STATE OF NEW HAMPSHIRE

SITE EVALUATION COMMITTEE

Docket # 2015-04

RE: EVERSOURCE-SEACOAST

PREFILED TESTIMONY OF JASON BAKER ON BEHALF OF FAT DOG SHELLFISH COMPANY, LLC

July 30, 2017

Please State your name, address, title, and credentials.

My name is Jason (jay) Baker. I am the principal owner of Fat Dog Shellfish Co., LLC, an Intervener in this proceeding. My business mailing address is 3 Chain Bridge Drive, Newburyport, MA, 01950. Fat Dog Shellfish is wholly owned by Jay and Elizabeth Baker, and, to date, we have not retained council in regards this matter.

I have over 20 years of professional experience in the field of marine biology and coastal environmental management in both the private and public sectors. I hold a Bachelor of Science degree in Environmental Biology form Gordon College and a Master of Environmental Management degree from Duke University.

What is your interest in this proceeding?

Fat Dog Shellfish Co., LLC is a 9-acre oyster farm located in Little Bay, site of the proposed project. Our primary 4.5-acre license location (as issued by the State of New Hampshire Fish and Game Department) and base of operations is on the Durham side of Little Bay, approximately 1000m north of the proposed Little Bay cable crossing. We have been culturing oysters at this site since 2011. We, the owners of Fat Dog Shellfish, anticipate that the proposed jet plow and diver dredging operations are likely to adversely impact our operation. Impacts could range from short-term harvest closures and declines in product quality during the project period to larger scale crop contamination and mortality.

Please describe your operation in the context of the proposed project.

Fat Dog Shellfish employs two primary types of culture methods at the Durham site: cage culture and bottom planting. These methods are described below in order to provide context and rationale for the likely impacts from the proposed project.

Cage Culture: Cage culture is our primary approach to cultivating oysters at our Durham license location. As the name implies, cage culture involves containing the oysters in an enclosed structure during grow out to maturity. Cages are typically3 feet wide x 4 ft. deep x 18 inches high. Cages are constructed of vinyl coated wire mesh (similar to a lobster trap) and the mesh sizes range from 1/8 inch to 1" depending on the size of the oyster. Cages are constructed on 4-inch legs to suspend the bottom layers and oysters above the soft, mud substrate.

Oysters are filter feeders and draw nourishment exclusively from naturally occurring plankton in the water column. As the oysters grow, they are graded and moved into cages with larger mesh sizes. Larger mesh sizes allow increased flow through the cages and subsequent food availability to the oysters. Any interruption in flow or contamination by non-food particles can result in diminished growth and product quality.

During the growing season (May –October), cages are held in relatively shallow water on the site (approximately 2 feet at mean low water) where plankton is more abundant. During winter months, cages are moved to deeper water on the site (greater than 5 feet at mean low water) to avoid winter ice and losses due to freezing. During this season, cages tend to accumulate sediment because of increased sediment suspension (due to more turbulent weather conditions and ice scour) and because oysters are not clearing the water around them by pumping and filtering.

Fat Dog Shellfish has a current inventory of 375 cages at the Durham site. These cages house approximately 2.2 million oysters of the following year classes.

2014-400,000
2015-600,000
2016-500,000
2017-700,000 (to be transferred to the site from a nursery from July-September, 2017. At the time of this writing, 250,000 have been transferred)

These numbers are consistent with those submitted to the USDA National Uninsured Crop Disaster Assistance Program (NAP) filed in 2016 and account for overwintering mortality as well as year to date sales.

The value of the total crop according to values assigned by NAP guidelines is as follows.

Year	Quantity oyster	NAP Value $/oyster	Total $
2017	700,000	.13	91,000
2016	500,000	.52	260,000
2015	600,000	.65	390,000
2014	400,000	.65	260,000
		Total	1,001,000

Bottom Planting: Another grow out method employed by Fat Dog Shellfish is referred to as bottom planting or bottom seeding. In this practice, oysters of around 1 inch in size are simply scattered on the mud substrate and then are raked off of the bottom when they reach maturity. Oysters cultivated in this way are particularly susceptible to sedimentation. In 2016, we bottom seeded approximately 250,000 1 inch oysters on our Little Bay, Durham site, many of which have now attained a 2-inch shell length.

What are the potential impacts of the project as you see them?

Temporary closure due to bacterial contamination: As pointed out in a number of technical sessions related to this project, harmful bacteria could lie latent in submerged sediments. Once these sediments are disturbed and redistributed, oysters can take them in during their natural feeding/filtration process. Bacterial contamination is the primary public health concern related to oyster consumption, and also serves as an indicator of the health and cleanliness of waters in which oysters are grown. For example, following a significant rainfall event, the NH Department of Environmental Services closes Little Bay to harvest until testing shows that fecal coliform bacteria has dropped to safe levels, which are set by federal water quality standards. It is our understanding that DES will treat the dredging phase of this project as a "post rainfall event" and will be testing the waters to ensure that there is an acceptable level of bacterial contamination. Exceedence of the bacteria standards could result in harvest closure for some unknown period during the project. Bacterial contamination would result in a complete shutoff in revenue for Fat Dog Shellfish and all other oyster farms in Little Bay for the duration of the closure.

Suspension of sales due to sediment accumulation and poor product quality: As filter feeders. Oysters must take in all fine particles found in the water column, including suspended sediments. When the water column is exceedingly turbid and contains an abundance of silt and fines, this grit can accumulate in an oyster making them unpalatable until the water clears and the oysters can purge the sediment. This happens on rare occasions when there is a significant rainfall event and/or prolonged periods of high winds. It is possible/likely that the significant amounts of suspended sediments resulting from both the jet plow and diver dredging will result on diminished quality of our oysters due to grit accumulation. The result could be a suspension of harvest and loss of sales for the duration of the event and for some period thereafter while the oysters are purging the sediments.

Loss of crop due to contamination by legacy pollutants: It is our great fear that the project will result in the dispersal of some previously undetected toxic contaminant that will contaminate our oysters and make them unsellable or create a significant and permanent public health threat.

Immediate mortality due to sediment deposition: Both cage grown oysters and bottom planted oysters are vulnerable to the impacts of accelerated sediment deposition. As outlined above, juvenile oysters are housed in mesh grow out bags and cages with small mesh sizes. These small mesh sizes are very efficient at trapping sediment. Growers in Little Bay need to be vigilant about keeping these bags free of mud under normal conditions. An increased sediment load over the course of weeks and months could result in mortality, and will, at the very least, require us to expend additional resources on cleaning efforts. Juvenile bottom planted oysters are susceptible to being "silted in" as a result of increased sediment deposition. Typically, oysters pump water and extend their shells to avoid being

smothered by typical sediment loads (a behavior often referred to as "reaching"). However, bottom seeded oysters may not have the ability to pump and add shell fast enough to keep pace with the increased load generated by the proposed project, and the oysters may literally be lost under the mud.

Overwintering mortality due to sediment deposition/anoxia: During fall/winter months, sediment naturally accumulates in the cages due to more volatile weather patterns stirring up sediment, ice sheets scouring the substrate, and lack of pumping by oysters due to their winter dormancy. In cases where we cannot clear the sediment quickly enough in the spring, the accumulated sediment can become anoxia (devoid of oxygen) resulting in greater than 90% mortality of those oysters exposed to these sediments. This typically occurs in about one cage per hundred. One of our primary concerns about the project is that the proponent plans to undertake dredging just as the oysters are entering dormancy. Sediment accumulating will likely be rapid, increasing the risk of anoxia and widespread mortality in cages. This may result in significant losses of oysters across the farm. At best, the cages will require additional cleaning/flushing during the winter months when weather conditions make it most difficult.

Deposition of additional sediments on bottom planted oysters is of great concern to us. These oysters typically "disappear" during winter months due to the natural deposition of sediment. However, as pumping and filtering resumes in the spring, they are able to reemerge. An excess sediment load may exceed their ability to clear winter sediments and result in a permanent loss of this crop.

How might these impacts be assessed?

Proxy monitoring protocol: As is clear from the statements above, the exact impacts of the project are unknown and may range from moderate to severe. The best way to assess the impacts to out oyster farm would be for the proponent to develop and implement a proxy monitoring protocol- a sort of oyster farm in miniature near our farm location where the impacts of the project can be objectively assessed. The monitoring effort should measure the effects of the project on oysters in all year classes (2014-2017) as well as the gear types typically employed on our farm. The protocol should also include monitoring the impacts of the project on bottom-seeded oysters. The protocol would need to assess direct mortality, overall health of the oysters, and product quality so that the impacts of the project on our farm (and other farms nearby) can be fully assessed.

Farm Monitoring Protocol: We would also ask that the proponent develop a strategy to fully assess the direct impacts of the project to our farm, including all gear types and year classes, as well as bottom planted oysters.

How might the impacts of the proposed project be mitigated?

Don't dredge: The only way to completely mitigate the impacts of the proposed projects to our oyster farm and others in the bay would be to find an alternate route or option for the power cable. Any effort to remove the existing cable and bury a new one will likely have negative impacts on our oyster farm and others in the bay.

Choose an alternate dredging technology: The project proponents have chosen a dredging methodology that, more than any other method of dredging that we are aware of, will disturb and redistribute a massive amount of sediment and associated contaminants. There is no precedent for using this technology in Little Bay, and very little precedent for its use around oyster farms and sensitive resource areas. Despite the project proponent's efforts to model sediment dispersal, there simply is no way to know how the entire Little Bay system will respond to the suspension and deposition of such a large amount of fine particles. If rerouting the cable is not an option, a lower impact approach to dredging, such as directional drilling, would be highly preferable to jet plowing in Little Bay.

Dredge during the growing season: If jet plowing and diver dredging must occur, we would prefer that it take place during the growing season (May through October) while oysters are pumping and able to clear sediment from their surroundings. During this period we are able to move through and clean gear more quickly (due to better weather conditions) to clear sediment. Given current staffing levels and resources, cleaning every cage (375 in total) will require the use of a boat with a crane and two experienced individuals approximately six to eight weeks. Unfortunately, there is no way to clear sediment from bottom-seeded oysters. If they cannot clear sediment on their own they will simply be lost.

Implement additional sediment control/removal protocols. If jet plowing must occur, we would ask that the project proponent implement all sediment controls available to them during all phases of the project. It would be in the best interest of Fat Dog Shellfish and all oyster growers that the jet plowing occur only on the incoming tide (all oyster farms are downstream of the project site). However, we understand that this will impact other sensitive resources in Great Bay. We understand that there will be some use of silt screening during the diver-dredging phase of the project. However, given the strong currents and changeable conditions in the bay, we have little faith in the ability of this technology to adequately capture sediments. We would ask that the proponent explore other options for sediment control/mitigation.

Do you have any further concerns about the project?

A major concern that we have about the project that may not have come through in the above paragraphs is the lost time that will certainly result from the project. The project, as proposed, will likely require us to spend a significant amount of time

evaluating and cleaning up impacts. Like all other farms in the Bay, we are a very small operation with one boat and an additional crew of 2 or fewer part lime employees. Our margins are exceedingly thin, and any diversion from our annual cycle will result in significant losses for a company that is just beginning to get off the ground. The project is scoped for a time period when we continue to manage all of our daily operations of grading, cleaning, and harvesting AND we begin to move our entire farm to deeper water for overwintering. We simply cannot afford to be distracted from these efforts. We would ask the project proponents be sensitive to this concern and those listed above as they relate to Fat Dog Shellfish and all of the other farms in the bay.

I thank the New Hampshire Site Evaluation committee sincerely for this opportunity to testify on this project.