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CC: Dawn Hegger, Department of Land and Natural Resources, Office of Conservation and Coastal Lands, P.O. Box 621, Honolulu, Hawaii 96734; John Corbin, Aquaculture Planning & Advocacy LLC, 47-215 Iui Street, Kaneohe, HI, 96744

Submitted to Applicant and Consultant on June 22, 2009 via email at rcates@hukilaufoods.com and jscorbin@aol.com, respectively.

Submitted to approving agency via fax at 808-587-0455, on this same day.

RE: Proposed Expansion of Hukilau Foods Offshore Fish Farm, Mamala Bay, Oahu, Hawaii – Draft Environmental Assessment

Dear Mr. Cates:

On behalf of Food & Water Watch (FWW),¹ I write to express the organization's concerns about the content of the Draft Environmental Assessment (DEA) submitted by Hukilau Foods (HF) for the proposed expansion of Hukilau Foods Offshore Fish Farm. For the reasons outlined below, the Department should not move forward with these plans and should reject this DEA as inadequate. Instead, an environmental impact statement is the appropriate mechanism by which to address the proposed expansion.

Overarching Concerns With Open Ocean Aquaculture

Without adequate safeguards, open ocean aquaculture could damage marine ecosystems, threaten the livelihoods of fishermen and those employed in the tourist industry, and interfere with important cultural traditions and resources.

Open ocean aquaculture is highly controversial, and a variety of publications by researchers, NGOs, and government offices have noted problems associated with the development of this industry. International experience from offshore fish farms should give DLNR cause for concern. Water flowing out of industrial fish farms carries excessive nutrients (e.g., phosphorus and nitrogen),^{2,3} particulates, metals,⁴ pesticides⁵

¹ FWW is a national non-profit consumer advocacy group that works to promote clean, safe seafood for consumers and the use of common resources for the public benefit.

² Holmer, M. et al. "Sedimentation of organic matter from fish farms in oligotrophic Mediterranean assessed through bulk and stable isotope ($\delta^{13}\text{C}$ and $\delta^{15}\text{N}$) analyses." *Aquaculture*, 262: 268-280, 2007.

³ Islam, Md. Shahidul. "Nitrogen and phosphorus budget in coastal and marine cage aquaculture and impacts of effluent loading on ecosystem: review and analysis towards model development." *Marine*

and other chemicals that may pose serious problems to water quality and the environment.⁶ For example, a salmon farm of 200,000 fish releases as much nitrogen, phosphorus, and fecal matter into the water as is present in the untreated sewage from 20,000, 25,000 and 65,000 people, respectively.⁷ Such waste can contribute to eutrophication in nearby waters,⁸ leading to harmful algae blooms, fish and seabed animal kills, and shellfish poisoning.⁹

Studies have also found increased mercury contamination in surrounding wild-caught fish populations. In one instance, researchers sampled fish caught in the traditional fishing grounds of indigenous people and found that mercury was significantly higher in wild fish caught near the salmon farms than far from them. This contamination was attributed to fish-farm waste, which may be altering the food web, forcing wild fish to eat more highly contaminated organisms. The researchers also believed that the fish farm waste might be tainted with mercury and might be altering water chemistry to make the mercury in surrounding sediments more easily absorbed by aquatic organisms.¹⁰ In addition, the escapement of fish from ocean fish farms is another chronic problem.¹¹

Moreover, a large body of scientific literature exists demonstrating that the use of a wide variety of antibiotics in aquaculture results in increased antibiotic resistance in fish, and the transfer of these resistant pathogens to the bacteria in land animals and to human pathogens. The use of large amounts of antibiotics increases the opportunities for the presence of residual antibiotics in meat and fish products, and thus possibly undermines the ability of doctors to effectively treat human infections.¹²

Furthermore, while fish farming is touted as a way of reducing the pressures on depleted fishing populations, marine aquaculture's feed requirements may actually increase these pressures due to a necessary diet of large quantities of fishmeal and fish oil.¹³ Already, fish farms use a significant portion of world supply of fishmeal and fish

Pollution Bulletin, 50,1: 48-61, January 2005.

⁴ Choi, Monica Heekyoung and Cech, Joseph J. "Unexpectedly High Mercury Level in Pelleted Commercial Fish Feed." *Environmental Toxicology and Chemistry*, 17(10): 1979-1981, 1998.

⁵ U.S. Environmental Protection Agency, "Economic and Environmental Benefits Analysis of the Final Effluent Limitations Guidelines and New Source Performance Standards for the Concentrated Aquatic Animal Production Industry Point Source Category," June 2004.

⁶ *Id.*

⁷ See Goldberg, R., Elliot M., and Naylor, R., "Marine Aquaculture in the United States, Environmental Impacts and Policy Options," 2001, citing Hardy, R.W., 2000b, Fish, Fish feeds, & Nutrition in the New Millennium, *Aquaculture Magazine* 26 (1): 85-89.

⁸ *Id.*

⁹ See Scottish Association for Marine Science and Napier University, "Review and Synthesis of the Environmental Impacts of Aquaculture, 2002."

¹⁰ Dubruyn, A.M., Trudel, M., Eydin, N.A., Harding, J., McNally, H., Mountain, R., Orr, C., Urban, D., Verenitch, S., Mazumder, A., Ecosystemic Effects of Salmon Farming Increase Mercury Contamination in Wild Fish, *Environ. Sci. & Technol.* Published on web April 19, 2006.

¹¹ "Norwegian Aquaculture: Status Report." *Aquaculture Magazine*, 33(1): 19-21, January-February 2007.

¹² Reviewed in Cabello, F.C., *Heavy use of prophylactic antibiotics in aquaculture: a growing problem for human and animal health and for the environment*, *Environmental Microbiology* (2006) 8 (7), 1137-1144.

¹³ Naylor, R.L., Goldberg, R.J., Primavera, J.H., Kautsky, N., Beveridge, M.C.M., Clay, J., Folke, C., Lubchenco, J., Mooney, H. and Troell, M. Effect of aquaculture on world fish supplies, *Nature* 405, 1017-

oil from wild marine sources, such as sardines, herring, and menhaden.¹⁴ Removing these fish from the ocean to feed farmed fish denies food to whales and other ocean mammals and to larger predatory fish and sea birds.

Offshore aquaculture could have negative socioeconomic effects, as well. Offshore aquaculture could harm U.S. fishing communities, which are dependent on healthy ecosystems and wild fish populations for their economic livelihood. Fish farming could also harm the existing U.S. fishing industry by lowering prices for wild fish caught by U.S. fishermen.

Given the potential dangers posed to the environment, consumers, and fishermen by industrial fish farming, we urge the DLNR to act cautiously so that this project does not cause some of the same types of problems.

Overview Of The Proposed Expansion

As stated in the DEA, HF offshore fish farms proposes to quadruple its industrial production of farmed moi from 1.2 million pounds per year to up to 5 million pounds per year. It plans to do so by doubling the number of sea cages (from four to eight), with each cage doubling in size (from 3000 m³ to 6000m³). In 2007, HF was filling each cage with 130,000 Pacific Threadfin (aka moi). This would mean that each cage in the proposed expansion would contain 260,000 moi. Multiplied by eight cages, and the amount of moi raised at a given moment would be a whopping 2,080,000 fish.

This would mean that the amount of fish waste coming from the project would be approximately equal to the amount of untreated sewage generated by the entire city of Boston. Yet despite these numbers, HF believes that the crowding of over two million fish in tight quarters will have no impact on the marine environment, and that their feces will simply wash away. HF appears to subscribe to the old and erroneous rhyme: “the solution to pollution is dilution.”

The current HF fish farming operation is located near a known dead zone, a protected marine sanctuary, a coral reef, and within an area contaminated by dredged material in Mamala Bay. Nonetheless, HF desires to expand its current ocean lease of 28 acres to 61 acres, to allow room for the extra sea cages. In addition, while it requests permission to permanently moor a feed/security barge on site, it simultaneously seeks to restrict the anchoring of all other boats within the 61-acre expanse. Furthermore, to decrease its “insurance liability,” it requests an outright ban on snorkeling or SCUBA diving within its area. Installing new cages also means removing the old ones and their anchors, and re-mooring the new structures, using sixteen “Danforth” style anchors (two per sea cage). Each anchor weighs 6,000 – 8,000 pounds and is designed to penetrate the

1024 (2000).

¹⁴ Tacon, Albert et al. “Use of Fishery Resources as Feed Inputs to Aquaculture Development: Trends and Policy Implications.” FAO Fisheries Circular No. 1018, Food and Agriculture Organization of the United Nations, Rome, 2006.

sea floor. The central cement ballast weight of the sea cage that rests on the ocean floor weighs 14,300 pounds.

While the DEA states that HF has never received a single complaint in all of its years of operation, it apparently fails to mention several freely-available reports outlining several deficiencies with the HF industrial operations, as discussed below.¹⁵

Comments

The DEA Inadequately Assesses the Project's Cumulative Impacts.

The DEA's discussion of the proposed HF expansion is completely inadequate. In less than half a page (see p. 41), the DEA dismisses of cumulative impacts by merely restating the tired proposition that because of the strong currents, all wastes will wash away and any impacts are expected to be "manageable and insignificant." It avoids examining other activities in the area, which, in conjunction with the proposed expansion, might play a significant role in environmental degradation.

The DEA fails to consider publicly available data from the U.S. Geological Survey on Mamala Bay area off of Ewa Beach. This area, which includes the location of the HF fish farms, was found to have been contaminated by other human caused activities: "For more than a century, material dredged from Pearl and Honolulu Harbors has been dumped in Mamala Bay off Oahu, Hawaii. Human activities add other materials to the bay as well: wastewater from Honolulu and its suburbs, shipyard contaminants and lead paint from ships, agricultural fertilizers leached from fields. *It is not known how the dredged material and contaminants are affecting the environment*"(emphasis added).¹⁶ Neither is it known how the excess food and fecal pollution from the HF sea cages interacts with these elements.

The DEA also fails to address the dead zone located just off the coast of Ewa Beach (Virginia Institute of Marine Science), as well as the cumulative impacts that the proposed expansion would have on the Barbers Point Marine Protected Area, found just southwest of the dead zone. In fact, there is no effort to even determine the cause of the dead zone – that is, whether the excess nutrients are due to the years of operation of Mr. Cates' fish farms, runoff from the island, or a combination of both.

In an earlier section of the DEA (see p. 25), it states that HF is proximate to a coral reef (1,800 feet away), but outright dismisses this as a problem, stating that "the prevailing currents" take the refuse away from the reef. More information is needed about the "repeated sampling" that demonstrated there was no effect on the coral reef. What were the findings? Who did the sampling? FWW recommends that HF use effective water quality models to achieve a more accurate prediction of the effects of pollution, such as the SUNTANS model, detailed on pp. 5-6.

¹⁵ [Ostrowski piece, Report of Marine Aquaculture Task Force.]

¹⁶ <http://walrus.wr.usgs.gov/mamalabay/>

Finally, there is no mention of the statewide cumulative impacts that this fish farm along with the others currently in operation (Kona Farms – yellowtail; Indigo Farms – moi, and potentially grouper and porgies) and soon to be planned (Hawaiian Ocean Technology, Inc. – ahi tuna) would have on the regional water quality. In sum, the cumulative impacts section of the DEA must be entirely redone, and an honest and meaningful analysis should take its place.

The DEA Fails To Adequately Consider Water Quality And Benthic Impacts From Quadrupling Production.

Under the Hawaii Environmental Policy Act, an environmental impact “statement shall be required if the agency finds that the proposed action *may* have a significant effect on the environment.”¹⁷ (Emphasis added.) Despite this low threshold, a draft environmental assessment for the expansion of HF was deemed to be the appropriate document, because “a finding of no significant impact is anticipated.”¹⁸ This anticipated outcome is conclusory and neglects the strong possibility that a quadrupling of fish production, wherein wastes are still not contained, “may have a significant effect on the environment.”¹⁹ This section outlines the significant impacts that may occur with this project, and given that the low threshold requirement is exceeded, an environmental impact assessment is surely needed for this proposed expansion.

The DEA concludes that because the farm’s maximum fish densities will likely remain largely the same, the quadrupling of fish production will have an “insignificant” impact on the water column and substrate under each cage. This flawed logic fails to appreciate the sheer magnitude of quantity of pollution; the agency merely focuses on density. The two must be considered in conjunction in order to better assess the true impacts of pollution.

Further, it is not enough for the project to look at fish density. The impacts of aquaculture facilities are highly variable and location specific. “The effects of effluents resulting from cage and other forms of aquaculture activities depend primarily on the annual fish production, production area and depth...and water resistance time... [T]he environmental effects...are also site specific and depend largely on the prevailing physico-chemical and biological features of the receiving environment.”²⁰ Without such an analysis, the DEA’s analysis is, at best, incomplete.

The DEA applies the same flawed assumption that the “mixing” ability of the open ocean will effectively wash away the wastes that the project itself removes. Acknowledging that the cages accumulate algae and other marine growth that impairs the free flow of seawater through the netting, HF uses divers to spray a heavy jet of water to “dislodge [the] material” approximately every 2 months. Without any analysis, the DEA reads: “Pulverized material is readily dispersed by the currents and assimilated and

¹⁷ HRS §343-5 (b)(1)(D)

¹⁸ HRS §343-5 (b)(1)

¹⁹ HRS, *supra* note 17.

²⁰ See e.g., Islam, *supra* note 3.

recycled by the ocean environment.” There is no information on the quantity of accumulated matter that is washed off, its composition, or why one would assume that it would have no impacts and simply be assimilated by the ocean.

In fact, on p. 37 of the DEA, it contradicts its previous “assimilation and no impact” argument by stating that the pulverized material actually *helps* maintain the local ecosystem. Of course, notwithstanding the contradiction, this statement neglects the fact that excess nutrient-spurred algal blooms, like the ones that attach to the sea cages, are commonly known to absorb massive amounts of oxygen when they sink to the sea floor, and create the feared hypoxic “dead zones.”

In section 5.3.2 (beginning on p. 29), the DEA displays a series of highly technical and impressive-looking charts to demonstrate the quality of the water and the benthic community. A SCUBA diver conducted a visual survey of the ocean bottom of the proposed expansion area (photo shown in Fig 14). However, no further analysis is taken – the conclusion is literally that because it looks the same as the current barren sea floor, it must be the same.

In reality, the project has had problems from its start. Originally, the Hawaii Pacific University’s Ocean Institute had found that worms associated with fecal pollution had appeared “rapidly” and “became much more abundant under the net cage.”²¹

And while the DEA reports a change in the polychaete species composition beneath the sea cages, and attributes this to the presence of organic enrichment of the sediments, it states that “they do not have great ecological significance” simply because similar changes in composition can also occur from other sources, and not just sea cages. It also claims when the sea cages are empty for six months straight, the DEA alleges that the sea floor returns to its previous state, and concludes that there are no long-term impacts on ecosystem health.

The applicant’s conclusion that there would be no long-term effects could not be further from the truth. A study in 2006 revealed that the facility had “grossly polluted” the seafloor and “severely depressed” certain types of sealife.²² The authors conclude that the changes in benthic infauna over the course of the study follows a typical pattern for organic enrichment of sediments, as the site under the sea cages evolved into a highly polluted site and the site 80 meters down-current followed, indicating that the benthic effects had spread well beyond the physical footprint of the sea cages. Notwithstanding the “open water” location of sea cages and robust longshore current, substantial alteration of the benthic environment resulted from commercial marine aquaculture operations.²³

²¹ Ostrowski, Anthony C. et al. “Hawaii Offshore Aquaculture Research Project (HOARP) – Phase II. Final Report.” NOAA Sea Grant Award No. NA86RG0041, Ocean Institute, Waiamanalo, HI, Aug 31, 2001.

²² Lee, Han W. “Temporal changes in the polychaete infaunal community surrounding a Hawaiian mariculture operation.” *Marine Ecology Progress Series*, 307:175-185, January 2006.

²³ Sustainable Marine Aquaculture: Fulfilling the Promise; Managing the Risks. Report of the Marine Aquaculture Task Force, January 2007, at 74.

These findings directly refute claims that there are no impacts from the waste and excessive nutrients, and that the open ocean waters simply wash all the filth away.

Instead of just snapping photos of the sea floor and then drawing specious conclusions, HF should employ state-of-the-art, water-quality modeling. Other fish farms already implement water quality models to better predict the impacts that pollution will have on the marine environment. The proposed Hubbs-Sea World project in San Diego had an AquaModel simulation prepared in order to analyze the water and sediment effects of fish mariculture at the proposed project.

Further, even more recent and accurate models are now available for HF's use. Researchers of the SUNTANS (Stanford Unstructured Nonhydrostatic Terrain-following Adaptive Navier-Stokes Simulator) project have found that waste plumes from fish farms retain coherence and maintain high concentrations over much longer distances than was previously believed. The SUNTANS model highlights the importance of wake vortex dynamics created by a given array on the concentration and coherence of waste plumes discharged by aquaculture operations.²⁴ The SUNTANS Model predicts a different waste plume behavior under the oscillatory flow conditions than the Gaussian plume dispersal predictions employed in AquaModel simulations. In short, the SUNTANS Model reveals that waste from fish farms can spread farther, and in higher concentrations than was previously believed.

HF should certainly take advantage of the opportunity to use the SUNTAN model to analyze pollution effects of the proposed expansion.

The DEA's Analysis of HF's Escaped Fish Is Inadequate.

The DEA states that "to date, there has been no known escape of fish from HF cages over the seven years of commercial operation." This analysis is highly inadequate. It is commonly known in the industry that escape rates tend to average around 5%. Over seven years of commercial operation, thousands of fish are likely to have escaped. To not be aware, then, of a single moi escaping, suggests nonexistent monitoring.

Perhaps worse, HF argues that even if a fish did escape, it is only helping with the state's restocking efforts. HF places the bulk of its argument in the fact that the moi are derived from local, wild stock. The DEA states genetic mapping of the species reveals that all are from the same genetic stock. While HF states that the initial broodstock is sourced from wild populations, these farmed populations are only replenished annually through capturing 100 juvenile and adult fish as the broodstock.

However, even escaped native fish can do great harm. "Escaped farmed fish can negatively impact the environment and wild populations of fish whether they are native or exotic to the area in which they are farmed, and the probability of significant

²⁴ Venayagamoorthy, S. K., Fringer, O. B., Koseff, J. R., Chiu, A. and Naylor, R. L. 2008. "Numerical modeling of aquaculture dissolved waste transport in a coastal embayment," submitted.

ecological impact increases as the number of escaped individuals increases.”²⁵ For example, extensive research shows that the escape of farmed fish into the ecosystem can result in competition for food and space and predation on native species.²⁶ Other scientific literature indicates there are harmful effects that result from the escapement of farm-raised fish, even if they are native, if, due to inadvertent selection by the novel environment (e.g., reduced fright response, disease resistance, and altered aggressive behaviors), they are not adaptive in the wild.²⁷ For example, a recent 2007 Oregon State University study published in the journal *Science*, demonstrated that the reproductive success of steelhead trout could drop by close to 40 percent per captive-reared generation.²⁸

These are but some of the problems that prompted The Marine Aquaculture Task Force, a consensus group made up of scientists, industry representatives, and conservation organizations, to conclude that “there are significant risks to ecosystems through escapes from aquaculture and that management measures should be taken to eliminate or minimize those risks.”²⁹

The DEA Fails To Assess The Impact Of The HF Project On Forage Fish Populations.

The DEA describes the method of feeding in great detail yet provides very little information on feed composition. One of the most important characteristics regarding evaluation of an operation’s sustainability – its wild fish feed to farmed fish ratio – is completely ignored. Most carnivorous finfish raised in offshore fish farms require, on average, anywhere from 2-6 pounds of wild fish (either in the form of fishmeal or fish oil) to feed one pound of farmed fish. Processing such large quantities of forage fish into pellet form and then feeding them again to farmed fish is the epitome of unsustainable, and actually exacerbates the overfishing problem. The DEA states that the “pellets are mixture of fish meal, agriculture grains, and a vitamin/mineral mix, with a crude protein content of 43%.” No information is given on the actual percentage of fishmeal or fish oil used, nor what kind of fish is used to feed to the Hawaiian moi, nor where the forage fish are sourced. More information is needed about the statewide (or nationwide) impacts of using wild forage fish for feed, because of the environmental effects of removing this critical link from the food chain.

The DEA Fails To Assess The Potential Disease Impacts From The HF Project.

²⁵ See e.g., Miranda, I.T. & Peet, C. 2008. “Seafood Watch Seafood Report: Farmed Yellowtail.”

²⁶ Marine Aquaculture Task Force, *supra* note 8 (citing Gross, M.R. 1998); One species with two biologies: Atlantic salmon (*Salmo salar*) *Aquatic Sciences* 55(Suppl. 1):131–144)

²⁷ National Research Council, *Genetic Status of Atlantic Salmon in Maine: Interim Report*, 2002 at pp. 20-21. at p. 21.

²⁸ Oregon State University (2007, October 5). Salmon And Trout Hatcheries Cause 'Stunning' Loss Of Reproduction. *Science Daily*. Retrieved January 8, 2008, from <http://www.sciencedaily.com/releases/2007/10/071004143128.htm>.

²⁹ Sustainable Marine Aquaculture, *supra* note 23, at 49.

Merely noting that “HF is striving to be a leader in marine finfish biosecurity,” and is “diligent in applying best management practices” is entirely insufficient. The DEA is supposed to evaluate the potential impacts of the transfer of disease from farmed moi to wild fish populations, and the drafters appear to not have taken this section seriously.

In Chile, for example, the salmon farming industry experienced a catastrophic decline in product output, due to various diseases ravaging most of the farmed fish in the region. Wild stock also suffered from these outbreaks. A study by L. Neil Frazer, from the University of Hawaii at Manoa, noted that: “Sea lice epidemics, together with recently documented population-level declines of wild salmon in areas of sea-cage farming are a reminder that sea-cage aquaculture is fundamentally different from terrestrial animal culture... a sea cage... becomes an unintended pathogen factory.”

The DEA only covers the procedures adopted by HF for monitoring, which appear to be little more than an explanation of standard industry practice. It does not evaluate the likelihood of outbreaks. Yet even this reveals areas of concern, for after the moi are placed into the pens, HF waits a full four months before testing for diseases.

The DEA Fails To Assess Reasonable Alternatives.

The evaluation of alternatives section is appalling. It first evaluates the option of stocking the moi in even higher densities, and then declines doing so, not based on the obvious environmental implications, but because of reduction in value of fish because of discrepancies in fish size and excessive stress. It rejects searching for other areas outside of the leasing vicinity, but for some reason, it limits itself to water. Why does it not consider land-based alternatives, particularly recirculating aquaculture systems, where untreated discharge is not emitted into the waterways? Several such facilities are in commercial operation on the mainland, and sustainable operations currently exist in Hawaii.

The “no action alternative” argues that if it does not expand its operations by quadrupling output, then moi production for the local market would continue to be “inadequate.” The DEA does not state what the current demand is, and whether HF is exceeding that demand. It states that there would be no increase in employment, but the speculative increase of fourteen people is underwhelming, particularly given that there is no promise to keep additional staff after the transition period is over. Oddly enough, the DEA notes that not expanding would suppress “opportunities to further refine sustainable open ocean aquaculture technologies for Hawaii,” but given the unsustainable nature of such operations to begin with, it seems clear that the appropriate avenue for experimentation would be small-scale scientific projects, and not a “wait-and-see” approach of quadrupling production.

The DEA Fails To Adequately Assess Endangered Species Concerns.

Under HI ST § 195D-4(a), “[a]ny species of aquatic life, wildlife, or land plant that has been determined to be an endangered species pursuant to the Endangered Species

Act shall be deemed to be an endangered species under this chapter and any indigenous species of aquatic life, wildlife, or land plant that has been determined to be a threatened species pursuant to the Endangered Species Act shall be deemed to be a threatened species under this chapter.” Given the many federally-protected endangered species seen at the site, as noted in the DEA, there are consultation requirements “if the applicant has reason to believe that an endangered species or a threatened species may be present in the area affected by his project and that implementation of such action will likely affect such species.”³⁰ The state laws require virtually identical consultation requirements.

Moreover, Hawaii’s Department of Land and Natural Resources must consult with the state’s endangered species recovery committee before authorizing any incidental take permits, and only after following the stringent criteria outlined in HI ST 195D-4(g). Additionally, and particularly given the eyewitness accounts of numerous federally-protected species in the area, the DLNR should “work cooperatively with federal agencies in concurrently processing habitat conservation plans, safe harbor agreements, and incidental take licenses pursuant to the Endangered Species Act.”³¹ This may include consultation requirements with NOAA. In addition, The Marine Mammal Protection Act requires consultation to determine the effects that activities will have in the killing, injury, or harassment of marine mammals – also witnessed in the area.

The DEA remains entirely silent as to whether any of these consultations or analyses were done; instead, it appears that the extent of the DEA’s inadequate analysis is that HF employees saw some endangered species swim by, and noticed that they did not get tangled in the sea cages.

The DEA Fails To Adequately Assess Economic Impacts.

HF argues that it will impact the Hawaii economy by increasing employment opportunities, benefiting local support industries, and increasing opportunities for Federal research dollars. HF argues that if this increased expansion is not approved, then another company will receive federal taxpayer support and Hawaiians will all suffer. HF and its predecessor have already relied heavily upon \$1.5 million in direct or indirect support from NOAA. When in its first year of operation, the experiment with moi was “sub-economic” and would need to triple production to be economically viable.³² Given the substantial economic help in the past, it needs to be asked whether this operation is truly financially sustainable, or would Hawaiian residents be forced to subsidize the private operations once the federal money stops.

HF currently employs eleven people, and hopes to hire fourteen more people with the expansion. The increase of fourteen additional people hired statewide is insignificant, particularly given that there is no promise to keep these staff beyond the transition period.

³⁰ ESA, 16 § 1535(a)(3)

³¹ HI ST § 195D-4(i).

³² Food & Water Watch. *Fishy Farms*, pp. 11-12.

Perhaps worse, the DEA provides no analysis of how this project's expansion might impact commercial fishermen. For example, the project seemingly bars all non-small- recreational fishermen, especially those who wish to anchor, from accessing the 61-acre expanse. The DEA does not analyze the impacts that this will cause to fishermen as fish aggregate around the HF project, instead of favorite fishing grounds.

Further, the DEA fails to analyze the impacts of the HF expansion on fish prices, as a large amount of farmed moi will be dumped into the market, potentially driving down prices.

The DEA Fails To Adequately Assess The Project's Historic and Cultural Resources Impacts.

The DEA's evaluation of the potential impacts the expansion would have on cultural practices and resources is woefully inadequate. In neglect of the importance of the ocean to Hawaiian native populations, along with the Hawaiian Constitution's call to protect natives' rights,³³ the report "confirms" that "...the open ocean site does not contain any known historic resources or traditional and culturally important sites[,]" through a "a recent interview with a knowledgeable Hawaiian fisher," and meetings with the EWA Beach Neighborhood Board. Talking to a non-indigenous Hawaiian fisherman about cultural impacts to indigenous peoples is not sufficient.

Further, the DEA mentions that sand bar sharks are regularly seen around the cages, and that tiger sharks are occasionally spotted. So far, HF reports no problems with the sharks. But given that Kona Blue Water Farms, a fish farm often cited in this DEA, recently killed a tiger shark that regularly appeared around its facility, it must be asked what does HF plan to do if a particular shark becomes persistently attracted to the moi. After all, sharks are revered in Hawaiian cultural lore as an *aumakua*, a family guiding spirit or totem, so this would certainly raise cultural sensitivity issues.

The DEA Inappropriately Inflates The Project's Benefits.

Finally, we must look at the facility's potential benefits, as touted on page 8 of the DEA. The project cannot continue to "demonstrate that commercial open ocean fish farming can be carried out in an environmentally sound, economically viable manner," when so many elements of the operation are unsustainable, and it is so heavily reliant upon federal subsidies. The purported employment benefits, as addressed above, are insignificant; worse, there is the possibility that the proposed expansion could drive Hawaiian fishermen out of business and create a statewide net loss of jobs.

Further, the DEA fails to demonstrate that local purchasing of equipment and supplies will increase, because it fails to show that HF currently sources its supplies

³³ Article XII, Section 7 of the Constitution of the State of Hawaii reads: "The State reaffirms and shall protect all rights, customarily and traditionally exercised for subsistence, cultural and religious purposes and possessed by ahupua'a tenants who are descendants of native Hawaiians who inhabited the Hawaiian Islands prior to 1778, subject to the right of the State to regulate such rights."

locally. It is known that the sea cages are manufactured in Washington, so the addition of cages will not benefit for local manufacturers. While Mr. Cates will indeed be supplying more moi to resident and tourist markets, there is no indication that there is a demand for fish that is not being met by existing wild fish populations.

Conclusion

The DEA fails to provide adequate information about the new installation of sea cages, the source and components of the massive amount of feed that will be purchased and discharged into the ocean, the untreated waste, or the true impacts on the ecosystem and marine animals. It also fails to prove that the environmental or cultural impacts can be mitigated. FWW urges DLNR to adopt the precautionary approach, reject this DEA, and to conduct a full-scale environmental impact statement, taking into consideration cumulative impacts and true evaluation of alternatives, and to not move forward with HF's proposed expansion at this time.

Sincerely,



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