

CALIFORNIA COASTAL COMMISSION

NORTH COAST DISTRICT OFFICE
1385 8TH STREET, SUITE 130
ARCATA, CALIFORNIA 95521-5967
(707) 826-8950 FAX (707) 826-8960

WWW.COASTAL.CA.GOV

**COMMISSION NOTIFICATION OF APPEAL**

October 28, 2022

To: Cade McNamara, Planner II
County of Humboldt, Planning and Building
3015 H Street
Eureka, CA 95501

From: Melissa Kraemer, North Coast District Manager

Re: **Commission Appeal No. A-1-HUM-22-0063**

Please be advised that the coastal development permit decision described below has been appealed to the California Coastal Commission pursuant to Public Resources Code Sections 30602 or 30603, and 30625. Therefore, the decision has been stayed pending Commission action on the appeal pursuant to the Public Resources Code Section 30623.

LOCAL PERMIT #: **PLN-2020-16698** [Commission File No. 1-HUM-20-1004]

APPLICANT(S): **Nordic Aquafarms California, LLC**

DESCRIPTION: A Coastal Development Permit and Special Permit for demolition and remediation of the Samoa Pulp Mill facility and construction of a land-based finfish recirculating aquaculture system (RAS) including development (through three phases, including the demolition and remediation phase) of five buildings totaling 766,530 square feet, installation of a 4.8 megawatt solar array mounted on building rooftops, and ancillary support features including paved parking, fire access roads, security fencing, storm water management features, and use of approximately 2.5 million gallons per day of freshwater and industrial water provided by the Humboldt Bay Municipal Water District.

LOCATION: Nordic Aquafarms, 364 Vance Ave., Samoa, CA (APN: 401-112-021)

LOCAL DECISION: Approval with Special Conditions

APPELLANT(S): (1) 350 Humboldt; (2) Redwood Region Audubon Society; (3) Salmonid Restoration Federation; (4) Alison Willy; (5) Scott Frazer

DATE APPEALS FILED: 10/25/2022; 10/26/2022; 10/27/2022

COMMISSION NOTIFICATION OF APPEAL

The Commission appeal number assigned to this appeal is A-1-HUM-22-0063. The Commission hearing date has not been scheduled at this time. Within 5 working days of receipt of this Commission Notification of Appeal, copies of all relevant documents and materials used in the Humboldt County's consideration of this coastal development permit must be delivered to the North Coast District Office of the Coastal Commission (California Administrative Code Section 13112). Please include copies of plans, relevant photographs, staff reports and related documents, findings (if not already forwarded), all correspondence, and a list, with addresses, of all who provided verbal testimony.

A Commission staff report and notice of the hearing will be forwarded to you prior to the hearing. If you have any questions, please contact Melissa Kraemer at the North Coast District Office.

cc: Applicant: Nordic Aquafarms California, LLC
Agent: GHD, Attn: Andrea Hilton
Owner: Humboldt Bay Harbor, Recreation, and Conservation District, Attn: Larry Oetker

Appellants:
350 Humboldt, Attn: Daniel Chandler
Redwood Region Audubon Society, Attn: Gail Kenny
Salmonid Restoration Federation, Attn: Dana Stoltzman
Alison Willy
Scott Frazer

From: [Gail Kenny](#)
To: [Northern Spotted Owl](#)
Cc: [NorthCoast@Coastal](#); [Jim Clark](#)
Subject: Re: RRAS Appeal of Local Government Coastal Development Permit Supplemental Information
Date: Thursday, October 27, 2022 4:21:04 PM

I approve of the supplemental information in this email.

Sincerely,

Gail Kenny
President
Redwood Region Audubon Society

On Thu, Oct 27, 2022 at 4:09 PM Northern Spotted Owl
<northernspottedowl707@gmail.com> wrote:

Dear Coastal Commission staff,

On behalf of Gail Kenny, RRAS board president, please include the following supplemental information to the appeal form previously submitted and attached here for reference.

RRAS Appeal Points

Below please find specific information regarding Redwood Region Audubon Society's appeal of the County of Humboldt Coastal Development Permit for Nordic Aquafarms, including reasons supporting our appeal to supplement the signed appeal form previously submitted.

Reasons supporting this appeal:

1. ENVIRONMENTALLY SENSITIVE HABITAT AREA (ESHA)

According to the Coastal Development Permit staff report, "high quality dune mat located on the project site will be protected by an established requirement of a minimum 35-foot buffer. Within the buffer is a 20-foot-wide fire road." The proposed buffer is not consistent with Section 30240 a and b of the Coastal Act^[1] or Policy 3.30 of the Humboldt Bay Area Plan,^[2] which both state that

- (a) Environmentally sensitive habitat areas (ESHAs) shall be protected against any significant disruption of habitat values, and only uses dependent on such resources shall be allowed.
- (b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade such areas, and shall be compatible with the continuance of such habitat areas.

2. COASTAL ACCESS

Industrial Development Policies, Section 3.14 B of the HBAP state that:

- "New industrial development adjacent to areas planned for public recreation, natural resources, or residential use on the North Spit shall include mitigation measures, including at a minimum, setbacks, landscaping, and design controls to minimize significant conflicts with adjacent land uses." 3.14.B.1. under ***30232 (a)
- "Where proposed industrial development would affect wetland or dune habitat, or areas of public access or recreation, it is subject to the policies of Section 3.27, 3.30, and 3.50 of this plan." 3.14.B.3 Coastal Dependent Industrial e(3)
- 3.50 c. Access Inventory
16. LP DRIVE/U.S.S. MILWAUKEE MARKER – This accessway provides access to the waveslope. Parking is available and logs placed along the access corridor restrict ORVs to the traveled path. (Amended by Res. No. 94-47, 6/7/94)
RECOMMENDATION: Gate the accessway to restrict vehicle use and improve as a pedestrian accessway to the waveslope. (Amended by Res. No. 94-47, 6/7/94)

This accessway is on the west side of the main entrance to the project site. Improvements should be made for safer coastal access. The increase in truck traffic poses increased hazards to safe coastal access, especially surfers changing into and out of wetsuits close to the roadway.

3. TSUNAMI HAZARD

HBAP 3.17 Hazards

3. Tsunamis–New development below the level of the 100 year tsunami run-up elevation described in Tsunami Predictions for the West Coast of the Continental United States ([Technical Report H-78-26 by the Corps of Engineers](#)) shall be limited to public access, boating, public recreation facilities, agriculture, wildlife management, habitat restoration, and ocean intakes, outfalls, and pipelines, and dredge spoils disposal. New subdivisions or development projects which could result in one or more additional dwelling units within a potential tsunami run-up area shall require submission of a tsunami vulnerability report which provides a site-specific prediction of tsunami-run-up elevation resultant from a local Cascadia subduction zone major earthquake. Such developments shall be subject to the following standards or requirements...

The CDP does not include tsunami evacuation plans to protect workers at the facility in the event of a tsunami.

-
- [1] California Coastal Act, Section 30240. <https://www.coastal.ca.gov/fedcd/cach3.pdf>
[2] Humboldt Bay Area Plan of the Humboldt County Local Coastal Program, Section 3.30. <https://humboldt.gov/DocumentCenter/View/50844/Humboldt-Bay-Area-Local-Coastal-Plan>

----- Forwarded message -----

From: **Gail Kenny** <gailkenny@gmail.com>

Date: Wed, Oct 26, 2022 at 8:02 PM

Subject: Appeal of Local Government Coastal Development Permit

To: <NorthCoast@coastal.ca.gov>

Cc: Jim Clark <clarkjimw@gmail.com>

I have attached an Appeal of Local Government Coastal Development Permit.
Redwood Region Audubon is appealing the Nordic AquaFarms permit.

Sincerely,

Gail Kenny
President
Redwood Region Audubon Society

CALIFORNIA COASTAL COMMISSION

NORTH COAST DISTRICT OFFICE
1385 EIGHTH STREET, SUITE 130
ARCATA, CA 95521
(707) 826-8950
NORTHCOAST@COASTAL.CA.GOV

**APPEAL FORM**

Appeal of Local Government Coastal Development Permit

Filing Information (STAFF ONLY)

District Office: North Coast

Appeal Number: _____

Date Filed: _____

Appellant Name(s): Redwood Region Audubon Society**APPELLANTS**

IMPORTANT. Before you complete and submit this appeal form to appeal a coastal development permit (CDP) decision of a local government with a certified local coastal program (LCP) to the California Coastal Commission, please review [the appeal information sheet](#). The appeal information sheet describes who is eligible to appeal what types of local government CDP decisions, the proper grounds for appeal, and the procedures for submitting such appeals to the Commission. Appellants are responsible for submitting appeals that conform to the Commission law, including regulations. Appeals that do not conform may not be accepted. If you have any questions about any aspect of the appeal process, please contact staff in the Commission district office with jurisdiction over the area in question (see the Commission's [contact page](#) at <https://coastal.ca.gov/contact/#/>).

Note regarding emailed appeals. Please note that emailed appeals are accepted ONLY at the general email address for the Coastal Commission district office with jurisdiction over the local government in question. For the North Coast district office, the email address is NorthCoast@coastal.ca.gov. An appeal emailed to some other email address, including a different district's general email address or a staff email address, will be rejected. It is the appellant's responsibility to use the correct email address, and appellants are encouraged to contact Commission staff with any questions. For more information, see the Commission's [contact page](#) at <https://coastal.ca.gov/contact/#/>.

Appeal of local CDP decision

Page 2

1. Appellant information¹

Name: Redwood Region Audubon Society
Mailing address: P. O. Box 1054, Eureka, CA 95502
Phone number: (707) 601-1582
Email address: gailgkenny@gmail.com

How did you participate in the local CDP application and decision-making process?

Did not participate Submitted comment Testified at hearing Other

Describe: Submitted comments at every step, testified at the Planning
Commission hearing, appeal to the Planning Commission
decision to the Board of Supervisors, and testified at the Board
of Supervisors hearing

If you did *not* participate in the local CDP application and decision-making process, please identify why you should be allowed to appeal anyway (e.g., if you did not participate because you were not properly noticed).

Describe: _____

Please identify how you exhausted all LCP CDP appeal processes or otherwise identify why you should be allowed to appeal (e.g., if the local government did not follow proper CDP notice and hearing procedures, or it charges a fee for local appellate CDP processes).

Describe: See response above, participated throughout the county process
and submitted comments, testified at hearings and appeal to
the Board of Supervisors

¹ If there are multiple appellants, each appellant must provide their own contact and participation information. Please attach additional sheets as necessary.

Appeal of local CDP decision

Page 3

2. Local CDP decision being appealed²

Local government name: County of Humboldt
Local government approval body: Humboldt County Board of Supervisors
Local government CDP application number: 1-HUM-20-1004
Local government CDP decision: CDP approval CDP denial³
Date of local government CDP decision: 9/28/2022 decision; 10/13/2022 notice

Please identify the location and description of the development that was approved or denied by the local government.

Describe: Nordic Aquafarms California, LLC, PLN-2020-16698
APN: 401-112-021; 364 Vance Ave., Samoa area
A Coastal Development Permit and Special Permit for the
demolition and remediation of the Samoa Pulp Mill facility and
construction of a land-based finfish recirculating aquaculture
system) including development (through three phases, including
the demolition and remediation phase) of five buildings totaling
766,530 square feet, installation of 4.8 megawatt solar array
and ancillary support features, including paved parking, fire
access roads, security fencing, storm water management
features, use of approximately 2.5 million gallons per day of
freshwater from the Mad River and 10 million gallons per day
of saltwater from Humboldt Bay

² Attach additional sheets as necessary to fully describe the local government CDP decision, including a description of the development that was the subject of the CDP application and decision.

³ Very few local CDP denials are appealable, and those that are also require submittal of an appeal fee. Please see the [appeal information sheet](#) for more information.

Appeal of local CDP decision

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5. Identification of interested persons

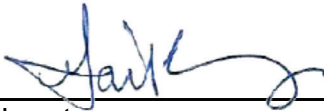
On a separate page, please provide the names and contact information (i.e., mailing and email addresses) of all persons whom you know to be interested in the local CDP decision and/or the approved or denied development (e.g., other persons who participated in the local CDP application and decision making process, etc.), and check this box to acknowledge that you have done so.

Interested persons identified and provided on a separate attached sheet

6. Appellant certifications

I attest that to the best of my knowledge, all information and facts in this appeal are correct and complete.

Print name Gail Kenny, President, RRAS



Signature

Date of Signature 10/26/2022

7. Representative authorizations

While not required, you may identify others to represent you in the appeal process. If you do, they must have the power to bind you in all matters concerning the appeal. To do so, please complete the representative authorization form below and check this box to acknowledge that you have done so.

I have authorized a representative, and I have provided authorization for them on the representative authorization form attached.

⁵ If there are multiple appellants, each appellant must provide their own certification. Please attach additional sheets as necessary.

⁶ If there are multiple appellants, each appellant must provide their own representative authorization form to identify others who represent them. Please attach additional sheets as necessary.

CALIFORNIA COASTAL COMMISSION

455 MARKET STREET, SUITE 300
SAN FRANCISCO, CA 94105-2219
VOICE (415) 904-5200
FAX (415) 904-5400

**DISCLOSURE OF REPRESENTATIVES**

If you intend to have anyone communicate on your behalf to the California Coastal Commission, individual Commissioners, and/or Commission staff regarding your coastal development permit (CDP) application (including if your project has been appealed to the Commission from a local government decision) or your appeal, then you are required to identify the name and contact information for all such persons prior to any such communication occurring (see Public Resources Code, Section 30319). The law provides that failure to comply with this disclosure requirement prior to the time that a communication occurs is a misdemeanor that is punishable by a fine or imprisonment and may lead to denial of an application or rejection of an appeal.

To meet this important disclosure requirement, please list below all representatives who will communicate on your behalf or on the behalf of your business and submit the list to the appropriate Commission office. This list could include a wide variety of people such as attorneys, architects, biologists, engineers, etc. If you identify more than one such representative, please identify a lead representative for ease of coordination and communication. You must submit an updated list anytime your list of representatives changes. You must submit the disclosure list before any communication by your representative to the Commission or staff occurs.

Your Name Gail Kenny, Redwood Region Audubon Society

CDP Application or Appeal Number 1-HUM-20-1004

Lead Representative

Name Jim Clark

Title RRAS Board Member and Conservation Committee Chair

Street Address. _____

City _____

State, Zip _____

Email Address clarkjimw@gmail.com

Daytime Phone 707-445-8311 (h), 707-499-9158 (cell)

Your Signature 

Date of Signature 10/26/2022

From: [Daniel Chandler](#)
To: NorthCoast@Coastal
Cc: Kraemer, Melissa@Coastal
Subject: Appeal of Coastal Commission Application File No. 1-HUM-20-1004
Date: Tuesday, October 25, 2022 1:46:03 PM
Attachments: [CDP-AppealForm-nc.pdf](#)
[350 Humboldt Appeal to Coastal Commission.pdf](#)
[INTERESTED PARTIES.docx](#)

Dear North Coast,

Please find attached a) the official appeal form completed [<https://documents.coastal.ca.gov/assets/cdp/CDP-AppealForm-nc.pdf>] b) the list of other interested parties c) and a detailed description of the grounds for this appeal. Please let me know if this appeal application is missing any required information. So far as I can tell it is not, but the official appeal form was not always clear to me.

Dan Chandler

Daniel Chandler, Ph.D.
350 Humboldt Steering Committee
dwchndl@gmail.com
Phone: 707 677 3359
Mobile: 707 601 6127

CALIFORNIA COASTAL COMMISSION

NORTH COAST DISTRICT OFFICE
1385 EIGHTH STREET, SUITE 130
ARCATA, CA 95521
(707) 826-8950
NORTHCOAST@COASTAL.CA.GOV

**APPEAL FORM**

Appeal of Local Government Coastal Development Permit

Filing Information (STAFF ONLY)

District Office: North Coast

Appeal Number: _____

Date Filed: _____

Appellant Name(s): _____

APPELLANTS

IMPORTANT. Before you complete and submit this appeal form to appeal a coastal development permit (CDP) decision of a local government with a certified local coastal program (LCP) to the California Coastal Commission, please review [the appeal information sheet](#). The appeal information sheet describes who is eligible to appeal what types of local government CDP decisions, the proper grounds for appeal, and the procedures for submitting such appeals to the Commission. Appellants are responsible for submitting appeals that conform to the Commission law, including regulations. Appeals that do not conform may not be accepted. If you have any questions about any aspect of the appeal process, please contact staff in the Commission district office with jurisdiction over the area in question (see the Commission's [contact page](#) at <https://coastal.ca.gov/contact/#/>).

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Appeal of local CDP decision

Page 2

1. Appellant information¹

Name: _____

Mailing address: _____

Phone number: _____

Email address: _____

How did you participate in the local CDP application and decision-making process?

Did not participate Submitted comment Testified at hearing Other

Describe: _____

If you did *not* participate in the local CDP application and decision-making process, please identify why you should be allowed to appeal anyway (e.g., if you did not participate because you were not properly noticed).

Describe: _____

Please identify how you exhausted all LCP CDP appeal processes or otherwise identify why you should be allowed to appeal (e.g., if the local government did not follow proper CDP notice and hearing procedures, or it charges a fee for local appellate CDP processes).

Describe: _____

¹ If there are multiple appellants, each appellant must provide their own contact and participation information. Please attach additional sheets as necessary.

Appeal of local CDP decision

Page 3

2. Local CDP decision being appealed²

Local government name: _____

Local government approval body: _____

Local government CDP application number: _____

Local government CDP decision: CDP approval CDP denial³

Date of local government CDP decision: _____

Please identify the location and description of the development that was approved or denied by the local government.

Describe: _____

² Attach additional sheets as necessary to fully describe the local government CDP decision, including a description of the development that was the subject of the CDP application and decision.

³ Very few local CDP denials are appealable, and those that are also require submittal of an appeal fee. Please see the [appeal information sheet](#) for more information.

Appeal of local CDP decision

Page 4

3. Applicant information

Applicant name(s): _____

Applicant Address: _____

4. Grounds for this appeal⁴

For appeals of a CDP approval, grounds for appeal are limited to allegations that the approved development does not conform to the LCP or to Coastal Act public access provisions. For appeals of a CDP denial, grounds for appeal are limited to allegations that the development conforms to the LCP and to Coastal Act public access provisions. Please clearly identify the ways in which the development meets or doesn't meet, as applicable, the LCP and Coastal Act provisions, with citations to specific provisions as much as possible. Appellants are encouraged to be concise, and to arrange their appeals by topic area and by individual policies.

Describe: _____

⁴ Attach additional sheets as necessary to fully describe the grounds for appeal.

Appeal of local CDP decision

Page 5

5. Identification of interested persons

On a separate page, please provide the names and contact information (i.e., mailing and email addresses) of all persons whom you know to be interested in the local CDP decision and/or the approved or denied development (e.g., other persons who participated in the local CDP application and decision making process, etc.), and check this box to acknowledge that you have done so.

Interested persons identified and provided on a separate attached sheet

6. Appellant certifications

I attest that to the best of my knowledge, all information and facts in this appeal are correct and complete.

Print name _____

David Chandler

Signature _____

Date of Signature _____

7. Representative authorizations⁵

While not required, you may identify others to represent you in the appeal process. If you do, they must have the power to bind you in all matters concerning the appeal. To do so, please complete the representative authorization form below and check this box to acknowledge that you have done so.

I have authorized a representative, and I have provided authorization for them on the representative authorization form attached.

⁵ If there are multiple appellants, each appellant must provide their own certification. Please attach additional sheets as necessary.

⁶ If there are multiple appellants, each appellant must provide their own representative authorization form to identify others who represent them. Please attach additional sheets as necessary.



10/25/22

California Coastal Commission

North Coast District Office 1385 8th Street,
Suite 130 Arcata,
California 95521-5967
Per email: Melissa.Kraemer@coastal.ca.gov

Melissa Kraemer, North Coast District Manager

Dear Ms. Kraemer:

350 Humboldt is hereby filing an appeal to the California Coastal Commission regarding the Nordic Aquafarm project, described formally as:

Coastal Commission Application File No. 1-HUM-20-1004

Local Permit #: Applicant(s): Description:

PLN-2020-16698
Nordic Aquafarms California, LLC, Attn: David Noyes

A Coastal Development Permit and Special Permit for demolition and remediation of the Samoa Pulp Mill facility and construction of a land-based finfish recirculating aquaculture system (RAS) including development (through three phases, including the demolition and remediation phase) of five buildings totaling 766,530 square feet, installation of a 4.8 megawatt solar array mounted on building rooftops, and ancillary support features including paved parking, fire access roads, security fencing, storm water management features, and use of approximately 2.5 million gallons per day of freshwater and industrial water provided by the Humboldt Bay Municipal Water District.

Location: APN 401-112-021; 364 Vance Ave, Samoa, CA

We originally intended to file this appeal after the approval of the project by the Humboldt County Planning Commission. We found that the Coastal Commission does indeed have authority over climate change, and therefore greenhouse gases, in the areas in which it is decisive:

Human activity is contributing to global climate change, which will have increasingly significant impacts on California and its coastal environments and communities. The [Coastal Act](#) mandates the California Coastal Commission to “protect, conserve, restore, and enhance” the state’s coastal resources. As a result, the Commission must consider climate change,

including global warming and potential sea level rise, through its planning, regulatory, and educational activities, and work to reduce greenhouse gas emissions and the detrimental impacts of global warming on our coast.¹

And we readily found a case from February 2022 in which inadequate preparations for sea level rise (a consequence of climate change) and inadequate provisions for greenhouse gas offsets led to rejection of a desalinization plant by the Coastal Commission.²

However, when we read the appeal information sheet the Coastal Commission makes available, we found that while we met the formal grounds for being an appellant, and the project is appealable, the appeal grounds were very limited. Specifically “For appeals of a CDP approval, grounds for appeal are limited to allegations that the approved development does not conform to the LCP and/or to Coastal Act public access provisions.”

After carefully reading the Local Coastal Plan for the Humboldt Bay area. We realized it did not contain a word about climate change, greenhouse gases, or sea level rise. So 350 Humboldt, along with the Humboldt Fishermen’s Marketing Association, Inc., and the Redwood Region Audubon Society appealed to the Board of Supervisors. That appeal was denied, although two potentially important conditions were added.

While the Local Coastal Program does not specifically address climate change, greenhouse gases, or sea level rise, the county *has* received funding for a variety of studies of sea level rise. In 2022 the final report was submitted regarding *Natural Shoreline Infrastructure in Humboldt Bay for Intertidal Coastal Marsh Restoration and Transportation Corridor Protection*. Earlier it received funding for a study of *Sea Level Rise Adaptation Plan for Humboldt Bay/Eureka Slough Area (2018-2021)*. Earlier reports focused on specific areas and considered vulnerabilities and adaptation plans as well as citing worldwide sea level rise projections due to climate change (and subsidence).³ As early as 2014 we had a report entitled *Adaptation to Climate Change: District 1 Climate Change, Vulnerability Assessment and Pilot Studies. Final Report*.⁴ On a webpage called Local Coastal Plan Update we hear that Humboldt County has received grant funding from the Ocean Protection Council and the California Coastal Commission to update the Humboldt Bay Area Plan for sea level rise.⁵

So we have a situation in which the County and multiple funding organizations have been studying and planning for sea level rise for at least eight years – yet the Local Coastal Program upon which we would have to base an appeal, has not been updated to set standards for greenhouse gases or sea level rise, or even to mention them. No doubt the local Planning Department is stretched far beyond available resources. However, we conclude that as members of the California public we have been deprived by the lack of an up to date LCP of an opportunity to appeal to the Coastal Commission issues (greenhouse gas emissions/effects on a project of sea level rise) that by law the Coastal Commission is intended to consider in protecting our coast.

¹ <https://www.coastal.ca.gov/climate/whyinvolved.html>

² A-5-HNB-10-225/9-21-0488 (Poseidon Water)

³ <http://humboltdbay.org/sites/humboltdbay2.org/files/Humboldt%20Bay%20Shoreline%20Inventory%2C%20Mapping%20and%20SLR%20Vulnerability%20Assessment-A.Laird%20%281%29%20-%20Compressed.pdf>

⁴ <https://humboldt.gov/DocumentCenter/View/70095/Caltrans-District-1-Climate-Change-Vulnerability-Assessment---Main-Document>

⁵ <https://humboldt.gov/1678/Local-Coastal-Plan-Update>

We see two possible courses of action the Coastal Commission could take (and recognize that there may be others):

1. The Coastal Commission could follow the clear mandate that it is authorized and expected to deal with climate change, which, of course, means attempting not just to adapt to it but – as shown by the Poseidon Water case – mitigate it by reducing or eliminating or offsetting greenhouse gas emissions. It is perhaps unnecessary to add that greenhouse gas emissions are a global cause of sea level rise and other significant environmental damage. Consequently, the Coastal Commission could accept our appeal which is based on the Nordic project’s currently unrecognized and unmitigated release of upwards of 2 million metric tons of CO₂e over the lifetime of the project.
2. Or, the Coastal Commission could delay hearing the Nordic case until the County remedies the clear deficiencies in the Local Coastal Program planning.

Stepping back, estimates of the social cost of a metric ton of carbon in 2030 run from \$170 in Canada, to \$185 in a new analysis from UC Berkeley, to \$233 in Norway.⁶ In this project, the costs are very directly borne by the Global South, as forage fish needed to feed people are instead transferred as fish feed to well-off Californians.

In a July 22 letter to Air Resources Board Chair Liane Randolph, Governor Newsom stated, “California is in the midst of a climate crisis. Drought, wildfire, and extreme heat have become everyday realities. We are compelled to do more.”⁷ In September the Governor also signed Senate Concurrent Resolution 53 (McGuire) into law which declared “that a climate emergency threatens the state, the nation, the planet, the natural world, and all of humanity.”

Unfortunately, in its handling so far, this project justifies the statement by United Nations Secretary General that “We are sleepwalking toward climate catastrophe.”⁸

Sincerely,



Daniel Chandler, Ph.D.
350 Humboldt Steering Committee
P.O. Box 231, Bayside, CA 95524
350Humboldt@gmail.com
707-601-6127

Cc: Governor Gavin Newsom, Senator Mike McGuire

⁶<https://climateinstitute.ca/canadas-carbon-pricing-update/> ; <https://www.rff.org/news/press-releases/social-cost-of-carbon-more-than-triple-the-current-federal-estimate-new-study-finds/>;
<https://www.oecd-ilibrary.org/sites/59e71c13-en/index.html?itemId=/content/publication/59e71c13-en>

⁷ <https://www.gov.ca.gov/wp-content/uploads/2022/07/07.22.2022-Governors-Letter-to-CARB.pdf?emrc=1054d6>

⁸ <https://news.un.org/en/story/2022/03/1114322>

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APPENDIX II. AQUACULTURE STEWARDSHIP COUNCIL STANDARDS FOR ATLANTIC SALMON GREENHOUSE GAS REPORTING 13

GREENHOUSE GASES FROM FISH FEED

Fish food for aquaculture is viewed by fish biologists as a major source of greenhouse gas emissions. Based on data from many different scientific studies that estimate the CO₂ equivalent emitted by fish food for Atlantic Salmon, the average emissions at the Nordic aquafarm are likely to be 55,000 to 150,000 metric tons per year, at least two times the amount needed to meet a threshold of environmental significance under CEQA. We have included the findings of these studies as Appendix I. What we did not know when we summarized these scientific studies in our comments on the DEIR is how much the salmon farming industry as whole has adopted the scientific methods used in these studies. And this makes sense: the aquaculture industry compares itself favorably to other sources of protein like cattle and pigs. But these comparisons all use the life cycle assessment method that scientists apply to salmon farming.¹ (Similarly, the bivalve aquaculture we have in Humboldt Bay has a minimal footprint as the oysters get their nutrients from the water.) As an article on the website of feed manufacturer Cargill says, "Feed makes up the vast majority of fish farmers' carbon emissions, so companies like Cargill are under increasing pressure from customers, lenders and buyers at retail and foodservice to reduce their footprint."²

- a. The major organization responsible for certifying quality in the land-based growth of Atlantic Salmon, the Aquaculture Stewardship Council (ASC), includes greenhouse gases as part of their certification and requires each aquafarm to do a greenhouse gas inventory each year. The inventory must document the greenhouse gases attributable to the fish food consumed. It also requires fish feed manufacturers to state on their product the greenhouse gases released in their manufacture. Here is the ASC statement to this effect as it applies to aquafarms such as the facility Nordic seeks to permit:³

"GHG accounting for feed –

[R] requires the calculation of the GHG emissions for the feed used during the prior production cycle at the grow-out site undergoing certification. This calculation requires farms to multiply the GHG emissions per unit of feed, provided to them by the feed manufacturer, by the amount of feed used on the farm during the production cycle. The feed manufacturer is responsible for calculating GHG emissions per unit feed....

The scope of the study [by feed manufacturers ASC certifies] to determine GHG emissions should include the growing, harvesting, processing and transportation of raw materials (vegetable and marine raw materials) to the feed mill and processing at feed mill. Vitamins and trace elements can be excluded from the analysis. The method of allocation of GHG emissions linked to by-products must be specified. The study to determine GHG emissions can follow one of the following methodological approaches:

1. A cradle-to-gate assessment, taking into account upstream inputs and the feed manufacturing process, according to the GHG Product Standard
2. A Life Cycle Analysis following the ISO 14040 and 14044 requirements for life cycle assessments."

These are the same methods used by the scientists cited in Appendix I.

- b. One of the three biggest fish feed manufacturers, Cargill, notes that fish farming contributes 250 million metric tons of CO₂e per year, and salmon contributes 10 million metric tons of CO₂e per year. Cargill says: "Feed contributes significantly to the carbon footprint of seafood farming, and

¹ <https://www.asf.ca/news-and-magazine/salmon-news/assessing-the-carbon-footprint-of-aquaculture>

² <https://www.intrafish.com/feed/i-want-to-see-results-cargill-aqua-nutrition-president-ramps-up-efforts-to-improve-feed-sustainability/2-1-1212928>

³ https://www.asc-aqua.org/wp-content/uploads/2019/12/ASC-Salmon-Standard_v1.3_Final.pdf

feed producers hold the key to achieving large emissions reductions throughout the value chain. Using that key to its full effect depends on seafood farmers and retailers sharing the same drive for sustainability.”⁴ Nordic, in its public relations materials, claims sustainability as a value but stated that the project would only be responsible for 10,000 metric tons of CO₂e over 30 years, none from fish feed.

- c. *To summarize: ASC, the certification agency for aquafarms like Nordic, requires food manufacturers to calculate GHG emissions using the methods that fish biologists use; and ASC requires the aquafarms themselves to count these feed emissions in the GHG emissions inventory they are required to report to ASC. So all three components of the industry are on the same page with how to calculate greenhouse gases from fish food. Nordic will be reporting every year to the ASC the greenhouse gases attributable to their fish feed and thus to their fish.*
- d. Planning Commission members received incorrect information on this issue. Staff member Cade MacNamara said the following: “Nordic aspires to be certified through ASC. The ASC requires that feed mills report greenhouse gases. This is not a requirement for feed purchasers.” This is a false statement and misled the Planning Commission. Below are quotations from the standard. (The entire standard is included as Appendix II to this document.) The quotations clearly indicate the farm itself must calculate and report as their own the greenhouse gases from the fish feed:

Criterion 4.6 Energy consumption and greenhouse gas emissions on farms⁸⁴

INDICATOR	REQUIREMENT
4.6.1 Presence of an energy use assessment verifying the energy consumption on the farm and representing the whole life cycle at sea, as outlined in Appendix V-1	Yes, measured in kilojoule/t fish produced/production cycle
4.6.2 Records of greenhouse gas (GHG ⁸⁵) emissions ⁸⁶ on farm and evidence of an annual GHG assessment, as outlined in Appendix V-1	Yes
4.6.3 Documentation of GHG emissions of the feed ⁸⁷ used during the previous production cycle, as outlined in Appendix V, subsection 2	Yes

Notice that the title is greenhouse gas emissions “on farms”. What does this entail? “Feed manufacturer is responsible for calculating GHG emissions per unit feed. Farm site then shall use that information to calculate GHG emissions for the volume of feed they used in the prior production cycle.”

Aside from the fact that aquacultural scientists and aquaculture certification agencies use a method that links the greenhouse gases to the fish grown from minuscule eggs to fish weighing several kilograms, the ASC approach makes sense because the farm can determine the emissions attributable to their fish by their choice of fish feed.

- e. We used the “sustainability reports” that fish food manufacturers Skretting⁶ and Cargill⁷ produce annually to calculate what the Nordic aquafarm greenhouse gas emissions would be. On their website, Skretting lists the values for the tons of CO₂e per ton of feed in their four Canadian and four Norwegian factories: they range from 2.05 at a minimum to 5.28 for the maximum (t CO₂e/t feed).⁸ Cargill, instead of providing figures for different factories, provides an average for salmon fish food of 2.67t CO₂e/t of feed.⁹ We can calculate the greenhouse gas emissions if we know how much fish food will be used. The Staff Report to the Planning Commission says: “At full scale operations, NAFC expects to use approximately 36,300 metric tons of feed per year.” To get the range of fish feed greenhouse gases attributable to Nordic at full build-out using Skretting’s data, we multiply respectively the 2.05 and the 5.28 of CO₂e t/t of fish food by the 36,300 tons of fish food. For the

low figure it is 74,415 and for the high figure it is 191,664. For Cargill's factory average it is 2.67 times 36,300 or 96,921 metric tons of greenhouse gases per year.

- f. These are huge figures. For illustration, the EPA emissions calculator says 191,000 metric tons of CO₂ is equal to burning 443,810 barrels of oil per year.¹⁰
- g. The applicant must show how they will offset these emissions.

REFRIGERANTS

- a. Emissions from commonly used refrigerants warm the atmosphere from a few hundred times more than CO₂ itself to thousands of times more.
- b. Nordic plans to use 25% of their electric power (which in total is equal to all that used by Eureka and Fortuna combined) for refrigeration.¹¹ They will use refrigerants to make the ice that they pack the fish in for shipping, and they will use refrigerants in "chillers" that will keep the water cool enough for the fish. The DEIR also says: "Use of water to water-heat exchangers and heat pumps will be maximized to reduce energy demands." Heat pumps also use refrigerants.
- c. In negotiations with Marianne Naess of Nordic, we were told many times that they cannot specify the actual refrigerants and the global warming potential of each because their design team hasn't designed the system. In short, instead of describing the potential greenhouse gas emissions from refrigerants they say they don't know what they are. The FEIR, however, says they are not required to specify the greenhouse gas emissions because they will follow the law. Is there any other source of greenhouse gas emissions that this would be an acceptable answer for? They follow the law in transporting the fish to market in legal trucks, but that doesn't mean they don't have to count the truck emissions. In fact, the relevant CEQA standard is "Would the Project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?" The answer is we don't know because the data are not available.
- d. In emails to Marianne Naess we asked that Nordic commit to using natural refrigerants. These are refrigerants that have a minimal effect on the climate. There is refrigeration equipment that uses natural refrigerants for chillers, heat pumps and virtually every other heating or cooling use. Nordic refused to commit to this. We believe it should be a condition of any permit.
- e. We asked for information that would allow us to judge how much refrigerants with a high global warming potential they will use.

⁶ <https://www.cargill.com/doc/1432196768685/cargill-aqua-nutrition-sustainability-report-2020.pdf>;
<https://www.skretting.com/en/sustainability/sustainability-reporting/sustainability-report-2020/>

⁷ <https://www.skretting.com/en/sustainability/sustainability-reporting/sustainability-report-2020/climate--circularity/the-carbon-footprint-of-feed/>

⁸ <https://www.skretting.com/en/sustainability/sustainability-reporting/sustainability-report-2020/climate--circularity/the-carbon-footprint-of-feed/>

⁹ <https://www.cargill.com/doc/1432196768685/cargill-aqua-nutrition-sustainability-report-2020.pdf>

¹⁰ <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator#results>

¹¹ See the graph on page 3.5-4 of the DEIR

(The California regulation going into effect in 2025 will allow them to use HFC refrigerants for chillers with up to 2,200 times more global warming potential than CO₂; right now there are no limits). Namely, what do they use in their Norwegian factory? This is actually easy to provide and highly relevant because they plan to use a number of modular tanks that are similar to the much smaller Norwegian factory. However, Nordic refused to provide this information. It should not be proprietary information. We contacted the DeepChill company in Canada that works with RAS facilities. They said they use R 404A, which warms 3,922 times as much as CO₂; they also use a lower GWP substitute for R404A called R448A which warms 1,386 times as much as CO₂; and they use R770 which is ammonia, a natural refrigerant with zero warming effects.

- f. Refrigeration is a technology that can go drastically wrong with huge emissions consequences. The following quotation is from the shareholder statement of Atlantic Sapphire's RAS facility in Florida: "The increase [in costs] is mainly explained by the \$11 million in temporary chiller and generator rental costs in the U.S. following the breakdown of the chiller plant...in Q1 2021." So chillers have not yet been proven to work in a facility less than half the size of what Nordic proposes.
- g. In summary, information about the project does not meet any reasonable standard *to identify and describe the potentially significant impacts of refrigerants on greenhouse gas emissions*. At the same time, Nordic has refused to adopt the easily available mitigation measure of using very low global warming potential refrigerants, which are readily available.

SOURCES OF GREENHOUSE GASES FROM RENEWABLE ELECTRIC POWER

- a. Nordic has committed to either buy its electricity from RCEA or buying renewable or low carbon electricity from another provider, presumably a solar provider outside the county. As a result the final EIR incorrectly states: "A more appropriate carbon intensity factor would be zero pounds of carbon dioxide equivalent per megawatt hour (0 lbs. CO₂e/MWh)."
- b. We are very appreciative that Nordic has decided to go with renewable energy. However it will *not* be zero emissions from power, not even close.
 - i. The major source of emissions from power that is unrecognized by Nordic is due to the intermittency of renewable power. Even if one buys 195 gigawatt hours of solar every year, that doesn't mean that 24/7 the Nordic facility will be powered by solar.¹² "24/7 Carbon-free Energy (CFE) means that every kilowatt-hour of electricity consumption is met with carbon-free electricity sources, every hour of every day, everywhere."¹³ The United Nations has a 24/7 Energy Compact that lays out the principles of such energy systems. Microsoft and Google are two of the firms that have signed on. Below is an extensive quotation from a white paper¹⁴ from the Peninsula Clean Energy CCA (the Silicon Valley equivalent of RCEA). Peninsula

¹² A very understandable explanation of this issue has been written by David Roberts at: <https://www.canarymedia.com/articles/clean-energy/google-and-others-have-committed-to-24-7-carbon-free-energy-what-does-that-mean> Nordic will have a constant demand, but the supply of renewable energy, including from storage, will vary across the 24 hours.

¹³ UN 24/7 Carbon Free Energy Compact. <https://www.un.org/en/energy-compacts/page/compact-247-carbon-free-energy>

¹⁴ <https://www.peninsulacleanenergy.com/wp-content/uploads/2021/11/Whitepaper-OUR-PATH-TO-247-RENEWABLE-ENERGY-BY-2025.pdf> We have removed the footnotes for clarity. See the original for those.

Clean Energy intends to deliver 24/7 renewable power by 2025. The white paper explains and shows graphically why annual purchases of renewable energy such as Nordic proposes do not reflect actual reductions in carbon emissions, especially for facilities running 24/7 all year around. The quotation is shown in blue type.

[In 2018] Google described its vision of a 24/7 carbon-free goal for their data centers and campuses, and in 2020 set a goal to achieve this by 2030. Cities such as Los Angeles, Sacramento, and Des Moines have now set similar goals, and researchers at RMI (formerly Rocky Mountain Institute) and Princeton have begun studying the trend. Earlier this year, the United Nations started building a global coalition for 24/7 carbon free energy....

To better understand what it means for Peninsula Clean Energy to deliver renewable energy to our customers, it is first necessary to explain generally how the electric grid works. In physical terms, the electric grid is a system of wires that transmits and distributes electricity throughout the state, connecting our customers with the renewable energy generators under contract with us. As an analogy, it can be helpful to think of the electricity grid as a river. Just as streams and tributaries add their water flow to larger rivers, power plants throughout California add their energy to the electricity grid. Just as downstream customers can draw water from the river to use in their homes and businesses, our customers consume energy from the grid. The key point of this analogy is that just as it is impossible to track the source of a single molecule of water drawn from a river, it is similarly impossible to track exactly where each electron you consume comes from.

The electricity that we deliver to customers is therefore tracked based on contractual terms, rather than physical terms. We know how much metered energy our contracted generators deliver to the grid, and we make sure that it is the same amount of metered energy that our customers use. While in contractual terms we currently deliver a specific mix of renewable and carbon-free electricity to our consumers, the physics of the power grid means that everyone consumes a mix of electrons from both the carbon-free and fossil-based resources that deliver energy to the grid.

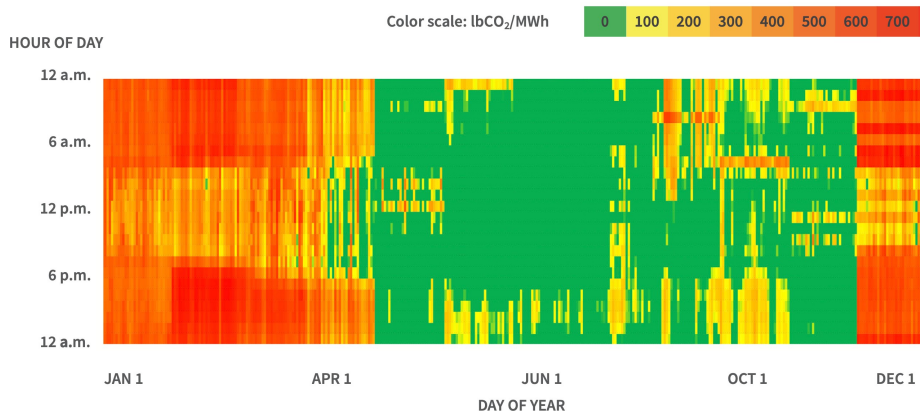
In addition, the timescale that we use to track our contractual renewable energy deliveries matters.

California's current regulatory standards for procuring and reporting clean electricity, such as the Renewables Portfolio Standard and Power Source Disclosure program, are tracked on an annual basis. We count how many megawatt-hours (MWh) of electricity our contracted generators produce in a year and match that to the number of MWh that our customers consume in a year. This annual accounting framework is how we are required to report our procurement to the state and report in our Power Content Label sent to our customers.

However, this annual accounting standard ignores whether our contracted generators produce electricity at the same time our customers use it. At certain hours, our contracts generate less clean energy than our customers are using. During those times, we must rely on generic grid electricity (most of which in California comes from methane gas power plants) to make up the difference. In other hours, our contracts

generate more clean energy than our customers use. Under the current standards, we can “credit” this excess clean generation to the hours when we rely on fossil-based grid energy and net out our grid energy use on an annual basis. While the excess renewable generation we contribute to the grid in some hours generally displaces fossil generation, we continue to send a demand signal for fossil-based energy in those hours when our clean energy contracts do not match the timing of our customers’ energy demand (see figure 1).

FIGURE 1. Hour-by-hour emissions intensity for 2020



This is why a 24/7 renewable energy approach, which matches renewable energy supply with demand on an hour-by-hour basis, is so important for the success of our state and global decarbonization goals. It enables us to help eliminate the demand signal for fossil-based electricity from the grid that our customers’ electricity consumption presently provides at the times when our contracted renewable generation does not match our load.

As of 2020, based on the annual accounting standard, Peninsula Clean Energy delivered 52% renewable energy and 47% large hydro to our customers. Our delivered electricity had a GHG emissions intensity of 12 lbCO₂e/MWh, compared to the California utility average of 466 lbCO₂e/MWh.

Also as of 2020, 47% of our hourly load was matched by contracted renewable energy generated in the same hour. Using an hourly, time-coincident accounting method, we estimate that the GHG emission intensity of our delivered electricity was closer to 187 lbCO₂/MWh than 12 lbCO₂e/MWh.

Based on contracts signed to date, we are currently on track to be 64% renewable on a time-coincident basis in 2025, and we are actively working to plan and procure the remaining 36% by that year. [End Quote]

So rather than zero the actual amount of CO₂e released by the Nordic facility from energy usage will be far higher.¹⁵ Peninsula’s actual hourly carbon intensity is 15 times the amount

¹⁵ A competitor in Norway, Sustainable Evolution, is backed by Cargill and a giant Korean food corporation to the tune of over \$300 million. It has just signed an agreement with a state run Norwegian power company for 100%

shown with annual accounting. Based on Peninsula's information, buying renewable energy with annual accounting results in about half of the hourly use actually coming from natural gas (because 47% of their hourly load was matched by contracted renewable energy generated in the same hour). Since according to the EPA fossil "natural" gas in power plants emits 898 pounds CO₂ per megawatt-hour¹⁶ and there are 1000 megawatt-hours in a gigawatt hour, Nordic's actual emissions (absent mitigation) will be approximately 97.5 x 1000 x 898 or 87,555,000 pounds of CO₂ which is equivalent to 39,714 metric tons of CO₂ annually.¹⁷

- ii. The discrepancy between annual and 24/7 emissions accounting will decline in Humboldt over time; for example, when (and if) offshore wind produces renewable energy at night and during the winter. While RCEA has no specific plans to adopt 24/7 accounting the way Peninsula is, the RCEA Board has passed an authorization that would allow a specific contract with Nordic or other large user of electricity to purchase only renewable power to the extent possible.¹⁸ As shown above, there is a limit to how much such a contract (like Peninsula has with Google) reduces emissions at this time. Again, Nordic must provide a plan for how it will offset these emissions.

TRANSPORTATION GREENHOUSE GASES

- a. The Coastal Commission has the authority to regulate greenhouse gases due to transportation. [Energy consumption and vehicle miles traveled are addressed in section 30253: "New development shall: ...(4) Minimize energy consumption and vehicle miles traveled."]
- b. Greenhouse gases attributable to transportation in the Nordic Project were estimated by the EIR. It projects 2,268,907 vehicle miles traveled (VMT) in 2029, most of which is driving loaded trucks (1,693,068). The EIR estimates these trips will emit 2,371 metric tons of CO₂e. The modeling tool is obviously the wrong one since the analysts had to fudge the data inputs, using multiple short trips instead of the actual long trips. In fact, data-based estimates about trip length were not used in the EIR: "Annual VMT data was provided for short-hauling and long-hauling trips for GHG emissions analysis; detailed hauling data, such as specific destinations or trip routes was not provided. Specific trip lengths (such as minimum, maximum, average, or distribution) for short- hauling and long-hauling were not known."¹⁹ In short, the EIR does not contain an independent or accurate estimate of VMT.

We redid the 2029 greenhouse gas emissions based on the Nordic-provided but unverified VMT using a formula from a manual for green trucking.²⁰ (We did not change the estimate for passenger vehicles going to and from work.) We first had to know roughly the tonnage of each truck load.

renewable power. This is "actual" renewable since it is hydropower and runs night and day.

<https://www.intrafish.com/salmon/land-based-salmon-farmer-salmon-evolution-signs-deal-for-100-percent-renewable-energy/2-1-1133585>

¹⁶ EPA's Emissions and Generation Resource Integrated Database (eGRID), released in 2018 with 2016 data, shows that at the national level, natural gas units have an average emission rate of 898 pounds CO₂ per megawatt-hour (MWh), while coal units have an emissions rate of 2,180 pounds CO₂ per MWh.https://www.epa.gov/sites/default/files/2020-12/documents/power_plants_2017_industrial_profile_updated_2020.pdf

¹⁷ Calculations from EPA Calculator: <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator#results>

¹⁸ Personal communication.

¹⁹ FEIR 2-19

²⁰ This calculator was developed by scientists at the Environmental Defense Fund for both sea and truck transport: <https://storage.googleapis.com/scsc/Green%20Freight/EDF-Green-Freight-Handbook.pdf>

The DEIR does include this for the fish food: 19 metric tons per truckload. Fish on ice, being more dense, might weigh more, so we used 20 metric tons as the tonnage. With 20 tons, the CO2 emitted is 161.8 grams of CO2/ton-mile.²¹ To get the ton miles we multiply 20 by the 1,693,068 truck VMT in a year or 33,861,360 ton miles. Multiplying the emissions factor by the ton miles,²² we get 5,479 metric tons emitted by the trucks per year; then we add the 152.7 metric tons for passenger vehicles, yielding a total of 5,631 metric tons of CO2 per year from vehicle traffic. This is 2.4 times the FEIR estimate from their inappropriate modeling software and certainly justifies using electric or hydrogen trucks as a mitigation measure.

²¹ Ibid.

²² There are 1,000,000 grams in a metric ton. We divided the ton miles by one million and multiplied by the emissions factor of 161.8.

²³ <https://nepis.epa.gov/Exec/ZyPDF.cgi/P1013TIJ.PDF?Dockey=P1013TIJ.PDF>

APPENDIX I: SCIENTIFIC STUDIES SHOWING THAT GROWING 25000 METRIC TONS OF ATLANTIC SALMON A YEAR WILL BE RESPONSIBLE FOR AT LEAST 55,00 TO 150,000 METRIC TONS OF GREENHOUSE GASES

Scientists consistently state that lifecycle analysis (LCA) is required for understanding the effects of aquaculture.²⁴ The life cycle assessment of aquaculture is the method used by the IPCC²⁵ and all scientific studies of greenhouse gasses and aquaculture. It makes possible the comparison of aquaculture using different methods (a pen in the ocean vs. a land-based system, for example) and the comparison of emissions from different species of fish; it also allows comparison of aquaculture to raising cattle or chickens or catching wild fish. An explanation of why and how this method is used is available in *Nature: Scientific Reports* in 2020.²⁶

It is impossible to analyze the cumulative effects of the project on climate change over the 30 years or more the facility operates, as required by CEQA, without including energy the CO₂e emissions attributable to the fish food to be used in large quantities over the life of the project.

In a 2009 article on global aquaculture, production of fish food drove 93% of energy use and 95% of greenhouse gas emissions.²⁷ Because the use of wild fish products in feed has declined considerably and because open pen aquaculture uses less electricity, the balance between food production and electricity has changed. But they are still the two major sources of greenhouse gas emissions associated with aquaculture.

For understanding the Nordic facility, we need studies that focus on land-based closed containment recirculating aquaculture systems (LBCC-RAS), which is how the proposed Nordic facility is classified.²⁸ A few of these kind of studied are reported below:

- A 2016 study compared a hypothetical RAS facility in the United States with an open pen design in Norway.²⁹ Exclusive of transportation costs, the LBCC-RAS-produced salmon has a carbon footprint that is double that of the open pen-produced salmon, 7.01 versus 3.39 kg

²⁴ Cao, Ling, James S. Diana, and Gregory A. Keoleian. "Role of life cycle assessment in sustainable aquaculture." *Reviews in Aquaculture* 5, no. 2 (2013): 61-71. ["Life cycle assessment (LCA) has become the leading tool for identifying key environmental impacts of seafood production systems."; Bartley, Devin M., Cecile Brugere, Doris Soto, Pierre Gerber, and Brian Harvey. *Comparative assessment of the environmental costs of aquaculture and other food production sectors: Methods for meaningful comparisons: FAO/WFT Experts workshop 24-28 Apr 2006 Vancouver, Canada*. FAO, Roma (Italia), 2007. [See the chart from this paper with pros and cons of different methods. It is attached.]

²⁵ IPCC 2013 100a in IPCC, 2013: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 1535 pp, doi:10.1017/CBO9781107415324.

²⁶ MacLeod, Michael J., Mohammad R. Hasan, David HF Robb, and Mohammad Mamun-Ur-Rashid. "Quantifying greenhouse gas emissions from global aquaculture." *Scientific reports* 10, no. 1 (2020): 1-8.

²⁷ Pelletier, Nathan, Peter Tyedmers, Ulf Sonesson, Astrid Scholz, Friederike Ziegler, Anna Flysjo, Sarah Kruse, Beatriz Cancino, and Howard Silverman. "Not all salmon are created equal: life cycle assessment (LCA) of global salmon farming systems." (2009): 8730-8736.

²⁸ DEIR 2-1

²⁹ Liu, Yajie, Trond W. Rosten, Kristian Henriksen, Erik Skontorp Hognes, Steve Summerfelt, and Brian Vinci. "Comparative economic performance and carbon footprint of two farming models for producing Atlantic salmon (*Salmo salar*): Land-based closed containment system in freshwater and open net pen in seawater." *Aquacultural Engineering* 71 (2016): 1-12.

- CO₂e/kg salmon live-weight, respectively.³⁰ The 7.41 kg CO₂e/kg salmon, when translated to the 25,000 - 27,000 metric tons of salmon production annually planned by Nordic, would equate to 185,250 - 200,070 MT CO₂e/yr. If we assume, as the authors of this study did, that alternatively 90% renewable energy is available, then the kg CO₂e/kg salmon went to 4.1, which for Nordic translates to 102,500 - 110,700 MT CO₂e/yr.
- A second LCA study, of a land-based RAS, was done in China by Norwegian, Swedish and Chinese researchers in 2019.³¹ It is also far smaller than the Nordic facility since only 29,000 fish at 5kg each were produced in a year: 145 metric tons rather than 25,000. However, it is an operating version of a land based Atlantic Salmon RAS. We are hampered in assessing the proposed Nordic facility in that no facility of its type and size exists anywhere in the world. The energy source in China was 65% coal and 35% renewables, so it was more carbon intensive than the Nordic facility is likely to be unless Nordic contracts directly for biomass power. Electricity use and fish feed dominated eight of the environmental effects assessed by the study, including greenhouse gasses. For greenhouse gasses, electricity was the cause of 45% and fish food 30% of emissions. The total CO₂e emissions were 16.747 kg per kg of salmon, or CO₂e of 418,675 – 452,169 MT CO₂e/yr for Nordic's proposed project.
 - For comparison with LBCC-RAS, we present results from a life-cycle analysis for a Canadian open pen Atlantic Salmon facility. Using IPCC methodology, one kg of salmon contributed to 2.26 kg CO₂e of GWP. Agricultural feed components include by-product poultry meal, wheat, corn gluten meal, canola seed and meal, canola oil, and soy meal, while marine-based ingredients include fish meal, by-product fish meal and oil, fish oil, and menhaden oil. Agricultural products lead impacts in GWP, acidification, eutrophication, and ecotoxicity, while impacts are more evenly distributed in ozone depletion and smog. Using the 25,000 – 27,000 metric ton annual production of the Nordic facility at buildout, this would be 56,500 to 61,020 MT CO₂e emitted indirectly annually. It is attributable primarily to the feed because open pen facilities are much less electricity intensive — and so constitutes a minimum estimate.³²
 - In 2019,³³ a meta-analysis of LCA studies on salmonids (a much broader category than Atlantic Salmon) was performed with important conclusions both about LCA results and limitations of the method. Twenty four studies were found, nine dealing with Atlantic Salmon. The 24 studies were grouped into Open or Closed and Land vs Sea-based, forming

³⁰ An earlier LCA study found a huge discrepancy in CO₂e produced per ton of fish between open pen (2,073) and a closed circulation land based facility like the proposed Nordic design (28, 200). Ayer, Nathan W., and Peter H. Tyedmers. "Assessing alternative aquaculture technologies: life cycle assessment of salmonid culture systems in Canada." *Journal of Cleaner production* 17, no. 3 (2009): 362-373.

³¹ Song, Xingqiang, Ying Liu, Johan Berg Pettersen, Miguel Brandão, Xiaona Ma, Stian Røberg, and Björn Frostell. "Life cycle assessment of recirculating aquaculture systems: A case of Atlantic salmon farming in China." *Journal of Industrial Ecology* 23, no. 5 (2019): 1077-1086.

"Results showed that 1 tonne live-weight salmon production required 7,509 kWh farm-level electricity and generated 16.7 tonnes of CO₂ equivalent (eq), 106 kg of SO₂ eq, 2.4 kg of P eq, and 108 kg of N eq (cradle-to-farm gate). In particular, farm-level electricity use and feed product were identified as primary contributors to eight of nine impact categories assessed (54-95% in total)..."

³² Sherry, Jesse, and Jennifer Koester. "Life Cycle Assessment of Aquaculture Stewardship Council Certified Atlantic Salmon (*Salmo salar*)." *Sustainability* 12, no. 15 (2020): 6079.

³³ Philis, Gaspard, Friederike Ziegler, Lars Christian Gansel, Mona Dverdal Jansen, Erik Olav Gracey, and Anne Stene. "Comparing life cycle assessment (LCA) of salmonid aquaculture production systems: status and perspectives." *Sustainability* 11, no. 9 (2019): 2517.

four groups. Differences by production grouping are more important than differences by the fish type. The GHG impacts of land based recirculating systems are higher than other models. The three studies we presented above are in line with the averages shown in Figure 1 in the Appendix, with the LBCC-RAS studies showing in yellow. For 25,000 metric tons of fish from Nordic the metric tons of CO₂eq would be 150,000 if we use the average.

The EIR does not discuss the greenhouse gas impacts of the food and give us a range based on what percentages of different types of ingredients might be used. It commits fairly strongly to environmental safety, but ignores the carbon footprint of the food. If the standard for an EIR is a “reasonable” expectation of impact, then this EIR is clearly insufficient since it fails to describe one of the two largest contributors to greenhouse gasses from the facility.

ASC certification requires reporting of greenhouse gases, but does not in itself limit them. A 2020 study open pen study examined, using life cycle assessments, the “the environmental impacts of salmon raised to Aquaculture Stewardship Council (ASC) certification standards in order to determine if ASC certification achieves the intended reductions in [environmental] impact.” It found:

We find that environmental impacts, such as global warming potential, do not decrease with certification. We also find that salmon feed, in contrast to the on-site aquaculture practices, dominates the environmental impacts of salmon aquaculture and contributes to over 80% of impacts in ozone depletion, global warming potential, acidification, and ecotoxicity.³⁴

There have been recent studies on the GHG impact of fish food that actually test the commercially available feed products. A 2021 study in the Nature journal Scientific Reports says: “Importantly, we have used recent commercial feed formulations for the main species groups and geographic regions, thereby providing a more up to date and detailed analysis than is generally provided in academic literature.”³⁵ To assess the impact of the commercial feed they used a standard model from the Food and Agriculture Organization of the United Nations (FAO).³⁶ The article is designed to compare aquaculture to other livestock.

Production of crop feed materials (the green segments of Fig. 2) accounted for 39% of total aquaculture emissions. When the emissions arising from fishmeal production, feed blending and transport are added, feed production accounts for 57% of emissions.... For most of the finfish, the EI [Emissions intensity] lies between 4 and 6 kgCO₂e/kg CW (carcass weight, i.e. per kg of edible flesh) at the farm gate....[T]he carnivorous salmonids have more emissions associated with fishmeal and higher crop land use change (LUC) emissions (arising from soybean production), reflecting their higher protein rations.³⁷

³⁴ Sherry, Jesse, and Jennifer Koester. "Life Cycle Assessment of Aquaculture Stewardship Council Certified Atlantic Salmon (*Salmo salar*)." Sustainability 12, no. 15 (2020): 6079. Our italics.

³⁵ MacLeod, Michael J., Mohammad R. Hasan, David HF Robb, and Mohammad Mamun-Ur-Rashid. "Quantifying greenhouse gas emissions from global aquaculture." Scientific reports 10, no. 1 (2020): 1-8.

³⁶ FAO.GlobalLivestockEnvironmentalAssessmentModel(GLEAM)109(FAO,Rome,2017)www.fao.org/gleam/en/.

³⁷ MacLeod, op cit.

With the production amount from Nordic and the energy intensity found in the above study, the range in GHG emissions annually would be between 100,000 and 162,000 MT CO₂e.

APPENDIX II. AQUACULTURE STEWARDSHIP COUNCIL STANDARDS FOR ATLANTIC SALMON GREENHOUSE GAS REPORTING

Aquaculture Stewardship Council Standards for Farms and Fish Feed Manufacturers

The standards are found at: https://www.asc-aqua.org/wp-content/uploads/2019/12/ASC-Salmon-Standard_v1.3_Final.pdf

Criterion 4.6 Energy consumption and greenhouse gas emissions on farms⁸⁴

INDICATOR	REQUIREMENT
4.6.1 Presence of an energy use assessment verifying the energy consumption on the farm and representing the whole life cycle at sea, as outlined in Appendix V-1	Yes, measured in kilojoule/t fish produced/production cycle
4.6.2 Records of greenhouse gas (GHG ⁸⁵) emissions ⁸⁶ on farm and evidence of an annual GHG assessment, as outlined in Appendix V-1	Yes
4.6.3 Documentation of GHG emissions of the feed ⁸⁷ used during the previous production cycle, as outlined in Appendix V, subsection 2	Yes

Rationale - Climate change represents perhaps the biggest environmental challenge facing current and future generations. Because of this, energy consumption used in food production has become a source of major public concern. The ASC Salmon Standard recognizes the importance of efficient and sustainable energy use. Therefore, these indicators will require that energy consumption in the production of fish should be monitored on a continual basis and that growers should develop means to improve efficiency and reduce consumption of energy sources, particularly those that are limited or carbon-based. The data collected in this process will help the ASC Salmon Standard set a meaningful numerical requirement for energy use in the future. Energy assessments are a new area for producers. Requiring that farms do these assessments will likely raise awareness of the issues related to energy and build support for adding a requirement in the future related to the maximum energy of GHG emissions allowed.

⁸⁴ See Appendix VI for transparency requirements for 4.6.1, 4.6.2 and 4.6.3.

⁸⁵ For the purposes of this standard, GHGs are defined as the six gases listed in the Kyoto Protocol: carbon dioxide (CO₂); methane (CH₄); nitrous oxide (N₂O); hydrofluorocarbons (HFCs); perfluorocarbons (PFCs); and sulphur hexafluoride (SF₆).

⁸⁶ GHG emissions must be recorded using recognised methods, standards and records as outlined in

Appendix V.

⁸⁷ GHG emissions from feed can be given based on the average raw material composition used to produce the salmon (by weight) and not as documentation linked to each single product used during the production cycle. Feed manufacturer is responsible for calculating GHG emissions per unit feed. Farm site then shall use that information to calculate GHG emissions for the volume of feed they used in the prior production cycle

Appendix V-1. Energy use assessment and GHG accounting for farms

The ASC encourages companies to integrate energy use assessments and GHG accounting into their policies and procedures across the board in the company. However, this requirement only requires that operational energy use and GHG assessments have been done for the farm sites that are applying for certification.

Assessments shall follow either the GHG Protocol Corporate Standard or ISO 14064-1 (references below). These are the commonly accepted international requirements, and they are largely consistent with one another. Both are also high level enough not to be prescriptive and they allow companies some flexibility in determining the best approach for calculating emissions for their operations.

If a company wants to go beyond the requirement of the ASC Salmon Standard and conduct this assessment for their entire company, then the full protocols are applicable. If the assessment is being done only on sites that are being certified, the farms shall follow the GHG Protocol Corporate Standard and/or ISO 14064-1 requirements pertaining to:

- Accounting principles of relevance, completeness, transparency, consistency and accuracy
- Setting operational boundaries
- Tracking emissions over time
- Reporting GHG emissions

Regarding the operational boundaries, farm sites shall include in the assessment:

- Scope 1 emissions, which are emissions that come directly from a source that is either owned or controlled by the farm/facility.

o For example, if the farm has a diesel generator, this will generate Scope 1 emissions. So will a farm-owned/-operated truck.

- Scope 2 emissions, which are emissions resulting from the generation of purchased electricity, heating, or cooling.

Quantification of emissions is done by multiplying activity data (e.g. quantity of fuel or kwh consumed) by an emission factor (e.g. CO₂/kwh). For non-CO₂ gases, you then need to multiply by a Global Warming Potential (GWP) to convert non-CO₂ gases into the CO₂-equivalent. Neither the GHG Protocol nor the ISO require specific approaches to quantifying emissions, so the ASC Salmon Standard provides the following additional information on the quantification of emissions:

- Farms shall clearly document the emission factors they use and the source of the emission factors. Recommended sources include the Intergovernmental Panel on Climate Change (IPCC) or factors provided by national government agencies such as the United States

Environmental Protection Agency (USEPA). Companies shall survey available emission factors and select the one that is most accurate for their situation, and transparently report their selection.

Appendix V-2. GHG accounting for feed

The requirement requires the calculation of the GHG emissions for the feed used during the prior production cycle at the grow-out site undergoing certification. This calculation requires farms to multiply the GHG emissions per unit of feed, provided to them by the feed manufacturer, by the amount of feed used on the farm during the production cycle.

The feed manufacturer is responsible for calculating GHG emissions per unit feed. GHG emissions from feed can be calculated based on the average raw material composition used to produce the salmon (by weight) and not as documentation linked to each single product used during the production cycle. The scope of the study to determine GHG emissions should include the growing, harvesting, processing and transportation of raw materials (vegetable and marine raw materials) to the feed mill and processing at feed mill. Vitamins and trace elements can be excluded from the analysis. The method of allocation of GHG emissions linked to by-products must be specified.

The study to determine GHG emissions can follow one of the following methodological approaches:

1. A cradle-to-gate assessment, taking into account upstream inputs and the feed manufacturing process, according to the GHG Product Standard
2. A Life Cycle Analysis following the ISO 14040 and 14044 requirements for life cycle assessments

Should the feed manufacturer choose to do a cradle-to-gate assessment:

1. It shall incorporate the first three phases from the methodology, covering materials acquisition and processing, production, and product distribution and storage (everything upstream and the feed manufacturing process itself).

Should the manufacturer follow the ISO 14040 and 14044 requirements for Life Cycle Assessment:

1. Feed manufacturers may follow either an ISO-compliant life cycle assessment methodology or the GHG Protocol product standard.

Regardless of which methodology is chosen, feed manufacturers shall include in the assessment

- Scope 1 emissions, which are emissions that come directly from a source that is either owned or controlled by the farm/facility.
- Scope 2 emissions, which are emissions resulting from the generation of purchased electricity, heating or cooling.
- Scope 3 emissions, which are emissions resulting from upstream inputs and other indirect emissions, such as the extraction and production of purchased materials, following the Scope 3 standard.

Quantification of emissions is done by multiplying activity data (e.g. quantity of fuel or kwh consumed) by an emission factor (e.g. CO₂/kwh). For non-CO₂ gases, you then need to multiply by a Global Warming Potential (GWP) to convert non-CO₂ gases into CO₂-equivalent. The ASC Salmon Standard provides the following additional information on the quantification of emissions:

- Farms shall clearly document the emission factors they use and the source of the emission factors. Recommended sources include the IPCC or factors provided by national government agencies, such as the USEPA. Companies shall survey available emission factors and select the one that is most accurate for their situation, and transparently report their selection.
- Farms shall clearly document the GWPs that they use and the source of those GWPs. Recommended sources include the IPCC 2nd Assessment Report, on which the Kyoto Protocol and related policies are based, or more recent Assessment Reports.

References:

- GHG Product Standard: <http://www.ghgprotocol.org/product-standard>
- ISO 14044 available for download (with fee) at:
http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=38498
- Some information on ISO 14064-1 is at: <http://www.iso.org/iso/pressrelease.htm?refid=Ref994>
- IPCC 2nd Assessment Report: <http://www.>
- All IPCC Assessment Reports:
http://www.ipcc.ch/publications_and_data/publications_and_data_reports.shtml#1

From: [Scott Frazer](#)
To: NorthCoast@Coastal
Cc: [Scott Frazer](#)
Subject: Nordic RAS/Humboldt Co. CDP approval APPEAL
Date: Thursday, October 27, 2022 4:31:07 PM
Attachments: [CACoastComm_AppealForm-nc-1-HUM-20-1004_10272022.docx](#)

To Whom It May Concern:

Please find my appeal of the Nordic Aquafarms, LLC project approval by Humboldt Co. Board of Supervisors.

Scott

CALIFORNIA COASTAL COMMISSION

NORTH COAST DISTRICT OFFICE
1385 EIGHTH STREET, SUITE 130
ARCATA, CA 95521
(707) 826-8950
NORTHCOAST@COASTAL.CA.GOV

**APPEAL FORM****Appeal of Local Government Coastal Development Permit****Filing Information (STAFF ONLY)**

District Office: North Coast

Appeal Number: _____

Date Filed: _____

Appellant Name(s): _____

APPELLANTS

IMPORTANT. Before you complete and submit this appeal form to appeal a coastal development permit (CDP) decision of a local government with a certified local coastal program (LCP) to the California Coastal Commission, please review [the appeal information sheet](#). The appeal information sheet describes who is eligible to appeal what types of local government CDP decisions, the proper grounds for appeal, and the procedures for submitting such appeals to the Commission. Appellants are responsible for submitting appeals that conform to the Commission law, including regulations. Appeals that do not conform may not be accepted. If you have any questions about any aspect of the appeal process, please contact staff in the Commission district office with jurisdiction over the area in question (see the Commission's [contact page](#) at <https://coastal.ca.gov/contact/#/>).

Note regarding emailed appeals. Please note that emailed appeals are accepted ONLY at the general email address for the Coastal Commission district office with jurisdiction over the local government in question. For the North Coast district office, the email address is NorthCoast@coastal.ca.gov. An appeal emailed to some other email address, including a different district's general email address or a staff email address, will be rejected. It is the appellant's responsibility to use the correct email address, and appellants are encouraged to contact Commission staff with any questions. For more information, see the Commission's [contact page](#) at <https://coastal.ca.gov/contact/#/>.

1. Appellant information¹

Name: _____ Scott Frazer _____
Mailing address: _____ P.O. Box _203 _____
Phone number: _____ Blue Lake, CA _____ 95525 _____
Email address: _____

How did you participate in the local CDP application and decision-making process?

Did not participate Submitted comment Testified at hearing Other

Describe: _____

Submitted comments at every step of process. Testified at HC Planning Comm.

Hearing, and Appeal before HumCo. Board of Supervisors.

If you did *not* participate in the local CDP application and decision-making process, please identify why you should be allowed to appeal anyway (e.g., if you did not participate because you were not properly noticed).

Describe: _____

Please identify how you exhausted all LCP CDP appeal processes or otherwise identify why you should be allowed to appeal (e.g., if the local government did not follow proper CDP notice and hearing procedures, or it charges a fee for local appellate CDP processes).

Describe: _See response above. Filed appeal to Board of supervisors for Redwood Region Audubon Society Chapter, and testified during appeal hearing.

¹ If there are multiple appellants, each appellant must provide their own contact and participation information. Please attach additional sheets as necessary.

2. Local CDP decision being appealed²

Local government name: County of Humboldt
Local government approval body: Humboldt Co. Board of Supervisors
Local government CDP application number: 1-Hum-20-1004
Local government CDP decision: CDP approval CDP denial³
Date of local government CDP decision: 9/28/2022 decision; 10-13-2022 Notice

Please identify the location and description of the development that was approved or denied by the local government.

Describe: Nordic Aquafarms CA, LLC, PLN-2020-16698 APN: 401-112-021; Vance Ave., Samoa area

A Coastal Development Permit and Special Use Permit for the Demolition of the Samoa Pulp Mill facility and

Construction of a land based finfish recirculating aquaculture system. Development through three phases,

Including demolition, remediation, and five buildings totaling 766,530 sq. ft., installation of 4.8 megawatt solar array,

And ancillary support features (parking, fire roads, security fence, storm water management facilities, use of 2.5 million gallons

Per day of freshwater from the Mad River, and 10 million gallons per day of saltwater removed from Humboldt Bay).

² Attach additional sheets as necessary to fully describe the local government CDP decision, including a description of the development that was the subject of the CDP application and decision.

³ Very few local CDP denials are appealable, and those that are also require submittal of an appeal fee. Please see the [appeal information sheet](#) for more information.

Appeal of local CDP decision

3. Applicant information

Applicant name(s): Nordic Aquafarms California, LLC
511 Congress street, suite 500
Applicant Address: Portland, Maine 04101

4. Grounds for this appeal⁴

For appeals of a CDP approval, grounds for appeal are limited to allegations that the approved development does not conform to the LCP or to Coastal Act public access provisions. For appeals of a CDP denial, grounds for appeal are limited to allegations that the development conforms to the LCP and to Coastal Act public access provisions. Please clearly identify the ways in which the development meets or doesn't meet, as applicable, the LCP and Coastal Act provisions, with citations to specific provisions as much as possible. Appellants are encouraged to be concise, and to arrange their appeals by topic area and by individual policies.

Describe: Failure to conform with the Coastal Act and the Local Coastal Plan (LCP).

The Nordic project is inconsistent with the Humboldt Bay Area Plan (HBAP)

subsections: 30250(a) General; 13142.5 (a through d), 30231, 30240, and subsection 8

Coastal Streams, Riparian Vegetation and Marine Resources. The proposed project is not protective of

environmentally sensitive marine habitat (Coastal protective Act Section 30107.5)

such as essential fish habitat, and is not protective of wild salmonids dependent upon

the environmentally sensitive habitats, as identified in the LCP. The use of 10 MGD of saltwater removed from

Humboldt Bay within the Nordic project and the inherent adverse consequences to native fish larvae

from impingement and entrainment were not evaluated prior to approval of the CDP and related approvals.

⁴ Attach additional sheets as necessary to fully describe the grounds for appeal.

Appeal of local CDP decision

Page 5

5. Identification of interested persons

On a separate page, please provide the names and contact information (i.e., mailing and email addresses) of all persons whom you know to be interested in the local CDP decision and/or the approved or denied development (e.g., other persons who participated in the local CDP application and decision making process, etc.), and check this box to acknowledge that you have done so.

Interested persons identified and provided on a separate attached sheet

6. Appellant certifications

I attest that to the best of my knowledge, all information and facts in this appeal are correct and complete.

Print name : Scott Frazer

Signature

Date of Signature 10-27-22 __

7. Representative authorization

While not required, you may identify others to represent you in the appeal process. If you do, they must have the power to bind you in all matters concerning the appeal. To do so, please complete the representative authorization form below and check this box to acknowledge that you have done so.

I have authorized a representative, and I have provided authorization for them on the representative authorization form attached.

⁵ If there are multiple appellants, each appellant must provide their own certification. Please attach additional sheets as necessary.

⁶ If there are multiple appellants, each appellant must provide their own representative authorization form to identify others who represent them. Please attach additional sheets as necessary.

STATE OF CALIFORNIA - NATURAL RESOURCES AGENCY

GAVIN NEWSOM, GOVERNOR

CALIFORNIA COASTAL COMMISSION

455 MARKET STREET, SUITE 300
SAN FRANCISCO, CA 94105-2219
VOICE (415) 904-5200
FAX (415) 904-5400



DISCLOSURE OF REPRESENTATIVES

If you intend to have anyone communicate on your behalf to the California Coastal Commission, individual Commissioners, and/or Commission staff regarding your coastal development permit (CDP) application (including if your project has been appealed to the Commission from a local government decision) or your appeal, then you are required to

Appeal of local CDP decision
Page 5

5. Identification of interested persons

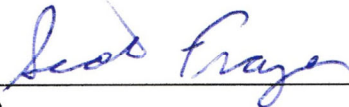
On a separate page, please provide the names and contact information (i.e., mailing and email addresses) of all persons whom you know to be interested in the local CDP decision and/or the approved or denied development (e.g., other persons who participated in the local CDP application and decision making process, etc.), and check this box to acknowledge that you have done so.

Interested persons identified and provided on a separate attached sheet

6. Appellant certifications

I attest that to the best of my knowledge, all information and facts in this appeal are correct and complete.

Print name Scott Frazer


Signature _____

Date of Signature Oct. 25, 2022

7. Representative authorization

While not required, you may identify others to represent you in the appeal process. If you do, they must have the power to bind you in all matters concerning the appeal. To do so, please complete the representative authorization form below and check this box to acknowledge that you have done so.

I have authorized a representative, and I have provided authorization for them on the representative authorization form attached.

⁵ If there are multiple appellants, each appellant must provide their own certification. Please attach additional sheets as necessary.

⁶ If there are multiple appellants, each appellant must provide their own representative authorization form to identify others who represent them. Please attach additional sheets as necessary.

From: [Dana Stolzman](#)
To: NorthCoast@Coastal
Subject: SRF NAF Appeal
Date: Wednesday, October 26, 2022 9:35:10 AM
Attachments: [SRF_NAF_Appeal_combined.pdf](#)

Hello,

Please confirm receipt of this appeal. I am not sure why it was not attaching correctly.

Thank you.

--

Dana Stolzman
Executive Director | [Salmonid Restoration Federation](#)
Office (707) 923-7501 | Fax (707) 923-3135

CALIFORNIA COASTAL COMMISSION

NORTH COAST DISTRICT OFFICE
1385 EIGHTH STREET, SUITE 130
ARCATA, CA 95521
(707) 826-8950
NORTHCOAST@COASTAL.CA.GOV

**APPEAL FORM**

Appeal of Local Government Coastal Development Permit

Filing Information (STAFF ONLY)

District Office: North Coast

Appeal Number: _____

Date Filed: _____

Appellant Name(s): _____

APPELLANTS

IMPORTANT. Before you complete and submit this appeal form to appeal a coastal development permit (CDP) decision of a local government with a certified local coastal program (LCP) to the California Coastal Commission, please review [the appeal information sheet](#). The appeal information sheet describes who is eligible to appeal what types of local government CDP decisions, the proper grounds for appeal, and the procedures for submitting such appeals to the Commission. Appellants are responsible for submitting appeals that conform to the Commission law, including regulations. Appeals that do not conform may not be accepted. If you have any questions about any aspect of the appeal process, please contact staff in the Commission district office with jurisdiction over the area in question (see the Commission's [contact page](#) at <https://coastal.ca.gov/contact/#/>).

Note regarding emailed appeals. Please note that emailed appeals are accepted ONLY at the general email address for the Coastal Commission district office with jurisdiction over the local government in question. For the North Coast district office, the email address is NorthCoast@coastal.ca.gov. An appeal emailed to some other email address, including a different district's general email address or a staff email address, will be rejected. It is the appellant's responsibility to use the correct email address, and appellants are encouraged to contact Commission staff with any questions. For more information, see the Commission's [contact page](#) at <https://coastal.ca.gov/contact/#/>.

Appeal of local CDP decision

Page 2

1. Appellant information¹

Name: _____

Mailing address: _____

Phone number: _____

Email address: _____

How did you participate in the local CDP application and decision-making process?

Did not participate Submitted comment Testified at hearing Other

Describe: _____

If you did *not* participate in the local CDP application and decision-making process, please identify why you should be allowed to appeal anyway (e.g., if you did not participate because you were not properly noticed).

Describe: _____

Please identify how you exhausted all LCP CDP appeal processes or otherwise identify why you should be allowed to appeal (e.g., if the local government did not follow proper CDP notice and hearing procedures, or it charges a fee for local appellate CDP processes).

Describe: SRF exhausted the appeal process by having an SRF Board member speaking at a Humboldt County
Planning Commission meeting on the DEIR and at the Humboldt County Board of Supervisors final decision
meeting. The comments were consistent with our concerns in our comment letters on the IS/MND and DEIR,
which have not been addressed in a manner that protects wild salmonids from farmed Atlantic salmon diseases.

¹ If there are multiple appellants, each appellant must provide their own contact and participation information. Please attach additional sheets as necessary.

Appeal of local CDP decision

Page 3

2. Local CDP decision being appealed²

Local government name: _____

Local government approval body: _____

Local government CDP application number: _____

Local government CDP decision: CDP approval CDP denial³

Date of local government CDP decision: _____

Please identify the location and description of the development that was approved or denied by the local government.

Describe: _____

² Attach additional sheets as necessary to fully describe the local government CDP decision, including a description of the development that was the subject of the CDP application and decision.

³ Very few local CDP denials are appealable, and those that are also require submittal of an appeal fee. Please see the [appeal information sheet](#) for more information.

Appeal of local CDP decision

Page 4

3. Applicant information

Applicant name(s): _____

Applicant Address: _____

4. Grounds for this appeal⁴

For appeals of a CDP approval, grounds for appeal are limited to allegations that the approved development does not conform to the LCP or to Coastal Act public access provisions. For appeals of a CDP denial, grounds for appeal are limited to allegations that the development conforms to the LCP and to Coastal Act public access provisions. Please clearly identify the ways in which the development meets or doesn't meet, as applicable, the LCP and Coastal Act provisions, with citations to specific provisions as much as possible. Appellants are encouraged to be concise, and to arrange their appeals by topic area and by individual policies.

Describe: _____

⁴ Attach additional sheets as necessary to fully describe the grounds for appeal.

Appeal of local CDP decision

Page 5

5. Identification of interested persons

On a separate page, please provide the names and contact information (i.e., mailing and email addresses) of all persons whom you know to be interested in the local CDP decision and/or the approved or denied development (e.g., other persons who participated in the local CDP application and decision making process, etc.), and check this box to acknowledge that you have done so.

Interested persons identified and provided on a separate attached sheet

6. Appellant certifications

I attest that to the best of my knowledge, all information and facts in this appeal are correct and complete.

Print name _____



Signature

Date of Signature _____

7. Representative authorization⁶

While not required, you may identify others to represent you in the appeal process. If you do, they must have the power to bind you in all matters concerning the appeal. To do so, please complete the representative authorization form below and check this box to acknowledge that you have done so.

I have authorized a representative, and I have provided authorization for them on the representative authorization form attached.

⁵ If there are multiple appellants, each appellant must provide their own certification. Please attach additional sheets as necessary.

⁶ If there are multiple appellants, each appellant must provide their own representative authorization form to identify others who represent them. Please attach additional sheets as necessary.

Salmonid Restoration Federation



Attachment to SRF Appeal

The certified local coastal program (LCP) is the 2022 Humboldt Bay Area Plan (HBAP). The HBAP largely adopts Coastal Act Provisions in its Development Policies, and sections of the Coastal Act are reiterated within the document. The subsections of the HBAP utilize the same numbers as the Coastal Act and are identified within HBAP sections described below.

HBAP Section 3.14 Industrial, Development Policies

Subsection 30250(a)

The HBAP's modified 30250(a) states that development "will not have significant adverse effects, either individually or cumulatively, on coastal resources." Pathogens known to occur in farmed Atlantic salmon are not receiving adequate testing and the intake water will receive more disease treatment than the outfall water. If a deleterious salmonid virus (known to occur in farmed Atlantic salmon) escapes the Project, local runs of wild native salmon could be impacted and run failure could result. The Salmonid Restoration Federation (SRF) has partnered with other parties to restore salmonid habitat on the North Coast. Loss of wild salmonid runs will have a significant effect on coastal resources.

Subsection 13142.5 (a)

Subsection 13142.5 Coastal Marine Environment (a) reiterates the Coastal Act provision that waste water discharges shall be treated to protect present and future beneficial uses, giving highest priority to wetlands, estuaries, and other biologically sensitive sites.

There are three outstanding issues with the Project's effluent affecting biologically sensitive species and ecosystems respectively. First is the lack of targeted ozone treatment to adequately treat the effluent to kill viruses that proliferate in Atlantic salmon farms and that are known to harm or kill wild native salmonids. Second is that the proposed sewage treatment design has not been proven to be protective of receiving waters. Third is that effluent dispersal into Humboldt Bay has not been fully analyzed or addressed in the environmental documents, and impacts to the estuarine ecosystem were not given full consideration.

Wastewater leaving the Project will not be as fully treated as the river and estuary water entering the Project (*i.e.*, incoming water will be filtered, UV treated, and ozone treated; outgoing water will only be filtered and UV treated). Lack of ozone treatment of the wastewater and factory floor effluent, combined with the lack of testing Project effluent or fish processing waste for the diseases known to be associated with Atlantic salmon farms, will put in place untried technologies without the practical safety provisions necessary to protect California's wild, native salmonids.

It is unproven that UV-C sterilization will fully treat the 12.5 MGD of effluent leaving the Project. The potential for viruses being present in Project effluent would have significant adverse effects to Coho salmon, Chinook salmon, and steelhead. Viruses attached to the 408 pounds-per-day of suspended solids in the effluent stream, would be capable of surviving the proposed UV treatment of the effluent. The fish processing portion of Project effluent would contain a massive viral load if any of the viruses known to be associated with Atlantic salmon farming have an outbreak in the rearing tanks. This is a serious threat to our native, wild salmon.

Once a salmonid virus enters a wild population, the threat to individual fish goes beyond direct mortality. Ability to swim and forage is typically compromised in infected salmonids, rendering them weak and vulnerable to predation. One or more viral pathogens in wild salmonid populations are implicated in high mortality during outmigration (Furey *et al.* 2021, Jeffries *et al.* 2014, Hinch *et al.* 2012). Other pathogens such as bacteria, fungi, protozoa, myxozoan microparasites, and sea lice compound the physiological stress from viral loads and increase the threat of mortality (Lovell *et al.* 2010). Salmonid viruses that affect internal organs compromise infected salmonids during upmigration (returning to natal streams to spawn). In instances when viral exposure and viral loading does not result in direct mortality to the fish, indirect harm, injury, and mortality are likely to occur when infected wild salmonids experience increased predation, decreased mobility and visual acuity, and lack of energy required for successful migration. (Furey *et al.* 2021, Hinch *et al.* 2012, Jeffries *et al.* 2014, Miller *et al.* 2017). Added stress from viral infection causes salmonids to either not start their up migration to natal streams, or not survive the natural physiological stresses of upmigration. Salmon compromised by viral load are referred to as "dead fish swimming" (Hinch *et al.* 2012).

During fish processing, bodily fluids containing a viral load will be the most difficult to contain and prevent from spreading into wild salmonid populations. Industrial cleansers used for protecting human health during fish processing can be damaging to biofilters, and could compromise the effectiveness of the Project's sewage treatment system to remove sewage solids. Viruses posing the highest risk to wild salmonids are as follows:

Infectious Pancreatic Necrosis Virus (IPN) is a disease first found in 1951 in farmed Atlantic salmon in Canada. It causes fluid in the abdomen (ascites) and sudden mortality. Other symptoms are: swollen eyes, darkening of the skin, anorexia, spiral swimming, fecal casts trailing from the vent, pancreatic necrosis, catarrhal exudate in the intestine, and hemorrhages in the visceral organs. IPN is an acute and highly contagious disease in juvenile salmonids. It causes mortality rates up to 70% in farmed salmon, with freshwater-stage mortality up to 100% (Evensen and Santi 2008).

As well as being found in Atlantic salmon, IPN is also found in farmed rainbow trout (*O. mykiss*). This virulent disease has spread to fish farms in North America, Europe, Chile, Japan, Korea, Taiwan, Iran, Turkey, China, Kenya, and Australia (Dopazo 2020). There has been a push to develop a vaccine for IPN, but it would not be possible to vaccinate all of the wild salmonid species from the Mad River, Eel River, Humboldt Bay, Elk River, Salmon Creek, Freshwater Creek, or Jacoby Creek once wild fish have been exposed to the virus. Because adult and juvenile salmonids will be migrating through the Project's effluent plume, their risk of mortality is high if this virus were to escape the Project. If IPN were introduced by the Project, it could have a significant adverse impact on the Mad River fish hatchery.

Infectious Salmon Anemia Virus, also known as Hemorrhagic Kidney Syndrome, Infectious Salmon Anemia (ISA) is a highly contagious disease associated with farmed Atlantic salmon. First reported in fish farms in Norway in 1984, ISA has since spread to fish farms in Scotland, the Faroe Islands, Chile, northeastern Canada and northeastern U.S. (Maine). Symptoms include: lethargy, anemia, leukopenia, bloated abdomen (ascites), protruding eyes, darkened skin, enlarged spleen, liver necrosis, swollen and discolored kidneys, localized bleeding from skin lesions (USDA *et al.* 2011, USDA 2020), and increased mortality of approximately 5 to 90 percent (Dannevig *et al.* 2008). Rainbow trout may also develop heart lesions.

Infectious Salmon Anemia virus can also be transmitted to Pacific herring (Nylund *et al.* 2002), allowing for spread of the disease to wild salmonids through foraging. Pacific herring can also act as a disease reservoir. Humboldt Bay and its surrounding waters are known to support large populations of Pacific herring.

Salmonid Alphavirus (SAV) causes pancreas disease (PD) in farmed Atlantic salmon and sleeping disease (SD) in farmed rainbow trout. It is found in salmonid farms in Norway, Scotland, England, Ireland, France, Germany Spain, U.S. (Washington), and Italy. Infections of SAV have high mortality rates. Six strains of SAV have been identified (Deperasińska *et al.* 2018). Symptoms include: cessation of feeding, lethargy, muscle damage, fluid in the abdomen, atrophy of red skeletal muscle, pancreatic necrosis, cardiac myopathy, difficulty swimming and staying upright, failure to grow, failure to gain weight, and death. Survivors appear thin and unthrifty, and they can become vectors. SAV was found to have up to 27 percent mortality in net pens in Washington state, but no studies on mortality have been conducted on wild salmonids. Sleeping disease in wild steelhead would make them extremely vulnerable to predation. If SAV escapes the Project, it could have a significant impact on steelhead returns to the Mad River Fish Hatchery.

Piscine Orthoreovirus and Novel Piscine Reoviruses is also known as Atlantic salmon reovirus and novel reovirus. Piscine Orthoreovirus (PRV) symptoms include, but are not limited to: heart and skeletal inflammation (HSMI), inflammatory lesions of the heart and skeletal muscle, burst cells (in Chinook), jaundice, anemia, anorexia, lethargy, inflammation, kidney and liver damage (degenerative/ necrotic lesions of the liver/kidney), and fluid in the abdomen (ascites). There are now three strains of PRV, with both PRV-1 and PRV-3 each having two sub-types with additional mutations.

PRV's expression of HSMI was first characterized in 2010 in farmed Atlantic salmon (Palacios 2010). PRV and HSMI have been found in farmed: Atlantic salmon (Palacios 2010, Kibenge *et al.* 2017), coho salmon (Takano *et al.* 2016, Kibenge *et al.* 2017), Chinook salmon, and rainbow trout (Olsen *et al.* 2015). PRV and HSMI are associated with high morbidity and mortality. PRV and HSMI are now also found in wild coho and Chinook salmon in Canada (Kibenge *et al.* 2017).

PRV and its variants are found in farmed salmonids in Norway, Denmark, Germany, United Kingdom, France, Canada, Japan, Chile, Italy, and the U.S. (Washington, Oregon, and Maine). Kibenge *et al.* (2017) estimated PRV prevalence in the source farmed Atlantic salmon population at 95% or greater. They found escaped, farmed Atlantic salmon had a PRV prevalence close to

100% in Washington State and British Columbia following a large containment failure at a farm in northern Puget Sound. Mordecai *et al.* (2021) found that infection of wild Chinook salmon with PRV-1 infection was closely tied to farm proximity.

First found in farmed Atlantic salmon in 1999 (Kongtorp *et al.* 2004) and later implicated as being associated with HSML (Palacios 2010), PRV was first described in farmed *O. mykiss* in Norway in 2013; however, symptoms similar to PRV have been described as early as 1977 (Vendramin *et al.* 2019).

Although PRV is ubiquitous in farmed salmon, some argue that symptoms and mortality are less than previously reported (Polinski *et al.* 2019). Emerging studies (Løvell *et al.* 2010, Mordecai *et al.* 2020) have shown that co-occurrences with other viruses and pathogens may drive the expression of symptoms and mortality. PRV is often co-associated with other viruses (Løvell *et al.* 2010, Mordecai *et al.* 2021).

Polinski *et al.* (2019) found that different populations of farmed Atlantic salmon had different responses to PRV, but PRV variants were not isolated in the study. Also, the fish with HSML in other studies were already sick; whereas PRV-positive but asymptomatic fish in Polinski *et al.* (2019) may have had earlier disease progression than other studies, therefore not yet showing signs of HSML.

In their study of PRV-3, Sørensen *et al.* (2020) found that the variant had its highest prevalence in grow-out facilities (71.7%) and, in Denmark, disease outbreaks of PRV-3 were only observed in RAS facilities. Considering that the Project is a grow-out RAS facility, the risk of viral loading after disease introduction is very high.

PRV has variable outcomes for farmed salmonids, depending on the PRV strain and the affected species. Stress is thought to be causative when going from a PRV infection to full-on HSML. There are no studies of heart, liver, or kidney effects to wild salmonids during upmigration to natal streams, but the stress of upmigration would put a phenomenal amount of physiological strain on individual salmonids with PRV. Individuals that avoid predation in their outmigration and marine phases would be the “dead fish swimming” described by Hinch *et al.* (2012) —e.g., not able to complete their full life-history cycle, upmigrate, or reproduce. If PRV escapes the Project, it could have a significant adverse effect on the Mad River Fish Hatchery.

Novel Fish Totivirus is co-associated with PRV and is implicated in Cardiomyopathy Syndrome (CMS), which is a spontaneous heart attack that occurs in farmed fish prior to harvest (Løvell *et al.* 2010). CMS was first reported in Norwegian farmed salmon in 1988 (Amin and Trasti 1988). Totiviruses are typically associated with fungi. Co-association of the novel fish totivirus and PRV is thought to significantly increase salmonid mortality.

Infectious Hematopoietic Necrosis Virus is one of the earlier diseases associated with fish farming and hatcheries. Now known as Infectious Hematopoietic Necrosis Virus (IHNV), earlier names being Oregon Sockeye Salmon Disease, Columbia River Sockeye Disease, Sacramento River Chinook Disease. Juvenile salmonids are more severely affected by IHNV than adults, but those that do survive the disease become vectors by shedding the virus through feces and mucus. IHNV is known to affect Atlantic salmon, sockeye and Chinook salmon, and *O. mykiss*. It is found in continental Europe, Alaska, Japan, Canada, Central California, Oregon, and Washington State.

IHNV causes lethargy, occasional frenzied swimming, darkened skin, abdomen swollen with ascitic fluid, protruding eyes, and hemorrhaging at the mouth, anus, and base of the fins. The cumulative mortality rates on fish farms can reach 90-95%. Occasional disease outbreaks have been reported in wild salmon.

PCR (polymerase chain reaction) testing is available for PRV, SAV, and IHNV. Weekly PCR testing of fish processing waste and Project effluent is needed to ensure early detection and that these deadly viruses do not proliferate at the Project. As PCR testing becomes commercially available for other Atlantic salmon diseases, they should be added to the weekly viral screening at the Project.

Subsection 13142.5 (d)

The HBAP states: “Independent baseline studies of the existing marine system should be conducted in the area that could be affected by a new or expanded industrial facility using seawater in advance of the carrying out of the development.” Contemporary baseline monitoring of the Sacramento River for salmonid pathogens (Mauduit *et al.* 2022) has demonstrated that the technology exists and is a useful tool in establishing a pathogen-burden baseline in local, wild salmonid populations in California. However, Nordic Aquafarms has strenuously rejected such monitoring in favor of biannual veterinary visits to the Project.

With worldwide proliferation of deadly viruses (*e.g.*, PRV, SAV, and IHNV) known to occur in Atlantic salmon farms, a fair assessment and baseline of salmon-farm pathogens is required in order to conform with subsection 13142.5. The baseline monitoring of the Sacramento River, done by Mauduit *et al.* (2022) is an excellent example of using modern investigative techniques to establish a pathogen baseline. Salmonid critical habitat that is likely to interface with Project effluent is the mouths of Mad River, Eel River, Humboldt Bay, Elk River, Salmon Creek, Freshwater Creek, and Jacoby Creek. Salmonids directly exposed to the effluent outfall when migrating past or feeding near the Project’s outfall pipe are likely to disperse pathogens into spawning areas when they migrate upstream. A baseline for each of these rivers and streams, as well as Klamath River and Redwood Creek, is needed in order to track the progression of disease known to be associated with farmed Atlantic salmon.

HBAP Section 3.30 Natural Resources Protection Policies and Standards

Subsection 30240

The HBAP directs that: “Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on such resources shall be allowed within such areas.” The Project is not protective of environmentally sensitive marine habitat, such as essential fish habitat and ESA critical habitat, and is not protective of salmonids dependent upon the environmentally sensitive habitats specifically identified in the HBAP. Release of effluent into the migratory path for green sturgeon, coho salmon, Chinook salmon and steelhead trout will cause disruption of migratory behavior. Exposure of salmonids to viruses associated with farmed Atlantic salmon could cause disruption of wild salmonid populations and potential run failure. Loss of important commercial, recreational, and valued native fishes should be considered a significant disruption.

Subsection 8--Coastal Streams, Riparian Vegetation and Marine Resources

Protection of marine resources has a high level of emphasis in the HBAP: “Marine resources shall be maintained, enhanced, and, where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Use of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.”

As discussed earlier, the risk of run decimation from Atlantic farmed salmon diseases continues due to lack of monitoring, timely response, mitigation, and remediation. Loss of salmon and steelhead runs in the Mad River, Eel River, Redwood Creek, Klamath River and tributaries to Humboldt Bay would have a profound impact on long-term commercial, recreational, scientific, and educational purposes of Humboldt Bay and the coastal marine area.

Subsection 30231

The HBAP requires protection of biological productivity and coastal waters. It includes direction to minimize adverse effects of waste water discharges and entrainment. Without ozone treatment of Project effluent and without viral monitoring, timely response, mitigation, and remediation for diseases found in Atlantic salmon, the Project will affect the biological productivity and the habitat quality of Humboldt Bay, coastal streams, and the Mad and Eel Rivers. When PRV, SAV, IHNV, and other deadly diseases escape the Project, the biological productivity of coastal waters, streams, wetlands, and estuaries will not be able to maintain optimum populations of wild salmon.

Nordic Aquafarms has strenuously opposed weekly PCR testing for PRV, SAV, and IHNV—claiming that all PCR positives in the effluent would be false positives, or non-pathogenic. PCR testing is an inexpensive and effective methodology for screening for viral diseases. Positive PCR tests would be an indication that virus has infected the facility and closer inspection for Atlantic salmon diseases is warranted. PCR testing is an important tool for disease control, planning, initial response, mitigation, and remediation.

Full ozone treatment of effluent and vigorous disease monitoring could minimize adverse effects of waste water discharges on wild native salmonids. In addition, technology exists to further remove ammonia and nitrogenous waste from effluent. Without these measures, biological productivity and habitat quality in Humboldt Bay and coastal streams will be compromised.

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From: [Alison Willy](#)
To: [NorthCoast@Coastal](#)
Cc: [Kraemer, Melissa@Coastal](#); [Dana Stolzman](#)
Subject: Appeal of Nordic Aquafarms CDP, 1-HUM-20-1004
Date: Tuesday, October 25, 2022 2:47:21 PM
Attachments: [Willy_NAF_appeal_combined_10_25_22.pdf](#)

Please accept the attached appeal. Thank you.

CALIFORNIA COASTAL COMMISSION

NORTH COAST DISTRICT OFFICE
1385 EIGHTH STREET, SUITE 130
ARCATA, CA 95521
(707) 826-8950
NORTHCOAST@COASTAL.CA.GOV

**APPEAL FORM**

Appeal of Local Government Coastal Development Permit

Filing Information (STAFF ONLY)

District Office: North Coast

Appeal Number: _____

Date Filed: _____

Appellant Name(s): _____

APPELLANTS

IMPORTANT. Before you complete and submit this appeal form to appeal a coastal development permit (CDP) decision of a local government with a certified local coastal program (LCP) to the California Coastal Commission, please review [the appeal information sheet](#). The appeal information sheet describes who is eligible to appeal what types of local government CDP decisions, the proper grounds for appeal, and the procedures for submitting such appeals to the Commission. Appellants are responsible for submitting appeals that conform to the Commission law, including regulations. Appeals that do not conform may not be accepted. If you have any questions about any aspect of the appeal process, please contact staff in the Commission district office with jurisdiction over the area in question (see the Commission's [contact page](#) at <https://coastal.ca.gov/contact/#/>).

Note regarding emailed appeals. Please note that emailed appeals are accepted ONLY at the general email address for the Coastal Commission district office with jurisdiction over the local government in question. For the North Coast district office, the email address is NorthCoast@coastal.ca.gov. An appeal emailed to some other email address, including a different district's general email address or a staff email address, will be rejected. It is the appellant's responsibility to use the correct email address, and appellants are encouraged to contact Commission staff with any questions. For more information, see the Commission's [contact page](#) at <https://coastal.ca.gov/contact/#/>.

Appeal of local CDP decision

Page 2

1. Appellant information¹

Name: _____

Mailing address: _____

Phone number: _____

Email address: _____

How did you participate in the local CDP application and decision-making process?

Did not participate Submitted comment Testified at hearing Other

Describe: _____

If you did *not* participate in the local CDP application and decision-making process, please identify why you should be allowed to appeal anyway (e.g., if you did not participate because you were not properly noticed).

Describe: _____

Please identify how you exhausted all LCP CDP appeal processes or otherwise identify why you should be allowed to appeal (e.g., if the local government did not follow proper CDP notice and hearing procedures, or it charges a fee for local appellate CDP processes).

Describe: _____

¹ If there are multiple appellants, each appellant must provide their own contact and participation information. Please attach additional sheets as necessary.

Appeal of local CDP decision

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2. Local CDP decision being appealed²

Local government name: _____

Local government approval body: _____

Local government CDP application number: _____

Local government CDP decision: CDP approval CDP denial³

Date of local government CDP decision: _____

Please identify the location and description of the development that was approved or denied by the local government.

Describe: _____

² Attach additional sheets as necessary to fully describe the local government CDP decision, including a description of the development that was the subject of the CDP application and decision.
³ Very few local CDP denials are appealable, and those that are also require submittal of an appeal fee. Please see the [appeal information sheet](#) for more information.

Appeal of local CDP decision

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3. Applicant information

Applicant name(s): _____

Applicant Address: _____

4. Grounds for this appeal⁴

For appeals of a CDP approval, grounds for appeal are limited to allegations that the approved development does not conform to the LCP or to Coastal Act public access provisions. For appeals of a CDP denial, grounds for appeal are limited to allegations that the development conforms to the LCP and to Coastal Act public access provisions. Please clearly identify the ways in which the development meets or doesn't meet, as applicable, the LCP and Coastal Act provisions, with citations to specific provisions as much as possible. Appellants are encouraged to be concise, and to arrange their appeals by topic area and by individual policies.

Describe: _____

⁴ Attach additional sheets as necessary to fully describe the grounds for appeal.

Appeal of local CDP decision

Page 5

5. Identification of interested persons


On a separate page, please provide the names and contact information (i.e., mailing and email addresses) of all persons whom you know to be interested in the local CDP decision and/or the approved or denied development (e.g., other persons who participated in the local CDP application and decision making process, etc.), and check this box to acknowledge that you have done so.

Interested persons identified and provided on a separate attached sheet

6. Appellant certifications

I attest that to the best of my knowledge, all information and facts in this appeal are correct and complete.

Print name _____

Signature  _____

Date of Signature _____

7. Representative authorization⁶

While not required, you may identify others to represent you in the appeal process. If you do, they must have the power to bind you in all matters concerning the appeal. To do so, please complete the representative authorization form below and check this box to acknowledge that you have done so.

I have authorized a representative, and I have provided authorization for them on the representative authorization form attached.

⁵ If there are multiple appellants, each appellant must provide their own certification. Please attach additional sheets as necessary.

⁶ If there are multiple appellants, each appellant must provide their own representative authorization form to identify others who represent them. Please attach additional sheets as necessary.

The certified local coastal program (LCP) is the 2022 Humboldt Bay Area Plan (HBAP). The HBAP largely adopts Coastal Act Provisions in its Development Policies, and sections of the Coastal Act are reiterated within the document. The subsections of the HBAP utilize the same numbers as the Coastal Act and are identified within HBAP sections described below.

HBAP Section 3.14 Industrial, Development Policies

Subsection 30250(a)

The HBAP's modified 30250(a) states that development "will not have significant adverse effects, either individually or cumulatively, on coastal resources." For the federal Endangered Species Act (ESA) listed species that would be harmed, harassed, killed, or injured by the Project, loss of habitat and prey resources due to water withdrawal is a significant and unaddressed concern. Absence of consultation with the National Marine Fisheries Service (NMFS) means that the level of effects on survival and recovery of ESA-listed species has yet to be determined for adverse effects to EFH, critical habitat, and for take of green sturgeon, California Coastal Chinook salmon, Northern California steelhead, Coho salmon, and eulachon.

The 10 million-gallons-per-day (MGD) that will be removed from Humboldt Bay at the proposed saltwater intakes will reduce the available prey biomass utilized by juvenile salmonids outmigrating from Mad River Slough, Liscom Slough, Ryan Slough, Fay Slough, Eureka Slough, Elk River, Freshwater Slough, Salmon Creek, McDaniel Slough, Rocky Gulch and its tributaries, Jacoby Creek, unnamed tributaries to Freshwater Slough, Swain Slough, Martin Slough and an unnamed tributary to Ryan Slough. The energetic demand on juvenile salmonids as they migrate into sloughs and estuaries is very high (Hinckelman *et al.* 2107, McCormick 2013, Woo *et al.* 2017). Loss of estuarine productivity will occur when plankton and ichthyoplankton are removed from the ecosystem. Loss of forage will harm juvenile salmonids by reducing the carrying capacity of Humboldt Bay. Loss of forage does not just harm individual juvenile salmonids, it harms the cohort as individuals compete amongst themselves for diminished resources.

Juvenile salmonids that depend upon prey biomass in Humboldt Bay would be harmed, killed, or injured by loss and reduction of forage in the estuarine system. The Project's environmental documents discount this harm to threatened species by identifying what Nordic Aquafarms considers a small percentage of estuarine habitat, in the form of flow, that would be lost from the Humboldt Bay estuarine ecosystem on each tidal cycle. Take is typically quantified by the number of individuals that the lost habitat would support and would be killed, injured, harmed or harassed by the loss of that habitat. When loss of habitat and subsequent take is quantifiable, that take is subject to the prohibitions identified in Section 9 of the ESA.

Impacts to listed salmonids from their loss of prey biomass due to the proposed seawater intakes in Humboldt Bay have not undergone consultation with NMFS. Due to the fact that the permitting process on the in-water work has not been conducted, and ESA consultation has not been conducted on the intakes, it is premature to conclude that “potential impact to special status fish in Humboldt Bay would be less than significant.” Through formal ESA consultation, NMFS may include reasonable and prudent measures, terms and conditions, or reasonable and prudent alternatives to the permit to minimize or mitigate effects to ESA-listed species. At a minimum, these protective measures should be a part of any final decision or permitting on the Project.

As benthic foragers, green sturgeon forage and migrate near the ocean floor, increasing their risk of exposure to potentially toxic levels of ammonia from the diffusers in the outfall pipe. While foraging on the ocean floor, green sturgeon mouth parts will be in direct contact with precipitated effluent solids. Project effluent is likely to reduce prey availability and affect green sturgeon olfactory receptors used during feeding. The Project’s environmental documents claim that sturgeon will swim away from the toxic zone of the effluent and thereby minimize effects to the species. If green sturgeon are forced to change their migratory routes in order to avoid exposure to toxic effluent and contaminated benthos, that level of harassment should undergo formal consultation with NMFS.

Subsection 13142.5 (a)

Subsection 13142.5 Coastal Marine Environment (a) reiterates the Coastal Act provision that waste water discharges shall be treated to protect present and future beneficial uses, giving highest priority to wetlands, estuaries, and other biologically sensitive sites.

There are three outstanding issues with the Project’s effluent affecting biologically sensitive species and ecosystems respectively. First is the lack of targeted ozone treatment to adequately treat the effluent to kill viruses that proliferate in Atlantic salmon farms and that are known to harm or kill wild native salmonids. Second is that the proposed sewage treatment design has not been proven to be protective of receiving waters. Third is that effluent dispersal into Humboldt Bay has not been fully analyzed or addressed in the environmental documents, and impacts to the estuarine ecosystem were not given full consideration.

Wastewater leaving the Project will not be as fully treated as the river and estuary water entering the Project (*i.e.*, incoming water will be filtered, UV treated, and ozone treated; outgoing water will only be filtered and UV treated). Lack of ozone treatment of the wastewater and factory floor effluent, combined with the lack of testing Project effluent or fish processing waste for the diseases known to be associated with Atlantic salmon farms, will put in place untried technologies without the practical safety provisions necessary to protect California’s wild, native salmonids.

It is unproven that UV-C sterilization will fully treat the 12.5 MGD of effluent leaving the Project. The potential for viruses being present in Project effluent would have significant adverse effects to coho salmon, Chinook salmon, and steelhead. Viruses attached to the 408 pounds-per-day of suspended solids in the effluent stream, would be capable of surviving the proposed UV treatment of the effluent. The fish processing portion of Project effluent would contain a massive viral load if any of the viruses known to be associated with Atlantic salmon farming have an outbreak in the rearing tanks. This is a serious threat to our native, wild salmon.

Once a salmonid virus enters a wild population, the threat to individual fish goes beyond direct mortality. Ability to swim and forage is typically compromised in infected salmonids, rendering them weak and vulnerable to predation. One or more viral pathogens in wild salmonid populations are implicated in high mortality during outmigration (Furey *et al.* 2021, Jeffries *et al.* 2014, Hinch *et al.* 2012). Other pathogens such as bacteria, fungi, protozoa, myxozoan microparasites, and sea lice compound the physiological stress from viral loads and increase the threat of mortality (Lovell *et al.* 2010). Salmonid viruses that affect internal organs compromise infected salmonids during upmigration (returning to natal streams to spawn). In instances when viral exposure and viral loading does not result in direct mortality to the fish, indirect harm, injury, and mortality are likely to occur when infected wild salmonids experience increased predation, decreased mobility and visual acuity, and lack of energy required for successful migration. (Furey *et al.* 2021, Hinch *et al.* 2012, Jeffries *et al.* 2014, Miller *et al.* 2017). Added stress from viral infection causes salmonids to either not start their upmigration to natal streams, or not survive the natural physiological stresses of upmigration. Salmon compromised by viral load are referred to as “dead fish swimming” (Hinch *et al.* 2012).

During fish processing, bodily fluids containing a viral load will be the most difficult to contain and prevent from spreading into wild salmonid populations. Industrial cleansers used for protecting human health during fish processing can be damaging to biofilters, and could compromise the effectiveness of the Project’s sewage treatment system to remove sewage solids. Viruses posing the highest risk to wild salmonids are as follows:

Infectious Pancreatic Necrosis Virus (IPN) is a disease first found in 1951 in farmed Atlantic salmon in Canada. It causes fluid in the abdomen (ascites) and sudden mortality. Other symptoms are: swollen eyes, darkening of the skin, anorexia, spiral swimming, fecal casts trailing from the vent, pancreatic necrosis, catarrhal exudate in the intestine, and hemorrhages in the visceral organs. IPN is an acute and highly contagious disease in juvenile salmonids. It causes mortality rates up to 70% in farmed salmon, with freshwater-stage mortality up to 100% (Evensen and Santi 2008).

As well as being found in Atlantic salmon, IPN is also found in farmed rainbow trout (*O. mykiss*). This virulent disease has spread to fish farms in North America, Europe, Chile, Japan, Korea, Taiwan, Iran, Turkey, China, Kenya, and Australia (Dopazo 2020). There has been a push to develop a vaccine for IPN, but it would not be possible to vaccinate all of the wild salmonid species from the Mad River, Eel River, Humboldt Bay, Elk River, Salmon Creek, Freshwater Creek, or Jacoby Creek once wild fish have been exposed to the virus. Because adult and juvenile salmonids will be migrating through the Project’s effluent plume, their risk of mortality is

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high if this virus were to escape the Project. If IPN were introduced by the Project, it could have a significant adverse impact on the Mad River fish hatchery.

Infectious Salmon Anemia Virus, also known as Hemorrhagic Kidney Syndrome, Infectious Salmon Anemia (ISA) is a highly contagious disease associated with farmed Atlantic salmon. First reported in fish farms in Norway in 1984, ISA has since spread to fish farms in Scotland, the Faroe Islands, Chile, northeastern Canada and northeastern U.S. (Maine). Symptoms include: lethargy, anemia, leukopenia, bloated abdomen (ascites), protruding eyes, darkened skin, enlarged spleen, liver necrosis, swollen and discolored kidneys, localized bleeding from skin lesions (USDA *et al.* 2011, USDA 2020), and increased mortality of approximately 5 to 90 percent (Dannevig *et al.* 2008). Rainbow trout may also develop heart lesions.

Infectious Salmon Anemia virus can also be transmitted to Pacific herring (Nylund *et al.* 2002), allowing for spread of the disease to wild salmonids through foraging. Pacific herring can also act as a disease reservoir. Humboldt Bay and its surrounding waters are known to support large populations of Pacific herring.

Salmonid Alphavirus (SAV) causes pancreas disease (PD) in farmed Atlantic salmon and sleeping disease (SD) in farmed rainbow trout. It is found in salmonid farms in Norway, Scotland, England, Ireland, France, Germany Spain, U.S. (Washington), and Italy. Infections of SAV have high mortality rates. Six strains of SAV have been identified (Deperasińska *et al.* 2018). Symptoms include: cessation of feeding, lethargy, muscle damage, fluid in the abdomen, atrophy of red skeletal muscle, pancreatic necrosis, cardiac myopathy, difficulty swimming and staying upright, failure to grow, failure to gain weight, and death. Survivors appear thin and unthrifty, and they can become vectors. SAV was found to have up to 27 percent mortality in net pens in Washington state, but no studies on mortality have been conducted on wild salmonids. Sleeping disease in wild steelhead would make them extremely vulnerable to predation. If SAV escapes the Project, it could have a significant impact on steelhead returns to the Mad River Fish Hatchery.

Piscine Orthoreovirus and Novel Piscine Reoviruses is also known as Atlantic salmon reovirus and novel reovirus. Piscine Orthoreovirus (PRV) symptoms include, but are not limited to: heart and skeletal inflammation (HSMI), inflammatory lesions of the heart and skeletal muscle, burst cells (in Chinook), jaundice, anemia, anorexia, lethargy, inflammation, kidney and liver damage (degenerative/ necrotic lesions of the liver/kidney), and fluid in the abdomen (ascites). There are now three strains of PRV, with both PRV-1 and PRV-3 each having two sub-types with additional mutations.

PRV's expression of HSMI was first characterized in 2010 in farmed Atlantic salmon (Palacios 2010). PRV and HSMI have been found in farmed: Atlantic salmon (Palacios 2010, Kibenge *et al.* 2017), coho salmon (Takano *et al.* 2016, Kibenge *et al.* 2017), Chinook salmon, and rainbow trout (Olsen *et al.* 2015). PRV and HSMI are associated with high morbidity and mortality. PRV and HSMI are now also found in wild coho and Chinook salmon in Canada (Kibenge *et al.* 2017).

PRV and its variants are found in farmed salmonids in Norway, Denmark, Germany, United Kingdom, France, Canada, Japan, Chile, Italy, and the U.S. (Washington, Oregon, and Maine). Kibenge *et al.* (2017) estimated PRV prevalence in the source farmed Atlantic salmon population at 95% or greater. They found escaped, farmed Atlantic salmon had a PRV prevalence close to 100% in Washington State and British Columbia following a large containment failure at a farm in northern Puget Sound. Mordecai *et al.* (2021) found that infection of wild Chinook salmon with PRV-1 infection was closely tied to farm proximity.

First found in farmed Atlantic salmon in 1999 (Kongtorp *et al.* 2004) and later implicated as being associated with HSMI (Palacios 2010), PRV was first described in farmed *O. mykiss* in Norway in 2013; however, symptoms similar to PRV have been described as early as 1977 (Vendramin *et al.* 2019).

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Although PRV is ubiquitous in farmed salmon, some argue that symptoms and mortality are less than previously reported (Polinski *et al.* 2019). Emerging studies (Løvell *et al.* 2010, Mordecai *et al.* 2020) have shown that co-occurrences with other viruses and pathogens may drive the expression of symptoms and mortality. PRV is often co-associated with other viruses (Løvell *et al.* 2010, Mordecai *et al.* 2021).

Polinski *et al.* (2019) found that different populations of farmed Atlantic salmon had different responses to PRV, but PRV variants were not isolated in the study. Also, the fish with HSML in other studies were already sick; whereas PRV-positive but asymptomatic fish in Polinski *et al.* (2019) may have had earlier disease progression than other studies, therefore not yet showing signs of HSML.

In their study of PRV-3, Sørensen *et al.* (2020) found that the variant had its highest prevalence in grow-out facilities (71.7%) and, in Denmark, disease outbreaks of PRV-3 were only observed in RAS facilities. Considering that the Project is a grow-out RAS facility, the risk of viral loading after disease introduction is very high.

PRV has variable outcomes for farmed salmonids, depending on the PRV strain and the affected species. Stress is thought to be causative when going from a PRV infection to full-on HSML. There are no studies of heart, liver, or kidney effects to wild salmonids during upmigration to natal streams, but the stress of upmigration would put a phenomenal amount of physiological strain on individual salmonids with PRV. Individuals that avoid predation in their outmigration and marine phases would be the “dead fish swimming” described by Hinch *et al.* (2012) —e.g., not able to complete their full life-history cycle, upmigrate, or reproduce. If PRV escapes the Project, it could have a significant adverse effect on the Mad River Fish Hatchery.

Novel Fish Totivirus is co-associated with PRV and is implicated in Cardiomyopathy Syndrome (CMS), which is a spontaneous heart attack that occurs in farmed fish prior to harvest (Løvell *et al.* 2010). CMS was first reported in Norwegian farmed salmon in 1988 (Amin and Trasti 1988). Totiviruses are typically associated with fungi. Co-association of the novel fish totivirus and PRV is thought to significantly increase salmonid mortality.

Infectious Hematopoietic Necrosis Virus is one of the earlier diseases associated with fish farming and hatcheries. Now known as Infectious Hematopoietic Necrosis Virus (IHNV), earlier names being Oregon Sockeye Salmon Disease, Columbia River Sockeye Disease, Sacramento River Chinook Disease. Juvenile salmonids are more severely affected by IHNV than adults, but those that do survive the disease become vectors by shedding the virus through feces and mucus. IHNV is known to affect Atlantic salmon, sockeye and Chinook salmon, and *O.mykiss*. It is found in continental Europe, Alaska, Japan, Canada, Central California, Oregon, and Washington State.

IHNV causes lethargy, occasional frenzied swimming, darkened skin, abdomen swollen with ascitic fluid, protruding eyes, and hemorrhaging at the mouth, anus, and base of the fins. The cumulative mortality rates on fish farms can reach 90-95%. Occasional disease outbreaks have been reported in wild salmon.

PCR (polymerase chain reaction) testing is available for PRV, SAV, and IHNV. Weekly PCR testing of fish processing waste and Project effluent is needed to ensure early detection and that these deadly viruses do not proliferate at the Project. As PCR testing becomes commercially available for other Atlantic salmon diseases, they should be added to the weekly viral screening at the Project.

Technology exists to further remove Ammonia from Project effluent, but the proposed Project is dependent upon nitrogenous waste being flushed into the marine environment and not persisting in the outfall area. As nitrogenous waste settles on the ocean floor, it is not trapped there. Upwelling events that are common drivers of productivity on the Pacific Coast are likely to redistribute the nitrogenous waste into estuaries and lagoons. The cumulative and additive effects of marine upwelling and nutrient loading from the Project have not been considered or fully addressed. Marine upwelling and nutrient loading have the capacity to seriously degrade the estuarine ecosystem in Humboldt Bay. Upwelling and shifting coastal currents will lead to greater dispersal and estuarine sedimentation of effluent than was analyzed in the Project's environmental documents. The full reach of effluent dispersal and adverse effects from resuspension during upwelling and storm events should be analyzed. An understanding of local currents, tides, and upwelling events leads one to logically expect resuspension and dispersion of sedimented effluent into Humboldt Bay and to the Mad and Eel River estuaries; however, we do not need to speculate. Upwelling modeling such as the Biologically Effective Upwelling Transport Index (BEUTI) combined with NOAA data on local currents can be used to quantify the full reach of nutrient dispersal and loading during upwelling events.

The risk of *Pseudo-nitzschia* blooms worsening due to upwelling and nutrient loading in Humboldt Bay is a serious concern. It is well-established scientifically that a combination of warm water and nutrients is a driver for algal blooms. When those algal blooms include toxic species or species that release toxic substances, such as *Pseudo-nitzschia* and its release of domoic acid, organisms in the environment could be harmed, injured, or killed. *Pseudo-nitzschia* responds very rapidly to localized warming and nutrient loading. The Project's nutrient loading and thermal pollution would exacerbate and accelerate *Pseudo-nitzschia* outbreaks already associated with local warming. Although it is true that domoic acid proliferation is known to be associated with large-scale climate events, the continuing presence of *Pseudo-nitzschia* in coastal waters puts the marine ecosystem at risk from domoic acid events.

Commercial fish feed is a known source of dioxins, PCBs, organochlorine pesticides, polybrominated diphenyl ethers (PBDEs), and mercury (Buckman *et al.* 2016, Choi *et al.*, Dietrich *et al.* 2015, Jacobs *et al.* 2002, Ng *et al.* 2018). These toxic chemicals are both bioaccumulated into fish tissue and excreted into the environment. Nordic Aquafarms has only addressed residual onsite dioxins, PCBs, organochlorine pesticides, and PBDEs and they do not address fish feed and excrement as a source of dioxins, PCBs, organochlorine pesticides, PBDEs, and mercury that will be present in Project effluent

The Project's wastewater treatment does not have the ability to remove dioxins, PCBs, PBDEs, and mercury from the effluent. These toxicants can enter Humboldt Bay on a southbound current and incoming tide, and they can precipitate onto tidal wetlands. The risk of additional distribution into Humboldt Bay during an upwelling event has not been addressed and no testing or monitoring is proposed.

Subsection 13142.5 (b)

For industrial processing (e.g., the rearing and processing of Atlantic salmon), the HBAP reiterates the Coastal Act and calls for the best available site, design, technology, and mitigation measures feasible to minimize the intake and mortality of all forms of marine life. According to the HBAP: “Humboldt Bay is by far the largest and most important estuary on the Northern California coast.” This being the case, removing productive estuarine waters from Humboldt Bay is not the best available site or measure to minimize mortality of all forms of marine life. Humboldt Bay is the cradle of coastal marine productivity on the Northern California coast, and locating the seawater intakes west of Samoa Peninsula (with adequate screening, as described) is a feasible way to minimize the intake and mortality of marine life. This option was recommended by NMFS in their comments on the DEIS.

Subsection 13142.5 (c)

The HBAP directs that warmed water “shall not significantly alter the overall ecological balance of the receiving area.” Marine warming has led to harmful algal blooms and bioaccumulation of domoic acid in the food chain along the coast of California. Additional nutrient loading and thermal pollution (*i.e.*, 9.0 to 10.9°C in winter months) from the Project effluent could extend the season for harmful algal blooms and extend exposure to marine mammals. California sea lions are particularly hard hit from domoic acid poisoning.

The 10 to 20°F warmer water from the outfall pipe is likely to foster a perennial reserve population of *Pseudo-nitzschia* that could trigger a faster domoic acid outbreak than a natural, slow warming trend at a larger scale. The area affected by the Project effluent (including and beyond the vicinity of the outfall pipe) is likely to become a highly retentive region for *Pseudo-nitzschia*, such as described for: Juan de Fuca eddy, Heceta Bank, Monterey Bay, and Point Conception (Trainer *et al.* 2012). The same risk from those areas becoming a “potential hotspot” for *Pseudo-nitzschia* outbreak applies to the area affected by the Project near the effluent pipe and from redistributed effluent into Humboldt Bay.

While the spread of domoic acid from a localized population of *Pseudo-nitzschia* would not affect the entire coastline, such as during a large-scale event, it would certainly affect local recreational and commercial crab fisheries and marine mammals. While larger marine mammals may move their young away from the effluent stream, both adults and juveniles could still be exposed to domoic acid and subsequent neurological effects if the warm and nutrient-laden effluent from the Project result in harmful *Pseudo-nitzschia* algal blooms. Sea lions and harbor seals are at the greatest risk from domoic acid poisoning, which results in lethargy, disorientation, loss of pregnancy, seizures, brain damage, and death. Although the Project is not the proximal cause of marine warming, *per se*, thermal pollution from Project effluent would put marine species at risk. If a marine warming event happens in the early stages of operation, the Project would be contributing to the magnitude of a harmful algal bloom.

Subsection 13142.5 (d)

The HBAP states: “Independent baseline studies of the existing marine system should be conducted in the area that could be affected by a new or expanded industrial facility using seawater in advance of the carrying out of the development.” Contemporary baseline monitoring of the Sacramento River for salmonid pathogens (Mauduit *et al.* 2022) has demonstrated that the technology exists and is a useful tool in establishing a pathogen-burden baseline in local, wild salmonid populations in California. However, Nordic Aquafarms has strenuously rejected such monitoring in favor of biannual veterinary visits to the Project.

Without even considering the cumulative effect of upwelling, effluent dispersion modeling in GHD 2021 clearly shows that effluent will interface with the salmonid critical habitat streams flowing into Humboldt Bay. With worldwide proliferation of deadly viruses (e.g., PRV, SAV, and IHNV) known to occur in Atlantic salmon farms, a fair assessment and baseline of salmon-farm pathogens is required in order to conform with subsection 13142.5. The baseline monitoring of the Sacramento River, done by Mauduit *et al.* (2022) is an excellent example of using modern investigative techniques to establish a pathogen baseline. Salmonid critical habitat that is likely to interface with Project effluent is the mouths of Mad River, Eel River, Humboldt Bay, Elk River, Salmon Creek, Freshwater Creek, and Jacoby Creek. Salmonids directly exposed to the effluent outfall when migrating past or feeding near the Project’s outfall pipe are likely to disperse pathogens into spawning areas when they migrate upstream. A baseline for each of these rivers and streams, as well as Klamath River and Redwood Creek, is needed in order to track the progression of disease known to be associated with farmed Atlantic salmon.

HBAP Section 3.30 Natural Resources Protection Policies and Standards

Subsection 30240

The HBAP directs that: “Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on such resources shall be allowed within such areas.” The Project is not protective of environmentally sensitive marine habitat, such as essential fish habitat and ESA critical habitat, and is not protective of salmonids dependent upon the environmentally sensitive habitats specifically identified in the HBAP. Release of effluent into the migratory path for green sturgeon, coho salmon, Chinook salmon and steelhead trout will cause disruption of migratory behavior. Exposure of salmonids to viruses associated with farmed Atlantic salmon could cause disruption of wild salmonid populations and potential run failure. Loss of important commercial, recreational, and valued native fishes should be considered a significant disruption.

The nutrient loading and thermal pollution created by the Project would be a key factor in localized algal blooms. *Pseudo-nitzschia* proliferation and domoic acid outbreaks

would have a profound effect on the marine mammals in and around Humboldt Bay, and the Dungeness crab fishery would have to close.

Subsection 8--Coastal Streams, Riparian Vegetation and Marine Resources

Protection of marine resources has a high level of emphasis in the HBAP: “Marine resources shall be maintained, enhanced, and, where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Use of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.”

As discussed earlier, the risk of run decimation from Atlantic farmed salmon diseases continues due to lack of monitoring, timely response, mitigation, and remediation. Loss of salmon and steelhead runs in the Mad River, Eel River, Redwood Creek, Klamath River and tributaries to Humboldt Bay would have a profound impact on long-term commercial, recreational, scientific, and educational purposes of Humboldt Bay and the coastal marine area.

Subsection 30231

The HBAP requires protection of biological productivity and coastal waters. It includes direction to minimize adverse effects of waste water discharges and entrainment. Without ozone treatment of Project effluent and without viral monitoring, timely response, mitigation, and remediation for diseases found in Atlantic salmon, the Project will affect the biological productivity and the habitat quality of Humboldt Bay, coastal streams, and the Mad and Eel Rivers. When PRV, SAV, IHNV, and other deadly diseases escape the Project, the biological productivity of coastal waters, streams, wetlands, and estuaries will not be able to maintain optimum populations of wild salmon.

Nordic Aquafarms has strenuously opposed weekly PCR testing for PRV, SAV, and IHNV—claiming that all PCR positives in the effluent would be false positives, or non-pathogenic. PCR testing is an inexpensive and effective methodology for screening for viral diseases. Positive PCR tests would be an indication that virus has infected the facility and closer inspection for Atlantic salmon diseases is warranted. PCR testing is an important tool for disease control, planning, initial response, mitigation, and remediation.

Full ozone treatment of effluent and vigorous disease monitoring could minimize adverse effects of waste water discharges on wild native salmonids. In addition, technology exists to further remove ammonia and nitrogenous waste from effluent. Without these measures, biological productivity and habitat quality in Humboldt Bay and coastal streams will be compromised.

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Although the saltwater intakes will be screened, impinged marine organisms will be blasted with air to clear the screens. Most marine fish species are not able to forage on the disintegrated prey from the blasters. Subsection 30231 calls for minimizing the adverse effects of entrainment. Due the fact that Humboldt Bay is an important estuary in California, screens and air blasters may not minimize the effect of impingement to a level that does not reduce the biological productivity of Humboldt Bay.

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