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By e-mail and Regular Mail
Eric Bush, Bureau Chief
Program Development & Support Section
Bureau of Submerged Lands & Environmental Resources
Department of Environmental Protection
2600 Blair Stone Road, MS 2500
Tallahassee, FL 32399-2400

Re: Offshore Fiber Optic Cables

Dear Eric:

PBS&J has been asked to provide its independent technical opinion regarding the videotape presented by Dr. Ray McAllister at the September 28, 2001 public hearing on offshore fiber optic cables, and on related comments made regarding the impacts of cables on Florida's hard bottom reefs. The video was entitled "Reef Gap Proposal"; however, the video went beyond being a "proposal" to being a forum to describe perceived environmental impacts caused by cable installation and the existence of cables on the hard bottom. The video entirely ignores the fact that we (the industry and government) have gone through a process of developing Best Management Practices (BMPs) and a mitigation process that has resulted in reduced impacts to the hard bottom community and more than adequate compensation for any measurable impacts. As detailed below, many key points made in that videotape and associated presentation were factually incorrect. The presentation therefore greatly overstated the actual, measured impacts of cable installations on the hard bottom communities that they cross.

PBS&J Qualifications

You may not know that I started my career as a biologist and permit processor with the Florida Department of Environmental Regulation in the West Palm Beach district office. As a result, I am sensitive to the information needs of the permit processors so that they can properly analyze projects through the information that comes into the process from various sources.

I am a member of a group within PBS&J that specializes in natural resource damage assessment (NRDA) and restoration of environmental resources including hard bottom and seagrass systems. We have assisted the U.S. Department of Justice in vessel grounding cases in seagrass and hard bottom areas within Biscayne National Park. This effort has included the design and costing of restoration projects and litigation support for several grounding cases in seagrass beds and the groundings of the *MV Igloo Moon* and *Allie B* on hard bottom within the park. We also are members of a team that has a task order contract with the National Oceanic and Atmospheric Administration (NOAA) for NRDA support. We have done support to NOAA for the restoration of hard bottom damaged by the *R/V Columbus Iselin* on Looe Key National Marine Sanctuary.

We also performed the restoration after the grounding of the *Contship Houston* on hard bottom in the Florida Keys National Marine Sanctuary between American Shoal and Maryland Shoal north of Key West. In this case, we negotiated with the responsible party and the federal and state government to avoid lengthy litigation and perform the restoration in a timely manner under a Memorandum of Understanding.

I have been a member of Florida Power & Light Company's emergency response team as the member and trainer of the corporate NRDA team. Last year under contract to the Florida Department of Environmental Protection (FDEP), I was a member of a team that designed and performed training programs for state permit processors on seagrass and hard bottom systems. In addition, we have been doing courses with the Florida Chamber Environmental Permitting Short Courses on permitting in the marine environment.

As you know, I have been working with the fiber optic cable industry on installations over hard bottom systems. In this process, and because I entered the work after impacts from the installation of the Americas II and Columbus III cables were already done, I used several tools that we have developed for the performance of NRDAs. This includes the use of the Habitat Equivalency Analysis (HEA), a tool that has proven to be effective in many situations with impacts to sensitive habitats.

Review of the Reef Gap Proposal Video

I have reviewed a copy of the video presented at the public hearing by Dr. McAllister, provided to me by Mr. Douglas Fry at FDEP. I reviewed the video with the eye of someone who has reviewed the installation of nine cables over hard bottom in southeastern Florida and monitored those cables and the associated mitigation tasks for up to two years after the installation. I have noticed several problems with this video and have described them briefly below.

1. Barrel sponge "split by cable". The description in the video of damage done by cables leads off with an image of what is described, as a "barrel sponge split by a cable this will be fatal to this particular sponge." The nearby cable in question is described on the video as the "M-2 cable", which is how we tagged the MAC-2 cable landed at Hollywood. This cable was landed in mid-1999. We performed the Year-2 monitoring on the repaired corals on that cable in August of this year.

   From the white edges of the tears in the barrel sponge in the video, however, the damage clearly was done much more recently than the installation. Nor did it result from subsequent movement of the cable, since we have documented that the cable has not moved. Specifically, we have had a monitoring program in place at each 300 ft monument along the cables over hard bottom. The cables have not shown movement at these locations over the 2-year monitoring program, even though these cables were in place during the passages of Hurricanes Floyd and Irene, which we document as high wave events in the monitoring program. Therefore, the damage in the video must have been caused by something else – probably the anchor of a recreational boater. In any event, contrary to the voiceover, barrel sponges regrow after this type of damage.

Some barrel sponges were impacted during the installation of the cables. We have been casually observing and photographing some of the injured sponges along the cable routes. The sponges heal along their edges and regrow. I will post on the PBS&J FTP site video clips of barrel sponges that were impacted by cable installation that have healed and will provide all with access methods for those clips. One sponge, in particular, that was split during installation has healed so that it appears that the cable was pulled through the sponge (see the attached photograph).

2. Cable alongside a brain coral. Next the video shows a cable laying against the side of a brain coral; a Type 2 coral in our assessment of impacts. On the video the diver pulls the cable off of the coral, while the voiceover states that the contact area "is a place where potentially algae could move in and kill it".

   As you may know, algal invasion is a problem for hard corals on our hard bottom systems in south Florida. This problem has been highlighted by invasions of *Codium* in the offshore environment in late summer during the last few years. The primary cause may be increased nutrients in the water column derived from sewage outfalls and urban runoff and/or upwelling. We are concerned about the long-term viability of the corals following various impacts and restoration methods. We have two parts of monitoring program that addresses these concerns. One, during the year-2 monitoring, we revisited, measured, and photographed Type 1 and Type 2 impacted corals along the Americas II and Columbus II cables to test the assumptions which we used in the development of the HEA for the installations. I have observed only one case--where the Americas II cable rises up a ledge at the western edge of the second reef--where a coral was abraded beyond the area of immediate contact. Two, we have designed and performed a monitoring program on the reattached coral colonies and have shown statistically that the reattached corals are not demonstrating any significant increase in new damage, i.e., including invasion by sponges or algae, as compared to reference coral colonies. In short, our monitoring has found no evidence of cable-coral contacts causing algal invasions.

   It is clear from the video that this particular coral, consistent with our general observations, had already begun to grow around and fuse itself to the cable. Again, I will try to post a video clip of a *Montastrea annularis* head that is growing and fusing with the cable (see attached photograph). One can see on the McAllister video, bits of coral broken off by the diver pulling the cable off of the coral. Unfortunately, the destructive action of the diver on the video, reopening a healed wound, has put the coral at increased risk of the algal invasion of which the voiceover warns.

3. Cable(s) under loose coral heads. Next the video shows several coral heads on top of one or more cables. The voiceover states that "the cable is underneath the coral head, which means the coral head had to be flipped up and land back down" on the cable. A diver is shown lifting up at least one of these loose coral heads that is not associated with a cable.

   The video does not identify the cable or cables in these images or when these sequences were filmed, but they are misleading when they imply that cables caused dislocated coral heads to be left on the bottom. We know that all coral heads dislocated by installation of the cables landed at Hollywood and Boca Raton have previously been identified and re-attached. (For example, PBS&J inspected and videotaped the entire route of each of the five Hollywood cables shortly after their installation, re-attached any dislocated coral heads found, and has

monitored random representatives of those coral heads to ensure their continued re-attachment.) Therefore these images may have been taken some time ago, shortly after installation before the dislocated corals had been repaired.

Alternatively, these images may represent corals dislocated by some other cause other than the cable and placed on the cable. We find dislocated coral heads almost anytime we dive on the reefs in southeastern Florida. These heads may be experiencing increased bioerosion (eroding of the attachment base to the hard bottom), which may be the result increased nutrients in the water column in the nearshore environment. The final dislocating force may be the result of recreational boaters anchoring on the hard bottom areas (see attached photograph). We find that, at times, divers, possibly local County program divers, move these dislocated corals on or near the cables for relocation and later repair.

FYI, Broward County has an active, funded program to relocate dislocated corals. They have begun using the AT&T artificial reefs as a recipient site for these corals.

4. "Hard corals cut in half". The next narrator on the video, identified as Lynn Woodhouse of Lighthouse Dive Centers, refers to "hard corals cut in half" as part of the impact of cables that have "devastated hundreds of years or growth of these corals".

   First, we have videoed the entire length of the five cables crossing the hardbottom areas off of Hollywood and two cables at the ARCOS site off Sunny Isles, and have not seen any hard corals cut in half. Second, while these cable installations have had a small measurable impact, "devastation" is a wildly inappropriate description. Others and we have carefully measured the area of hard coral touched by the recent cable installations at Hollywood, Boca Raton, and Sunny Isles and the totals per cable are as follows:

	Hollywood	South Boca Raton	North Boca Raton	ARCOS
Average hard coral density over hardbottom crossed	1%	0.6%	0.2%	0.5%
Total area of hard coral impacts per cable (shaded corals at 10%) (square feet)	2.75	0.39*	0.06*	2.03

* Average from available data

   Water Movement Moving Cables. The video shows a diver moving a cable that is suspended above the bottom for some distance. The cable is not identified but it seems to be the same M-2 (MAC 2) cable at Hollywood. Suspensions occur along the cable installations when they cross substrate of varying height and result in the Type 1 (shaded) coral colonies. The longer suspensions as shown in the video typically occur in deeper water (45 to 90 feet) on the third reef. The voiceover asserts that a hurricane could move such a cable "violently".

   First, one should distinguish between cables lying on hard bottom and cables suspended as they cross high, hard bottom outcroppings. All the evidence from multiple sites of varying ages suggests that cables lying on hard bottom do not move laterally, even under hurricane conditions. Instead, they become encrusted and part of the hard bottom and buried in the

bottom in the sand areas between the hard bottom areas, further stabilizing them over the hard bottom areas.

Portions of cables that are suspended, on the other hand, may be expected to strum or vibrate in some cases. But even with such suspensions, the evidence that we have observed during our monitoring events is against either wide or "violent" movements. As noted above, we have examined all of the points of contact with hard coral of the Americas II and Columbus III cables landed at Hollywood. As described above, only one area at the shallow end of the second reef shows evidence of broadened wear, approximately 5 inches in width, due to movement of a suspended cable.

5. Bentonite drill mud filling voids. Dr. McAllister on the video expresses concern that attempts to drill "through the live reef" could lead to bentonite drill mud filling "passages" in the reef and killing the creatures (he mentions lobsters in particular) that live there.

   His comment seems based on a misunderstanding of typical directional drilling techniques. First, such drilling has never yet been attempted under the third reef, upon which his "gap study" focuses. Second, I am told that such drilling typically proceeds tens of feet below the seabed, until it curves up to surface in a sandy offshore area. The biologically active area of the sandy areas is limited to about the top 6 inches; the biologically active area of the reef to which the video refers (i.e., holes and crevices used by lobsters and others that travel to the reef surface) is limited to about the top foot or few feet. I know of no drill mud "frac-out" associated with a cable deployment in south Florida that has emerged through or otherwise impacted a coral-bearing hard bottom. Therefore it is highly misleading for the video to state that drill mud typically "moves into all the hollows of the reef", since this has never yet been known to occur.

The Big Picture.

There is no doubt that Florida's reefs face major challenges today. Impacts to corals are constantly being discussed on the coral list, an e-mail forum about coral issues. The biggest problems are nearshore pollution from urban areas and global warming. Somewhere further down the list is the physical impact damage from the anchors of recreational boaters (see attached photograph). Those anchor impacts clearly exceed the impacts from undersea cables, even during the busiest period of cable laying that this state has ever seen, in 1999-2000. As Ken Banks of the Broward County Department of Planning and Environmental Protection has expressed to me, on a single calm weekend day, recreational fishermen and divers do more damage to hard corals in Broward County than has any one of the cable installations in the county. His comment fits with my experience; there is not a day that I dive on the reefs that I do not find another hard coral damaged by an anchor and/or bioerosion.

Note also that the damage done by cables has been carefully measured and monitored over time, and these impacts are compensated for many times over (according to the HEA) by the creation of artificial reefs, which are already flourishing with fish and epibiota. No such mitigation is provided by the other sources of damage listed above.

I am not suggesting that we should ban recreational boating to save the reefs (though many anchoring behaviors should be improved). Nor am I suggesting that cable installers should stop trying

to minimize impacts from cable installations, including using reef gaps when appropriate; to that end, the gap-mapping done by Dr. McAllister under contract to FDEP may provide useful additional information in the project planning process. However, such gaps are only one factor that should be taken into consideration in private planning and public review of a cable project. The effects of such projects in Florida have been carefully measured and monitored under conditions set through FDEP permits, and are not at all what the video would lead one to believe.

I hope that you can see--from my background and my analysis of these projects--that I always attempt to take a balanced approach that in the end results in a net positive for the environment and, hopefully, a true understanding of the impacts of projects on the environment. If you have any questions or comments, do not hesitate to contact me at (904) 367-8683 extension 242 or drdeis@pbsj.com.

Sincerely,

PBSJ

Donald R. Deis
Senior Scientist

Attachment

Exhibit A
Selected Still Photographs
from
Hollywood 2-year Monitoring Video
August 2001

Figure 1. - Barrel sponge split by cable fusing together.

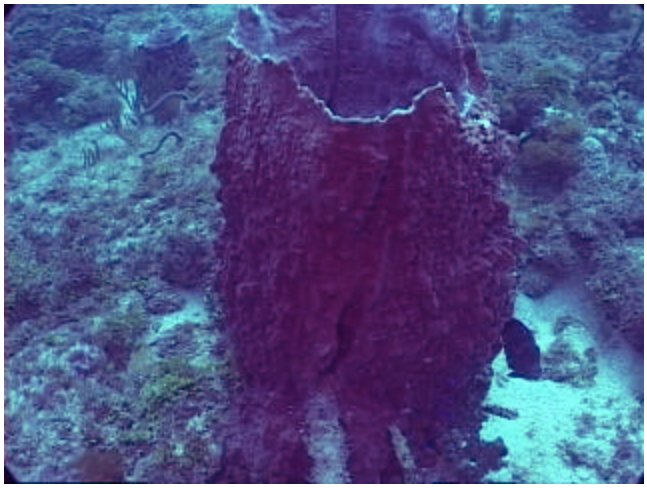

Figure 2. - Barrel sponge split by cable fusing together.

Figure 3. – Coral *Montastrea annularis* fusing onto and growing up the cable.

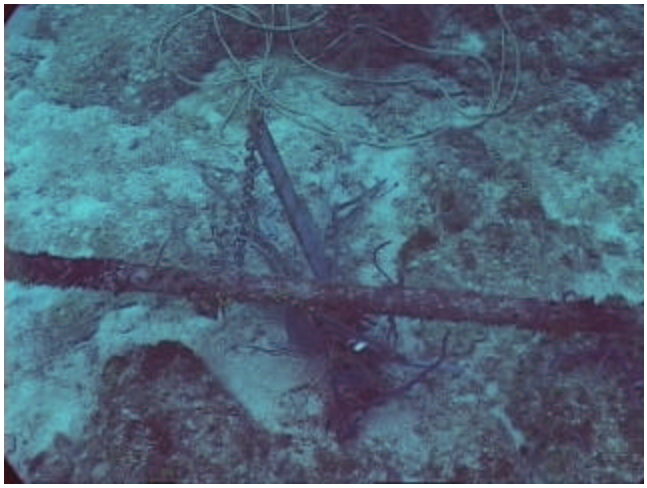

Figure 4. – Galvanized boat anchor found fouled on the cable.