

Memorandum

To: Jeff Fryer (CRITFC)
From: Steve Anglea
Re: Bonneville AFF PIT-Tag Antenna Placement
CC: John Whiteaker (CRITFC)
Date: April 8, 2014

Biomark attempted to install a pass-through antenna within the BON AFF fish ladder return channel on 25 March 2014 (Figure 1). Inspection of the noise floor, conducted by PSMFC, on the existing BO3 system indicated interference between the existing system and the antenna at this location, thus preventing installation. Earlier noise listening measurements conducted near the entrance to the channel (Figure 2) did not result in interference with the BO3 system. This location was rejected due to possible disruption of flow and fish striking the antenna (Figure 3). Interference occurred at the alternative location due to the antenna being rotated 90 degrees; this was not taken into account when considering this location for potential antenna placement.

On 26 March 2014, we tested an antenna at the exit to the return channel. The antenna placed at this location did not generate interference on the existing BO3 system. The antenna required for this location is larger than the antenna intended to be installed, due to the need to extend beyond the opening for placement of anchors. The BON AFF channel was watered up at 1330 hrs on 26 March 2014, preventing any further work within the channel.

There are two options for placement of an antenna within the channel.

- Option 1: Install pass-through antenna at exit (Figure 4).
- Option 2: Install floating antenna at exit (Figure 5 and Figure 6).

Option 1 would provide the highest detection efficiency as fish are compelled to swim through the antenna. This antenna could be connected to the existing FS1001M reader (FDX-B only) in the facility. Installation would require one day within the channel.

Option 2 would likely provide acceptable detection efficiency as the nominal detection range of the antenna is 24 inches; water depth is approximately 18 inches. Additional testing will need to be conducted to determine if this antenna in a slightly different orientation results in noise on the BO3 system. The floating antenna could be installed from the deck and operated on a standalone Biomark IS1001 reader placed on the railing above this location (Figure 7). Rigging to secure the antenna would be contained within the existing gate slots.



Figure 1. Antenna placed at proposed alternative location. Antenna at this location resulted in elevated noise levels on the existing BO3 system.



Figure 2. Antenna placed at entrance to BON AFF channel during noise listening survey conducted in fall 2013. This location was rejected due to possible flow disruption and fish strikes.



Figure 3. Antenna positioned near the entrance to the exit channel to confirm results from earlier noise listening effort. Fiberglass (FRP) ramps would be used to reduce flow disruption. This location did not result in noise on the BO3 system, but did raise concerns about possible fish strikes and flow disruption.

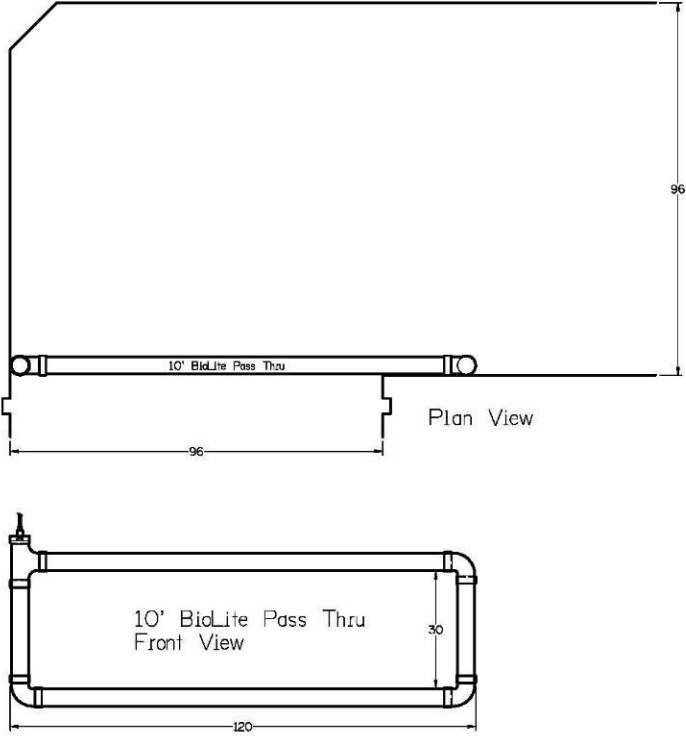


Figure 4. Plan view of potential antenna location at exit to BON AFF channel. FRP ramps would be used to secure the antenna to the channel wall and reduce flow disruption.

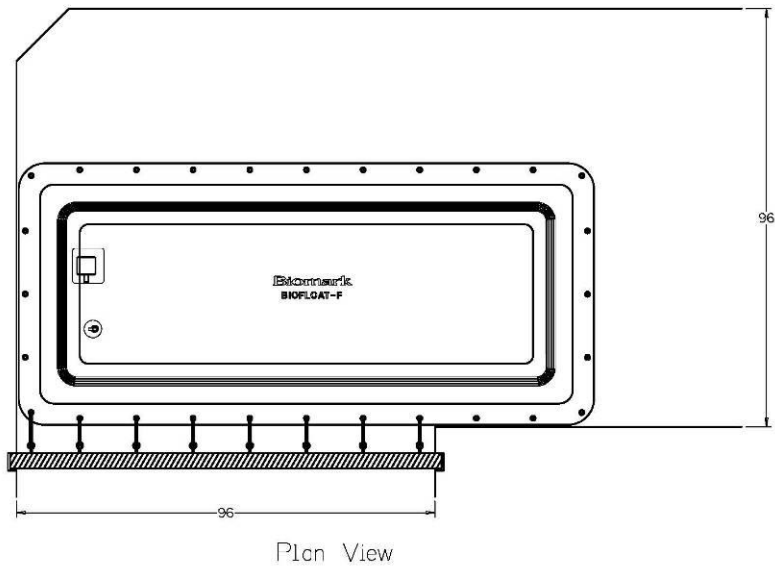


Figure 5. Plan view of 10' BIO Floating antenna at exit to BON AFF channel. First section of shade cover would need to be lifted up, from deck, to allow installation of the antenna.



Figure 6. Picture of 2-10' BIO Float antennas installed in the Okanagan River, BC in spring 2014.



Figure 7. Picture of gate slots at exit to BON AFF channel.