Table 1 Seasonal occurrence of selected life stages of anadromous salmonids in the Upper Sacramento River, California, based on Schafter (1980) and Vogel and Marine (1991).

Life Stage	Species	Month											
		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
Adult Migration	Winter Chinook				X								
	Spring Chinook					X							
	Fall Chinook										X		
	Late-Fall Chinook	X											
	Steelhead												
Spawning	Winter Chinook						X						
	Spring Chinook									X			
	Fall Chinook											X	
	Late-Fall Chinook		X										
	Steelhead												
Juvenile Residence	Winter Chinook												
	Spring Chinook												
	Fall Chinook												
	Late-Fall Chinook												
	Steelhead												

X = Denotes approximate peak of life stage if a significant peak occurs.

Table 2 COLDWATER REFUGIA

Table 4.5-4
Comparison of a Range of Summer Temperatures in North Fork Battle Creek Downstream of Eagle Canyon Dam Site with and without removal under Identical Inflow above the site and spring flow below the site[1]

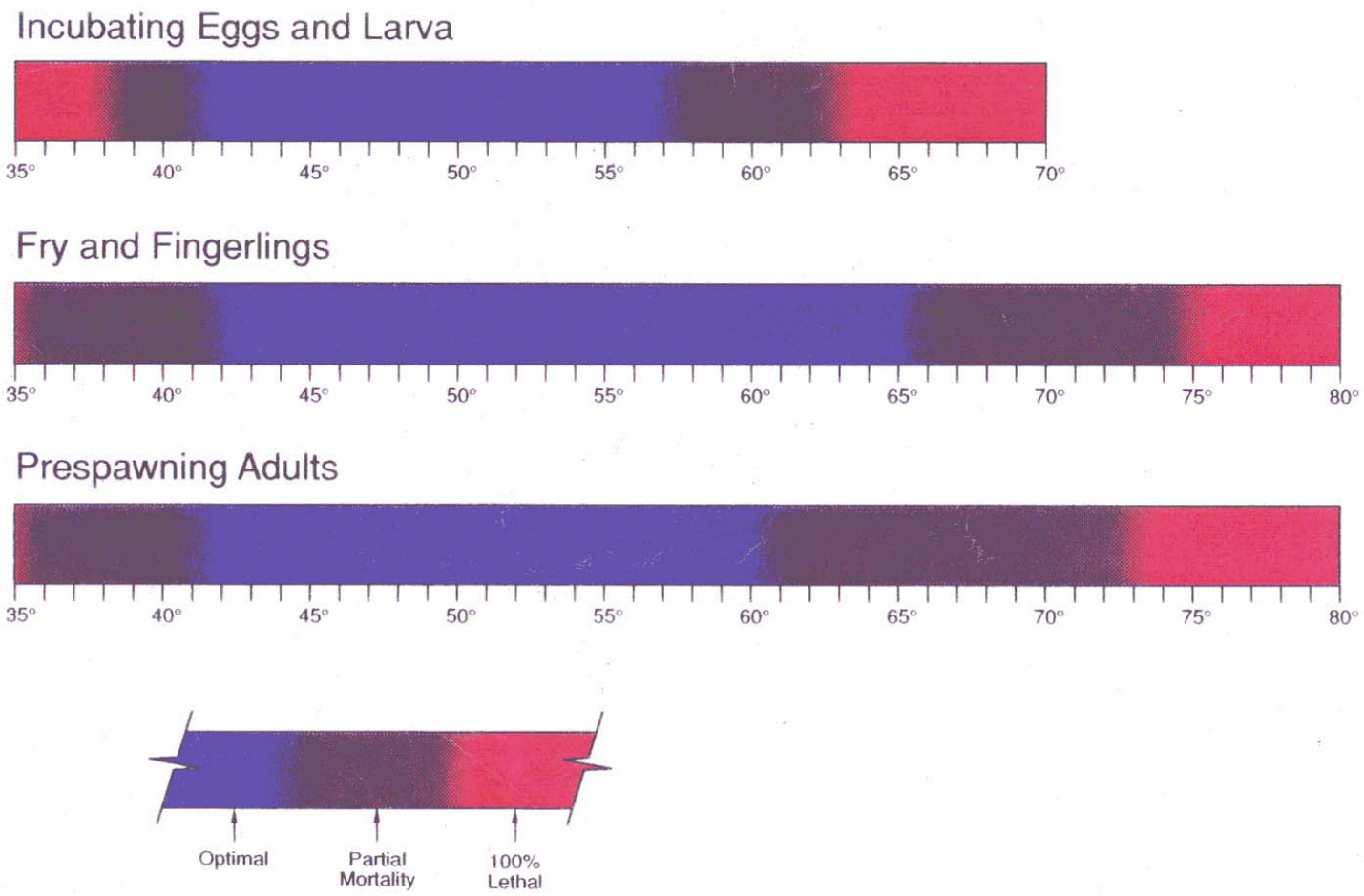
Predicted Temperatures		
Above Eagle Canyon Dam[2] 93 cfs	With Eagle Canyon Dam diverting inflow and releasing 23 cfs to mix with 12 cfs spring flow	Removal of Eagle Canyon Dam with all inflow (93 cfs) mixing with spring flow
56ºF	54.6ºF	55.5ºF
57ºF	55.3ºF	56.4ºF
58ºF	55.9ºF	57.3ºF
59ºF	56.6ºF	58.2ºF

[1]Derived using mass balance equation.
[2]PG&E 2001 June

Figure 1

MORTALITY RELATED TO TEMPERATURE

CHINOOK SALMON



CH2M HILL

GEOMORPHIC ANALYSIS

Figure 2. Addition of diversion magnitudes to the 1.5 year return interval flow

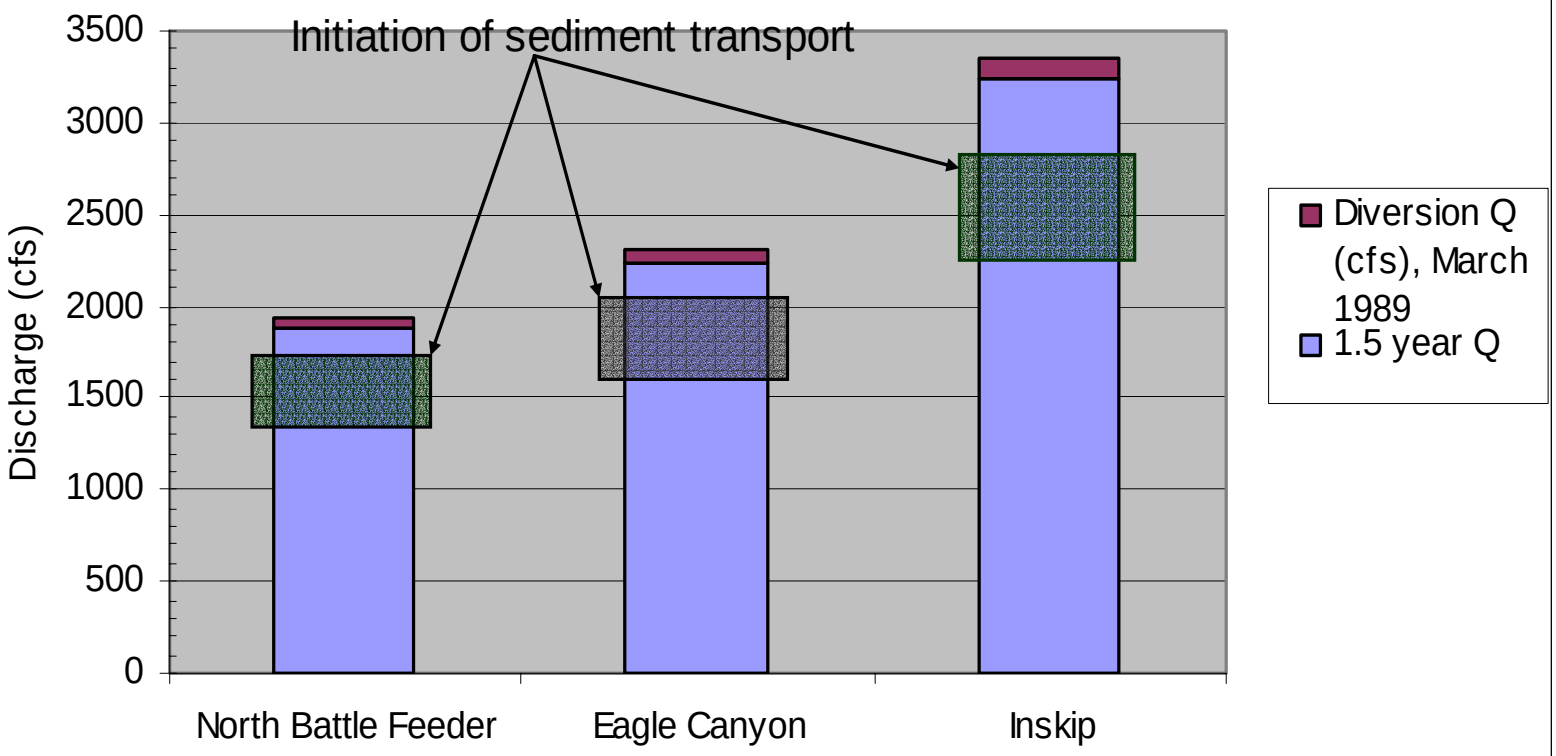


Figure . I-3, Eagle Canyon

Water Year 1989

North Fork Battle Creek at Eagle Canyon

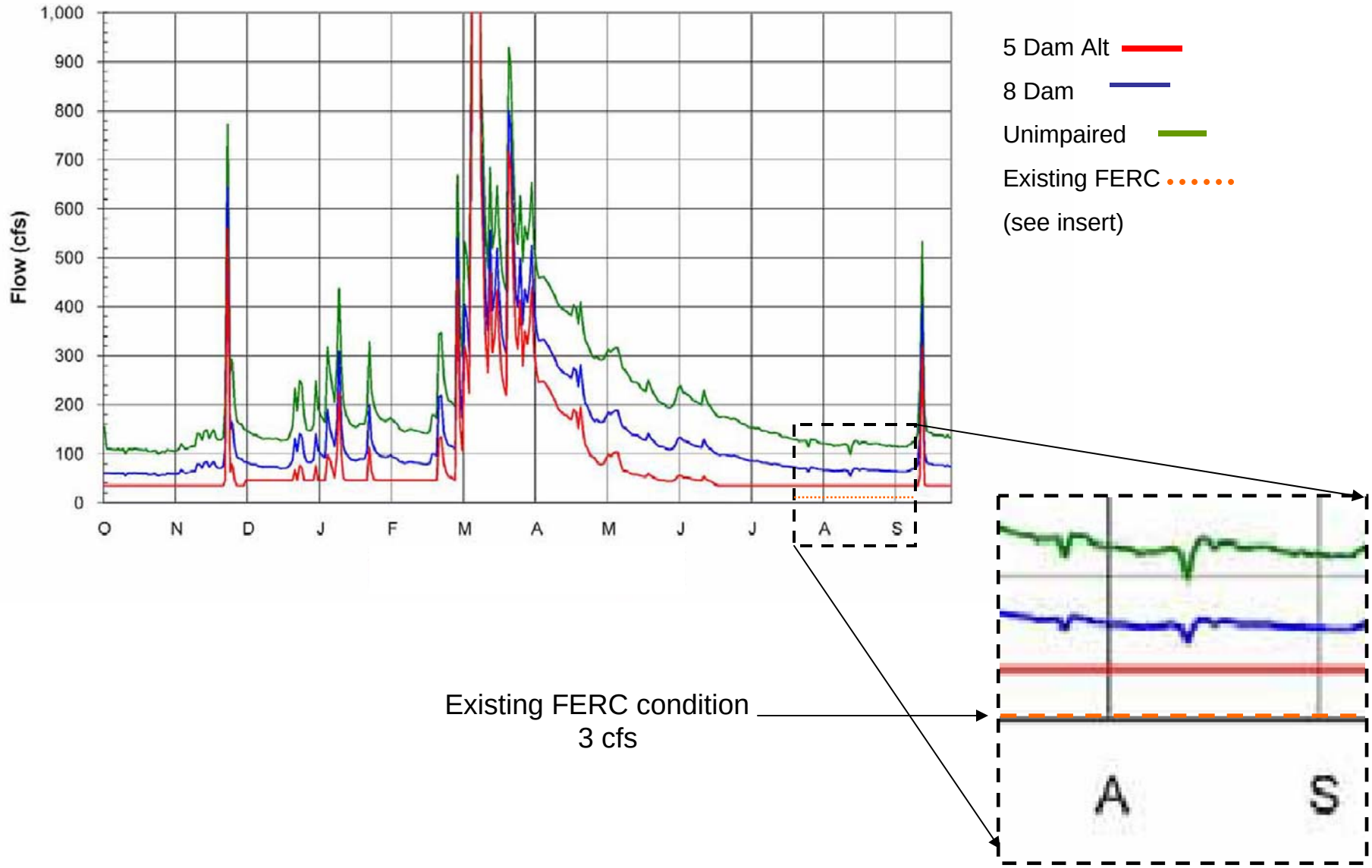


FIGURE 4
Chinook Embryo Survival (Kier 1999; USBR 1991)

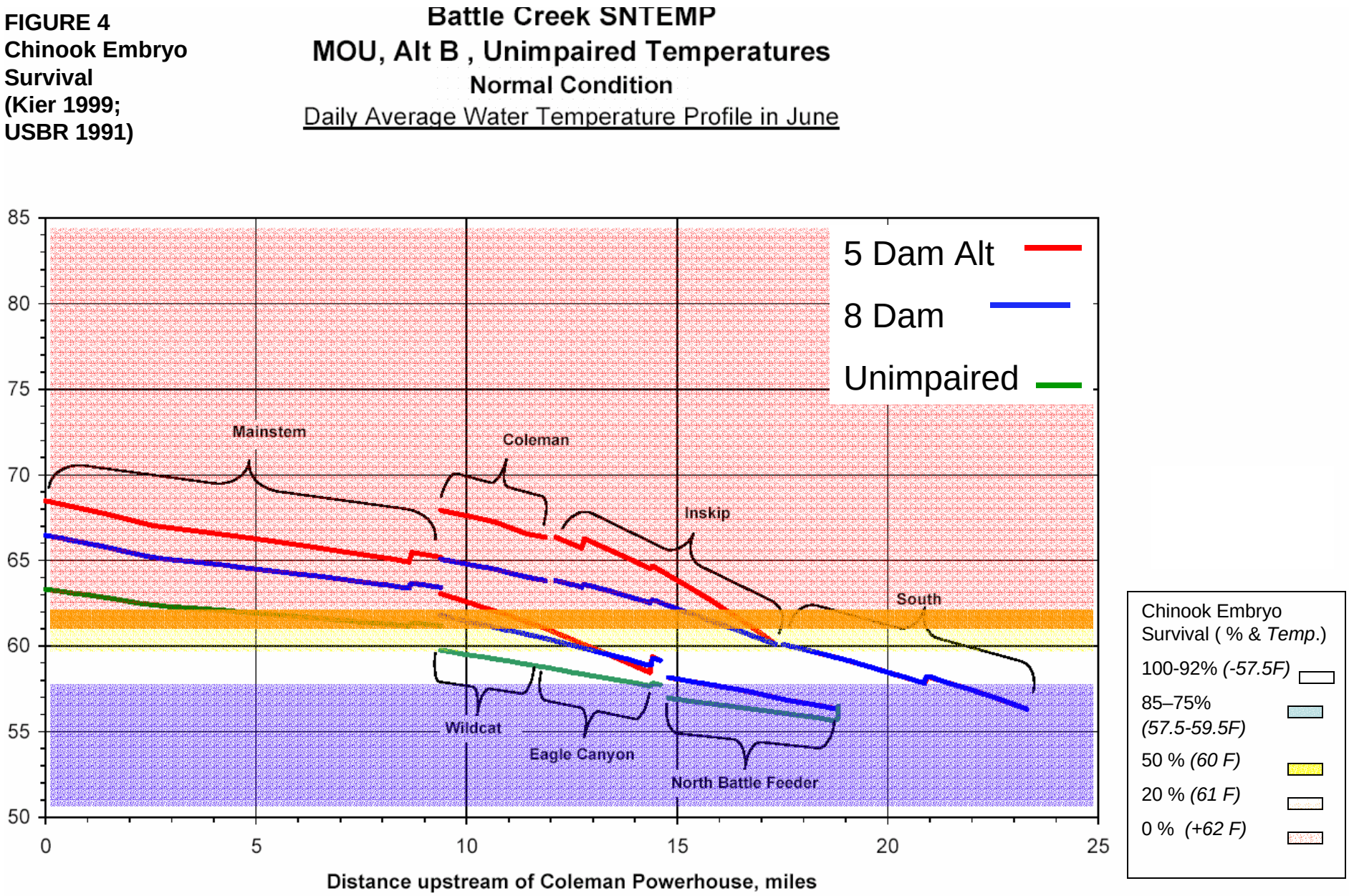


FIGURE 5
Chinook Embryo Survival (Kier 1999; USBR 1991)

Battle Creek SNTEMP
MOU, Alt B , Unimpaired Temperatures
Normal Condition
Daily Average Water Temperature Profile in September

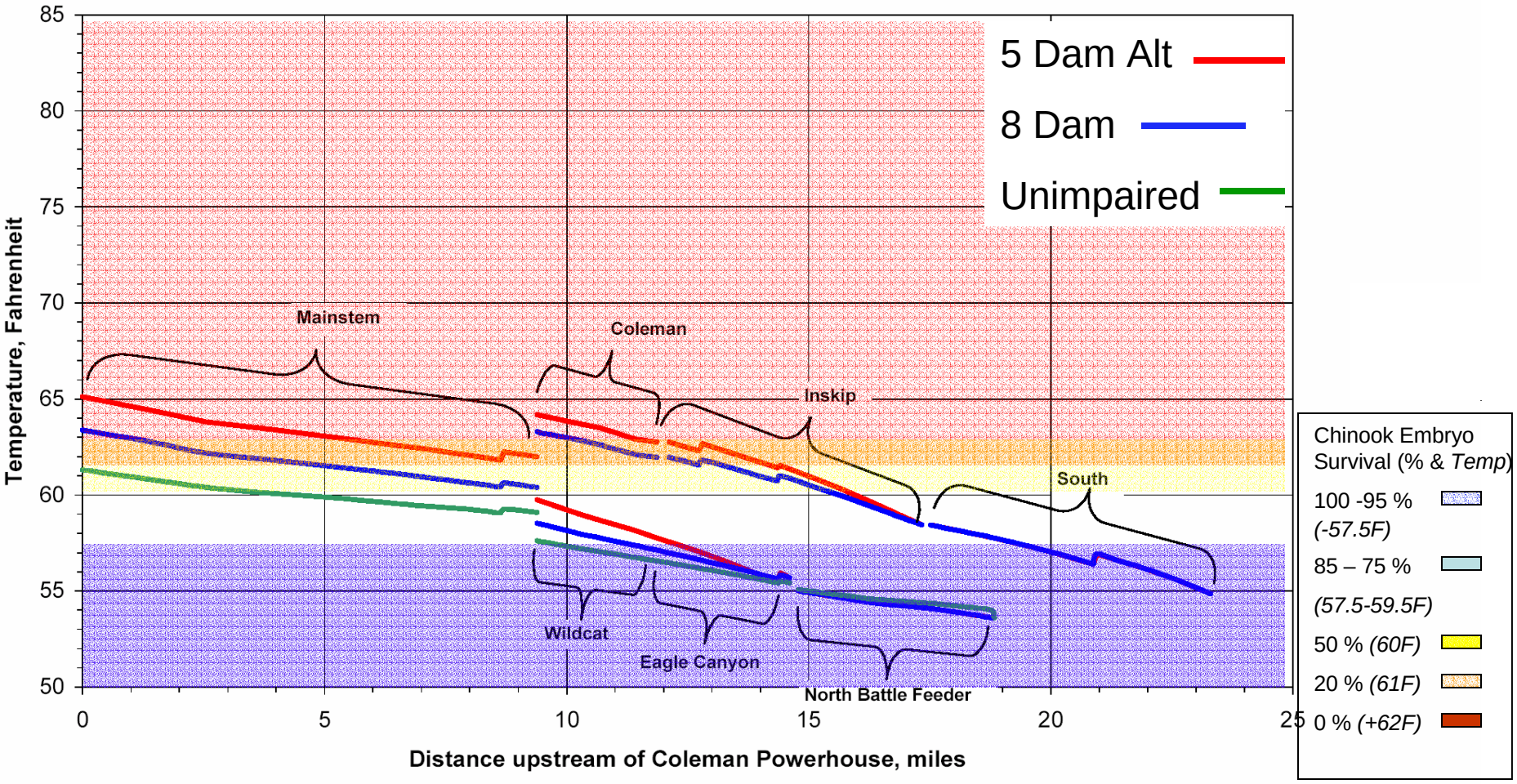


FIGURE 6
Adult Chinook Holding Temp.
(Kier 1999)
(USFS 1999)

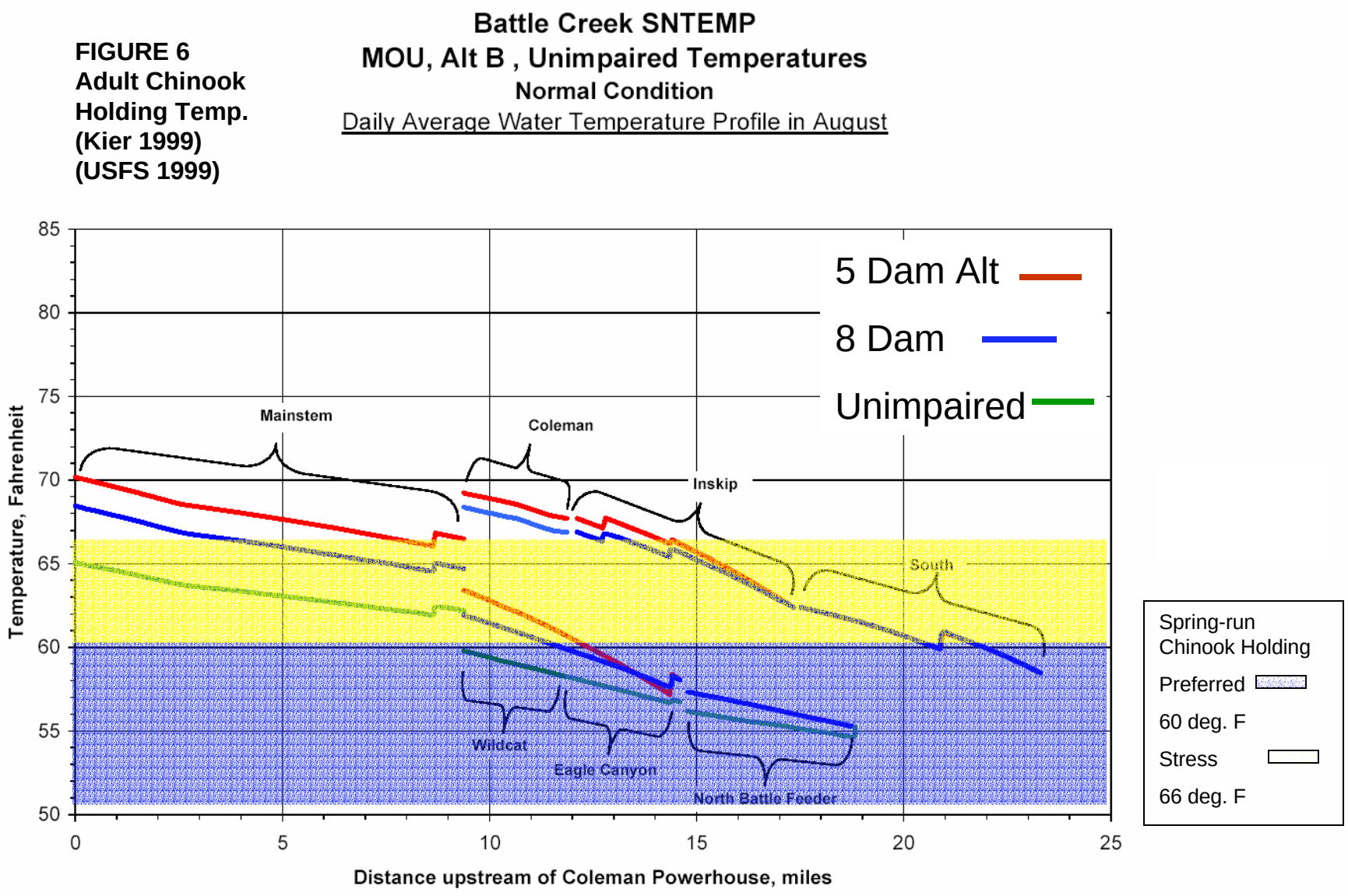


FIGURE 7
Chinook Juvenile Temp. Response (USFWS 1999)

Battle Creek SNTEMP
MOU, Alt B , Unimpaired Temperatures
Normal Condition
Daily Average Water Temperature Profile in September

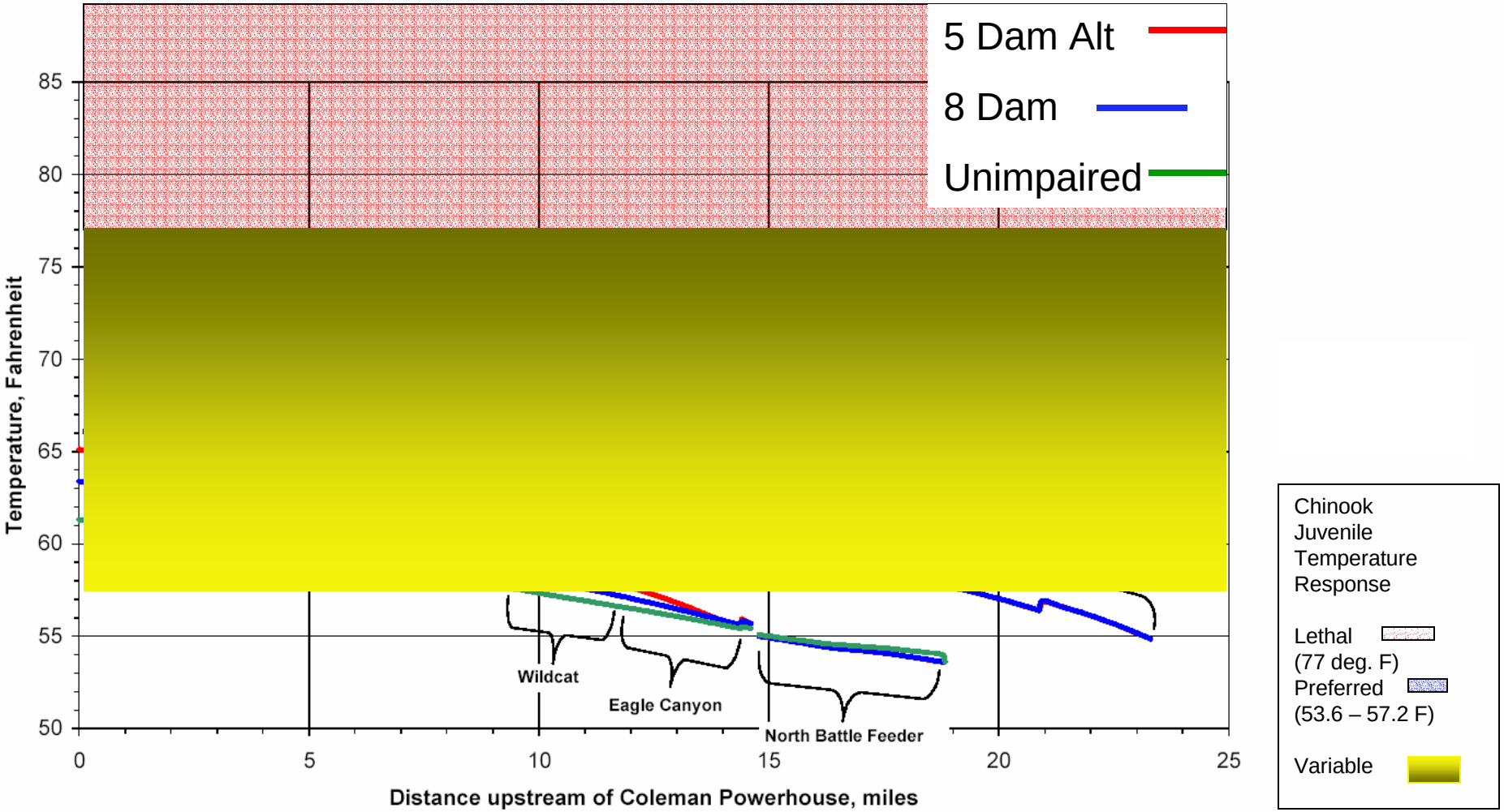


FIGURE 8
Chinook Smolt Survival
(USFWS 1999)

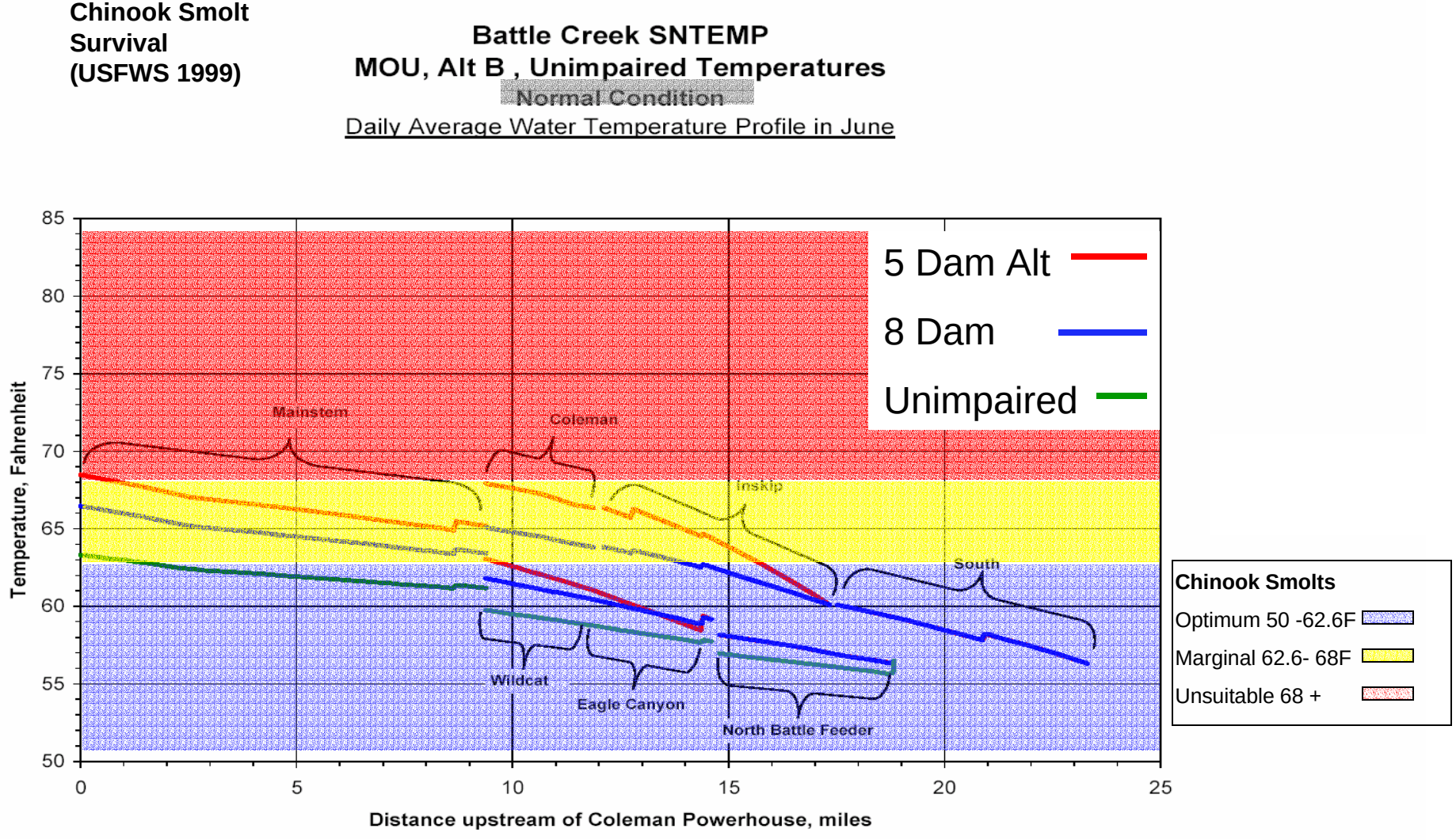


FIGURE 9
Steelhead Smolt Survival
(USFWS 1999)

Battle Creek SNTEMP
MOU, Alt B , Unimpaired Temperatures
Normal Condition
Daily Average Water Temperature Profile in June

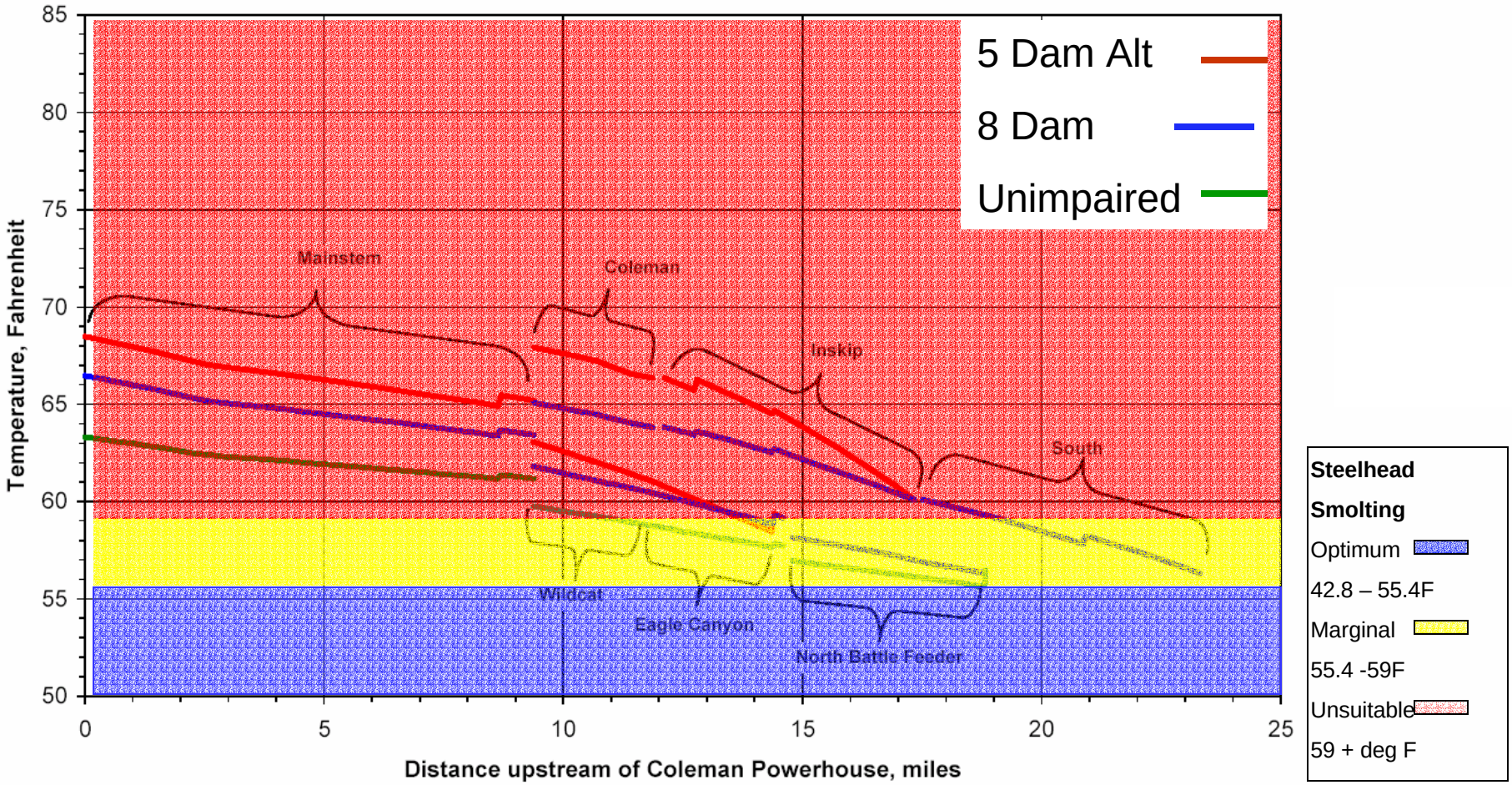


FIGURE 10
Chinook Embryo Survival
(Kier 1999; USBR 1991)

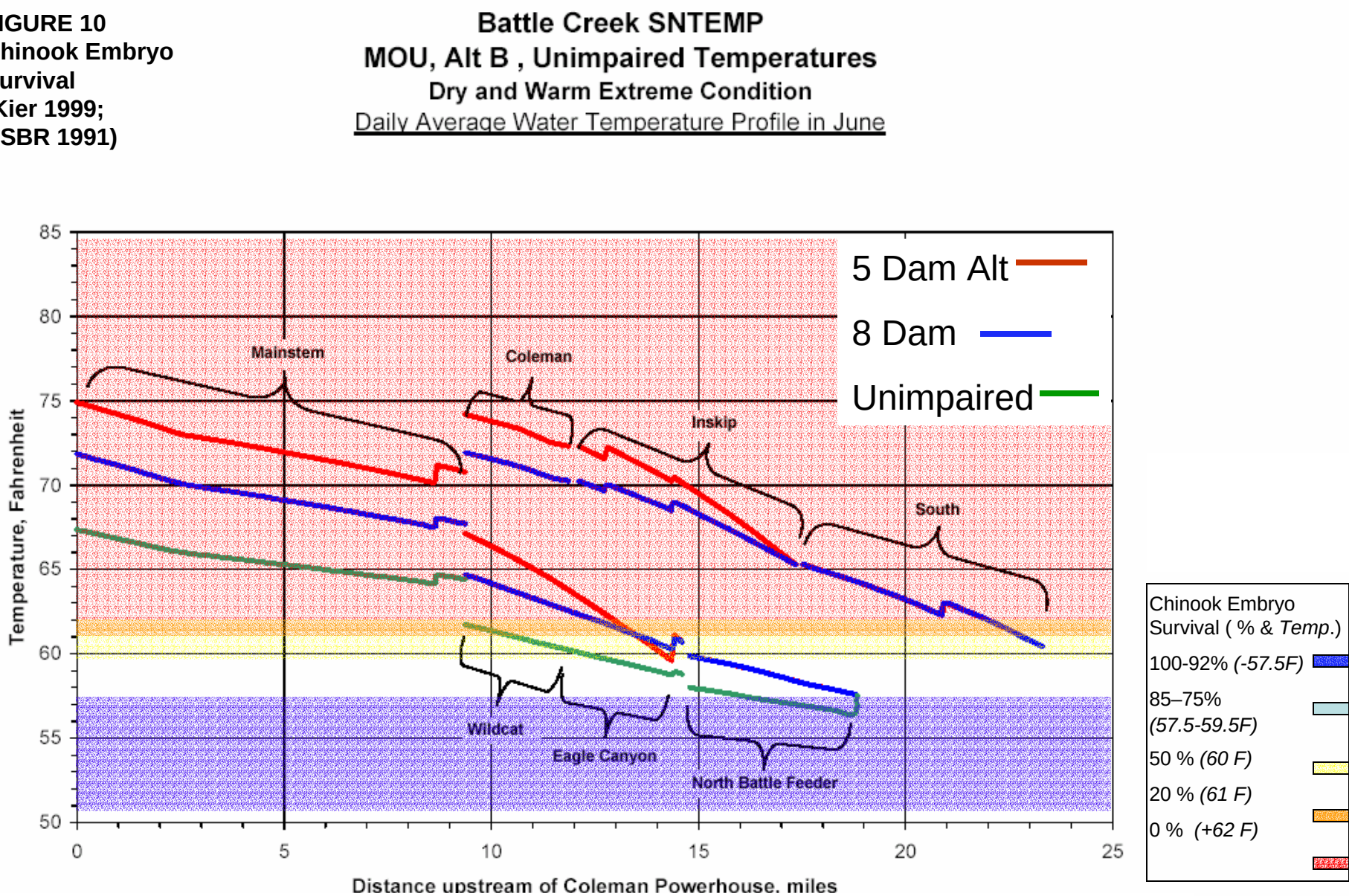


FIGURE 11
Chinook Smolt Survival
(USFWS 1999)

Battle Creek SNTEMP
MOU, Alt B , Unimpaired Temperatures
Dry and Warm Extreme Condition
Daily Average Water Temperature Profile in June

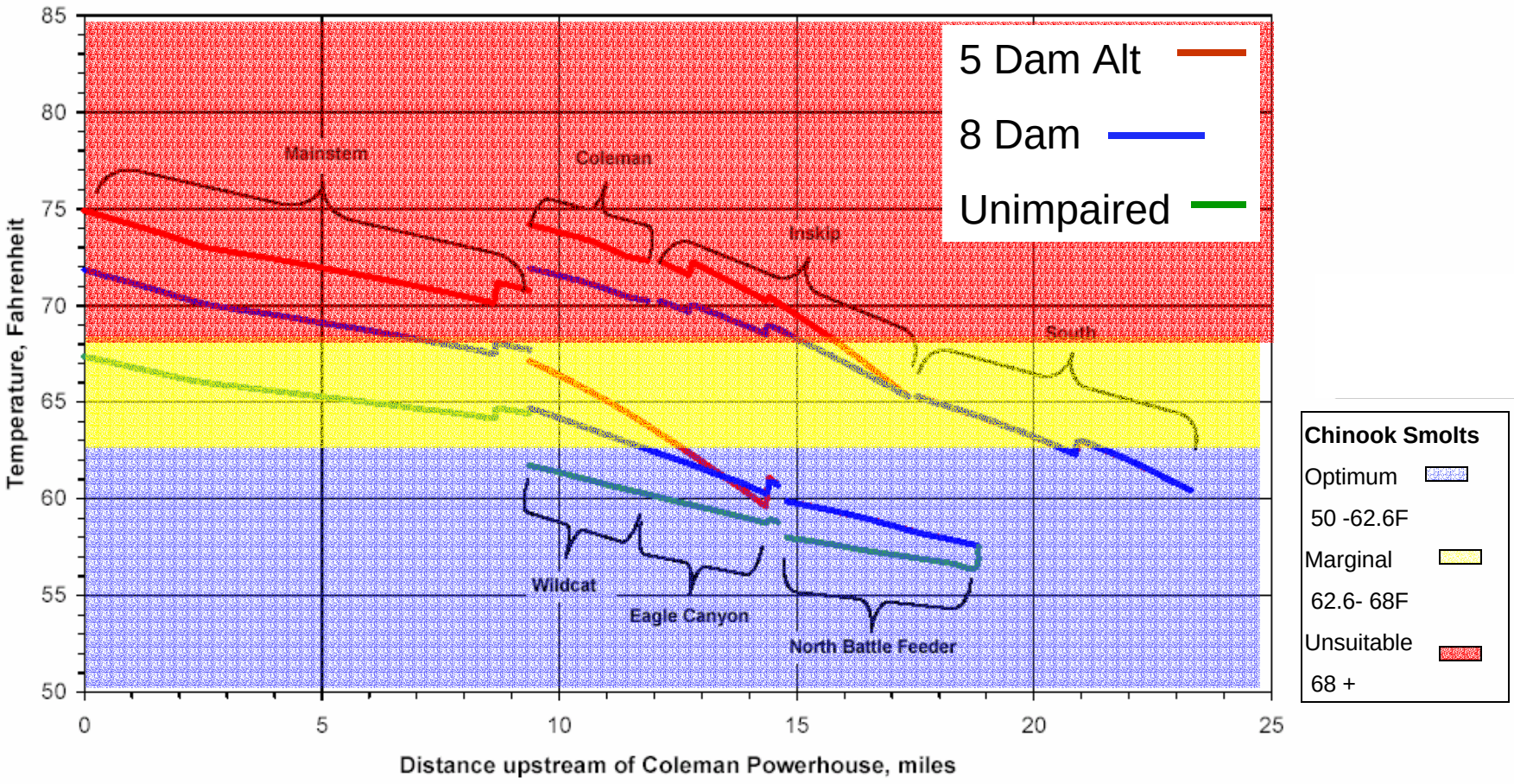
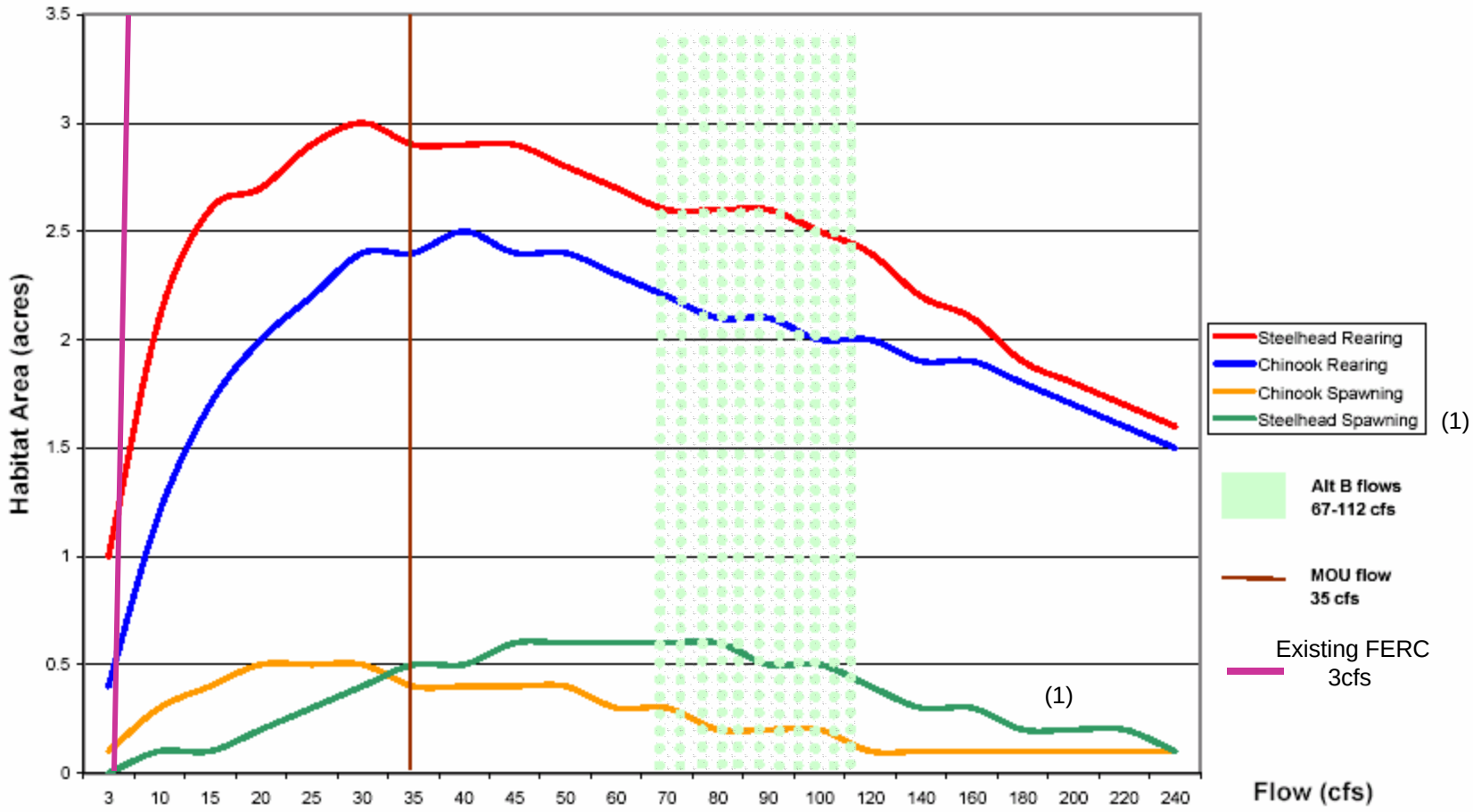


Figure 12 , Eagle Canyon

MOU and Alt B Flow/Habitat Curves
June - Sep, Normal Year (1989)

North Fork Battle Creek, Eagle Canyon Reach

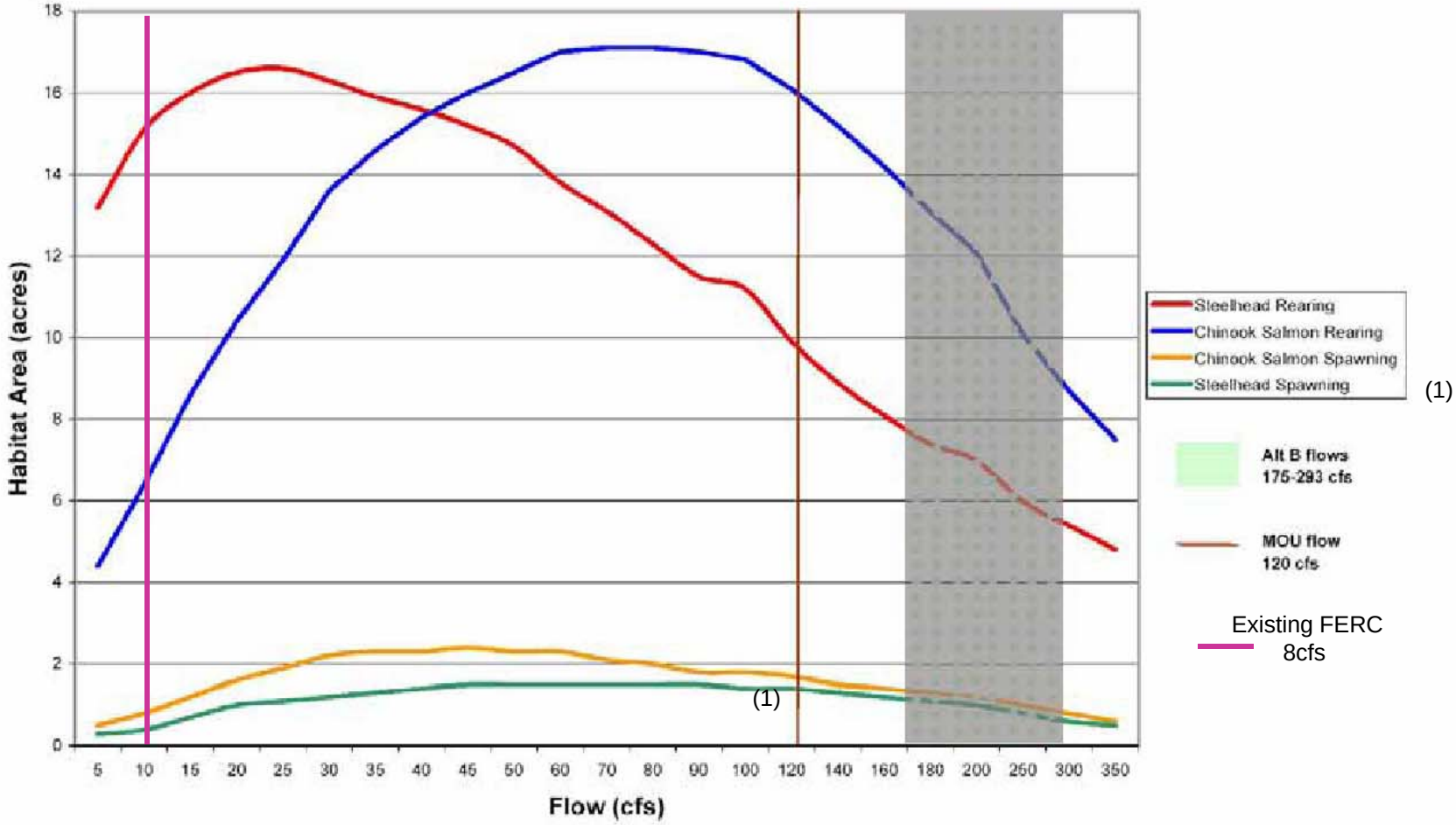


(1)Note Steelhead spawning occurs in winter so base flows approximate minimum winter flows between runoff events.

Figure 13 Mainstem

MOU and Alt B Flow/Habitat Curves
June - Sep, Normal Year (1989)

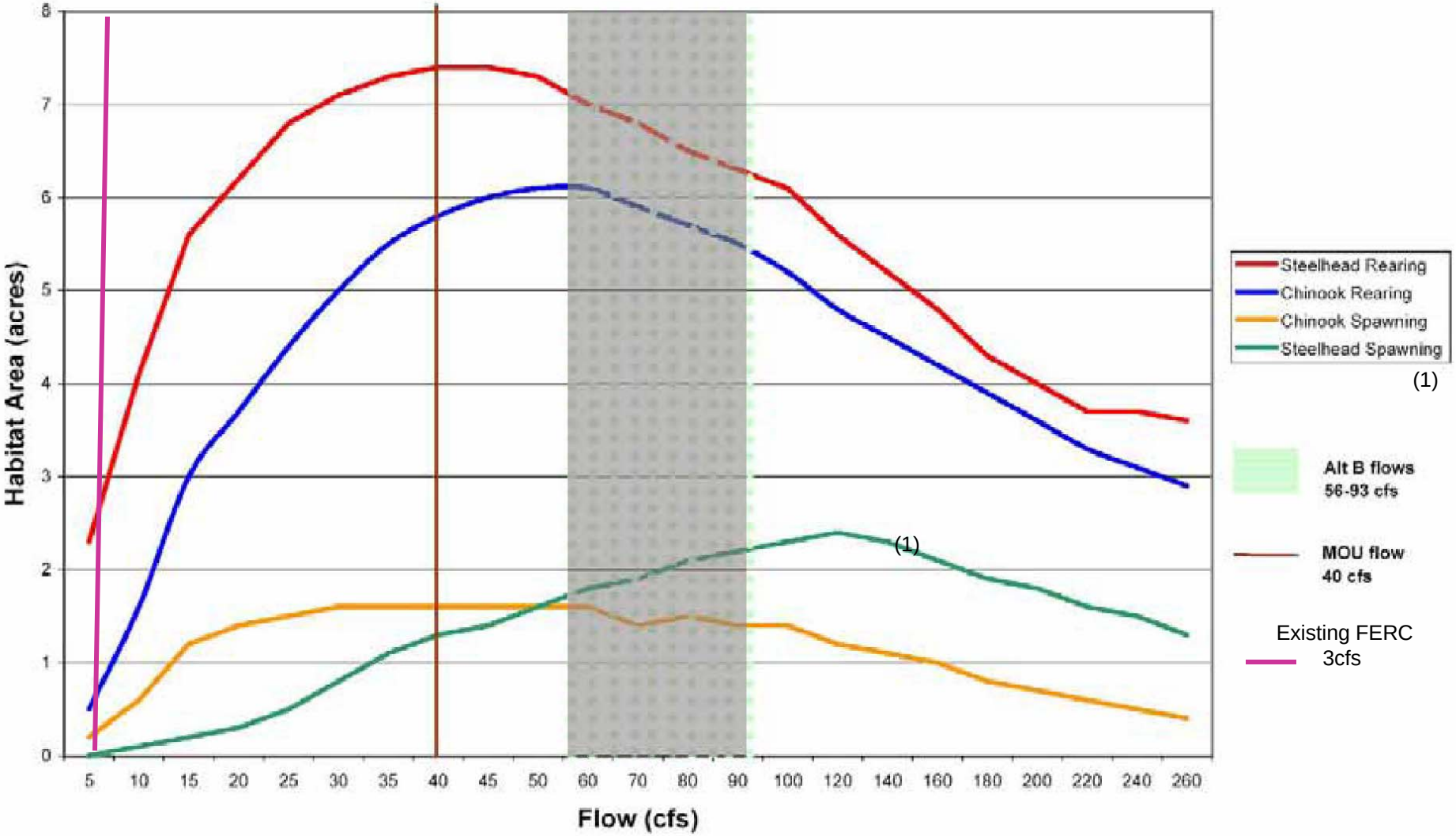
Mainstem Battle Creek Above Coleman PH



(1)Note Steelhead spawning occurs in winter so base flows approximate minimum winter flows between runoff events.

June - Sep, Normal Year (1989)

South Fork Battle Creek, Inskip Reach



(1)Note Steelhead spawning occurs in winter so base flows approximate minimum winter flows between runoff events.

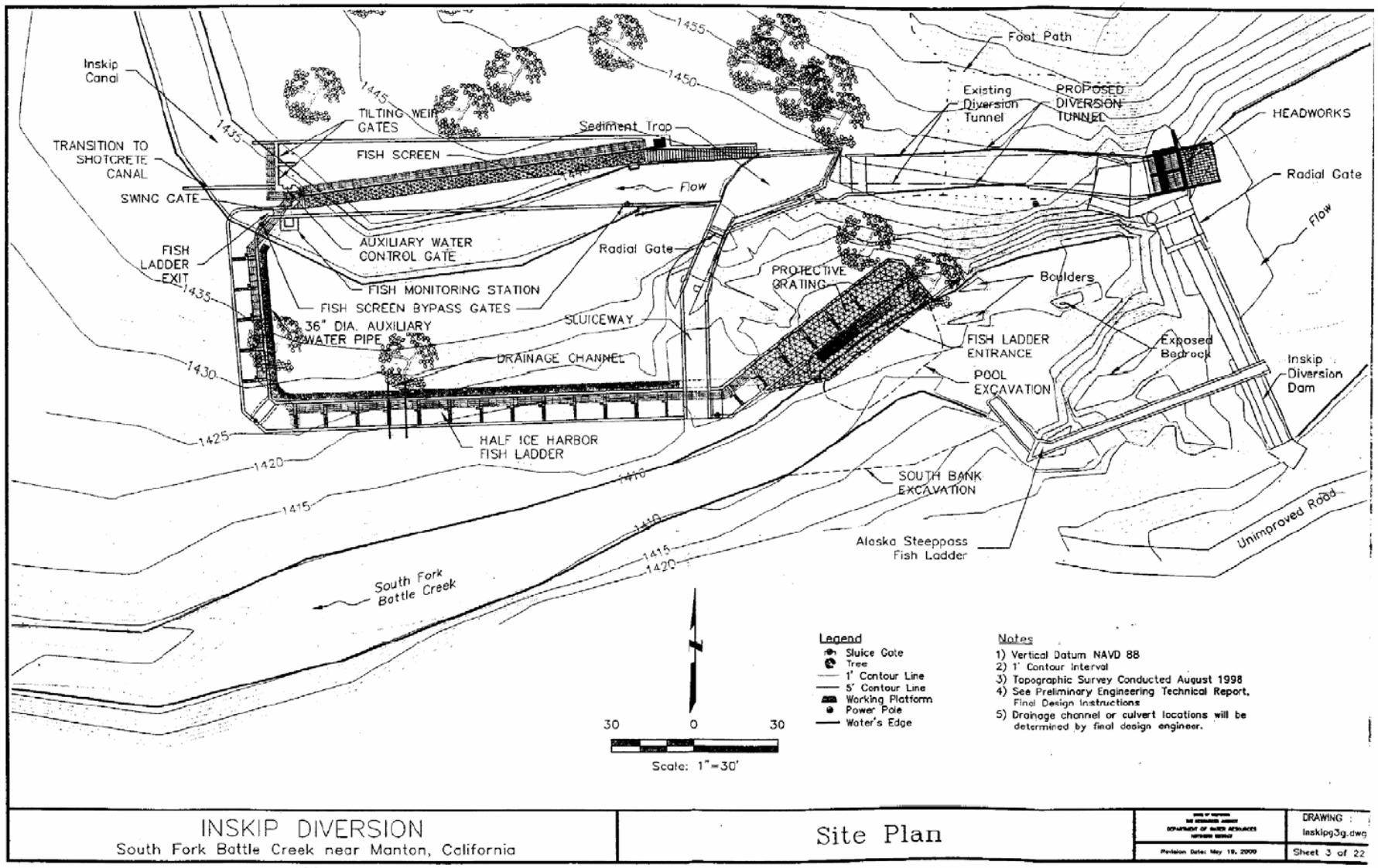
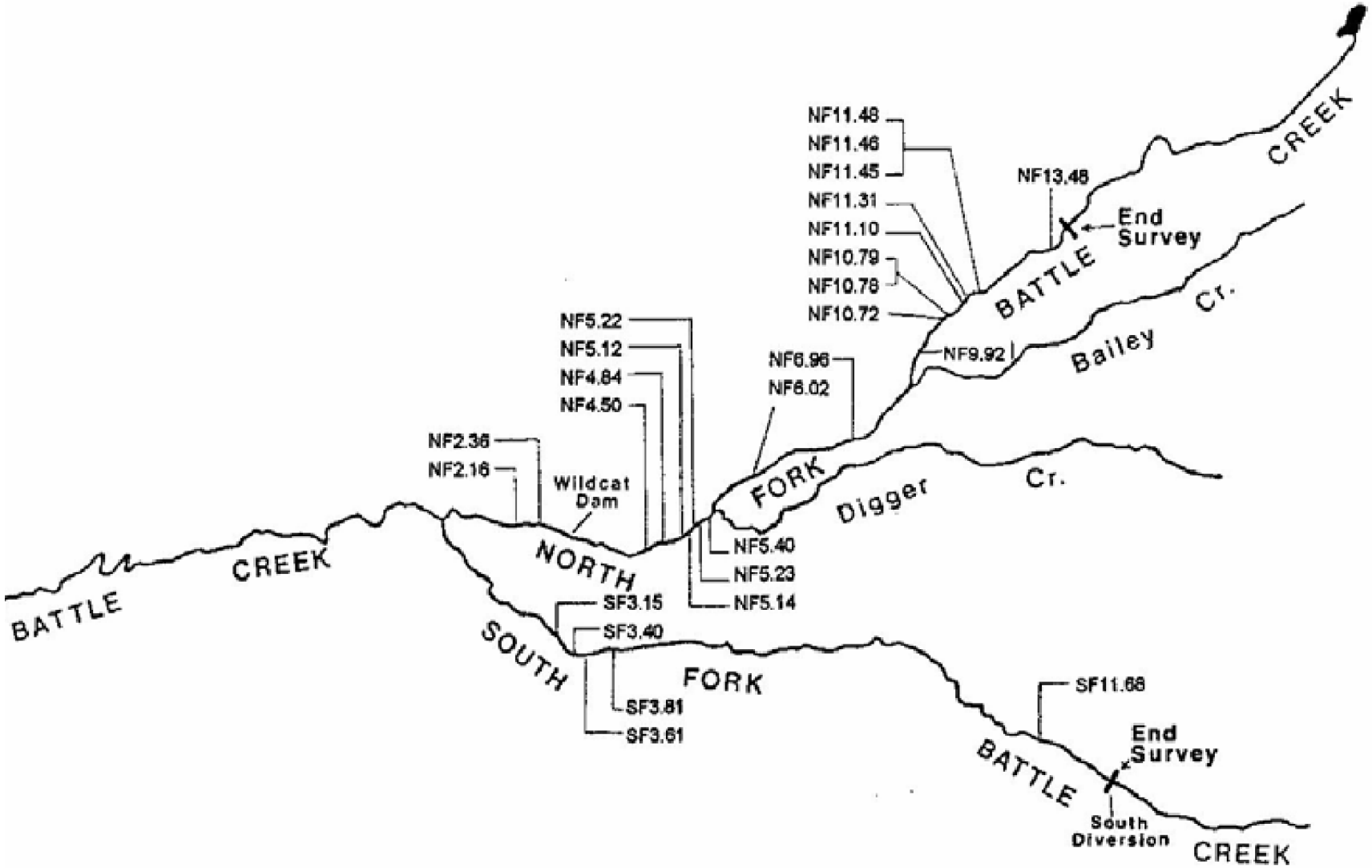


Figure 15, Inskip Dam Fish Ladder Design

Figure 16

Natural Migration Obstacles Survey (TRPA 1999)