



US Army Corps
of Engineers

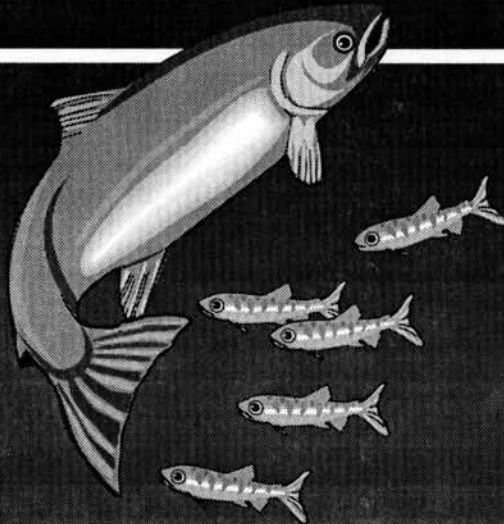
Walla Walla District

1992 Reservoir Drawdown Test

Lower Granite and Little Goose Dams

Appendix N

Dissolved Gas Data



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APPENDIX N
DISSOLVED GAS DATA
1992 Reservoir Drawdown Test
Lower Granite and Little Goose Dams

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2/11/92

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APPENDIX N

1992 RESERVOIR DRAWDOWN TEST LOWER GRANITE AND LITTLE GOOSE DAMS

DISSOLVED GAS DATA

Dissolved gas supersaturation data were obtained from several locations during the spill tests conducted in March 1992. This appendix contains a summary of all the data collected immediately below Lower Granite Dam, from both mobile and stationary instruments. Measurements were made approximately one-half mile downstream of the dam ("upstream" and "north shore" headings in the table) and approximately four miles downstream of the dam ("downstream" heading). At both locations, transects were made across the river: "north", "center", and "south", and dissolved gas supersaturation readings were taken at the surface and at a depth of approximately ten to fifteen feet ("deep"). A stationary instrument operated continuously on the north shore, approximately one-half mile below the dam ("north shore"). The "all" columns in the tables are simply a summary of the transect data from each depth and location. All dissolved gas supersaturation data are in percentages. Dissolved oxygen pressures are in millimeters mercury. The tables also include barometric pressure (millimeters mercury), and amount of spill and powerhouse flows (in thousand feet per cubic second, KCFS). The barometric pressure was taken with each of the mobile instruments, however, the pressure recorded in the table is from the instrument used for the deep, "upstream" site. Other barometric pressures, upon which the supersaturation data were based, varied slightly. Forebay and tailwater elevations, feet above mean sea level, along with the head (difference between the two) are also recorded.

Dissolved gas measurements were also made with stationary instruments in the forebay and tailwaters of Little Goose Dam. However, these data are not included since the forebay instrument was malfunctioning most of the test period, and no transects were made with which to compare the tailwater instrument.

All raw data sheets, and the data from the Little Goose Dam instruments are kept on file at the Walla Walla District, U.S. Army Corps of Engineers (Planning Division).

MARCH 15, 1992 - 2 HR INFLOW SPILL, THEN 100 KCFS SPILL (approximately 100 kcfs - values extrapolated between start and end of test as forebay lowered)																																
TIME	UPSTREAM														DOWNSTREAM																	
FROM	DEEP					SURFACE					NORTH					FORE-	DEEP					SURFACE										
START	ALL	NORTH	CENTER	SOUTH	OXY.	ALL	NORTH	CENTER	SOUTH	OXY.	SHORE	BAROM	SPILL	BAY	TAILW.	HEAD	ALL	NORTH	CENTER	SOUTH	OXY.	ALL	NORTH	CENTER	SOUTH	OXY						
343												743						126.4														
344												743						126.4														
345												743						126.4														
346												743						126.3														
347												743						126.2														
348												743						126.3														
349																		126.3														
350																		126.1														
351																		126.1														
352																		126.2														
353																		126.3								125.5				125.5		177

MARCH 16, 1992 - 2 HR INFLOW SPILL, 80 % SPILL/20 % POWERHOUSE (approximately 80 krfs - values extrapolated between start and end of test as forebay lowered)

TIME	UPSTREAM															DOWNSTREAM													
	DEEP					SURFACE					NORTH					FORE-					DEEP					SURFACE			
FROM	ALL	NORTH	CENTER	SOUTH	OXYGEN	ALL	NORTH	CENTER	SOUTH	OXYGEN	SHORE	BAROM	SPILL	POWERH.	BAY	TAILW.	HEAD	ALL	NORTH	CENTER	SOUTH	OXYGEN	ALL	NORTH	CENTER	SOUTH	OXYGEN		
216												743	79.6154	23															
217	124.9		124.9									743	79.576	23															
218												743	79.5365	23															
219												743	79.4971	23															
220												743	79.4577	23															
221	126.2		126.2									743	79.4183	23															
222												743	79.3788	23				122.6		122.6		188	123.1			123.1		186	
223												743	79.3394	23															
224												743	79.3	23															
225											124.36164	743			703.07	636.21	66.86												
226												743																	
227												743																	
228	127.2		127.2									743																	
229												743																	
230						123.8		123.8		189		743			703	636.12	66.88												
231												743																	
232												743																	
233												743																	
234												743																	
235												743																	
236												743																	
237												743						117.9		117.9		182	117.9			117.9		182	
238												743																	
239												743																	
240											124.36164	743																	
241												743																	
242												743																	
243												743																	
244												743																	
245												743																	
246												743																	
247												743																	
248												743						122.6		122.6		185	121.9			121.9		188	
249												743																	
250												743																	
251												743																	
252												743																	
253												743																	
254												743																	
255											124.31131	743																	
256												743																	
257												743																	
258												743																	
259												743																	
260												743																	
261												743																	
262												743						121.8		121.8		185	123			123		184	

MARCH 17, 1992 - 2 HR INFLOW SPILL, 100 KCPS SPILL (approximately 100 kcfs - values extrapolated between start and end of test as forebay lowered)

TIME FROM START	UPSTREAM												DOWNSTREAM											
	DEPTH					SURFACE				NORTH			FORE-BAY	TAILW.	HEAD	DEPTH					SURFACE			
	ALL	NORTH	CENTER	SOUTH	OXYGEN	ALL	NORTH	CENTER	SOUTH	SHORE	BAROM	SPILL				ALL	NORTH	CENTER	SOUTH	OXYGEN	ALL	NORTH	CENTER	SOUTH
104						115.7			115.7		745	35.2												
105										111.812617	745	35.2												
106											745	35.2												
107											745	35.2												
108											745	35.2												
109											745	35.2												
110	117.9			117.9	179	115.7			115.7		745	35.2				101.3	101.3		147		101.7	101.7	148	
111											745	35.2												
112											745	35.2												
113											745	35.2												
114											745	35.2												
115											745	35.2												
116											745	35.2												
117											745	35.2												
118						115.8			115.8		745	35.2												
119											745	35.2												
120										112.415705	745	111.1	706.06	632.25	73.81									
121											745	111.05												
122											745	111.00												
123	118.9		118.9		181	115.7			115.7		745	110.95												
124											745	110.90												
125											745	110.85												
126											745	110.79												
127											745	110.74												
128											745	110.69												
129											745	110.64												
130						114			114		745	110.59				101.4		101.4		147		100.5	100.5	147
131											745	110.54												
132											745	110.49												
133											745	110.44												
134											745	110.39												
135	114.3		114.3		178	109.7			109.7		115.582685	745	110.34	705.31	634.27	71.04								
136											745	110.29												
137											745	110.24												
138											745	110.18												
139											745	110.13												
140											745	110.08												
141											745	110.03												
142											745	109.98												
143											745	109.93												
144						123.2			123.2		745	109.88												
145											745	109.83				101.4		101.4		147		100.6	100.6	147
146											745	109.78												
147											745	109.73												
148	126.5		126.5		190	122.7			122.7		745	109.68												
149											745	109.62												
150										122.419195	745	109.57	705.12	634.16	70.96									
151											745	109.52												
152											745	109.47												
153											745	109.42												
154											745	109.37												
155											745	109.32				101.4		101.4		147		100.6	100.6	147

	MARCH 21, 1992 - 2 HR K INFLOW SPILL, 100 KCFS SPILL (approximately 100 kcfs - values extrapolated between start and end of test as forebay lowered)																													
TIME	UPSTREAM										DOWNSTREAM																			
FROM	DEEP					SURFACE					NORTH	FORE-	DEEP					SURFACE												
START	ALL	NORTH	CENTER	SOUTH	OXYGEN	ALL	NORTH	CENTER	SOUTH	SHORE	BAROM	SPILL	BAY	TAILW.	HEAD	ALL	NORTH	CENTER	SOUTH	OXYGEN	ALL	NORTH	CENTER	SOUTH						
312																														
313																														
314																														
315																														

125.251613

MARCH 22, 1992 - 2 HR INFLOW SPILL, 20% SPILL/80% POWERHOUSE																											
UPSTREAM											DOWNSTREAM																
TIME	1988					1989					1990					1991											
FROM	1988					1989					1990					1991											
START	ALL	NORTH	CENTER	SOUTH	OXYGEN	ALL	NORTH	CENTER	SOUTH	SHORE	BAROM	SPILL	FORE-BAY	TAILW.	HEAD	ALL	NORTH	CENTER	SOUTH	OXYGEN	ALL	NORTH	CENTER	SOUTH			
312																											
313																											
314																											
315																											

109.442127

		MARCH 26, 1992 - 2 HR INFLOW SPILL, 114 KCFS - 90 KCFS FREE-FLOW (values extrapolated between start and end of test as forebay lowered)																													
TIME		UPSTREAM											DOWNSTREAM																		
FROM		FREE					90 KCFS					NORTH					FORE-					FREE					90 KCFS				
START		ALL	NORTH	CENTER	SOUTH	OXYGEN	ALL	NORTH	CENTER	SOUTH	SHORE	BAROM	SPILL	BAY	TAILW.	HEAD	ALL	NORTH	CENTER	SOUTH	OXYGEN	ALL	NORTH	CENTER	SOUTH						
156												745	108.80																		
157												745	108.65																		
158												745	108.49																		
159												745	108.34																		
160	127.1				127.1	210	124.3			124.3		745	108.18												102.2		102.2				
161												745	108.03																		
162												745	107.87																		
163												745	107.72																		
164												745	107.56																		
165	126.8				126.8	210	124.3			124.3	120.257584	745	107.41	698.76	633.97	64.79															
166												745	107.25																		
167												745	107.09																		
168												745	106.94					102.2		102.2		153									
169												745	106.78																		
170												745	106.63																		
171												745	106.47																		
172	128.6				128.6	213	126.3			126.3		744	106.32																		
173												744	106.16																		
174												744	106.01																		
175												744	105.85																		
176												744	105.70																		
177	129.1				129.1	214	126.6			126.6		745	105.54																		
178												745	105.39																		
179												745	105.23																		
180											122.368859	745	105.07	698.68	633.84	64.84															
181												745	104.92												108.3		108.3				
182												745	104.76					107.7		107.7		167									
183												745	104.61																		
184	124.9		124.9			206	122.8			122.8		745	104.45																		
185												745	104.30																		
186												745	104.14																		
187												745	103.99																		
188												745	103.83																		
189	125.1		125.1			207	123.5			123.5		745	103.68																		
190												745	103.52																		
191												745	103.36																		
192												745	103.21																		
193												745	103.05																		
194												745	102.90					113.2		113.2		171		112.8			112.8				
195	128.4				128.4	215	126.6			126.6	122.972215	745	102.74	698.36	634.03	64.33															
196												745	102.59																		
197												745	102.43																		
198												745	102.28																		
199												745	102.12																		
200	128.3				128.3	213	125.9			125.9		744	101.97																		
201												744	101.81																		
202												744	101.65																		
203												744	101.50																		
204												744	101.34																		
205												744	101.19																		
206												744	101.03																		
207							125.4			125.4		744	100.88													108.1		108.1			

