtain a final maximum concentration to compare against the NAAQS, as shown in Table III-4.

TABLE III-4 : Maximum Combined Source Impacts ($\mu\text{g}/\text{m}^3$)

Pollutant	Averaging Period	Max Impact ($\mu\text{g}/\text{m}^3$)	Receptor UTM E (m)	Receptor UTM N (m)	Receptor Elevation (m)	Back-Ground ($\mu\text{g}/\text{m}^3$)	Total Impact ($\mu\text{g}/\text{m}^3$)	NAAQS ($\mu\text{g}/\text{m}^3$)
SO ₂	1-hour	1.59	500550	4915830	15.55	15	16.59	196
	3-hour	1.33	500550	4915830	15.55	2	3.33	1,300
PM ₁₀	24-hour	4.27	500550	4915850	14.24	15	19.27	150
	Annual	0.60	500630	4915850	15.61	6	6.60	50
PM _{2.5}	24-hour	4.27	500550	4915850	14.24	15	19.27	35
	Annual	0.60	500630	4915850	15.61	6	6.60	12
NO ₂	1-hour	120.62	500550	4915830	15.55	39	159.62	188
	Annual	7.36	500630	4915870	15.61	4	11.36	100
CO	1-hour	963.42	500550	4915850	14.24	460	1,423.42	40,000
	8-hour	512.53	500550	4915850	14.24	460	972.53	10,000

Because all pollutant/averaging period impacts meet NAAQS, no further NAAQS modeling analyses need to be performed.

D. Class II Increment

The AERMOD-PRIME refined model was used to predict maximum Class II increment impacts.

Results of the Class II increment analysis are shown in Table III-5. All modeled maximum increment impacts were below all increment standards. Because all predicted increment impacts meet increment standards, no additional Class II SO₂, PM₁₀, PM_{2.5} and NO₂ increment modeling needed to be performed.

TABLE III-5 : Class II Increment Consumption

Pollutant	Averaging Period	Max Impact ($\mu\text{g}/\text{m}^3$)	Receptor UTM E (km)	Receptor UTM N (km)	Receptor Elevation (m)	Class II Increment ($\mu\text{g}/\text{m}^3$)
SO ₂	3-hour	1.33	500,550	4.914.830	15.55	512
	24-hour	1.20	500,570	4.914.810	14.71	91
	Annual	0.06	500,630	4.914.870	15.61	20
PM ₁₀	24-hour	4.27	500,550	4.914.850	14.24	30
	Annual	0.60	500,630	4.914.870	15.61	17
PM _{2.5}	24-hour	8.46	500,550	4.914.850	14.24	9
	Annual	0.60	500,630	4.914.870	15.61	4
NO ₂	Annual	7.36	500,630	4.914.870	15.61	25

E. Summary

In summary, Nordic Aquafarms demonstrated that the source, in its proposed configuration will not cause or contribute to a violation of any SO₂, PM₁₀, PM_{2.5}, NO₂ or CO ambient air quality standards or to Class II increments for SO₂, PM₁₀, PM_{2.5} or NO₂.

ORDER

Based on the above Findings and subject to conditions listed below, the Department concludes that the emissions from this source:

- will receive Best Practical Treatment,
- will not violate applicable emission standards,
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants New Source Review License A-1146-71-A-N subject to the following conditions.

Severability. The invalidity or unenforceability of any provision of this License or part thereof shall not affect the remainder of the provision or any other provisions. This License shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

STANDARD CONDITIONS

- (1) Employees and authorized representatives of the Department shall be allowed access to the licensee's premises during business hours, or any time during which any emissions units are in operation, and at such other times as the Department deems necessary for the purpose of performing tests, collecting samples, conducting inspections, or examining and copying records relating to emissions (reference Title 38 MRSA §347-C).
- (2) The licensee shall acquire a new or amended air emission license prior to beginning actual construction of a modification, unless specifically provided for in Chapter 115. [06-096 CMR 115]
- (3) Approval to construct shall become invalid if the source has not commenced construction within eighteen (18) months after receipt of such approval or if construction is discontinued for a period of eighteen (18) months or more. The Department may extend this time period upon a satisfactory showing that an extension is justified, but may condition such extension upon a review of either the control technology analysis or the ambient air quality standards analysis, or both. [06-096 CMR 115]

- (4) The licensee shall establish and maintain a continuing program of best management practices for suppression of fugitive particulate matter during any period of construction, reconstruction, or operation which may result in fugitive dust, and shall submit a description of the program to the Department upon request. [06-096 CMR 115]
- (5) The licensee shall pay the annual air emission license fee to the Department, calculated pursuant to Title 38 MRSA § 353-A. [06-096 CMR 115]
- (6) The license does not convey any property rights of any sort, or any exclusive privilege. [06-096 CMR 115]
- (7) The licensee shall maintain and operate all emission units, air pollution control and monitoring systems required by the air emission license in a manner consistent with good air pollution control practice for minimizing emissions. [06-096 CMR 115]
- (8) The licensee shall maintain sufficient records to accurately document compliance with emission standards and license conditions and shall maintain such records for a minimum of six (6) years. The records shall be submitted to the Department upon written request. [06-096 CMR 115]
- (9) The licensee shall comply with all terms and conditions of the air emission license. The filing of an appeal by the licensee, the notification of planned changes or anticipated noncompliance by the licensee, or the filing of an application by the licensee for the renewal of a license or amendment shall not stay any condition of the license. [06-096 CMR 115]
- (10) The licensee may not use as a defense in an enforcement action that the disruption, cessation, or reduction of licensed operations would have been necessary in order to maintain compliance with the conditions of the air emission license. [06-096 CMR 115]
- (11) In accordance with the Department's air emission compliance test protocol and 40 CFR Part 60 or other method approved or required by the Department, the licensee shall:
 - A. perform stack testing to demonstrate compliance with the applicable emission standards under circumstances representative of the facility's normal process and operating conditions:
 1. within sixty (60) calendar days of receipt of a notification to test from the Department or EPA, if visible emissions, equipment operating parameters, staff inspection, air monitoring or other cause indicate to the Department that equipment may be operating out of compliance with emission standards or license conditions; or
 2. pursuant to any other requirement of this license to perform stack testing.
 - B. install or make provisions to install test ports that meet the criteria of 40 CFR Part 60, Appendix A, and test platforms, if necessary, and other accommodations necessary to allow emission testing; and

- C. submit a written report to the Department within thirty (30) days from date of test completion.
- (12) If the results of a stack test performed under circumstances representative of the facility's normal process and operating conditions indicate emissions in excess of the applicable standards, then:
- A. Within thirty (30) days following receipt of the written test report by the Department, or another alternative timeframe approved by the Department, the licensee shall re-test the non-complying emission source under circumstances representative of the facility's normal process and operating conditions and in accordance with the Department's air emission compliance test protocol and 40 CFR Part 60 or other method approved or required by the Department;
 - B. The days of violation shall be presumed to include the date of stack test and each and every day of operation thereafter until compliance is demonstrated under normal and representative process and operating conditions, except to the extent that the facility can prove to the satisfaction of the Department that there were intervening days during which no violation occurred or that the violation was not continuing in nature; and
 - C. The licensee may, upon the approval of the Department following the successful demonstration of compliance at alternative load conditions, operate under such alternative load conditions on an interim basis prior to a demonstration of compliance under normal and representative process and operating conditions.
- (13) Notwithstanding any other provision in the State Implementation Plan approved by the EPA or Section 114(a) of the CAA, any credible evidence may be used for the purpose of establishing whether a person has violated or is in violation of any statute, regulation, or license requirement. [06-096 CMR 115]
- (14) The licensee shall maintain records of malfunctions, failures, downtime, and any other similar change in operation of air pollution control systems or the emissions unit itself that would affect emissions and that is not consistent with the terms and conditions of the air emission license. The licensee shall notify the Department within two (2) days or the next state working day, whichever is later, of such occasions where such changes result in an increase of emissions. The licensee shall report all excess emissions in the units of the applicable emission limitation. [06-096 CMR 115]
- (15) Upon written request of the Department, the licensee shall establish and maintain such records, make such reports, install, use and maintain such monitoring equipment, sample such emissions (in accordance with such methods, at such locations, at such intervals, and in such manner as the Department shall prescribe), and provide other information as the Department may reasonably require to determine the licensee's compliance status. [06-096 CMR 115]

- (16) The licensee shall notify the Department within 48 hours and submit a report to the Department on a quarterly basis if a malfunction or breakdown in any component causes a violation of any emission standard (reference Title 38 MRSA §605-C). [06-096 CMR 115]

SPECIFIC CONDITIONS

(17) **Electric Generating Engines #1 - #8**

- A. Electric Generating Engines #1 - #8 shall combust distillate fuel only with a sulfur content of 15 ppm or less. [06-096 C.M.R. 115, BACT]
- B. The facility shall be limited to using no more than 900,000 gallons per year of distillate fuel oil based on a rolling 12-month total.
- C. Nordic Aquafarms shall only operate a maximum of seven of the eight engines simultaneously.
- D. Emissions shall not exceed the following [06-096 C.M.R. 115, BPT]:

Emission Unit	PM (lb/hr)	*PM₁₀ (lb/hr)	*PM_{2.5} (lb/hr)	SO₂ (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Electric Generating Engines #1 - #8	0.2	0.3	0.3	0.03	4.2	16.1	0.9

* filterable and condensable

- E. Engines #1 - #8 shall exhaust through stacks which shall have a minimum height of 67.5-feet above ground level. [06-096 C.M.R. 115, BACT]
- F. Visible emissions shall not exceed an opacity of 20 percent on a six (6) minute block average basis, except for no more than two (2) six (6) minute block averages in a 3-hour period.
- G. New Source Performance Standards (NSPS) Part 60, Subpart IIII for Electrical Generating Engines #1 - #8: [06-096 C.M.R. 115, BACT]
 - 1. Manufacturer Certification Requirement
The engines shall be certified by the manufacturer as meeting the emission standards for new nonroad compression ignition engines found in 40 C.F.R. § 60.4201. [40 C.F.R.4204(b)]
 - 2. Ultra-Low Sulfur Fuel Requirement Fuel Requirements
The diesel fuel fired in the Electrical Generator Engines #1 - #8 shall not exceed 15 ppm sulfur (0.0015%). Compliance with the fuel sulfur content limit shall be based on fuel records from the supplier documenting the type of fuel delivered and the sulfur content of the fuel. [40 C.F.R. §60.4207(b) and 06-096 C.M.R. 115, BPT]
 - 3. Monitoring Requirements

The engines are equipped with diesel particulate filters necessary to comply with the emission standards in § 60.4204 and must be fitted with a backpressure monitor that notifies the owner or operator when the high backpressure limit of the engine is approached. [40 C.F.R. § 60.4209(b)]

4. Operation and Maintenance Requirements

The engines shall be operated and maintained according to the manufacturer's emission-related written instructions or procedures developed by Nordic Aquafarms that are approved by the engine manufacturer. Nordic Aquafarms may only change those emission-related settings that are permitted by the manufacturer. [40 C.F.R. § 60.4211(a)]

5. NSPS Subpart III Reporting and Recordkeeping

Because Nordic Aquafarm's engines are equipped with a diesel particulate filters, it must keep records of any corrective action taken after the backpressure monitor has notified the owner or operator that the high backpressure limit of the engine is approached. [40 C.F.R. § 60.4214(c)]

18. Nordic Aquafarms shall keep readily accessible records showing the dimension of its two distillate fuel storage vessels and an analysis showing the capacity of the storage vessels. These records shall be kept for the life of the source. [40 CFR Part 60.116b(b)]

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PROPOSED FINDINGS OF FACT

In compliance with the applicable provisions of *Pollution Control*, 38 M.R.S. §§ 411 – 424-B, *Water Classification Program*, 38 M.R.S. §§ 464 – 470 and *Federal Water Pollution Control Act*, Title 33 U.S.C. § 1251, and applicable rules of the Department of Environmental Protection (the “Department”), the Board of Environmental Protection considered the application of Nordic Aquafarms Inc. (“Nordic” or the “Permittee”), for a new combination Maine Pollutant Discharge Elimination System (“MEPDES”) permit/Maine Waste Discharge License (“WDL” or, together, the “Permit”) with its supportive data, agency review comments, public comments and other related materials on file and FINDS THE FOLLOWING FACTS:

APPLICATION SUMMARY

On October 19, 2018, Nordic submitted an application to the Department for a new MEPDES permit/WDL for the monthly average discharge of 7.7 million gallons per day (MGD) of treated wastewater associated with a land based recirculating aquaculture system (RAS) to Belfast Bay, Class SB, in Belfast, Maine. On June 20, 2019, the Board voted to assume jurisdiction over the Permit. On February 11-14, 2020, the Board held hearings regarding the Permit.

The permittee proposes to rear Atlantic salmon from the egg life stage to market size fish weighing 10-12 pounds. At full production, the facility will be able to produce 30,000 metric tons or 66 million pounds of fish per year. The permittee proposes to construct a fish processing facility (head-on, gutted) on-site.

Nordic proposes to construct the facility in two phases. Phase I will consist of infrastructure connection to the site, earth moving and construction of the smolt facility and the waste water treatment system which is estimated to take 12-15 months. Phase II will consist of constructing the grow-out modules and the processing facility and will following the completion of Phase I construction which is expected to take another 12 months.

PERMIT SUMMARY

This permitting action is establishing:

1. Technology based numeric limitations for flow, biochemical oxygen demand (BOD), total suspended solids (TSS), total nitrogen and pH;

2. A requirement to seasonally (May – October) monitor the effluent for total phosphorus and total ammonia.
3. A requirement for the permittee to conduct a dye study to determine the mixing characteristics of the treated effluent discharge from the facility with the receiving water;
4. A requirement to conduct seasonal (May – October) ambient water quality monitoring of Belfast Bay;
5. A requirement for the facility to develop and maintain an Operations & Maintenance (O&M) Plan for the production facility and the wastewater treatment facility;
6. A requirement to limit the use of antibiotics, fungicides, bactericides, paracitocides and other chemical compounds;
7. A requirement for the facility to develop and maintain a Containment Management System (CMS) to prevent escape of fish from the facility; and
8. A requirement for the permittee to meet with the Department's permitting and compliance inspection staff 90 days prior to commencement of operations, to review applicability of the permit limitations, monitoring requirements and reporting requirements.

CONCLUSIONS

BASED on the findings in the attached and incorporated Fact Sheet dated July, 2002, and subject to the Conditions listed below, the Department makes the following CONCLUSIONS:

1. The discharge, either by itself or in combination with other discharges, will not lower the quality of any classified body of water below such classification.
2. The discharge, either by itself or in combination with other discharges, will not lower the quality of any unclassified body of water below the classification which the Department expects to adopt in accordance with State law.
3. The provisions of the State's antidegradation policy, *Classification of Maine Waters*, 38 M.R.S. § 464(4)(F), will be met, in that:

- (a) Existing in-stream water uses and the level of water quality necessary to protect and maintain those existing uses will be maintained and protected;
 - (b) Where high quality waters of the State constitute an outstanding national resource, that water quality will be maintained and protected;
 - (c) Where the standards of classification of the receiving waterbody are not met, the discharge will not cause or contribute to the failure of the waterbody to meet the standards of classification;
 - (d) Where the actual quality of any classified receiving waterbody exceeds the minimum standards of the next highest classification that higher water quality will be maintained and protected; and
 - (e) The discharge will not result in lowering the existing water quality of any waterbody, and the Department has made the finding, following public hearing, that this action is necessary to achieve important economic or social benefits to the State.
4. The discharge will be subject to effluent limitations that require application of best practicable treatment as defined in 38 M.R.S. § 414-A(1)(D).

ACTION

THEREFORE, the Department _____ the application of Nordic Aquafarms Inc. to discharge a monthly average flow of 7.7 MGD of treated wastewater associated with a land based RAS to Belfast Bay, Class SB in Belfast, Maine, subject to the attached conditions and all applicable standards and regulations:

1. *“Maine Pollutant Discharge Elimination System Permit Standard Conditions Applicable to All Permits,”* revised July 1, 2002, copy attached.
2. The attached Special Conditions, including any effluent limitations and monitoring requirements.
3. This permit becomes effective upon the date of signature below and expires at midnight five (5) years after that date. If a renewal application is timely submitted and accepted as complete for processing prior to the expiration of this permit, the terms and conditions of

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this permit and all subsequent modifications and minor revisions thereto remain in effect until a final Department decision on the renewal application becomes effective. [*Maine Administrative Procedure Act*, 5 M.R.S. § 10002 and *Rules Concerning the Processing of Applications and Other Administrative Matters*, 06-096 CMR 2(21)(A) (last amended June 9, 2018)].

SPECIAL CONDITIONS

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

- The permittee is authorized to discharge treated **waste water associated with a land based RAS from Outfall #001A** to Belfast Bay. Such discharges are limited and must be monitored by the permittee as specified below⁽¹⁾:

Effluent Characteristic					Minimum Monitoring Requirements	
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Measurement Frequency	Sample Type
Flow [50050]	7.7 MGD [03]	---	---	---	Continuous [99/99]	Meter [MR]
Biochemical Oxygen Demand ⁽⁵⁾ (BOD ₅) [00310]	1,926 lbs./day [26]	3,210 lbs./day [26]	30 mg/L [19]	50 mg/L [19]	3/Week [03/07]	Composite ⁽²⁾ [24]
Total Suspended Solids(TSS) ⁽⁵⁾ [00530]	1,926 lbs./day [26]	3,210 lbs./day [26]	30 mg/L [19]	50 mg/L [19]	3/Week [03/07]	Composite ⁽²⁾ [24]
Total Kjeldahl Nitrogen (as N) [00625] (May – Oct)	Report lbs/day _[26]	Report lbs/day _[26]	Report mg/L _[19]	Report mg/L _[19]	1/Week [01/07]	Composite ⁽²⁾ [24]
Nitrate + Nitrite Nitrogen (as N) [00630] (May – Oct)	Report lbs/day _[26]	Report lbs/day _[26]	Report mg/L _[19]	Report mg/L _[19]	1/Week [01/07]	Composite ⁽²⁾ [24]
Total Nitrogen (as N) ^(3,5) [00600] (May – Oct)	1,481 lbs/day _[26]	Report lbs/day _[26]	Report mg/L _[19]	Report mg/L _[19]	1/Week [01/07]	Composite ⁽²⁾ [24]

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Fish on Hand [45604]	---	Report Metric Tons [41]	---	---	1/Month [01/30]	Calculated [CA]
Total Phosphorus ⁽⁴⁾ [00665] (May – Oct)	Report lbs/day [26]	Report lbs/day [26]	Report mg/L [19]	Report mg/L [19]	1/Week [01/07]	Composite ⁽²⁾ [24]
Total Ammonia [00610] (May – Oct)	Report lbs/day [26]	Report lbs/day [26]	Report mg/L [19]	Report mg/L [19]	1/Week [01/07]	Grab [GR]
pH (Std. Units) [00400]	---	---	---	6.0-9.0 [12]	3/Week [03/07]	Grab [GR]

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SPECIAL CONDITIONS

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (cont'd)

Footnotes

1. **Sampling** – All effluent monitoring must be conducted following the last treatment unit prior to discharging to the receiving water. All monitoring must be conducted so as to be representative of end-of-pipe effluent characteristics. Any change in sampling location must be approved by the Department in writing. The permittee must conduct sampling and analysis in accordance with; a) methods approved by 40 Code of Federal Regulations (CFR) Part 136, b) alternative methods approved by the Department in accordance with the procedures in 40 CFR Part 136, or c) as otherwise specified by the Department. Samples that are sent out for analysis must be analyzed by a laboratory certified by the State of Maine's Department of Health and Human Services for wastewater. Samples that are sent to a laboratory operated by a waste discharge facility licensed pursuant to *Waste discharge licenses*, 38 M.R.S. § 413 are subject to the provisions and restrictions of *Maine Comprehensive and Limited Environmental Laboratory Certification Rules*, 10-144 CMR 263 (effective date April 1, 2010). If the permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 CFR Part 136 or as specified in this permit, the results of this monitoring must be included in the calculation and reporting of the data submitted in the Discharge Monitoring Report (DMR).
2. **Composite sample** means a sample consisting of a minimum of eight grab samples collected at equal intervals during a 24-hour period (or a lesser period as specified in the section on monitoring and reporting) and combined proportional to the flow over that same time period.
3. **Total nitrogen (as N) – Monthly** – The permittee is required to report the monthly average, and daily maximum mass and concentrations for each month (May – October) of each year by adding the total kjeldahl nitrogen values to the nitrate + nitrite nitrogen values for each sampling event. See **Attachment A** of this permit for *Protocol for Nitrogen Sample Collection and Analysis for Waste Water Effluent*.
4. **Total phosphorus** – See **Attachment B** of this permit for *Protocol for Total Phosphorus Sample Collection and Analysis for Waste Water and Receiving Water Monitoring Required by Permits*.

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5. **BOD, TSS and Total nitrogen** - The monthly average and daily maximum limitations for biochemical oxygen demand, total suspended solids and total nitrogen will be subject to a statistical evaluation at the end of the term of this permit to assist the Department in establishing best practicable treatment standards for the RAS industry.

SPECIAL CONDITIONS

B. NARRATIVE EFFLUENT LIMITATIONS

1. The permittee must not discharge effluent that contains a visible oil sheen, foam or floating solids at any time which would impair the uses designated for the classification of the receiving waters.
2. The permittee must not discharge effluent that contains materials in concentrations or combinations which are hazardous or toxic to aquatic life, or which would impair the uses designated for the classification of the receiving waters.
3. The discharge must not impart visible discoloration, taste, turbidity, toxicity, radioactivity or other properties in the receiving waters which would impair the usages designated for the classification of the receiving waters.
4. The permittee must not discharge effluent that lowers the quality of any classified body of water below such classification, or lowers the existing quality of any body of water if the existing quality is higher than the classification.

C. AUTHORIZED DISCHARGES

The permittee is authorized to discharge only in accordance with: 1) the permittee's General Application for Waste Discharge Permit, accepted for processing on November 9, 2018; 2) the terms and conditions of this permit; and 3) only from Outfall #001A. Discharges of wastewater from any other point source are not authorized under this permit, and must be reported in accordance with Standard Condition D(1)(f), *Twenty-four-hour reporting*, of this permit.

D. NOTIFICATION REQUIREMENT

In accordance with Standard Condition D, the permittee must notify the Department of the following:

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1. Any substantial change in the volume or character of pollutants being introduced into the wastewater collection and treatment system.
2. For the purposes of this section, adequate notice must include information on:
 - a. The quality and quantity of wastewater introduced to the wastewater collection and treatment system; and
 - b. Any anticipated change in the quality and quantity of the wastewater to be discharged from the treatment system.

SPECIAL CONDITIONS

E. MONITORING AND REPORTING

Electronic Reporting

NPDES Electronic Reporting, 40 C.F.R. 127, requires MEPDES permit holders to submit monitoring results obtained during the previous month on an electronic discharge monitoring report to the regulatory agency utilizing the USEPA electronic system.

Electronic Discharge Monitoring Reports (DMRs) submitted using the USEPA NetDMR system, must be:

1. Submitted by a facility authorized signatory; and
2. Submitted no later than **midnight on the 15th day of the month** following the completed reporting period.

Documentation submitted in support of the electronic DMR may be attached to the electronic DMR. Toxics reporting must be done using the DEP toxsheet reporting form. An electronic copy of the Toxsheet reporting document must be submitted to your Department compliance inspector as an attachment to an email. In addition, a hardcopy form of this sheet must be signed and submitted to your compliance inspector, or a copy attached to your NetDMR submittal will suffice. Documentation submitted electronically to the Department in support of the electronic DMR must be submitted no later than midnight on the 15th day of the month following the completed reporting period.

F. DYE STUDY

Within 6 months of the effective date of this permit, the permittee must submit a plan to the Department for review and approval that includes a scope of work and schedule to conduct a

dye study to more accurately determine the mixing characteristics of the effluent being discharged with the receiving water.

Within 6 months of commencing operations and achieving $\geq 50\%$ (15,000 metric tons) of full production (eggs, smolts, fry, and market size fish), the permittee must conduct a dye study to determine the mixing characteristics of the treated effluent and the receiving water. The dye study must be conducted in July or August and at multiple tidal stages during low flow conditions.

Within 6 months of completion of the dye study, the permittee must submit a report to the Department that characterizes the mixing conditions in the receiving water.

SPECIAL CONDITIONS

G. AMBIENT WATER QUALITY MONITORING

Within 60 days of receipt of the permit, the permittee must submit an ambient water quality monitoring plan to the Department for review and approval, to monitor five (5) sampling stations established by the Department. The stations to be monitored are BB02, PB01, PB02, PB03, and PB04. See **Attachment D** of the Fact Sheet of this permit for a map depicting the locations of the monitoring sites. The proposed monitoring plan must conform with a Department approved Quality Assurance Project Plan (QAPP). All sampling and analysis must be conducted by a) methods approved by 40 Code of Federal Regulations (CFR) Part 136, b) alternative methods approved by the Department in accordance with the procedures in 40 CFR Part 136, or c) as otherwise specified by the Department.

Beginning May 1, 2021, the permittee must commence ambient monitoring at five (5) designated sites established by the Department at a frequency of 2/Month between May 1st and October 31st of each year. Each monitoring event must be conducted during a three-hour sampling window on the second half of an ebb tide. Minimum parameters to be monitored via a sonde are depth, temperature, salinity, pH, dissolved oxygen, chlorophyll *a*, and turbidity while total phosphorus, total kjeldahl nitrogen, nitrate + nitrite nitrogen are to be monitored via grab samples submitted for analysis by a laboratory approved by the Department. Monthly monitoring shall commence on the first month of the May to October window following Department approvals of the QAPP.

On or before December 31st of each year, the permittee must submit a report to the Department summarizing the data collected and report any trends or anomalies with the data.

H. OPERATION & MAINTENANCE PLAN

Within 6 months after commencement of the initial operations (eggs on-site), the permittee must submit a written Operation & Maintenance (O&M) Plan for the facility to the Department for review. The plan must provide a systematic approach by which the permittee must at all times, properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit.

An acceptable O&M plan must ensure the following items are adequately addressed:

1. Solids Control

- a. Methods and practices to ensure efficient feed management and feeding strategies that limit feed input to the minimum amount reasonably necessary to achieve production goals and sustain targeted rates of aquatic animal growth in order to minimize potential discharges to waters of the State.

SPECIAL CONDITIONS

H. OPERATION & MAINTENANCE PLAN (cont'd)

- b. In order to minimize the discharge of accumulated solids from the solids processing system and production systems, identify and implement procedures for routine cleaning of rearing units and any settling tanks, and procedures to minimize any discharge of accumulated solids during the inventorying, grading, and harvesting of aquatic animals in the production system.
- c. Procedure for removal and disposal of mortalities.

2. Materials Storage

- a. Ensure proper storage of drugs¹, pesticides², feed, chemicals and any petroleum and/or hazardous waste products in a manner designed to prevent spills that may result in the discharge of drugs, pesticides, or feed to waters of the State.

¹ **Drug.** “Drug” means any substance defined as a drug in section 201(g)(1) of the *Federal Food, Drug and Cosmetic Act* [21 U.S.C. § 321].

² **Pesticide.** “Pesticide” means any substance defined as a “pesticide” in section 2(u) of the *Federal Insecticide, Fungicide, and Rodenticide Act* [7 U.S.C. § 136 (u)].

- b. Implement procedures for properly containing, cleaning, and disposing of any spilled material that has the potential to enter waters of the State.
- 3. Structural Maintenance
 - a. Inspect the production system and the wastewater treatment system on a routine basis in order to identify and promptly repair any damage.
 - b. Conduct regular maintenance of the production system and the wastewater treatment system in order to ensure that they are properly functioning.
- 4. Recordkeeping
 - a. Maintain records for fish rearing units documenting the feed amounts and estimates of the numbers and weight of fish.
 - b. Maintain records that document the frequency of cleaning, inspections, repairs and maintenance.

SPECIAL CONDITIONS

H. OPERATION & MAINTENANCE PLAN (cont'd)

- 5. Training
 - a. In order to ensure the proper clean-up and disposal of spilled material adequately, train all relevant personnel in spill prevention and how to respond in the event of a spill.
 - b. Train staff on the proper operation and cleaning of production and wastewater treatment systems including training in feeding procedures and proper use of equipment to prevent unauthorized discharges.

By December 31 of each year, or within 90 days of any process changes or minor equipment upgrades, the permittee must evaluate and modify the O&M Plan including site plan(s) and schematic(s) for the wastewater treatment facility to ensure that it is up-to-date. The O&M Plan must be kept on-site at all times and made available to Department and United States Environmental Protection Agency (USEPA) personnel upon request.

Within 90 days of completion of new and or substantial upgrades of the wastewater treatment facility, the permittee must submit the updated O&M Plan to their Department inspector for review and comment.

I. DISEASE CONTROL

The permittee must comply with Maine Department of Inland Fisheries and Wildlife (MDIFW) (freshwater facilities) and Maine Department of Marine Resources (MEDMR) (salmon & marine facilities) fish health laws (12 MRS, §6071; 12 MRS, §100051, 10105, 12507 and 12509, or revised laws). The cited laws include requirements for notification to the appropriate agency within 24-hours of pathogen detection. In addition to the requirements of the MDIFW and MEDMR rules, **the permittee shall notify the Department in writing within 24 hours following pathogen detection**, with information on the disease/pathogen, necessary control measures, and the veterinarian involved.

1. **General requirements.** All chemicals used at the facility must be applied in compliance with federal labeling restrictions and in compliance with applicable statute, Board of Pesticides Control rules and best management practices (BMPs). In accordance with Special Condition D of this permit, the permittee must notify the Department of any substantial change in the volume or character of pollutants being introduced into the wastewater collection and treatment system.

SPECIAL CONDITIONS

I. DISEASE CONTROL (cont'd)

2. **FDA-approved drugs.** All drugs used for disease prevention or control must be approved or authorized by the U.S. Food and Drug Administration (FDA), and all applications must comply with applicable FDA requirements and shall only be administered in accordance with label instructions.
 - a. Drugs identified in the permittee's application: A list of drugs, chemicals and other compounds proposed for use at the permittee's facility during the term of the permit, were provided by the permittee in its October 19, 2018, General Application for Waste Discharge Permit. See **Attachment C** of this permit.
 - b. Preventative treatments: The discharge of any approved drug administered as a preventative measure is not authorized by this permit, unless the following conditions are met: the drug must be approved by FDA, and the treatment and route of

administration must be consistent with the drug's intended use. FDA approved drugs in the permittee's October 19, 2018 application are:

1. Formalin (Parasite-S)
2. Terramycine® 200 (oxytetracycline dehydrate)
3. Aquaflor® (florfenicol)
4. Romet ®30/Romet®TC (sulfadimethoxine/ormetoprim)
5. Chloramine-T
6. Hydrogen peroxide

Effluent monitoring – The permittee must monitor the final effluent at a frequency of 1/Day anytime one or more of the following compounds are utilized in the facility.

1. Formalin (Parasite-S)
2. Terramycine® 200 (oxytetracycline dehydrate)
3. Aquaflor® (florfenicol)
4. Romet ®230/Romet®TC (sulfadimethoxine/ormetoprim)
5. Chloramine-T

Monitoring must commence the day of use of a compound(s) and continue until at least fourteen (14) days after the compound(s) is no longer being administered.

On or before six months following the effective date of this permit [ICIS code 53799] the permittee must submit a list of approved test methods for the compounds listed in this section. The individual tests results for each must be submitted as an attachment to monthly Discharge Monitoring Reports.

SPECIAL CONDITIONS

I. DISEASE CONTROL (cont'd)

- c. Drugs not identified in the permittee's application: When the need to treat or control diseases requires the use of a FDA-approved drug not identified in the application (see **Attachment C** of this permit), the permittee must notify the Department orally or by electronic mail prior to initial use of the drug.
 1. The notification must include a description of the drug, its intended purpose, the method of application, the amount, the concentration, the duration of the use, and information on aquatic toxicity.

2. **Within seven (7) days of** the initial notification the permittee must submit a written report that includes all of the information outlined in Section I.2(c)(1) above.
 3. The Department may require submission of an application for permit modification, including public notice requirements, if the drug is to be used for more than a 30-consecutive day period.
 4. If, upon review of information regarding the use of a drug pursuant to this section, the Department determines that significant adverse effects are likely to occur, it may restrict or limit use of the drug.
3. **Extralabel drug use.** Extralabel drug use is not authorized by this permit, unless in accordance with a specific prescription written for that use by a licensed veterinarian.
- a. Notification. The permittee must notify the Department orally or by e-mail prior to initial extralabel use of a drug.
 1. The notification must include a description of the drug, its intended purpose, the method of application, the amount, concentration, and duration of the use, information on aquatic toxicity, and a description of how and why the use qualifies as an extralabel drug use under FDA requirements.
 2. **Within seven (7) days of the initial notification** the permittee must submit a written report that includes all of the information outlined in Section I.3(a)(1) above. Notice must include documentation that a veterinarian has prescribed the drug for the proposed use. A copy of the veterinarian's prescription must be maintained on-site during treatment for Department review.
 3. If, upon review of information regarding the extralabel use of a drug pursuant to this section, the Department determines that significant adverse effects are likely to occur, it may deny, restrict or limit use of the drug.

SPECIAL CONDITIONS

I. DISEASE CONTROL (cont'd)

4. **Investigational New Animal Drug (INAD).** The discharge of drugs authorized by the FDA for use during studies conducted under the INAD program is not authorized by this permit, unless in accordance with specific prior consent given in writing by the Department.

- a. Initial report. The permittee must provide a written report to the Department for the proposed use of an INAD *within seven (7) days* of agreeing or signing up to participate in an INAD study. The written report must identify the INAD to be used, method of use, dosage, and disease or condition the INAD is intended to treat.
- b. Evaluation and monitoring. *At least ninety (90) days prior to initial use* of an INAD at a facility, the permittee must submit for Department review and approval a study plan for the use of the drug that:
 1. Indicates the date the facility agreed or signed up to participate in the INAD study.
 2. Demonstrates that the minimum amount of drug necessary to evaluate its safety, efficacy, and possible environmental impacts will be used.
 3. Includes an environmental monitoring and evaluation program that at a minimum describes sampling strategies, analytical procedures, evaluation techniques and a timetable for completion of the program. Currently available data or literature that adequately characterizes the environmental fate of the INAD and its metabolite(s) may be proposed for consideration in determinations of environmental monitoring and evaluation programs required by the Department pursuant to this section.
- c. Notification. The permittee must notify the Department orally or by electronic mail *no more than forty-eight (48) hours after* beginning the first use of the INAD under the approved plan.

SPECIAL CONDITIONS

J. SPILLS

In the event of a spill of drugs, chemicals, feed, petroleum and/or hazardous waste products that results in a discharge to waters of the State, the permittee must provide an oral report of the spill to the Department within 24 hours of its occurrence and a written report on a form provided by the Department, within five (5) days to the Department. The report must include the identity and quantity of the material spilled.

K. PROTECTION OF ATLANTIC SALMON

The permittee is required to employ a fully functional Containment Management System (CMS) designed, constructed, operated, and audited so as to prevent the accidental or consequential escape of fish from the facility.

Each CMS plan must include:

1. a site plan or schematic;
2. site plan description;
3. procedures for inventory control, escape response; and unusual event management;
4. provisions for employee training, auditing methods, and record keeping requirements; and
5. the CMS must identify critical control points where escapes could potentially occur, specific control mechanisms for each of these points, and monitoring procedures to verify the effectiveness of controls.

The CMS site specific plan must also describe the use of effective containment barriers appropriate to the life history of the fish. The facility must have in place both a three-barrier system for fish up to 5 grams in size and a two-barrier system for fish 5 grams in size or larger.

The three-barrier system must include one barrier at the incubation/rearing unit, one barrier at the effluent from the hatch house/fry rearing area and a third barrier placed in line with the entire effluent from the facility. Each barrier must be appropriate to the size of fish being contained. The two-barrier system must include one barrier at the individual rearing unit drain and one barrier in line with the total effluent from the facility. Each barrier must be appropriate to the size of fish being contained. Barriers installed in the system may be of the screen type or some other similarly effective device used to contain fish of a specific size in a designated area. Barriers installed in the system for compliance with these requirements must be monitored daily.

SPECIAL CONDITIONS

K. PROTECTION OF ATLANTIC SALMON (cont'd)

Facility personnel responsible for routine operation must be properly trained and qualified to implement the CMS. Prior to any containment system assessment associated with this permit, the permittee must provide to the Department

documentation of the employee's or contractor's demonstrated capabilities to conduct such work [*ICIS code 21599*].

On or before six months following the effective date of this permit [*ICIS code 53799*] the permittee must submit the CMS plan to the Department, NOAA, USFWS and DMR for review and approval and must maintain a current copy of the plan at the facility. Final approval of the plan will be determined by the Department. **The permittee may not bring eggs or any size fish into the facility until the final CMS plan is approved by the Department.**

The CMS must be audited at least once per year and within 30 days of a reportable escape by a third party qualified to conduct CMS audits and approved by the Department [*ICIS code 63899*]. A written report of these audits must be provided to the facility and the Department for review and approval within 30 days of the audit being conducted [*ICIS code 43699*]. Any time that a CMS audit identifies deficiencies, the written report must contain a corrective action plan including a timetable for implementation and provisions for re-auditing, unless waived by the Department, to verify completion of all corrective actions.

Additional third party audits to verify correction of deficiencies must be conducted in accordance with the corrective action plan or upon request of the Department. The facility must notify the Department upon completion of corrective actions.

The permittee must maintain for a period of at least five (5) years complete records, logs, reports of internal and third party audits and documents related to the CMS for each facility.

SPECIAL CONDITIONS

K. PROTECTION OF ATLANTIC SALMON (cont'd)

Compromised containment/Escape reporting. The permittee must notify by electronic mail (e-mail) the Escape Reporting Contact List (provided in this subsection) of any known system failures that compromise fish containment or suspected escape of any fish within 24 hours of becoming aware of the known or suspected loss to the following persons listed under "Escape Reporting Contact List."

The permittee must include in its e-mail notification the following information: 1) site location (town and waterbody); 2) date of event (or window of possible dates if exact date is unknown); 3) time of event (if known or specify "unknown"); 4) species (including strain); 5) estimated average weight; 6) age of escaped fish; 7) number of escaped fish (or if exact number is not

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possible, an estimate); 8) medication profile; 9) details of the escape; 10) corrective action(s) taken or planned; 11) and a contact person (including phone number) for the facility which is subject of the known or suspected escape.

Escape Reporting Contact List:

The agency contacts on this list may be revised by the state and/or federal agencies by provision of written notification to the permittee and the other agencies. Upon notice of any such change the permittee must notify all persons on the revised list in the same manner as provided in this protocol.

Army Corps of Engineers

Maine Project Office; Peter Tischbein; Peter.Tischbein@usace.army.mil

Maine Department of Environmental Protection

Regional Compliance Inspector, Clarissa Trasko, Clarissa.Trasko@maine.gov

Maine Department Marine Resources

Secretary to the Commissioner; Amy Sinclair; Amy.Sinclair@maine.gov

Marine Scientist, Division of Aquaculture, Marcy Nelson, Marcy.Nelson@maine.gov

Director, Division of Sea-Run Fisheries, Sean Ledwin, Sean.M.Ledwin@maine.gov

Maine Department of Inland Fisheries and Wildlife

Commissioner, Judy Camuso, Judy.Camuso@maine.gov, or current Commissioner

SPECIAL CONDITIONS

K. PROTECTION OF ATLANTIC SALMON (cont'd)

National Marine Fisheries Service

Maine Field Station; David Bean, David.Bean@noaa.gov

United States Fish & Wildlife Service

Maine Field Office; Wende Mahaney; Wende_Mahaney@fws.gov

L. FISH FEED

On or before 90 days prior to stocking the site with fish feed, the permittee must submit a detailed list of ingredients in the feed. If the list contains ingredients of concern, the Department reserves the right to reopen the permit pursuant to Special Condition O, *Reopening*

of *Permit for Modifications*, to establish additional limitations and or monitoring requirements of the ingredients of concern.

M. 06-096 CMR 530(2)(D)(4) STATEMENT FOR REDUCED/WAIVED TOXICS TESTING

By **December 31 of each calendar year**, the permittee must provide the Department with a certification describing any of the following that have occurred since the effective date of this permit [*ICIS Code 96299*]. See **Attachment E** of the Fact Sheet of this permit for an acceptable certification form to satisfy this Special Condition.

- a. Changes in the number or types of non-domestic wastes contributed directly or indirectly to the wastewater treatment works that may increase the toxicity of the discharge;
- b. Changes in the operation of the treatment works that may increase the toxicity of the discharge; and
- c. Changes in industrial manufacturing processes contributing wastewater to the treatment works that may increase the toxicity of the discharge.

In addition, in the comments section of the certification form, the permittee shall provide the Department with statements describing;

- d. Changes in storm water collection or inflow/infiltration affecting the facility that may increase the toxicity of the discharge.
- e. Increases in the type or volume of hauled wastes accepted by the facility.

SPECIAL CONDITIONS

M. 06-096 CMR 530(2)(D)(4) STATEMENT FOR REDUCED/WAIVED TOXICS TESTING (cont'd)

The Department reserves the right to reinstate routine surveillance level testing or other toxicity testing if new information becomes available that indicates the discharge may cause or have a reasonable potential to cause exceedances of ambient water quality criteria/thresholds.

N. COMMENCEMENT OF OPERATIONS

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At a minimum of ninety (90) days prior to commencing production/operations, the permittee must meet with the Department's permitting and compliance inspection staff to review applicability of the permit limitations, monitoring requirements and reporting requirements. Should the Department determine the proposed production/operations are significantly different than what has been presented in the October 19, 2018, application materials, and as the Department may require the permittee to submit a revised application to the Department.

O. REOPENING OF PERMIT FOR MODIFICATION

In accordance with 38 M.R.S. § 414-A(5) and upon evaluation of the tests results in the Special Conditions of this permitting action, new site specific information, or any other pertinent test results or information obtained during the term of this permit, the Department may, at any time and with notice to the permittee, modify this permit to: (1) include effluent limits necessary to control specific pollutants or whole effluent toxicity where there is a reasonable potential that the effluent may cause water quality criteria to be exceeded; (2) require additional monitoring if results on file are inconclusive; or (3) change monitoring requirements or limitations based on new information.

P. SEVERABILITY

In the event that any provision or part thereof, of this permit is declared to be unlawful by a reviewing court, the remainder of the permit must remain in full force and effect, and must be construed and enforced in all aspects as if such unlawful provision, or part thereof, had been omitted, unless otherwise ordered by the court.

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PROPOSED FINDINGS OF FACT

Pursuant to the provisions of the Site Location of Development Act (38 M.R.S. §§ 480-A–480-JJ) (Site Law), the Natural Resources Protection Act (38 M.R.S. §§ 481–489-E) (NRPA), Section 401 of the Federal Water Pollution Control Act (33 U.S.C. § 1341) (WQC), and Chapters 2, 3, 310, 315, 335, 342, 355, 371-73, 375-76, 380, 400, 418-19, 500-02 and 587 of the Department of Environmental Protection (Department) Rules, the Board of Environmental Protection (“Board”) considered the applications of Nordic Aquafarms, Inc. (“Applicant” or “Nordic”) (together the “Applications”) with the supportive data, agency review comments, direct, rebuttal prefiled and hearing testimony and all other related materials on file and FINDS THE FOLLOWING FACTS¹:

1. PROJECT APPLICATIONS AND BACKGROUND:

A. Summary of Applications and Project:

The Applicant proposes construction and operation of a Recirculating Aquaculture System (RAS) for Atlantic salmon production in Belfast and Northport, Waldo County, Maine. The purpose of the Project is to provide 33,000 metric tons per year of safe, high quality and sustainable seafood to the consumers in the northeast of the United States. The facility is designed and engineered based on standardized modular designs which require one smolt

¹ Nordic also submitted Department applications for permits pursuant to the Maine Pollutant Discharge Elimination System and Waste Discharge License (ME0002771 and (W-009200-6F-A-N) and a New Minor Source Air Emissions License pursuant to Chapter 115 of the Department’s Air Rules (A-1146-71-A-N).

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module supporting three grow-out modules. Together, these four modules comprise one production module. The Project includes two production modules. Site Law Application § 1; NRPA Application §§ 1 and 2.3

The Project includes significant supporting infrastructure including a water and wastewater treatment facility and three pipes (two 30” pipes for seawater intake and one 36” pipe for wastewater discharge) running approximately a mile from the facility into the ocean in order to meet Project water needs. Plans and detailed views of the proposed intake and discharge piping are presented on CS101-CS104, CS301, CS501-CS505 and M-100. The intake and outfall functions to draw seawater into the water treatment plant (WTP) and to discharge treated water from the wastewater treatment plant (WWTP), housed in a common building. The piping will be a very durable high-density polyethylene (HDPE) with an approximately 3” wall thickness, predominantly side by side in a common trench within the buried zone as well as the exposed portion anchored above the seafloor. This configuration will begin at the WWTP/WTP at the former Belfast Water District (BWD) property and be routed underground beneath US Route 1. It will proceed underground through an upland easement path to the shoreline and out under the intertidal and submerged land zones, eventually emerging above the subtidal sea floor and continuing to the pipe end points. The two intake pipes will extend several thousand feet beyond the discharge pipe termination point. The intake ends will have support structures and screens and the discharge will have a diffuser end. Construction under Route 1 will require construction of a temporary bypass on the Project site. The intertidal (mudflats) and submerged lands piping will be constructed during the late fall and winter season. Excavation associated with construction of the intake and outfall piping in the intertidal and submerged lands will entail handling of approximately 36,000 cubic yards of marine soils. Excavated marine soils will be used as backfill to the extent possible. Excess marine soils will be characterized and transported by barge approximately 5.5 miles to Mack Point in Searsport, Maine where the soils will be loaded onto dump trucks and transported and disposed of by properly licensed solid waste transporters and disposal facilities. Site Law Application §§ 1 and 18; NRPA Application §§ 1 and 7.3

The Project will require both potable domestic water for drinking and fish processing, and water for salmon rearing. Domestic water is to be supplied by the BWD, the local public water supplier via its existing system.

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Based on the changing environmental needs of salmon through their life cycle, fish husbandry water needs include both freshwater and saltwater sources. Freshwater sources include an on-site groundwater extraction well network, on-site surface water withdrawal from Belfast Lower Reservoir Number One (Lower Reservoir), and additional off-site supply from the BWD. Saltwater is proposed to be obtained from Belfast Bay through the seawater intake. Collectively, the Project is anticipated to use approximately 1,205 gallons per minute (gpm) of freshwater and 3,925 gpm of saltwater at full operational capacity.

Traditional sanitary waste, not a part of the fish rearing process, will be disposed of through the existing Belfast sanitary waste sewer and treatment system. Connection of the Project to this system will require a new sewer extension along Perkins Road and a new pump station. Treated process wastewater will be discharged to Belfast Bay via an ocean discharge, the length and location of which is discussed in the Maine Pollution Discharge Elimination System (MEPDES) and Waste Discharge License application submitted to the Department in October 2018 and addressed in MEPDES/WDL License No. ME0002771 and W-009200-6F-A-N. Site Law Application §§ 1, MEPDES Application, and NRPA Application § 1.1.

Power currently enters the site from Route 1, runs to the BWD office building, and to the garage buildings. The Project also includes a power connection from the Route 1 transmission line. Substation and/or transmission line upgrades that may be required to support the facility at full build out will be the responsibility of Central Maine Power, the owner of the power grid. In order to support the constant power needs of fish husbandry, the project includes eight generators for peak shaving and backup power generation the operation and emissions of which are discussed in the Chapter 115 New Minor Source of Air Emissions application submitted to the Department in May, 2019 and addressed in Minor New Source of Air Emissions License No. A-1146-71-A-N. Site Law Application §§ 1 and 21; NRPA Application § 1.1.

The Project also includes an office and maintenance building, central utility plant, processing, gatehouse, a visitor's center and associated access, parking and delivery areas. Including these required impervious access drives, parking areas and delivery areas, the total new impervious area at the Site will be 27.4 acres after full build-out of Phases I and II.

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Together, the Nordic project is referred to herein as the “Project.” Site Law Application § 1; NRPA Application § 1.

The Project will be constructed in two phases. Phase 1 consists of the Office/Maintenance Building – 8,936 SF, Water/Wastewater Treatment Plant (plus Intake and Outfall Piping) – 20,056 SF, Central Utility Plant (CUP) – 18,998 SF, Module 1 Building – 112,223 SF, Module 2 Building – 112,223 SF, Module 3 Building – 112,223 SF, Smolt 1 Building – 53,947 SF (Together these three Modules and Smolt Building are one Production Module), Processing Building – 24,096 SF, and Gate House – 298 SF. Site Law Application § 1; NRPA Application § 1.1.

Phase 2 consists of the second Production Module and the Visitor Center – 2,188 square foot (SF). Site Law Application § 1; NRPA Application 1.1.

B. Current Use of the Site:

The Project location is on the northwest side of Route 1 (Northport Avenue) in Belfast, Maine adjacent to the Lower Reservoir, as shown on Nordic Exhibit 1. The Project site consists of parcels owned by the BWD, Mathews Brothers (deed reference is Goldenrod) and Cassida. The development also includes easements to the northwest of the main Project site to connect a sewer line to the existing City of Belfast (City) sewer system on Northport Avenue, by way of Perkins Road, authorizations to excavate and cross Route 1 from the City, an easement through the Eckrote parcel for intake and outfall piping, and a submerged land lease from Maine’s Bureau of Parks and Lands for the submerged lands (subtidal). Site Law Application § 1; NRPA Application §§ 0.2, 1.1.

The primary access to the Project site will be off Route 1 at the current access for the BWD. The existing BWD parcel adjacent to the Lower Reservoir, contains approximately 14 acres directly adjacent to the reservoir. This two hundred and fifty foot portion of the BWD parcel is subject to easements necessary for the Project but will be kept undeveloped as resource protection and buffer. This area currently includes an existing trail system. Approximately 2 acres of the BWD parcel is currently developed with an office building, a former filter house, two garage buildings, and associated driveways and parking. A concrete dam controls the water level to the Lower Reservoir, and piping associated with the former

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use of the reservoir as the water supply for the City still exists adjacent to the dam and the office building. Site Law Application § 1; NRPA Application § 1.1.

The Matthews Brothers parcel is currently used as a manufacturing plant for windows. Site Law Application § 1; NRPA Application § 0.

The Eckrote parcel and the Cassida parcels are primarily residential use but the Cassida parcel is also used for timber harvesting and agriculture. Site Law Application § 1; NRPA Application § 0.

2. PUBLIC PARTICIPATION:

A. Prefiling Department Meeting Requirements:

Applicant submitted the Site Law application on May 17, 2019. The on-site pre-application meeting was held on October 29, 2018. An additional pre-application meeting was held with Department staff on February 20, 2019. Pre-application meetings specific to stormwater design were held on October 20, 2019 and December 5, 2019. The pre-submission meeting was held on April 25, 2019.

Applicant submitted the NRPA application on May 16, 2019. The pre-application meeting was held on February 28, 2019. The pre-submission meeting was held on May 7, 2019.

Department staff conducted site visits for NRPA and Site Law on May 17, July 3, and November 1, 2019.

B. Public Informational Meeting:

The Applicant held a public information meeting (PIM) regarding the Applications on March 26, 2019 at the Hutchinson Center, 80 Belmont Avenue, Belfast, Maine between 6:00 and 9:00 pm. The meeting presented information on the Site Law, NRPA, MEPDES/WDL and Minor New Source of Air Emissions License permit applications consolidated for review by the Board. Department fact sheets regarding opportunities for public comment in the permitting process were made available to meeting attendees. The PIM was attended by

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approximately 300 members of the public, recorded by a court reporter, and broadcast by Belfast Community Media and a video recording of the meeting is available on the City of Belfast website. Notice of the PIM was provided to abutting property owners and the municipalities of Belfast and Northport by certified mail and published in the local newspaper. Site Law Application § 25; NRPA Application § 10.

C. Notice of Intent to File:

Notice of Intent to File (NOI) was published in the Bangor Daily News on April 25, 2019 and sent by certified mail to Project abutters and the City of Belfast. Nonabutter waterfront property owners within a mile radius of the intake and outfall piping and the Town of Northport also received certified notice of the Applications. Perkins Road abutters were also provided notice due to their proximity to the sewer line extension. The City of Belfast and the Town of Northport received copies of the Applications. Site Law Application § 25; NRPA Application § 10.

D. Completeness:

By letter dated June 13, 2019, the Department accepted the applications as complete for processing stating:

The Department has reviewed the applications and the MEPDES application addendum (aligning the proposed project's pipe locations in the pending MEPDES application with the pipe locations in the other more recent applications) submitted by NAF and has considered all supplemental TRI material that both NAF and various interested persons have submitted. With respect to the intertidal portion of the property proposed for use, the Department finds that the deeds and other submissions, including NAF's option to purchase an easement over the Eckrote property and the succession of deeds in the Eckrote chain of title, when considered in the context of the common law presumption of conveyance of the intertidal area along with an upland conveyance, constitute a sufficient showing of TRI for the Department to process and take action on the pending applications. This determination is not an adjudication of property rights and may be

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reconsidered by the Department at any time during processing as applicants must have adequate and sufficient TRI throughout the application process. Accordingly, should a court adjudicate any property disputes or rights in a way that affects NAF's interest in the proposed project lands while the applications are being processed, the Department may revisit the issue of TRI and return the applications if appropriate.

In addition to TRI, the Department has reviewed the applications for other acceptance criteria required by Chapter 2 §11(B). These applications were deemed to be subject to the special fees requirements outlined in 38 M.R.S. § 352(3) in October 2018. NAF has provided information on all the substantive licensing criteria for each of the pending applications. The Department, therefore, finds each of the above applications complete for processing.

Department June 13, 2019 Completeness Determination.

E. Public Hearing Requests and Board Jurisdiction:

Upstream Watch and the Lobstering Representatives requested a public hearing on and Board jurisdiction over the Applications. The Department initially declined to refer the Applications for Board jurisdiction. Nordic requested referral for Board jurisdiction and a hearing. Thereafter, on June 20, 2019, the Board voted to assume licensing jurisdiction over the Applications and to hold a public hearing on the proposed Project. First Procedural Order.

F. Public Hearing Process:

(1) Intervenors

Notice of the opportunity to petition to intervene in the Board's proceeding was published in the Bangor Daily News, Republican Journal, Camden Herald, and Courier Gazette on June 27, 2019. Notice was also mailed to the applicant, government officials, and interested persons in accordance with the Maine

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Administrative Procedures Act, 5 M.R.S. § 9051-A(1) and Chapter 3, § 12(A) of the Department's Rules Governing the Conduct of Licensing Hearings.

Intervenor status was requested by eleven entities. On July 3, 2019, the Board received a petition to intervene from Eleanor Daniels and Donna Broderick. On July 10, 2019, the Board received petitions to intervene from Upstream Watch, Northport Village Corporation, The Maine Lobstering Union (“IMLU”), Wayne Canning and David Black. On July 11, 2019, the Board received petitions to intervene from Trudy Miller and the School of Fish, University of New England, Maine & Company, and Lawrence Reichard. On July 12, 2019, the Board received petitions to intervene from The Fish Are Okay, Jeffrey Mabee and Judith Grace, and the Gulf Maine Research Institute.

(2) Pre-Hearing Procedural Orders

Prior to the public hearing, the Board issued ten Procedural Orders:

- a. The First Procedural Order, issued on August 15, 2019, set a date for the pre-hearing conference and granted the petitions to intervene of: Maine Lobstering Union, Wayne Canning, and David Black; Jeffrey R. Mabee and Judith B. Grace (these parties were later consolidated as MGL); Upstream Watch; Northport Village Corporation (these parties were later consolidated as Upstream/NVC); Eleanor Daniels and Donna Broderick; Lawrence Reichard; University of New England (UNE); Gulf of Maine Research Institute (GMRI); and The Fish Are Okay.
- b. The Second Procedural Order, issued on August 23, 2019, documented the pre-hearing conference held on August 15, 2019. The Second Procedural Order established the deadlines for the Board site visit, the deadline for parties to offer suggestions for areas of site features for the Board to view, the deadline for each intervenor to provide a preliminary list of issues they would like addressed at the hearing, the date for the pre-hearing conference, and the deadline to

file petitions to intervene.

- c. The Third Procedural Order, issued on November 1, 2019, set forth the Presiding Officer's ruling on the issues to be addressed at the hearing.
- (i) Site Location of Development and Natural Resources Protection Act Applications testimony was to focus on:
- Financial Capacity;
 - Water Usage: groundwater and surface water withdrawals including potential impacts to existing uses such as nearby wells;
 - Impacts to streams and associated freshwater wetlands; alternatives analysis (avoidance, minimization, compensation);
 - Stormwater Management and upland Erosion and Sedimentation Control, both during construction and post development;
 - Impacts to existing uses from construction and operations, including blasting and odor; and
 - Coastal Wetland Impacts: staging, erosion and sedimentation control during construction, potential impacts to water quality and protected natural resources including concerns about HoltraChem mercury, alternatives analysis.

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- (ii) Maine Pollutant Discharge Elimination System/ Water Discharge License Application testimony was to focus on:
- Composition and characteristics of the effluent;
 - Modeling of the discharge as submitted with the application; and
 - Impact of the discharge on the water quality of the Bay (Class SB) including potential impacts to fishers, other marine resources, and other uses.

The Presiding Officer acknowledged requests from intervenors for TRI to be included as a hearing topic and noted awareness of litigation over ownership of the intertidal lands where portions of the Project are located. The Presiding Officer declined to include TRI as a hearing topic.

- d. The Fourth Procedural Order, issued on November 8, 2019, documented the Board's decisions on the appeals of the Third Procedural Order. MGL appealed the Presiding Officer's ruling that TRI will not be a hearing topic. Upstream Watch appealed the Third Procedural Order, requesting clarification of the Presiding Officer's ruling regarding impacts to existing uses from construction and operations, including blasting and odor. Upstream questioned whether this issue area would include testimony on Nordic's Air Emissions application including the issues of air pollution, noise, and odor. In the event Nordic's Air Emissions application was not intended to be included within that category, Upstream Watch requested it be added to the list of issues for the hearing. Following oral arguments, the Board voted and upheld the Presiding Officer's ruling that TRI will not be an issue for oral testimony and cross-

examination at the hearing. Following oral argument and comments from Department staff, the Board voted that Nordic's Air Emissions application would be included as a hearing topic, limited to the licensing criteria set forth in Chapter 115 of the Department's rules. The Fourth Procedural Order clarified that noise from the proposed development is not a hearing topic and that construction noise generated between the longer of 7 a.m. and 7 p.m. or daylight hours, is exempt from review by the Board. It also clarified that, pursuant to the Third Procedural Order, odor is a hearing topic that may be addressed under Site Law criteria. The Fourth Procedural Order established deadlines for filing testimony and exhibits and set the hearing dates.

- e. The Fifth Procedural Order, issued on November 26, 2019, responded to the Motion for Inclusion of Conditions, and the Motion for Rescission of Fourth Procedural Order, and Suspension or Termination of Board Consideration of Nordic's Applications submitted on behalf of Intervenors MGL. The Board denied the Motion for Inclusion of Conditions as premature. As to the Motion to Terminate, after considering Nordic's response to the Motion, Assistant Attorney General Lauren Parker on behalf of the Bureau of Parks and Lands' clarification of the status of Nordic's request for a submerged lands lease for the project, and Intervenors MGLs response, the Board denied the motion. The Fifth Procedural Order explains a pending application for a submerged lands lease with the Bureau of Parks and Lands is sufficient demonstration of TRI pursuant to Chapter 2, § 11(D)(2) of the Department's Rules. The Board held that there had been no change to Nordic's TRI that warrants the recession of the Fourth Procedural Order or the termination or suspension of Board proceedings.

- f. The Sixth Procedural Order, issued on January 2, 2020, ruled on Nordic's Objections and Motion to Strike Prefiled Direct Testimony.

The Sixth Procedural Order established the deadline to appeal the Order.

- g. The Seventh Procedural Order, issued on January 9, 2020, constituted the Board’s decision on Upstream/NVC’s appeal. Upstream/ NVC appealed the ruling pertaining to Noise, arguing that the ruling in the Sixth Procedural Order striking the testimony of Mr. Lannan on noise was contrary to the vote taken by the Board at its November 7, 2020 meeting and that the Board is incorrect as a matter of law in holding that daytime construction noise is not subject to Department regulation under the Site Law. The Board explained that their vote was intended to add only the Chapter 115 Application and not to add noise under the Site law to the list of hearing issues. The Board held that 38 M.R.S. § 484(3) exempts daytime construction noise from all developments from review under the Site Law’s “no adverse effect on the natural environment” criterion. Upstream/ NVC’s proposed interpretation of the statute would render the daytime construction noise language meaningless. The Seventh Procedural Order reaffirmed that noise generated between the hours of 7:00 a.m. and 7:00 p.m. or during daylight hours, whichever is longer, may not be regulated under the “no adverse effect on the natural environment” criterion of the Site Law. The Seventh Procedural Order also reaffirmed that blasting, including airblast noise from blasting, is regulated pursuant to different criteria of the Site Law, Section 484(9), and is a hearing topic. Testimony as to blasting, including airblast noise, is allowed. Accordingly, the Seventh Procedural Order denied the appeal and affirmed the Sixth Procedural Order.
- h. The Eighth Procedural Order, issued on January 13, 2020, documented the matters discussed at the conference and the rulings of the Presiding Officer. The Eighth Procedural Order established the deadlines for the pre-hearing schedule, restated the requirements

for rebuttal testimony, and established Board panels for, and the organization of, the hearing, set out the standards and rules for evidence, including exhibits, and noted the hearing logistics. The Eighth Procedural Order also ruled on the additional information requests and set a deadline for parties to respond to Intervenor MGL's request that the Board reconsider the issue of whether Applicant demonstrated sufficient TRI in the intertidal land that is part of the Project.

- i. The Ninth Procedural Order, issued on January 31, 2020, documented the Presiding Officer's rulings on the Motion to Strike Pre-filed Rebuttal Testimony and Eliminate a Hearing Topic, Request to Cross Non-Witnesses, State Agency Review Comments, Request to Stop Processing for Lack of Title, Right or Interest, and Links and References to Materials Note in the Record. The Board granted in part and denied in part Nordic's Motion to Strike Pre-filed Rebuttal Testimony and Eliminate a Hearing Topic. The Board struck portions of Mr. Bernacki's testimony that focused predominately on the matter of TRI and admitted several documents as exhibits to Mr. Bernacki's testimony that the other parties may comment on orally in their testimony at the hearing and/or may file a response in the form of exhibits by the start of the hearing. The Ninth Procedural Order confirmed that Mr. Lannan's submission on noise will be treated as a written comment. The Board denied Nordic's motion to eliminate Stormwater Management as a hearing issue because no intervenor submitted direct or rebuttal testimony on that topic, stating that the parties have a right to cross-examine the witnesses of other parties on all pre-filed testimony and that the Board may also have questions. MGL requested the Board compel Nordic to provide access to additional persons with direct knowledge and expertise referenced in their direct testimony. The Board denied MGL's request stating that every party has the right to select its witnesses and set out other methods that MGL may utilize, such as cross examination and Section 13 of Chapter 3's provision to request

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that a subpoena be issued in the name of the Department to require the attendance of a witness to provide testimony. The Board denied MGL's request to stop processing Nordic's application based on argument that Nordic does not have sufficient TRI. The Board ruled that the materials submitted by MGL do not change the Board's decision, it has reviewed MGL's position on TRI on more than one occasion and will not revisit the matter at this time.

- j. The Tenth Procedural Order, issued on February 7, 2020, documented the Presiding Officer's rulings on the Written Comments on Hearing Issues Filed by Party Witnesses, State Agency Review Comments, and the Site Visit by Board Members. The Tenth Procedural Order reiterated what Assistant Attorney General Laura Jensen wrote to the parties explaining that parties to this proceeding may not submit written comments on hearing topics. Subsequent to Ms. Jensen's letter, Mr. Bernacki sent several emails to the Department on hearing topics. The Board ruled that those emails and their attachments are stricken from the Administrative Record. The Tenth Procedural Order stated that the Department of Marine Resources and Department staff member John Hopeck submitted comments and memorandum and that the parties will be permitted to address them orally at the hearing and can request additional time to submit written comments following the close of the hearing if needed. The Tenth Procedural Order stated that Board members Robert Sanford and Seven Pelletier who did not attend the Board's October 24, 2019 site visit, would like to view the proposed development site with staff. Ms. Tucker requested the two Board members be briefed concerning the TRI issues and arguments made by the parties and that they be provided with documents concerning TRI. The Tenth Procedural Order noted that Board member Sanford has been on the Board since June 27, 2019 and received the filings that other Board members have received and that while Mr. Pelletier has not received those filings, he will be briefed on the issue by Department staff and counsel prior to the site visit. However,

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because TRI is not a hearing topic and due to time constraints, Mr. Pelletier will be provided the materials that the other Board members have previously received after the hearing. The Tenth Procedural Order established the deadline to appeal the rulings.

(3) Prehearing Conferences

On August 15, 2019, Presiding Officer Robert Duchesne held a pre-hearing conference at the Augusta Civic Center in Augusta, Maine. The purpose of the conference was to review procedural rules governing the Board's processing of the Applications.

On October 17, 2019, Board staff and counsel held the second pre-hearing conference with the participants in this proceeding to discuss, among other things, the preliminary list of hearing topics intervenors requested be the subject of testimony at the Board's hearing on Nordic's applications for a land-based aquaculture facility. At the pre-hearing conference the intervenors were asked to submit a second list of requested hearing topics with the three or four most important issues from their various perspectives for the Presiding Officer's consideration.

On January 9, 2020, Presiding Officer Robert Duchesne held a pre-hearing conference at the Augusta Civic Center in Augusta, Maine. The purpose of the conference was to review matters related to the schedule, rebuttal testimony, and the organization and conduct of the hearing.

On February 6, 2020, Presiding Officer Robert Duchesne held a pre-hearing meeting by teleconference call. The purpose of the conference was to obtain consent from the parties to a site walk by new Board members and discuss final hearing procedures.

(4) Site Visits

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On October 24, 2019, Board of Environmental Protection members visited the Project site in Belfast, Maine. Attendees convened at the BWD. The Board's Executive Analyst, Ms. Bertocci, distributed a copy of the itinerary for the site visit and a set of maps excerpted from Nordic's applications. She stated that the purpose of the site visit was to familiarize Board members with the physical features of the site and the location of the proposed structural development at the site as well as the nature of existing land uses adjacent to the site.

The Governor appointed and the Legislature confirmed two new Board members after the October 24, 2019 site visit. Those new Board members conducted a separate site visit on February 10, 2020. The Presiding Officer requested, and obtained, waiver of the right of attendance by all parties.

(5) Four Day Public Hearing

Prefiled Direct Testimony on hearing topics was due by December 13, 2019. Nordic and Upstream/NVC submitted direct prefiled testimony on all hearing topics. GMRI, UNE, the Fish are Okay, and Lawrence Reichard submitted prefiled direct testimony on discrete hearing topics.

Nordic submitted Prefiled Rebuttal Testimony responsive to all Prefiled Direct Testimony. Upstream/NVC and MGL submitted Prefiled Rebuttal Testimony on discrete hearing topics.

The Board held an adjudicatory hearing in Belfast from February 11 through February 14, 2020 on the Applications with a public hearing on the night of February 11, 2020. At the conclusion of the hearing, the record was left open for specific documents.

By electronic mail on the afternoon of February 10, 2020, the Friends of Harriet L. Hartley Conservation Area (Friends) filed a motion to intervene in the proceeding. As grounds for intervention, Friends stated that it is the holder of a conservation easement on the intertidal land through which Nordic's proposed pipelines would

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be constructed, the ownership of which is in dispute. Nordic objected to the motion, noting among other issues that Friends alleged that it had been a holder of the conservation easement over the property in question since early November 2019 but had failed to move for intervention for over three months. Intervenor Lawrence Reichard expressed support for the Friends motion to intervene. Because Friends failed to show good cause to grant its late motion to intervene, the motion was denied at the beginning of the hearing.

By letter dated February 7, 2020, intervenors Eleanor Daniels and Donna Broderick submitted a letter to the Board regarding their participation in the hearing. Although Ms. Daniels and Ms. Broderick had not filed any testimony and had not previously requested time for cross-examination of any witnesses, they reaffirmed their standing as intervenors and requested time at the hearing to question the witnesses of the other parties. The other parties did not object to the request. At the hearing, Ms. Daniels was permitted to cross-examine those testifying as time permitted.

Wayne Canning, the Zone D District 11 representative to the Lobster Management Policy Council, who was granted intervenor status by the Board on August 15, 2019 along with David Black and the Maine Lobstering Union, did not pre-file testimony by the deadline established in the Fourth Procedural Order. In response to comments filed by Denis-Marc Nault of the Maine Department of Marine Resources on January 30, 2020, however, MGL submitted a statement by Mr. Canning as Exhibit A to her February 3, 2020 submittal to the Board. No party objected, and Mr. Canning was allowed to present sworn testimony at the hearing on potential impacts to coastal wetlands including fisheries as part of the testimony presented by intervenors MGL.

At the hearing, intervenor Upstream Watch notified the Board that its witness Dr. Brian Dixon was unable to attend the hearing and that its witness Frederick Johnson (GEI) was unable to attend the portion of the hearing relating to blasting and odor. In accordance with provisions of Chapter 3, § 19(B) of the Department's Rules Governing the Conduct of Licensing Hearings and the Second and Third Procedural Orders, witnesses were required to be present at the hearing for cross-examination.

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Accordingly, the testimony of Dr. Dixon and attached exhibits Upstream/NVC A-1, B-1, C-1, E-1, F-1, and G-1 were stricken from the record.

With respect to the testimony of Frederick Johnson, the report titled “GEI Water Supply and Dam Elevation,” December 2019 (GEI NVC/Upstream 2) was part of the record as Mr. Johnson had appeared in person to testify on February 11, 2020 about water usage. Therefore, with the agreement of Nordic, only the following statement in Mr. Johnson’s prefiled testimony related to blasting and odor was stricken from the record: Testimony at page 5, third full paragraph, beginning “The Nordic development will disrupt...” and ending “...assess potential impacts to the dams during the planning process.”

Additionally, prior to the hearing, Nordic notified the Board that witness William R. Keleher, who had submitted rebuttal testimony jointly with Nordic witness Peter L. Merrill, would not be able to attend the hearing. On February 7, 2020, Nordic resubmitted the testimony affirmed by Peter L. Merrill with no additional changes. Paper copies of the resubmitted testimony were provided at the hearing.

In accordance with section 1(A) of the Ninth Procedural Order and in response to exhibits submitted by MGL witness Paul Bernacki, Nordic submitted the following exhibits during the hearing which were accepted into the record:

- a. Nordic Exhibit 38: Memorandum from Edward Cotter, dated February 10, 2020, “Coastal Conditions Summary” and
- b. Nordic Exhibit 39 consisting of two maps from the Penobscot River Mercury Study and one map from the Maine Department of Marine Resources depicting closure areas in 2014 and 2016.

At the close of the hearing, the record was left open for the submissions listed below.

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- a. Air modeling. At the request of Department staff, the record remained open to allow staff to complete further dispersion modeling to estimate ambient air concentrations from Nordic’s proposed project based on additional information submitted at the hearing.
- b. Nordic comments on analysis by DEP staff member Dr. John Hopeck by February 18, 2020 with intervenors’ responses by Tuesday, February 25, 2020.
- c. Board members requested copies of Nordic’s boring logs for samples taken in the coastal wetland by February 18, 2020.
- d. Review by Department of Marine Resources (DMR).
 - (i) Pathogens. Intervenor comments on DMR’s memorandum dated February 5, 2020 from David Russell and Marcy Nelson to Gregg Wood, entitled “Preliminary Review of a.Nordic Aquafarms’ discharge as it pertains to pathogens” by February 21, 2020.
 - (ii) Dredging. On February 14, 2020, DMR published notice that it will hold a public hearing on March 2, 2020 to facilitate its “assessment of the impacts on the fishing industry” of the “proposed dredging operation in the coastal wetlands” pursuant to 38 M.R.S.A. § 480-D(9). The DMR Assessment must be considered by the Department in assessing Nordic’s NRPA Application and must “consider impacts to the area to be dredged and impacts to the fishing industry of a proposed route to transport dredge spoils to an ocean disposal site.” 38 M.R.S.A. § 480-D(9).

(6) Post Hearing Procedural Orders

- a. The Eleventh Procedural Order, issued on February 19, 2020, documented the decisions made at the adjudicatory hearing and the matters for which the record was held open at the close of the hearing as discussed above.
- b. The Twelfth Procedural Order, issued on March 2, 2020, documented decisions made on post-hearing submissions. The Board noted that after the hearing, NVC/Upstream filed comment on Applicant's technical ability to design, construct, operate, and maintain the Project consistent with state environmental standards. The Board ruled that NVC/Upstream's comments were allowed only as written comment. The Board noted NVC/Upstream also sent a letter requesting clarification on additional air dispersion modeling and including comments on the Air Emissions Application. This letter was stricken from the administrative record because it contained additional evidence on a hearing topic and was not a timely comment on the results of the Department's additional modeling. The Board denied MGL's motion requesting that Nordic Exhibit 41 not be considered by the Board for any purpose. Nordic Exhibit 41 is in the administrative record as written comment. The Board ruled that MGL's motions to dismiss Nordic's application for lack of TRI and to conduct an adjudicatory hearing on the issue of TRI, submitted on behalf of MGL, will be considered by the Board at a later date and set a deadline for the parties to respond to the motions.
- c. The Thirteenth Procedural Order, issued on March 16, 2020, documented rulings made on additional post-hearing submissions and motions. In accordance with the Eleventh Procedural Order, Nordic submitted boring logs for nine core samples from the coastal wetland. MGL requested Nordic be required to submit all sediment

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log data and be required to sample and test sediment in accordance with protocols in the Penobscot River Mercury Study (“PRMS”). The Presiding Officer denied MGL’s motion, stating that the information requested by MGL appears in the Applications.

At the conclusion of the hearing, the Presiding Officer held the record open for the DMR Assessment pursuant to NRPA §480-D(9) and the parties’ responses to that assessment. MGL requested that documents from the DMR hearing be added to the Board’s record and that Nordic be required to conduct sediment sampling and testing along the proposed pipeline route and proposed haul route using the methodology used in the PRMS. MGL additionally argued that Nordic had materially changed its proposal and requested, among other things that the Board re-open its record for further proceedings including an adjudicatory hearing by the Board. MGL requested the Board instruct Nordic to file corrected applications or dismiss the Applications. NVC also requested that the Board re-open its hearing to receive comments on the wastewater pipeline construction and discharge topic. Applicant responded that there had been no change to the Applications requiring amendment under Chapter 2 of the Department’s Rules. The Board denied MGL’s and NVC’s requests.

- d. The Fourteenth Procedural Order, issued on April 3, 2020, postponed until April 16, 2020 argument on MGL’s renewed motions to modify the schedule for Board review of the Applications, to reopen the record on certain issues, and to suspend Board proceedings on the Applications in light of COVID-19 and for personal health reasons. Nordic waived oral argument on MGL’s motions scheduled to occur on April 9, 2020, but MGL refused to waive oral argument. In the Fourteenth Procedural Order the Board recognizes the challenges brought by COVID-19 but explains it has a statutory responsibility to conduct business, including processing

applications, to the extent possible. The Board postponed argument until April 16, 2020 and urged parties to identify persons who can represent their interests in the proceedings in the event they are not able to participate. Ms. Tucker renewed MGL’s motions requesting the Board reopen its record to receive additional evidence and testimony regarding Nordic’s proposal for dredging in the coastal wetland including the management of dredge spoils, that the Board require additional sediment testing, and that the Board require Nordic submit amended applications or dismiss the applications. The Board noted that it had already considered and denied those motions. The Board requested that parties refrain from renewing motions previously decided absent a material change in circumstance and directed the parties to refrain from arguing their respective cases on the merits in emails, and that all filings, including emails to the Board and Department staff, are public documents and should be professional in tone and content.

(7) Post Hearing Submissions

- a. Nordic submitted copies of its coastal wetland boring logs and its response to the comments of Dr. Hopeck on February 18, 2020. Upstream/NVC submitted comments on Dr. Hopeck’s comments on February 25, 2020.
- b. On March 13, 2020, the Department issued revised air modeling on indicating compliance with all Ambient Air Quality Standards. Nordic and Upstream/NVC submitted comments on that revised air modeling on April 2, 2020.
- c. DMR extended the period for submission of written comments on its assessment of impacts to the fishing industry from “the area to be dredged and impacts to the fishing industry of a proposed route to

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transport dredge spoils to an ocean disposal site” beyond its March 2, 2020 public hearing to March 12, 2020. DMR issued its Assessment to the Department on April 7, 2020. The DMR Assessment concluded that:

In order to mitigate fishermen’s concerns, DMR requests the contractor conduct outreach via written notice thirty days in advance of the project start date to the local Lobster Zone Council, and coordinate with DMR staff who will send email notification to all Zone D members. Notice should include specific nautical bearings of the haul route and width for the safe travel of the spoils barge to avoid entanglement with fishing gear. DMR further requests the anchorage of the barge at either the construction site or at a safe location off Mack Point, and the anchorages be included in the notice. DMR also requests the construction company contracted by Nordic Aquafarm equip their barge with a VMS (Vessel Monitoring System) to track its transit activity along the haul route, and provide a mechanism by which area fishermen may seek compensation for lost gear should the barge deviate from the specified haul route.

- (i) Nordic consented to the recommendations in DMR’s Assessment.
- (ii) Intervenors MGL and Upstream/NVC submitted comments on the DMR Assessment by April 23, 2020.

(8) Post Hearing Board Review of MGL Motions on Title, Right or Interest

On April 16, 2020 the Board heard oral argument on MGL’s Motions to Dismiss Nordic’s Application for Lack of Title, Right or Interest or to Hold an Adjudicatory Hearing on the Issue of Title, Right or Interest. The Board heard argument, rebuttal and surrebuttal from MGL and Nordic and voted unanimously to reject both MGL

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motions.

(9) Post Hearing Briefs

Parties' post hearing briefs were due May 4, 2020. April 10, 2020 email from Board Executive Analyst Bertocci to the Nordic Service List.

G. Draft License Comment Period:

A draft license was made available for comments on _____ through notification to the Applicant, Intervenor, and interested persons. The draft license was posted on the Board's website and the fifteen (15) day comment period closed on _____. A total of _____ commenters submitted written comments on the draft license. All of the comments were reviewed and given consideration in relation to the relevant review criteria of State laws and rules. All comments received are part of the record.

3. COMPLIANCE WITH THE SITE LAW AND NRPA:

A. Title, Right or Interest:

Nordic's Applications included copies of purchase or lease agreements evidencing title, right or interest (TRI) for the Project²:

- (1) Options and Purchase Agreement and Amendment with the BWD for approximately 30 acres of City of Belfast Tax Map 29 Lot 39;
- (2) Lease Agreement and Amendment with Samuel E. Cassida for approximately 12.2 acres of City of Belfast Tax Map 4 Lot 104;

² These agreements required extension due to the passage of time. Extensions were granted as necessary and filed with the Department.

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- (3) Purchase and Sale Agreement, Amendment and Easement Deed with Goldenrod Properties, LLC for approximately 14.6 acres of City of Belfast Tax Map 4 Lot 12-A;
- (4) Easement Purchase and Sale Agreement and Amendment with Richard and Janet Eckrote for a portion of City of Belfast Tax Map 29 Lot 36 with additional permission to upgrade an existing culvert on the property;
- (5) Application for a Submerged Lands Lease and Supplement with the State of Maine Bureau of Parks and Lands for submerged lands within Belfast Bay;
- (6) Permit to Open Street from the City of Belfast for approximately 6,600 square feet of Northport Avenue; and
- (7) Permit to Open Street from the City of Belfast for approximately 7,000 square feet of Perkins Road.

Site Law Application § 2; NRPA Application § 0.2

On June 10, 2019, in response to a Department letter request dated May 29, 2019, Nordic supplemented its Applications with additional documentation of TRI regarding the intertidal adjacent to the Eckrote property including deeds in the Eckrote chain, surveys, and written discussion of the status of the intertidal title by a surveyor and legal counsel. June 10, 2019 TRI Supplement.

On June 13, 2019 the Commissioner of the Department found, pursuant to Chapter 2, Section 11(D) of the Department's Rules, that the Applications established TRI. Specifically, with regard to TRI, the Commissioner's completeness determination states:

A determination that an applicant has demonstrated TRI sufficient for an application to be processed requires a showing of a legally cognizable expectation of having the power to use the site in the ways that would be authorized by the permits being sought. The purpose of this requirement is to allow the Department to avoid wasting its finite resources reviewing

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applications for projects that can never be built. If the applicant is unable to show a sufficient property interest in the site proposed for the project, pursuant to the TRI threshold requirement in Chapter 2 §11(D), the Department can return the application at the outset without devoting time and resources to its processing. In any TRI analysis under Chapter 2, the Department may look beyond an applicant's initial submissions and may request additional information and consider submissions of interested persons as necessary to judge whether adequate credible evidence has been submitted by the applicant and a sufficient showing of TRI has been made to warrant expending Department resources to process the application. The TRI provision cannot, however, be interpreted as compelling the Department to perform an exacting legal analysis of competing ownership claims to determine the ultimate ownership of a property. That ultimate conclusion can only be made by a court. Moreover, the Department rejects any such interpretation as directly counter to the purpose of the TRI provision and cannot afford to allow its permitting proceedings to be transformed into the equivalent of an administrative agency quiet title action. So long as the applicant is able to make a showing of TRI in the subject property that is sufficient to justify the processing of the application, the Department will generally consider this threshold requirement to be satisfied and move to evaluate the merits of the application.

With that understanding, the Department has reviewed the applications and the MEPDES application addendum (aligning the proposed project's pipe locations in the pending MEPDES application with the pipe locations in the other more recent applications) submitted by NAF and has considered all supplemental TRI material that both NAF and various interested persons have submitted. With respect to the intertidal portion of the property proposed for use, the Department finds that the deeds and other submissions, including NAF's option to purchase an easement over the Eckrote property and the succession of deeds in the Eckrote chain of title, when considered in the context of the common law presumption of conveyance of the intertidal area along with an upland conveyance, constitute a sufficient showing of TRI for the Department to process and take action on the pending applications.

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This determination is not an adjudication of property rights and may be reconsidered by the Department at any time during processing as applicants must have adequate and sufficient TRI throughout the application process. Accordingly, should a court adjudicate any property disputes or rights in a way that affects NAF's interest in the proposed project lands while the applications are being processed, the Department may revisit the issue of TRI and return the applications if appropriate.

On July 12, 2019, MGL submitted a petition to dismiss the Nordic applications for lack of TRI with an alternative request for an adjudicatory hearing on the issue of TRI. The Presiding Officer, in the Second Procedural Order dated, August 23, 2019, denied these requests and held that:

Pursuant to my authority under Chapter 3, § 4(C), paragraphs (8), (9), and (12), and as stated at the conference, I decline to return the applications based on a lack of TRI at this time, and I deny the request for a preliminary hearing on the issue of TRI.

Second Procedural Order at § 12.

On November 1, 2019, Presiding Officer Duchesne issued the Board's Third Procedural Order rejecting MGL's request that TRI be a hearing topic and stating:

Intervenors Jeffrey Mabee and Judith Grace [...] requested that one of the hearing issues be whether Nordic has demonstrated sufficient title, right or interest (TRI) to pursue permits for the proposed project. The Board is aware of the dispute over ownership of the intertidal lands where portions of Nordic's proposed pipelines would be located, and that ownership of this land is currently being litigated. The Board will not hear testimony on this issue at the hearing. The issue is better suited to written evidence and argument than to live testimony and cross-examination. The parties may submit written evidence and argument on the issue but are asked to refrain from re-submitting evidence that is already in the record.

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Third Procedural Order at § 1(D).

On November 4, 2019, MGL appealed this decision to the full Board. They requested that TRI be a topic at the hearing, with testimony of witnesses and cross-examination. The Board heard this appeal on November 7, 2019 and unanimously upheld the Presiding Officer's ruling that TRI would not be an issue for oral testimony and cross-examination at the hearing. The Board noted that the issue could be addressed through written submissions. Fourth Procedural Order at § 1(G).

On November 18, 2019, MGL filed a Motion to suspend or terminate Board proceedings based on TRI objections and reiterated this request by email dated November 26, 2019. In the Fifth Procedural Order, the Presiding Officer determined that:

there has been no change to the applicant's Title, Right, or Interest (TRI) that warrants the rescission of the Fourth Procedural Order or the termination or suspension of these Board proceedings.

Fifth Procedural Order at § 2.

On January 8, 2020, MGL submitted another request that the Board reconsider whether Nordic demonstrated sufficient TRI. In support of this request, MGL submitted a transcript of a telephonic oral argument on a motion in the federal court case being litigated between Mabee/Grace and the intertidal property owners that refers to renewal of the easement option submitted by Nordic on January 7, 2020. The Presiding Officer denied this request noting previous similar requests by MGL. Ninth Procedural Order at § 4.

Parties' pre-filed rebuttal testimony was due January 17, 2020. Despite TRI not being a hearing topic, a MGL witness submitted hearing testimony on TRI that was stricken from the hearing record but remains in the administrative record. Ninth Procedural Order at § 1(A).

By e-mail dated February 7, 2020, MGL requested that the two new Board members doing a site visit be briefed concerning the TRI issues. MGL also requested that a list of documents

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concerning TRI be provided to the two Board members before the site visit. Board member Sanford has been on the Board since June 27, 2019 and received the filings that other Board members have received. New Board member Mr. Pelletier was briefed on the issue by staff and counsel prior to the site visit and was provided the materials, that the other Board members previously received, after the hearing. *See* Tenth Procedural Order at § 3.

At the Board hearing, on February 12, 2020, Nordic provided the Board with statements from its surveyor and an engineer at the same company, swearing under oath to the falsity of certain sworn testimony submitted to the Board by a MGL witness regarding TRI. Nordic Exhibit 41.

On February 14 and again on February 28, 2020, after the end of the Board hearing dates, MGL again petitioned the Board to terminate its review and dismiss the Applications or to conduct an adjudicatory hearing on TRI. The Board heard these motions on April 16, 2020 and voted unanimously to deny both.

The Applicant demonstrated TRI in the Project as required by Department Rules Chapter 2, §11(D), the Site Law, and NRPA. Applicant shall submit executed copies of the property transactions documented in the TRI materials in advance of commencement of construction.

B. Technical Ability:

Pursuant to the technical ability standard of the Site Law 38 M.R.S.A. § 484(1) and Department Rules Chapter 373 § 3, Applicant must demonstrate technical ability sufficient to construct and operate the Project consistent with state environmental standards.

Applicant documented technical ability consistent with state environmental standards, the Site Law. Site Law Application § 4. Consultants retained by Applicant submitted credentials with their pre-filed sworn written testimony documenting compliance with the technical ability standard of 38 M.R.S.A. § 484(1) and Department Rules Chapter 373 § 3.

C. Financial Capability:

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Pursuant to the financial capacity standard of the Site Law and Department Rules Chapter 373 § 2, Applicant must demonstrate financial capacity to design, construct, operate, and maintain the proposed development in a manner consistent with state environmental standards and the provisions of the Site Law. Applicant must demonstrate financial capacity for all aspects of the development and not solely the environmental protection aspects. Evidence regarding financial capacity must be provided prior to a decision on an application, except, pursuant to 38 M.R.S. § 484(1), the Department may condition a permit to require provision of final evidence of financial capacity before the start of any site alterations.

Applicant submitted financial capacity materials and a capital cost estimate with the Site Law Application. The Applications indicate that the estimated total cost to bring the Project from design through completion is \$500 million. Two major phases are contemplated, Phase 1 at \$269.75 million and Phase 2 at \$230.25 million, these are itemized by cost category and further detailed per construction milestone within the major Phases in Table 3-1 of the Site Law Application. Nordic has commitments from its Board members and its Applications included an independent audit from BDO regarding financing received to date. Nordic also submitted Letters of Interest from Pareto Securities AS and Carnegie AS, significant investment houses which supported past share issues and which expressed strong interest in future private placements and other private financing as well as a statement of interest from EKF, Denmark's Export Credit Agency. Site Law Application § 3.

Applicant submitted Pre-filed Direct and Rebuttal testimony from its Chief Financial Officer, Brenda Chandler, discussing availability of investment for the Project.

Based on the information in the administrative record, the Department finds that Applicant demonstrated adequate financial capacity, provided Applicant:

Submits evidence that it has raised capital, been granted a line of credit or a loan by a financial institution authorized to do business in this State, or evidence of any other form of financing consistent with Department Rules, Chapter 373, § 2(B), in an amount needed for Phase I (currently estimated at \$269.75 million) to the Department for review and approval prior to the start of construction of Phase I. If

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the Phase I cost estimate requires revision, Nordic shall document the revised amount and provide evidence of financial assurance in that amount.

Submits evidence that it has raised capital, been granted a line of credit or a loan by a financial institution authorized to do business in this State, or evidence of any other form of financing consistent with Department Rules, Chapter 373, § 2(B), in an amount needed for Phase II (currently estimated at \$230.25 million) to the Department for review and approval prior to the start of construction of Phase II. If the Phase II cost estimate requires revision, Nordic shall document the revised amount and provide evidence of financial assurance in that amount.

D. Scenic Character:

Site Law, 38 M.R.S. § 484(3), and NRPA, 38 M.R.S. § 480-D(1), both have standards pertaining to scenic impacts that must be satisfied in order to obtain a permit from the Department. Pursuant to section 484(3), an applicant must make adequate provision for fitting the proposed project into the existing natural environment and the development may not adversely affect scenic character in the surrounding area. Pursuant to section 480-D(1), an applicant must demonstrate that the proposed project will not unreasonably interfere with scenic or aesthetic uses of protected natural resources. Thus, Site Law prohibits development that will “adversely affect” scenic character, while NRPA prohibits activity that will “unreasonably interfere” with existing scenic and aesthetic uses. The criteria of the two laws reflect a similar intent in that they both allow development or activity that will result in a visual impact, but when this impact is too great an applicant fails to satisfy the review criteria. This is reflected in the corresponding NRPA and Site Law rules, both of which specify that the applicant’s burden is to demonstrate that there would be no “unreasonable adverse” impacts or effects and the Department’s assessment is on that basis. DEP Chp. 315, §§ 1 & 4 and DEP Chp. 375, § 14(B) & (C).

The Project preserves the scenic value of the Little River Community Trail, the Lower Reservoir, dam, and some of the existing Belfast Water District buildings and existing uses by retaining the existing red brick BWD office building, dam, and associated structures for the Project, and repurposing the office building for the visitor center. Site Law Application § 6; NRPA Application Appendix 12-A.

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Preservation of the view across the Lower Reservoir and along the Little River Community Trail is accomplished by maintaining a 250-foot undeveloped area directly adjacent to the Lower Reservoir for continued community use and a Project buffer between the upland edge of this area and the nearest building of approximately 100 feet (40 feet of which will be vegetated). Project buildings are condensed to the maximum extent possible in the central core of the Project area to preserve existing views to the greatest extent possible, from all directions. Site Law Application § 6; NRPA Application § 5.

The Project requires increased power supply from Central Maine Power. The feed will come from the north via the U.S. Route 1 / Northport Avenue corridor to the Project entrance, where it will be placed underground and routed to the primary substation. Utility requirements will necessitate replacement of the existing (approximately 30-foot high) poles on the north side of the road with taller poles as necessary to achieve proper separation of the high-voltage supply line. The replacement of the poles and any minor height increase will not create an unreasonable adverse visual impact to a public viewing area. Site Law Application § 6; NRPA Application § 1.

SMRT, Inc. prepared a Visual Assessment Report (VIA) in accordance with Chapter 315 of the Department Rules which assesses Project impacts to the visual quality and scenic character of the surrounding area. Site Law Application § 6, Appendix 6-A. In accordance with Chapter 315, two defined “public viewing areas” exist within 2,000 feet of the Project boundary, (1) the McLellan-Poor Preserve consisting of lands and trails on the south side of the Lower Reservoir in Northport, and (2) the Little River Community Trail consisting of land coinciding with the Shoreland Zone (250 feet from shoreline) on the north side of the reservoir. Other vantage points include public rights-of-way such as Rt. 1/ Northport Road and Perkins Road, which afford views into the Project site but which do not meet the definition of “public viewing areas” and which are thus not required to meet applicable scenic quality regulations. Site Law Application Appendix 6-A.

The VIA documents that there will be no unreasonable adverse impact to public viewing areas. All public viewing areas are adequately buffered by existing and maturing vegetation and, because these areas will be protected by conveyance to a third party for preservation, vegetation will remain and increase in buffering effectiveness. The Project area includes an

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additional 40 foot vegetated buffer area adjacent to this undeveloped area. New perimeter plantings will augment and enhance this 40-foot zone and the cut/fill slopes leading to it around the developed areas. These plantings are oriented more towards providing screening to the Perkins and Rt. 1 views, even though they are not defined as “public viewing areas.” Site Law Application Appendix 6-A.

In support of its application and in accordance with Chapter 315 of the Department’s Rules, Applicant submitted a Virtual Tour of the Project site and Natural Resources Report by Normandeau Associates along with a description of the property and the proposed project as part of the NRPA Application. NRPA Application §§ 0, 1, 3, 4 and Appendix 12-A. Department Staff visited the Project site on May 17, 2019, July 3, 2019, October 24, 2019, and November 1, 2019 and the Board visited on October 24, 2019 and February 10, 2020 to view features of the site and the nature of the surrounding area.

Based upon the information in the record including the VIA, photographs of the site, and site visits the Department finds that the proposed activity will not unreasonably interfere with existing scenic or aesthetic uses or character of the protected natural resource pursuant to the Site Law and NRPA.

E. Existing Uses:

The Site Law requires Applicant to demonstrate that the Project will not adversely affect existing uses or scenic character. 38 M.R.S. § 484(3). Similarly, NRPA requires that the proposed activity will not unreasonably interfere with existing scenic, aesthetic, recreational, or navigational uses. 38 M.R.S. § 480-D(1). Scenic impacts of the project are evaluated in Section 3(D) of this Order. The Department addressed the scenic impact standards of both Site Law and NRPA and found that the project will not have an unreasonable adverse effect on scenic uses or scenic character. As a result, because the scenic impact of the project is not unreasonable, the Department further finds the project will not have an unreasonable adverse effect on existing uses that are related to the scenic character.

Project impacts to existing uses, however, are not limited to a impacts on scenic uses and scenic character. A project could, for example, physically interfere with existing uses and result in an unreasonable adverse effect. Thus, the Department evaluated the potential

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impact of the Project on existing uses, looking beyond the scenic impacts. Chapter 315 of the Department’s Rules guides analysis of impacts to existing recreational or navigational uses from activities in, on, over or adjacent to protected natural resources subject to NRPA.

Because the freshwater wetlands on the Project site are not used for navigational purposes and are in private ownership, existing uses of concern are those impacted by construction and operation of the intake and outfall piping associated with the Project. Operation of the outfall is subject to a separate MEPDES/WDL license issued by the Department, compliance with which will ensure there is not impact from pollutants like metals, pathogens, and nutrients which could interfere with existing uses. Impacts to navigation and the fishing community were also the subject of significant testimony. MGL and Upstream/NVC as well as numerous individual commenters, expressed concern about construction and operation of the intake and outfall piping on the fishing community.

Pursuant to NRPA, 38 M.R.S.A. § 380-D(9) the DMR must “provide the Department with an assessment of the impacts on the fishing industry of proposed dredging operation in the coastal wetlands.” On February 14, 2020, DMR noticed a public hearing to be held March 2, 2020 in Belfast, Maine. On April 7, 2020 DMR issued its “Addendum Comments on impacts to fishing activity during construction of intake and discharge pipes and haul route for transport of excavated material site” (DMR Assessment). Although the excess marine soils from the excavation for construction of the intake and outfall will be transported approximately 5.5 miles by barge to Mack Point in Searsport for disposal in an upland solid waste facility, and not to an ocean disposal site, the DMR Assessment considered impacts to the fishing community from this transport in addition to the impacts associated with construction of the intake and outfall.

The DMR Assessment discusses concerns regarding: resuspension of historic deposition of mercury and other contaminants, and concerns about gear entanglement with the barge. DMR Assessment at 1-4. The DMR Assessment included the following recommendations:

Applicant use a closed bucket dredge, where practicable, for excavation activity in the sub-tidal to minimize the re-suspension of the sediments. This will minimize any potential impacts to shellfish and other marine species within the direct project location, including nearby aquaculture facilities. The use of turbidity curtains around

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the barge and excavation site will minimize impact to the nearshore marine environment.

Applicant is strongly encouraged to mark the location of the intake and outfall piping for navigational safety and to avoid entanglement in consultation with the United States Coast Guard.

Applicant conduct outreach via written notice thirty days in advance of the project start date to the local Lobster Zone Council, and coordinate with DMR staff who will send email notification to all Zone D members. Notice should include specific nautical bearings of the haul route and width for the safe travel of the spoils barge to avoid entanglement with fishing gear. DMR further requests the anchorage of the barge at either the construction site or at a safe location off Mack Point, and the anchorages be included in the notice. DMR also requests the construction company contracted by Nordic Aquafarm equip their barge with a VMS (Vessel Monitoring System) to track its transit activity along the haul route, and provide a mechanism by which area fishermen may seek compensation for lost gear should the barge deviate from the specified haul route.

The U.S. Army Corps of Engineers will determine appropriate sediment analysis needed. DMR is satisfied that this process will be adequate to resolve its concern regarding resuspension of contaminants.

DMR Assessment at 2-4. Applicant consented to these conditions.

Based upon the information in the record including the Applicant's VIA, photographs of the site, site visits, and the DMR Assessment, the Department finds that the proposed activity will not unreasonably interfere with existing uses or character of protected natural resources pursuant to the Site Law and NRPA provided Applicant complies with the DMR recommendations which are included herein below as conditions to this Approval.

F. Natural Resource Impacts:

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Site Law, 38 M.R.S. § 484(3), requires Applicant to demonstrate the Project will not unreasonable adversely affect any natural resources. Department Rules recognize the need to protect wildlife and fisheries by maintaining suitable and sufficient habitat and the importance of preserving unusual natural areas for educational and scientific purposes. DEP Chapter 375 §§ 12 and 15.

NRPA, 38 M.R.S. § 480-D(3), requires Applicant to demonstrate that the Project will not unreasonably harm significant wildlife habitat; freshwater wetland plant habitat; threatened or endangered plant habitat; aquatic or adjacent upland habitat; freshwater, estuarine, or marine fisheries; or other aquatic life.

Chapters 310 and 335 of the Department’s Rules guide Department determinations on the reasonableness of Project impacts. Each application for a NRPA permit that involves wetland alterations or impacts to Tidal Waterfowl or Wading Bird Habitat (TWWH) or Inland Waterfowl and Wading Bird Habitat (IWWH) must provide an analysis of alternatives, which is a part of the Department’s analysis of whether a proposed project’s environmental impacts are unreasonable. Project impacts to protected resources would generally be unreasonable if there is a practicable alternative to the Project that would be less damaging to the environment. An alternative is practicable if it is “available and feasible considering cost, existing technology and logistics based on the overall purpose of the project.” DEP Chapter 310 §§ 3(R) and 5(A).

Normandeau Associates completed multiple natural resource studies and impact compensation plans between July 2018 and October 2019 the results of which are contained in the May 8, 2019 Natural Resources Report and responses to Department requests for information (Natural Resources Report). NRPA Application Appendix 12-A. The Natural Resources Report detailed the methods and results of the wetland and stream determinations, vernal pool surveys, wildlife, fisheries and benthic assessments. Prefiled Direct and Rebuttal Testimony and associated Exhibits submitted on the Applicant’s behalf by Adele Fiorillo and Tyler Parent provided additional information on the reasonableness of Project natural resource impacts.

- (1) Project Wetland Impacts

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Applicant proposes to permanently alter approximately 4.4 acres of freshwater wetlands, 1,863 linear feet of stream, and 0.17 acres of coastal wetlands as well as approximately 14.75 acres of temporary impacts to freshwater and coastal wetlands to construct the Project. NRPA Application Appendix 12-A

Applicant assessed the functions and values of wetlands using the U. S. Army Corps of Engineers Highway Methodology (September, 1999). The functions and values of the freshwater wetlands proposed to be impacted by the project include flood flow alteration, nutrient removal, sediment and toxics removal, and wildlife habitat or other significant wildlife habitats in the wetlands to be impacted.

(2) Alternatives Analysis

Applicant submitted an alternatives analysis for the Project completed by Ransom Consulting, Inc. which summarized the need for the Project, examined alternatives to the selected Project site and Project design, including: development of alternative sites, alternative site layouts, and alternative intake and outfall pipe routing.

a. Project Purpose

The stated Project purpose is to provide 33,000 metric tons of high quality and sustainable seafood to consumers in the northeastern United States. NRPA Application § 2.3. Applicant reviewed coastal properties from Washington, D.C. northward to the Canadian border over a six-month property location process. This initial analysis along with Nordic's need for clean and cold fresh and salt water determined that the proposed project should be located in the State of Maine. This decision was bolstered by the comparative availability of coastal land and clean groundwater in Maine and national recognition and branding of the state as a producer of high-quality seafood. NRPA Application § 2.1.

b. Alternatives Considered

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Applicant conducted a desktop geospatial assessment and reviewed 534 potential properties in Maine. This list was narrowed to approximately 40 which were further narrowed using their relative: availability of property, access to clean and cold seawater, attractive workplace location, buildable lot size, available road and utility infrastructure, effluent impacts to local waterbody, construction impacts to natural resources, lack of preexisting adverse environmental conditions, ground conditions favorable to construction, access to abundant fresh water resource. Applicant visited the most favorable locations, and results were narrowed further based on preliminary site specific evaluations and willingness of the landowner to transfer property rights. Evaluation of these criteria resulted in selection of the Project site in Belfast as the preferred alternative. NRPA Application § 2.4.

Applicant considered four site layout alternatives and five pipe routing alternatives for the intake and outfall piping to determine whether the Project purpose could be met by changing the Project size, scope, configuration or density at the Belfast site in order to avoid or minimize the impact to natural resources. NRPA Application § 2.5.

c. Minimization of On-Site Impacts

Applicant utilized the Qualitative Habitat Evaluation Index (QHEI) to provide a qualitative evaluation of Project stream impacts and potential for enhancement. The QHEI uses a qualitative scoring method with six separate categories and a possible total score of 100. Application of the QHEI methodology shows overall quality of the streams onsite is poor and the streams have limited to no potential to achieve higher aquatic biological functions. The highest scoring reach of stream on the site was Stream 9c, with a score of 42.

The proposed on-site compensation, which includes restoration plantings along all sections of Stream 9 as well as replacement of a culverted driveway crossing on S8 and another culverted driveway crossing on D7, will improve

the score for the full length of Stream 9. Specifically, S9a will see immediate improvement to instream cover and bank erosion/riparian zone scores through the planned planting of riparian vegetation and deeded protection of up to 75 feet wide adjacent to the stream bank. Substrate, channel morphology, and riffle/run scores would also be expected to improve over time. S9b will show substantial improvement through the restoration of this section, as instream cover, which is currently sparse, will be vastly improved, as will the riparian zone. Improvements to D7 and S8 through the replacement of a currently hung set of three culverts and a hung single culvert with open bottom aluminum arches will provide not only improved stream characteristics to D7 and S8, but also to S9c, as well as the joinder of the three at the coastal wetland. This increased connectivity and improved instream cover will improve water quality and macroinvertebrate diversity. These improvements also provide connection to downstream fish habitat along the lower reaches of S8 and S9.

Streams 3, 5 and 6 will be altered on the Project site. Applicant maintains flow in the off-site portions of these streams using groundwater from the interceptor trench on the northern property boundary. Applicant also proposes compensation and improvements to the lower portions of these streams. Specifically, Applicant will remove unnecessary piping from Streams 5 and 6, provide bank stabilization, and create improved trail crossings and stream bottoms along the Little River trail. Similar improvements are planned for Stream 3, where bank stabilization, slope stabilization, and other compensation measures are planned. With the projects described, Nordic proposes 225.5 linear feet (lf) of stream restoration measures, broken down as follows:

Stream 3 Western Bank:

- New plank bridge raised off stream bed, lengthened to span banks (32 lf of stream protection)
- providing bank stabilization with stone steps (5 lf)

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Stream 3 Eastern Bank:

- Bank stabilization at base of steps (3 lf)

Stream 5:

- Replace rock in stream bed with new arch bridge and use rock to create riffle/pool complex (18.5 lf of stream restoration)
- Concrete and aluminum culvert removal (40 lf stream restoration)

Stream 6:

- Replace rock in stream bed with new arch bridge and use rock to create riffle/pool complex (13 lf of stream restoration)
- Concrete culvert removal (24.5 lf stream restoration)
- Bank stabilization (7 lf)

Drainage 7:

- Replace hung culvert with arch culvert (65 lf)
- Restore stream bed (80 lf)
- Restore plunge pool below arch (15 lf)

Applicant's wetland impact mitigation proposal also includes maintenance of a minimum 75-foot deeded buffer along the Stream 9 as shown on Figure 10-1 to the NRPA Application. Stream 9 is the focus of Applicant's riparian restoration plan which extends up to 150' between the stream and Project development in some locations. The riparian restoration and deeded buffer will create quality wildlife habitat and a travel corridor along Stream 9.

d. Compensation

In accordance with DEP Chapter 310 § 5(C), compensation is the off-setting of a lost wetland function with a function of equal or greater value. The goal

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of compensation is to achieve no net loss of freshwater wetland functions and values. The amount of compensation required to replace lost functions depends on a number of factors including: the size of the alteration activity, the functions of the wetlands to be altered, and the type of compensation to be used.

Applicant's NRPA Application included a Natural Resources Impact Compensation Plan prepared by Normandeau Associates which was updated on November 4, 2019 (Compensation Plan). The Compensation Plan details the wetland (including streams) impacts, impact compensation (including riparian restoration and buffers, aquatic passage improvement, and impacts restored in place), compensation goals (including on-site compensation and the in lieu fee), schedule for compensation implementation, and a compensation monitoring plan. NRPA Application Appendix 13-A.

After reviewing the Project's impacts to these freshwater wetlands and waterbodies, the Department finds that that impacts are not unreasonable because the site resources are not unique, are generally of low function and value, and impacts have been avoided or minimized through site layout design. In addition, this approval is conditioned upon implementation of the Project Compensation Plan which offsets permanent impacts through a combination of on-site compensation and payment of the in lieu fee of \$613,466.48.

(3) **Wildlife, Fisheries, and Other Natural Resources**

DEP Chapter 375, § 15, implementing Site Law, requires an applicant to make adequate provision for the protection of wildlife and fisheries by maintaining suitable and sufficient habitat, including travel lanes between areas of habitat. NRPA, and the pertinent regulations promulgated under it, DEP Chapters 310 and 335, recognize the importance of rivers, streams, and brooks; wetlands; and significant wildlife habitat including TWWH and IWWH. The rules support a goal of no net loss of function and values, establish the criteria for avoidance and minimization of project impacts and state that some projects, even if the impacts have been avoided and minimized to

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the greatest practical extent, still may be unreasonable. In its review, the Department considers evidence concerning buffer strips of sufficient area to provide wildlife with travel lanes and protection of wildlife and fisheries lifecycles, threatened or endangered species, and high or moderate value waterfowl and wading bird habitat.

a. Wildlife

The Natural Resources Report indicates that the Project site is similar to the surrounding landscape in natural land cover and amount of human development and activity. Due to high proportion of natural and semi-natural cover types and small amount of developed area, the site is expected to provide good general wildlife habitat for most if not all of the common wildlife species that use the habitats that are present on-site.

The 2019 Timber Inventory by CLT, Inc. (Natural Resources Report Appendix E), as confirmed during the on-site habitat review, document that the Project site is primarily forestland that gradually slopes south towards the Lower Reservoir. These forest stands are either hardwood (+19 acres) or pine (+15 acres) dominated. Stand age and condition, and remnant barb wire fence indicates historic clearing for farm fields or pasture. Portions of the forested stands appear to have been recently selectively harvested. Some smaller snags are present and a few larger trees have hollows, but due to the age of the stand as secondary growth, these features are not abundant.

The field habitat appears to be regularly mowed for hay, which reduces its value for wildlife habitat. However, regularly mowed hayfields do provide habitat for snakes and frogs in summer, and for certain small mammal and bird species year round. The species of bird most likely to use hayfields varies with the season and the height of the vegetation.

The Natural Resources Report notes that Project site wetland habitat has a minimal hydroperiod, due to the nature and slope of site soils, that limits their value to wetland-dependent wildlife species that require more constant levels of inundation. However, the intermittent streams on-site do provide some

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suitable habitat for wetland-associated wildlife species adapted to a limited hydroperiod, including certain stream-breeding salamanders and aquatic invertebrates.

The Natural Resources Report documents that the TWWH area impacted by the intake and outfall pipes is part of a substantially larger intertidal area that extends roughly from the mouth of the Little River southwards for about $\frac{3}{4}$ of a mile to Browns Head, on the Northport, ME shoreline. This entire area is designated as TWWH, a class of habitats recognized as a Significant Wildlife Habitat under NRPA.

The Natural Resources Report discusses Maine Natural Areas Program (MNAP) mapping which designates the Lower Reservoir as IWWH includes the reservoir itself, as well as the shores. The entire reservoir and adjacent shores is designated as IWWH from the lower dam inland. IWWH is a class of habitats recognized as Significant Wildlife Habitat under NRPA.

The Project is located in or near habitat for the following species included on Maine's Endangered or Threatened Species list, or identified as species of special concern as well as species federally listed as threatened or endangered:

(i) Invertebrates

Based on known distribution and habitat preferences of Maine's special status invertebrate species, none of these species are expected to be present within the Project site.

(ii) Reptiles and Amphibians

Based on known distribution and habitat preferences of Maine's special status reptile and amphibian species, none of these species are expected to use habitats within the Project site.

(iii) Birds

Of the 56 terrestrial species that likely use the on-site habitats, based on their habitat preferences and e-bird records, eight are listed as Species of Special Concern (SC), and five designated as Species of Greatest Conservation Need (SGCN) in *Maine's Wildlife Action Plan* (2015). None are listed as State or federally threatened (ST, FT) or endangered (SE, FE). Eleven of these 13 special status species are long-distance migrants that spend the winters in Central or South America and their summers in northern latitudes. The wood warblers (American redstart, northern parula, black and white, chestnut-sided, black-throated green, and black-throated blue warblers) depend on upland forest habitats for feeding and breeding, as does the eastern wood-pewee, while the veery uses understory thickets associated with water courses and surrounding uplands, and bobolinks and barn swallows use open fields. The two short-distance migrants, the purple finch and white-throated sparrow, use a variety of edge and wooded habitats. All 13 species are likely to use the site during migration, and have at least some potential to nest on the Project site.

Of the 19 water bird species with a high likelihood of using the TWWH associated with the intake and outfall pipes, based on e-bird records, three are listed as SC (greater scaup, lesser yellowlegs, semipalmated plover), and four additional species are designated as SGCNs (common eider, least sandpiper, long-tailed duck, semipalmated sandpiper). None are listed as State or federally threatened or endangered.

(iv) Mammals

All of Maine's eight bat species are listed, and based on known distribution and the habitat available, all have some potential to be present during the summer. The forest cover on-site provides summer roosting habitat for the foliage-roosting species (eastern red, hoary,

and silver-haired bat, all listed as SC) as well as the northern long-eared bat (Species Endangered (SE), Species Federally listed as Threatened (FT)), which roosts under loose bark and tree trunk crevices and hollows. Structures on-site and nearby provide potential summer roosting habitat for little brown bats (SE) and big brown bats (SC), and forest edges and the nearby reservoir provide suitable feeding areas for all these species as well as the eastern small-footed bat (ST). No other listed mammals are expected to be present.

(v) Tidal Waterfowl and Wading Bird Habitat

Designated TWWH will be temporarily impacted during construction of the intake and outfall piping. The value of TWWH is associated with feeding habitat that it provides for waterfowl and wading bird species, generally intertidal mudflats, eelgrass and mussel beds where they can forage for aquatic invertebrates. The intertidal area that will be impacted by the project has a cobbly and firm substrate and does not support any mussels, eelgrass, or shellfish beds. Adherence to a November 1 to April 1 work window for construction in the intertidal and subtidal area minimizes impacts to the TWWH.

(vi) Inland Waterfowl / Wading Bird Habitat

Forest cover is generally present right up to the shoreline, which is also relatively steep, and there is no shoreline emergent vegetation to provide cover. All these attributes make the shore low value habitat for inland waterfowl and wading birds. The Lower Reservoir itself does provide some opportunity for these species to loaf or feed, especially ducks, which e-bird records indicate are observed on the reservoir in moderate numbers during migration, especially in the spring. The Project does not impact this IWWH.

b. Fisheries

There are two fisheries habitat types associated with the project site, freshwater and marine.

(i) Freshwater Fisheries

Potential freshwater habitat on or adjacent to the Project site consists of the Lower Reservoir and intermittent streams. The streams are drainage avenues for water to drain from upland areas during significant rain events. They do not stay watered for enough of the year to present a significant potential habitat for fisheries.

The Lower Reservoir, is a ponded section between two dams on the Little River that does provide adequate habitat for some freshwater species, however there were no specific reservoir species recommended for impact assessment by the state. In order to prevent impact to this water body, erosion and sedimentation control measures will be implemented during Project construction, as outlined in Section 8 of the NRPA Application, and permanent vegetative buffers will be maintained between the reservoir and the Site, as detailed in NRPA Application Section 9. Vegetative buffers will include a 250-foot shoreland zone, measured from the mean high water mark, on the Project side of the Lower Reservoir with the exception of the areas where the water district office building is currently located. This shoreland buffer is located outside of the Project boundary, but is subject to Project easements.

(ii) Marine Fisheries

Other than the first short distance from shore, the marine habitat associated with the proposed path of the intake and outfall piping is quite homogenous- fine grain sandy, silty, muddy substrate mixed in with relatively small cobble, and almost no vegetation. Circular depressions in the seafloor are quite abundant in Belfast Bay. These depressions are referred to as “Pockmarks.” Pockmarks are an

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unusual geological feature that occurs worldwide as described in Fandel 2013. Pockmarks are formed primarily by the historic escape of methane gas through the estuarine sediment, which displaces the substrate thereby forming the pockmarks. Pockmark size ranges from 1 m to greater than 1 kilometer in diameter. These pockmarks will be avoided in the path of the pipes. Under the proposed design, the terminus of the pipes will be located closer to shore than any of the major pockmarks that occur in Belfast Bay. The pockmarks in the vicinity of the Project area are shown in the bathymetric survey completed by Normandeau Associates in 2018. NRPA Application § 12 (Appendix 12-A) (Appendix H).

In the closest section of the piping path to shore, in the subtidal area, there are some small patches of vegetation that could be used as viable habitat for a variety of finfish or shellfish species. Vegetation consisted of common intertidal and shallow subtidal species. Also present are smaller amounts of some larger diameter substrates including cobble, boulders, and shells. These small patches of vegetation did not represent a substantial portion of the proposed construction area.

Fishes, crabs, sea stars, and shellfish were not very prevalent in the video, but it is likely some of the mobile organisms detected the towed camera and boat, moving from the visual field. This indicates that the majority of the seafloor life is likely to temporarily relocate on its own and presumably re-colonize the area post-construction. Mobile organisms will likely recolonize the area post-construction. Sessile organisms will begin recolonization after the first spawning season post-construction.

DMR recommended impact assessment for five species of finfish which use the marine habitat. Those species were American eel (*Anguilla rostrata*), alewife (*Alosa pseudoharengus*), blueback herring (*Alosa aestivalis*), winter flounder (*Pseudopleuronectes*

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americanus), and rainbow smelt (*Osmerus mordax*). In this document, the two herring species will be combined into a single assessment for “river herring” as they are generally grouped.

Due to the depth and placement of the intake, it is unlikely that the Project would have a significant impact on elvers because they will already be developed swimmers able to avoid the intake.

The egg and larval stages of alewife and blueback herring only occur in freshwater. Thus, juveniles which could exist in the Project area on their way to the ocean will already be developed enough to be unaffected by the operation of the intake. Additionally, the in-water work window (November 1 – April 1) will ensure that migrating individuals will not be injured during construction.

Winter flounder come inshore during late winter and early spring to spawn and adults move offshore following spawning. Winter flounder eggs are both demersal and adhesive. They are laid in masses and stay on the seafloor during incubation. The Project area, with its mainly soft bottom, would likely be suitable habitat for the Winter flounder spawning and nursery habitat. As this species spawns during the proposed in-water work window (November 1 – April 1), the Project is likely to disturb or displace some spawning individuals. However, the Project footprint is small when compared to the whole of Belfast Bay, so individuals should be able to flee and still spawn in adjacent equivalent habitat during construction. During operations some eggs and larvae may be impacted.

Rainbow smelt are schooling, pelagic fish that occupy inshore coastal waters. In spring, typically March-May in New England, they undertake significant migrations leaving coastal waters and traveling to freshwater streams to spawn above the head of tide. Spawning rainbow smelt that come inshore during spawning season do have the potential to have their migration to upriver spawning areas affected by

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the Project. If individuals come inshore in March, they may come into contact with construction activities. Although spawning occurs in freshwater, after hatching, larvae drift quickly to estuarine waters, making it possible for larvae to occur the project area. This will likely not be an issue during construction because eggs will not drift into the project area until after the end of the in-water work window (November 1 – April 1). However, once the facility begins operating, some may be impacted. Rainbow smelt serve as important forage for a wide variety of important predator species in the Gulf of Maine, which suggests that loss of individuals of this species could affect other species in the bay which use it as forage.

Impacts to finfish are expected to vary based on species. Of the species assessed, only winter flounder is expected to be present in the Project area during construction. This species is known to spawn in the area during the in-water construction window. Although this species is expected to be in the vicinity, spawning adults are expected to self-relocate and should be able to successfully spawn in adjacent and equivalent habitat available in the bay. The other species are not expected to occupy the Project area in significant numbers during construction, so minimal construction impact should occur. Overall, the impact from construction on the species assessed is expected to be insignificant.

When the intake is operational, the only ongoing potential for loss of finfish due to Project operations would be to eggs and larvae. The intake is engineered to have a through screen velocity of less than 0.5 ft/sec, which will effectively minimize the chance for impacts to adult fish. The screen itself is proposed to be a 1 inch slot size wedge wire mesh allowing smaller than 1 inch eggs and larvae to enter the intake. It is not expected that mortality would occur due to temperature, rather, eggs and larvae would be lost at the intake. The most likely species to experience this impact would be winter flounder and rainbow smelt as these species are likely to have the egg and/or larval

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life stages present in the vicinity of the intake. There is some chance that young glass or elver stage eels could be impacted by the intake, but it is unlikely that this would be significant as their swimming ability should be developed enough for them to avoid the screen due to the low intake velocity.

DMR recommended impact assessment for four species of shellfish. Those species are American lobster (*Homarus americanus*), Atlantic sea scallop (*Placopecten magellanicus*), blue mussel (*Mytilus edulis*), and softshell clam (*Mya arenaria*). According to DMR, softshell clams are mapped and known to be present in the area of the proposed Project's intake and discharge pipelines. There is one blue mussel farming lease approximately 2 miles from the Project area. Although blue mussels are not mapped by DMR in the immediate Project area, it is possible that they would use this habitat.

American lobster uses a wide variety of substrate. Although no lobsters or burrows were observed during the pipeline habitat survey conducted by Normandeau Associates, the literature suggests that the Project area could be suitable for some life stages of this species. As eggs of this species hatch from May to October, it is not expected that the in-water construction will significantly impact lobster in the Project area. Individuals present during the November 1st through April 1st in-water construction window are most likely to be fully or nearly fully developed, making them mobile enough to self-relocate to a safe distance from construction activities. After the Project begins operating, some early planktonic larva may be impacted.

Mortality of individuals of the four shellfish species in question is not likely to occur strictly from the temporary increase in TSS during construction activities. Juvenile and adult lobsters will self-relocate during construction, thereby minimizing the chance for significant impact. Scallops, blue mussels, and softshell clams will be able to modify their behavior to temporarily endure the change in water

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conditions until their area of residence is no longer part of the active construction zone. Once the aquafarm begins operating, the cleaned discharge water is not expected to impact shellfish in the area. If loss of adult shellfish is observed, it is most likely to occur by the individual being physically crushed by a piece of equipment used during in-water construction. As an impact mitigation measure, this Project will restrict all in-water work in the marine environment to November 1st to April 1st. Construction activities are not expected to significantly impact the shellfish community in the area. After construction is complete, all shellfish should be able to resume routine use of the Project area.

During facility operation the only ongoing potential for loss of shellfish due to Project operations would be the loss of eggs and larvae at the intake. The intake's less than 0.5 ft/sec engineered intake velocity will minimize the chance for adult shellfish to become stuck to the intake screen. The screen itself is proposed to be a 1 inch slot size wedge wire mesh, which will be too large to reduce the intake of larval and egg life stages.

No commercial shellfisheries are expected to be negatively affected by the Project because the proposed Project area is located within an area which DMR has classified as a prohibited shellfish growing area.

The intertidal substrate along the Project pipe route is firm sand with an abundance of cobble and some boulders. A Coastal Wetland Characterization – Intertidal and Shallow Subtidal Check list was completed. NRPA Application Appendix B. The deeper portions of the subtidal substrate along the piping path was determined based on sediment cores and underwater video and is characterized as mostly homogenous sandy/silty/muddy sediment with cobble mixed in. Overall, abundance of benthic organisms was relatively low. A total of 18 species or species groups were identified: two nemerteans (ribbon worms), 12 annelids (including 10 polychaetes, one

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oligochaete, and one archannelid, a primitive form of polychaete), one gastropod (snail), and three bivalves (clams).

Impacts to the benthos in the Project area during construction and operation of the Project will be both temporary and permanent. The temporary impacts, including increased turbidity during dredging, rock removal, and pipe burial; and underwater noise from dredging, hoe ramming, pile driving, and construction vessels will be short-term and occur only during construction (from November 1 through April 1).

The permanent impacts will include the loss of soft bottom habitat, converting to hard substrate with the two intake pipes and one discharge pipe. The loss of this area is minimal considering the amount of similar available habitat throughout Belfast Bay.

(4) Unusual Natural Areas

The Site Law and Chapter 375 of the Department's Rules define an unusual natural area as "any land or water area, usually only a few acres in size, which is undeveloped and which contains natural features of unusual geological, botanical, zoological, ecological, hydrological, other scientific, educational, scenic, or recreational significance."

Applicant reviewed publicly available data sources and consulted with state and federal agencies including the Maine Natural Areas Program (MNAP), Maine Department of Inland Fisheries & Wildlife (IFW) and DMR. The Natural Resource Report reports the results of field surveys to evaluate the Site for unusual natural areas and included identification and evaluation of the potential presence of rare, threatened and endangered plants, wildlife and rare or exemplary natural communities within the Project area and evaluation of potential Project impacts.

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Field surveys and information reviewed did not identify any natural areas of unusual geological, botanical, hydrological, scientific, educational, scenic, or recreational significance.

Applicant field surveys identified the following MNAP defined natural communities, within the Project area: Coastal Beach: The coastal beach on the project site consists of unvegetated upper beach with coarse sand, gravel and cobble; Saltmarsh (S3): The saltmarsh on the project site is a narrow fringe of high marsh bordering both sides of two freshwater streams (S8 and S9). The marsh is vegetated with saltmeadow cordgrass (*Spartina patens*) and black grass (*Juncus gerardii*); and Oak-Pine Forest.

Based on their state rarity rankings, the three natural communities identified are not considered to have unusual significance to the State of Maine. Additionally, no vernal pools were found during the vernal pool surveys in May of 2018 and no sensitive botanical resources were identified within the Project area.

IFW review of the project site dated March 11, 2019 (Site Law Appendix 9-A) and mapping from MNAP (Site Law Appendix 9-B) confirm the presence of TWWH, a significant wildlife habitat associated with the portion of the Project that borders Belfast Bay. As discussed in the Wildlife and Habitat Findings, impacts to the TWWH will be temporarily caused by trench excavation to install the project intake and outfall pipes. The buried pipeline design through the TWWH will result in temporary impacts to approximately 1% of the larger intertidal area that extends roughly from the mouth of the Little River southwards for about ¾ of a mile to Browns Head, a Point on the Northport, ME shoreline.

MNAP mapping indicates the Lower Reservoir as IWWH. The Project will not adversely impact IWWH in and around the Lower Reservoir. The Lower Reservoir is buffered from the Project site by a 250-foot shoreland zone of mature trees, that, while subject to Project easements, will be conserved. The Project maintains flow in the streams that currently drain from the site into the Lower Reservoir, so there will be no change in the hydrology that supports the habitat resources currently present. The surface water withdrawal will be in accordance with Chapter 587 of the Department's Rules and no changes to the existing intake pipe are proposed.

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Additionally, construction Best Management Practices (BMPs) to avoid erosion and sedimentation will be adhered to and any in-water work in the Lower Reservoir should occur between July 15 and October 1, as recommended by IFW.

Endangered, Threatened and Special Concern species identified by IFW review as potentially present consisted of all eight of Maine's bat species, including the state endangered little brown bat, and northern long-eared bat as well as the state threatened eastern small-footed bat. Bat species may occur on the project site only during migration or summer seasons. IFW recommends coordination with the U.S. Fish and Wildlife Service for the northern long-eared bat (federally threatened) but otherwise does not anticipate significant impacts to any bats species resulting from the Project. The Project will avoid impact to bats by cutting trees outside of the migration or breeding season, when bats are not present on-site.

The Department finds that the proposed development will not have an unreasonable adverse effect on unusual natural areas either on or near the Project provided Applicant:

Adheres to applicable work window of November 1 to April 1 for work in the coastal wetland, construction BMPs, and continued consultation with IFW, the Project will not have unreasonable effects on significant wildlife habitat or potentially present endangered, threatened or special concern species.

(5) Overall Findings Regarding Natural Resource Impacts

Upon review of the administrative record, including the application materials, hearing testimony and exhibits, agency comments, and written public comments, the Department considered whether Applicant met its burden of proof on the criteria pertaining to the natural resource impacts of the Project. Having completed its review and evaluation, the Department finds that the Applicant avoided and minimized natural resource impacts to the greatest extent practicable, that the impacts to natural resources after avoidance and minimization are not unreasonable, and that there is no practicable alternative to proposed Project with Applicant compliance with the above listed conditions. The Department concludes that the

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Project represents the least environmentally damaging alternative that meets the overall Project purpose.

4. COMPLIANCE WITH THE SITE LAW, NRPA AND WQC:

As discussed in Findings 3(D)-(G) above, pursuant to the Site Law Section 484(3) and NRPA Section 480-D(4), Applicant must demonstrate that the activity will not unreasonably interfere with the natural flow of any surface or subsurface waters or water quality. Pursuant to 38 M.R.S. § 480-D(5) and Section 401 of the Federal Water Pollution Control Act, the Applicant must demonstrate that the activity will not violate any state water quality law, including those governing the classification of the State's waters. Chapter 375 of the Department's Rules establishes the criteria reviewed in determining whether there is an unreasonable adverse effect to water quality. Chapter 342 of the Department's Rules regulates significant groundwater wells.

A. Surface Water Quality:

The Project permanently impacts 1,863 linear feet of NRPA regulated streams. These NRPA streams are not waters of the state subject to water quality classification. Applicant proposes to rewet the streams downgradient of the Project with permanent easements and improvements to culverts and footbridge crossings. NRPA Application Appendix 12-A. As discussed in our previous findings on wetland and intermittent streams, the function and value of these NRPA streams is low and will be improved in the downgradient areas. Applicant also proposes to monitor water quality in NRPA streams as part of the Water Resources Monitoring Plan submitted to the Department in the Site Law application.

As discussed more fully in the Stormwater Findings below, Applicant submitted a Stormwater Management Plan and an Erosion Control Plan. Site Law Application § 12. Those plans comply with the Site Law and protect water quality as required by NRPA.

The Department is separately issuing Applicant an approval pursuant to its MEPDES/WDL application which approval addresses water quality issues associated with the Project discharge to Belfast Bay.

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Based on the history of mercury contamination in the Penobscot River and Penobscot Bay, Applicant submitted additional evaluation of potential mercury impacts sediment within the proposed Project pipeline area. A chlor-alkali plant formerly operated in Orrington, ME which had a history of mercury contaminated releases to the Penobscot River that occurred primarily between 1967 and 1970 up-estuary of the project site in Belfast Bay. Site Law Application § 18.1.1.

The Penobscot River Mercury Study (PRMS) indicates that natural background concentrations of mercury in surface sediments varies from about 28 – 51 ng/g dry weight mercury as measured in the Narraguagas and St. George estuaries and the East Branch of the Penobscot River according to Bodaly, 2013. NOAA considers levels below 51 ng/g dry weight mercury concentration in sediment to be the present background concentration or natural abundance (i.e. where the primary contamination source is atmospheric deposition). The PRMS by Bodaly, 2013 concludes that modern regional background concentrations of total mercury in surface sediments in central Maine estuaries is approximately 55 ng/g. Site Law Application § 18.1.1. The Bodaly, 2013 PRMS determined that in the contamination zone of the Penobscot River, near the historic contamination source in Orrington, the mean sediment mercury concentration was about 800 ng/g, while upstream in the Old Town – Veazie reach (above the head of tide) the mercury concentration was about 78 - 145 ng/g in surface sediments. Site Law Application § 18.1.1.

Several sampling sites are located in the lower estuary in the area between Sears Island and Isleboro Island and east of Belfast Bay including stations ES 7A, ES 8A, ES 8C, and ES 15A. These stations, which are the closest stations to the Project site for which sediment mercury data were reasonably available, indicate mercury concentrations of 290 – 383 ng/g in surface sediments and sediment mercury concentrations of 111 - 145 ng/g as a column average (total column depth 90 cm). The Bodaly, 2013 PRMS and Yeager, 2013 study indicate that mercury concentration varies by depth in the affected marine sediments with the highest concentrations typically located at depths of 10-30 cm in the sediment column with lower values in surface sediments and lower values approaching background concentrations at depths below 40-60 cm. Site Law Application § 18.1.1.

The two sediment samples collected, and laboratory analyzed in support of Applicant's Site Law Application were depth composite samples, as explained previously. Site Law

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Application § 18.1.1 These samples were found to have mercury at a concentration of 267 ng/g in the B3 sample and at a concentration that was less than the laboratory reporting limit of 103 ng/g in the A6/A7 composite sample. *Id.*; *see also* Elizabeth Ransom Pre-filed Direct Testimony (Ransom Direct) at §§ 14-15. The mercury concentrations in the sediments in the area of the piping route are more than an order of magnitude below the applicable Remedial Action Guidelines for mercury. Ransom Direct at § 15.

Results indicate that low levels of certain compounds, including mercury, are present at the Project site. Site Law Application § 18.1.1. However, the results also indicate that the presence of low-level contamination is not uniform at the Project site and the majority of compounds tested were not detectable at typical laboratory reporting limits. *Id.* Mercury levels in the tested samples were comparable to other sample sites in the lower Penobscot River estuary and well below the high values measured in the mercury contamination zone in the upper estuary. *Id.*; *see also* Ransom Direct at § 16. Samples collected for this study were depth composites which we believe to be a valid and representative sampling technique (i.e. versus testing discrete depths) to indicate the potential impacts from construction activities at the site. Site Law Application § 18.1.1. Construction and disturbance of marine sediments will expose and mix multiple depth layers concurrently which will tend to reduce the risk of exposing any single strata or other area of potentially concentrated contamination. In addition, construction methodologies will be used that minimize risk of sediment exposure and mobilization and construction impacts will be temporary. *Id.*

The Project fresh water supply includes surface water withdrawal from the Lower Reservoir through an existing intake infrastructure located at the Lower Dam. The withdrawal will comply with Chapter 587 of the Department's Rules. The Lower Reservoir is positioned uniquely, as discharge from this water body flows directly into a tidal inlet of Belfast Bay. DEP Chapter 587 allows a maximum withdrawal of up to 1.0 acre-feet of water per acre of the reservoir at normal high water between April 1 and July 31, and up to 2.0 acre-feet of water per acre of the waterbody at normal high water from August 1 to March 31 during any given year. Based on the area of the Lower Reservoir, which is 37 acres, the above allowable withdrawal is equivalent to approximately 70 gallons per minute (gpm).

The DEP Chapter 587 Rules allow for any surplus water demonstrated to have been delivered to the Lower Reservoir beyond the maximum acre-foot withdrawals to be included

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in the overall withdrawal, with the limitation that volume not be decreased beyond 25%, or the lowest level attained by operation of the Lower Dam. Applicant will install a streamflow gauging station in the free-flowing reach of the Little River below the Upper Dam and upstream of the Lower Reservoir to monitoring stage of the Little River in near real-time. The Applicant will also generate a rating curve through manual measurement of streamflow during the pre-operation background monitoring period that can be used to calculate discharge of the Little River from stage height. The gauging station and rating curve will be submitted to the Department for review as a component of the monitoring program, further detailed below. Applicant will limit surface water withdrawal from the Lower Reservoir to maximum total withdrawals of 3,068,100 per month plus the volume of water measured to have entered the Lower Reservoir at the Little River gauging station for that month and 36,817,200 gallons per year plus the volume of water measured to have entered the Lower Reservoir at the Little River gauging station, established and maintained by the Applicant, for that year.

Based on the Stormwater Management Plan, Erosion Control Plan, the Natural Resources Report and the Compensation Plan, and provided Applicant submits and complies with the Revised Water Resource Monitoring Plan for the surface water withdrawal from the Lower Reservoir and the specific conditions below, the Department finds that the Project meets the surface water quality of the Site Law, NRPA and WQC.

B. Groundwater Quality:

Site Law, in 38 M.R.S.A. § 484(5), requires Applicant to demonstrate that the Project will not pose an unreasonable risk that a discharge to a significant groundwater aquifer will occur. DEP Chapter 375, §§ 7 & 8 require an applicant to show that that a proposed development will not have an unreasonable adverse effect on groundwater quality or quantity. NRPA § 380-D(10) and Chapter 342 of the Department's Rules require that Applicant demonstrate that its significant groundwater well network will not have an unreasonable adverse effect on groundwater quality.

The Project is located within the Belfast and Searsport United States Geological Survey (USGS) 7.5-minute quadrangles. There are no significant sand and gravel aquifers

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underlying the Project and no bedrock wells within or immediately adjacent to the Project area. Site Law Application Figures 15-1, 15-2 and 15-3.

Project construction and operation has some limited potential for groundwater contamination by fuel and hydraulic and lubricating oils used in the operation of vehicles, construction equipment, and the backup power generator which has an independent fuel supply. Site Law Application § 15.

The Site Law Application included procedures to prevent groundwater degradation during construction of the Project in the erosion and sedimentation control requirements described in Section 14 and the accompanying erosion and sediment control plan sheets. Prior to construction, Applicant must submit a site-specific Spill Prevention, Control, and Countermeasures (SPCC) Plan to the Department. Applicant submitted a draft SPCC plan to the Department on November 4, 2019 in response to the Department's October 9, 2019 comment letter on the Site Law application. This SPCC Plan will be finalized prior to facility operation and will include procedures to ensure protection of groundwater, including training of on-site personnel to prevent, respond to, and report spills, and routine equipment inspection and maintenance.

Prior to the commencement of facility operations, an operational SPCC Plan will be developed by Nordic and submitted to the MEDEP for review to ensure risks of adverse groundwater impacts from spills are minimized. All chemicals stored at the site, including cleaners, therapeutants, and water treatment products, will adhere to safe storage guidelines and applicable spill protocols to be included in the operational SPCC plan. Project design stormwater management procedures, including stormwater treatment design, are described in Section 12 of the Site Law Application.

Project operations require freshwater from multiple sources for fish rearing, fish processing, and domestic water use as discussed below in the Water Supply section of this approval. Some of the Project freshwater need will be met by groundwater. Specifically, the Project includes a network of significant groundwater wells authorized to extract up to 455 gpm of groundwater from the bedrock aquifer underlying the Project site. The on-site groundwater production well network is comprised of three wells located on the eastern and southeastern portions of the site. Proposed on-site groundwater withdrawal rates are 250 gpm from

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production well PW-1, 175 gpm from test well GWW-103, and 30 gpm from test well DRX-102. Applicant proposes constructing appropriately sized production wells in the locations of GWW-103 and DRX-102.

Applicant conducted a site-specific Hydrogeologic Investigation Report included as Appendix 15-A to the Site Law Application. This investigation included a test well drilling program based on interpretation of a site-wide electrical resistivity survey, four separate aquifer pumping tests, and development of a numerical groundwater flow model for the Project site. This report includes discussion of all available freshwater resources to the project, including groundwater extraction, surface water withdrawal from the Lower Reservoir, and available public water supply from the BWD, along with potential existing sources of groundwater contamination and anticipated impacts to existing groundwater users and natural resources.

Based on the testing and modeling presented in Appendix 15-A to the Site Law Application, the proposed production well network and pumping rates will not have an unreasonable impact on the quantity of water available for existing residential groundwater users, or other water-related resources at or near the site. As presented in Section 16 of the Site Law Application, freshwater obtained from on-Site groundwater and surface water sources will be treated and used for fish rearing, while freshwater for food processing and domestic use will be provided by the BWD public water supply. Water supply from the BWD public water supply will also be treated and used for fish rearing based on the Applicant's operational demand.

The Hydrogeologic Investigation Report also identified potential sources of contamination in the vicinity of the site which, based on the results of two ASTM Phase I Environmental Site Assessments conducted in 2018 for two separate portions of the Project site, do not represent a significant threat to groundwater quality at the Project site. Similarly, this Report documents existing saltwater intrusion in the easternmost portion of the Project area.

To assess the effectiveness of groundwater degradation prevention measures and ensure prevention of unreasonable adverse impacts to existing groundwater users and ground water quality are not caused by the proposed groundwater extraction, the Project includes implementation of a monitoring program. The monitoring program will include monitoring

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of production wells, bedrock monitoring wells, private water supply wells, overburden monitoring wells, piezometers, surface water stages, wetlands, streams, and weather as detailed in the Water Resource Monitoring Plan included as Site Law Application Appendix 15-B.

To assess the effectiveness of groundwater degradation prevention measures and ensure prevention of unreasonable adverse impacts to existing groundwater users and ground water quality are not caused by the proposed groundwater extraction, the Applicant submitted a monitoring program for the Project. The monitoring program includes monitoring of on- and off-site water groundwater levels, surface water stages, precipitation, and withdrawal rates for each freshwater source, as detailed in the Water Resource Monitoring Plan included as Site Law Application Appendix 15-B. The Department and Applicant have further refined the scope of the monitoring program in formal communications between the Department and Applicant, including Department memorandums on September 7, 2019 and January 14, 2020, revised January 27, 2020 and Applicant response memorandums dated November 4, 2019 and February 18, 2020. Applicant agreed to provide a Revised Water Resource Monitoring Plan for Department review and approval.

Applicant is currently monitoring groundwater levels in the majority of existing on- and off-site wells, and, upon Department approval of the Revised Water Resource Monitoring Plan, agreed to implement the pre-operational monitoring of existing locations as soon as possible and of new locations as they are installed and/or access to them is gained in the case of private supply wells. Applicant shall provide a specific timeline for implementation of the pre-operational monitoring program in the revised monitoring plan.

At the end of the pre-operational monitoring period, Applicant will submit an addendum to the revised monitoring plan to the Department for review and approval. The addendum shall include a summary of the pre-operational background data collected and recommendations for specific alert and action levels, based on background data from groundwater wells and surface waters related to the site. The addendum shall also contain a summary of discharge gauging data collected at the Little River gauging station and a proposed discharge rating curve to be used in calculating Little River discharge from stage height. After review of the addendum to the monitoring plan, the Department will determine the Alert and/or Action

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Levels specific to the project and any other required alterations to the monitoring plan prior to beginning the operational monitoring program.

Data collected during operational monitoring will be reported to Department no less often than monthly, however, the Department may request the Applicant submit data on a more frequent basis if monitoring data suggest possible impacts on surface water or offsite water supplies, or drawdowns significantly exceed those predicted by the numerical model. Applicant will report monthly data to the Department by the 15th of the following month in the most recent electronic format accepted by the Department unless the Department requires more frequent reporting.

Operational monitoring data will be compiled and submitted to the Department annually. Annual reports will include all monitoring data with a written summary that will provide recommendations to address any potential adverse impacts to the surface water or groundwater quantity or quality that may be indicated by the monitoring results. Annual reports will be for each fiscal year, ending December 31, and will be submitted to the Department by April 1 of the following year.

After review of the monthly data reports and/or annual report, the Department may require the Applicant to submit, for review and approval, plans to modify the withdrawal rates from the onsite groundwater well network and/or Lower Reservoir, the monitoring program, or other relevant aspects of the project. If undue unreasonable effect on waters of the State, water-related natural resources, or existing uses are identified, the Applicant will suspend withdrawal from the onsite groundwater well network and/or Lower Reservoir until sufficient operational changes are made to rectify the impacts.

Aside from changes necessary to address required replacement of monitoring locations due to damage or voluntary withdrawal of a homeowner from the monitoring program, or changes required by the Department to address specific issues, if any, that arise during operation, the approved monitoring program should continue for at least two years of freshwater extraction at full operational capacity. After such time, the Applicant may request changes to monitoring frequency, locations, or other considerations for review by the Department. Any changes requested by the Applicant are subject to review and approval of the Department.

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Should Applicant water usage stabilize at lower levels than the anticipated full production volume, data collection and reporting frequency at some or all monitoring points may be reduced, pending a finding by the Department that data collected to that point show no unreasonable adverse impacts, or threat of such impacts, on groundwater or surface water quality and quantity.

In summary, the location of the Project at the base of the Little River watershed, where it empties into Penobscot Bay, and the local usage of a municipal water supply greatly reduces the risk of adverse impacts from groundwater extraction and potential contamination that could adversely impact ground water quality.

Based on the review of the Geologic Survey, the SPCC Plan, the Hydrogeologic Investigation Report and provided Applicant submits and complies with the Revised Water Resource Monitoring Plan and the specific conditions discussed above and included below, the Department finds that the Project meets the groundwater quality requirements of the Site Law, NRPA and WQC and the Project will not have an unreasonable adverse effect on groundwater, other groundwater uses, or other natural resources in the area.

5. COMPLIANCE WITH THE SITE LAW:

A. No Adverse Effect on the Natural Environment:

As discussed in our Findings regarding Project impacts above, the Site Law and NRPA require that Applicant ensure that there is no practicable Project alternative and that Project impacts to existing uses, scenic character, water quality or other natural resources are reasonable. The Site Law also requires that there be no unreasonable adverse effects to additional criteria and Chapter 375 of the Department's Rules establishes the criteria reviewed in making that determination.

(1) Air Quality

Department Rules Chapter 375 § 1 require submission of evidence affirmatively demonstrating that there will be no unreasonable adverse effect on air quality. This

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Site Law standard is met where an Air Emission License has been or will be obtained. DEP Chapter 375 § 1(C)(1). The Department’s Air Bureau reviewed and the Board is separately authorizing Applicant’s New Minor Source Air Emissions License Application pursuant to Chapter 115 of the Department’s Air Rules (A-1146-71-A-N). Site Law Application Appendix 21-A.

The Chapter 115 Air Licensure process satisfies the air quality requirements of the Site Law and Department Rules Chapter 375 § 1.

(2) Buffers

Natural buffer strips play an important role in protecting water quality and wildlife habitat. Buffer strips also provide screening that can serve to lessen the visual impact of incompatible or undesirable land uses. Pursuant to Department Rules Chapter 375, § 9, Applicant must demonstrate adequate provision for buffer strips where appropriate. When evaluating whether an applicant has made adequate provision for buffers, the Department considers all relevant evidence, including evidence that:

- Water bodies within or adjacent to the development will be adequately protected from sedimentation and surface runoff by buffer strips;
- Buffer strips will provide adequate space for movement of wildlife between important habitats; and
- Buffer strips will shield adjacent uses from unsightly developments and lighting. DEP Chp. 375, § 9(B).

Project buffers provide a natural means of sedimentation and erosion control, reduce the potential for Project development to cause soil erosion; maintain wildlife corridors, particularly along existing streams; and provide visual screening, especially along areas delineated in the Site Law Application, § 6 as “public viewing areas.”

A 250-foot Shoreland Zone abuts the southern portion of the project site. The Belfast community has utilized a trail along the shore of the Lower Reservoir and the Little River within this Shoreland Zone for recreation (hiking, dog walking), and the land

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provides a valuable linkage between the Project site and the larger area of wildlife habitat on the Upper Reservoir parcel of land to the northwest. As part of the real estate agreement between the BWD and Nordic included in Section 2.0, the 250' buffer along the Lower Reservoir and the Little River abutting the Project site is subject to any easements necessary for the Project but ownership will transfer to the City of Belfast. The transfer of land back to the community will preserve a significant 250-foot buffer on the southern and western boundaries of the proposed project, in addition to the 100+ feet of buffer described above. Access to riparian habitat and significant water bodies will help meet the goals of the Project by linking site buffers with the larger portions of land preserved by the City of Belfast, while also providing an approximately 350-foot buffer from the edge of the Lower Reservoir and Little River to the proposed site buildings.

Nordic's centralized building layout includes a number of buffers imposed on the property that serve to protect water quality, create visual screening and, provide for and protect wildlife habitat and travel corridors. Some encroachment into the buffers is required to support Project infrastructure; however, areas of encroachment have been either avoided where possible or minimized where practicable.

The Project minimizes soil erosion by minimizing encroachment into buffers via reduced side slope grading. This will be accomplished through reduced side slope grading where practicable. Project work adjacent to WWTP/WTF and Wetland 6 will have side slopes of 2:1. Side slopes of 1.5:1 along the entire length of Production Module 2 on the Lower Reservoir side will provide vegetated buffering, a travel corridor and maintain setbacks. Additionally, riprap slopes adjacent to Wetland 2 will reduce encroachment into the wetland. Site Law Application §§ 12, 14.

The slope along the northern property line will be revegetated with a mix of evergreen and deciduous trees to enhance the buffer between the site and the neighboring properties. This area will be naturalized with a mix of plant sizes and types will be used to emulate existing species diversity. A restoration seed mix will be used to stabilize the immediate ground surface and allow larger species to take hold. Additional planted screening is proposed at the southeast corner of the site.

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Areas with high visual interest and visibility including the main entrance will be planted with flowering accent trees, low shrubs, and ornamental grasses. Site Law Application § 10.

The Department finds that Applicant made adequate provision for buffers to avoid an unreasonable impact under the Site Law.

(3) Historic and Archaeological Sites

Initial screening of Maine’s National Register of Historic Places and the Cultural Architectural Resource Management Archive did not identify any sites or structures impacted by the Project. Further consultation with the Maine Historic Preservation Commission (MHPC) and federally recognized Indian tribes in Maine began in June 2018 to identify possible historic sites, historic structures or archaeological sites that may be impacted by the Project.

In September 2018 the MHPC received notice of a potential archaeological site located within the Project area and MHPC recommended completion of a Phase I Archeological Survey. Northeast Archeology Research Center, Inc. (NE ARC), conducted this survey in September 2018. NE ARC’s director is listed on the MHPC approved prehistoric archeologist list. The study included the excavation of 196 test pits along 27 sampling transects across the Project area. According to the final “Nordic Aquafarms Development Project Archaeological Phase I Survey, MHPC# 0737-18” (Site Law Application, Appendix 8-A) no archaeological sites were identified, and no additional archeological work was recommended. Following a review of this report by the MHPC staff archeologist, and a review of updated project details, in October 2018 the MHPC concluded in a set of letters that no historic or archaeological properties would be affected by the Project. Site Law Application Appendix 8-B.

Initial and updated project plans were sent for consultation to the following federally recognized Indian tribes in Maine: the Aroostook Band of Micmacs, the Houlton Band of Maliseet Indians, the Passamaquoddy Tribe and the Penobscot Nation. A response letter from the Penobscot Nation Tribal Historic Preservation Officer (Site

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Law Application Appendix 8-C) stated that the Project appears to have no impact on a structure or site of historic, architectural or archaeological significance to the Penobscot Nation. None of the other tribal nations responded.

B. Noise:

The Department’s noise standards are set forth in DEP Chapter 375, § 10. Section 10(B)(1) states that “when a development is located in a municipality which has duly enacted by ordinance an applicable quantifiable noise standard, which ... (1) contains limits that are not higher than the sound level limits contained in this regulation by more than 5 decibels (dBA), and (2) limits or addresses the various types of noises contained in this regulation or all types of noise generated by the development, that local standard, rather than this regulation, shall be applied by the Department within that municipality for each of the types of sounds the ordinance regulates.”

In those municipalities without a local noise standard meeting these criteria, the project is required to meet the Department’s noise standards. DEP Chapter 375, § 10 applies hourly sound pressure level limits (LAeq-Hr) at facility property boundaries and at nearby protected locations. DEP Chapter 375, § 10(G)(16) defines a protected location as “any location accessible by foot, on a parcel of land containing a residence or approved subdivision” In addition to residential parcels, protected locations include, but are not limited to, schools, state parks, and designated wilderness areas.

The Site Law (38 M.R.S. § 484(3)(A)) specifies that “noise generated between the hours of 7 a.m. and 7 p.m. or during daylight hours, whichever is longer, by construction of a development approved under this article may not be regulated under this subsection.”

Gridworks Energy Consulting LLC prepared a full noise study presenting the potential noise-related impacts from Project construction and operation. This Construction, Operation, and Maintenance Noise Impact Assessment is Appendix 5-A to the Site Law Application and indicates that noise associated with construction, operation and/or maintenance of the Project complies with all federal, state and local noise level requirements.

Applicant demonstrated compliance with Department noise standards.

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C. Soils:

As set forth in 38 M.R.S. § 484(4), Applicant must demonstrate that the proposed project will be built on soil types that are suitable to the nature of the development. Applicant also must demonstrate the proposed activity will not cause unreasonable erosion of soil or sediment.

Broadwater Environmental, LLC prepared a Class B (High Intensity) Soil Survey, performed by a Maine Certified Soil Scientist. Site Law Application, Appendix 11-A. This Soil Survey identified four major soil series in the Project area. Undeveloped portions of the Project area are largely comprised of Pushaw silt loam, a somewhat poorly drained soil, and to a lesser extent Boothbay silt loam, a moderately well drained soil. Hydric soil boundaries were found to be similar to field-delineated wetland boundaries and are comprised of Swanville silt loam, a poorly drained soil. All of these soils are derived from a mineralogically similar marine sediment parent material. Developed portions of the Site, along Route 1, are identified as man-modified, Udorthent soils.

Ransom Consulting, Inc. prepared a geotechnical engineering report to support design and construction of Project buildings and infrastructure. Site Law Application, Appendix 11-B. The subsurface geotechnical explorations encountered a glaciomarine deposit of silt and clay, underlain by glacial till, and bedrock. Upper portions of the glaciomarine deposit were observed to be medium to very stiff, while the lower portions of the glaciomarine deposit were observed to be very soft and compressible. Due to the presence of soft, compressible clay, the subsurface conditions are not suitable for supporting the loads of the proposed structures with a conventional spread footing foundation system without improvement of the soil conditions. Applicant proposes to excavate and replace unsuitable soils (soft glaciomarine soils) or design the buildings to bear at elevations corresponding to suitable soils (i.e. glacial till or bedrock). Excavation and replacement of the glaciomarine soils with compacted structural fill, and/or design of the buildings to bear at elevations corresponding to suitable bearing soils are geotechnically feasible alternatives to allow construction of the proposed buildings on conventional spread footing foundation systems.

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Applicant plans additional subsurface exploration (borings) in both upland and tidal zones will be performed before final design and construction start for the intake and outfall piping in order to provide a complete understanding of the marine soils and rock.

The Project will be constructed on suitable soils. In order to overcome limitations presented by existing soil conditions, Applicant designed the Project to address the geotechnical conditions at the Project site.

D. Storm Water Management and Erosion Control:

The Site Law, in 38 M.R.S §484(4-A) and (7), requires an applicant to demonstrate that the proposed development meets the standards for stormwater management set forth in 38 M.R.S. § 420-D and the standard for erosion and sedimentation control in 38 M.R.S. § 420-C.

(1) Basic Standards

a. Erosion and Sedimentation Control

Applicant submitted an Erosion and Sedimentation Control Plan (ESC Plan) (Site Law Application § 14) that is based on the performance standards contained in Appendix A of DEP Chapter 500 and the BMPs outlined in the Maine Erosion and Sediment Control BMPs, which were developed by the Department. The ESC Plan and plan sheets containing erosion control details were reviewed by, and revised in response to the comments from, Department staff.

b. Inspection and Maintenance

Applicant submitted a Maintenance Plan that addresses both short and long-term maintenance requirements. The Maintenance Plan is based on the standards contained in Appendix B of DEP Chapter 500. This plan was

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reviewed by, and adequately revised in response to comments from, the Department.

c. Housekeeping

The Project will comply with the performance standards outlined in Appendix C of DEP Chapter 500.

d. Summary

Based on the Department's review of the ESC Plan and the Maintenance Plan, the Department finds that the proposed project meets the Basic Standards contained in DEP Chapter 500, § 4(B), provided Applicant: Retains an independent third-party inspector pursuant to the Special Condition for Third Party Inspection Program included with this Order.

(2) General and Phosphorus Standards

Applicant's Stormwater Management Plan includes general treatment measures that will mitigate for the increased frequency and duration of channel erosive flows due to runoff from smaller storms, provide for effective treatment of pollutants in stormwater, and mitigate potential temperature impacts. This mitigation will be achieved by using BMPs that will control runoff from no less than 95% of the impervious area and no less than 80% of the developed area. The access to the proposed project meets the definition of "a linear portion of a project" in DEP Chapter 500 and the applicant is proposing to control runoff volume from no less than 75% of the impervious area and no less than 50% of the developed area.

(3) Flooding Standard

Site Law, in 38 M.R.S. § 484(7), and NRPA, in 38 M.R.S. § 480-D(6), require Applicant to demonstrate that the Project will not unreasonably cause or increase flooding.

a. The Project is located on Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) panel number 23027C0463 with an effective date of July 6, 2015. (Site Law Application, Appendix 19-A) The Project area intersects two riverine Special Flood Hazard Area (SFHA) zones and one coastal SFHA zone. The riverine zones include a zone associated with the Lower Reservoir One along the southern boundary of the site and a zone associated with the unnamed stream along the northeastern boundary of the site. Both riverine zones are classified as unnumbered (approximate) A zones on the FIRM and do not have assigned regulatory Base Flood Elevations (BFE). The site is also adjacent to a coastal AE zone located between the dam at Lower Reservoir One and Route 1. The BFE of the coastal AE zone is 14 feet North American Vertical Datum 1988 (NAVD88). Other BFE data is not readily available. The Applicant conservatively estimated the BFE for Lower Reservoir One as 21 feet above the NAVD88 and BFEs along the unnamed stream range from 23 feet NAVD88 at the inlet of the culvert at Route 1 to an elevation of 65 feet NAVD88 at the northern end of the site approximately 1950 feet upstream from the Route 1 culvert. (Site Law Application, § 19 and Appendix 19-B)

b. Applicant is proposing to utilize a stormwater management system based on estimates of pre- and post-development stormwater runoff flows obtained using Hydrocad. Hydrocad is a stormwater modeling software that utilizes the methodologies outlined in Technical Releases #55 and #20, U.S.D.A., Soil Conservation Service, and retains stormwater from 24-hour storms of 2-, 10-, and 25-year frequency. The post-development peak flow from the substations will not exceed the pre-development peak flow from the site.

c. The stormwater management system for the Project are designed such that rainfall from a 50 year 24-hour storm will infiltrate, be detained on the site, or be conveyed directly to the ocean, such that there will be no increase in storm water outflow from the site when compared to pre-development stormwater outflow. Site Law Application, § 19

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d. Stormwater management design will decrease the volume of runoff conveyed to potential riverine flooding sources on or adjacent to the proposed development boundaries, and therefore will not create an unreasonable flood hazard to any proposed or existing structure. Site Law Application, § 19

e. Applicant's Stormwater Management Plan demonstrates that the project meets the criteria for detaining, retaining, or resulting in the infiltration of stormwater from 24-hour storms of the 2-year, 10-year, and 25-year frequencies such that the peak flows of stormwater from the project site do not exceed the peak flows. The Stormwater Management Plan also demonstrates that the project meets the criteria for a waiver for the portion of the project in the watershed of a coastal wetland, a great pond, or a major river segment by providing conveyance in a piped system directly into one of these resources.

(4) Summary

The Department reviewed Applicant's stormwater management system and finds that the proposed stormwater management system is designed in accordance with the General and the Phosphorus Standards contained in DEP Chapter 500, § 4(C). Applicant must retain the stormwater design engineer to oversee the installation of the stormwater BMPs. At least once per year, or within 30 days of completion, the applicant must submit an update or as-built plans to the Department for review.

Based on the stormwater system's design, the Department finds that Applicant made adequate provision to ensure that the proposed project will meet the General and the Phosphorus Standards contained in DEP Chapter 500, § 4(C), provided the Applicant complies with the reporting and inspection requirements summarized in this section.

E. Infrastructure:

(1) Water Supply

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The Department evaluates the availability of adequate water supply pursuant to DEP Chapter 375, § 18.

The Project will require both potable domestic water for drinking, fish processing, and process water for salmon rearing. Based on the changing environmental needs of salmon through their life cycle, process water will include freshwater and a larger component of saltwater sources. Freshwater sources are proposed to include an on-site groundwater extraction well network, additional off-site supply from the BWD, and on-site surface water withdrawal from the Lower Reservoir. The proposed 70 gpm plus inflow from the Little River surface water withdrawal rate represents approximately 50% less than 500 gpm historically used for almost a century when this reservoir was the primary drinking water supply for the City of Belfast. Saltwater is proposed to be obtained from Belfast Bay through a seawater intake and pipeline. Collectively, the project is anticipated to use approximately 1,735,200 gallons of freshwater per day (1,205 gpm) and 5,652,000 gallons of saltwater per day (3,925 gpm) on a continuous basis at full operational capacity.

Usage rates for freshwater sources, including the 455 gpm for the on-site groundwater well network, were selected based on hydrogeologic investigations, research, and modeling detailed in the 2019 Hydrogeologic Investigation Report included in Site Law Application, § 15 as Appendix 15-A. The BWD has the ability to provide the project up to 500 gpm as stipulated in the signed January 29, 2018 Water Supply and Purchase Agreement between Nordic and BWD (Site Law Application Appendix 16-A), the March 7, 2019 Capacity to Serve letter from BWD (Site Law Application Appendix 16-B), and as approved by the Maine Public Utilities Commission (Site Law Application Appendix 16-C). The anticipated surface water withdrawal of 70 gpm plus inflows from the Lower Reservoir is based on DEP Chapter 587 of the Department's Rules.

The saltwater needs for the facility will be drawn from Penobscot Bay using two parallel 30-inch diameter pipelines which extend approximately 6,400-feet from the shore access point to the intake point. The saltwater intake structures will be located about 10-feet above the seafloor and will feature 1-inch screen mesh to prevent entrainment of larger particulates or sea life. The pipelines will transport saltwater to

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a pump station located beneath the water treatment plans as shown on drawings CS101-CS104, CS301, CS501-CS505 and M-100, included in the Site Law Application as Appendix 16-D. Further description of the construction of the intake water system can be found in Section 1 of the Site Law Application.

The Department finds that the Applicant has made adequate provision for securing and maintaining a sufficient and healthful water supply.

(2) Wastewater Disposal

Pursuant to the Site Law, 38 M.R.S. § 484(6), Applicant must demonstrate that it has made adequate provision for wastewater disposal.

Process wastewater from RAS smolt tanks, grow-out tanks, and fish processing facility, will be directed to an on-site wastewater treatment facility and discharged after treatment via an outfall pipe into Belfast Bay. The Department is separately issuing MEPDES/WDL authorizations ensuring the proposed discharge will not have unreasonable adverse impacts to the water quality of Belfast Bay. Site Law Application § 17.

On-site subsurface wastewater disposal is not proposed as part of the Project. Domestic wastewater will be disposed through the municipal sewer system and production wastewater will be discharged to Belfast Bay following treatment, as detailed in Section 17 of the Site Law Application. Site Law Application §§ 16, 17.

The Department finds that the applicant has made adequate provisions for wastewater disposal.

(3) Solid Waste

Pursuant to the Site Law, 38 M.R.S. § 484(6) and DEP Chapter 375, § 16, Applicant must demonstrate that it has made adequate provision for solid waste disposal.

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Operational waste streams will include both solid and liquid wastes. Solid waste in the form of domestic waste, water treatment plant sludge and fish processing by-products will be removed from the Site for final reuse or disposal as presented in the Site Law Application Section 18.

Project construction and operation will produce a variety of temporary and permanent waste streams. The variable volume of each waste stream will closely coincide with the construction schedule and slow operational increase to 50% capacity during Phase I development and slow increase to 100% capacity during Phase II development. Site Law Application § 18.0.

Construction activities for the Project will generate a standard assortment of solid waste consisting of construction and demolition debris, special waste, and land clearing debris. The land clearing debris will include timber, brush and stumps, as well as soil and ledge that cannot be reused on Site based on final grading design plans. Cleared vegetation will be harvested and removed as merchantable forest products. Site Law Application Appendix 18-B. Smaller woody debris and grubbing material will be chipped or mulched and used on-site for erosion control or as a soil amendment. Any excess wood waste, including stumps, generated during vegetation clearing that cannot be reused, marketed or donated will be hauled off-site to an appropriate management facility. Applicant provided commitment letters from Comprehensive Land Technologies, Casella/Pine Tree Waste Services and Waste Management to manage these construction-related waste streams. Site Law Application § 18.1.

Construction activities pertaining to the renovation of the existing office building and former pump house are anticipated to generate small volumes of special waste including asbestos insulation, asbestos roofing, and localized polycyclic aromatic hydrocarbon (PAH) impacted soils, as documented in environmental due diligence investigations. Applicant provided commitment letters from Casella and Waste Management to manage these special wastes. Site Law Application § 18.1.

Construction of the intake and outfall piping is anticipated to generate a net surplus of sediment removed from Belfast Bay during pipeline burial. Site Law Application

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§ 18.1. Marine sediments are to be disposed of on land at a solid waste facility. Chapters 800 and 850 of the Department’s Rules require characterization in advance of disposal. Site Law Application § 18.1.1. Applicant will characterize marine soils before disposal in accord with Department Rules and the acceptance requirements of the receiving facility.

Further, Applicant is working with the U.S. Army Corps of Engineers to determine whether additional testing will be required and, if so, the methodology. Applicant will also be doing additional pre-construction borings to prepare final pipeline construction design.

Vibracore sediment samples were collected in Belfast Bay on November 29, 2018 and submitted to Alpha Analytical Labs in Westboro, MA for laboratory analysis of multiple parameters. Multiple samples were collected for grain size analysis, while two samples, B3 and A6/A7 composite (See Figure 18-1 in Section 18.1.1. of Nordic’s Site Law Application), were submitted for chemical and physical characteristics analysis. Sample B3 was a depth composite sample collected at station B3 to a sediment penetration depth of 6 ft. 5 in. Sample A6/A7 composite was a two-sample composite from stations A6 and A7. Station A6 was sampled to a sediment penetration depth of 1 ft. 0in. while station A7 was sampled to a sediment penetration depth of 3 ft. 9 in. Site Law Application § 18.1.1.

Applicant provided letters of commitment from Casella and Waste Management to manage this sediment. Site Law Application § 18.1. Crossroads Landfill and Juniper Ridge Landfill, where these marine sediments could be disposed of, are licensed by the State of Maine to dispose of non-hazardous waste. 40 CFR 261.24 identifies toxicity characteristics (standards) in solid waste and is used to determine whether solid waste is characterized as hazardous or non-hazardous. Landfill waste is tested and compared to toxicity characteristics based on EPA Method 1311 “Toxicity Characteristic Leaching Procedure,” or TCLP analysis, which is used for simulating the leaching potential from landfill waste. Method 1311 TCLP analysis specifies an extraction fluid equivalent to 20 times the total weight of a waste sample for evaluating the leaching potential of the sample. However, if a total sample concentration, as determined from a conventional analytical test (e.g. versus the

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TCLP test), is less than 20 times the toxicity characteristic concentration, then the waste can be considered non-hazardous and no further testing is required. Site Law Application § 18.1.1.; *see also* Site Law Application § 18 Table 18-2.

Applicant provided laboratory results (analyzed with conventional methods for total concentration) for which there were detections above laboratory reporting limits for the 40 CFR 261.24 toxicity characteristics (multiplied by 20) to determine whether the samples met the criteria for non-hazardous waste. The results do not indicate exceedance of the toxicity characteristic in 40 CFR 261.24. Based on the laboratory results and using the “rule of 20” for evaluating waste samples, no further sediment testing (e.g. EPA Method 1311 TCLP testing) is warranted and marine sediments from the project site can be accepted as non-hazardous waste for disposal at a RCRA Subtitle D landfill. The full laboratory report is included with the Site Law Application at Appendix 18-C. Site Law Application § 18.1.1.

Applicant seeks to establish markets for operational by-products including salmon processing solids such as heads, viscera, and mortalities and wastewater treatment filtrate high in organics and nutrients. While production of these by-products will likely lead to a range of recycling opportunities in the future, applicant provided letters of commitment from Agri-Cycle Energy, Casella Organics, Channel Fish Co., Inc., Coast of Maine Organic Products, Inc., Compost Maine LLC, and Waste Management reflecting interest and ability to manage the volume and content of these organic by-product resources. Site Law Application Table 18-2 and Appendix 18-B. Site Law Application § 18.2

In addition, commitment letters for the management of office waste (i.e. municipal solid waste), universal wastes, and recyclable products, have been provided by Casella/Pine Tree Waste Services and Waste Management. Site Law Application § 18, Site Law Application Appendix 18-B.

Based on the evidence summarized above, the Department finds that Applicant made adequate provision for solid waste disposal provided Applicant characterizes waste marine sediments as required by Department Rule Chapters 800 or 850 or the acceptance requirements of the receiving facility.

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The Department finds that Applicant appropriately addressed the Project's infrastructure needs.

F. Blasting:

The Site Law requires that “[b]lasting will be conducted in accordance with the standards in section 490-Z, subsection 14 unless otherwise approved by the department.” 38 M.R.S. § 484(9). NRPA Section 490-Z requires a preblast survey for all production blasting extending, at a minimum radius of ½ mile from the blast site. 38 M.R.S. § 490-Z(14)(F). The preblast survey must document any preexisting damage to structures and buildings and any other physical features within the survey radius that could reasonably be affected by blasting. *Id.*

Project development is expected to require blasting of approximately 18,000 cubic yards of bedrock during the construction of Project buildings and the Intake and Outfall piping. Applicant provided a site plan showing anticipated blasting areas, based on existing information about subsurface conditions. Site Law Application § 20, Figure 20-1. Maine Drilling & Blasting, Inc. prepared a blast assessment and blasting plan for the Project. Site Law Application Appendix 20-A and 20-B. This assessment along with Mr. Doyon's Direct and Rebuttal Prefiled Testimony and Exhibits demonstrate that Project blasting will not cause an unreasonable adverse effect on natural resources, structures, surface water, or wells of offsite buildings. Site Law Application § 20; *see also* Pre-filed Direct Testimony of Brett Doyon; Pre-filed Rebuttal Testimony of Brett Doyon.

G. Odor:

Applicant “shall made adequate provision for controlling odors.” DEP Chapter 375 § 17(A). The application for approval of any development likely to be the source of offensive odors shall include evidence that affirmatively demonstrates that the applicant has made adequate provision for the control of odors, including, but not limited to, the following information: (1) the identification of any sources of odors from the development; (2) an estimation of the area which would be affected by the odor, based on experience in dealing with the material or process used in the development, or similar materials or processes; or (3) proposed

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systems for enclosure of odor-producing materials and processes, and proposed uses of technology to control, reduce or eliminate odors. DEP Chapter 375 § 17(B). To comply with this section, Applicant need only do one of the three. *Id.*

The Project will not generate noticeable odors. Potential sources of odor in land-based aquaculture include: ensilage of mortalities, fish processing, the Waste Water Treatment Plant; and feed storage.

Applicant proposes the following steps to avoid odors at each of these points. Basic mechanisms for odor control throughout the facility include: sealed enclosure in tanks, chilling or freezing, regular out-shipment to off-take partners; and air treatment systems. All processes with the potential for creating odors will take place in enclosed buildings. Applicant will employ air filtration that may include carbon, biofilters, wet scrubbers, and media.

Applicant acknowledged that even with well-designed life support systems and husbandry practices, mortalities are a natural part of any farming operation. Applicant process anticipates that mortalities will be removed and tank-stored in a weak organic acid solution to maintain a pH below 4 in order to preserve these materials in air-sealed containers for out-shipment. Following preservation, mortalities will be properly disposed of offsite through professional recycling and disposal partners.

Applicant testified that after processing, residual fish parts, or byproducts, will immediately be stored in insulated, food grade containers for regular out-shipment to offtake partners. Byproducts will be frozen to prevent spoilage. These materials will be processed into secondary products, such as bait, pet food, and human supplements. Recycling for these uses requires that materials be handled and stored in a manner that prevents spoilage, and the associated odor. Reuse retains the value of these byproducts. Applicant obtained capacity to serve commitments from companies with a history of providing these services for other salmon and seafood processors in greater New England. Site Law Application, Appendix 22-A.

Applicant also testified that organic material removed by water filtration systems will be regularly removed from the facility by a partner with demonstrated experience in the

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transportation, disposal and odor control of similar materials. Materials filtered from the water will be immediately pumped into and stored in sealed tanks until they are outshipped in tank trucks. Filtrate will not be exposed to air, therefore fermentation and resulting odors will not develop. Applicant provided letters of capacity to serve from reputable partners with years of experience and demonstrated ability to remove odiferous materials from holding tanks in urban settings without releasing odors. Site Law Application, Appendix 22-B.

Feed silos will be stored inside fish rearing buildings. There will be no storage of fish feed outdoors. Applicant will not store more than a week's supply at the time.

The Department reviewed Applicant's proposed odor control processes and finds that they meet the odor control provisions of the Site Law.

H. Sunlight:

Applicant projected the shadow area to ensure that Project operation would not block access to direct sunlight to structures utilizing solar energy through active or passive systems as identified in Chapter 375 § 13 of the Department's Rules. The diagram attached as Appendix 24-A to the Site Law Application indicates that the distance from Building 1 to the residences on Perkins Road to the north is approximately 300+ feet. Projection of the shadow from the northern edge of Building 1 yields a maximum shadow throw of approximately 57 feet into the abutting property to the north using a building height of 45 feet (which is the maximum allowed instead of the proposed height of 33 feet), flat topography (instead of the rising grades from the building north), and using the lowest sun angle to produce the longest possible shadow.

No structures currently exist in the shadow area, and the minimum local setback for structures from the property line is 40 feet, thus operation and construction of the Project will not block access to direct sunlight to structures utilizing solar energy through active or passive systems.

I. Climate Change:

The Site Law, as set forth in DEP Chapter 375, requires the Department to undertake an analysis of a proposed project's impact on global climate change. The relevant section of DEP Chapter 375 reads in its entirety as follows:

No Unreasonable Alteration of Climate

- A. Preamble.** The Department recognizes the potential of large-scale, heavy industrial facilities, such as power generating plants, to affect the climate in the vicinity of their location by causing changes in climatic characteristics such as rainfall, fog, and relative humidity patterns.
- B. Scope of Review.** In determining whether the proposed development will cause an unreasonable alteration of climate, the Department shall consider all relevant evidence to that effect.
- C. Submissions.** Applications for approval of large-scale, heavy industrial developments, such as power generating plants, shall include evidence that affirmatively demonstrates that there will be no unreasonable alteration of climate, including information such as the following, when appropriate:
 - (1) Evidence that the proposed development will not unreasonably alter the existing cloud cover, fog, or rainfall characteristics of the area.
- D. Terms and Conditions.** The Department may, as a term or condition of approval, establish any reasonable requirement to ensure that the proposed development will not cause an unreasonable alteration of climate.

DEP Chapter 375, § 2. Read in context, this provision is not directed at issues of global climate change, but instead is exclusively concerned with the potential for highly localized climate impacts that facilities such as powerplants could have on atmospheric conditions such as rainfall, fog, and humidity. DEP Chapter 375, § 2(A) & (C)(1). The Department has

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consistently interpreted Chapter 375, § 2 in this manner, and has never before construed it as applying to issues of global climate change. Neither Site Law nor NRPA in their current form, and as applicable to this Project, require Applicant to make any particular showing regarding the Project's impact on global climate change. To the extent DEP Chapter 375, § 2 has any applicability to this Project, the Department finds the project will not adversely impact climate, as that term is used.

Operation and construction of the Project will not cause unreasonable alteration of climate including alterations to existing cloud cover, fog, or rainfall characteristics in the area as required by Chapter 375 of the Department's Rules.

BASED on the above Findings of Fact, and subject to the Conditions listed below, the Board makes the following CONCLUSIONS pursuant to the Site Law (38 M.R.S. §§ 480-A–480-JJ) NRPA (38 M.R.S. §§ 481–489-E), WQC (33 U.S.C. § 1341), and Chapters 2, 3, 310, 315, 335, 342, 355, 371-73, 375-76, 380, 400, 418-19, 500-02 and 587 of the Department Rules:

- A. The Applicant provided adequate evidence of technical ability to develop the Project in a manner consistent with state environmental standards.
- B. Applicant demonstrated financial capability. Provided the Application complies with the below conditions regarding financial capability, Applicant meets the requirement that Applicant demonstrate sufficient financial capability to develop and operate the Project in compliance with all applicable State environmental standards.
- C. The Applicant made adequate provision for fitting the development harmoniously into the existing natural environment and the development will not adversely affect existing uses, scenic character, air quality, water quality or other natural resources in the municipality or in neighboring municipalities.
- D. The proposed development will be built on soil types which are suitable to the nature of the undertaking and will not cause unreasonable erosion of soil or sediment nor inhibit the natural transfer of soil.
- E. Applicant made adequate provision to ensure blasting during construction of the Project

complies with 38 M.R.S. § 490(Z).

- F. The proposed development meets the standards for stormwater management in 38 M.R.S. § 420-D and the standard for erosion and sediment control in 38 M.R.S. § 420-C.
- G. The proposed development will not pose an unreasonable risk that a discharge to a significant groundwater aquifer will occur provided Applicant complies with Conditions 18 and 19 below.
- H. Applicant made adequate provision of utilities, including water supplies, sewerage facilities and solid waste disposal required for the Project and the Project will not have an unreasonable adverse effect on the existing or proposed utilities in the municipality or area served by those services.
- I. The Project will not unreasonably cause or increase the flooding of the alteration area or adjacent properties nor create an unreasonable flood hazard to any structure.
- J. Applicant sufficiently demonstrated that the Project will not unreasonably interfere with existing scenic, aesthetic, recreational or navigational uses pursuant to 38 M.R.S. § 480-D(1).
- K. Applicant sufficiently demonstrated that the proposed expansion will not cause unreasonable erosion of soil or sediment nor unreasonably inhibit the natural transfer of soil from the terrestrial to the marine or freshwater environment pursuant to 38 M.R.S. § 480-D(2).
- L. Applicant sufficiently demonstrated that the proposed expansion will not unreasonably harm any significant wildlife habitat, freshwater wetland plant habitat, threatened or endangered plant habitat, aquatic or adjacent upland habitat, travel corridor, freshwater, estuarine or marine fisheries or other aquatic life pursuant to 38 M.R.S. § 480-D(3) provided Applicant complies with Conditions 7-9 and 15-17 below.
- M. Applicant sufficiently demonstrated that the proposed expansion will not unreasonably interfere with the natural flow of any surface or subsurface waters pursuant to 38 M.R.S. §

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480-D(4) provided Applicant complies with Conditions 10-14 below.

- N. The Applicant sufficiently demonstrated that the proposed expansion will not violate any State water quality law, including those governing the classification of the State's waters pursuant to 38 M.R.S. § 480-D(5) and Section 401 of the Federal Water Pollution Control Act.
- O. The Applicant sufficiently demonstrated that the proposed expansion will not unreasonably cause or increase the flooding of the alteration area or adjacent properties pursuant to 38 M.R.S. § 480-D(6).
- P. The proposed activity is not on or adjacent to a sand dune.

THEREFORE, the Board APPROVES the application of NORDIC AQUAFARMS, INC. for the Project in Belfast and Northport, Maine as described in Finding 1, SUBJECT TO THE FOLLOWING CONDITIONS and all applicable standards and regulations:

1. The Standard Conditions of Approval, a copy attached.
2. Severability. The invalidity or unenforceability of any provision, or part thereof, of this License shall not affect the remainder of the provision or any other provisions. This License shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.
3. The Specific Conditions set forth in Section II of the Site Law.
4. Applicant shall submit executed copies of the property transactions documented in the TRI materials in advance of commencement of construction.
5. Applicant shall submit evidence that it has raised capital, been granted a line of credit or a loan by a financial institution authorized to do business in this State, or evidence of any other form of financing consistent with Department Rules, Chapter 373, § 2(B), in the amount needed for Phase I (currently estimated at \$269.75 million) to the Department for review and approval prior to the start of construction of Phase I. If the Phase I cost

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estimate requires revision, Nordic shall document the revised amount and provide evidence of financial assurance in that amount.

6. Applicant shall submit evidence that it has raised capital, been granted a line of credit or a loan by a financial institution authorized to do business in this State, or evidence of any other form of financing consistent with Department Rules, Chapter 373, § 2(B), in the amount needed for Phase II (currently estimated at \$230.25 million) to the Department for review and approval prior to the start of construction of Phase II. If the Phase II cost estimate requires revision, Nordic shall document the revised amount and provide evidence of financial assurance in that amount.
7. Applicant shall make payment of the in lieu fee of \$613,466.48 in advance of commencing Project construction.
8. Applicant shall submit documentation of implementation of the on-site compensation work described in the Project Compensation Plan within one year of completion of construction.
9. As an impact mitigation measure, all Project in-water work in the marine environment shall be completed between November 1st to April 1st unless authorized by the Department in advance. Applicant may complete pre-construction borings for sampling of sediments and other geotechnical due diligence such as that required by any U.S. Army Corps of Engineers authorization outside this marine work window.
10. Within 60 days of receipt of this permit, Applicant shall submit a revised Water Resources Monitoring Plan summarizing the changes to the original monitoring plan through comment and response memorandums between the Department and the Applicant. The revised monitoring plan shall include specific plans for the pre-operational background monitoring program, which shall be implemented by the Applicant as soon as practicable after approval by the Department.
11. Prior to the start of facility operations, Applicant shall submit to the Department, for review and approval, an addendum to the Water Resources Monitoring Plan summarizing the pre-operational background data collection required by the above Condition. Included with this plan will be a summary of the background data collected and recommendations for specific

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alert and action levels, based on background data from groundwater wells and surface waters related to the site. The addendum shall also contain a summary of discharge gauging data collected at the Little River gauging station and a proposed discharge rating curve to be used in calculating Little River discharge from stage height.

12. Compliance Monitoring

- a. Monthly Reporting: Once freshwater withdrawal begins, Applicant shall submit monthly monitoring data reports to the Department. Monthly reports shall include all monitoring data outlined in the revised monitoring plan in the most recent electronic format accepted by the Department. Monthly data reports shall include data through the end of each month and be submitted to the Department by the 15th of the following month.
- b. Annual Report: Once freshwater withdrawal begins, Applicant shall submit annual monitoring reports to the Department for review. Annual reports will include all monitoring data required by the revised monitoring plan with a written summary that will provide recommendations to address any potential adverse impacts to the surface water or groundwater quantity or quality that may be indicated by the monitoring results. Annual reports will be for each fiscal year, ending December 31, and will be submitted to the Department by April 1 of the following year. Data for the annual report shall be submitted in the most recent electronic format accepted by the Department.
- c. Alert and Action Levels: Alert and/or Action Levels will be established by the Department in response to the addendum to the Water Resources Monitoring Plan required in Condition 10 above. Any time water levels fall below the Alert Levels, Applicant shall submit an interim monthly report of monitoring results assessing potential causes of the reduced water levels, and propose actions to be taken should observed levels fall to or below Action Levels. Any time water levels are observed at or below Action Levels, Applicant shall notify the Department within five days and describe all actions taken to address the water levels. The Department reserves the right to require further actions as provided for in Condition 13(e) below.

- d. Biological Monitoring: Applicant shall employ a qualified environmental professional to conduct biological monitoring for wetlands and NRPA jurisdictional streams located on the Project site and prepare an annual report on the biological monitoring. This annual report shall be submitted by April 1 of the year following the year in which monitoring was conducted. Biological monitoring shall continue for at least two years after the Project reaches full operational capacity. After such time, the Department shall review the data collected to date and make a determination regarding the ongoing need for continued biological monitoring.
- e. If, during its review of these monitoring reports, the Department find that withdrawals from the Lower Reservoir or on site groundwater wells may have an undue unreasonable effect on waters of the State, as defined in section 361-A, subsection 7, or on water-related natural resources or existing uses, the Department may require Applicant to submit plans to modify the groundwater or surface water extraction rate, the operation monitoring program, or other relevant aspects of the Project. If undue unreasonable effects on waters of the State, water-related natural resources, or existing uses (including private wells), are found, the Applicant will be required to suspend extraction activities until operational modifications can be made to remedy the impacts.
- f. The approved revised monitoring plan, including biological and water monitoring, shall be conducted in its current form for a minimum of two years after the Project reaches full operational capacity. After such time, the Applicant may request changes to monitoring frequency, locations, or other considerations for review by the Department. Any changes requested by the Applicant are subject to review and approval of the Department.
- g. Should the water usage by the Applicant stabilize at lower levels than the anticipated full production volume, data collection and reporting frequency at some or all monitoring points may be reduced, pending a finding by the Department that data collected to that point show no unreasonable adverse impacts, or threat of such impacts, on groundwater or surface water quality and quantity.

13. This permit is based on a maximum instantaneous groundwater withdrawal rate of 455 gallons per minute, maximum total withdrawals of 655,200 gallons per day, 20,311,200 gallons per month, and 239,312,000 gallons per year from three bedrock production wells combined. Any increase in the maximum withdrawal rate, or any additional production wells, requires modification or amendment of this permit.
14. Applicant will install a streamflow gauging station in the free-flowing reach of the Little River below the Upper Dam and upstream of the Lower Reservoir to monitoring stage of the Little River in near real-time. Applicant will generate a rating curve through manual measurement of streamflow during the pre-operation background monitoring period that can be used to calculate discharge of the Little River from stage height. The gauging station and rating curve will be submitted to the Department for review as a component of the Monitoring Program discussed in Conditions 11-14 above. Applicant will limit surface water withdrawal from the Lower Reservoir to maximum total withdrawals of 3,068,100 per month plus the volume of water measured to have entered the Lower Reservoir at the Little River gauging station for that month and 36,817,200 gallons per year plus the volume of water measured to have entered the Lower Reservoir at the Little River gauging station, established and maintained by the Applicant, for that year.
15. Applicant shall conduct outreach via written notice thirty days in advance of the start of construction of the intake and outfall piping to the local Lobster Zone Council, and coordinate with DMR staff who will send email notification to all Zone D members. Notice should include specific nautical bearings of the haul route and width for the safe travel of the spoils barge to avoid entanglement with fishing gear. This notice shall include the anchorage of the barge at either the construction site or at a safe location off Mack Point. The barge transporting the marine soils to Mack Point shall be equipped with a VMS (Vessel Monitoring System) to track its transit activity along the haul route, and provide a mechanism by which area fishermen may seek compensation for lost gear should the barge deviate from the specified haul route.
16. Applicant shall mark the location of the intake and outfall piping for navigational safety and to avoid entanglement in consultation with the United States Coast Guard.

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17. Prior to soil disposal at an upland landfill, all material shall be tested in accordance with 38 M.R.S., §1301, *et seq.*, Chapters 800 and/or 850 of the Department’s Rules, as applicable, and in accordance with the acceptance criteria of the receiving facility.
18. Prior to the start of construction Applicant shall submit a SPCC Plan for Project construction activities to the Department. This SPCC Plan shall be updated and resubmitted to the Department in advance of Phase II Project Construction Activities.
19. Prior to the start of operations Applicant shall submit a SPCC Plan for Phase I Project operations. This SPCC Plan shall be updated and resubmitted to the Department in advance of commencement of Phase II Project operations.