Warren Colyer
Watershed Programs

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Les Perkins
Farmers Conservation Alliance
14 Oak Street, suite 302
Hood River, OR 97031

Dear Les:

I am writing this letter in support of FCA's bid to have the Farmer's screen accepted as an approved technology by the National Marine Fisheries Service. Over the past seven years Trout Unlimited's Watershed Restoration Programs have installed over 40 fish screens in the states of Utah, Idaho, Wyoming, and Montana. Our goal to date has been to install as many different types of screens as possible in order to be able to evaluate the efficacy of different designs in different situations. In 2008 we installed two FCA screens on Fish Haven Creek, a tributary to Bear Lake in southeast Idaho, and these two fish screens have been among our most successful to date.

Most of TU's fish screen installation has occurred in the Bear River watershed in Idaho, Utah, and Wyoming, and in the Snake River watershed in Idaho and Wyoming. These projects are aimed at protecting migratory life histories within native fish populations—specifically Bonneville cutthroat trout in the Bear River and Snake River finespotted cutthroat trout in the Snake River. In both systems it is the migratory fish that are at greatest risk of entrainment in irrigation systems, as they move between main stem overwintering and feeding habitats (and in some cases lake habitats) and tributary spawning and rearing habitats every year. Along the way they pass countless irrigation headgates and canal intersections where they often are directed into irrigation systems. Many of these headgate locations are unique, and we have found that some fish screen designs perform better than others depending on the configuration and operation of these irrigation systems. For this reason, having a suite of different approved screen technologies benefits our restoration work and provides the flexibility that we need in order to address and eliminate entrainment problems.

To date TU has installed the following types of fish screens: rotary drum, Hydrolox vertical belt, Coanda, FCA, and flat plate wipers. Each of these screen types has advantages and disadvantages relating to cost, configuration, and local site constraints. We have found that given the right conditions, the FCA screen design is the most effective relative to maintenance and operation requirements.

Our Fish Haven Creek restoration project entailed screening five different irrigation ditches prior to removing a culvert barrier near the mouth of the creek that had prevented large, adfluvial Bonneville cutthroat trout from moving out of Bear Lake into historic spawning and rearing habitat in Fish Haven Creek. As such, these screens needed to protect not only juvenile outmigrants, but also the large post-spawn adults that return to the lake after spawning. At the two upstream-most sites the

irrigators never diverted all of the water from the creek, so there was always bypass flow available to sweep the screen. These sites were also remote and forested, making power hook-up (including solar arrays) infeasible. We determined that the best screen alternative at these sites would be a passive, self-cleaning design with a compact footprint. The FCA design fit these criteria better than any other. Alternatively, at the downstream three locations, the irrigators had the water right and capacity to divert 100% of the stream flows during some seasons in some years. Our preferred screen design given this constraint is either a rotary drum or vertical belt design, as the 'active' cleaning mechanism (driven by power or paddle-wheel) keeps these screens clean and passing water even when no bypass flow is available. At the Fish Haven locations we installed rotary drum screens at these three locations based on their low cost relative to vertical belt screens.

All five of the Fish Haven screens successfully prevent entrainment of adult and juvenile Bonneville cutthroat trout in the Fish Haven irrigation system. During the summer of 2010—the first year that adfluvial migrants had access to the stream following the culvert removal—we documented close to 50 adfluvial redds and over 100 adults spawning in the system. In the fall of 2010 the creek was teaming with juvenile trout. On two separate occasions we witnessed trout moving through the forebays of both the rotary drum and FCA screens and returning to the stream via the bypass pipes.

Whereas both the rotary drum and FCA screens effectively prevent entrainment in Fish Haven Creek, the FCA design requires almost no maintenance while the rotary drum screens require lubrication, seal maintenance, and frequent adjustment. A major advantage of the FCA design is that there are no moving parts and they require much less day-to-day adjustment. Once the screen was set we have not had to adjust the weir boards or any other part of the screen since, regardless of streamflow. Conversely, the rotary drum design requires the irrigators to add and remove boards as flows change in order to maintain the water levels over 60-90% of the drum face. This, coupled with the need to add and remove boards to maintain paddlewheel operation, can be complicated and difficult to communicate to irrigators. Lastly, the installation of the FCA screens involved much less on-site disturbance than did the rotary drum installations. The compact footprint of the FCA design allowed for less excavation, and most of the excavation that was required was confined almost completely within the existing irrigation ditch footprint. In comparison, the modular rotary drum screens were much larger and required much more extensive site preparation and excavation.

In summary, we have been extremely pleased with both the efficacy and low-maintenance requirements of the FCA screens. In fact, this design is now our preferred alternative in situations where site-specific constraints allow for a passive screen. If you have any questions or would like to discuss this further please don't hesitate to contact me. Thank you for your time.

Sincerely,

Warren Colyer
Director