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OPEN OCEAN AQUACULTURE: A CONFERENCE

May 8-10, 1996

Portland, ME

Edited comments from the May 10, afternoon session

Agency Panel Discussion

Panel: D. Douglas Hopkins, Senior Attorney, Environmental Defense Fund, New York, New York; Kenneth L. Beal, National Marine Fisheries Service, Gloucester, Massachusetts; Pat Fiorelli, New England Fishery Management Council; Grant Kelly, U.S. Army Corps of Engineers, Waltham, Massachusetts; Phil Colarusso, Environmental Protection Agency.

Moderator: Bill Brennan, Marine and Environmental Affairs Consultant, N.J. Brennan Associates, Portland, Maine.

BILL BRENNAN: What we are going to do now is provide an opportunity for the various federal agencies that Doug [Hopkins] has identified in his paper to provide you with an overview of what it is they do vis à vis aquaculture. I have also asked them if there was anything that Doug presented in his remarks that they felt compelled to rebut or to bolster, to do so. I have asked them to each speak for about eight to ten minutes so that we can have plenty of opportunity for questions to be directed at any of the agency representatives.

The first agency representative that I would like to introduce is Ken Beal. Ken is an assistant chief of the state-federal constituents' programs division of the National Marine Fisheries Service in the Gloucester office. He is responsible for oversight of all fishery development activities in the northeast region. During his career with the fisheries services, Ken has been responsible for fisheries management and environmental assessment, fisheries policy and oceanography.

KEN BEAL: As Bill noted, my background is somewhat checkered. It goes into a number of the different issues that we are talking about in this discussion. The habitat portion of my background has given me an opportunity to work with the Rivers and Harbors Act of 1899. I have had a very intimate relationship with the [U.S. Army] Corps of Engineers. I spent my military time as a fishery biologist for them in one of their district offices. My first job with the National Marine Fisheries Service was in the headquarters working with the Section 10 permit program. I do know it quite well. More recently, for the past ten years or so, I have been involved with fisheries development activities and this has been primarily working with the Saltonstall-Kennedy grant program, but I have also had some time in management, so I have worked very closely with the [Regional Fishery Management] Councils.

All of these different phases have given me a different piece of the pie. Sometimes when you are trying to figure out how an agency reacts to a particular situation, it's good to have a little bit more than one, narrow approach. Trying to look at how they look at one aspect, without seeing the bigger picture. I think that is perhaps why it is a pleasure for me to be here and if it clears some heat that you folks would like to address towards the NMFS, I'll be glad to take that too.

The balancing act within the National Marine Fisheries Service covers fish management, fisheries development, conservation, a number of different aspects. In aquaculture you see an endeavor which is truly a fisheries development approach.

I think that the agency realized, as aquaculture was developing, that we did have an interest but we also saw some problems. Chris Mantzaris and his crew in the Habitat Division worked very closely with the State and developed a joint permit review process so that as an aquaculture developer began his permit process, he could go to one office or one individual and say, "What do I need? What are the steps that I need to go through?" and he would get most of the answers that he was seeking. This is the type of approach that we would like to see in other states and this is being pursued by Chris Mantzaris and his staff. Within the National Marine Fisheries Service we have a risk-averse or a conservation-first approach to fisheries issues. While we are responsible for the marine resources, I think that with any development that may be impacting on the marine resources, we have to take an outlook that if those resources are going to be adversely affected, we have to address that up front. That is our first concern.

The federal role in interacting with the other federal agencies, I think, is one which many of the different offices within the NMFS are involved on a daily basis. We have fisheries researchers at Woods Hole and other laboratories along the coast that are involved with aquaculture. The Milford Laboratory in Connecticut, which Don Calabrese heads up, was created specifically for aquaculture and it is a great source of expertise for anyone who is interested in pursuing this in the northeast.

While we don't necessarily know how this aquaculture activities decision-making process is going to settle out with our agency and how we react to the responsibility for aquaculture in the northeast, I think I do agree with Doug that the National Marine Fisheries Service has a significant role in the marine environment. If permitting responsibility, leasing or whatever it happens to be, is vested with one of the federal agencies it seems logical that it be with the National Marine Fisheries Service.

Within the last two years the funding we have provided through the Saltonstall-Kennedy grant program for aquaculture has amounted to over \$5 million. In some of those proposals there were matching funds which totaled over \$2 million, so all together there is \$7 million that has been invested in the northeast in aquaculture in just a few years. While our investment in this industry is not the end result, I think that resolving the problems that have faced many of the aquaculturists in permitting problems has been facilitated by the fact that these grants are in place, that they have money—they have access—to try to resolve some of the problems. We have invested and we want to see them succeed.

If the permits they need are being held up by other federal agencies, state agencies, and in some cases local governments, then there is added incentive for those bodies to come up with solutions because of the investment that is behind the request.

Open-water aquaculture, while I think it has some inherent risks, may be a solution to some of the developmental pressures on the coastal zone where high real estate values practically force our options. Looking at Down East Maine: Eastport and Lubec, in that area where the opportunities are perhaps a little greater for acquiring leases, I have been told that most of the suitable lease sites have already been secured. So, perhaps the growth is somewhat limited in that area. Maybe open water is the solution.

The first that I became aware of open-water aquaculture was the American-Norwegian Fishfarm proposal which was so massive in scope that the initial reaction for most people hearing about it was concern for the impact on commercial fishermen. Obviously, there are interactions

between the commercial fisherman, recreational fishermen and other users of the open ocean that have to be accommodated in any proposal, whether it is eighty square miles, nine square miles, or a few acres. I think possibly, special use areas may be a solution. Looking at Stellwagen Bank and hearing Brad Barr talk about the situation there in the sanctuary—perhaps this is one of the approaches that might be pursued. I am not suggesting that it is “the” solution. Single use of any resource is somewhat limiting.

We have a couple of studies that are going on now with polyculture, one of which is growing sea scallops in near proximity to salmon net pens. Another is looking at use of the increased nutrients from salmon net pens to try to accelerate growth of nori or the algae known as *Porphyra*. Some of these opportunities for polyculture may be the solution in special use areas. I think we need to look at that perhaps a little more closely.

There are no simple answers that I can offer you today. But I do want to leave you with the message that the National Marine Fisheries Service is certainly interested in the industry. We want to take actions that are environmentally sound but our interest in fisheries development, in opportunities for growth that will help the public at large, are there as well.

BILL BRENNAN: Our next presenter is Pat Fiorelli. Pat is a member of the New England Fishery Management staff who came to the Council after working for some years at the New England Aquarium in Boston. Pat’s duties at the Council are extensive and include being responsible for several of the Council’s standing committees including the aquaculture committee, the habitat committee and the marine mammals committee. She also serves as the Council’s liaison in its public information office.

PAT FIORELLI: I would like you all to keep in mind that I am a Council staffer not a voting Council member. So, I would be happy to carry your messages back.

I think a number of previous speakers have referred to the New England Fishery Management Council and its current and perhaps future role in aquaculture. I thought I could give a brief description of the organization for the benefit of the out-of-towners. The Council is largely an appointed body comprised of seventeen voting members. It is charged with conserving and managing fisheries resources in federal waters off New England. The five coastal states: Connecticut, Rhode Island,

Massachusetts, New Hampshire and Maine, as well as the National Marine Fisheries Service, are each represented by a voting member.

If any of you were here for Cliff Goudey's talk you may recall that the Westport Scallop Corporation sought Council approval for the location of their project seven miles south of Martha's Vineyard in the EEZ [Exclusive Economic Zone]. Although I am sure the concept of aquaculture existed somewhere way back in the Council's consciousness, I can assure you it was not a priority for them. Hence the resulting process. Consideration of the Westport project, in fact, was shuffled around to various Council subcommittees, each one requiring a new briefing on the particulars. Approval was eventually given, but it was a painful experience, I think, for all involved. It should be clear that the basis for the Council's reluctance did not stem from a desire to block the project. Council members simply were not sure what to do or even how to do it since there had never been a project proposed of this nature before. One had been proposed but it never came to fruition.

Quite deliberately at that time, the Council did not want to back into major questions associated with the preemption of ocean bottom for the exclusive use or the potential for the pivotal displacement of traditional commercial fisheries. The complexity of those issues aside, the Council policy, or perhaps the lack thereof, and the process as it exists today with a project of this nature, are clearly not suitable. In this first test case, the Westport Scallop Project, the Council approved an area closure to facilitate the project because it was characterized as an eighteen-month-long, experiment and demonstration project. I think we can be certain that the next proposal will not be of this nature. I suspect that a commercial enterprise will come forward and the Council will have to deal with more issues another time.

Fortunately, Bill Brennan's report to the Council has prodded them into taking the next logical step in the development of an aquaculture policy. To assure those of you who doubt that the Council will ever carry on with this issue, the Council's Executive Committee very recently charged staff with this task and made it a priority issue. I also think it is important to remember that the Council does not have to reinvent the wheel. There are numbers of ocean aquaculture policies, and very good ones, that exist within the United States and elsewhere. So I think that piggybacking them, borrowing or stealing, might be appropriate. Although policy development has barely begun, at least it gives you some idea of what direction the Council is headed. Some of the aquaculture committee members have already been discussing what the policy might

look like or at least some options that they might want to bring before the Council.

As the first order of business, the Council must establish an advisory committee comprised of individuals who can speak to the interests of the aquaculture industry. Second, the Council must also develop a strategy for resolving allocation and space issues. As has been discussed, the Council could play a central role in the inevitable conflicts between aquaculturists and fishermen and, perhaps, other users that haven't yet surfaced. A better tool than the current fishery management plan process is needed to accommodate the establishment of aquaculture sites. Whether this occurs in the form of an overarching fishery management plan, which contains an efficient mechanism to deal with each individual project, the establishment of special management zones so that projects could be clustered, or participation in some sort of review, the open-ended time frame for the development of fishery management plans will not suffice. At the very least, the Council could identify areas of high use by traditional fishermen.

Finally, I don't think I am speaking out of turn when I say the Council does not envision itself as the lead entity in what hopefully will be a one-stop shopping process. The Council is interested in serving as a participant, and certainly not as a impediment, to a process that will allow a particular industry to move forward.

The best advice I can probably leave you with is the fact that the Council system is a very open one that allows for lots, and lots of public input; there are also advisory committees that we use very actively. I encourage you all, as the Council embarks on this process, to attend those committees, to be put on a mailing list to be notified of opportunities. So please come. Thank you.

BILL BRENNAN: Our next speaker is Grant Kelly. Grant is a senior project manager in the Regulatory Division of the Corps of Engineers in Waltham. He is a civil engineer graduate from the University of Toronto. He has been with the Corps for twenty-one years. In addition to reviewing permits for aquaculture activities in the state, he also handles permitting for all Massachusetts highway projects, including the central artery project.

GRANT KELLY: I think in the great patchwork quilt known as the federal regulatory policies of aquaculture projects, I would argue that [the Corps'] square in upper right hand corner with the pink hearts and flowers

on it is a little more sewn together than most others. You'll be the judge of that after I go through the process for reviewing permit applications and some of the regulatory issues that come out of them.

As has been suggested, the primary vehicle under which we do this regulation is Section 10 of the Rivers and Harbors Act of 1899, which empowers us to traditionally view near-shore structures that may or may not have the interference potential for navigation, typically: piers, floats, buoys, moorings, and dredging operations near shore. But, clearly, when you look at the wording in the statute and as extended by more recent laws that have extended the Corps authority beyond out into the EEZ, we do have regulatory authority over these matters that we exercise and will probably continue to do so until some court tells us not to.

How does this process work? Basically, an applicant appears on our radar screen at some point as a blip in the form of an application for a project, small or large. On large projects we will probably issue a public notice, invite the public to comment on the project, listen to and react to those comments and engage in a rather formal consultation processes with our sister federal agencies—specifically, EPA [Environmental Protection Agency], the National Marine Fisheries Service [NMFS], and the U.S. Fish and Wildlife Service. We do this routinely on all projects, not just aquaculture projects. So, I would propose that there is a mechanism in place that does, indeed, take some of those squares and put them together into a comprehensive review package.

I am going to talk a little bit about some of the issues that come up in aquaculture projects just to let you know that we do, certainly, more than ocean aquaculture projects. In terms of volume, the bulk of our regulatory activity is in the near-shore area, principally on intertidal shellfish aquaculture activities, a lot of which are around Cape Cod. We have an expedited permit process for these since we determined that they are rather minor in the extent of any adverse impacts on the environment. So, they don't go through a public notice process. But, again, we do interact with the other agencies in those projects to make sure that there are no resources that could be adversely impacted by activities from those projects. Two projects that have been instructive are the American-Norwegian Fishfarm Project, which has been talked about today, and the Wesport Scalloping Project. They provide good examples of issues that surfaced during the regulatory process.

Conflicts with navigation is one of the more traditional review criteria which the Corps brings to bear on these projects. It was certainly an issue on the American-Norwegian Fishfarm project. Subsequent to our initial

granting of that permit for the project, the Department of the Navy objected, indicating that it was within a lane for deployment of submarines out of Portsmouth. I was a little alarmed to find out that a \$50 million state-of-the-art platform with all kinds of electronic gear couldn't see a few nets in the water, but apparently that proved to be the case. We ultimately ended up revoking that permit. In the revised form, it is still under review. I'll talk in a few minutes about what some of the issues are that still have not been resolved on that.

Typically, we will be looking at these projects from the standpoint of potential interaction with navigation—both commercial and recreational use of the offshore waters.

Another issue is the issue of structural adequacy. A lot of issues surfaced during our review of the American-Norwegian Fishfarming project that led us to believe that if any substantial portion of fish from that rather massive project were to get loose in the environment, there could be some adverse consequences. As a result, we had a real concern that the system, both the pen system and the means by which it was attached to the ocean floor, was adequate to withstand the conditions that extend fifty miles off Gloucester, in the Gulf of Maine. As it turned out, that project really had no design, per se. It was purely an ad hoc selection of components that were put together with the wishful thinking that, hopefully, if something occurred out there they would hang together and the project would stay intact, and where-put. We were not convinced. And as a matter of fact, the project right now is undergoing, to the best of my knowledge, some model testing at the University of Michigan to try to give us some level of assurance that, indeed, those components of the project are adequate to the task at hand. On something that size there are some fairly serious implications associated with failure of the mooring system of the components of that project. In addition to fish loose in the environment—a substantial number of fish, hybrid salmon, loose in the North Atlantic—there is also the possibility of practically a mile of pen systems afloat in shipping lanes.

I will talk a little bit about the impacts of proposed projects on threatened or endangered species. Another project which we worked on that was not particularly an offshore project, but again instructive of the process, is the Dutra Shellfish Sea Scallop project off Truro in Cape Cod Bay. Originally it was proposed to have a number of net structures in the water column, in which these animals were going to live. Full build-out, which was the basis of the seeking of the permit, would have comprised a substantial number of lines and nets in the water column. We engaged

in consultation with the National Marine Fisheries Service pursuant to Section 7 of the Endangered Species Act and that consultation culminated in a jeopardy opinion out of NMFS for that particular project. This is to say that the project, as fully developed, would have had an adverse impact on both the northern right whale and critical habitat where the project was proposed. The proponent of that particular project, given that situation and finding out that he was not likely to get a permit with that finding on the street, basically scaled down the project and essentially removed all gear from the water column. It is now an essentially on-bottom project with some up-lines just to mark where it is and to retrieve some of the gear. Ultimately, the permit was issued for that modified project. But clearly, this process, with consultations under Section 7 of the Endangered Species Act, is important to address these issues of potential interaction with marine animals.

Marine environmental issues arose to a great extent in the American-Norwegian Fishfarm review. There were many issues that came up having to do with water quality, water column, benthic sediment or quality, operational factors having to do with the project, net cleaning, husbandry issues, and issues that EPA will address in the normal course of reviewing for an NPDES [National Pollutant Discharge Elimination System] discharge permit, that is, the discharge of both feed and antibiotics into the environment and finally some major issues having to do with do with monitoring. We consulted closely with EPA on this matter and even though the permit was ultimately issued, there was a great deal of consultation on the record in that project and the applicant was instructed to go back and produce information that had been deficient in his original application.

One of the other issues that arose during the review of the American-Norwegian Fishfarm project was the potential impact of farmed animals on wild stock, particularly in the event of escapes. Would there, for instance, be any interbreeding between the farmed stock and the wild stock? Would there be displacement of breeding habitat by any escaped wild animals? These are all issues that were raised and addressed again in the consultation process with the agencies. There were issues of disease transmission both from the wild stock to farmed animals and from farmed animals back into the wild animals by a variety of factors. Again, we sought answers to some of these questions, but answers were not all forthcoming. A lot of the disease issues were recently raised since the original issuance of the American-Norwegian Fishfarm permit.

Use conflicts have come up again and again and will continue to be one of the biggest bugaboos, from my standpoint, having to do with authorization of aquaculture activities in the EEZ. You can almost guarantee that you can put your finger on any spot in the ocean and propose an aquaculture activity there and in short order, the current users of that particular piece of ocean will come out of the woodwork and tell you that their livelihood is fully or partially-dependent upon that [area] remaining free and open. It poses major issues in terms of adjudication of these competing use issues about which the Corps does not feel particularly comfortable. We don't like being cast in that role and, in a minute, you will see when we talk about public trust doctrine issues, we don't believe we are granting any exclusivity in our Corps' permits for these structures and this gear in open ocean.

Basically, in this issue, our feeling is that New England Fisheries Management Council has the authority to close areas and grant exclusive use to areas for aquaculture permits if they so choose. In the case of Westport Scalloping, that is exactly what is going on. The Corps issued its permit, essentially for the deployment of gear and equipment in federal waters, and that project is moving forward to gain exclusive use of the area which was not at all implicit in the Corps' authorization.

Allow me just a moment of time on a body of law that is collectively referred to as the "Public Trust Doctrine" and I'll defer to Doug before getting into too much detail on this. Essentially, it is a body of law that holds that the oceans are held in trust by the government for the American public and, to the extent that any part of that area is given over for private commercial use, either on a lease or some other exclusive use basis, that there should be a fee flowing back to the government, to the people, for that use. Certainly, there is no such fee involved in the Corps permit and I would argue that we, again, are not granting that use. We are not dealing with the issue of the public trust doctrine. It is not clear to me at this time who should be. Certainly, nobody seems to be at this time.

Basically, those are the types of issues that we are dealing with in these projects. We believe we are doing so in a coordinated manner with other agencies and certainly we feel that we have the authority under Section 10 to do this. Thank you.

BILL BRENNAN: Our next speaker is Phil Colarusso. Phil has been with the Environmental Protection Agency since 1989. Over the years he has worked on a wide range of coastal projects from power plant and port development to dredging and ocean dumping.

PHIL COLARUSSO: Thank you. When I was invited to speak here, I was asked to speak on EPA's policy on aquaculture. My response was that EPA does not have a policy on aquaculture. The person told me that was okay, say that in eight minutes or less.

So, I will talk about some of our interactions and how we address the aquaculture industry in general. A lot of the regulatory framework, all my thunder, has been stolen by a lot of the previous speakers, but I will try to be brief and go over some of the important points. (Let me put in another disclaimer: putting together this talk on open ocean aquaculture, I advised] the American-Norwegians in a large project. So, with that I will leave it to you.)

[One of] the three main regulatory mechanisms that EPA focuses on in relation to aquaculture is the National Environmental Policy Act [NEPA]. I think that NEPA is, for our Agency, one of the most important tools and would like to convince you that: (1) it is not a tool designed to stop development; and (2) it is a process that can help the industry as well as help the environment. NEPA requires the production of Environmental Impact Statements [EISs] and the whole environmental impacts assessment process. I think that the advantage to EPA and the environment is obvious: impacts are assessed in advance. I think the advantage to the industry is that a lot of these proposals sometimes are not fully thought out; when people apply for permits and apply for financing, all the potential implications are not assessed. What potentially can happen is that a project can go forward and have unforeseen impacts and fail down the road. Giving the entire industry a "high risk" label is unnecessary [and] could affect future financing for other enterprises. So, from our perspective the environmental impacts process is one that can make good projects better and makes projects that are not good, fall under their own weight.

The second trigger or involvement that EPA has is under the Clean Water Act. The Corps issues Section 404 permits for placement of fill. EPA comments and has veto authority for placement of fill in navigable waters. The final regulatory point is, as we mentioned, EPA issuance of NPDES permits. I would disagree with Doug and say that our attorneys feel fairly comfortable that EPA can require NPDES permits for pen facilities. We feel that we are on solid legal ground. Open ocean facilities also fall under Section 403(c) of the Clean Water Act, which requires a full review of potential impacts to endangered species, sensitive resources and variety of other factors, making it almost a big EIS process. So, whether the process goes through NEPA, if it is in the open ocean, it

will get a NEPA-like review anyway in order to receive an NPDES permit.

The two other points I would like to make are (I am glad I get to speak last because I get to rebut everyone's previous points): First, that Doug had mentioned significant regulatory burdens in state waters. Being involved in the process in Maine, particularly with salmon net pens, I think that the State of Maine and the federal agencies have done a tremendous job loosening the regulatory burdens for those facilities at no expense to the environment whatsoever. I think the program that Laurice Churchill operates is tremendous. It is better probably than any piece of paper that she gave—a discharge permit or anything like that. She had those people on the ground, working with the industry. It is better for the environment than anything that I can do in Boston. I would just like to make that point. The second point I would like to make is that EPA is neither an advocate for aquaculture nor an opponent. Our job is to review proposals based on their merits. The good proposals will rise to the top; the bad ones will fall. I have a sense that EPA is viewed as an opponent of aquaculture, but I can assure you that is not the case.

BILL BRENNAN: Thanks, Phil. I would like to second your laudatory comments regarding Laurice and the program that she operates.

You have had a presentation by Doug, expressing his view and his organizational views of the process, the failing, and to some extent the strengths, of the statutory process vis à vis aquaculture. You have had a presentation from the various cognizant agencies on their involvement and what they see as their involvement and their role. Hopefully that has evoked some questions or some points of contention to stimulate some discussion. So, with that, who wants to go first?

AUDIENCE (ROLLIN B. JOHNSON): I am sure that there are a lot of things that people in the audience can identify that are problems with the process. I think it would be enlightening to hear from the agency representatives what they see from the inside as being problematic or what the biggest difficulties are with the process.

PANELIST (GRANT KELLY): Let me respond to that with particular emphasis on Massachusetts right now because it is where I do my permitting. I'm most familiar with that setup. I believe the biggest single regulatory problem at this time is the lack of an integrated federal-state-local program. An applicant has to wade through local permits, possibly

three to four different state permits, and then the federal permit process. So, clearly, there is a need for Massachusetts to move in the direction in which Maine has already moved, and that is to integrate state and federal processes. I think in Massachusetts it is a little more complicated because some statutes that empower the local governments give them power in addition [to the State's powers]. Clearly we need to streamline the process and move towards one-stop shopping.

PARTICIPANT: I would second Grant's comments. I worked in Massachusetts and was involved in a white paper where we were putting together aquaculture policy and the big thing was one-stop shopping. We held up the State of Maine as an example to everyone else as a success story. In Massachusetts it is a little more difficult. Local conservation officials have added another layer of review to permitting as well. I would agree that one-stop shopping, again, could be restructured so that the environmental review remains at the state level.

AUDIENCE: My comments are to the agency people. At a time when all of you are struggling to fulfill your mandates (some better than others) and at a time when you are looking at declining budgets, it seems to me that even beyond this policy integration and regulatory integration that you've been talking about, there is a resource bottleneck here. It is one thing to talk about grabbing jurisdiction over a topic, but if you don't have the resources to exercise your responsibilities that come with that jurisdiction, it's really no help in moving the point forward. I am curious as to how you plan to find the resources within your agency to do the work necessary to respond to proposals that people want to bring forward.

PANELIST (KEN BEAL): Within our agency we have several mandates and aquaculture crosses many of these. First of all is the permit review process, which Chris Mantzaris and his staff conduct on a regular basis. But, if we have a grant, for instance, to conduct an aquaculture research project, it may also involve special exemption or a research permit that we have to issue within the agency. That involves the Fisheries Management people and if there is some potential interaction with endangered species and marine mammals, then there is a review there as well. In answer to Peter's comment: there are no extra resources that I would say that we need to rely on to conduct these different kinds of review. It's just a matter of making sure the emphasis is there so that the decision is made in a timely manner. Chris, do you want to follow up on that?

(CHRIS MANTZARIS): Yes, if I could add a little bit. I disagree with Ken. I think I can answer the question. I think the reason why some of this is moving the way it is moving is because none of the agencies have been precluded [from acting], yet [they] have not made a firm commitment to deal with aquaculture as a major activity. So there is no one to take up this cause of one-stop shopping. That is one small area. When we get an application, we deal with it as Ken said, through the Endangered Species Act, Marine Mammal Protection Act, the Rivers and Harbors Act, and through Fisheries Management. Now, it is only by the good graces of particular staff in the regional office, that it gets transferred over to the Fisheries Management office. If that initiative wasn't there, it would probably sit for a couple of months. So, there isn't any dedicated effort to do this. To get that effort, you need the resources to go ahead and define and develop a program that can take on these kinds of concerns and do the one-stop shopping not only for permitting activities but also to encourage the kind of research or a type of questioning that needs to be answered. That doesn't exist in the agencies; we are all reacting right now. We are not in a proactive mode. We are all dealing with it permit-by-permit.

(GRANT KELLY): To some extent the first two or three permits for big projects through the pipeline get bogged down because we are dealing with issues that haven't been focused [on] prior to that time. But once those issues get surfaced and addressed and the means of addressing and finding answers to these impacts is in place—it is worked out on those first two programs—I think the regulatory process tends to get more streamlined and more efficient as you get the third, fourth and fifth application through the process. So, I don't think it is fair to assume that our level of efficiency a year or two from now will be as awkward and cumbersome as it was the first few times through.

PARTICIPANT: I would like to agree with both Chris and Grant. I agree that as we do more of these, we will become more efficient. I agree with Chris, that there is no advocate yet on the budget level, but what we are seeing in Maine is that advocacy for state law exists and that is what Massachusetts is trying to do now. That is where, I believe, the energy and money is going to need to come from, in the short term, anyway.

AUDIENCE: Has anyone taken a look at the before and after costs of one-stop shopping?

PANELIST (DOUG HOPKINS): The really obvious, but possibly counter-intuitive, conclusion from this discussion is that there needs to be a stronger presence in Washington advocating for adequate authorization and for adequate appropriations and budgeting for these functions that this industry depends on. It amazes me how burdened agencies are, how much their responsibilities increase, but they can always do it with what they have got. The truth is that they really need our support early on in the process, when they are fighting for those scarce dollars. The environmental community also should be fighting for adequate funding at the federal level for this oversight responsibility.

AUDIENCE (CLIFF GOUDEY): I have a question for Pat. I have privately, and I want to thank you publicly, for what you have given to the process we have gone through. I also want to single out Phil Coates as a singular champion for our cause. Not necessarily for blind support for what we were going to do, but for pushing the process and realizing the inertia that it was exhibiting. I was struck by one of your comments. It was that the Council or maybe [John Helmsman], chairman of the aquaculture committee, was already in the process of crafting some policy or regulations. That troubles me because I am not sure there really is any one of the Council members that knows enough about the needs of aquaculture to start the process. I would ask you to take back to the membership [the message to] get people involved who know what they want and possibly what the concerns are in other areas and to get those people in the loop as soon as possible before any serious decisions are made.

AUDIENCE: Just a statement from an outsider. It appears that there are numerous committees, federal and state, and you are waiting for a one-stop shop to be set up for aquaculture. You could be waiting for a hell of a long time. Wouldn't a good starting place be for applicants, because we are talking about a new industry, new group, to get out and do something? The gentleman talked about being proactive and you all seem proactive. Wouldn't it be good if an applicant had, from each of the groups, maybe the four or five points which would have to be included in an application? The applicants could address all of those points rather than feel, like a lot of applicants in Australia have felt, that they are being picked off one-by-one by each of the agencies. If each of the agencies would state maybe just four or five points that have to be addressed by a corporation on an application, then maybe someone can put the four or five papers together so when someone comes with the idea to do an aquaculture operation,

you've got it together. This is the first sort of proactive move, getting linkage between all the various government agencies.

BILL BRENNAN: If I may take the liberty of responding to that. One-stop shopping, at least as it is practiced in the State of Maine, is a misnomer because it is not one-stop shopping in that you go in and after a while you get everybody's permit. Through the process that we work with, with the various federal agencies and the state agencies, the Maine Department of Marine Resources became kind of the point of contact, the place where an applicant would go to get all of the necessary application materials, which, I'll be the first to admit, are far more than four or five requirements of each of the agencies. The intention was to put up front to the applicant the various requirements that they would have to meet while the different agencies are reviewing the application.

AUDIENCE: To answer the question, or the idea, we have already been considering doing this. We have already started putting materials together. We are planning on having a home-page online and are going to put on the information regarding what is necessary from each regulatory agency that requires some sort of permit. We will also to include step-by-step instructions, what you need to do first; what you need to do second. That is going to be online and, hopefully, for those who are not online, we will also have some sort hard copy for those who are not inclined to join me in the cyberspace revolution.

BILL BRENNAN: It must then be the General Services Administration home-page.

AUDIENCE: I was struck by much of the discussion over the last three days about who ought to be, at least in the United States, the lead authority for aquaculture. I must say I am amazed to hear the suggestions that there is a central role for the Fisheries Management Councils to play in this because in the public policy meetings I've been to over the last three years that involved the Council system, people say [the Council system] doesn't work, its overburdened and it is grinding itself down. There are major fisheries initiatives that are being removed from the Council process. Aquaculture is a brand new interest group. It has major potential conflicts with all of these traditional user groups that already gridlock the Council system. I think this conference has really done a good thing to focus this question: Who is going to be the lead agency at

the federal level? Many of the aquaculture interests here, I don't think, have a real close-up view of the Council system. If I were in your shoes, I'd really think seriously about this.

BILL BRENNAN: Obviously spoken by a man who really is enthralled with the Council process and rightly so. As one who is a participant in it, what I am trying to point out in the paper that I presented is that whether or not you like the Council process, the statutes have to be amended in order to get aquaculture out from underneath the Council, or at least the issues that the Council is involved with. The Magnuson Act, as I pointed out yesterday, does have some very far reaching implications for aquaculture. Whether it's the Council or the Fisheries Service who are engaged with it is almost irrelevant at that point.

PANELIST (PAT FIORELLI): I thought I made it clear that the Council does not wish to take the lead role. The Council, I think, is the appropriate forum to deal with allocation of space issues. It has been involved with that sort of thing for a number of years and I think it might serve best as facilitator, but I don't think it would be comfortable and certainly would not want to take on the entire role as the lead agency.

PANELIST: I agree that the Council doesn't have the expertise and that it is already overburdened with fisheries management. There are some ideas that Pat [Fiorelli] has that have merit that could incorporate the Councils into a role that is essentially led by the National Marine Fisheries Service. They include broader, general management plans that can cover aquaculture. The Council does have, and it is using frequently, a streamlined rule making authority under fishery management plans. I think you are going to see the Councils using those more and more, simply to get the work done faster. There is nothing that you could pick up off the shelf right now that creates a working system but there are some good ideas and, as Bill [Brennan] said, the statutes get amended rarely and it is very difficult to amend them the way you want to. The Magnuson Act isn't going to be reauthorized [by Congress] for another five years. If you are waiting around to get a statutory amendment for any of these models, you may be waiting around for a long time.

AUDIENCE: It wouldn't hurt to repeal that section [of the Magnuson Act] that authorizes the Fishery Management Council system.

AUDIENCE (CHUCK ELLSLEY): I am a long way away from this region, but I would like to make an observation, if I may. It seems that we have had a very interesting session, from my perspective, with lots of opportunity being presented and lots of challenges. I would like to comment that if every fisherman who currently can't go out and catch cod would apply for an aquaculture permit, you would find out what the real problem was. You couldn't possibly react to all those applications in a timely way. Time is money to people. If they don't have any employment for their vessels, the vessels are going to rust and go to the bottom of the sea or the bank is going to have them and the bank doesn't want them. My reaction is that someone has to take a more proactive stance on these matters and, basically, argue that the "West" was not "won," as we heard this morning by somebody sitting back passively saying, "Gee whiz, what's out there we want?" What I see happening here is "why should we be interested in aquaculture?" Somebody has to take the proactive stance and say "we are going to implement a best use policy that says the best use for this parcel of water is, indeed, aquaculture, not conservation, not navigation, not something else, but this is an aquaculture place." We need to take that proactive stance so we can get some movement going. I don't know how else to say it, other than very bluntly, I don't see that happening. I would hate to see this meeting end without some kind of proactive stance. It has been a very proactive meeting, but we have a regulation problem that we have to take a proactive stance about.

AUDIENCE (MARK WHITE): As a outsider from Ireland, I offer a couple of comments with a lot of resonance to what the last speaker from Hawaii said. I was just thinking today of the differences between Ireland and America. As one person said, America doesn't need aquaculture in terms of the major industrial wisdom. It is a small section that its just beginning to realize and I think that that wisdom has come true in Ireland. Take a look at Ireland a lot of energetic people, a great tradition, and the industrial base is just realizing [...] My mother has a great expression that says when "ignorance is bliss; 'tis folly to be wise" and I think of that comment in the context of public policy. There is a lovely line from an Irish poet, which some of you may have seen, where a guy called McCabe takes a field back from nature the old Irish way with seaweed and sand, but he kills a guy along the way and he gets arrested by the local sergeant. Although the sergeant was having a problem fitting the crime to the guy, he said, "McCabe, I always knew you were a very intelligent man." McCabe turned around to him and said, "Well, you see

sergeant, the problem with being ignorant is that you have to be fierce clever.”

I am not sure how to manage and to develop the industry without a policy. I would say that without a policy you are ignorant and that trying to regulate without a policy requires great cleverness. In my past experience I got a discharge license for a smolt unit and one of the conditions on the license was that the water should be between 7.5 and 8.5 pH. I was in the west of Ireland, in granite rock where we had problems keeping the level of pH coming into the pond at about 6.0 so the eggs would hatch. We never paid too much attention to the regulations and nobody bothered to check us out. It was through ignorance, through lack of policy [...]

One of the reasons that I am here this week is to take a break from my policy work which is one tedious mother of a job. It seems to me that there is nothing more important, in fact, than all the agencies that deal with the aquaculture industry—the fish farming industry—that there is nothing more important than them getting together, knocking their heads together and coming up with policy which is coherent, which is rational, which resolves the problems that are getting deeper and deeper between conflicting users.

How do you tell a fisherman he can't throw his net in this forty-yard square? How do you tell guys who have been having yacht races that they have to tack once around the farm before they can go through? They are really minor, minor issues once you get down to it, but you still have to resolve them. You can't run away from them. Otherwise, if you don't have a policy, the thing will be run on personal issues.

Some of the ladies and gentlemen at the table might be hung up about the genetic impact of one percent releases on the fish and because there is no policy, their personal opinion will carry. Policy has to be bigger than one person. It has to have something rational that it carries forward. I hear language this morning: equipment failures, unknown consequences, benthic impacts, effects on water quality. In the context of open-ocean aquaculture a lot of these things have been very, very well measured and, in fact, most of the consequences, once you get out on the ocean, are immeasurable. Aquaculture shouldn't be judged by the impacts of major industrial bases. It should be judged on its own merits.

AUDIENCE: I understand that one of the Councils—it might have been the Gulf of Mexico Council—issued or authorized an open-water aquaculture operation. I wondered how they handled the exclusivity issue.

PANELIST: (PAT FIORELLI): I don't know. I know that the Gulf Council has a method by which they evaluate these things and I'm not sure if they charge fees or not. It is something our Council should look into.

AUDIENCE MEMBER FROM NOVA SCOTIA: We do have one-stop shopping where we liaise with eleven other government agencies. My job is to process one application including [getting approval from] the other eleven agencies. At the end of this process they get their lease license. We have also dispensed with public hearings after coming to a couple in Maine. I shouldn't say all of them. We still have them in about twenty percent of the cases. We have RADAG, which are Regional Aquaculture Development Advisory Groups, where we turn user conflict situations back to the communities. So, what you do is basically have a round table where we invite representatives from the community to come in, and to represent their comrades in the community, and they make the decision whether or not that aquaculture site is a valued economic advantage for their own community. I was really overwhelmed by the amount of work an applicant is required to do. Our turn around time is six to nine months after application. We approved eighty-four licenses last year.

BILL BRENNAN: One of the things that always struck me when I heard things like that was clearly the difference in the governmental systems. I could not imagine telling people in our form of government here that, "Sorry, we have made a decision and there will be no public hearings." Although I certainly understand that there are many areas, including in aquaculture, where public hearings are really unnecessary because the issues are fairly boilerplate, nevertheless hearings are, in our statutes, required.

AUDIENCE (LEE ROBERTS): They are required in our Act. What we have done is invite the community. In the majority of them, we have encouraged them to set themselves up. What they do is basically stop a group of lobbyists, consultants and the sort of scenario where you get the different user groups coming in saying "You are really threatening my livelihood." When they have their next door neighbor sitting at the table who knows it is not true, it generally comes to the forefront. Many of these are really as heated as a public hearing, but they are conducted in a much more civilized manner and at the end there are some communities that use secret ballots. They don't want their neighbor to know they voted

against a site that may impact on him. But we do have all the use groups such as land owners.

I don't know if many of you are familiar with Nova Scotia, but on holidays we are one of the most utilized recreational areas in Canada, possibly in North America. Three years ago, before we had RADAG, ninety percent of the applications were rejected. Since the inception of RADAG, ninety percent were approved. So, it made a real difference in community education. Most people didn't know what aquaculture was or what aquaculture could do. We are a little different from the States in that we rely very heavily on fisheries and tourism so we haven't said that aquaculture is going to replace the jobs that we lost in fishing, but we have been able to get back some empowerment to those smaller communities where they can get together and do something about the economy.

BILL BRENNAN: There are many attributes of your [Nova Scotia] system that we should probably emulate.

AUDIENCE: Just a short comment to follow the Canadian participant here. It looks like she's gone in exactly the same direction. She cited to the Resource Management Act of 1991, a document which each of the local regional councils take out and basically just put their own letter-head on it. It gives the guidelines or conditions which are required by the statutes to meet marine navigation, and to address environmental concerns. The whole emphasis of the document is on the fact that you are using a resource, and you will have to show that your impact on that resource is going to be minimal, and to show all the different types of mitigation measures you have that actually remove conflict for the different groups. The basis of the effort is then to go out and meet all the user groups in advance. She basically gets windows of support or letters that indicate that they would like it done in a different way. If you apply up to 9.9 hectares, the council has the opportunity to approve your lease directly without public consultation, if you have done the consultant work in advance and got all their comments. Over ten hectares, the prepared document is advertised, it is given twenty-eight days in the paper, which is the circulation paper in the area. It is published twice on normally maximum circulation days. There are twenty-eight days to reply. The council gets the list back, goes through it, and rejects the ones which are totally absurd. The realistic ones with real concerns are brought together by the council. They talk to each one of them and come to a compromise situation. Initially they thought it was going to be a major disaster but it

has done two major things. The crisis now is really up front. Everybody knows what you are required to do as an applicant and you are also dealing exactly the same as you can with people you can actually reach—not people who are sitting in Washington or sitting on the far side of California; people you can reach and express your interests to. It is a much easier route to work with than we have. We have, I think, now 1827 marine farm units which are alive and active in New Zealand, in Australia and different places, but since the Resource Management Act it has become a much, much easier, decentralized process to group them to the people with the real interests in the area where you want your marine farm.

AUDIENCE: There is a potentially useful example in another technology sector for the kind of process that has to happen in the open-ocean aquaculture industry. That is the biotech industry. In 1972, Stanford recombinant DNA techniques were discovered. By the early 1980s, a biotechnology industry with commercial products started to come along and there was absolutely no sense of how the potential environmental risks were going to be regulated. The Office of Science and Technology Policy, a part of the White House under the Reagan administration, started a process to bring agencies together to work out how to use existing statutes that had nothing to do with biotechnology to cover all the potential risks that biotech posed. This led to publishing a policy in 1986 called the four-digit framework for regulation of biotechnology with three principle federal agencies that have roles assigned to them under it. They then go out and write regulations implementing applicable statutes. It is the kind of thing that this gentleman over here talked about: A policy exists that had White House approval and it also had involvement of the industry in developing it. There are still plenty of fights with the framework that has emerged, but what is useful about that particular process is that like with aquaculture, there were many, many environmental concerns at the outset that proved not to be as serious as expected three, five, ten years down the line. The idea was built in at the very beginning that this regulatory framework would have to evolve over time. It would have to continually refocus those issues that were the most serious risks and gradually reduce or eliminate regulatory responsibility for risks determined not to be as serious. It's clearly a living framework that is continuing to evolve. For it to happen, it required a really strong and continuing strong national presence of the biotechnology industry.

AUDIENCE: I just want to raise the question of the role of the Department of Agriculture. I believe they have the lead role in aquaculture. Maybe really a simple approach here is, and I know the discussion is going on between Agriculture and the National Marine Fisheries Service, to form some sort cooperative way of dealing with or forming a group to become an advocate for aquaculture. Generally, the U.S. government has never been an advocate of industry in the sense that it pours money into it through various programs, but it doesn't go out and generate an interest for that particular activity. I think that is one thing that we are lacking. We don't have advocates that go out and form these interest groups and form these local groups to get together to work together for legislation.

BILL BRENNAN: It is evident to me, given the nature of the questions, the amount of questions, that those of you in the industry certainly feel that it is going to be far easier to overcome some of the technical obstacles than it will be to overcome some of the regulatory burdens that you confront. I would like to thank the panelists for their participation and their presentations and I would also like to thank all the people that have had questions, comments and suggestions.

