Species or Lifestage	Minimum Water Depth	Prolonged Swimming Mode		Burst Swimming Mode		
		Maximum Swim Speed	Time to Exhaustion	Maximum Swim Speed	Time to Exhaustion	Maximum Leap Speed
Adult anadromous salmonids	0.8 feet	6.0 ft/sec	30 minutes	10.0 ft/sec	5.0 sec	15.0 ft/sec
Resident trout and juvenile steelhead trout >6”	0.5 feet	4.0 ft/sec	30 minutes	5.0 ft/sec	5.0 sec	6.0 ft/sec
Juvenile salmonids <6”	0.3 feet	1.5 ft/sec	30 minutes	3.0 ft/sec	5.0 sec	4.0 ft/sec

(These values are used to assist in prioritizing stream crossing for treatment and do not represent whether or not a stream crossing currently meets DFG or NOAA passage criteria).

Table IX-6. Minimum water depth requirements and swimming and leaping ability inputs for *FishXing*.

FishXing and other hydraulic models report the average cross-sectional water velocity, not accounting for spatial variations. Stream crossings with natural substrate or deep corrugations will have regions of reduced velocities that can be utilized by migrating fish (Figure IX-20). These areas are often too small for larger fish to use, but can enhance juvenile passage success. *FishXing* allows the use of reduction factors that decrease the calculated water velocities proportionally. Accounting for areas of reduced velocities may be appropriate for the analysis of juvenile passage through certain types of stream crossing structures. *FishXing* also requires a lower and upper fish passage flow. To calculate these flows refer to the previous “Hydrology and Flow Requirements” section.

Stream Crossing Inputs

During the site visit, all required stream crossing information will have been collected for the passage analysis. Input the appropriate stream crossing type, material and length, whether it’s embedded, corresponding roughness values, and the bottom elevations of the inlet and outlet.

Next, define the tailwater elevation with respect to the stream crossing outlet. The tailwater elevation often determines whether the culvert is a barrier. A high tailwater can backwater the culvert for easy passage. Too low of a tailwater elevation will leave the outlet perched above the downstream channel. There are three different methods to choose from, depending on the type of information collected during the field survey (Table IX-7).