

January 3, 2022

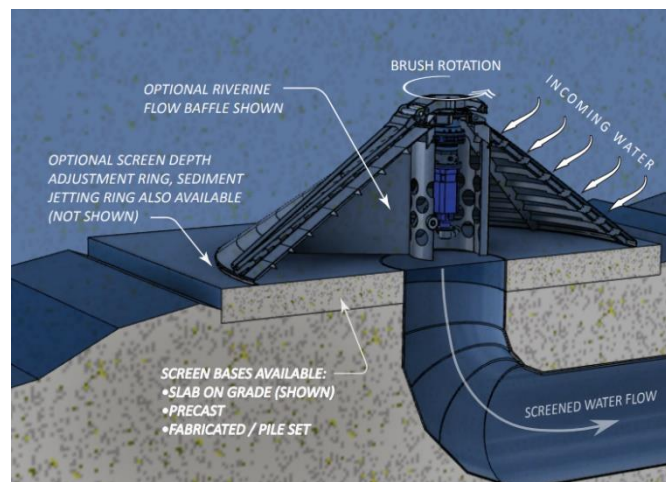
Tonia Tabucchi Herrera  
Nevada Irrigation District  
1036 West Main Street  
Grass Valley CA 95945

**Subject:** Hemphill Diversion Project  
**Re:** Concept Design Change to Cone Screen

Dear Tonia Tabucchi Herrera:

On November 3, 2021, McMillen Jacobs provided a draft version of the Conceptual Design Report (CDR) for the Hemphill Diversion Project that included a concept design for the removal of the existing diversion structure, the construction of a roughened ramp fishway, and a Farmer's Horizontal Fish Screen in the Hemphill Canal. On November 23<sup>rd</sup> and 24<sup>th</sup>, comments on the CDR were received from California Department of Fish and Wildlife (CDFW) and National Marine Fisheries Service (NMFS), respectively. The majority of these comments are items that would be developed as design moves forward. However, there were comments related to the Farmer's Horizontal Fish Screen that would require significant coordination and time to address and would likely affect the overall project budget.

While we believe that the Farmer's Horizontal Fish Screen is an excellent solution for the Hemphill Canal that provides well researched protection of fish, minimal head loss, debris management, and a competitive cost, we understand that an extended design process would be necessary to establish design criteria for a horizontal screen system that would satisfy CDFW and NMFS. Given the short timeline to complete design, we have revisited the alternatives that were considered in the CDR and recommend that design continue with a cone screen (see image below) manufactured to meet current CDFW and NMFS design criteria for an active screen.



The inlet structure for the cone screen will be set at a lower elevation than the bottom of the low flow channel in order to maintain sufficient depth of water for irrigation diversion. Because this area will likely collect some sediment, a sediment sluicing system could be installed to manage sediment. As sediment collects near the bottom of the screen, a valve or gate could be temporarily opened to sluice the sediment out and discharge it downstream.

The current concept is for one 78" diameter by 21" tall cone screen with an automatic brush cleaning mechanism. A screen of this size would allow up to 12 cfs to be diverted. This screen would provide Nevada Irrigation District (NID) with the flexibility to increase deliveries in the future. However, if demand on Hemphill Canal increases beyond 12 cfs, a second screen would be required. As currently drawn, a larger intake structure would be installed which would allow for the addition of a second screen in the future. Current design includes stop logs that would allow for the dewatering of the screen as well as a divider wall allowing for the cone screens to operate independently of one another.

Flow would pass through the cone screen into a pipe (24" – 36" in diameter) that would discharge into the existing Hemphill Canal through an outlet headwall structure with a flow control head gate. Because a portion of the pipe downstream of the cone screen would be under full pipe (inverted siphon) conditions at all flow rates, an ultrasonic flow meter could be used to measure canal flow. Downstream of the outlet structure, the existing canal bottom would need to be re-graded for approximately 200 feet. This would include the existing concrete gage structure.

We understand that while this change will answer a number of the questions and comments that were raised in the CDFW and NMFS comments to the CDR, there are a number of comments that remain which will be addressed as design progresses. We look forward to working with NID, CDFW and NMFS in the coming months. Please feel free to forward any comments, questions or concerns you may have.

Sincerely,



Jon Burgi  
Project Manager



Kevin Jensen  
Project Engineer

cc: File