

SLOUGH 11 REFERENCE DATA
COMPILED FROM SUSITNA PROJECT
BIOLOGICAL REPORTS

CONFIDENTIAL: PRIVILEGED WORK
PRODUCT PREPARED IN ANTICIPATION
OF LITIGATION; RESTRICTED
DISTRIBUTION

RECEIVED
OCT 23 1984
Alaska Dept. of Fish & Game
Susitna Hydro Aquatic Studies

SLOUGH 11 REFERENCE DATA
COMPILED FROM SUSITNA PROJECT
BIOLOGICAL REPORTS

Prepared by:
Woodward-Clyde Consultants
701 Sesame Street
Anchorage, AK 99503

October 1984

FOR INTERNAL PROJECT USE ONLY

NOT FOR REFERENCE

INDEX

Resident and Anadromous Fish Data

- 1=Index counts
- 2=Catch per unit effort
- 3=Total population estimate
- 4=Spawning ground surveys
- 5=Weighted useable area
- 6=Habitat indice
- 7=Timing of salmon presence
- 8=Spawning areas maps
- 9=Escapement

Aquatic Habitat Data

- 1=WSEL vs Q
- 2=Surface area of aggregate type II
- 3=Habitat zone description
- pm=Planimetric map
- S=Substrate
- ST=Substrate water temperature
- OL=Open leads
- *=Winter data
- 4=Weighted useable area
- 5=Habitat index
- 6=WSEL
- 7=X-sectional elevation
- =Collected at chum salmon redds
- + =Collected at pink salmon redds
- x=Collected at sockeye salmon redds

D = intergravel water
S = surface water

WATER QUALITY DATA

Aug 11

* Winter Data

[illegible]

March 11
3 - Habitat Zone Description

CM = volumetric mass; ρ = surface area of aggregate type 4

AQUATIC HABITAT DATA

$S = \text{substrate}$

OL = open leads

[illegible]

1 = Index Counts
2 = Catch per unit effort
3 = Total population estimate

RESIDENT FISH DATA

Slimy Sculpin

1 = Index Counts
2 = Catch per unit effort
3 = Total population estimate

4 = spawning ground survey

[illegible]

ADF&G Susitna Specific Reference List

1. Alaska Department of Fish and Game. 1977. Corps of Engineers Susitna River Hydroelectric Project: Baseline inventory study (1 July 1976 - 30 September 1976). Prepared for U.S. Department of the Interior, Fish and Wildlife Service, Anchorage, AK. 91 pp.
2. Alaska Department of Fish and Game. 1978. Preliminary environmental assessment of hydroelectric development on the Susitna River. Prepared for the U.S. Fish and Wildlife Service. Anchorage, AK. 207 pp.
- 2a. *Alaska Department of Fish and Game. 1979. Little Susitna River juvenile chinook and coho salmon study. Prepared by Kevin Delaney and Roger Wadman, Division of Sport Fish. Anchorage, AK.
3. Alaska Department of Fish and Game. 1981. Susitna Hydro Aquatic Studies - Phase I Report: Resident fish investigation on the Upper Susitna River. Prepared for Acres American, Inc. Buffalo, NY. 137 pp.
4. Alaska Department of Fish and Game. 1981. Susitna Hydro Aquatic Studies - Phase I Final Draft Report: Resident fish investigation on the Lower Susitna River. Prepared for Acres American, Inc. Buffalo, NY. 166 pp.
5. Alaska Department of Fish and Game. 1981. Susitna Hydro Aquatic Studies - Phase I Report: Juvenile anadromous fish study on the Lower Susitna River. Prepared for Acres American, Inc. Buffalo, NY. 121 pp.
6. Alaska Department of Fish and Game. 1981. Susitna Hydro Aquatic Studies - Phase I Report (Vol. 1): Aquatic habitat and instream flow project. Prepared for Acres American, Inc. Buffalo, NY. 260 pp.
7. Alaska Department of Fish and Game. 1981. Susitna Hydro Aquatic Studies - Phase I Report (Vol. 2 Pt. 1): Aquatic habitat and instream flow project. Prepared for Acres American, Inc. Buffalo, NY. 305 pp.
8. Alaska Department of Fish and Game. 1981. Susitna Hydro Aquatic Studies - Phase I Report (Vol. 2 Pt. 2): Aquatic habitat and Instream Flow Project. Prepared for Acres American, Inc. Buffalo, NY. 541 pp.
9. Alaska Department of Fish and Game. 1982. Susitna Hydro Aquatic Studies - Phase I Report: Aquatic Studies Program. Prepared for ACRES American Incorporated, Buffalo, NY. 137 pp.
- 9a. *Alaska Department of Fish and Game. 1982. Susitna Hydro Aquatic Studies - Phase II Final Data Report: Volume 2. Adult Anadromous Fish Studies. Anchorage, AK 239 pp.

- 9b. *Alaska Department of Fish and Game. 1982. Susitna Hydro Aquatic Studies - Phase II Final Report: Volume 2. Adult Anadromous Fish Studies, Part B: Appendices A-H. Anchorage, AK 318 pp.
10. Alaska Department of Fish and Game. 1983. Review Comments - Draft Exhibit E - Susitna Hydroelectric Project. Prepared for Alaska Power Authority.
11. Alaska Department of Fish and Game. 1983. Susitna Hydro Aquatic Studies - Phase II Data Report: Winter aquatic studies (October, 1982 - May, 1983), Anchorage, AK. 137 pp.
12. Alaska Department of Fish and Game. 1983. Susitna Hydro Aquatic Studies, Phase II Report: Synopsis of the 1982 aquatic studies and analysis of fish and habitat relationships. Anchorage, AK. 152 pp.
13. Alaska Department of Fish and Game. 1983. Susitna Hydro Aquatic Studies - Phase II Report: Synopsis of the 1982 aquatic studies and analysis of fish and habitat relationships. Appendices A-K. Anchorage, AK. 357 pp.
14. Alaska Department of Fish and Game. 1983. Susitna Hydro Aquatic Studies. Phase II Basic Data Report. Volume 3: Resident and juvenile anadromous fish studies below Devil Canyon, 1982. 277 pp.
15. Alaska Department of Fish and Game. 1983. Susitna Hydro Aquatic Studies. Phase II Basic Data Report. Volume 3: Resident and juvenile anadromous fish studies below Devil Canyon, 1982 (Appendices).
16. Alaska Department of Fish and Game. 1983. Susitna Hydro Aquatic Studies: Phase II Basic Data Report. Volume 4: Aquatic habitat and instream flow studies 1982, Part I (Draft). Anchorage, AK. 183 pp.
17. Alaska Department of Fish and Game. 1983. Susitna Hydro Aquatic Studies: Phase II Basic Data Report. Volume 4: Aquatic habitat and instream flow studies, 1982, Part II. 215 pp.
18. Alaska Department of Fish and Game. 1983. Susitna Hydro Aquatic Studies. Phase II Basic Data Report. Volume 4: Aquatic habitat and instream flow studies, 1982, Appendix A (Draft). Anchorage, AK. 182 pp.
19. Alaska Department of Fish and Game. 1983. Susitna Hydro Aquatic Studies: Phase II Basic Data Report. Volume 4: Aquatic habitat and instream flow studies, 1982, Appendix B (Draft). Anchorage, AK. 99 pp.
20. Alaska Department of Fish and Game. 1983. Susitna Hydro Aquatic Studies: Phase II Basic Data Report. Volume 4: Aquatic habitat and instream flow studies, 1982, Appendix C (Draft). Anchorage, AK. 221 pp.

21. Alaska Department of Fish and Game. 1983. Susitna Hydro Aquatic Studies: Phase II Basic Data Report. Volume 4: Aquatic habitat and instream flow studies, 1982, Appendices D and E (Draft). Anchorage, AK. 168 pp.
22. Alaska Department of Fish and Game. 1983. Susitna Hydro Aquatic Studies: Phase II Basic Data Report. Volume 4: Aquatic habitat and instream flow studies, 1982, Appendices F-J (Draft). Anchorage, AK. 236 pp.
23. Alaska Department of Fish and Game. 1983. Susitna Hydro Aquatic Studies - Phase II Basic Data Report. Volume 5: Upper Susitna River impoundment studies, 1982. Anchorage, AK. 150 pp.
24. Alaska Department of Fish and Game. 1984. Susitna Hydro Aquatic Studies, Report No. 1: Adult Anadromous Fish Investigations, May - October 1983. Prepared for Alaska Power Authority, Anchorage, AK. 380 pp.
25. *Alaska Department of Fish and Game. 1984. Susitna Hydro Aquatic Studies, Report No. 2: Resident and juvenile anadromous fish investigations, May - October 1983. Dana C. Schmidt, Stephen S. Hale, Drew L. Crawford, Paul M. Suchanek (eds.), Prepared for: Alaska Power Authority, Anchorage, AK. 395 pp.
26. *Alaska Department of Fish and Game. 1984. Susitna Hydro Aquatic Studies, Report No. 3: Aquatic Habitat and Instream Flow Investigations, May - October 1983. Chapter 1: Stage and Discharge Investigations. Prepared for Alaska Power Authority, Anchorage, AK. 136 pp.
27. *Alaska Department of Fish and Game. 1984. Susitna Hydro Aquatic Studies, Report No. 3: Aquatic Habitat and Instream Flow Investigations, May - October 1983. Chapter 2: Channel geometry investigations of the Susitna River Basin. Prepared for Alaska Power Authority, Anchorage, AK. 212 pp.
28. Alaska Department of Fish and Game. 1984. Susitna Hydro Aquatic Studies, Report No. 3: Aquatic Habitat and Instream Flow Investigations, May - October 1983. Chapter 3: Continuous water temperature investigations. Prepared for Alaska Power Authority, Anchorage, AK. 145 pp.
29. *Alaska Department of Fish and Game. 1984. Susitna Hydro Aquatic Studies, Report No. 3: Aquatic Habitat and Instream Flow Investigations (May-October 1983) - Chapter 4: Water Quality Investigations (+ Appendix). Prepared for Alaska Power Authority, Anchorage, AK. 30 pp.

30. *Alaska Department of Fish and Game. 1984. Susitna Hydro Aquatic Studies, Report No. 3: Aquatic Habitat and Instream Flow Investigations (May-October 1983) - Chapter 5: Eulachon Spawning Habitat in the Lower Susitna River (+ Appendix). Prepared for Alaska Power Authority, Anchorage, AK. 32 pp.
31. Alaska Department of Fish and Game. 1984. Susitna Hydro Aquatic Studies, Report No. 3: Aquatic Habitat and Instream Flow Investigations, May - October 1983 (Review Draft). Chapter 6: An evaluation of passage conditions for adult salmon in sloughs and side channels of the Middle Susitna River. Prepared for Alaska Power Authority, Anchorage, AK. 178 pp.
33. Alaska Department of Fish and Game. 1983. Susitna Hydro Aquatic Studies, Report No. 3: Aquatic Habitat and Instream Flow Investigations, May - October 1983 (Draft). Part II, Chapter 7: An Evaluation of Chum and Sockeye Salmon Spawning Habitat in Sloughs and Side Channels of the Middle Susitna River. Prepared for Alaska Power Authority, Anchorage, AK. 178 pp.
34. Alaska Department of Fish and Game. 1983. Susitna Hydro Aquatic Studies, Report No. 3: Aquatic Habitat and Instream Flow Investigations, May - October 1983 (Draft). Part II, Chapter 7: An Evaluation of Chum and Sockeye Salmon Spawning Habitat in Sloughs and Side Channels of the Middle Susitna River. Prepared for Alaska Power Authority, Anchorage, AK. 178 pp.
35. Alaska Department of Fish and Game. 1983. Susitna Hydro Aquatic Studies, Report No. 3: Aquatic Habitat and Instream Flow Investigations, May - October 1983 (Draft). Part II, Chapter 8: An Evaluation of Salmon Spawning Habitat in Selected Tributary Mouth Habitats of the Middle Susitna River. Prepared for Alaska Power Authority, Anchorage, AK. 70 pp.
36. Alaska Department of Fish and Game. 1983. Susitna Hydro Aquatic Studies, Report No. 3: Aquatic Habitat and Instream Flow Investigations, May - October 1983 (Draft). Part II, Chapter 9: Habitat Suitability Criteria for Chinook, Coho, and Pink Salmon Spawning. Prepared for Alaska Power Authority, Anchorage, AK. 61 pp.
37. Alaska Department of Fish and Game. 1983. Susitna Hydro Aquatic Studies, Report No. 3: Aquatic Habitat and Instream Flow Investigations, May - October 1983 (Draft). Part II, Chapter 10: The Effectiveness of Infrared Thermal Imagery Techniques for Detecting Upwelling Groundwater. Prepared for Alaska Power Authority, Anchorage, AK. 61 pp.
39. Alaska Department of Fish and Game. 1983. Susitna Hydro Aquatic Studies, Report No. 4: Access and Transmission Corridor Aquatic Investigations, July - October 1983. Prepared for Alaska Power Authority, Anchorage, AK.

40. Alaska Department of Fish and Game. 1983. Susitna Hydro Aquatic Studies - Phase II Report: Summarization of Volumes 2, 3, 4; Parts I and II, and 5 - Susitna Hydro Basic Data Reports, 1982. Prepared for Alaska Power Authority, Anchorage, AK. 126 pp.
42. Alaska Department of Fish and Game. 1983. Susitna Hydro Aquatic Studies. Phase II Basic Data Report. Volume 5: Upper Susitna River impoundment studies, 1982. 152 pp.
43. Alaska Department of Fish and Game. 1984. Susitna Hydro Aquatic Studies: Procedures Manual, May 1983 - June 1984. Prepared for Alaska Power Authority, Anchorage, AK. 255 pp.
44. Alaska Department of Fish and Game. 1984. Susitna Hydro Aquatic Studies: Procedures Manual, May 1983 - June 1984. (Appendices). Prepared for Alaska Power Authority, Anchorage, AK. 119 pp.
46. Alaska Department of Fish and Game. 1984. Draft FY85 ADF&G-APA Reimbursable Service Agreement (RSA). Prepared for Alaska Power Authority, Anchorage, Alaska.
47. Barrett, B.M. 1974. An assessment of the anadromous fish populations in the Upper Susitna River watershed between Devil Canyon and the Chulitna River. Division of Commercial Fisheries, Alaska Department of Fish and Game, Anchorage, AK. 57 pp.
49. Barrick, L., B. Kepshire and G. Cunningham. 1983. Upper Susitna River Salmon Enhancement Study (Draft). Division of Fisheries Rehabilitation, Enhancement and Development, Alaska Department of Fish & Game. Anchorage, AK. 15 pp.
- 49a. EWT&A. 1984. Response of aquatic habitat surface areas to mainstem discharge in the Talkeetna to Devil Canyon Reach of the Susitna River, Alaska. Prepared for Alaska Power Authority under contract to Harza-Ebasco Susitna Joint Venture. Final Report. Document No. 1693. 15 pp + appendices.
- 49b. *EWT&A. 1984. Memo Re: Transfer of Information on Mainstem and Side Channel Thermal Leads. August 11, 1984. Anchorage, AK. 1 p.
50. Friese, N.V. 1975. Preauthorization assessment of anadromous fish populations of the upper Susitna River watershed in the vicinity of the proposed Devil Canyon Hydroelectric Project. Division of Commercial Fisheries, Alaska Department of Fish and Game. Anchorage, AK. 108 pp.
51. Mills, Michael J. 1982. Statewide harvest study - 1981 data. Division of Sport Fish, Alaska Department of Fish and Game. Juneau, AK. 115 pp.

52. Mills, Michael J. 1983. Statewide Harvest Study - 1982 data. Division of Sport Fish, Alaska Department of Fish and Game, Juneau, AK. 118 pp.
53. Riis, J.C. 19___. Preauthorization Assessment of the Susitna River Hydroelectric Project: Preliminary investigations of water quality and aquatic species composition. Sport Fish Division, Alaska Department of Fish and Game. Anchorage, AK. 50 pp.

WATER QUALITY

Table EB-41. Habitat Location - Slough 10

River Mile 133.8

Geographic Code - 31N 03W 36 AAC

DATE	TIME	D O (MG/L)	PH	SPEC COND MICROMHOS/CM	TEMP - °C		TURBIDITY (NTU)
					AIR	H2O	
810617	1020	9.00	7.10	134.00	24.20	12.80	45.00
810705	1900	9.80	7.00	121.00	14.60	9.80	
810721	1145	10.70	7.40	101.00	14.00	10.30	130.00
810811	1600	11.50	7.80	190.00	13.30	8.90	103.00
810829	1730	9.90	7.20	137.00	15.00	11.00	67.00
810915	1430	10.10	7.20	144.00	11.80	6.80	22.00
810926	1530		7.20	171.00	4.60	2.70	1.50

Table EB-42. Habitat Location - Slough 11

River Mile 135.3

Geographic Code - 31N 02W 19 DDD

DATE	TIME	D O (MG/L)	PH	SPEC COND MICROMHOS/CM	TEMP - °C		TURBIDITY (NTU)
					AIR	H2O	
810618	1030	9.80	7.10		19.40	9.70	1.50
810705	1800	10.00	7.00	194.00	15.00	7.10	
810719	1430	9.30	6.90	207.00	13.60	7.30	3.50
810815	1530	10.70	7.00	144.00	8.00	6.30	98.00
810827	1315	9.60	6.90	209.00	25.00	7.50	6.00
810915	1630	9.30	6.80	208.00	11.40	5.80	2.40
810926	1315		7.10	210.00	5.30	4.00	3.50

Table EJ-1. (Continued)

SITE DESCRIPTION	DATE	WATER DEPTH (ft)	ICE THICKNESS (ft)	WATER TEMP (°C)	CONDUCTIVITY (umhos /cm)	pH	D.O. (mg /liter)	WATER VELOCITY (ft /sec)	TOTAL DISCHARGE (cfs)
Side Channel Adj. to 4th of July Creek	26 Feb 81	--	--	0.5	170	--	--	0-1	--
Side Channel Above 4th of July Creek	26 Feb 81	4-5	--	0.0	160	--	--	1	--
Main Susitna at 4th of July Creek	11 April 81	1.7	.15	1	270	--	--	0.0	--
Slough 9, Lower Area	11 April 81	0.7	0.0	3	130	7.7	13.0	0.1	--
Slough 9A	26 Feb 81	0.2-1.5	--	1.0	240	--	--	0-0.8	--
Slough 9	9 April 81	1.5	0.0	4	95	--	--	0.1	1.3
Mainstem Susitna Between Sloughs 9A and 10	26 Feb 81	0.4-1	--	3.5	300	--	--	--	--
Slough 10	26 Feb 81	0.7-1.0	--	2.1	265	--	--	0.5	--
Slough 10 Trap 1	8 April 81	1.1	0.0	4	121	6.1	10.7	0.4	2.0
Side Channel of Susitna Below Slough 11	8 April 81	0.8	0.0	3	140	7.6	10.8	<0.1	--
Slough 11	26 Feb 81	0.1-1	--	1.0	125-130	--	--	0.1-1.3	--
Slough 11 - Trap 2	13 April 81	0.8	0.0	4	195	7.6	--	<0.1	2.9
Side Channel Above Slough 11	13 April 81	0.7	0.0	3.5	115	6.8	--	<0.1	--
Slough 14, Beaver Pond	26 Feb 81	0.4	0.7	1.0	45	--	--	--	--

Appendix Table B-1 Summary of intragravel and corresponding surface water quality data collected along the left bank of specific sites in sloughs 8A, 9, 11 and 21 during early (April 15-18) and late (April 29-May 2) sampling periods in spring, 1983.

Slough	Site	Sampling Period	Slough Bank	Variable	Intragravel Water					Surface Water				
					Min	Mean	Max	SD	N	Min	Mean	Max	SD	N
Slough 8A	A	Early	Left	Dissolved Oxygen	4.0	4.3	4.6	0.2	10	7.4	9.5	10.5	1.0	10
	A	Late	Left	Dissolved Oxygen	4.0	4.4	4.6	0.2	10	10.5	11.1	11.3	0.3	10
	A	Early	Left	Water Temperature	2.0	2.3	2.5	0.2	10	2.0	2.4	3.0	0.384	10
	A	Late	Left	Water Temperature	3.0	3.6	5.8	0.8	10	4.2	4.6	5.0	0.245	10
	A	Late	Left	Specific Conductance	236	254	258	6	10	178	183	188	3.0	10
	A	Early	Left	pH	7.2		7.3	--	10	7.1		7.3	--	10
	A	Late	Left	pH	6.4		6.6	--	5	6.4		6.8	--	5
Slough 9	B	Early	Left	Dissolved Oxygen	5.5	6.2	6.8	0.4	10	9.0	9.5	10.0	0.3	10
	B	Late	Left	Dissolved Oxygen	5.3	6.0	6.6	0.5	10	10.4	10.7	10.9	0.1	10
	C	Late	Left	Dissolved Oxygen	1.3	3.3	6.4	27	3	8.0	8.1	8.2	0.1	3
	B	Early	Left	Water Temperature	3.0	3.9	4.9	0.6	10	5.0	5.2	5.4	0.129	10
	B	Late	Left	Water Temperature	3.5	4.0	4.5	0.3	10	6.0	6.3	6.5	0.204	10
	C	Late	Left	Water Temperature	4.0	4.1	4.2	0.1	3	5.2	5.6	6.2	0.513	3
	B	Late	Left	Specific Conductance	201	217	236	15	10	153	157	163	3.0	10
	C	Late	Left	Specific Conductance	218	242	257	21	3	192	196	198	3.0	3
	B	Early	Left	pH	6.5		7.0	--	10	6.5		7.0	--	10
	B	Late	Left	pH	6.2		6.4	--	5	5.9		6.3	--	5
Slough 11	A	Early	Left	Dissolved Oxygen	7.4	7.9	8.4	0.3	10	11.3	11.5	11.6	0.1	10
	A	Late	Left	Dissolved Oxygen	6.7	7.1	7.5	0.3	10	10.9	11.1	11.2	0.1	10
	B	Early	Left	Dissolved Oxygen	6.2	9.0	10.5	1.1	10	9.8	10.2	11.0	6.4	10
	B	Late	Left	Dissolved Oxygen	8.1	8.9	9.2	0.3	10	10.8	11.1	11.3	0.2	10
	A	Early	Left	Water Temperature	2.5	2.8	3.0	0.1	10	3.0	3.1	3.2	0.103	10
	A	Late	Left	Water Temperature	3.5	4.7	7.2	1.0	10	7.5	7.8	8.2	0.271	10
	B	Early	Left	Water Temperature	2.0	2.1	2.2	0.1	10	2.0	2.0	2.0	0.000	10
	B	Late	Left	Water Temperature	3.5	4.0	4.5	0.4	10	6.0	6.1	6.2	0.097	10
	A	Late	Left	Specific Conductance	245	260	268	6	10	241	245	247	2	10
	B	Early	Left	Specific Conductance	258	268	271	4	8	198	262	285	25	9
Slough 21	A	Early	Left	pH	7.1		7.3	--	10	7.1		7.2	--	10
	A	Early	Left	Dissolved Oxygen	2.3	6.1	6.9	1.4	10	6.2	8.5	9.4	1.1	10
	A	Late	Left	Dissolved Oxygen	6.7	7.0	7.4	0.2	9	7.3	9.2	10.2	1.1	9
	A	Early	Left	Water Temperature	2.5	3.0	3.5	0.3	10	2.5	4.5	5.5	1.047	10
	A	Late	Left	Water Temperature	2.5	2.9	4.0	0.5	9	2.5	4.8	6.8	1.571	9
	A	Late	Left	Specific Conductance	236	242	248	4	9	245	251	262	5	9
	A	Early	Left	pH	6.6		7.1	--	10	6.6		7.2	--	10
Slough 21	A	Late	Left	pH	6.6		6.8	--	5	6.6		6.8	--	5

Appendix Table B-2 Summary of intragravel and corresponding surface water quality data collected along the right bank of specific sites in sloughs 8A, 9, 11 and 21 during early (April 15-18) and late (April 29-May 2) sampling periods in spring, 1983.

Slough	Site	Sampling Period	Slough Bank	Variable	Intragravel Water					Surface Water				
					Min	Mean	Max	SD	N	Min	Mean	Max	SD	N
Slough 8A	A	Early	Right	Dissolved Oxygen	4.2	5.0	9.2	1.5	10	10.2	11.1	11.6	0.4	10
	A	Late	Right	Dissolved Oxygen	4.4	4.9	7.9	1.1	10	11.3	11.4	11.6	0.1	10
	A	Early	Right	Water Temperature	0.4	1.8	2.0	0.5	10	0.3	0.5	1.8	0.478	10
	A	Late	Right	Water Temperature	2.2	2.9	3.2	0.3	10	2.0	3.7	4.5	0.696	10
	A	Late	Right	Specific Conductance	215	246	255	11	10	164	179	184	6	10
	A	Early	Right	pH	7.2		7.3	--	10	7.1		7.3	--	10
	A	Late	Right	pH	6.7		6.8	--	5	6.6		6.8	--	5
Slough 9	A	Early	Right	Dissolved Oxygen	3.7	4.9	6.7	0.9	10	9.3	9.6	9.8	0.2	10
	A	Late	Right	Dissolved Oxygen	7.1	8.8	10.8	1.3	10	10.9	11.0	11.0	0.1	10
	A	Early	Right	Water Temperature	4.1	4.3	5.2	0.4	10	5.1	5.3	5.3	0.070	10
	A	Late	Right	Water Temperature	3.5	4.0	5.0	0.5	10	5.8	6.0	6.2	0.133	10
	A	Late	Right	Specific Conductance	128	156	186	19	10	146	153	156	3	10
	A	Early	Right	pH	6.8		7.1		10	6.8		7.0	--	10
	A	Late	Right	pH	6.2		6.6		5	6.3		6.8	--	5
Slough 11	B	Early	Right	Dissolved Oxygen	9.5	10.0	10.8	0.4	10	9.8	10.3	10.6	0.2	10
	B	Late	Right	Dissolved Oxygen	9.4	9.8	10.4	0.3	10	10.3	10.8	11.0	0.2	10
	C	Early	Right	Dissolved Oxygen	1.3	4.9	11.2	4.5	4	11.0	11.6	12.4	0.6	4
	C	Late	Right	Dissolved Oxygen	1.1	4.3	10.2	4.1	4	10.5	10.6	10.8	0.1	4
	B	Early	Right	Water Temperature	1.8	2.1	2.2	0.1	10	1.8	2.0	2.2	0.094	10
	B	Late	Right	Water Temperature	3.5	4.2	4.8	0.4	10	5.2	5.7	6.2	0.357	10
	C	Early	Right	Water Temperature	2.2	2.4	2.5	0.1	4	1.8	1.9	2.0	0.100	4
	C	Late	Right	Water Temperature	4.0	4.7	5.2	0.6	4	5.2	5.4	5.5	0.173	4
	B	Early	Right	Specific Conductance	267	273	280	5	10	267	269	271	2	10
	C	Late	Right	Specific Conductance	159	191	234	35	4	232	239	245	5	4
	B	Early	Right	pH	6.8		6.8	--	1	6.3		6.3	--	1
	C	Early	Right	pH	6.2		6.4	--	4	6.3		6.4	--	4
Slough 21	A	Early	Right	Dissolved Oxygen	5.0	7.6	8.8	1.1	10	9.5	9.8	10.0	0.2	10
	A	Late	Right	Dissolved Oxygen	7.3	7.7	8.4	0.4	10	10.3	10.5	10.6	0.1	10
	A	Early	Right	Water Temperature	4.0	4.4	5.0	0.3	10	5.2	5.2	5.2	0.000	10
	A	Late	Right	Water Temperature	3.8	4.1	4.5	0.3	10	6.8	7.1	7.5	0.207	10
	A	Late	Right	Specific Conductance	174	201	216	16	10	238	243	248	3	10
	A	Early	Right	pH	6.9		7.1	--	10	6.7		7.2	--	10
	A	Late	Right	pH	6.8		6.8	--	5	6.7		6.9	--	5

Appendix Table B-3 Summary of intragravel and corresponding surface water quality data collected at specific sites in sloughs 8A, 9, 11 and 21 during early (April 15-18) and late (April 29-May 2) sampling periods in spring, 1983.

Slough	Site	Sampling Period	Variable	Intragravel Water					Surface Water				
				Min	Mean	Max	SD	N	Min	Mean	Max	SD	N
Slough 8A	A	Early	Dissolved Oxygen	4.0	4.6	9.2	1.1	20	7.4	10.3	11.6	1.1	20
	A	Late	Dissolved Oxygen	4.0	4.6	7.9	0.8	20	10.5	11.2	11.6	0.2	20
	A	Early	Water Temperature	0.4	2.0	2.5	0.5	20	0.3	1.4	3.0	1.0	20
	A	Late	Water Temperature	2.2	3.2	5.8	0.7	20	2.0	4.1	5.0	0.7	20
	A	Late	Specific Conductance	215	250	258	10	20	164	181	188	5	20
	A	Early	pH	7.2		7.3	--	20	7.1		7.3	--	20
	A	Late	pH	6.4		6.8	--	10	6.4		6.8	--	10
Slough 9	A	Early	Dissolved Oxygen	3.7	4.9	6.7	0.9	10	9.3	9.6	9.8	0.2	10
	A	Late	Dissolved Oxygen	7.1	8.8	10.8	1.3	10	10.9	11.0	11.0	0.1	10
	B	Early	Dissolved Oxygen	5.5	6.2	6.8	0.4	10	9.0	9.5	10.0	0.3	10
	B	Late	Dissolved Oxygen	5.3	6.0	6.6	0.5	10	10.4	10.7	10.9	0.1	10
	C	Late	Dissolved Oxygen	1.3	3.3	6.4	2.7	3	8.0	8.1	8.2	0.1	3
	A	Early	Water Temperature	4.1	4.3	5.2	0.4	10	5.1	5.3	5.3	0.1	10
	A	Late	Water Temperature	3.5	4.0	5.0	0.5	10	5.8	6.0	6.2	0.1	10
	B	Early	Water Temperature	3.0	3.9	4.9	0.6	10	5.0	5.2	5.4	0.1	10
	B	Late	Water Temperature	3.5	4.0	4.5	0.3	10	6.0	6.3	6.5	0.2	10
	C	Late	Water Temperature	4.0	4.1	4.2	0.1	3	5.2	5.6	6.2	0.5	3
	A	Late	Specific Conductance	128	156	186	19	10	146	153	156	3	10
	B	Late	Specific Conductance	201	217	236	15	10	153	157	163	3	10
	C	Late	Specific Conductance	218	242	257	21	3	192	196	198	3	3
	A	Early	pH	6.8		7.1	--	10	6.8		7.0	--	10
	A	Late	pH	6.2		6.6	--	5	6.3		6.8	--	5
	B	Early	pH	6.5		7.0	--	10	6.5		7.0	--	10
	B	Late	pH	6.2		6.4	--	5	5.9		6.3	--	5
Slough 11	A	Early	Dissolved Oxygen	7.4	7.9	8.4	0.3	10	11.3	11.5	11.6	0.1	10
	A	Late	Dissolved Oxygen	6.7	7.1	7.5	0.3	10	10.9	11.1	11.2	0.1	10
	B	Early	Dissolved Oxygen	6.2	9.5	10.8	1.0	20	9.8	10.3	11.0	0.3	20
	B	Late	Dissolved Oxygen	8.1	9.3	10.4	0.6	20	10.3	10.9	11.3	0.2	20
	C	Early	Dissolved Oxygen	1.3	4.9	11.2	4.5	4	11.0	11.6	12.4	0.6	4
	C	Late	Dissolved Oxygen	1.1	4.3	10.2	4.1	4	10.5	10.6	10.8	0.1	4
	A	Early	Water Temperature	2.5	2.8	3.0	0.1	10	3.0	3.1	3.2	0.1	10
	A	Late	Water Temperature	3.5	4.7	7.2	1.0	10	7.5	7.8	8.2	0.3	10
	B	Early	Water Temperature	1.8	2.1	2.2	0.1	20	1.8	2.0	2.2	0.1	20
	B	Late	Water Temperature	3.5	4.1	4.8	0.4	20	5.2	5.9	6.2	0.3	20
	C	Early	Water Temperature	2.2	2.4	2.5	0.1	4	1.8	1.9	2.0	0.1	4
	C	Late	Water Temperature	4.0	4.7	5.2	0.6	4	5.2	5.4	5.5	0.2	4
	A	Late	Specific Conductance	245	260	268	6	10	241	245	247	2	10
	B	Early	Specific Conductance	258	270	280	5	18	198	265	285	17	19
	C	Late	Specific Conductance	159	191	234	35	4	232	239	245	5	4
	A	Early	pH	7.1		7.3	--	10	7.1		7.2	--	10
	B	Early	pH	6.8		6.8	--	1	6.3		6.3	--	1
	C	Early	pH	6.2		6.4	--	4	6.3		5.4	--	4

Appendix Table B-4 Summary of intragravel and corresponding surface water quality data collected in sloughs 8A, 9, 11 and 21 during early (April 15-18) and late (April 29-May 2) sampling periods in spring, 1983.

Slough	Sampling Period	Variable	Intragravel Water					Surface Water				
			Min	Mean	Max	SD	N	Min	Mean	Max	SD	N
Slough 8A	Early	Dissolved Oxygen	4.0	4.6	9.2	1.1	20	7.4	10.3	11.6	1.1	20
	Late	Dissolved Oxygen	4.0	4.6	7.9	0.8	20	10.5	11.2	11.6	0.2	20
	Early	Water Temperature	0.4	2.0	2.5	0.5	20	0.3	1.4	3.0	1.0	20
	Late	Water Temperature	2.2	3.2	5.8	0.7	20	2.0	4.1	5.0	0.7	20
	Late	Specific Conductance	215	250	258	10	20	164	181	188	5	20
	Early	pH	7.2		7.3	--	20	7.1		7.3	--	20
	Late	pH	6.4		6.8	--	10	6.4		6.8	--	10
Slough 9	Early	Dissolved Oxygen	3.7	5.6	6.8	0.9	20	9.0	9.6	10.0	0.2	20
	Late	Dissolved Oxygen	1.3	6.9	10.8	2.3	23	8.0	10.5	11.0	1.0	23
	Early	Water Temperature	3.0	4.1	5.2	0.5	20	5.0	5.2	5.4	0.1	20
	Late	Water Temperature	3.5	4.0	5.0	0.4	23	5.2	6.1	6.5	0.3	23
	Late	Specific Conductance	128	194	257	39	23	146	160	198	14	23
	Early	pH	6.5		7.1	--	20	6.5		7.0	--	20
	Late	pH	6.2		6.6	--	10	5.9		6.8	--	10
Slough 11	Early	Dissolved Oxygen	1.3	8.5	11.2	2.2	34	9.8	10.8	12.4	0.7	34
	Late	Dissolved Oxygen	1.1	5.1	10.4	2.2	34	10.3	11.0	11.3	0.2	34
	Early	Water Temperature	1.8	2.3	3.0	0.4	34	1.8	2.3	3.2	0.5	34
	Late	Water Temperature	3.5	4.3	7.2	0.7	34	5.2	6.4	8.2	1.0	34
	Early	Specific Conductance	258	270	280	5	18	198	265	285	17	19
	Late	Specific Conductance	159	240	268	87	14	232	243	247	4	14
	Early	pH	6.2		7.3	--	15	6.3		7.2	--	15
Slough 21	Early	Dissolved Oxygen	2.3	6.9	8.8	1.4	20	6.2	9.1	10.0	1.0	20
	Late	Dissolved Oxygen	6.7	7.4	8.4	8.5	19	7.3	9.9	10.6	1.0	19
	Early	Water Temperature	2.5	3.7	5.0	0.8	20	2.5	4.8	5.5	0.8	20
	Late	Water Temperature	2.5	3.5	4.5	0.7	19	2.5	6.0	7.5	1.6	19
	Late	Specific Conductance	174	221	248	24	19	238	247	262	6	19
	Early	pH	6.6		7.1	--	20	6.6		7.2	--	20
	Late	pH	6.6		6.8	--	10	6.6		6.9	--	10

Table 4-D-4 (Continued).

River Mile	Site	Zone	Geographic Code	Date	Time	Air Temp°C	Water (Mercury) Temp°C	HydroLab Measurements					
								Water Temp°C	D.O. (mg/l)	D.O. (% Sat.)	pH	Spec. Cond. umhos/cm	Turbidity NTU
131.1	4th of July Creek Mouth	3	S30N03W03DAC	820908	1240	12.4	--	8.9	11.2	96	6.7	--	--
131.1	4th of July Creek Mouth	1	S30N03W03DAC	820924	1830	--	--	5.6	12.2	97	6.7	16	1
131.1	4th of July Creek Mouth	3	S30N03W03DAC	820924	1820	6.8	--	5.6	12.0	95	6.8	--	16
MAINSTEM ADULT ANADROMOUS FISH HABITAT INVESTIGATIONS													
131.3	Susitna River	-	S30N03W03DAD	820908	1300	13.0	--	10.2	12.8	112	8.7	74	--
131.3	Susitna River	-	S30N03W03DAD	820908	1300	13.0	--	10.2	12.8	112	8.7	74	--
131.3	Susitna River	-	S30N03W03DAD	820908	1300	11.8	--	9.5	13.9	120	7.0	92	--
131.3	Susitna River	-	S30N03W03DAD	820908	1300	11.8	--	8.6	12.9	110	7.9	124	--
131.3	Susitna River	-	S30N03W03DAD	820908	1300	11.8	--	8.5	12.5	106	7.9	132	--
131.3	Susitna River	-	S30N03W03DAD	820908	1300	11.8	--	9.3	13.1	112	8.0	33	--
ADULT ANADROMOUS FISH INVESTIGATIONS													
133.0	Slough 9A		S30N03W36DAA3										
133.0	Transect 1		S30N03W36DAA3	821003	1300	--	--	5.0	11.3	89	6.9	161	--
133.0	Transect 2		S30N03W36DAA3	821003	1215	11.8	--	3.9	10.2	77	6.9	136	--
133.0	Transect A		S30N03W36DAA3	821003	1200	11.8	--	3.6	11.1	84	6.9	121	--
133.8	Transect 1	-	S31W03W36AAC4	821003	1500	3.0	--	5.0	9.0	70	7.0	183	--
133.8	Transect 2	-	S31W03W36AAC4	821003	1530	--	--	6.5	9.4	76	7.2	226	--
133.8	Transect 3	-	S31W03W36AAC4	821003	1600	--	--	5.5	10.5	83	7.4	205	--
133.8	Transect A	-	S31W03W36AAC4	821003	1630	--	--	4.2	8.9	68	6.9	175	--
DESIGNATED FISH HABITAT SITES													
133.8	Slough 10	2	S31N03W36AAC	820608	1005	--	--	5.8	7.9	63	6.1	144	<1
133.8	Slough 10	3	S31N03W36AAC	820608	1000	--	--	5.2	8.9	70	6.1	132	4
135.3	Slough 11	1	S31N02W19DDD	820604	1200	17.4	--	7.2	10.4	86	5.8	208	<1
135.3	Slough 11	2	S31N02W19DDD	820604	1040	17.4	--	5.3	9.2	74	6.3	211	<1
135.3	Slough 11	3	S31N02W19DDD	820604	1045	17.4	--	5.1	10.0	89	6.7	204	--
135.3	Slough 11	1	S31N02W19DDD	820621	1010	10.2	--	6.3	12.1	98	7.2	222	--
135.3	Slough 11	2	S31N02W19DDD	820621	1045	10.2	--	6.0	11.3	91	7.1	224	20
135.3	Slough 11	3	S31N02W19DDD	820621	1040	10.2	--	6.4	12.5	101	6.9	197	5
135.3	Slough 11	1	S31N02W19DDD	820714	0845	14.0	--	5.6	12.9	102	7.2	230	--
135.3	Slough 11	2	S31N02W19DDD	820714	0830	14.0	--	6.0	10.1	81	7.1	230	--
135.3	Slough 11	3	S31N02W19DDD	820714	0845	14.0	--	10.4	11.4	102	7.6	133	49
135.3	Slough 11	1	S31N02W19DDD	820729	1020	12.0	--	11.6	9.7	89	7.8	--	3
135.3	Slough 11	2	S31N02W19DDD	820729	0950	12.0	--	6.1	9.8	89	7.1	--	1
135.3	Slough 11	3	S31N02W19DDD	820729	1040	12.0	--	5.9	9.6	77	7.2	--	59
135.3	Slough 11	1	S31N02W19DDD	820812	0945	12.0	--	5.6	11.3	90	6.6	--	<1

Table 4-D-4 (Continued).

River Mile	Site	Zone	Geographic Code	Date	Time	Air Temp °C	Water (Mercury) Temp °C	Hydrolab Measurements					
								Water Temp °C	D.O. (mg/l)	D.O. (% Sat.)	pH	Spec. Cond. umhos/cm	Turbidity NTU
135.3	Slough 11	2	S31N02W19DDD	820812	0940	12.0	--	4.6	10.2	78	6.4	--	< 1
135.3	Slough 11	3	S31N02W19DDD	820812	0935	12.0	--	9.3	10.6	93	7.4	--	38
135.3	Slough 11	1	S31N02W19DDD	820822	1525	--	--	8.2	10.2	87	7.2	--	2
135.3	Slough 11	2	S31N02W19DDD	820822	1515	--	--	8.4	10.3	88	7.3	--	9
135.3	Slough 11	3	S31N02W19DDD	820822	1535	--	--	10.5	10.4	93	7.5	--	30
135.3	Slough 11	1	S31N02W19DDD	820906	1550	12.8	--	6.2	10.3	83	6.8	--	1
135.3	Slough 11	2	S31N02W19DDD	820906	1530	12.8	--	6.1	10.2	83	7.1	--	3
135.3	Slough 11	3	S31N02W19DDD	820906	1540	12.8	--	6.8	10.8	89	7.2	--	22
135.3	Slough 11	1	S31N02W19DDD	820929	1715	7.1	--	4.5	11.4	88	7.2	--	3
135.3	Slough 11	2	S31N02W19DDD	820929	1730	7.1	--	4.3	11.6	89	7.2	--	1
135.3	Slough 11	3	S31N02W19DDD	820929	1830	--	--	4.1	12.2	93	6.9	--	4
135.3	Slough 11	-	S31N02W19DDD	820830	1753	--	--	5.7	--	--	4.0	214	--
135.3	Slough 11	-	S31N02W19DDD	820830	1505	--	6.0	5.4	--	--	--	2.4	--
135.3	Slough 11	-	S31N02W19DDD	820918	1050	--	5.9	4.6	11.1	86	6.6	212	--
ADULT ANADROMOUS FISH INVESTIGATIONS													
135.5	Slough 11	-	S31N02W19DDD4										
135.5	Transect 1	-	S31N02W19DDD4	820921	1250	--	--	5.0	10.9	85	5.3	214	--
135.5	Transect 2	-	S31N02W19DDD4	820921	1240	--	--	4.9	10.5	82	7.1	210	--
135.5	Transect 3	-	S31N02W19DDD4	820921	1230	--	--	4.7	10.6	82	7.0	215	--
135.5	Transect 3	-	S31N02W19DDD4	821003	0900	7.2	--	3.3	9.1	68	7.0	221	--
135.5	Transect 4	-	S31N02W19DDD4	820921	1220	--	--	4.6	10.2	79	6.9	213	--
135.5	Transect 5	-	S31N02W19DDD4	820921	1210	--	--	4.4	10.5	81	7.0	217	--
135.5	Transect 5	-	S31N02W19DDD4	821003	0910	--	--	3.0	7.1	53	7.0	224	--
135.5	Transect 6	-	S31N02W19DDD4	820921	1200	--	--	4.5	10.4	80	7.0	218	--
135.5	Transect 6	-	S31N02W19DDD4	821003	0920	--	--	3.1	7.7	57	7.1	225	--
135.5	Transect 7	-	S31N02W19DDD4	820921	1150	9.0	--	4.5	10.6	82	7.0	218	--
135.5	Transect 7	-	S31N02W19DDD4	821003	0940	--	--	3.5	8.0	60	7.1	225	--
MAINSTEM ADULT ANADROMOUS FISH HABITAT INVESTIGATIONS													
136.0	Susitna River	-	S31N02W19AD	820904	1030	12.2	--	5.8	7.1	56	7.3	79	--
136.0	Susitna River	-	S31N02W19AD	820904	1030	12.2	--	6.1	8.0	64	7.6	80	--
136.0	Susitna River	-	S31N02W19AD	820904	1030	12.2	--	7.5	10.6	88	7.8	108	--
136.9	Susitna River	-	S31N02W17CDA	820906	1325	12.2	--	7.7	10.4	87	7.3	91	--
DESIGNATED FISH HABITAT SITES													
137.7	Slough 16	4	S31N02W17ABD	820604	1500	16.4	--	6.8	11.1	91	6.2	42	3

Appendix 4-1. Cont.

LOCATION: SLOUGH 11
RIVER MILE: 135.3

ZONE	HABITAT PARAMETER	JUNE 1-15	JUNE 16-30	JULY 1-15	JULY 16-31	AUGUST 1-15	AUGUST 16-31	SEPTEMBER 1-15	SEPTEMBER 16-30
1	AIR TEMPERATURE (C)	17.4	10.2	14.0	12.0	12.0	-----	12.8	7.1
	WATER TEMPERATURE (C)	7.2	6.3	5.6	11.6	5.6	8.2	6.2	4.5
	DISSOLVED OXYGEN (mg/l)	10.4	12.1	12.9	9.7	11.3	10.2	10.3	11.4
	pH	5.8	7.2	7.2	7.8	6.6	7.2	6.8	7.2
	SPECIFIC CONDUCTANCE (micromhos/cm)	208	222	230	-----	-----	-----	-----	-----
	TURBIDITY (NTU)	< 1	-----	-----	3	< 1	2	1	3
	WATER VELOCITY (ft/s)	1.2	.5	.4	.6	.6	.5	.6	.7
2	AIR TEMPERATURE (C)	17.4	10.2	14.0	12.0	12.0	-----	12.8	7.1
	WATER TEMPERATURE (C)	5.3	6.0	6.0	6.1	4.6	8.4	6.1	4.3
	DISSOLVED OXYGEN (mg/l)	9.2	11.3	10.1	9.8	10.2	10.3	10.2	11.6
	pH	6.3	7.1	7.1	7.1	6.4	7.3	7.1	7.2
	SPECIFIC CONDUCTANCE (micromhos/cm)	211	224	230	-----	-----	-----	-----	-----
	TURBIDITY (NTU)	< 1	2	-----	1	< 1	9	3	1
	WATER VELOCITY (ft/s)	0.0	-----	0.0	0.0	0.0	0.0	0.0	.6
3	AIR TEMPERATURE (C)	17.4	10.2	14.0	12.0	12.0	-----	12.8	-----
	WATER TEMPERATURE (C)	5.1	6.4	10.4	5.9	9.3	10.5	6.8	4.1
	DISSOLVED OXYGEN (mg/l)	10.0	12.5	11.4	9.6	10.6	10.4	10.8	12.2
	pH	6.7	6.9	7.6	7.2	7.4	7.5	7.2	6.9
	SPECIFIC CONDUCTANCE (micromhos/cm)	204	197	133	-----	-----	-----	-----	-----
	TURBIDITY (NTU)	-----	5	49	59	38	30	22	4
	WATER VELOCITY (ft/s)	-----	-----	1.5	1.2	1.6	.9	1.2	1.5

Appendix Table 4-J-1 (Continued).

River Mile	Site	Geographic Code	Date	Time	Air Temp (°C)	Water Temp (°C)	Hydrolab Measurements				Turbidity (NTU)	Water Depth (ft)	Ice Thickness (ft)
							D.O. (mg/l)	D.O. (% sat)	pH	Spec. Cond. (micromhos/cm)			
101.4	Whisker Creek	S26N05W03AAC	820204	1110	6.4	1.6	10.0	72	6.3	30	-	1.3	1.7
			820322	1130	0.0	0.9	9.6	67	7.3	37	1	1.3	0.0
			820422	1200	---	3.8	9.3	70	7.2	---	1	3.0	0.0
112.3	Slough 6A	S28N05W13CAC	820223	1345	-10.5	0.3	---	---	---	---	1	2.0	2.0
			820324	1030	8.5	1.5	7.2	51	6.9	83	3	2.5	0.0
113.6	Lane Creek - Mouth	S28N05W12ADD	820324	1110	1.8	1.8	11.4	82	7.1	64	2	0.4	0.0
114.4	Susitna River	S28N04W06CAB	820324	1145	3.0	3.9	9.2	70	7.3	206	2	1.0	0.0
121.6	Susitna River - Side Channel	S23N04W11BBB	820208	1333	---	1.5	9.4	66	6.5	101	1	0.6	0.0
			820312	1200	-1.2	1.4	9.3	66	6.4	161	-	0.4	0.0
			820422	1305	-9.8	5.8	9.3	75	7.2	82	1	1.2	0.0
122.3	Slough 8D	S29N04W02CBA	820420	1346	13.0	4.6	7.7	60	7.2	166	1	0.9	0.0
123.8	Susitna River	S30N04W26DDD	820222	1200	---	0.3	12.3	84	6.9	274	1	3.5	2.7
125.3	Slough 8A	S30N03W20CCD	820222	1300	-15.0	0.4	6.4	45	6.4	163	1	0.4	0.0
			820312	1300	0.0	1.8	6.3	45	6.4	192	2	0.6	0.0
129.2	Slough 9	S30N03W09DCB	820312	1330	-0.4	2.4	7.6	66	6.5	199	1	0.7	0.0
129.2	Slough 9B	S30N03W09DCB	820416	1540	8.0	4.5	8.3	64	6.0	175	1	1.3	0.0
131.1	Susitna River near mouth of 4th of July Creek	S30N03W03DAC	820312	1400	-0.4	1.3	9.2	65	7.1	353	1	0.9	0.0
			820209	1120	---	1.8	9.3	67	6.2	291	1	4.7	0.0
			820416	1653	6.6	2.3	11.3	83	7.5	279	1	1.5	0.0
133.6	Slough 9A	S30N03W36DAA	820416	1800	4.0	3.7	10.0	86	7.4	184	1	1.1	0.0
133.8	Slough 10	S31N03W36AAC	820208	1354	---	0.8	11.6	81	6.7	197	1	2.4	0.0
			820312	1415	-0.4	1.4	10.0	71	6.8	213	1	1.2	0.0
			820416	1715	5.8	3.6	10.0	75	7.3	187	-	1.5	0.0
135.3	Slough 11	S32N02W19DDD	820205	1556	-1.6	0.9	12.4	87	6.9	224	1	0.8	---
			820308	1120	5.0	1.6	10.5	75	6.4	217	1	0.8	0.0
			820414	1500	4.4	2.2	13.3	69	6.9	207	1	---	1.2
136.9	Susitna River - Inside Bend	S31N02W17CDA	820205	1446	-3.2	0.0	15.1	101	7.0	259	1	1.8	2.6
			820308	1215	4.0	0.1	13.1	89	7.1	292	1	1.5	2.5

INSTREAM TEMPERATURE

Appendix Table A-6 Datapod intragravel and surface water
temperature (C) data summary, at Slough 11,
RM 135.7, Geocode S31N02W30ADC.

- AUGUST 1982 -

DATE	INTRAGRAVEL			SURFACE WATER		
	MIN	MEAN	MAX	MIN	MEAN	MAX
820821	3.2	3.3	3.3	4.7	6.4	9.2
820822	3.2	3.3	3.3	4.9	6.8	9.0
820823	3.2	3.3	3.3	5.9	6.8	8.4
820824	3.2	3.3	3.4	5.5	6.3	8.0
820825	3.2	3.4	3.7	4.3	6.5	8.4
820826	3.6	3.7	4.4	3.5	5.5	7.7
820827	3.4	3.5	3.6	3.4	3.5	3.8
820828	3.4	3.5	3.5	3.4	3.4	3.5
820829	3.5	3.5	3.5	3.4	3.4	3.5
820830	3.4	3.5	3.5	3.3	3.4	3.5
820831	3.4	3.4	3.5	3.3	3.4	3.4
MONTHLY VALUE	3.2	—	4.4	3.3	—	9.2

Appendix Table B-7. Intragravel and corresponding surface water quality measurements collected in Slough 11 (RM 135.3, Geographic Code S31N02W19DDD) of the Susitna River during two sampling periods (April 15-18 and April 29-May 2) in spring, 1983.

SITE	STANDPIPE NUMBER	SAMPLING DATE	SLOUGH BANK	INTRAGRAVEL				SURFACE WATER			
				WATER pH	WATER TEMP(C)	D.O. (mg/l)	SPEC.COND. (umhos/cm)	WATER pH	WATER TEMP(C)	D.O. (mg/l)	SPEC.COND. (umhos/cm)
A	01	830417	LEFT	7.3	2.8	7.8	—	7.2	3.2	11.6	—
A	02	830417	LEFT	7.2	3.0	7.4	—	7.1	3.2	11.3	—
A	03	830417	LEFT	7.1	2.8	8.4	—	7.1	3.2	11.4	—
A	04	830417	LEFT	7.1	2.8	7.8	—	7.1	3.2	11.3	—
A	05	830417	LEFT	7.1	2.5	7.8	—	7.1	3.2	11.5	—
A	06	830417	LEFT	7.2	3.0	7.8	—	7.1	3.2	11.4	—
A	07	830417	LEFT	7.2	2.8	7.6	—	7.2	3.0	11.4	—
A	08	830417	LEFT	7.2	2.8	8.3	—	7.2	3.0	11.5	—
A	09	830417	LEFT	7.2	2.8	8.2	—	7.2	3.0	11.6	—
A	10	830417	LEFT	7.1	3.0	7.5	—	7.2	3.0	11.6	—
A	01	830430	LEFT	—	4.8	6.7	260	—	7.8	11.2	244
A	02	830430	LEFT	—	5.0	7.4	262	—	7.5	11.2	246
A	03	830430	LEFT	—	4.0	6.7	264	—	7.5	11.1	246
A	04	830430	LEFT	—	4.0	7.0	267	—	7.5	10.9	246
A	05	830430	LEFT	—	3.5	7.5	268	—	7.8	11.1	244
A	06	830430	LEFT	—	4.5	7.3	263	—	7.8	11.1	247
A	07	830430	LEFT	—	4.8	7.2	257	—	8.0	11.1	246
A	08	830430	LEFT	—	4.8	7.3	257	—	8.0	11.2	243
A	09	830430	LEFT	—	4.8	7.3	257	—	8.2	11.0	241
A	10	830430	LEFT	—	7.2	6.9	245	—	8.2	11.1	241
B	01	830415	LEFT	—	2.2	9.3	—	—	2.0	10.0	—
B	02	830415	LEFT	—	2.0	9.3	—	—	2.0	10.2	198
B	03	830415	LEFT	—	2.0	8.8	271	—	2.0	10.0	285
B	04	830415	LEFT	—	2.0	9.0	265	—	2.0	10.1	269
B	05	830415	LEFT	—	2.0	8.8	267	—	2.0	9.8	267
B	06	830415	LEFT	—	2.2	9.3	271	—	2.0	10.2	269
B	07	830415	LEFT	—	2.0	6.2	258	—	2.0	9.8	267
B	08	830415	LEFT	—	2.2	9.5	271	—	2.0	10.4	267
B	09	830415	LEFT	—	2.2	10.5	269	—	2.0	10.6	269
B	10	830415	LEFT	—	2.2	9.5	269	—	2.0	11.0	267
B	01	830415	RIGHT	6.8	2.0	9.8	267	6.3	2.0	9.8	267
B	02	830415	RIGHT	—	2.0	10.0	271	—	2.2	10.6	267
B	03	830415	RIGHT	—	2.2	9.5	269	—	2.0	10.2	267
B	04	830415	RIGHT	—	2.0	9.6	267	—	2.0	10.6	271
B	05	830415	RIGHT	—	1.8	10.8	271	—	1.8	10.4	269
B	06	830415	RIGHT	—	2.0	10.6	273	—	2.0	10.4	269
B	07	830415	RIGHT	—	2.2	10.1	276	—	2.0	10.5	271
B	08	830415	RIGHT	—	2.2	9.6	276	—	2.0	10.2	267
B	09	830415	RIGHT	—	2.2	10.1	278	—	2.0	10.1	267
B	10	830415	RIGHT	—	2.2	9.7	280	—	2.0	10.2	271
B	01	830429	RIGHT	—	4.0	9.7	—	—	5.8	10.3	—
B	02	830429	RIGHT	—	4.5	9.4	—	—	5.2	10.5	—
B	03	830429	RIGHT	—	3.8	9.5	—	—	5.2	10.8	—
B	04	830429	RIGHT	—	4.2	10.1	—	—	5.5	10.9	—
B	05	830429	RIGHT	—	4.5	10.4	—	—	5.2	11.0	—

Appendix Table B-7. (Cont.)

SITE	STANDPIPE NUMBER	SAMPLING DATE	SLOUGH BANK	INTRAGRAVEL				SURFACE WATER			
				pH	WATER TEMP(C)	D.O. (mg/l)	SPEC.COND. (umhos/cm)	pH	WATER TEMP(C)	D.O. (mg/l)	SPEC.COND. (umhos/cm)
B	06	830429	RIGHT	—	4.5	9.9	—	—	6.2	10.8	—
B	07	830429	RIGHT	—	4.8	9.8	—	—	5.8	10.9	—
B	08	830429	RIGHT	—	4.0	9.6	—	—	6.0	10.7	—
B	09	830429	RIGHT	—	4.0	9.6	—	—	5.8	10.9	—
B	10	830429	RIGHT	—	3.5	9.6	—	—	5.8	11.0	—
B	01	830429	LEFT	—	3.8	9.0	—	—	6.0	10.8	—
B	02	830429	LEFT	—	4.0	9.0	—	—	6.0	11.1	—
B	03	830429	LEFT	—	4.5	8.6	—	—	6.2	11.1	—
B	04	830429	LEFT	—	4.0	8.6	—	—	6.0	11.0	—
B	05	830429	LEFT	—	4.5	8.1	—	—	6.0	11.1	—
B	06	830429	LEFT	—	4.0	9.0	—	—	6.0	11.1	—
B	07	830429	LEFT	—	4.2	8.9	—	—	6.2	11.3	—
B	08	830429	LEFT	—	3.5	9.2	—	—	6.2	11.2	—
B	09	830429	LEFT	—	3.5	9.0	—	—	6.0	10.9	—
B	10	830429	LEFT	—	3.8	9.2	—	—	6.0	11.3	—
C	06	830417	RIGHT	6.4	2.5	11.2	—	6.4	2.0	11.4	—
C	08	830417	RIGHT	6.3	2.5	4.8	—	6.3	1.8	11.0	—
C	09	830417	RIGHT	6.3	2.5	2.3	—	6.3	1.8	11.6	—
C	10	830417	RIGHT	6.2	2.2	1.3	—	6.3	1.8	12.4	—
C	06	830430	RIGHT	—	4.0	10.2	206	—	5.5	10.8	245
C	08	830430	RIGHT	—	4.5	3.6	234	—	5.2	10.7	238
C	09	830430	RIGHT	—	5.2	2.3	159	—	5.2	10.6	241
C	10	830430	RIGHT	—	5.2	1.1	166	—	5.5	10.5	232

Table 4-B-21. Hydraulic habitat variables collected at sockeye redds. (Transect number indicates the transect area in which the redd was located).

LOCATION	DATE	TRANSECT	DEPTH (ft)	VELOCITY (ft/s)	SUBSTRATE		INTRAGRAVEL	SURFACE WATER	REDD NUMBER
					PRIMARY	SECONDARY	TEMPERATURE (°C)	TEMPERATURE (°C)	
SLOUGH 8A	820906		.50	.05	GRAVEL	SAND	7.4	7.6	S01
SLOUGH 11	820905		.85	0.00	COBBLE	GRAVEL	5.3	6.8	
SLOUGH 11	820920		2.80	.09	GRAVEL	RUBBLE	3.1		S01
SLOUGH 11	820920		2.80	.07	GRAVEL	RUBBLE	4.1		S02
SLOUGH 11	820920		2.50	.08	GRAVEL	RUBBLE	3.2		S03
SLOUGH 11	820920		2.50	0.00	GRAVEL		3.4		S04
SLOUGH 11	820920		2.60	.01	GRAVEL		3.1		S05
SLOUGH 11	820920		1.80	.06	GRAVEL	RUBBLE	3.2		S06
SLOUGH 11	820920		2.10	.08	GRAVEL	RUBBLE	3.2		S07
SLOUGH 11	820920		.75	.05	GRAVEL	RUBBLE	4.0		S08
SLOUGH 11	820920		1.00	.45	GRAVEL	COBBLE	4.2		S09
SLOUGH 11	820920		1.15	.40	GRAVEL	BOULDER	3.0		S10
SLOUGH 11	820920		1.15	.70	RUBBLE	COBBLE	3.1		S11
SLOUGH 11	820920		.50	.50	GRAVEL	SAND	3.0		S12
SLOUGH 11	820920		1.10	.80	GRAVEL	COBBLE	3.6		S13
SLOUGH 11	820920		.95	.06	RUBBLE	GRAVEL	3.5		S14
SLOUGH 11	820920		1.25	.10	RUBBLE	GRAVEL	3.1		S15
SLOUGH 11	820920		1.30	.30	RUBBLE	GRAVEL	3.2		S16
SLOUGH 11	820920		1.20	.04	GRAVEL	RUBBLE	3.2		S17
SLOUGH 11	820920		.85	.10	GRAVEL	COBBLE	3.2		S18
SLOUGH 11	820920		.90	.30	GRAVEL	SAND	3.4		S19
SLOUGH 11	820920		1.00	.30	RUBBLE	GRAVEL	3.4		S20
SLOUGH 11	820920		1.55	.19	GRAVEL	SAND	3.0		S21
SLOUGH 11	820920		1.45	.28	SAND	GRAVEL	3.2		S22

Appendix Table 4-D-10. Temperature (°C), specific conductance (umhos/cm), and depth (ft) collected at specified locations in Slough 11, October 3, 1982.

Location	Depth	Temperature			Specific Conductance	
		Surface	Intra-gravel	Substrate/ Water ^a		
At mouth by staff gage	LB	0.10	5.6	5.7	5.6	---
	M	0.10	5.6	5.5	5.5	---
	RB	0.10	5.6	5.6	5.6	---
Adjacent to redd C03	LB	1.65	5.5	5.9	5.8	---
	M	1.50	5.3	4.6	5.1	---
	RB	0.40	5.3	4.2	4.9	---
R & M tag line	LB	0.40	5.4	4.9	5.2	---
	M	0.75	5.0	4.4	4.6	---
(upwelling)	RB	0.40	4.2	3.9	4.1	---
Adjacent to redd C09	LB	1.76	4.7	3.7	3.8	---
	M	1.95	4.7	3.9	4.3	---
	RB	0.90	4.6	4.0	4.3	---
Above deep hole	LB	1.00	5.2	4.4	4.4	---
	M	2.85	5.1	4.5	4.5	---
	RB	0.85	5.3	4.9	5.2	---
Upper pool; old redd	LB	0.95	5.3	4.2	4.4	---
	M	2.10	5.2	4.1	4.2	---
	RB	0.75	5.3	5.1	5.6	---

^aTemperature readings obtained at substrate/water interface.

APPENDIX Table 4-C-27 Datapod intragravel and surface water temperature (C) continuous record, at Slough 11, RM 135.7, Geocode S31N02W30ADC.

Note, that time periods are six hours and three minutes in duration; accordingly, daily minimum, maximum and mean values can not be directly calculated from this data.

DATE PERIOD	TIME PERIOD	INTRAGRAVEL			SURFACE WATER		
		MIN	MEAN	MAX	MIN	MEAN	MAX
820821 - 820821	0604 - 1206	3.2	3.3	3.3	4.8	5.3	5.9
820821 - 820821	1207 - 1809	3.2	3.3	3.3	4.7	5.4	6.9
820821 - 820822	1810 - 0012	3.2	3.3	3.3	6.9	8.4	9.2
820822 - 820822	0013 - 0615	3.2	3.3	3.3	6.4	7.6	8.7
820822 - 820822	0616 - 1218	3.2	3.3	3.3	5.0	5.5	6.3
820822 - 820822	1219 - 1821	3.2	3.3	3.3	4.9	5.7	7.3
820822 - 820823	1822 - 0024	3.2	3.3	3.3	7.3	8.4	9.0
820823 - 820823	0025 - 0627	3.2	3.3	3.3	6.6	7.4	8.4
820823 - 820823	0628 - 1230	3.3	3.3	3.3	6.0	6.3	6.6
820823 - 820823	1231 - 1833	3.2	3.3	3.3	5.9	6.2	6.6
820823 - 820824	1834 - 0036	3.2	3.3	3.3	6.6	7.1	7.3
820824 - 820824	0037 - 0639	3.2	3.3	3.3	5.6	6.1	6.8
820824 - 820824	0640 - 1242	3.3	3.3	3.4	5.6	5.6	5.8
820824 - 820824	1243 - 1845	3.2	3.3	3.3	5.5	6.0	7.0
820824 - 820825	1846 - 0048	3.2	3.3	3.3	6.4	7.5	8.0
820825 - 820825	0049 - 0651	3.2	3.3	3.5	4.3	6.1	7.3
820825 - 820825	0652 - 1254	3.3	3.3	3.3	5.0	5.7	6.0
820825 - 820825	1255 - 1857	3.3	3.4	3.5	5.1	6.2	7.2
820825 - 820826	1858 - 0100	3.5	3.5	3.7	7.0	8.0	8.4
820826 - 820826	0101 - 0703	3.6	3.7	3.7	6.2	7.0	7.7
820826 - 820826	0704 - 1306	3.6	3.6	3.7	5.7	6.0	6.3
820826 - 820826	1307 - 1909	3.6	3.7	4.4	3.6	5.5	6.7
820826 - 820827	1910 - 0112	3.6	3.6	3.7	3.5	3.6	4.0
820827 - 820827	0113 - 0715	3.5	3.5	3.6	3.4	3.5	3.8
820827 - 820827	0716 - 1318	3.5	3.5	3.5	3.4	3.5	3.5
820827 - 820827	1319 - 1921	3.4	3.5	3.5	3.4	3.4	3.5
820827 - 820828	1922 - 0124	3.4	3.5	3.5	3.4	3.5	3.5

Table 4-C-27 Cont.

DATE PERIOD	TIME PERIOD	INTRAGRAVEL			SURFACE WATER		
		MIN	MEAN	MAX	MIN	MEAN	MAX
820828 - 820828	0125 - 0727	3.5	3.5	3.5	3.4	3.4	3.5
820828 - 820828	0728 - 1330	3.4	3.5	3.5	3.4	3.5	3.5
820828 - 820828	1331 - 1933	3.4	3.5	3.5	3.4	3.4	3.5
820828 - 820829	1934 - 0136	3.4	3.5	3.5	3.4	3.4	3.5
820829 - 820829	0137 - 0739	3.5	3.5	3.5	3.4	3.5	3.5
820829 - 820829	0740 - 1342	3.5	3.5	3.5	3.4	3.4	3.5
820829 - 820829	1343 - 1945	3.5	3.5	3.5	3.4	3.4	3.5
820829 - 820830	1946 - 0148	3.5	3.5	3.5	3.4	3.4	3.5
820830 - 820830	0149 - 0751	3.4	3.5	3.5	3.4	3.4	3.5
820830 - 820830	0752 - 1354	3.5	3.5	3.5	3.4	3.4	3.4
820830 - 820830	1355 - 1957	3.4	3.5	3.5	3.3	3.4	3.4
820830 - 820831	1958 - 0200	3.4	3.5	3.5	3.3	3.4	3.4
820831 - 820831	0201 - 0803	3.4	3.4	3.4	3.3	3.4	3.4
820831 - 820831	0804 - 1406	3.4	3.4	3.4	3.4	3.4	3.4
820831 - 820831	1407 - 2009	3.4	3.4	3.5	3.3	3.4	3.4
820831 - 820901	2010 - 0212	3.4	3.5	3.5	3.3	3.4	3.4
820901 - 820901	0213 - 0815	3.4	3.4	3.4	3.3	3.4	3.4
820901 - 820901	0816 - 1418	3.4	3.4	3.4	3.3	3.4	3.4
820901 - 820901	1419 - 2021	3.4	3.4	3.5	3.3	3.4	3.4
820901 - 820902	2022 - 0224	3.4	3.5	3.5	3.3	3.4	3.5
820902 - 820902	0225 - 0827	3.4	3.5	3.5	3.4	3.4	3.5
820902 - 820902	0828 - 1430	3.4	3.5	3.5	3.4	3.4	3.4
820902 - 820902	1431 - 2033	3.4	3.4	3.5	3.3	3.4	3.4
820902 - 820903	2034 - 0236	3.4	3.5	3.5	3.4	3.4	3.5
820903 - 820903	0237 - 0839	3.4	3.5	3.5	3.4	3.4	3.5
820903 - 820903	0840 - 1442	3.4	3.4	3.5	3.4	3.4	3.4
820903 - 820903	1443 - 2045	3.4	3.4	3.5	3.3	3.4	3.4
820903 - 820904	2046 - 0248	3.4	3.5	3.5	3.3	3.4	3.4

Appendix Table 4-C-28 Cont.

DATE PERIOD	TIME PERIOD	INTRAGRAVEL			SURFACE WATER		
		MIN	MEAN	MAX	MIN	MEAN	MAX
820904 - 820904	0249 - 0851	3.4	3.5	3.5	3.3	3.4	3.4
820904 - 820904	0852 - 1454	3.4	3.4	3.5	3.3	3.3	3.4
820904 - 820904	1455 - 2057	3.3	3.4	3.5	3.3	3.3	3.4
820904 - 820905	2058 - 0300	3.4	3.4	3.5	3.3	3.4	3.4
820905 - 820905	0301 - 0903	3.4	3.4	3.5	3.3	3.4	3.4
820905 - 820905	0904 - 1506	3.3	3.4	3.4	3.3	3.3	3.4
820905 - 820905	1507 - 2109	3.4	3.4	3.4	3.3	3.3	3.4
820905 - 820906	2110 - 0312	3.4	3.4	3.5	3.3	3.4	3.4
820906 - 820906	0313 - 0915	3.4	3.4	3.5	3.3	3.4	3.4
820906 - 820906	0916 - 1518	3.4	3.4	3.5	3.3	3.4	3.4
820906 - 820906	1519 - 2121	3.4	3.4	3.4	3.3	3.4	3.4
820906 - 820907	2122 - 0324	3.4	3.4	3.5	3.3	3.4	3.4
820907 - 820907	0325 - 0927	3.4	3.4	3.4	3.3	3.3	3.4
820907 - 820907	0928 - 1530	3.3	3.4	3.4	3.3	3.3	3.4
820907 - 820907	1531 - 2133	3.4	3.4	3.4	3.3	3.3	3.4
820907 - 820908	2134 - 0336	3.4	3.4	3.5	3.3	3.4	3.4
820908 - 820908	0337 - 0939	3.4	3.4	3.5	3.3	3.4	3.4
820908 - 820908	0940 - 1542	3.4	3.4	3.5	3.3	3.4	3.4
820908 - 820908	1543 - 2145	3.4	3.4	3.5	3.3	3.4	3.4
820908 - 820909	2146 - 0348	3.4	3.4	3.5	3.3	3.4	3.4
820909 - 820909	0349 - 0951	3.4	3.4	3.5	3.3	3.4	3.4
820909 - 820909	0952 - 1554	3.3	3.4	3.4	3.3	3.4	3.4
820909 - 820909	1555 - 2157	3.3	3.4	3.4	3.3	3.3	3.4
820909 - 820910	2158 - 0400	3.4	3.4	3.4	3.3	3.3	3.4
820910 - 820910	0401 - 1003	3.4	3.4	3.4	3.3	3.3	3.4
820910 - 820910	1004 - 1606	3.3	3.4	3.4	3.3	3.3	3.3
820910 - 820910	1607 - 2209	3.3	3.4	3.4	3.3	3.3	3.4
820910 - 820911	2210 - 0412	3.3	3.4	3.4	3.3	3.3	3.4

APPENDIX Table 4-C-27 Cont.

DATE PERIOD	TIME PERIOD	INTRAGRAVEL			SURFACE WATER		
		MIN	MEAN	MAX	MIN	MEAN	MAX
820911 - 820911	0413 - 1015	3.4	3.4	3.4	3.3	3.3	3.3
820911 - 820911	1016 - 1618	3.3	3.4	3.4	3.3	3.3	3.3
820911 - 820911	1619 - 2221	3.3	3.4	3.4	3.3	3.3	3.3
820911 - 820912	2222 - 0424	3.3	3.4	3.4	3.2	3.3	3.3
820912 - 820912	0425 - 1027	3.3	3.4	3.4	3.3	3.3	3.3
820912 - 820912	1028 - 1630	3.3	3.4	3.4	3.2	3.3	3.3
820912 - 820912	1631 - 2233	3.3	3.3	3.4	3.2	3.3	3.3
820912 - 820913	2234 - 0436	3.3	3.4	3.4	3.3	3.3	3.4
820913 - 820913	0437 - 1039	3.3	3.3	3.4	3.3	3.3	3.3
820913 - 820913	1040 - 1642	3.3	3.3	3.4	3.2	3.2	3.3
820913 - 820913	1643 - 2245	3.3	3.3	3.4	3.2	3.3	3.3
820913 - 820914	2246 - 0448	3.3	3.4	3.4	3.2	3.3	3.3
820914 - 820914	0449 - 1051	3.3	3.4	3.4	3.3	3.3	3.3
820914 - 820914	1052 - 1654	3.3	3.3	3.4	3.2	3.3	3.3
820914 - 820914	1655 - 2257	3.3	3.3	3.4	3.2	3.3	3.3
820914 - 820915	2258 - 0500	3.3	3.4	3.4	3.2	3.3	3.3
820915 - 820915	0501 - 1103	3.3	3.4	3.4	3.3	3.3	3.3
820915 - 820915	1104 - 1706	3.3	3.3	3.4	3.2	3.3	3.3
820915 - 820915	1707 - 2309	3.3	3.4	3.4	3.3	3.3	3.3
820915 - 820916	2310 - 0512	3.3	3.4	3.4	3.2	3.3	3.4
820916 - 820916	0513 - 1115	3.3	3.4	3.4	3.2	3.3	3.4
820916 - 820916	1116 - 1718	3.3	3.4	3.4	3.2	3.3	3.3
820916 - 820916	1719 - 2321	3.3	3.3	3.4	3.2	3.3	3.3
820916 - 820917	2322 - 0524	3.3	3.4	3.4	3.3	3.3	3.4
820917 - 820917	0525 - 1127	3.3	3.3	3.4	3.2	3.3	3.3
820917 - 820917	1128 - 1730	3.3	3.3	3.3	3.2	3.3	3.3
820917 - 820917	1731 - 2333	3.3	3.3	3.4	3.2	3.3	3.3
820917 - 820918	2334 - 0536	3.3	3.3	3.4	3.2	3.2	3.3

APPENDIX Table 4-C-27 Cont.

DATE PERIOD	TIME PERIOD	INTRAGRAVEL			SURFACE WATER		
		MIN	MEAN	MAX	MIN	MEAN	MAX
820918 - 820918	0537 - 1139	3.3	3.3	3.3	3.3	3.3	3.3
820918 - 820918	1140 - 1742	3.2	3.3	3.3	3.2	3.2	3.3
820918 - 820918	1743 - 2345	3.3	3.3	3.4	3.2	3.2	3.3
820918 - 820919	2346 - 0548	3.3	3.3	3.3	3.2	3.2	3.2
820919 - 820919	0549 - 1151	3.3	3.3	3.3	3.2	3.2	3.2
820919 - 820919	1152 - 1754	3.3	3.3	3.3	3.2	3.2	3.2
820919 - 820919	1755 - 2357	3.3	3.3	3.3	3.2	3.2	3.2
820919 - 820920	2358 - 0600	3.3	3.3	3.3	3.2	3.2	3.2
820920 - 820920	0601 - 1203	3.3	3.3	3.3	3.2	3.2	3.3
820920 - 820920	1204 - 1806	3.3	3.3	3.3	3.2	3.2	3.2
820920 - 820921	1807 - 0009	3.3	3.3	3.4	3.2	3.2	3.3
820921 - 820921	0010 - 0612	3.3	3.3	3.3	3.2	3.2	3.2
820921 - 820921	0613 - 1215	3.3	3.3	3.3	3.2	3.2	3.3
820921 - 820921	1216 - 1818	3.3	3.3	3.4	3.2	3.2	3.3
820921 - 820922	1819 - 0021	3.3	3.3	3.3	3.2	3.2	3.2
820922 - 820922	0022 - 0624	3.3	3.3	3.3	3.2	3.2	3.3
820922 - 820922	0625 - 1227	3.3	3.3	3.4	3.2	3.2	3.3
820922 - 820922	1228 - 1830	3.3	3.3	3.3	3.2	3.2	3.3
820922 - 820923	1831 - 0033	3.2	3.3	3.4	3.2	3.2	3.3
820923 - 820923	0034 - 0636	3.3	3.3	3.4	3.2	3.2	3.3
820923 - 820923	0637 - 1239	3.3	3.3	3.3	3.2	3.2	3.2
820923 - 820923	1240 - 1842	3.2	3.3	3.3	3.2	3.2	3.3
820923 - 820924	1843 - 0045	3.3	3.3	3.4	3.2	3.2	3.3
820924 - 820924	0046 - 0648	3.3	3.3	3.4	3.2	3.2	3.3
820924 - 820924	0649 - 1251	3.3	3.3	3.3	3.2	3.2	3.2
820924 - 820924	1252 - 1854	3.2	3.3	3.3	3.1	3.2	3.3
820924 - 820925	1855 - 0057	3.2	3.3	3.3	3.2	3.2	3.3

APPENDIX Table 4-C-27 Cont.

DATE PERIOD	TIME PERIOD	INTRAGRAVEL			SURFACE WATER		
		MIN	MEAN	MAX	MIN	MEAN	MAX
820925 - 820925	0058 - 0700	3.2	3.3	3.3	3.1	3.2	3.2
820925 - 820925	0701 - 1303	3.2	3.3	3.3	3.1	3.2	3.2
820925 - 820925	1304 - 1906	3.2	3.3	3.3	3.1	3.2	3.2
820925 - 820926	1907 - 0109	3.2	3.3	3.3	3.1	3.2	3.2
820926 - 820926	0110 - 0712	3.2	3.3	3.3	3.2	3.2	3.2
820926 - 820926	0713 - 1315	3.3	3.3	3.3	3.2	3.2	3.2
820926 - 820926	1316 - 1918	3.2	3.3	3.3	3.1	3.2	3.2
820926 - 820927	1919 - 0121	3.2	3.3	3.3	3.1	3.2	3.2
820927 - 820927	0122 - 0724	3.3	3.3	3.3	3.2	3.2	3.2
820927 - 820927	0725 - 1327	3.3	3.3	3.3	3.2	3.2	3.2
820927 - 820927	1328 - 1930	3.2	3.3	3.3	3.1	3.2	3.2
820927 - 820928	1931 - 0133	3.2	3.3	3.3	3.2	3.2	3.3
820928 - 820928	0134 - 0736	3.2	3.3	3.3	3.1	3.2	3.2
820928 - 820928	0737 - 1339	3.2	3.3	3.3	3.2	3.2	3.2
820928 - 820928	1340 - 1942	3.2	3.3	3.3	3.1	3.2	3.2
820928 - 820929	1943 - 0145	3.2	3.3	3.3	3.1	3.2	3.2
820929 - 820929	0146 - 0748	3.3	3.3	3.3	3.2	3.2	3.2
820929 - 820929	0749 - 1351	3.3	3.3	3.3	3.2	3.2	3.2
820929 - 820929	1352 - 1954	3.2	3.3	3.3	3.1	3.2	3.2
820929 - 820930	1955 - 0157	3.2	3.3	3.3	3.1	3.2	3.2
820930 - 820930	0158 - 0800	3.3	3.3	3.3	3.2	3.2	3.2
820930 - 820930	0801 - 1403	3.3	3.3	3.3	3.2	3.2	3.2
820930 - 820930	1404 - 2006	3.2	3.3	3.3	3.1	3.2	3.3
820930 - 821001	2007 - 0209	3.2	3.3	3.4	3.1	3.2	3.3
821001 - 821001	0210 - 0812	3.3	3.3	3.4	3.2	3.2	3.3
821001 - 821001	0813 - 1415	3.3	3.3	3.3	3.2	3.2	3.2
821001 - 821001	1416 - 2018	3.2	3.3	3.3	3.2	3.2	3.2
821001 - 821002	2019 - 0221	3.2	3.3	3.4	3.1	3.2	3.3

APPENDIX Table 4C-27 Cont.

DATE PERIOD	TIME PERIOD	INTRAGRAVEL			SURFACE WATER		
		MIN	MEAN	MAX	MIN	MEAN	MAX
821002 - 821002	0222 - 0824	3.3	3.3	3.3	3.2	3.2	3.2
821002 - 821002	0825 - 1427	3.2	3.3	3.3	3.1	3.2	3.2
821002 - 821002	1428 - 2030	3.2	3.3	3.3	3.1	3.2	3.2
821002 - 821003	2031 - 0233	3.2	3.3	3.3	3.1	3.2	3.2
821003 - 821003	0234 - 0836	3.2	3.3	3.3	3.1	3.2	3.2
821003 - 821003	0837 - 1439	3.2	3.3	3.3	3.1	3.2	3.2
821003 - 821003	1440 - 2042	3.2	3.3	3.3	3.2	3.2	3.2
821003 - 821004	2043 - 0245	3.2	3.3	3.3	3.2	3.2	3.3
821004 - 821004	0246 - 0848	3.2	3.3	3.3	3.1	3.2	3.2
821004 - 821004	0849 - 1451	3.2	3.3	3.3	3.1	3.2	3.2
821004 - 821004	1452 - 2054	3.2	3.3	3.3	3.1	3.2	3.2
821004 - 821005	2055 - 0257	3.2	3.3	3.3	3.1	3.2	3.2
821005 - 821005	0258 - 0900	3.2	3.3	3.3	3.1	3.2	3.2
821005 - 821005	0901 - 1503	3.2	3.3	3.3	3.1	3.2	3.2
821005 - 821005	1504 - 2106	3.2	3.2	3.3	3.1	3.2	3.2
821005 - 821006	2107 - 0309	3.2	3.2	3.3	3.1	3.1	3.2
821006 - 821006	0310 - 0912	3.2	3.2	3.2	3.1	3.1	3.2
821006 - 821006	0913 - 1515	3.2	3.2	3.3	3.1	3.1	3.2
821006 - 821006	1516 - 2118	3.2	3.2	3.3	3.1	3.1	3.1
821006 - 821007	2119 - 0321	3.2	3.3	3.3	3.1	3.1	3.2
821007 - 821007	0322 - 0924	3.2	3.2	3.2	3.1	3.1	3.1
821007 - 821007	0925 - 1527	3.2	3.2	3.3	3.1	3.1	3.1
821007 - 821007	1528 - 2130	3.2	3.2	3.2	3.1	3.1	3.2
821007 - 821008	2131 - 0333	3.2	3.2	3.3	3.1	3.1	3.1
821008 - 821008	0334 - 0936	3.2	3.2	3.2	3.1	3.1	3.1
821008 - 821008	0937 - 1539	3.1	3.2	3.2	3.1	3.1	3.2
821008 - 821008	1540 - 2142	3.2	3.2	3.3	3.1	3.1	3.1
821008 - 821009	2143 - 0345	3.2	3.2	3.3	3.1	3.1	3.2

APPENDIX Table 4-C-27 Cont.

DATE PERIOD	TIME PERIOD	INTRAGRAVEL			SURFACE WATER		
		MIN	MEAN	MAX	MIN	MEAN	MAX
821009 - 821009	0346 - 0948	3.2	3.2	3.2	3.1	3.1	3.1
821009 - 821009	0949 - 1551	3.1	3.2	3.2	3.1	3.1	3.2
821009 - 821009	1552 - 2154	3.2	3.2	3.3	3.1	3.1	3.1
821009 - 821010	2155 - 0357	3.2	3.2	3.3	3.1	3.1	3.2
821010 - 821010	0358 - 1000	3.2	3.2	3.2	3.1	3.1	3.1
821010 - 821010	1001 - 1603	3.2	3.2	3.3	3.1	3.1	3.1
821010 - 821010	1604 - 2206	3.2	3.2	3.3	3.1	3.1	3.2
821010 - 821011	2207 - 0409	3.2	3.2	3.3	3.1	3.1	3.2
821011 - 821011	0410 - 1012	3.2	3.2	3.3	3.1	3.1	3.1
821011 - 821011	1013 - 1615	3.2	3.2	3.3	3.1	3.1	3.1
821011 - 821011	1616 - 2218	3.2	3.2	3.3	3.1	3.1	3.1
821011 - 821012	2219 - 0421	3.2	3.2	3.2	3.1	3.1	3.1
821012 - 821012	0422 - 1024	3.2	3.2	3.2	3.1	3.1	3.1
821012 - 821012	1025 - 1627	3.1	3.2	3.2	3.1	3.1	3.1
821012 - 821012	1628 - 2230	3.1	3.2	3.2	3.1	3.1	3.1
821012 - 821013	2231 - 0433	3.2	3.2	3.2	3.1	3.1	3.1
821013 - 821013	0434 - 1036	3.2	3.2	3.2	3.1	3.1	3.1
821013 - 821013	1037 - 1639	3.2	3.2	3.2	3.1	3.1	3.1
821013 - 821013	1640 - 2242	3.2	3.2	3.2	3.1	3.1	3.1
821013 - 821014	2243 - 0445	3.2	3.2	3.2	3.1	3.1	3.1
821014 - 821014	0446 - 1048	3.2	3.2	3.3	3.0	3.1	3.1
821014 - 821014	1049 - 1651	3.1	3.2	3.3	3.0	3.1	3.1
821014 - 821014	1652 - 2254	3.1	3.2	3.2	3.1	3.1	3.2
821014 - 821015	2255 - 0457	3.2	3.2	3.3	3.0	3.1	3.2
821015 - 821015	0458 - 1100	3.1	3.2	3.3	3.0	3.1	3.1
821015 - 821015	1101 - 1703	3.1	3.2	3.2	3.0	3.1	3.1
821015 - 821015	1704 - 2306	3.1	3.2	3.3	3.0	3.1	3.1
821015 - 821016	2307 - 0509	3.2	3.2	3.2	3.0	3.1	3.1

APPENDIX Table 4-C-27 Cont.

DATE PERIOD	TIME PERIOD	INTRAGRAVEL			SURFACE WATER		
		MIN	MEAN	MAX	MIN	MEAN	MAX
821016 - 821016	0510 - 1112	3.2	3.2	3.2	3.0	3.1	3.1
821016 - 821016	1113 - 1715	3.2	3.2	3.2	3.0	3.1	3.1
821016 - 821016	1716 - 2318	3.2	3.2	3.2	3.0	3.1	3.1
821016 - 821017	2319 - 0521	3.2	3.2	3.2	3.0	3.0	3.1
821017 - 821017	0522 - 1124	3.2	3.2	3.2	3.0	3.1	3.1
821017 - 821017	1125 - 1727	3.1	3.2	3.2	3.0	3.1	3.1
821017 - 821017	1728 - 2330	3.1	3.2	3.2	3.0	3.1	3.1
821017 - 821018	2331 - 0533	3.2	3.2	3.3	3.0	3.1	3.1
821018 - 821018	0534 - 1136	3.2	3.2	3.2	3.0	3.1	3.1
821018 - 821018	1137 - 1739	3.1	3.2	3.2	3.0	3.1	3.1
821018 - 821018	1740 - 2342	3.1	3.2	3.2	3.0	3.1	3.1
821018 - 821019	2343 - 0545	3.2	3.2	3.2	3.1	3.1	3.1
821019 - 821019	0546 - 1148	3.2	3.2	3.2	3.1	3.1	3.1
821019 - 821019	1149 - 1751	3.2	3.2	3.2	3.0	3.1	3.1
821019 - 821019	1752 - 2354	3.1	3.2	3.2	3.0	3.1	3.1
821019 - 821020	2355 - 0557	3.2	3.2	3.2	3.0	3.1	3.1
821020 - 821020	0558 - 1200	3.2	3.2	3.2	3.0	3.1	3.1
821020 - 821020	1201 - 1803	3.1	3.2	3.2	3.0	3.1	3.1
821020 - 821021	1804 - 0006	3.1	3.2	3.2	3.0	3.1	3.1
821021 - 821021	0007 - 0609	3.2	3.2	3.2	3.0	3.1	3.1
821021 - 821021	0610 - 1212	3.1	3.2	3.2	3.0	3.1	3.1
821021 - 821021	1213 - 1815	3.1	3.2	3.2	3.0	3.1	3.1
821021 - 821022	1816 - 0018	3.1	3.2	3.2	3.0	3.0	3.1
821022 - 821022	0019 - 0621	3.1	3.1	3.2	3.0	3.0	3.0
821022 - 821022	0622 - 1224	3.1	3.1	3.2	2.9	3.0	3.0
821022 - 821022	1225 - 1827	3.1	3.1	3.2	2.9	3.0	3.0
821022 - 821023	1828 - 0030	3.1	3.1	3.2	2.9	3.0	3.0
821023 - 821023	0031 - 0633	3.1	3.1	3.2	2.9	3.0	3.0

APPENDIX Table 4-C-27 Cont.

DATE PERIOD	TIME PERIOD	INTRAGRAVEL			SURFACE WATER		
		MIN	MEAN	MAX	MIN	MEAN	MAX
821023 - 821023	0634 - 1236	3.1	3.1	3.2	3.0	3.0	3.0
821023 - 821023	1237 - 1839	3.1	3.1	3.2	2.9	3.0	3.0
821023 - 821024	1840 - 0042	3.1	3.1	3.2	2.9	3.0	3.0
821024 - 821024	0043 - 0645	3.1	3.1	3.2	3.0	3.0	3.0
821024 - 821024	0646 - 1248	3.1	3.1	3.2	3.0	3.0	3.0
821024 - 821024	1249 - 1851	3.1	3.1	3.2	2.9	3.0	3.1
821024 - 821025	1852 - 0054	3.1	3.1	3.2	2.9	3.0	3.1
821025 - 821025	0055 - 0657	3.1	3.2	3.2	3.0	3.0	3.0
821025 - 821025	0658 - 1300	3.1	3.1	3.2	2.9	3.0	3.0
821025 - 821025	1301 - 1903	3.1	3.1	3.2	2.9	3.0	3.1
821025 - 821026	1904 - 0106	3.1	3.1	3.2	2.9	3.0	3.0
821026 - 821026	0107 - 0709	3.1	3.1	3.2	2.9	3.0	3.0
821026 - 821026	0710 - 1312	3.1	3.1	3.1	3.0	3.0	3.0
821026 - 821026	1313 - 1915	3.1	3.1	3.2	2.9	3.0	3.0
821026 - 821027	1916 - 0118	3.1	3.1	3.2	2.9	3.0	3.0
821027 - 821027	0119 - 0721	3.1	3.1	3.2	2.9	3.0	3.0
821027 - 821027	0722 - 1324	3.1	3.1	3.1	2.9	3.0	3.0

APPENDIX Table 4-C-34 Mean intragravel and surface water temperature (C) datapod data summary, at Slough 11, RM 135.7, Geocode S31N02W30ADC. A two part linear equation interpolation method was used in order to "correct" readings from actual six hour and three minute time intervals to six hour intervals.

- AUGUST 1982 -

TIME PERIOD	DAYS 1 - 8		DAYS 9 - 16		DAYS 17 - 24		DAYS 25 - 31	
	INTRA- GRAVEL	SURFACE WATER	INTRA- GRAVEL	SURFACE WATER	INTRA- GRAVEL	SURFACE WATER	INTRA- GRAVEL	SURFACE WATER
0001 - 0600	---	---	---	---	---	---	3.3	6.4
0601 - 1200	---	---	---	---	---	---	3.3	5.8
1201 - 1800	---	---	---	---	---	---	3.4	6.1
1801 - 2400	---	---	---	---	---	---	3.5	7.5
DAILY VALUE	---	---	---	---	---	---	3.4	6.4
0001 - 0600	---	---	---	---	---	---	3.6	7.3
0601 - 1200	---	---	---	---	---	---	3.6	6.4
1201 - 1800	---	---	---	---	---	---	3.7	5.7
1801 - 2400	---	---	---	---	---	---	3.6	4.3
DAILY VALUE	---	---	---	---	---	---	3.6	5.9
0001 - 0600	---	---	---	---	---	---	3.5	3.6
0601 - 1200	---	---	---	---	---	---	3.5	3.5
1201 - 1800	---	---	---	---	---	---	3.5	3.4
1801 - 2400	---	---	---	---	---	---	3.5	3.5
DAILY VALUE	---	---	---	---	---	---	3.5	3.5
0001 - 0600	---	---	---	---	---	---	3.5	3.4
0601 - 1200	---	---	---	---	---	---	3.5	3.5
1201 - 1800	---	---	---	---	---	---	3.5	3.4
1801 - 2400	---	---	---	---	---	---	3.5	3.4
DAILY VALUE	---	---	---	---	---	---	3.5	3.4
0001 - 0600	---	---	---	---	---	---	3.5	3.5
0601 - 1200	---	---	---	---	---	---	3.5	3.4
1201 - 1800	---	---	---	---	---	---	3.5	3.4
1801 - 2400	---	---	---	---	3.3	8.2	3.5	3.4
DAILY VALUE	---	---	---	---	---	---	3.5	3.4
0001 - 0600	---	---	---	---	3.3	7.7	3.5	3.4
0601 - 1200	---	---	---	---	3.3	5.7	3.5	3.4
1201 - 1800	---	---	---	---	3.3	5.7	3.5	3.4
1801 - 2400	---	---	---	---	3.3	8.1	3.5	3.4
DAILY VALUE	---	---	---	---	3.3	6.8	3.5	3.4
0001 - 0600	---	---	---	---	3.3	7.5	3.5	3.4
0601 - 1200	---	---	---	---	3.3	6.5	3.4	3.4
1201 - 1800	---	---	---	---	3.3	6.2	3.4	3.4
1801 - 2400	---	---	---	---	3.3	6.9	3.4	3.4
DAILY VALUE	---	---	---	---	3.3	6.8	3.4	3.4
0001 - 0600	---	---	---	---	3.3	6.3	MONTHLY VALUE	
0601 - 1200	---	---	---	---	3.3	5.7		
1201 - 1800	---	---	---	---	3.3	5.9		
1801 - 2400	---	---	---	---	3.3	7.1		
DAILY VALUE	---	---	---	---	3.3	6.3		

S. J. E. N. L. X

Table 4-C-34 Cont.

- SEPTEMBER 1982 -

TIME PERIOD	DAYS 1 - 8		DAYS 9 - 16		DAYS 17 - 24		DAYS 25 - 31	
	INTRA- GRAVEL	SURFACE WATER	INTRA- GRAVEL	SURFACE WATER	INTRA- GRAVEL	SURFACE WATER	INTRA- GRAVEL	SURFACE WATER
0001 - 0600	3.4	3.4	3.4	3.4	3.3	3.3	3.3	3.2
0601 - 1200	3.4	3.4	3.4	3.4	3.4	3.3	3.3	3.2
1201 - 1800	3.4	3.4	3.4	3.4	3.3	3.3	3.3	3.2
1801 - 2400	3.4	3.4	3.4	3.3	3.3	3.3	3.3	3.2
DAILY VALUE	3.4	3.4	3.4	3.4	3.3	3.3	3.3	3.2
0001 - 0600	3.5	3.4	3.4	3.3	3.3	3.3	3.3	3.2
0601 - 1200	3.5	3.4	3.4	3.3	3.3	3.2	3.3	3.2
1201 - 1800	3.5	3.4	3.4	3.3	3.3	3.3	3.3	3.2
1801 - 2400	3.5	3.4	3.4	3.3	3.3	3.2	3.3	3.2
DAILY VALUE	3.5	3.4	3.4	3.3	3.3	3.2	3.3	3.2
0001 - 0600	3.5	3.4	3.4	3.3	3.3	3.2	3.3	3.2
0601 - 1200	3.5	3.4	3.4	3.3	3.3	3.2	3.3	3.2
1201 - 1800	3.4	3.4	3.4	3.3	3.3	3.2	3.3	3.2
1801 - 2400	3.4	3.4	3.4	3.3	3.3	3.2	3.3	3.2
DAILY VALUE	3.4	3.4	3.4	3.3	3.3	3.2	3.3	3.2
0001 - 0600	3.5	3.4	3.4	3.3	3.3	3.2	3.3	3.2
0601 - 1200	3.5	3.4	3.4	3.3	3.3	3.2	3.3	3.2
1201 - 1800	3.4	3.3	3.4	3.3	3.3	3.2	3.3	3.2
1801 - 2400	3.4	3.3	3.4	3.3	3.3	3.2	3.3	3.2
DAILY VALUE	3.4	3.4	3.4	3.3	3.3	3.2	3.3	3.2
0001 - 0600	3.4	3.4	3.3	3.3	3.3	3.2	3.3	3.2
0601 - 1200	3.4	3.4	3.4	3.3	3.3	3.2	3.3	3.2
1201 - 1800	3.4	3.3	3.3	3.3	3.3	3.2	3.3	3.2
1801 - 2400	3.4	3.3	3.3	3.2	3.3	3.2	3.3	3.2
DAILY VALUE	3.4	3.4	3.3	3.3	3.3	3.2	3.3	3.2
0001 - 0600	3.4	3.4	3.3	3.3	3.3	3.2	3.3	3.2
0601 - 1200	3.4	3.4	3.4	3.3	3.3	3.2	3.3	3.2
1201 - 1800	3.4	3.4	3.4	3.3	3.3	3.2	3.3	3.2
1801 - 2400	3.4	3.4	3.3	3.3	3.3	3.2	3.3	3.2
DAILY VALUE	3.4	3.4	3.4	3.3	3.3	3.2	3.3	3.2
0001 - 0600	3.4	3.4	3.3	3.3	3.3	3.2	3.3	3.2
0601 - 1200	3.4	3.3	3.4	3.3	3.3	3.2	3.3	3.2
1201 - 1800	3.4	3.3	3.4	3.3	3.3	3.2	3.3	3.2
1801 - 2400	3.4	3.3	3.3	3.3	3.3	3.2	3.3	3.2
DAILY VALUE	3.4	3.3	3.4	3.3	3.3	3.2	3.3	3.2
0001 - 0600	3.4	3.4	3.4	3.3	3.3	3.2	3.3	3.2
0601 - 1200	3.4	3.4	3.4	3.3	3.3	3.2	3.3	3.2
1201 - 1800	3.4	3.4	3.4	3.3	3.3	3.2	3.3	3.2
1801 - 2400	3.4	3.4	3.4	3.3	3.3	3.2	3.3	3.2
DAILY VALUE	3.4	3.4	3.4	3.3	3.3	3.2	3.3	3.2

APPENDIX Table 4-C-34 Cont.

- OCTOBER 1982 -

TIME PERIOD	DAYS 1 - 8		DAYS 9 - 16		DAYS 17 - 24		DAYS 25 - 31	
	INTRA- GRAVEL	SURFACE WATER	INTRA- GRAVEL	SURFACE WATER	INTRA- GRAVEL	SURFACE WATER	INTRA- GRAVEL	SURFACE WATER
0001 - 0600	3.3	3.2	3.2	3.1	3.2	3.1	3.2	3.0
0601 - 1200	3.3	3.2	3.2	3.1	3.2	3.0	3.1	3.0
1201 - 1800	3.3	3.2	3.2	3.1	3.2	3.1	3.1	3.0
1801 - 2400	3.3	3.2	3.2	3.1	3.2	3.1	3.1	3.0
DAILY VALUE	3.3	3.2	3.2	3.1	3.2	3.1	3.1	3.0
0001 - 0600	3.3	3.2	3.2	3.1	3.2	3.1	3.1	3.0
0601 - 1200	3.3	3.2	3.2	3.1	3.2	3.1	3.1	3.0
1201 - 1800	3.3	3.2	3.2	3.1	3.2	3.1	3.1	3.0
1801 - 2400	3.3	3.2	3.2	3.1	3.2	3.1	3.1	3.0
DAILY VALUE	3.3	3.2	3.2	3.1	3.2	3.1	3.1	3.0
0001 - 0600	3.3	3.2	3.2	3.1	3.2	3.1	3.1	3.0
0601 - 1200	3.3	3.2	3.2	3.1	3.2	3.1	3.1	3.0
1201 - 1800	3.3	3.2	3.2	3.1	3.2	3.1	---	---
1801 - 2400	3.3	3.2	3.2	3.1	3.2	3.1	---	---
DAILY VALUE	3.3	3.2	3.2	3.1	3.2	3.1	---	---
0001 - 0600	3.3	3.2	3.2	3.1	3.2	3.1	---	---
0601 - 1200	3.3	3.2	3.2	3.1	3.2	3.1	---	---
1201 - 1800	3.3	3.2	3.2	3.1	3.2	3.1	---	---
1801 - 2400	3.3	3.2	3.2	3.1	3.2	3.1	---	---
DAILY VALUE	3.3	3.2	3.2	3.1	3.2	3.1	---	---
0001 - 0600	3.3	3.2	3.2	3.1	3.2	3.1	---	---
0601 - 1200	3.3	3.2	3.2	3.1	3.2	3.1	---	---
1201 - 1800	3.3	3.2	3.2	3.1	3.2	3.1	---	---
1801 - 2400	3.2	3.2	3.2	3.1	3.2	3.0	---	---
DAILY VALUE	3.3	3.2	3.2	3.1	3.2	3.1	---	---
0001 - 0600	3.2	3.1	3.2	3.1	3.1	3.0	---	---
0601 - 1200	3.2	3.1	3.2	3.1	3.1	3.0	---	---
1201 - 1800	3.2	3.1	3.2	3.1	3.1	3.0	---	---
1801 - 2400	3.2	3.1	3.2	3.1	3.1	3.0	---	---
DAILY VALUE	3.2	3.1	3.2	3.1	3.1	3.0	---	---
0001 - 0600	3.2	3.1	3.2	3.1	3.1	3.0	---	---
0601 - 1200	3.2	3.1	3.2	3.1	3.1	3.0	---	---
1201 - 1800	3.2	3.1	3.2	3.1	3.1	3.0	---	---
1801 - 2400	3.2	3.1	3.2	3.1	3.1	3.0	---	---
DAILY VALUE	3.2	3.1	3.2	3.1	3.1	3.0	---	---
0001 - 0600	3.2	3.1	3.2	3.1	3.1	3.0	MONTHLY VALUE	
0601 - 1200	3.2	3.1	3.2	3.1	3.1	3.0		
1201 - 1800	3.2	3.1	3.2	3.1	3.1	3.0		
1801 - 2400	3.2	3.1	3.2	3.1	3.1	3.0		
DAILY VALUE	3.2	3.1	3.2	3.1	3.1	3.0	3.2	3.1

Appendix Table 4-C-42 Thermograph data summary, winter surface water temperature (C),
Slough 11, RM 135.3, Geocode S31N02W19DDD.

- FEBRUARY 1982 -

TIME PERIOD	DAYS 1 - 8			DAYS 9 - 16			DAYS 17 - 24			DAYS 25 - 31		
	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX
0001 - 0600	---	---	---	---	---	---	---	---	---	2.0	2.0	2.0
0601 - 1200	---	---	---	---	---	---	---	---	---	2.0	2.0	2.0
1201 - 1800	---	---	---	---	---	---	---	---	---	2.0	2.0	2.0
1801 - 2400	---	---	---	---	---	---	---	---	---	2.0	2.0	2.0
DAILY VALUE	---	---	---	---	---	---	---	---	---	2.0	2.0	2.0
0001 - 0600	---	---	---	---	---	---	---	---	---	2.0	2.0	2.0
0601 - 1200	---	---	---	---	---	---	---	---	---	2.0	2.0	2.0
1201 - 1800	---	---	---	---	---	---	---	---	---	2.0	2.0	2.0
1801 - 2400	---	---	---	---	---	---	---	---	---	2.0	2.0	2.0
DAILY VALUE	---	---	---	---	---	---	---	---	---	2.0	2.0	2.0
0001 - 0600	---	---	---	---	---	---	---	---	---	2.0	2.0	2.0
0601 - 1200	---	---	---	---	---	---	---	---	---	2.0	2.0	2.0
1201 - 1800	---	---	---	---	---	---	---	---	---	2.0	2.0	2.0
1801 - 2400	---	---	---	---	---	---	---	---	---	2.0	2.0	2.0
DAILY VALUE	---	---	---	---	---	---	---	---	---	2.0	2.0	2.0
0001 - 0600	---	---	---	---	---	---	---	---	---	2.0	2.0	2.0
0601 - 1200	---	---	---	---	---	---	---	---	---	2.0	2.0	2.0
1201 - 1800	---	---	---	---	---	---	---	---	---	2.0	2.3	2.5
1801 - 2400	---	---	---	---	---	---	---	---	---	2.0	2.0	2.0
DAILY VALUE	---	---	---	---	---	---	---	---	---	2.0	2.1	2.5
0001 - 0600	---	---	---	---	---	---	---	---	---	---	---	---
0601 - 1200	---	---	---	---	---	---	---	---	---	---	---	---
1201 - 1800	---	---	---	---	---	---	---	---	---	---	---	---
1801 - 2400	---	---	---	---	---	---	---	---	---	---	---	---
DAILY VALUE	---	---	---	---	---	---	---	---	---	---	---	---
0001 - 0600	---	---	---	---	---	---	---	---	---	---	---	---
0601 - 1200	---	---	---	---	---	---	---	---	---	---	---	---
1201 - 1800	---	---	---	---	---	---	---	---	---	---	---	---
1801 - 2400	---	---	---	---	---	---	---	---	---	---	---	---
DAILY VALUE	---	---	---	---	---	---	---	---	---	---	---	---
0001 - 0600	---	---	---	---	---	---	---	---	---	---	---	---
0601 - 1200	---	---	---	---	---	---	---	---	---	---	---	---
1201 - 1800	---	---	---	---	---	---	---	---	---	---	---	---
1801 - 2400	---	---	---	---	---	---	---	---	---	---	---	---
DAILY VALUE	---	---	---	---	---	---	---	---	---	---	---	---
0001 - 0600	---	---	---	---	---	---	---	---	---	MONTHLY VALUE		
0601 - 1200	---	---	---	---	---	---	---	---	---			
1201 - 1800	---	---	---	---	---	---	2.0	---	2.0			
1801 - 2400	---	---	---	---	---	---	2.0	2.0	2.0	2.0 --- 2.5		
DAILY VALUE	---	---	---	---	---	---	2.0	---	2.0			

Appendix Table 4-C-42 Cont.

- MARCH 1982 -

TIME PERIOD	DAYS 1 - 8			DAYS 9 - 16			DAYS 17 - 24			DAYS 25 - 31		
	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX
0001 - 0600	2.0	2.0	2.0	2.5	2.5	2.5	2.5	2.5	2.5	2.0	2.0	2.0
0601 - 1200	2.0	2.0	2.0	2.5	2.5	2.5	2.5	2.7	3.0	2.0	2.2	2.5
1201 - 1800	2.0	2.3	2.5	2.5	2.5	2.5	2.5	2.8	3.0	2.5	2.8	3.0
1801 - 2400	2.0	2.0	2.0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
DAILY VALUE	2.0	2.1	2.5	2.5	2.5	2.5	2.5	2.6	3.0	2.0	2.4	3.0
0001 - 0600	2.0	2.0	2.0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
0601 - 1200	2.0	2.0	2.0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.7	3.0
1201 - 1800	2.0	2.2	2.5	2.5	2.7	3.0	2.5	2.5	2.5	2.5	3.0	3.5
1801 - 2400	2.0	2.0	2.0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
DAILY VALUE	2.0	2.0	2.5	2.5	2.5	3.0	2.5	2.5	2.5	2.5	2.7	3.5
0001 - 0600	2.0	2.0	2.0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
0601 - 1200	2.0	2.0	2.0	2.5	2.5	2.5	2.5	2.7	3.0	2.5	2.7	3.0
1201 - 1800	2.0	2.0	2.0	2.5	2.5	2.5	2.5	2.7	3.0	3.0	3.3	3.5
1801 - 2400	2.0	2.0	2.0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.8	3.0
DAILY VALUE	2.0	2.0	2.0	2.5	2.5	2.5	2.5	2.6	3.0	2.5	2.8	3.5
0001 - 0600	2.0	2.0	2.0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
0601 - 1200	2.0	2.2	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.7	3.0
1201 - 1800	2.5	2.5	2.5	2.5	2.7	3.0	2.5	2.5	2.5	3.0	3.3	3.5
1801 - 2400	2.0	2.0	2.0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.7	3.0
DAILY VALUE	2.0	2.2	2.5	2.5	2.5	3.0	2.5	2.5	2.5	2.5	2.8	3.5
0001 - 0600	2.0	2.0	2.0	2.0	2.0	2.0	2.5	2.5	2.5	2.5	2.5	2.5
0601 - 1200	2.0	2.3	2.5	2.0	2.2	2.5	2.5	2.7	3.0	2.5	2.8	3.0
1201 - 1800	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.7	3.0	3.0	3.3	3.5
1801 - 2400	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.7	3.0
DAILY VALUE	2.0	2.3	2.5	2.0	2.3	2.5	2.5	2.6	3.0	2.5	2.8	3.5
0001 - 0600	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
0601 - 1200	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.7	3.0	2.5	2.8	3.0
1201 - 1800	2.5	2.7	3.0	2.5	2.7	3.0	3.0	3.0	3.0	3.0	3.3	3.5
1801 - 2400	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
DAILY VALUE	2.5	2.5	3.0	2.5	2.5	3.0	2.5	2.7	3.0	2.5	2.8	3.5
0001 - 0600	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
0601 - 1200	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.7	3.0	2.5	2.7	3.0
1201 - 1800	2.5	2.5	2.5	2.5	2.7	3.0	2.5	2.8	3.0	2.5	2.8	3.0
1801 - 2400	2.5	2.5	2.5	2.5	2.5	2.5	2.0	2.2	2.5	2.5	2.5	2.5
DAILY VALUE	2.5	2.5	2.5	2.5	2.5	3.0	2.0	2.5	3.0	2.5	2.6	3.0
0001 - 0600	2.5	2.5	2.5	2.5	2.5	2.5	2.0	2.0	2.0	MONTHLY VALUE		
0601 - 1200	2.5	2.5	2.5	2.5	2.5	2.5	2.0	2.5	3.0			
1201 - 1800	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5			
1801 - 2400	2.5	2.5	2.5	2.5	2.5	2.5	2.0	2.0	2.0			
DAILY VALUE	2.5	2.5	2.5	2.5	2.5	2.5	2.0	2.2	3.0	2.0	2.5	3.5

4-C-190

Appendix Table 4-C-42 Cont.

- APRIL 1982 -

TIME PERIOD	DAYS 1 - 8			DAYS 9 - 16			DAYS 17 - 24			DAYS 25 - 31		
	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX
0001 - 0600	2.5	2.5	2.5	2.5	2.5	2.5	3.0	3.0	3.0	—	—	—
0601 - 1200	2.5	2.7	3.0	3.0	3.5	4.0	3.0	3.5	4.0	—	—	—
1201 - 1800	2.5	2.8	3.0	3.0	3.5	4.0	3.5	3.8	4.0	—	—	—
1801 - 2400	2.5	2.5	2.5	2.5	2.7	3.0	3.0	3.0	3.0	—	—	—
DAILY VALUE	2.5	2.6	3.0	2.5	3.0	4.0	3.0	3.3	4.0	—	—	—
0001 - 0600	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	—	—	—
0601 - 1200	2.5	2.8	3.0	2.5	3.3	4.0	3.0	3.5	4.0	—	—	—
1201 - 1800	2.5	3.0	3.5	3.0	3.5	4.0	3.0	3.5	4.0	—	—	—
1801 - 2400	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.7	3.0	—	—	—
DAILY VALUE	2.5	2.7	3.5	2.5	3.0	4.0	2.5	3.0	4.0	—	—	—
0001 - 0600	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.7	3.0	—	—	—
0601 - 1200	2.5	3.0	3.5	2.5	3.3	4.0	3.0	3.8	4.5	—	—	—
1201 - 1800	3.0	3.5	4.0	3.0	3.5	4.0	4.0	4.5	5.0	—	—	—
1801 - 2400	2.5	2.5	2.5	2.5	2.5	2.5	3.0	3.2	3.5	—	—	—
DAILY VALUE	2.5	2.9	4.0	2.5	3.0	4.0	2.5	3.5	5.0	—	—	—
0001 - 0600	2.5	2.5	2.5	2.5	2.5	2.5	3.0	3.0	3.0	—	—	—
0601 - 1200	2.5	3.0	3.5	2.5	3.2	4.0	3.5	4.0	4.5	—	—	—
1201 - 1800	3.0	3.3	3.5	3.0	3.5	4.0	4.0	4.5	5.0	—	—	—
1801 - 2400	2.5	2.7	3.0	2.0	2.3	2.5	3.0	3.2	3.5	—	—	—
DAILY VALUE	2.5	2.9	3.5	2.0	2.9	4.0	3.0	3.7	5.0	—	—	—
0001 - 0600	2.5	2.5	2.5	2.0	2.2	2.5	3.0	3.0	3.0	—	—	—
0601 - 1200	2.5	3.2	3.5	3.0	3.5	4.0	3.5	4.3	5.0	—	—	—
1201 - 1800	3.0	3.2	3.5	3.0	3.3	3.5	4.0	4.8	5.5	—	—	—
1801 - 2400	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.2	3.5	—	—	—
DAILY VALUE	2.5	2.8	3.5	2.0	3.0	4.0	3.0	3.8	5.5	—	—	—
0001 - 0600	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0	—	—	—
0601 - 1200	2.5	3.0	3.5	3.0	3.5	4.0	4.0	4.5	5.0	—	—	—
1201 - 1800	3.0	3.3	3.5	3.5	3.8	4.0	4.0	4.7	5.0	—	—	—
1801 - 2400	2.5	2.7	3.0	2.5	2.8	3.0	—	—	—	—	—	—
DAILY VALUE	2.5	2.9	3.5	2.5	3.3	4.0	3.0	4.1	5.0	—	—	—
0001 - 0600	2.5	2.5	2.5	2.5	2.5	2.5	—	—	—	—	—	—
0601 - 1200	2.5	2.7	3.0	3.0	3.5	4.0	—	—	—	—	—	—
1201 - 1800	3.0	3.0	3.0	4.0	4.3	4.5	—	—	—	—	—	—
1801 - 2400	2.5	2.5	2.5	3.0	3.2	3.5	—	—	—	—	—	—
DAILY VALUE	2.5	2.7	3.0	2.5	3.4	4.5	—	—	—	—	—	—
0001 - 0600	2.5	2.5	2.5	3.0	3.0	3.0	—	—	—	MONTHLY VALUE		
0601 - 1200	3.0	3.2	3.5	3.0	3.3	4.0	—	—	—			
1201 - 1800	3.0	3.5	4.0	3.5	4.0	4.5	—	—	—			
1801 - 2400	2.5	2.7	3.0	3.0	3.0	3.0	—	—	—	2.0	3.1	5.5
DAILY VALUE	2.5	3.0	4.0	3.0	3.3	4.5	—	—	—			

Appendix Table 4-C-52. Instantaneous intragravel water temperatures obtained at salmon spawning redds in Slough 11, Susitna River, Alaska, 1982.

Date	Time (hours)		Redd No.	Salmon Species	Intragravel Temp (°C)	Surface Temp (°C)
	Begin	End				
September 6, 1982	N/A	N/A	--	Chum	5.0	7.1
			--	Chum	6.1	7.0
			--	Chum	-. -	7.0
			--	Chum	4.3	6.8
			--	Chum	4.3	6.8
			--	Sockeye	5.3	6.8
			--	Chum	4.1	7.0
September 20, 1982	1030	1745	01	Sockeye	3.1	-. -
			02	Sockeye	4.1	-. -
			03	Sockeye	3.2	-. -
			04	Sockeye	3.4	-. -
			05	Sockeye	3.1	-. -
			06	Sockeye	3.2	-. -
			07	Sockeye	3.2	-. -
			01	Chum	4.6	-. -
			02	Chum	4.3	-. -
			03	Chum	4.9	-. -
			08	Sockeye	4.0	-. -
			04	Sockeye	4.5	-. -
			05	Sockeye	4.4	-. -
			06	Sockeye	5.0	-. -
			09	Sockeye	4.2	-. -
			08	Chum	5.5	-. -
			10	Sockeye	3.0	-. -
			11	Sockeye	3.1	-. -
			12	Sockeye	3.0	-. -
			13	Sockeye	3.6	-. -
			14	Sockeye	3.5	-. -
			15	Sockeye	3.1	-. -
			16	Sockeye	3.2	-. -
			17	Sockeye	3.2	-. -
			18	Sockeye	3.2	-. -
			09	Chum	3.1	-. -
			19	Sockeye	3.4	-. -
			20	Sockeye	3.4	-. -
			21	Sockeye	3.0	-. -
			22	Sockeye	3.2	-. -

Table 3-A-87. Weekly minimum, mean and maximum intragravel and surface water temperatures (C) at Slough 11 - Site 2, RM 135.7, GC 831N02W19DAD. Values were obtained from temperatures measured at six-hour intervals by a datapod temperature recorder.

Water Year Week	Starting Calendar Date	Intragravel Weekly Values					Surface Water Weekly Values				
		Min (C)	Mean (C)	Max (C)	n	No. of days in record	Min (C)	Mean (C)	Max (C)	n	No. of days in record
31	830429	3.6	----	3.8	20	5	3.5	----	8.7	20	5
32	830506	3.6	3.7	3.9	28	7	3.7	5.8	9.5	28	7
33	830513	3.5	3.7	3.8	28	7	3.7	6.6	9.7	28	7
34	830520	3.6	3.6	3.7	28	7	3.6	6.4	9.0	28	7
35	830527	3.5	3.6	3.7	27	7	3.8	6.0	10.0	27	7
36	830603	3.4	3.5	3.6	28	7	3.7	5.7	9.3	28	7
37	830610	3.5	3.6	3.7	28	7	3.7	5.5	9.4	28	7
38	830617	3.5	3.6	3.7	28	7	3.7	4.6	6.4	28	7
39	830624	3.5	3.6	3.7	28	7	3.8	4.9	8.1	28	7
40	830701	3.5	3.5	3.7	28	7	3.8	5.9	9.2	27	7
41	830708	3.5	3.6	3.7	28	7	4.0	6.6	9.5	28	7
42	830715	3.5	3.6	3.7	28	7	3.9	5.8	9.8	28	7
43	830722	3.5	3.6	3.8	28	7	3.9	5.7	8.9	28	7
44	830729	3.6	3.7	3.8	28	7	3.9	5.4	8.7	28	7
45	830805	3.5	3.6	3.7	28	7	4.6	6.8	10.2	28	7
46	830812	3.5	3.6	3.7	28	7	3.7	6.1	9.0	28	7
47	830819	3.5	3.6	3.7	28	7	3.8	6.0	8.8	28	7
48	830826	3.5	3.5	3.6	28	7	4.7	6.1	8.8	28	7
49	830902	3.4	3.5	3.6	28	7	3.3	5.2	7.7	28	7
50	830909	3.5	3.5	3.6	28	7	3.9	5.4	7.3	28	7
51	830916	3.4	3.5	3.6	28	7	3.1	4.6	6.2	28	7
52	830923	3.2	3.4	3.5	32	8	.9	2.8	4.7	32	8
1	831001	3.2	3.4	3.5	28	7	1.9	3.3	5.4	28	7
2	831008	3.2	3.3	3.3	28	7	1.1	2.4	3.3	28	7
3	831015	3.2	3.3	3.3	28	7	1.6	2.5	3.6	28	7
4	831022	3.2	3.3	3.3	28	7	1.6	2.3	3.3	28	7
5	831029	3.2	----	3.3	12	3	1.9	----	2.5	12	3

3-A-260

Table 3-A-35. Datapod temperature recorder data summary:
intragravel and surface water temperature (C)
at Slough 11 - Site 2, RM 135.7, GC S31N02W19DAD.

May 1983.						
Date	Intragravel			Surface Water		
	Min	Mean	Max	Min	Mean	Max
830501	3.6	3.7	3.8	3.5	4.8	7.7
830502	3.6	3.7	3.8	3.7	5.4	7.4
830503	3.6	3.7	3.8	3.7	5.4	7.4
830504	3.6	3.7	3.8	3.8	4.9	6.9
830505	3.6	3.7	3.8	3.6	5.1	8.7
830506	3.6	3.7	3.8	3.7	4.9	8.1
830507	3.6	3.7	3.8	3.7	4.9	8.5
830508	3.6	3.7	3.8	3.8	6.1	9.5
830509	3.6	3.7	3.9	3.8	6.4	8.8
830510	3.7	3.7	3.8	3.8	6.6	9.0
830511	3.6	3.7	3.8	3.8	6.4	9.5
830512	3.7	3.7	3.8	3.9	5.7	8.3
830513	3.6	3.7	3.8	3.7	7.1	9.7
830514	3.6	3.7	3.8	4.7	7.3	9.6
830515	3.6	3.7	3.8	5.3	6.6	8.0
830516	3.6	3.6	3.7	4.6	6.4	8.2
830517	3.6	3.6	3.7	5.3	6.3	7.6
830518	3.6	3.6	3.7	4.9	6.2	7.7
830519	3.5	3.6	3.7	4.1	6.7	9.1
830520	3.6	3.7	3.7	4.5	7.0	9.0
830521	3.6	3.7	3.7	4.1	6.5	7.7
830522	3.6	3.6	3.7	4.4	6.6	8.7
830523	3.6	3.6	3.7	4.0	6.4	8.4
830524	3.6	3.7	3.7	3.8	5.2	7.6
830525	3.6	3.6	3.7	3.6	6.4	8.5
830526	3.6	3.7	3.7	4.2	6.8	8.9
830527	3.6	3.6	3.7	3.9	5.5	8.6
830528	3.6	3.6	3.7	3.9	6.5	9.7
830529	3.6	3.7	3.7	3.8	4.7	7.9
830530	3.6	3.6	3.7	3.9	5.9	8.2
830531	3.5	3.6	3.7	4.1	6.7	8.0
Monthly Value	3.5	3.7	3.9	3.5	6.0	9.7

Table 3-A-35. (continued).

June 1983						
Date	Intragravel			Surface Water		
	Min	Mean	Max	Min	Mean	Max
830601	3.5	3.6	3.7	4.0	6.7	10.0
830602	3.5	3.6	3.6	4.0	6.2	7.6
830603	3.5	3.5	3.6	5.5	5.8	6.5
830604	3.4	3.5	3.6	4.8	5.4	6.2
830605	3.4	3.5	3.5	5.1	6.0	7.5
830606	3.4	3.5	3.6	3.7	5.5	8.4
830607	3.4	3.5	3.6	3.7	6.0	9.3
830608	3.5	3.5	3.6	3.8	5.9	8.3
830609	3.5	3.5	3.6	4.0	5.5	8.5
830610	3.5	3.5	3.6	3.8	5.0	7.0
830611	3.5	3.5	3.6	3.7	6.4	8.2
830612	3.5	3.6	3.6	4.5	6.3	9.4
830613	3.5	3.6	3.7	4.0	6.2	8.8
830614	3.5	3.6	3.7	3.9	5.7	7.6
830615	3.5	3.6	3.7	3.8	4.7	6.3
830616	3.5	3.6	3.7	3.9	4.6	6.2
830617	3.5	3.6	3.7	3.8	4.5	6.2
830618	3.5	3.6	3.7	3.7	4.6	6.1
830619	3.5	3.6	3.7	3.7	4.4	6.4
830620	3.5	3.6	3.7	3.8	4.7	6.4
830621	3.5	3.6	3.7	3.8	4.8	6.3
830622	3.5	3.6	3.7	3.7	4.5	5.7
830623	3.5	3.6	3.7	3.7	4.5	6.2
830624	3.5	3.6	3.7	3.9	4.7	6.4
830625	3.5	3.6	3.7	3.8	4.7	6.7
830626	3.6	3.6	3.7	4.3	5.2	8.1
830627	3.5	3.6	3.6	4.3	5.0	6.2
830628	3.5	3.6	3.6	4.0	5.1	7.3
830629	3.5	3.5	3.6	4.1	5.0	6.7
830630	3.5	3.5	3.6	4.0	4.8	6.2
Monthly Value	3.4	3.6	3.7	3.7	5.3	10.0

Table 3-A-35. (continued).

July 1983						
Date	Intragravel			Surface Water		
	Min	Mean	Max	Min	Mean	Max
830701	3.5	3.5	3.6	3.9	4.9	6.2
830702	3.5	3.5	3.6	4.3	5.6	8.2
830703	3.5	3.5	3.6	3.9	5.9	9.2
830704	3.5	3.6	3.6	3.8	5.9	8.4
830705	3.5	3.6	3.7	4.9	5.7	6.8
830706	3.5	3.6	3.6	4.6	7.0	7.8
830707	3.5	3.5	3.6	5.5	6.6	8.3
830708	3.5	3.5	3.6	5.5	6.6	8.5
830709	3.5	3.5	3.6	4.0	5.8	8.7
830710	3.5	3.5	3.6	4.2	6.8	9.5
830711	3.5	3.6	3.6	4.3	7.1	9.3
830712	3.5	3.6	3.7	4.2	7.2	9.4
830713	3.5	3.6	3.7	4.1	6.4	8.4
830714	3.5	3.6	3.7	4.1	6.4	8.8
830715	3.5	3.6	3.7	4.0	5.9	9.8
830716	3.5	3.6	3.7	4.0	6.3	9.7
830717	3.6	3.6	3.7	3.9	7.0	8.5
830718	3.6	3.6	3.7	4.0	5.2	7.2
830719	3.5	3.6	3.7	3.9	5.3	8.2
830720	3.6	3.6	3.7	3.9	5.5	8.6
830721	3.6	3.6	3.7	3.9	5.4	8.6
830722	3.6	3.6	3.7	3.9	5.0	8.5
830723	3.6	3.7	3.8	4.3	6.5	8.6
830724	3.6	3.7	3.7	4.6	6.8	8.5
830725	3.5	3.6	3.7	4.2	5.8	8.9
830726	3.5	3.6	3.7	3.9	5.3	8.5
830727	3.6	3.6	3.7	3.9	5.3	7.7
830728	3.5	3.6	3.7	3.9	5.4	8.9
830729	3.6	3.7	3.8	3.9	5.1	8.7
830730	3.6	3.7	3.7	3.9	5.3	7.8
830731	3.6	3.6	3.7	4.1	5.7	7.0
Monthly Value	3.5	3.6	3.8	3.8	5.9	9.8

Table 3-A-35. (continued).

August 1983						
Date	Intragravel			Surface Water		
	Min	Mean	Max	Min	Mean	Max
830801	3.6	3.7	3.7	4.0	5.3	8.6
830802	3.6	3.6	3.7	4.0	5.3	7.5
830803	3.6	3.6	3.7	3.9	5.3	7.8
830804	3.6	3.6	3.7	3.9	5.5	8.0
830805	3.6	3.6	3.7	4.6	5.6	6.4
830806	3.6	3.6	3.7	4.7	6.7	9.1
830807	3.6	3.6	3.7	6.4	7.2	8.1
830808	3.6	3.6	3.7	6.4	6.7	7.2
830809	3.5	3.6	3.6	6.1	7.0	8.6
830810	3.5	3.6	3.7	5.8	7.6	10.2
830811	3.5	3.6	3.6	5.8	7.1	8.5
830812	3.5	3.6	3.7	6.4	6.8	7.3
830813	3.5	3.6	3.6	5.8	6.5	7.6
830814	3.5	3.5	3.6	5.5	6.6	8.8
830815	3.5	3.6	3.6	5.1	6.0	7.3
830816	3.5	3.5	3.6	3.7	6.1	9.0
830817	3.5	3.5	3.6	3.7	5.5	7.5
830818	3.5	3.6	3.7	3.8	5.2	7.7
830819	3.5	3.6	3.7	3.8	5.9	8.8
830820	3.6	3.6	3.7	4.7	6.2	6.7
830821	3.5	3.6	3.6	3.8	5.8	7.2
830822	3.5	3.6	3.6	4.0	6.1	7.5
830823	3.5	3.6	3.6	5.0	6.2	7.1
830824	3.5	3.6	3.6	5.3	6.2	7.5
830825	3.5	3.5	3.6	4.3	5.5	6.8
830826	3.5	3.5	3.6	5.1	6.2	8.1
830827	3.5	3.5	3.6	5.3	6.6	8.8
830828	3.5	3.5	3.6	4.7	6.2	8.1
830829	3.5	3.5	3.6	5.0	5.5	6.7
830830	3.5	3.5	3.6	5.4	6.3	8.2
830831	3.5	3.5	3.6	5.5	6.0	6.8
Monthly Value	3.5	3.6	3.7	3.7	6.1	10.2

Table 3-A-35. (continued).

September 1983						
Date	Intragravel			Surface Water		
	Min	Mean	Max	Min	Mean	Max
830901	3.5	3.5	3.6	5.2	5.6	6.2
830902	3.5	3.5	3.6	4.6	5.9	7.7
830903	3.4	3.5	3.5	4.3	5.3	6.8
830904	3.4	3.5	3.6	3.9	5.0	6.3
830905	3.5	3.5	3.5	3.3	4.8	6.6
830906	3.4	3.5	3.5	3.4	4.8	6.7
830907	3.4	3.5	3.5	3.6	4.9	6.7
830908	3.5	3.5	3.5	4.7	5.4	6.1
830909	3.5	3.5	3.6	4.7	5.6	7.2
830910	3.5	3.5	3.6	4.8	5.8	7.3
830911	3.5	3.5	3.6	4.6	5.6	6.8
830912	3.5	3.5	3.6	4.6	5.7	7.1
830913	3.5	3.5	3.6	4.4	5.4	6.5
830914	3.5	3.5	3.6	3.9	4.8	5.6
830915	3.5	3.5	3.6	4.1	5.2	6.9
830916	3.5	3.5	3.6	3.3	4.5	6.2
830917	3.5	3.5	3.6	3.1	4.4	5.7
830918	3.4	3.5	3.5	3.1	4.2	5.4
830919	3.4	3.5	3.5	3.2	4.2	5.3
830920	3.5	3.5	3.5	4.0	4.8	5.2
830921	3.5	3.5	3.5	4.6	5.2	6.0
830922	3.5	3.5	3.6	4.0	5.1	5.7
830923	3.4	3.5	3.5	2.8	3.8	4.7
830924	3.3	3.5	3.5	1.1	2.2	3.2
830925	3.2	3.3	3.4	.9	2.4	3.6
830926	3.2	3.3	3.4	1.5	2.7	4.5
830927	3.2	3.3	3.4	1.8	2.5	3.4
830928	3.2	3.3	3.3	2.3	2.7	3.2
830929	3.2	3.3	3.3	2.7	2.9	3.2
830930	3.3	3.4	3.4	3.1	3.5	4.4
Monthly Value	3.2	3.5	3.6	.9	4.5	7.7

Table 3-A-35. (continued).

October 1983						
Date	Intragravel			Surface Water		
	Min	Mean	Max	Min	Mean	Max
831001	3.3	3.4	3.5	3.8	4.2	5.1
831002	3.4	3.4	3.5	3.7	4.2	5.4
831003	3.3	3.4	3.5	2.5	3.4	4.2
831004	3.3	3.4	3.4	2.2	3.1	3.8
831005	3.3	3.3	3.4	2.6	3.0	3.5
831006	3.3	3.3	3.4	2.2	3.0	4.4
831007	3.2	3.3	3.4	1.9	2.5	3.4
831008	3.2	3.3	3.3	1.7	2.3	3.2
831009	3.3	3.3	3.3	1.5	2.2	2.7
831010	3.2	3.2	3.3	1.1	1.7	2.6
831011	3.2	3.2	3.3	2.2	2.6	3.3
831012	3.2	3.3	3.3	2.6	2.8	3.3
831013	3.2	3.3	3.3	2.0	2.7	3.1
831014	3.2	3.3	3.3	1.8	2.3	3.1
831015	3.2	3.3	3.3	2.3	2.6	3.0
831016	3.2	3.3	3.3	1.6	2.1	2.6
831017	3.2	3.3	3.3	1.7	2.2	3.0
831018	3.2	3.3	3.3	2.3	2.8	3.6
831019	3.2	3.3	3.3	2.2	2.6	3.2
831020	3.2	3.3	3.3	1.8	2.3	3.3
831021	3.2	3.3	3.3	2.0	2.5	3.3
831022	3.2	3.3	3.3	2.0	2.5	3.3
831023	3.2	3.3	3.3	2.0	2.6	3.3
831024	3.2	3.3	3.3	2.0	2.3	2.8
831025	3.2	3.2	3.3	1.9	2.2	2.8
831026	3.2	3.2	3.3	1.6	2.0	2.5
831027	3.2	3.2	3.3	1.8	2.1	2.5
831028	3.2	3.2	3.3	2.0	2.2	2.7
831029	3.2	3.2	3.3	1.9	2.2	2.4
831030	3.2	3.2	3.3	2.0	2.3	2.5
831031	3.2	3.2	3.3	1.9	2.1	2.4
Monthly Value	3.2	3.3	3.5	1.1	2.6	5.4

HYDRAULICS

Table ED-8 (Continued)

Site	Staff Gage Number	Date	Time	Height
Slough 10	GC061C	810616	1530	1.92
		810617	1020	1.74
		810705	1900	0.76
		810706	1530	0.96
		810706	1630	0.99
		810707	1150	1.36
		810811	1445	2.54
	GC061B	810812	1350	2.65
		810914	1445	0.73
	GC061D	810915	1445	0.59
		810916	1730	0.55
		810618	1030	1.70
Slough 11	GC071A	810619	1105	1.70
		810705	1800	1.10
		810706	2130	1.35
		810707	1100	1.53
	GC071B	810926	1315	0.85
		810927	1030	0.80
	GC072A	810706	2110	1.26
		810707	1000	1.40
Mainstem Susitna- Inside Bend	GC081B	810702	1845	1.70
		810703	2030	1.33
		810704	1630	1.11
		810927	0930	0.02
	GC081A	810719	1600	1.98
		810720	2000	2.11
		810721	0930	1.82
		810722	0950	1.08
	GC081C	810725	1130	0.98
		810926	1130	1.50
		810927	0930	1.33
Indian River	GC091C	810701	1630	2.20
		810703	1115	1.80
	GC091B	810717	1815	2.22
		810717	2030	2.27
		810718	1800	2.45
		810719	1330	2.52
	GC091D	810913	1315	1.20
		810924	1800	1.00
		810925	1500	1.00
	GC092B	810701	1900	2.32
		810702	1430	1.61
		810703	1030	1.07
	GC092A	810719	1150	2.49
		810811	1220	2.51
		810812	1710	2.50
		810813	1645	3.10

Appendix Table 4-A-1 (Continued).

River Mile ^a	Site	Geographic Code	Date	Time	Gage No.	WSEL	Discharge (cfs) Non Mainstem	Discharge (cfs) Mainstem
							Instream Flow Evaluation	USGS Gold Creek
131.1	4th of July Creek	S30N03W03DAC	820803	1200	131.1T1A	625.35	38.33	19,800
135.3	Slough 11 Above Mouth	S31N02W30ABB	820830	1710	-----	----	5.44	13,100
135.7	Slough 11 Q Site	S31N02W30ABB	820830	1425	-----	670.72	3.06	13,100
			820918	1010	135.3S6A	670.80	5.52	27,500
135.8	Slough 11 Above Q Site	S31N02W30ABB	820830	1244	135.3S5A	675.42	1.30	13,100
138.0	Slough 16B Below Q Site	S31N02W17ABD	820902	1212	-----	----	0.96	16,000
			820914	1718	-----	----	0.41	20,200
138.0	Slough 16B Q Site	S31N02W17ABD	820801	1551	138.0S5B	700.85	54.80	26,400
			820915	1412	138.0S5A	701.70	257.64	28,200
			820919	----	138.0S5B	700.58	23.50	24,100
140.0	Slough 19	S31N02W10DBD	820819	1700	140.0W1B	718.79	0.18	13,300
			820819	1730	140.0W1B	718.79	0.40	13,300
140.2	Slough 20	S31N02W10ADB	820820	1643	140.1S5B	726.76	2.60	12,500
			820901	1545	140.1S5B	726.88	11.57	17,900
			820916	1415	140.1S5B	728.06	158.80	32,500
			820918	1825	140.1S5B	727.27	44.82	27,500
			820802	1220	140.1S5B	726.99	16.45	22,500
140.6	Slough 20 Tributary at Head	S31N02W10ADB	820901	1545	140.1T3B	730.22	0.17	17,900
			820916	1232	140.1T3B	731.40	23.45	32,500
			820918	1717	140.1T3B	730.74	9.28	27,500

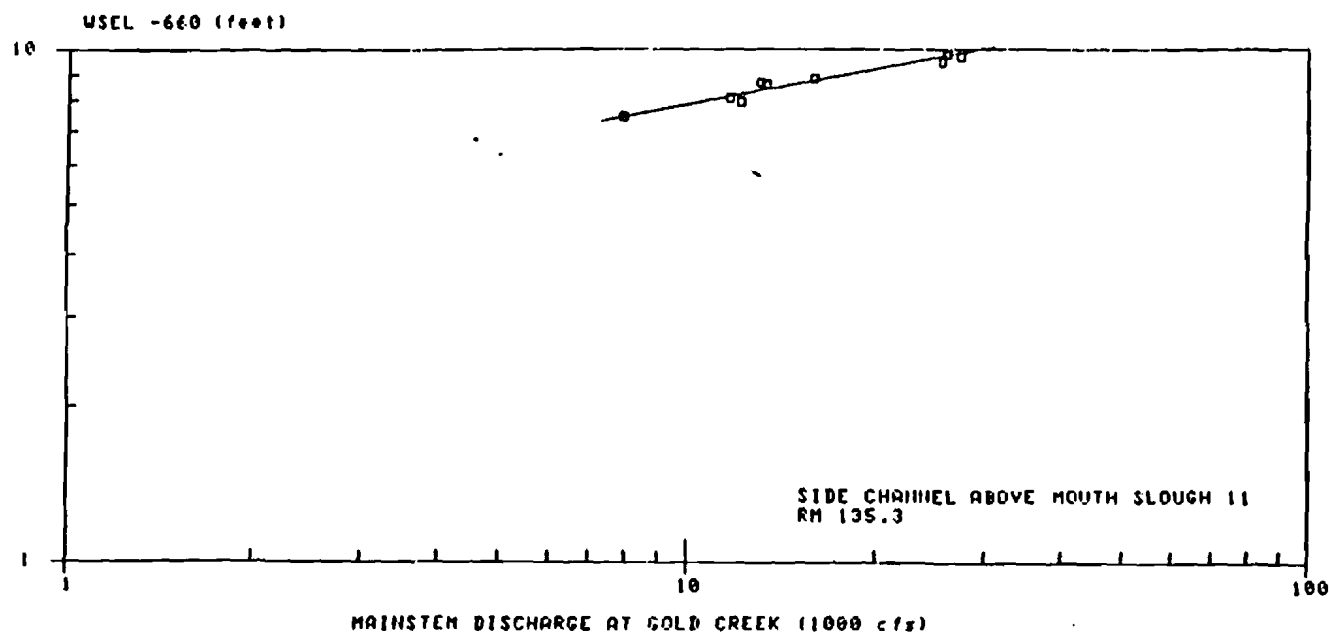
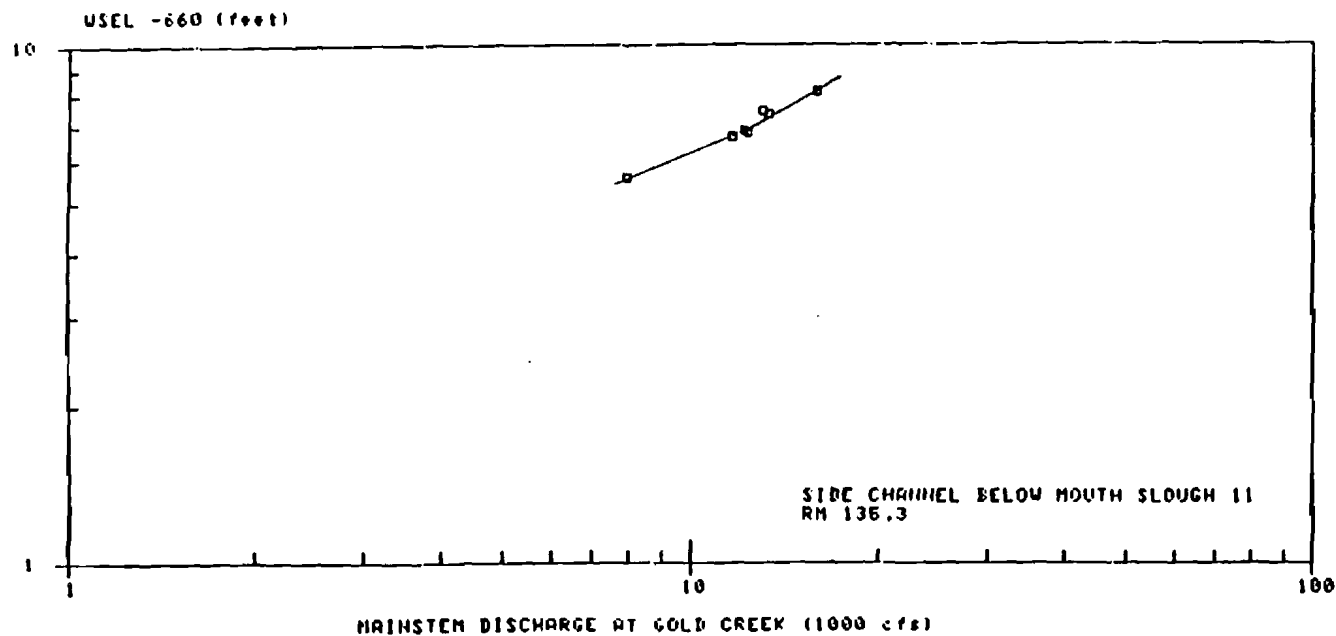
^aRiver mile taken from the most downstream portion of study site.

^bGeographic code taken from the center of the study site.

4-9-47

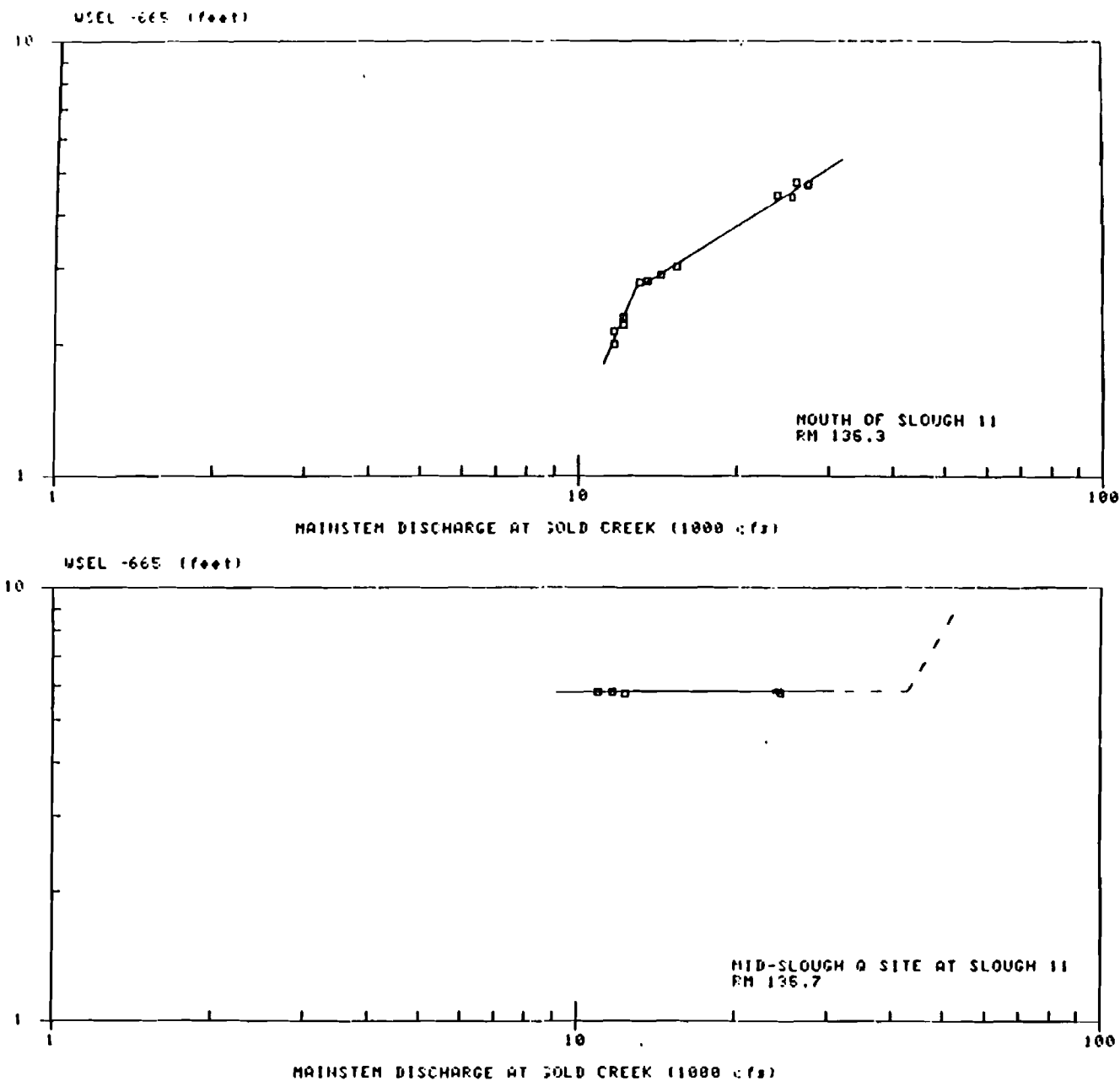
Q1

4-A-9



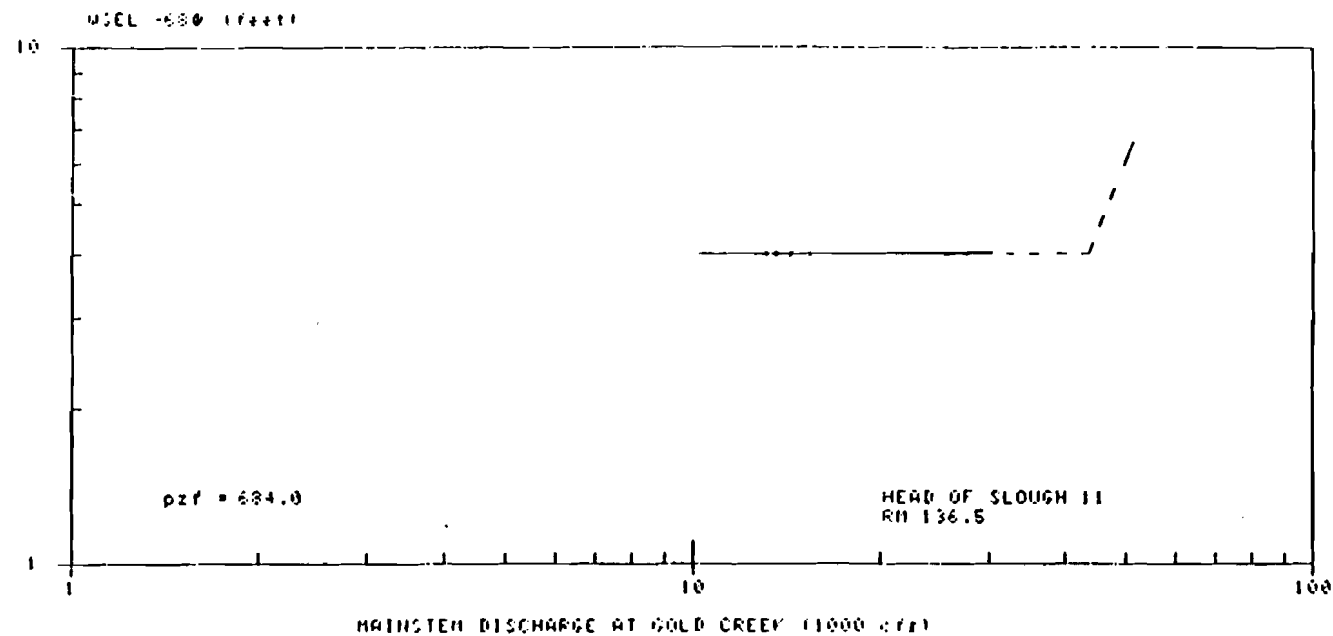
Appendix Figure 4-A-9 Mainstem discharge versus mainstem water surface elevation at side channel below mouth of Slough 11 and side channel above mouth of Slough 11.

4-A-21



APPENDIX Figure 4-A-21 Mainstem discharge versus the water surface elevation of Slough 11 mouth and mid-slough.

4-A-22



APPENDIX Figure 4-A-22 Mainstem discharge versus the water surface elevation of Slough 11 head.

Appendix Table 4-A-3 (Continued)

Part B: Side Sloughs ^b				
<u>Location</u>	<u>Date</u>	<u>Time</u>	<u>WSEL (ft)</u>	<u>Discharge (cfs)</u>
Mid-Slough at Lane Creek Slough Gage Site 113.6S2 (R.M. 113.6)	821004	1235	468.24	10,500
	820903	1456	468.28	14,600
	820925	1110	468.35	15,000
	820722	1010	468.80	22,400
	820920	1329	469.41	24,000
	820723	1010	469.15	24,900
	820917	1517	470.75	32,100
Head of Lane Creek Slough Gage Site 113.6H4 (R.M. 114.1)	820903	----	Dry	14,600
	820920	1310	Dry	24,000
	820917	1830	474.30	32,000
Mouth of Slough 11 Gage Site 135.3W1 (R.M. 135.3)	821002	1040	667.01	11,700
	820907	1825	667.15	11,700
	820822	1540	667.32	12,200
	820906	1600	667.23	12,200
	820830	1740	667.77	13,100
	820813	1115	667.81	13,600
	820812	0935	667.91	14,400
	820811	1825	668.04	15,400
	820920	1026	669.41	24,000
	820728	2030	669.37	25,600
Mouth of Slough 11 Gage Site 135.3W1 (R.M. 135.3)	820622	1045	670.16	26,000 ^c
	820624	1020	669.72	26,000 ^c
	820714	1210	669.67	27,300
	820918	1026	669.71	27,500 ^c
	820621	1040	670.66	28,000 ^c
Mid-Slough at Slough 11 Gage Site 135.3S6 (R.M. 135.7)	821003	1513	670.77	11,000
	821002	1100	670.76	11,700
	820929	1800	670.75	12,400
	820920	1300	670.80	24,000
	820921	1130	670.80	24,200
	820929	1800	670.75	24,400

^aUSGS provisional data, 1982^bThe upstream end (head) of an upland slough is not normally connected to the mainstem (breached) during high flows.^cGold Creek stream gage malfunctioned, USGS estimated value.

Appendix Table 4-A-3 (Continued)

Part B: Side Sloughs^b

<u>Location</u>	<u>Date</u>	<u>Time</u>	<u>WSEL (ft)</u>	<u>Discharge (cfs)</u>
Head of Slough 11	820830	----	684.0 ^c	13,100
Gage Site 135.3H3	820813	1140	684.0 ^c	13,600
(R.M. 136.5)	820812	0935	684.0 ^c	14,400
	820811	1805	684.0 ^c	15,400
	820716	1255	684.0 ^c	25,600
	820918	1025	684.0 ^c	27,500
Mouth of Slough 16B	821002	1435	697.28	11,700
Gage Site 138.0W1	820822	1445	697.18	12,200
(R.M. 137.9)	820813	1035	697.20	13,600
	820902	1130	697.20	16,000
	820919	1641	698.38	24,100
	820915	1352	699.92	28,200
	820725	1110	700.06	31,900
Mid-Slough at Slough 16B	821002	1454	700.08	11,700
Gage Site 138.0S5	820822	1500	700.05	12,200
(R.M. 138.0)	820813	1040	700.07	13,600
	820902	1140	700.10	16,000
	820914	1722	700.18	20,200
	820919	1617	700.58	24,100
	820801	1551	700.85	26,400
	820915	1412	701.69	28,200
Head of Slough 16B	820813	1020	703.0 ^d	13,600
Gage Site 138.0H3	820831	1900	703.0 ^d	16,000
(R.M. 138.3)	820914	1626	703.17	20,200
	820920	1310	703.55	24,000
	820919	1543	703.51	24,100
	820915	1252	704.50	28,200
	820725	1115	704.59	31,900

^aUSGS provisional data, 1982.

^bThe upstream end (head) of a side slough is usually connected to the mainstem (breached) during high flows.

^cGold Creek stream gage malfunctioned, USGS estimated value.

^dGage was dewatered, 703.75 ft. was point of zero flow.

Appendix Table 4-A-7 Surface area of aggregate type II hydraulic zones at Designated Fish Habitat (DFH) sites, and mainstem Susitna River discharges, June through September, 1982.

DFH Site	Discharge cfs	Date	Zones	Surface Area Type II (Ft ²)
Slough 21 ^b	31,900	7/25	6	72,800
	25,000	6/19	6	16,300
	24,000	7/11	none	--
	17,000	8/09	2	73,600
	13,800	9/27	2	48,200
	12,500	8/20	2	47,300
	12,200	9/06	2	61,200
Slough 20	28,000	6/20	7	20,600
	26,800	7/24	none	--
	23,000	6/04	none	--
	18,100	7/08	none	--
	16,500	8/07	none	--
	14,400	9/04	2	500
	14,000	9/26	none	--
	12,500	8/20	2	1,800
Slough 19	24,900	7/23	2	26,000
	28,000	6/17	2	10,000
	22,000	6/05	2	16,500
	16,800	8/06	2	12,300
	16,600	7/07	2	4,800
	15,000	9/25	none	--
	14,400	9/04	none	--
	13,300	8/19	2	4,200
Slough 11	28,000	6/20	2	128,000
	27,300	7/14	2	92,800
	23,600	7/29	2	124,000
	23,000	6/04	2	95,000
	14,400	8/12	2	25,600
	12,400	9/29	2	19,300
	12,200	9/06	2	25,300
	12,200	8/22	2	23,700

^aUSGS provisional data at Gold Creek, 1982, 15292000.^bJune 10, 1982, data for Slough 21 incomplete.

4-A-179

Appendix Table 4-B-18. Depths (ft) and velocities (ft/sec) associated with chum salmon redds in four sloughs at three discharges (Q, cfs) in 1982.

		Depth				Velocity			
		<u>Q₁*</u>	<u>Q₂**</u>	<u>Q₃***</u>	<u>Average</u>	<u>Q₁*</u>	<u>Q₂**</u>	<u>Q₃***</u>	<u>Average</u>
Slough 8A	$\bar{x}$	0.67	0.72		0.70	0.03	0.36		0.30
	Range	0.30-1.30	0.20-1.60		0.20-1.60	0.00-1.45	0.05-0.72		0.00-1.45
	N	26	11		37	26	11		37
	Q (cfs)	4	7			4	7		
Slough 9	$\bar{x}$	1.24	1.27		1.25	0.13	0.16		0.14
	Range	0.30-2.40	0.40-2.10		0.30-2.4	0.05-0.40	0.00-0.78		0.00-0.78
	N	28	20		48	28	20		48
	Q (cfs)	3	8			3	8		
Slough 11	$\bar{x}$		1.21	1.33	1.28		0.13	0.45	.32
	Range		0.60-2.20	0.55-2.10	.55-2.20		0.00-0.61	0.05-1.00	0.00-1.00
	N		6	9	15		6	9	15
	Q (cfs)								
Slough 21	$\bar{x}$		1.02		1.02		0.22		0.22
	Range		0.40-2.60		0.40-2.60		0.00-1.10		0.00-1.10
	N		33		33		33		33
	Q (cfs)		5				5		

*Q₁ = 25-26 August

**Q₂ = 2-7 September

***Q₃ = 20 September

4-B-89

10

Table 4-B-19. Depths (ft) and velocities (ft/sec) associated with pink salmon and sockeye salmon redds in three sloughs at three discharges (Q , cfs) in 1982.

PINK SALMON									
		<u>Depth</u>				<u>Velocity</u>			
		<u>Q_1^*</u>	<u>Q_2^{**}</u>	<u>Q_3^{***}</u>	<u>Average</u>	<u>Q_1^*</u>	<u>Q_2^{**}</u>	<u>Q_3^{***}</u>	<u>Average</u>
Slough 8A	$\bar{x}$	0.30			0.30	0.80			0.80
	Range	-			-	-			-
	N	1			1	1			1
	Q	4			4	4			4
Slough 9	$\bar{x}$	0.68			0.68	0.25			0.25
	Range	0.55-0.80			0.55-0.80	0.20-0.30			0.20-0.30
	N	2			2	2			2
	Q	3			3	3			3
SOCKEYE SALMON									
		<u>Depth</u>				<u>Velocity</u>			
		<u>Q_1^*</u>	<u>Q_2^{**}</u>	<u>Q_3^{***}</u>	<u>Average</u>	<u>Q_1^*</u>	<u>Q_2^{**}</u>	<u>Q_3^{***}</u>	<u>Average</u>
Slough 9	$\bar{x}$	0.5			0.5	0.05			0.05
	Range	-			-	-			-
	N	1			1	1			1
	Q	7			7	7			7
Slough 11	$\bar{x}$	0.85	1.51	1.48		0.00	0.23	.22	
	Range	-	0.75-2.80	0.75-2.80		-	0.00-0.80	0.00-0.80	
	N	1	22	23		1	22	23	
	Q	-	-	-		-	-	-	

* Q_1 = 25-26 August** Q_2 = 2-7 September*** Q_3 = 20 September

Appendix Table 1-A-7

continued

26

<u>LOCATION</u>	<u>DATE</u>	<u>TIME</u>	<u>WSEL (ft)</u>	<u>DISCHARGE (cfs)</u>
LOWER SIDE CHANNEL 11 (134.6SL AT R.M. 135.0)	831019	1254	661.47	8,010
	831011	1145	661.67	9,520
	830922		661.82	13,600
	830906	1610	661.82	16,000
	830729	1713	662.10	17,300
	830728	1340	662.27	17,700
	830820	1200	662.10	17,800
	830820	1205	662.12	17,800
	830730	1119	662.32	19,100
	830819	1045	662.32	19,200
	830723	1722	662.37	19,200
	830711	1400	662.27	20,000
	830804	1245	662.47	20,900
	830904	1237	662.52	21,000
	830818	1620	662.53	21,000
	830803	1740	662.52	21,600
	830822	1535	662.74	21,600
	830608	1205	662.57	22,000
	830823	1400	662.62	22,700
	830817	0945	662.82	22,700
	830731	1131	662.87	22,800
	830806	1030	662.82	23,800
	830806	1258	662.83	23,800
	830624	1324	663.10	24,000
	830812	1320	662.92	24,500
	830816	1000	663.11	24,600
	830831	1105	663.07	24,800
	830902	1156	663.27	25,400
	830808	1336	663.17	26,000
	830808	1430	663.22	26,000
	830828	0955	663.22	26,600
	830815	1230	663.32	26,800
	830825	1035	663.22	27,400
	830809	1811	663.95	29,900
	830827	1730	663.60	31,000
	830827	1340	663.77	31,000
	830826	0900	663.82	31,700
	830810	1259	663.95	31,900

Appendix Table 1-A-7 continued

LOCATION	DATE	TIME	WSEL (ft)	DISCHARGE (cfs)
LOWER SIDE CHANNEL 11 (134.6S2 AT R.M. 135.2)	831019	1253	662.92	8,010
	831011	1145	663.42	9,520
	830915	0930	663.22	10,600
	830922		663.62	13,600
	830906	1610	663.67	16,000
	830729	1713	663.87	17,300
	830728	1915	663.80	17,700
	830820	1205	663.87	17,800
	830820	1200	663.95	17,800
	830730	1119	664.15	19,100
	830819	1045	664.07	19,200
	830723	1724	664.12	19,200
	830711	1400	664.15	20,000
	830804	1250	664.23	20,900
	830904	1238	664.22	21,000
	830818	1620	664.27	21,000
	830803	1740	664.27	21,600
	830822	1535	664.35	21,600
	830608	1203	664.29	22,000
	830823	1403	664.48	22,700
	830817	0945	664.55	22,700
	830731	1131	664.55	22,800
	830806	1030	664.57	23,800
	830806	1254	664.59	23,800
	830624	1324	664.77	24,000
	830812	1320	664.62	24,500
	830816	1000	664.72	24,600
	830831	1105	664.72	24,800
	830902	1157	664.90	25,400
	830813	1255	664.87	25,900
	830808	1336	664.82	26,000
	830828	0958	664.87	26,600
	830815	1235	664.92	26,800
	830825	1039	664.82	27,400
	830811	1700	664.72	27,700
	830809	1812	665.47	29,900
	830827	1730	665.22	31,000
	830827	1343	665.27	31,000
	830826	0900	665.42	31,700
	830810	1259	665.42	31,900

Appendix Table 1-A-7

continued

26

<u>LOCATION</u>	<u>DATE</u>	<u>TIME</u>	<u>WSEL (ft)</u>	<u>DISCHARGE (cfs)</u>
SIDE CHANNEL B/L SLOUGH 11 MOUTH (135.3M4 AT R.M. 135.3)	821012	1555	665.56	7,950
	821002	1040	666.68	11,700
	820906	1600	666.86	12,200
	820929	1830	666.81	12,400
	820830	1740	667.46	13,100
	820909	1420	667.36	13,400
	830906	1610	667.79	16,000
	820831		668.16	16,000
	830904	1238	668.69	21,000
	830822	1730	669.79	21,600
	830823	1414	669.95	22,700
	830812	1320	669.14	24,500
	830831	1105	669.24	24,800
	830902	1159	669.44	25,400
	830808	1338	669.45	26,000
	830808	1435	669.49	26,000
	830828	0958	669.44	26,600
	830825	1040	669.46	27,400
	830825	1514	669.54	27,400
	830825	0900	670.04	27,400
	830809	1815	670.09	29,900
	830827	1200	669.79	31,000
	830827	1345	669.89	31,000
	830826	0900	670.04	31,700
	830810	1259	670.04	31,900

Appendix Table 1-A-7

continued

LOCATION	DATE	TIME	WSEL (ft)	DISCHARGE (cfs)
SIDE CHANNEL A/B SLOUGH 11 MOUTH (135.3M2 AT R.M. 135.3)	831027	1430	667.27	5,020
	821012	1555	667.50	7,950
	830915	1807	667.78	10,600
	820907	1820	668.10	11,700
	820822	1535	667.92	12,200
	831003	1350	667.89	13,000
	820830	1735	668.62	13,100
	820909	1420	668.55	13,400
	830906	1610	668.55	16,000
	820831		668.80	16,000
	830729	1715	668.66	17,300
	830728	1340	668.79	17,700
	830820	1200	668.74	17,800
	830721	1150	668.76	18,100
	830727	1025	668.84	18,500
	830718	1025	668.91	18,900
	830730	1120	668.91	19,100
	830723	1735	668.91	19,200
	830819	1045	668.94	19,200
	830518	1318	668.91	20,000
	830804	1300	669.08	20,900
	830904	1238	669.06	21,000
	830818	1625	669.11	21,000
	830822	1535	669.16	21,600
	830725	1030	669.16	21,900
	830724	1030	669.21	22,700
	830817	0945	669.36	22,700
	830731	1131	669.29	22,800
	830618	1620	669.23	22,900
	830812	1320	669.36	24,500
	830816	1000	669.56	24,600
	830831	1110	669.46	24,800
	830902	1200	669.65	25,400
	830813	1300	669.70	25,900
	820624	1020	669.75	26,000
	830828	0958	669.66	26,600
	830629	1210	669.55	26,800
	830815	1235	669.76	26,800
	820714	1210	669.67	27,300
	830825	1042	669.76	27,400
	830825	1519	669.79	27,400
	830810	1307	670.21	31,900
	830810	0953	670.22	31,900
	830604	1430	670.70	36,000

Appendix Table 1-A-7 continued

LOCATION	DATE	TIME	WSL (ft)	DISCHARGE (cfs)
SLOUGH 11 (MOUTH) (135.3W1 AT R.M. 135.3)	831020	1210	666.29	7,230
	830915	1812	666.96	10,600
	831004	1353	667.07	11,400
	821002	1040	667.01	11,700
	820907	1825	667.15	11,700
	820906	1600	667.23	12,200
	820822	1540	667.32	12,200
	820830	1740	667.77	13,100
	820813	1115	667.81	13,600
	830922	1330	667.89	13,600
	820812	0935	667.91	14,400
	820811	1825	668.04	15,400
	830906	1630	668.28	16,000
	830728	1915	668.52	17,700
	830820	1205	668.60	17,800
	830718	1020	668.85	18,900
	830723	1730	668.91	19,200
	830518	1319	668.87	20,000
	830804	1253	669.05	20,900
	830804	1255	669.05	20,900
	830823	1616	669.24	22,700
	830618	1615	669.28	22,900
	830806	1131	669.37	23,800
	830806	1320	669.37	23,800
	820920	1026	669.41	24,000
	830816	1000	669.47	24,600
	820728	2030	669.37	25,600
	830813	1310	669.69	25,900
	820624	1020	669.72	26,000
	830828	1000	669.64	26,600
	830707	1120	669.75	27,200
	820714	1210	669.67	27,300
	830825	1045	669.72	27,400
	830825	1515	669.75	27,400
	830811	1100	669.82	27,700
	820918	1026	669.71	28,600
	830809	1100	669.92	29,900
	830827	1200	670.02	31,000
	830827	1730	670.02	31,000
	830827	1347	670.13	31,000
	820622	1045	670.16	31,000
	830826	0900	670.20	31,700
	830826	0905	670.20	31,700
	830826	1800	670.28	31,700
	830810	1309	670.22	31,900

Appendix Table 1-A-7 continued

<u>LOCATION</u>	<u>DATE</u>	<u>TIME</u>	<u>WSEL (ft)</u>	<u>DISCHARGE (cfs)</u>
SLOUGH 11 (MOUTH)	830810	0837	670.29	31,900
(135.3W1 AT R.M. 135.3)	820621	1040	670.66	37,000

Appendix Table 1-A-7 continued

<u>LOCATION</u>	<u>DATE</u>	<u>TIME</u>	<u>WSEL (ft)</u>	<u>DISCHARGE (cfs)</u>
SLOUGH 11 (Q SITE) (135.386 AT R.M. 135.7)	830505	1810	670.67	4,900
	830915	1751	670.67	10,600
	821003	1513	670.77	11,000
	831004	1340	670.67	11,400
	821002	1100	670.76	11,700
	820929	1800	670.75	12,400
	820830	1244	670.72	13,100
	830922	1205	670.66	13,600
	830524	1100	670.23	17,000
	830524	1420	670.73	17,000
	830721	1110	670.72	18,100
	830718	1040	670.72	18,900
	830609	1333	670.75	19,400
	830803	1330	670.73	21,600
	830823	1524	670.73	22,700
	830806	1155	670.73	23,800
	830806	1330	670.73	23,800
	830806	1500	670.73	23,800
	820920	1300	670.80	24,000
	820921	1130	670.80	24,200
	830828	1030	670.75	26,600
	830629	0950	670.76	26,800
	820918	1010	670.80	26,800
	830707	1145	670.76	27,200
	830604	1045	670.85	36,000

Appendix Table 1-A-7

continued

<u>LOCATION</u>	<u>DATE</u>	<u>TIME</u>	<u>WSEL (ft)</u>	<u>DISCHARGE (cfs)</u>
SLOUGH 11 (HEAD) (135.3E3 AT R.M. 136.4)	831004	1300	684.00	11,400
	820830		684.00	13,100
	820813	1140	684.00	13,600
	820812	0935	684.00	14,400
	820811	1805	684.00	15,400
	820716	1255	684.00	25,600
	820918	1025	684.00	26,800

1/ Streambed elevation obtained from cross sectional profile.

Appendix Table 1-A-7 continued

<u>LOCATION</u>	<u>DATE</u>	<u>TIME</u>	<u>WSEL (ft)</u>	<u>DISCHARGE (cfs)</u>
UPPER SIDE CHANNEL 11 (MOUTH) (136.2W3 AT R.M. 136.2)	831004	1258	676.84	11,400
	830911	1700	676.90	12,200
	830910	1730	677.01	12,700
	830711	1715	677.95	20,000
	830725	1257	678.31	21,900
	830829	1435	678.43	23,300
	830824	1605	678.31	24,700
	830826	1853	679.56	31,700

Appendix Table 1-A-7 continued

<u>LOCATION</u>	<u>DATE</u>	<u>TIME</u>	<u>WSEL (ft)</u>	<u>DISCHARGE (cfs)</u>
UPPER SIDE CHANNEL 11 (136.2S4 AT R.M. 136.2)	831004	1256	676.78	11,400
	830911	1655	676.91	12,200
	830910	1730	677.01	12,700
	830906	1720	677.41	16,000
	830829	1545	678.45	23,300
	830826	1851	679.65	31,700

Appendix Table 1-A-7 continued

<u>LOCATION</u>	<u>DATE</u>	<u>TIME</u>	<u>WSEL (ft)</u>	<u>DISCHARGE (cfs)</u>
UPPER SIDE CHANNEL 11 (136.255 AT R.M. 136.3)	831004	1247	677.68	11,400
	830911	1653	677.68	12,200
	830910	1800	677.69	12,700
	830906	1630	677.80	16,000
	830824	1605	678.10	24,700

26

Appendix Table 1-A-7 continued

<u>LOCATION</u>	<u>DATE</u>	<u>TIME</u>	<u>WSEL (ft)</u>	<u>DISCHARGE (cfs)</u>
UPPER SIDE CHANNEL 11 (Q SITE) (136.251 AT R.M. 136.5)	830911	1745	680.63	12,200
	830721	0945	681.34	18,100
	830727	1130	681.38	18,500
	830720	0940	681.34	18,600
	830821	1600	681.39	18,900
	830712	1115	681.40	19,700
	830725	1236	681.68	21,900
	830823		681.77	22,700
	830701	1150	681.74	23,100
	830806	1345	681.95	23,800
	830808	1450	682.24	26,000
	830808	1345	682.51	26,000
	830826	1835	682.93	31,700
	830810	1438	682.87	31,900
	830604	1300	683.44	36,000

Appendix Table 1-A-7 continued

LOCATION	DATE	TIME	WSEL (ft)	DISCHARGE (cfs)
UPPER SIDE CHANNEL 11 (HEAD) (136.2H2 AT R.M. 136.6)	831010		684.50	8,400
	830917		684.50	10,000
	830906	1700	685.20	16,000
	830729	1726	685.56	17,300
	830821	1600	685.91	18,900
	830730	1133	685.93	19,100
	830731	1030	686.56	22,800
	830806	1409	686.66	23,800
	830824	0934	686.62	24,700
	830808	1504	687.11	26,000
	830707	1100	687.18	27,200
	830826	1003	687.91	31,700
	830826	1856	687.95	31,700
	830810	1453	687.76	31,900

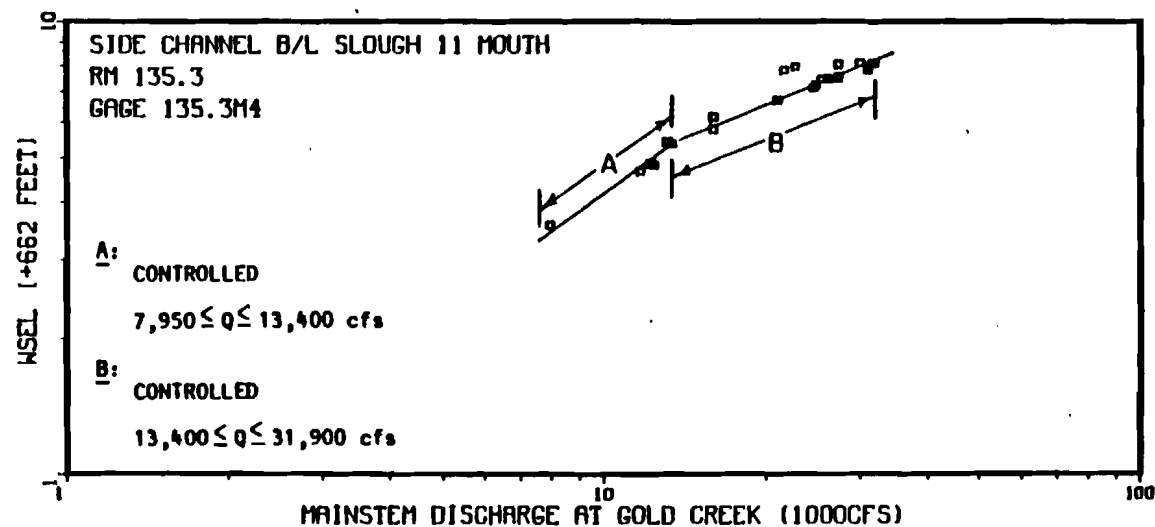
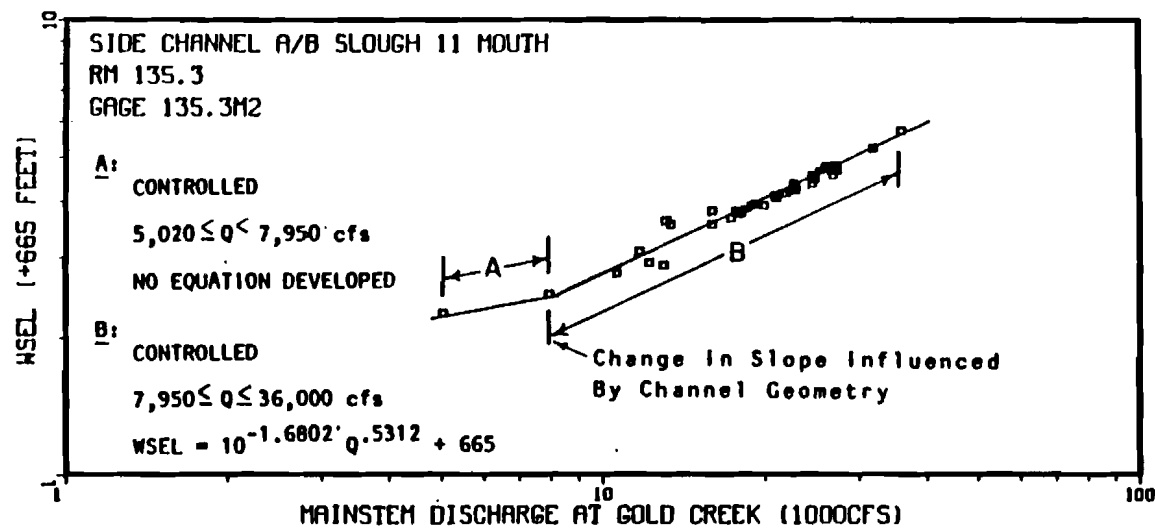
1/ Streambed elevation obtained from cross sectional profile.

Appendix Table 1-A-8 (Continued)

	<u>DATE</u>	<u>TIME</u>	<u>WSEL</u> <u>(ft)</u>	<u>MEASURED</u> <u>FLOW</u> <u>(cfs)</u>	<u>MAINSTEM</u> <u>DISCHARGE</u> <u>(cfs)</u>
LOWER SIDE CHANNEL 11 (GAGE 134.6S2 AT R.M. 134.6)	830929	1200	663.09	820.0	9,400
	830915	0930	663.22	973.0	10,600
	830711	1400	664.15	2790.0	20,000
	830811	1700	664.72	4210.0	27,700
SIDE SLOUGH 11 (GAGE 135.3S6 AT R.M. 135.7)	830721	1020	670.72	2.0	18,100
	820830	1244	670.72	3.1	13,100
	830629	1000	670.76	4.1	26,800
	820918	1010	670.80	5.5	26,800
UPPER SIDE CHANNEL 11 (GAGE 136.2S1 AT R.M. 136.3)	830911	1715	680.63	.1	12,200
	- - -	- -	680.95	12.0	- - -
	830712	1145	681.35	54.0	19,700
	830720	0945	681.34	56.6	18,600
	830727	1130	681.38	59.6	18,500
	830608	1550	681.63	110.0	22,000
	830629	1255	682.13	335.0	26,800
	830808	1400	682.24	403.0	26,000
	830810	1346	682.87	735.6	31,900
	830826	1745	682.93	777.5	31,700
GOLD CREEK (GAGE 136.8T1 AT R.M. 136.7)	830806	1605	696.09	34.1	23,800
	830827	1705	696.18	51.1	31,000
	830629	1442	696.25	56.0	26,800
	830808	1809	696.86	153.6	26,000
SIDE SLOUGH 16B (GAGE 138.0S5 AT R.M. 138.0)	820907		700.08	1.1	11,700
	830701	1521	700.28	6.0	23,100
	820919	1617	700.58	24.0	24,100
	820801	1551	700.85	55.0	26,400
	820915	1412	701.69	257.0	28,200

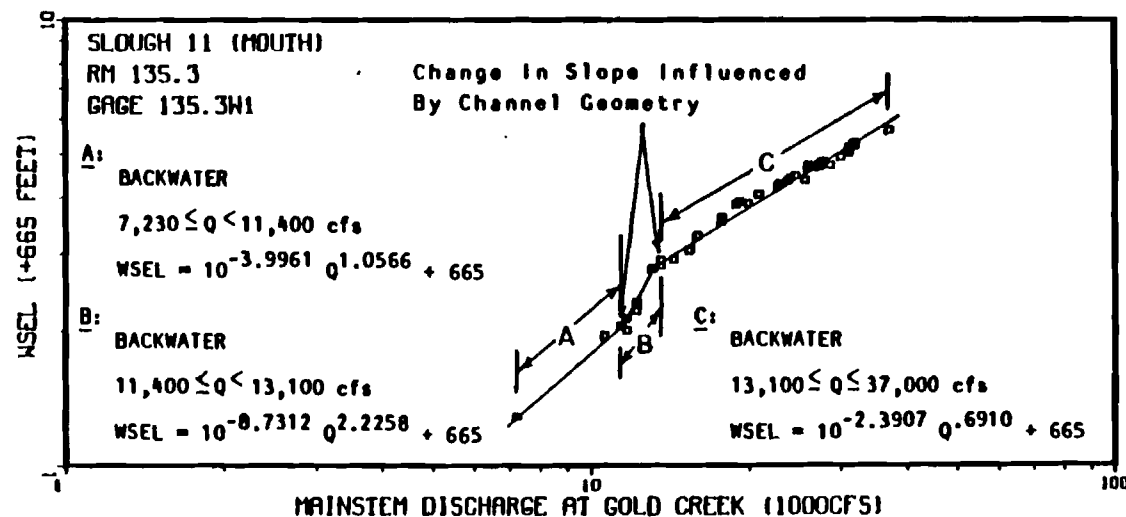
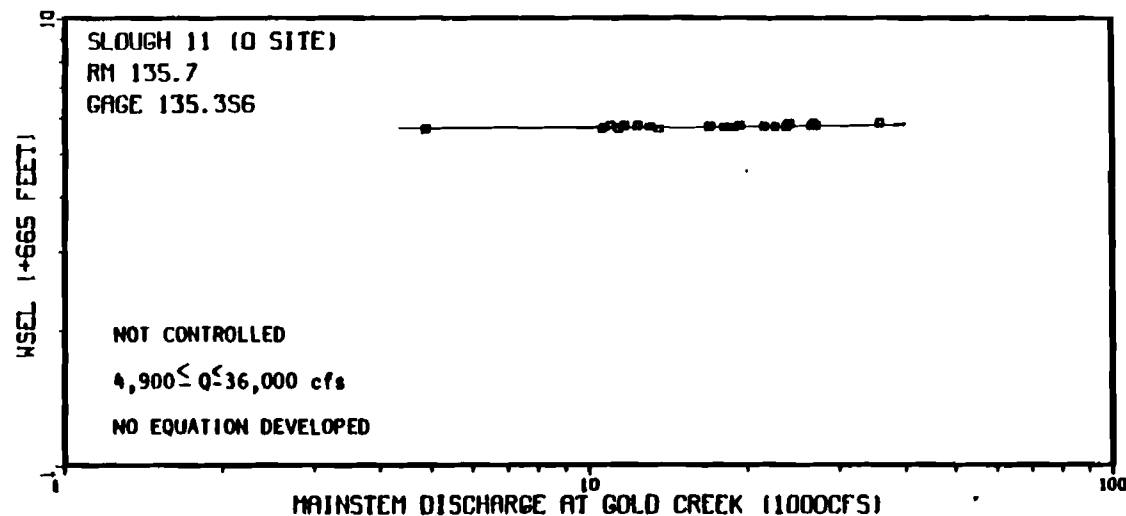
1-A-133

1-A-201



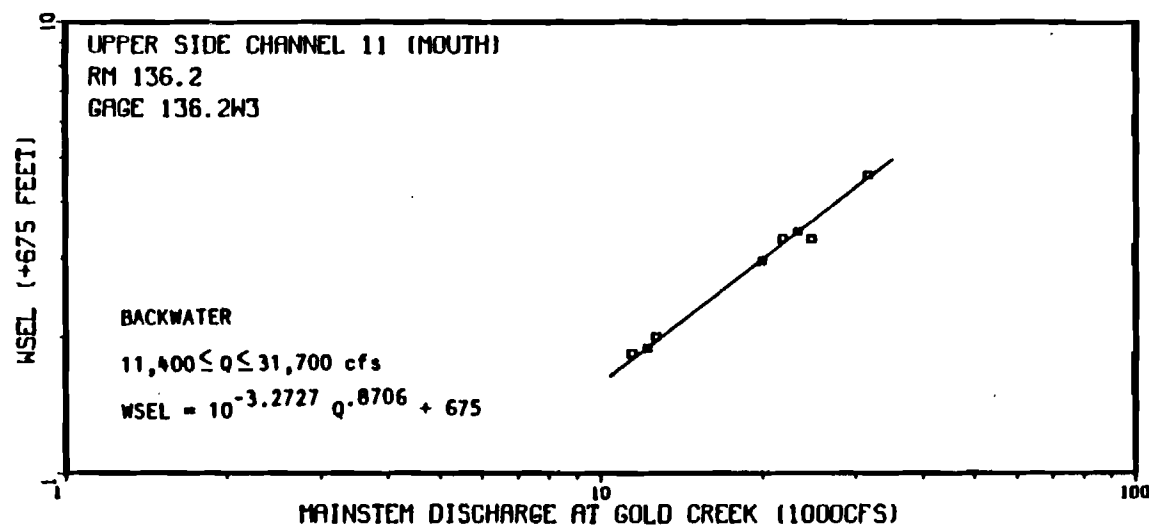
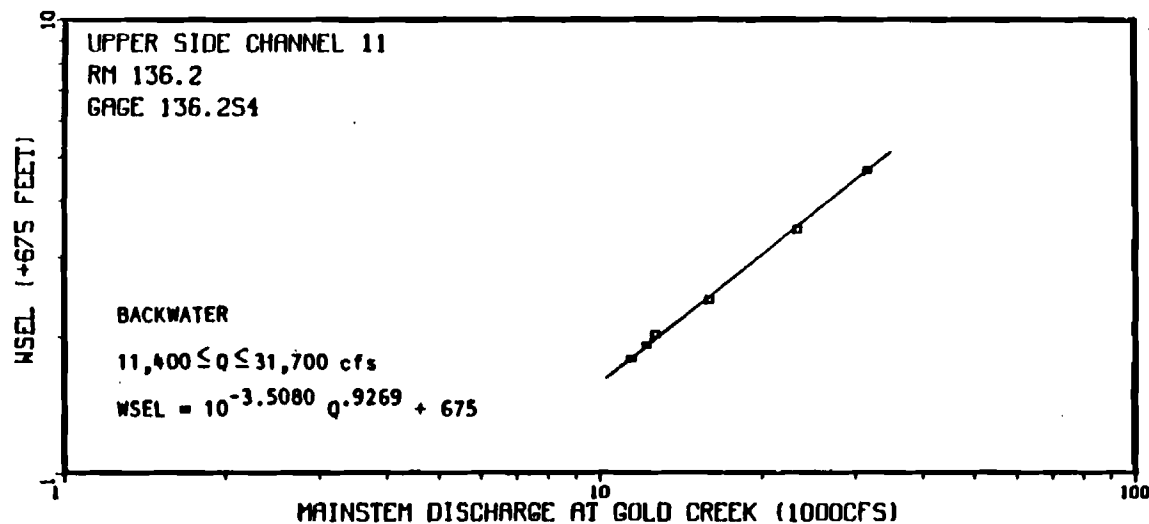
Appendix Figure 1-A-41 Non-Mainstem discharge (Provisional USGS 1983) versus the water surface elevation at Side Channel below Slough 11 mouth and Side Channel above Slough 11 mouth.

1-A-202



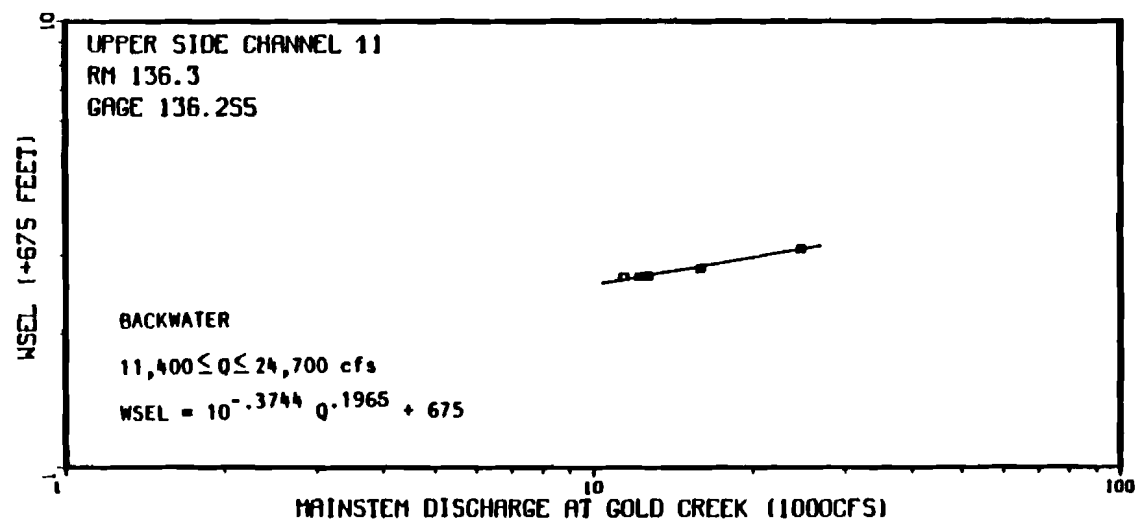
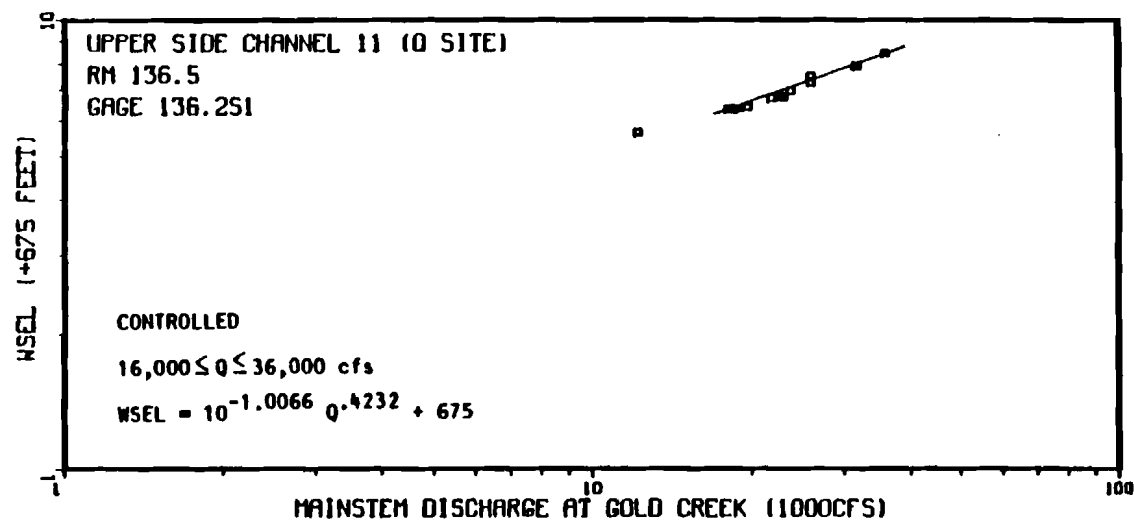
Appendix Figure 1-A-42 Non-Mainstem discharge (Provisional USGS 1983) versus the water surface elevation at Slough 11 mouth and discharge site.

1-A-203



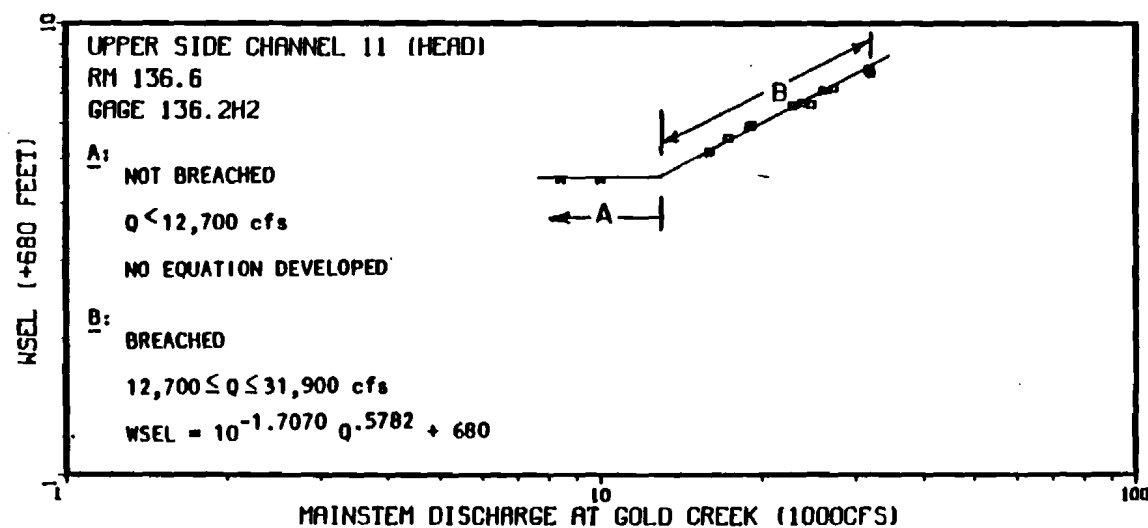
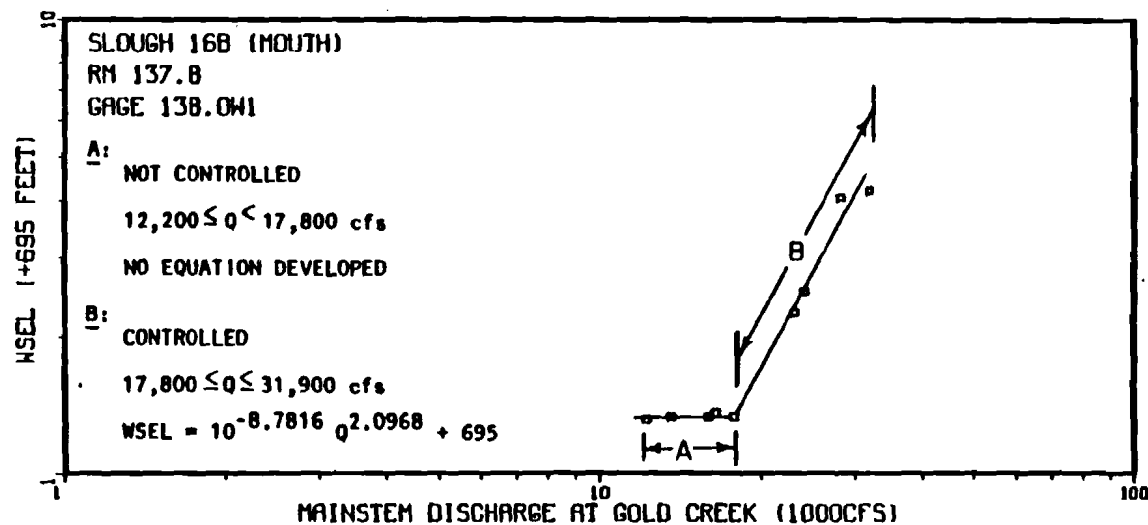
Appendix Figure 1-A-43 Non-Mainstem discharge (Provisional USGS 1983) versus the water surface elevation at Upper Side Channel 11 mouth and physical habitat modeling cross section 2 (136.2S4).

1-A-204



Appendix Figure 1-A-44 Non-Mainstem discharge (Provisional USGS 1983) versus the water surface elevation at Upper Side Channel 11 physical habitat modeling cross section 3 (136.2S5) and discharge site.

1-A-205



Appendix Figure 1-A-45 Non-Mainstem discharge (Provisional USGS 1983) versus the water surface elevation at Upper Side Channel 11 head and Slough 16B mouth.

Appendix Table 4-F-1. Description of habitat zones sampled at Designated Fish Habitat Sites, June through September, 1982.

ZONE

CODEDESCRIPTION

- 1 Areas with a tributary or groundwater water source, which are not influenced by mainstem stage, and which usually have significant surface water velocity.
- 2 Areas with a tributary or groundwater water source, which have no appreciable surface water velocity as a result of a hydraulic barrier created at the mouth of a tributary or slough by mainstem stage.
- 3 Areas of significant surface water velocities, primarily influenced by mainstem, where tributary or slough water mixes with the mainstem water.
- 4 Areas of significant surface water velocities, which are located in a slough or side channel above a tributary confluence (or in a slough or side channel where no tributary is present), when the slough head is open.

4-F-4

Appendix Table 4-F-1. Description of habitat zones sampled at
Designated Fish Habitat Sites, June through September, 1982.
(continued)

ZONE

CODEDESCRIPTION

- 5 Areas of significant water surface velocities, which are located in slough or side channel below a tributary confluence, when the slough head is open.
- 6 Backwater areas with no appreciable surface water velocities resulting from a hydraulic barrier created by mainstem stage, which occur in a slough or side channel above a tributary confluence (or in a slough or side channel where no tributary is present), when the head of the slough is open.
- 7 Backwater areas with no appreciable surface water velocities resulting from a hydraulic barrier created by mainstem stage, which occur in a slough or side channel below a tributary confluence, when the head of the slough is open.
- 8 Backwater areas consisting of mainstem eddies.
- 9 A pool with no appreciable surface water surface velocities, which is created by a geomorphological feature of a free-flowing zone or from a hydraulic barrier created by a tributary; not created as a result of mainstem stage.

Appendix Table 4-F-13. Hydraulic zones, mainstem discharges at the Gold Creek station^a and the status of the controlling streambed elevation at the upstream entrance (head) of Slough 11 at the Slough 11 site for sampling dates from June to September, 1982.

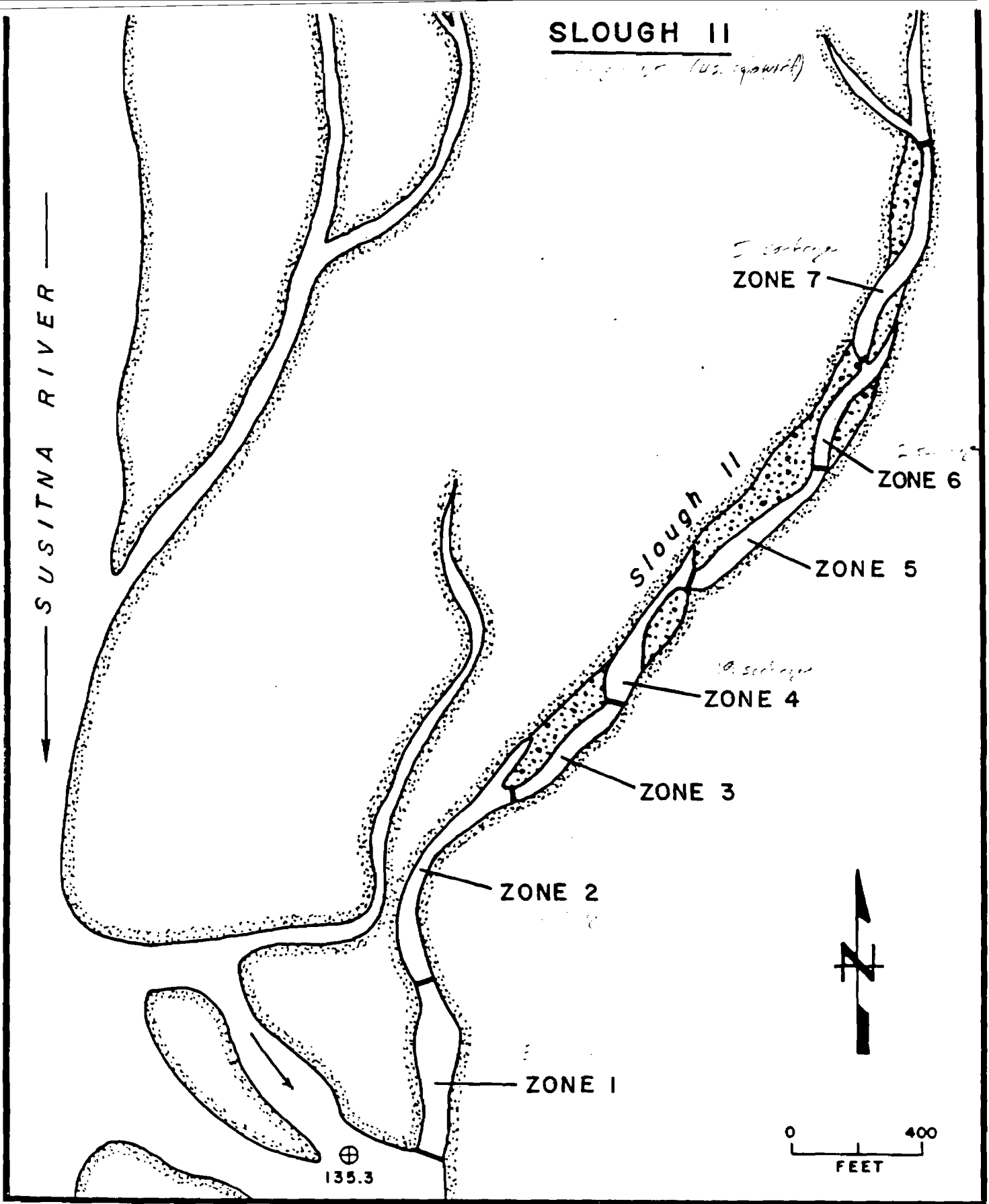
Sampling Date	June 04	June 20	July 14	July 29	August 12	August 22	September 06	September 29
Mainstem Discharge (cfs)	23,000	28,000	27,300	23,600	14,400	12,200	12,200	12,400
Status of Channel Head	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed
Hydraulic Zones								
1	+	+	+	+	+	+	+	+
2	+	+	+	+	+	+	+	+
3	+	+	+	+	+	+	+	+
4	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0

^aUSGS provisional data at Gold Creek 15292000.

⁺Zone present.

⁰Zone absent.

4-F-89



Appendix Figure 2-G-5. Slough 11 map with habitat locations defined, 1983.

Table 7-A-1 Continued

LOCATION	DATE	DEPTH (FT)	WATER VELO- CITY (FT/S)	SUBSTRATE		WATER TEMPERATURE (C)		REDD NO.	UPWELLING	DISTANCE (FT) TO UPWELLING
				PRIMARY	SECONDARY	INTRAGRAVEL	SURFACE			
SLOUGH 9A	830910	1.48	.08	RUBBLE	COBBLE	4.1	8.5	21	UNKNOWN	
SLOUGH 9A	830910	1.80	.15	COBBLE	BOULDER	7.3	8.7	22	UNKNOWN	
SLOUGH 9A	830910	1.00	0.00	RUBBLE	LARGE GRAVEL	4.8	8.1	23	PRESENT	10
SLOUGH 9A	830910	.90	0.00	RUBBLE	LARGE GRAVEL	3.9	8.5	24	PRESENT	10
SLOUGH 11	830811	1.60	.18	SMALL GRAVEL	RUBBLE	6.2	7.2	21		
SLOUGH 11	830816	1.95	.20	RUBBLE	LARGE GRAVEL	4.4	9.2	8	UNKNOWN	
SLOUGH 11	830816	2.10	.20	RUBBLE	SMALL GRAVEL	7.2	9.1	9	UNKNOWN	
SLOUGH 11	830816	1.20	.20	LARGE GRAVEL	SMALL GRAVEL	4.6	8.9	10	UNKNOWN	
SLOUGH 11	830816	1.20	.20	LARGE GRAVEL	SMALL GRAVEL	5.4	8.9	11	UNKNOWN	
SLOUGH 11	830816	.65	.10	LARGE GRAVEL	SMALL GRAVEL	5.4	8.3	12	UNKNOWN	
SLOUGH 11	830820	.45	.20	LARGE GRAVEL	SMALL GRAVEL	3.7	5.3	1	UNKNOWN	
SLOUGH 11	830820	.60	.40	LARGE GRAVEL	RUBBLE	4.3	5.6	2	UNKNOWN	
SLOUGH 11	830820	.60	1.40	LARGE GRAVEL	RUBBLE	5.0	5.6	3	UNKNOWN	
SLOUGH 11	830820	.50	.20	LARGE GRAVEL	RUBBLE	3.8	5.4	4	UNKNOWN	
SLOUGH 11	830820	.70	.05	LARGE GRAVEL	RUBBLE	3.8	4.8	5	UNKNOWN	
SLOUGH 11	830820	2.20	0.00	LARGE GRAVEL	RUBBLE	3.2	5.9	6	UNKNOWN	
SLOUGH 11	830820	2.10	0.00	LARGE GRAVEL	RUBBLE	3.1	5.9	7	UNKNOWN	
SLOUGH 11	830820	2.10	0.00	LARGE GRAVEL	RUBBLE	3.2	5.9	13	UNKNOWN	
SLOUGH 11	830820	1.70	0.00	LARGE GRAVEL	RUBBLE	3.2	5.8	14	UNKNOWN	
SLOUGH 11	830820	1.40	.18	LARGE GRAVEL	RUBBLE	3.5	5.7	15	UNKNOWN	
SLOUGH 11	830820	.80	0.00	LARGE GRAVEL	RUBBLE	3.2	5.0	16	UNKNOWN	
SLOUGH 11	830820	1.20	0.00	LARGE GRAVEL	SMALL GRAVEL	3.1	4.5	17	UNKNOWN	
SLOUGH 11	830820	2.10	.08	RUBBLE	LARGE GRAVEL	2.9	4.6	18	UNKNOWN	

Table 7-A-1 Continued

LOCATION	DATE	DEPTH (FT)	WATER VELO- CITY (FT/S)	SUBSTRATE		WATER TEMPERATURE (C)		REDD NO.	UPWELLING	DISTANCE (FT) TO UPWELLING
				PRIMARY	SECONDARY	INTRAGRAVEL	SURFACE			
SLOUGH 11	830820	1.90	.08	SMALL GRAVEL	LARGE GRAVEL	2.9	4.6	19	UNKNOWN	
SLOUGH 11	830820	1.90	.10	LARGE GRAVEL	RUBBLE	2.9	4.7	20	UNKNOWN	
SLOUGH 11	830827	.95	.10				8.0	22	UNKNOWN	
SLOUGH 11	830827	1.00	.10				8.0	23	UNKNOWN	
SLOUGH 11	830827	.60	.05				8.5	24	UNKNOWN	
SLOUGH 11	830827	1.50	.10				8.0	25	UNKNOWN	
SLOUGH 11	830827	1.00	.05				8.0	26	UNKNOWN	
SLOUGH 11	830827	2.00	.05				8.0	27	UNKNOWN	
SLOUGH 11	830827	2.10	.05				8.0	28	UNKNOWN	
SLOUGH 11	830827	2.60	0.00				8.0	29	UNKNOWN	
SLOUGH 11	830827	.60	0.00				7.0	30	UNKNOWN	
SLOUGH 11	830827	1.50	0.00				8.5	31	UNKNOWN	
SLOUGH 11	830827	1.50	0.00				8.0	32	UNKNOWN	
SLOUGH 11	830827	2.00	.05				8.0	33	UNKNOWN	
SLOUGH 11	830827	1.90	0.00				8.0	34	UNKNOWN	
SLOUGH 11	830827	2.50	0.00				9.5	35	UNKNOWN	
SLOUGH 11	830910	1.55	0.00	RUBBLE	LARGE GRAVEL	3.6	7.2	36	UNKNOWN	
SLOUGH 11	830910	1.40	0.00	RUBBLE	LARGE GRAVEL	3.7	6.6	37	UNKNOWN	
SLOUGH 11	830910	1.63	0.00	RUBBLE	LARGE GRAVEL	3.5	6.9	38	UNKNOWN	
SLOUGH 11	830910	1.50	0.00	RUBBLE	COBBLE	4.0	7.0	39	UNKNOWN	
SLOUGH 11	830910	2.00	0.00	COBBLE	BOULDER			40	UNKNOWN	
SLOUGH 11	830910	.70	.15	SMALL GRAVEL	LARGE GRAVEL			41	UNKNOWN	
SLOUGH 11	830910	.96	.10	COBBLE	RUBBLE			42	UNKNOWN	
SLOUGH 11	830910	.60	0.00	COBBLE	RUBBLE			43	UNKNOWN	

Table 7-A-1 Continued

LOCATION	DATE	DEPTH (FT)	WATER VELO- CITY (FT/S)	SUBSTRATE		WATER TEMPERATURE (C)		REDD NO.	UPWELLING	DISTANCE (FT) TO UPWELLING
				PRIMARY	SECONDARY	INTRAGRAVEL	SURFACE			
SLOUGH 11	830910	1.52	0.00	RUBBLE	COBBLE			44	UNKNOWN	
SLOUGH 11	830910	1.10	0.00	RUBBLE	COBBLE			45	UNKNOWN	
SLOUGH 11	830910	1.18	0.00	RUBBLE	COBBLE			46	UNKNOWN	
SLOUGH 11	830911	.40	.75	LARGE GRAVEL	SMALL GRAVEL			47	UNKNOWN	
SLOUGH 11	830911	.24	.35	LARGE GRAVEL	SMALL GRAVEL			48	UNKNOWN	
SLOUGH 11	830911	.90	0.00	RUBBLE	COBBLE			49	UNKNOWN	
SLOUGH 11	830911	1.20	.05	LARGE GRAVEL	RUBBLE			50	UNKNOWN	
SLOUGH 11	830911	1.70	0.00	RUBBLE	LARGE GRAVEL			51	PRESENT	
SLOUGH 11	830911	2.90	0.00	RUBBLE	LARGE GRAVEL			52	PRESENT	10
SLOUGH 11 SIDE CHANNEL (UPPER)	830823	1.50	2.10	RUBBLE	LARGE GRAVEL		9.1	1	UNKNOWN	
SLOUGH 11 SIDE CHANNEL (UPPER)	830823	2.30	2.40	SAND	RUBBLE		9.1	2	UNKNOWN	
INDIAN RIVER (MOUTH)	830820	1.40	.60	RUBBLE	LARGE GRAVEL	8.5	8.2	1		
INDIAN RIVER (MOUTH)	830820	1.20	.15	RUBBLE	LARGE GRAVEL	8.4	8.7	2		
INDIAN RIVER (MOUTH)	830820	1.90	.42	RUBBLE	LARGE GRAVEL	8.8	8.2	3		
SLOUGH 17	830820	.70	.20	LARGE GRAVEL	RUBBLE	5.0	5.4	1	PRESENT	60
SLOUGH 17	830820	.80	.40	LARGE GRAVEL	RUBBLE	5.1	5.2	2	PRESENT	65
SLOUGH 17	830901	1.70	0.00	LARGE GRAVEL	RUBBLE	4.8	5.0	4	UNKNOWN	
SLOUGH 17	830901	1.50	0.00	LARGE GRAVEL	SMALL GRAVEL	4.7	4.8	5	UNKNOWN	
SLOUGH 17	830901	1.90	0.00	RUBBLE	COBBLE	4.1	4.8	6	UNKNOWN	
SLOUGH 17	830901	2.60	0.00	RUBBLE	COBBLE		5.0	7	UNKNOWN	

Table 7-A-3 Habitat data collected at sockeye salmon redds.

LOCATION	DATE	DEPTH (FT)	WATER VELO- CITY (FT/S)	SUBSTRATE		WATER TEMPERATURE (C)		REDD NO.	UPWELLING	DISTANCE (FT) TO UPWELLING
				PRIMARY	SECONDARY	INTRAGRAVEL	SURFACE			
SLOUGH 8A W. FORK B/L TR. #1	830909	.60		RUBBLE	COBBLE	5.9	10.4	1	UNKNOWN	
SLOUGH 8A W. FORK B/L TR. #1	830909	.70		RUBBLE	COBBLE	5.7	10.5	2	UNKNOWN	
SLOUGH 8A W. FORK B/L TR. #1	830909	.75		LARGE GRAVEL	COBBLE	4.7	7.2	3	UNKNOWN	
SLOUGH 8A W. FORK B/L TR. #1	830909	.90		LARGE GRAVEL	RUBBLE	6.6	9.3	4	UNKNOWN	
SLOUGH 8A W. FORK B/L TR. #1	830909	.70		LARGE GRAVEL	RUBBLE	5.0	9.3	5	UNKNOWN	
SLOUGH 8A W. FORK B/L TR. #1	830909	.60		RUBBLE	COBBLE	6.5	9.8	6	UNKNOWN	
SLOUGH 8A W. FORK B/L TR. #1	830909	.60		LARGE GRAVEL	RUBBLE	5.1	9.8	7	UNKNOWN	
SLOUGH 8A W. FORK B/L TR. #1	830909	.60		RUBBLE	COBBLE	4.4	9.5	8	UNKNOWN	
SLOUGH 8A W. FORK B/L TR. #1	830909	.40		RUBBLE	BOULDER	5.0	8.8	9	UNKNOWN	
SLOUGH 8A W. FORK B/L TR. #1	830909	.90		SMALL GRAVEL	LARGE GRAVEL	5.7	8.0	10	UNKNOWN	
SLOUGH 8A W. FORK B/L TR. #1	830909	1.00		LARGE GRAVEL	RUBBLE	6.1	7.9	11	UNKNOWN	
SLOUGH 8A W. FORK B/L TR. #1	830909	1.50		RUBBLE	COBBLE	6.5	8.9	12	UNKNOWN	
SLOUGH 8A W. FORK B/L TR. #1	830909	1.00		LARGE GRAVEL	RUBBLE	5.1	8.9	13	UNKNOWN	
SLOUGH 8A W. FORK B/L TR. #1	830909	1.00		LARGE GRAVEL	RUBBLE	5.3	8.7	14	UNKNOWN	
SLOUGH 8A W. FORK B/L TR. #1	830909	1.10		RUBBLE	COBBLE	6.4	9.0	15	UNKNOWN	
SLOUGH 8A W. FORK B/L TR. #1	830909	1.90		LARGE GRAVEL	COBBLE	5.1	9.0	16	UNKNOWN	
SLOUGH 11	830910	1.68	0.00	RUBBLE	COBBLE			1	UNKNOWN	
SLOUGH 11	830910	1.10	0.00	SAND	LARGE GRAVEL			2	PRESENT	15
SLOUGH 11	830910	.92	0.00	RUBBLE	COBBLE			3	UNKNOWN	
SLOUGH 11	830910	.92	.20	RUBBLE	SAND			4	UNKNOWN	
SLOUGH 11	830910	.62	.70	LARGE GRAVEL	SMALL GRAVEL			5	UNKNOWN	
SLOUGH 11	830911	2.00	0.00	RUBBLE	COBBLE			6	UNKNOWN	
SLOUGH 11	830911	.60	0.00	LARGE GRAVEL	SAND			7	UNKNOWN	
SLOUGH 11	830911	.50	0.00	RUBBLE	LARGE GRAVEL			8	UNKNOWN	

Table 7-A-3 Continued

Survey 20 May 1976

LOCATION	DATE	DEPTH (FT)	WATER VELO- CITY (FT/S)	SUBSTRATE		WATER TEMPERATURE (C)		REDD NO.	UPWELLING	DISTANCE (FT) TO UPWELLING
				PRIMARY	SECONDARY	INTRAGRAVEL	SURFACE			
SLOUGH 11	830911	1.20	.10	RUBBLE	LARGE GRAVEL			9	PRESENT	1
SLOUGH 11	830911	.80	.05	LARGE GRAVEL	RUBBLE			10	UNKNOWN	
SLOUGH 11	830911	.60	0.00	RUBBLE	COBBLE			11	UNKNOWN	
SLOUGH 11	830911	1.30	0.00	LARGE GRAVEL	RUBBLE			12	PRESENT	
SLOUGH 11	830911	1.60	0.00	RUBBLE	LARGE GRAVEL			13	PRESENT	
SLOUGH 11	830911	1.30	0.00	LARGE GRAVEL	SAND			14	PRESENT	
SLOUGH 11	830911	1.00	0.00	SMALL GRAVEL	SAND			15	UNKNOWN	
SLOUGH 11	830911	.70	0.00	LARGE GRAVEL	RUBBLE			16	UNKNOWN	
SLOUGH 11	830911	.90	0.00	SMALL GRAVEL	LARGE GRAVEL			17	UNKNOWN	
SLOUGH 11	830911	.60	0.00	SMALL GRAVEL	RUBBLE			18	UNKNOWN	
SLOUGH 17	830901	2.30	0.00	LARGE GRAVEL	SMALL GRAVEL	4.0	4.9	1	UNKNOWN	
SLOUGH 17	830901	2.30	0.00	LARGE GRAVEL	SMALL GRAVEL	4.5	5.0	2	UNKNOWN	
SLOUGH 21 (SLOUGH ONLY)	830831	.40	.20	RUBBLE	LARGE GRAVEL	5.0	5.6	2	UNKNOWN	
SLOUGH 21 (SLOUGH ONLY)	830831	.40	.90	COBBLE	LARGE GRAVEL	4.6	6.3	3	UNKNOWN	
SLOUGH 21 (SLOUGH ONLY)	830831	.30	.01	RUBBLE	LARGE GRAVEL	4.3	7.0	4	PRESENT	
SLOUGH 21 (SLOUGH ONLY)	830831	.50	.10	LARGE GRAVEL	SMALL GRAVEL	4.7	6.6	5	UNKNOWN	
SLOUGH 21 (SLOUGH ONLY)	830831	.25	.30	LARGE GRAVEL	SMALL GRAVEL	4.3	6.1	6	UNKNOWN	
SLOUGH 21 (SLOUGH ONLY)	830831	.45	.20	BOULDER	LARGE GRAVEL	4.0	6.4	7	UNKNOWN	
SLOUGH 21 (SLOUGH ONLY)	830831	.50	0.00	BOULDER	SMALL GRAVEL	4.1	5.1	8	PRESENT	
SLOUGH 21 (SLOUGH ONLY)	830831	.80	.05	COBBLE	LARGE GRAVEL	4.7	6.2	9	UNKNOWN	
SLOUGH 21 (SLOUGH ONLY)	830831	.90	.15	RUBBLE	LARGE GRAVEL	4.6	6.1	10	UNKNOWN	
SLOUGH 21 (SLOUGH ONLY)	830831	.40	.40	RUBBLE	LARGE GRAVEL	4.4	6.1	11	UNKNOWN	
SLOUGH 21 (SLOUGH ONLY)	830831	.70	.15	BOULDER	LARGE GRAVEL	4.1	6.1	12	UNKNOWN	
SLOUGH 21 (SLOUGH ONLY)	830831	.70	.10	BOULDER	LARGE GRAVEL	4.2	6.2	13	UNKNOWN	

CHANNEL CHARACTERISTICS

GENERAL DESCRIPTION

high steep cut bank that is thickly vegetated with shrubs and trees. Pool/riffle sequence predominates throughout the side channel except for a backwater area at the mouth. The lower half of the side channel consists mostly of a gravel/rubble substrate, while the upper half is cobble/boulder. Silt/sand deposits are found in the pool areas and in the backwater area at the mouth. The overall side channel gradient is 20.5 ft/mi.

Side Channel 10 is initially breached at a mainstem discharge of approximately 19,000 cfs. The initial and controlling breaching discharges are the same at this site. Once the channel is breached, the water becomes turbid. The first 900 feet of the side channel is a long pool, influenced by mainstem backwater. It generally remains turbid while the rest of the slough is clear. There are several intermittent channels intersecting the gravel bar forming the south bank, which contributes additional flow to the side channel. The exact discharge at which they become watered has not been determined. Below the breaching discharge, base channel flow is maintained by runoff and groundwater seepage.

Slough 11 - RM 135.3

Slough 11 is approximately one mile long and is located on the east bank of the Susitna River (Appendix Figures 6-C-12 to 6-C-14). Both the head and the mouth of the slough join side channels of the mainstem Susitna River. The slough has a winding channel that is a series of pools and riffles with an overall gradient of 19.8 ft/mi. Substrate in the upper half of the slough is composed mostly of cobble/boulder with the lower half composed of gravel/rubble. Silt/sand deposits are confined mostly to the backwater pool at the mouth. This pool is formed by a relatively stable sand/gravel bar at the mouth. The slough channel is broad in general, being enlarged by dramatic break-ups which occurred in previous years. The steep banks are approximately six feet high and sparsely vegetated.

Slough 11 has an identical initial and controlling breaching discharge of approximately 42,000 cfs. The slough was last observed breached in 1981.^a In an unbreached state, intragravel flow can be observed entering the slough through the berm at the head. However, this flow is minimal and below breaching discharges most of the upper third of the slough is dewatered with isolated shallow pools. Surface runoff and upwelling maintain flow in the lower two thirds of the slough. The backwater pool at the mouth exhibits considerable fluctuation in direct response to changes in mainstem discharge. The backwater area is quite broad, encompassing the entire slough width, in contrast to the narrow channel in the rest of the slough.

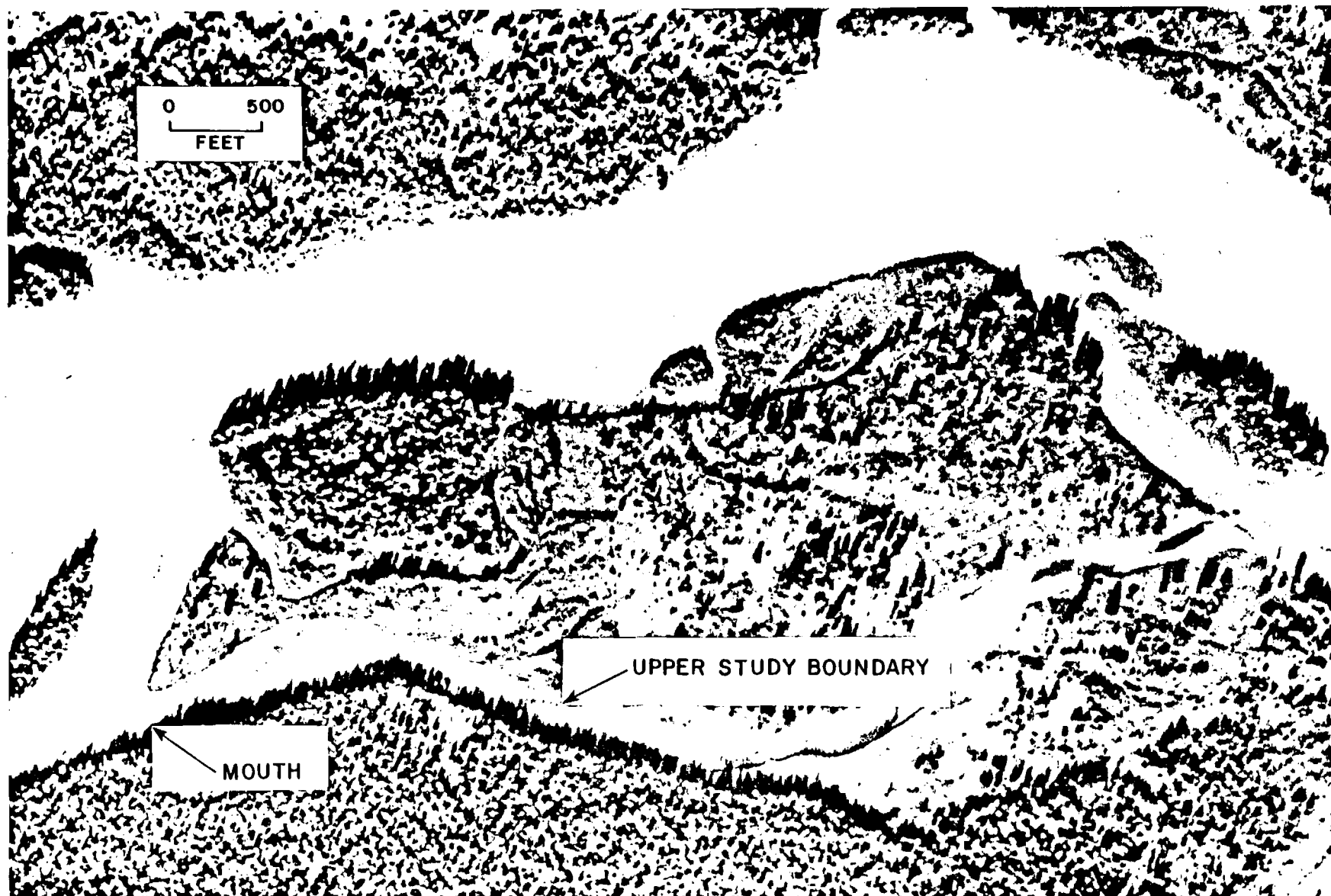
Upper Side Channel 11 - RM 136.0

Upper Side Channel 11 is located on the east bank of the Susitna River and flows in an approximate east-west direction (Appendix Figures 6-C-12 to 6-C-14). The head of the approximately 2,300 foot side channel is

^a Although it was not observed during this study period, mainstem discharge records indicate that this slough was breached in the spring of 1984.

MAPS

4-f-87



Appendix Plate 4-F-13. August 1980 aerial photograph of Slough 11 (RM 135.3). The Susitna River flows from right to left in this photo.

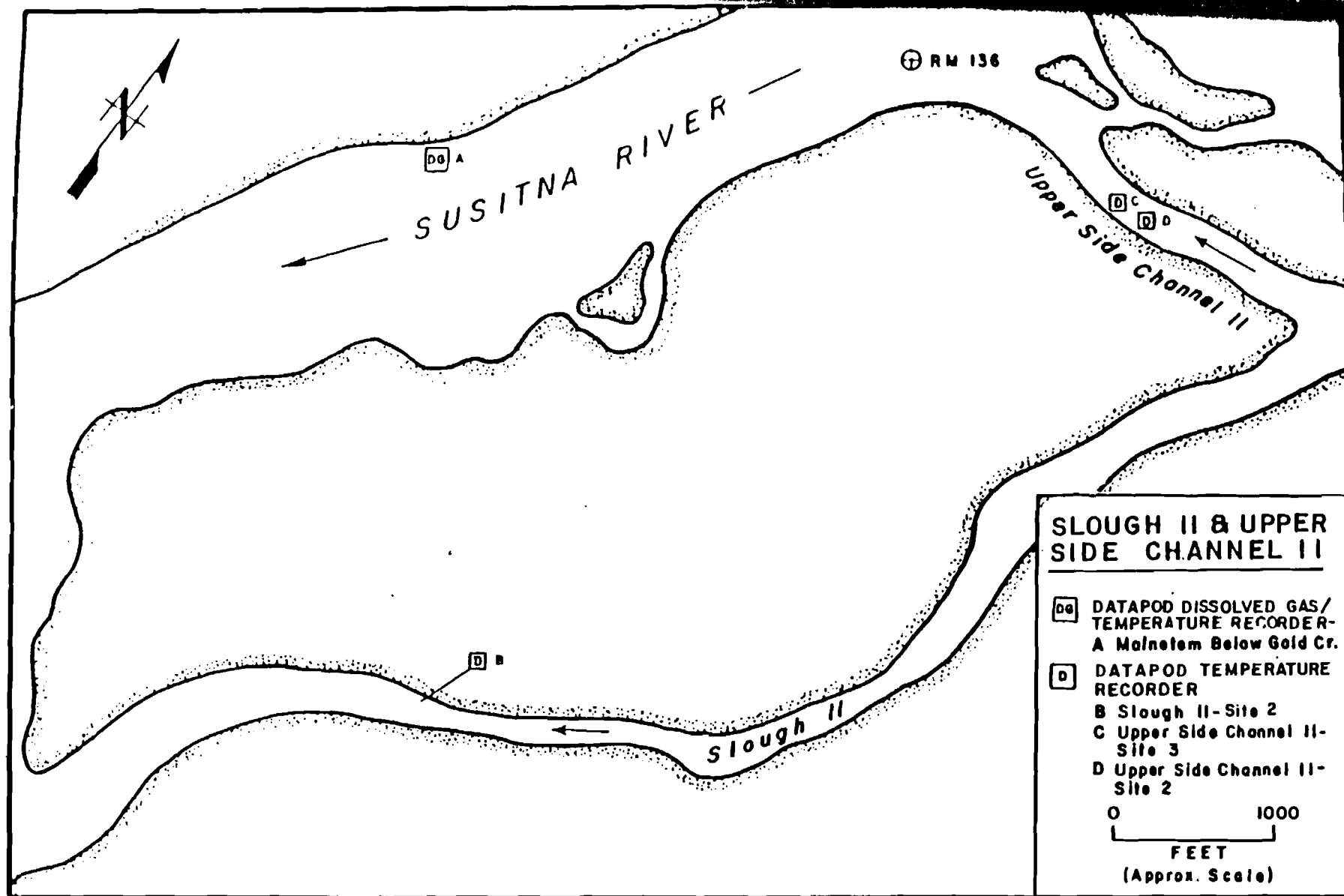
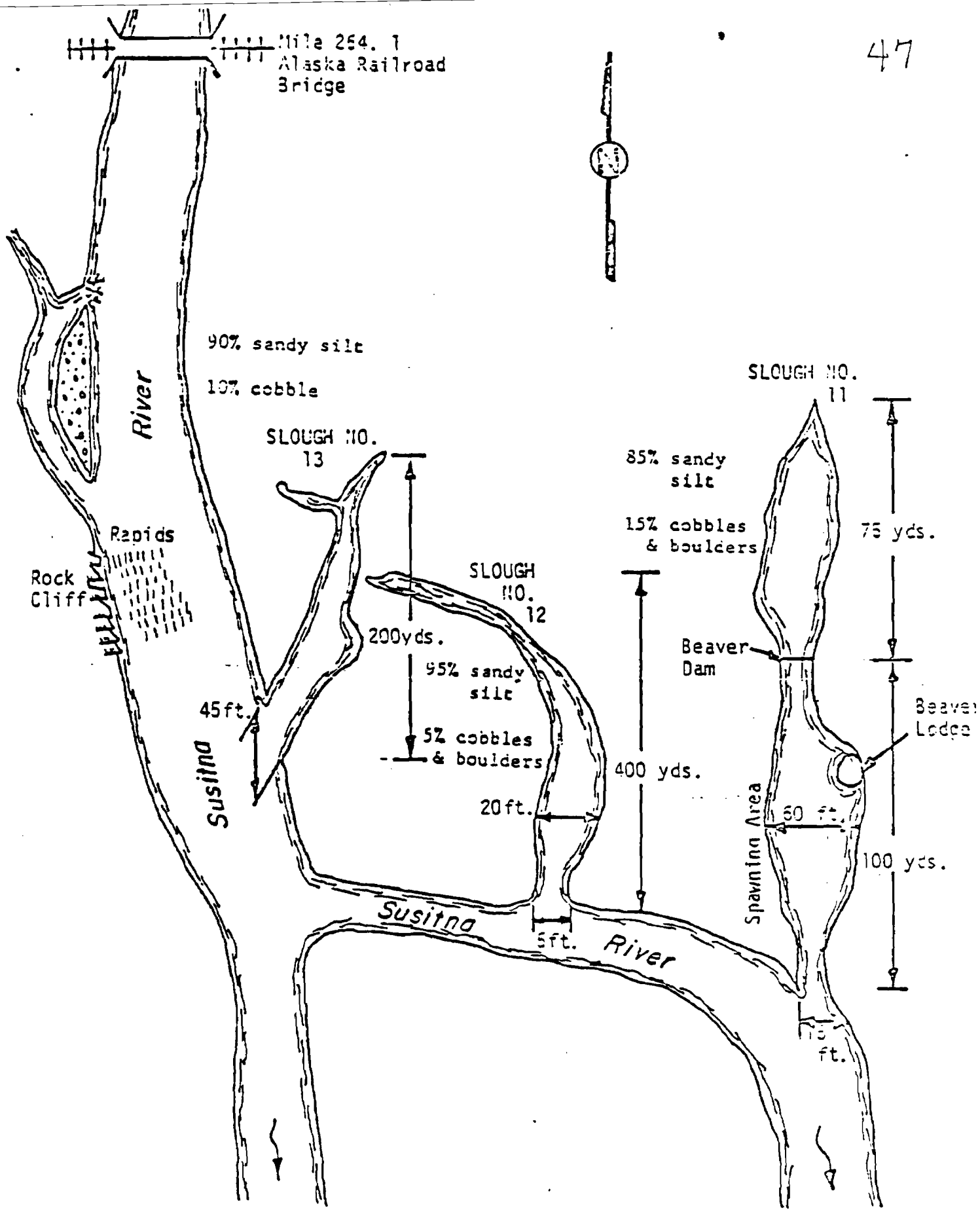
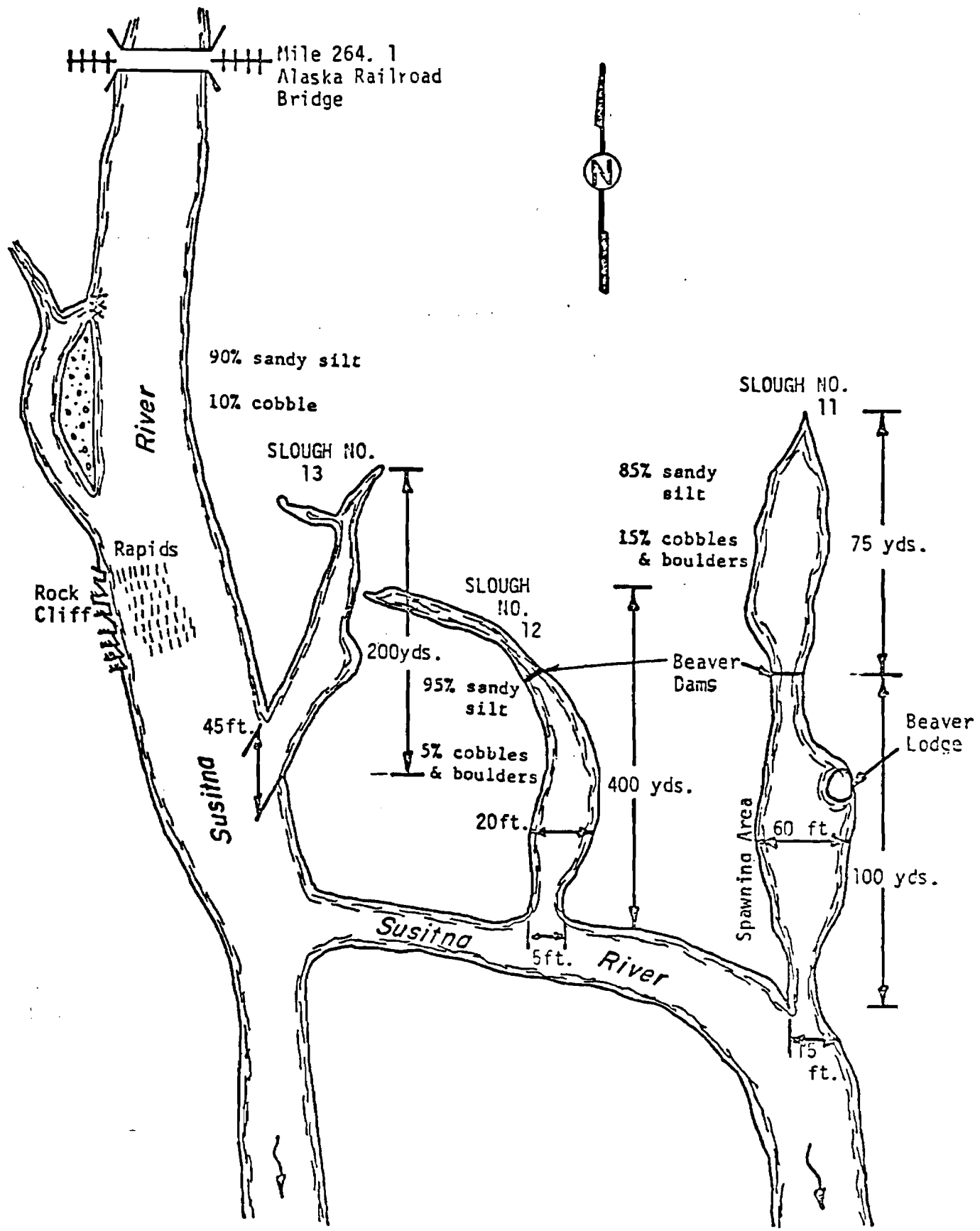


Figure 3-A-17. Locations of the temperature monitoring stations at Slough II - Site 2, RM 135.7, GC S31N02W19DAD; Upper Side Channel II - Sites 1 and 2, RM 136.3 GC S31N02W20BBD; and Mainstem Susitna River below Gold Creek, RM 135.8, GC S31N02W20BAC.

20



Appendix Figure 7 . Map of Sloughs No. 11, No. 12 and No. 13 as composed on August 9, Devil's Canyon Project, 1974.



Appendix Figure 19. Map of Sloughs Numbers 11, 12, and 13, Susitna River as composed on August 9, Devil Canyon Project, 1974.

MAPS

MAPS

95

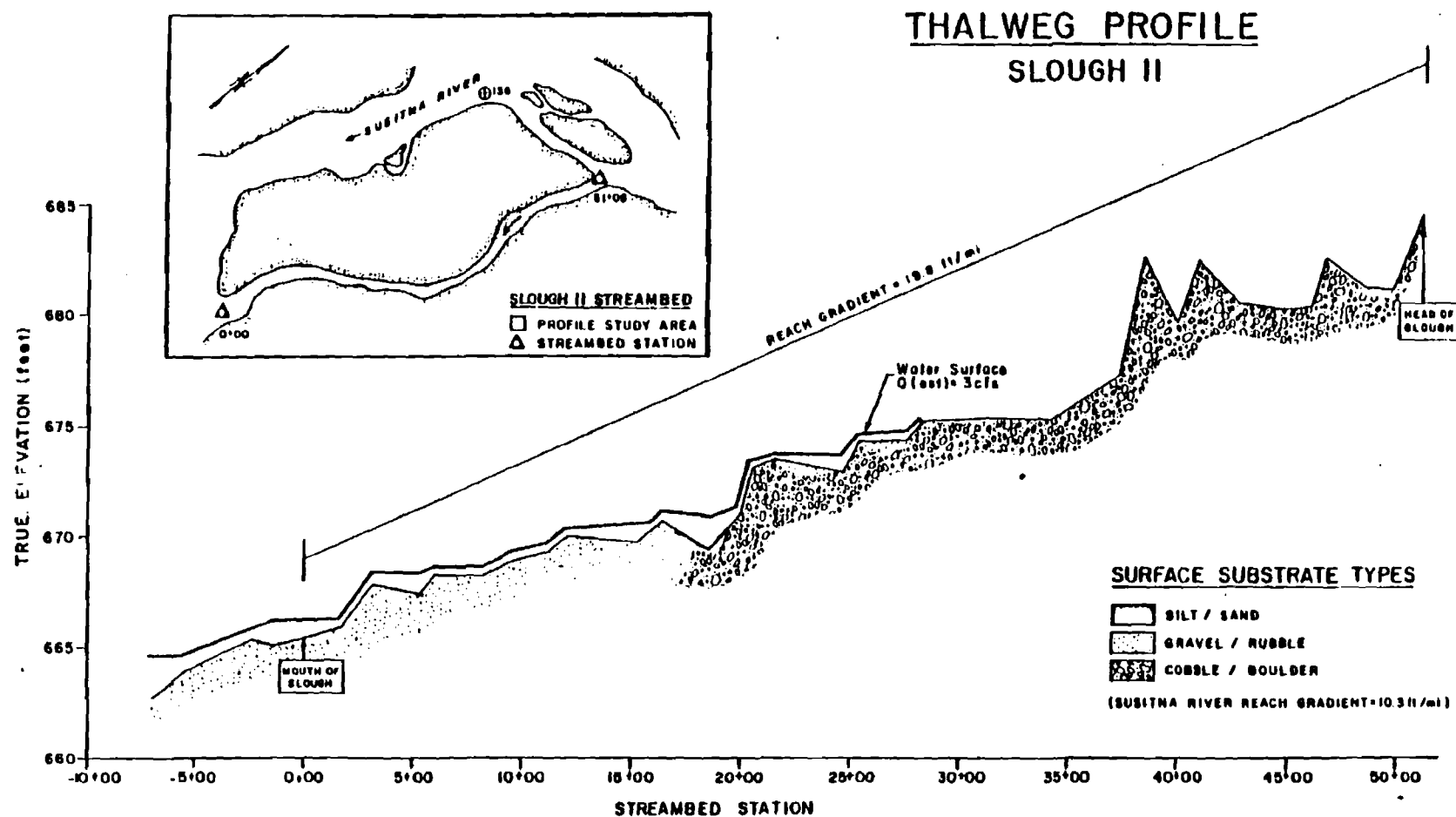
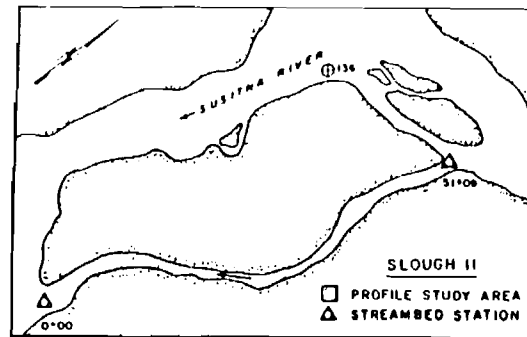


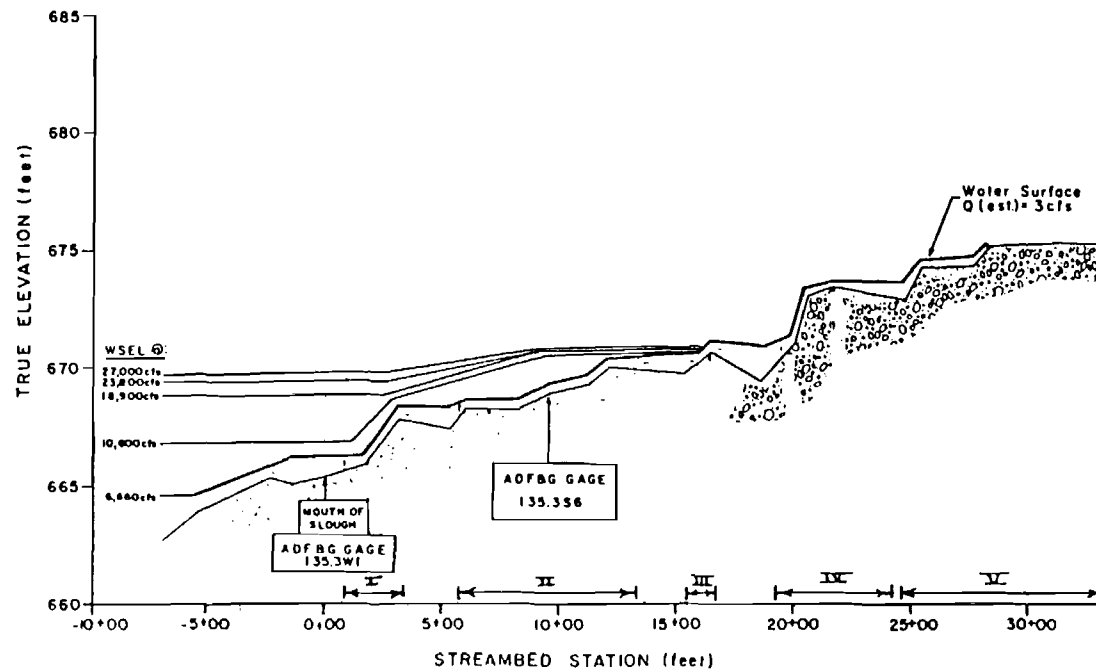
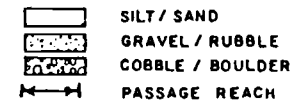
Figure 2-19 Streambed (thalweg) profile of Side Slough 11 (RM 135.7).

42



SLOUGH II

PASSAGE REACH LOCATIONS



6-E-7

Thalweg profile of Slough II

Table 4-E-44. Data (ft) for streambed (thalweg) profile of Slough 11, 1982 (see pages E-3, -4 for definitions of terms).

Point	Distance	Station	Thalweg Elevation	Depth	WSE ^a	Comments
1		-7 + 09	662.80	1.70	664.50	Below mouth
	165					
2		-5 + 44	664.00	0.52	664.50	Below mouth
	300					
3		-2 + 44	665.30	0.50	665.80	Below mouth
	115					
4		-1 + 29	665.15	1.03	666.15	Below mouth
	129					
5		0 + 00	665.45	0.85	666.30	Mouth
	171					
6		1 + 71	666.00	0.37	666.35	Top pool
	137					
7		3 + 08	667.90	0.49	668.40	Top riffle
	212					
8		5 + 20	667.55	0.90 ^b	668.45 ^b	Top pool
	72					
9		5 + 92	668.30	0.33	668.65	Top riffle
	235					
10		8 + 27	668.25	0.45	668.70	Top pool
	124					
11		9 + 51	668.95	0.55	669.50	Top riffle
	157					
12		11 + 08	669.25	0.43	669.70	Top pool
	94					
13		12 + 02	670.00	0.44	670.45	Top riffle
	325					
14		15 + 27	669.80	0.91	670.70	At R & M well
	79					
15		16 + 06	670.50	0.21	670.70	Top pool
	35					
16		16 + 41	670.75	0.30	671.05	Top riffle
	218					
17		18 + 59	669.65	1.32	671.00	Pool
	139					
18		19 + 98	671.05	0.27	671.30	Top pool
	51					
19		20 + 49	673.15	0.24	673.35	Top riffle
	117					
20		21 + 66	673.55	Ice	673.55	Pool
	300					
21		24 + 66	673.05	0.51	673.55	Top pool
	56					
22		25 + 22	674.30	0.28	674.55	Top riffle
	241					
23		27 + 63	674.40	0.25	674.65	Top pool

Table 4-E-44. (Continued).

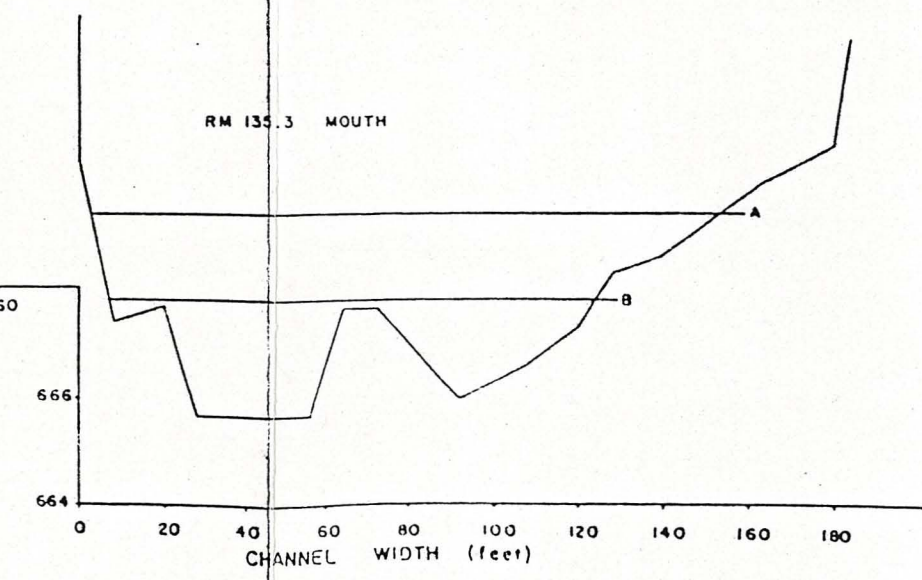
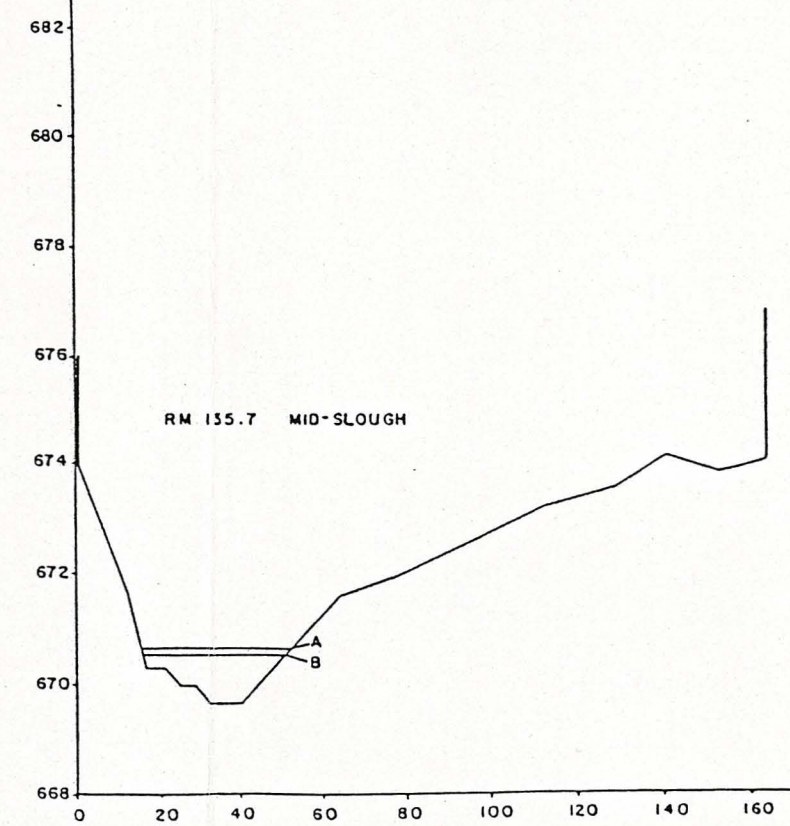
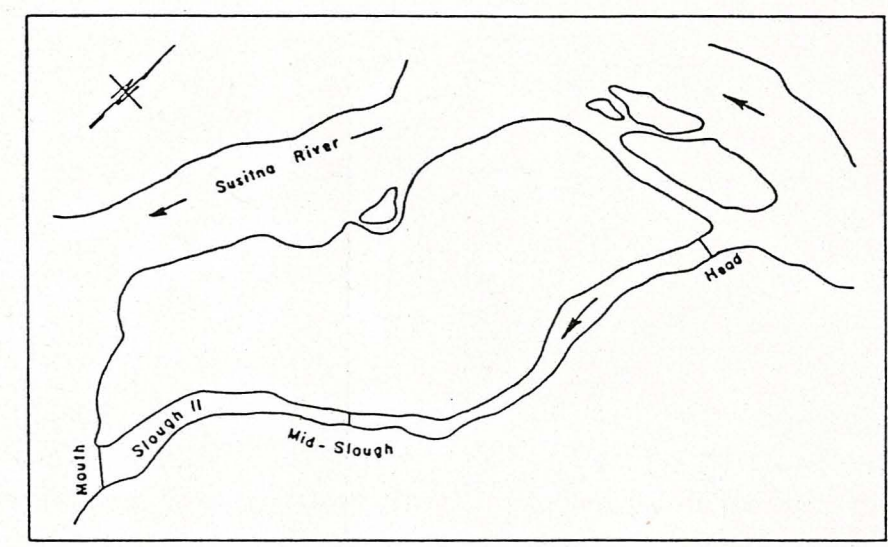
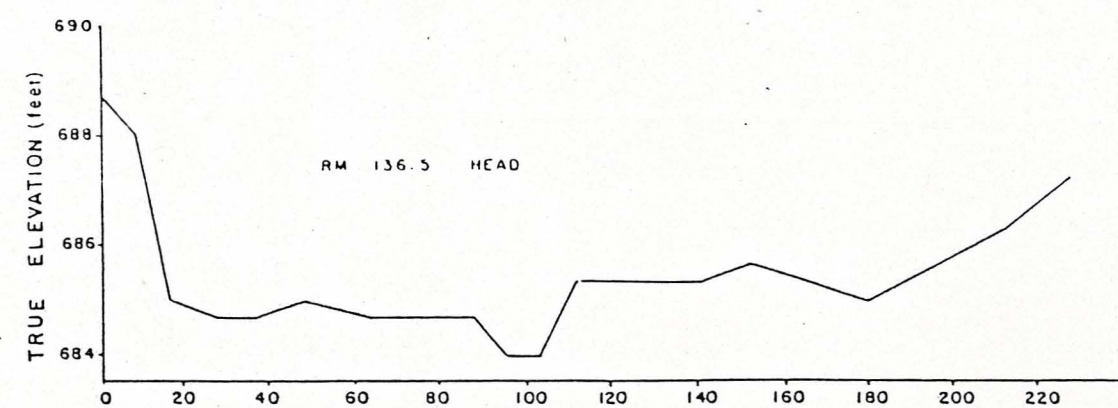
<u>Point</u>	<u>Distance</u>	<u>Station</u>	<u>Thalweg Elevation</u>	<u>Depth</u>	<u>WSE^a</u>	<u>Comments</u>
24	48	28 + 11	675.15	0.25	675.40	Top riffle
25	300	31 + 11	675.45	--	--	Pool ^c
26	300	34 + 11	675.35	--	--	Top pool ^c
27	302	37 + 13	677.30	--	--	- ^c
28	128	38 + 41	682.80	--	--	Channel ^c
29	154	39 + 95	679.75	--	--	Channel ^c
30	100	40 + 95	682.55	--	--	Mound ^c
31	190	42 + 85	680.70	--	--	Mound ^c
32	211	44 + 96	680.25	--	--	Btm. pool ^c
33	106	46 + 02	680.40	--	--	Top pool ^c
34	68	46 + 70	682.80	--	--	Mound ^c
35	177	48 + 47	681.35	--	--	Btm. pool ^c
36	139	49 + 86	681.35	--	--	Top pool ^c
37	123	51 + 09	684.60	--	--	Head ^c

^aWater surface elevation.

^bEstimated value.

^cNo water present at time of survey.

CROSS-SECTIONAL DATA



OBSERVATION	DISCHARGE (cfs)	
	Slough	Mainstem
A	5.5	27,500
B	3.1	13,100

SLOUGH II

Appendix Figure 4-A-33. Cross sections of the head, the mid-slough and mouth of Slough II depicting the water surface elevation corresponding to the slough and mainstem discharge.

endix Table 2-B-35. Cross sectional elevations obtained at
Side Slough 11 mouth, staff gage 135.3W1.
Surveyed by ADF&G on October 19, 1983.

STATION	ELEVATION	DESCRIPTION
0.0	672.77	LBHP ALCAP R&M 135.5W1LB
0.0	672.57	GB
3.0	670.96	TOP OF LEFT BANK. EDGE VEGETATION
16.5	670.42	
41.0	669.14	MIDDLE BANK
64.4	668.15	
83.4	667.45	
107.6	667.64	
114.8	667.38	
120.0	666.60	BOTTOM OF LOW BANK
126.5	666.30	LWE
133.2	665.81	
137.0	665.61	
144.0	665.83	
148.4	665.45	
54.0	665.75	
155.7	666.31	RWE
162.2	666.88	BOTTOM OF LOW BANK
173.5	667.78	MIDDLE BANK
184.6	669.24	BANK
186.6	671.97	BANK
186.6	674.00	

Appendix Table 2-B-36. Cross sectional elevations obtained at
Side Slough 11 (Q site), staff gage 135.3S6.
Surveyed by ADF&G on June 29, 1983.

STATION	ELEVATION	DESCRIPTION
0.0	674.36	LBHP ALCAP R&M 135.7S2RB
0.0	674.06	GB
11.5	673.69	
23.5	674.19	
43.6	673.04	
72.0	672.19	
98.0	671.53	
107.6	670.74	LEW
118.7	670.71	
125.6	669.77	THALWEG
129.9	669.83	
147.3	670.78	REW
162.6	674.27	MIDDLE OF HIGH BANK

pendix Table 2-B-37. Cross sectional elevations obtained at
Side Slough 11 head, staff gage 135.3H3.
Surveyed by R&M in 1982.

STATION	ELEVATION	DESCRIPTION
0.0	688.67	LBHP ALCAP R&M LRX44
13.0	688.10	TOP BANK
21.0	685.30	BOTTOM OF BANK
31.0	684.80	
40.0	684.90	
53.0	685.10	
65.0	684.90	
79.0	684.70	
90.0	684.90	
98.0	684.00	
108.0	684.20	
116.0	685.50	
129.0	685.40	
140.0	685.60	
154.0	685.70	
8.0	685.60	
182.0	685.10	
197.0	685.80	
213.0	686.60	
229.0	687.30	
246.0	687.70	
263.0	688.30	
280.0	688.80	
292.0	689.00	TOP OF BANK
299.0	689.70	GB

Appendix Table 2-B-37. continued.

STATION	ELEVATION	DESCRIPTION
307.0	689.36	RBHP ALCAP 136.5H4LB

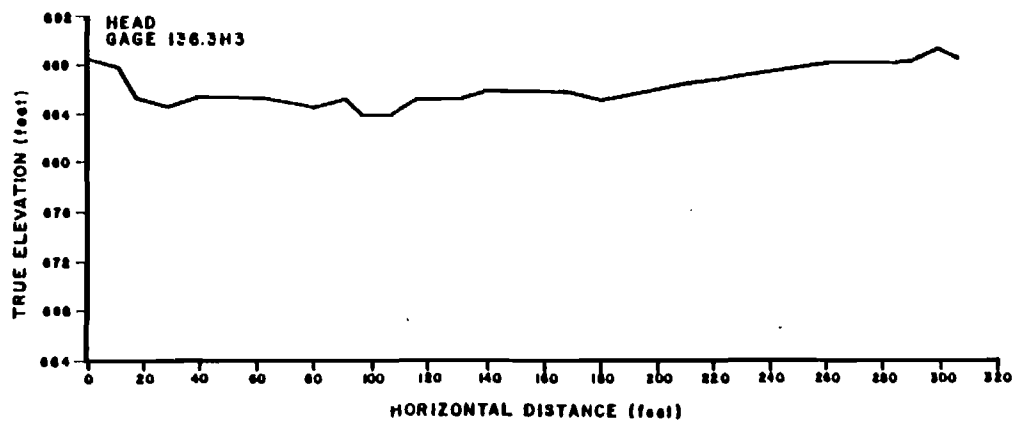
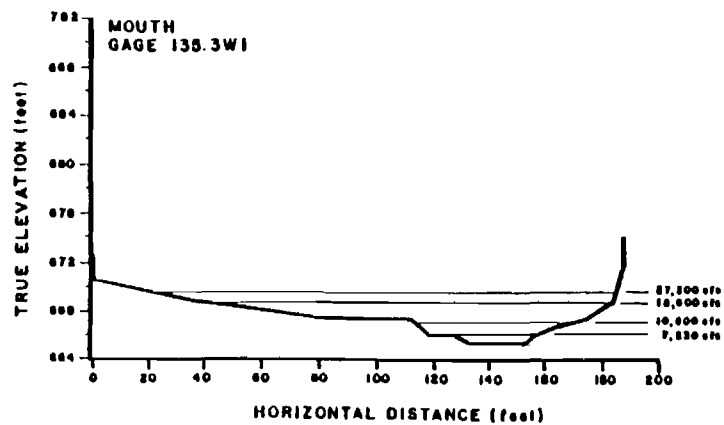
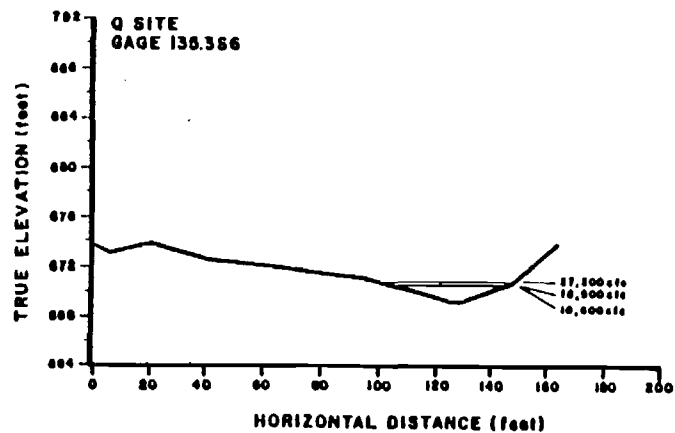
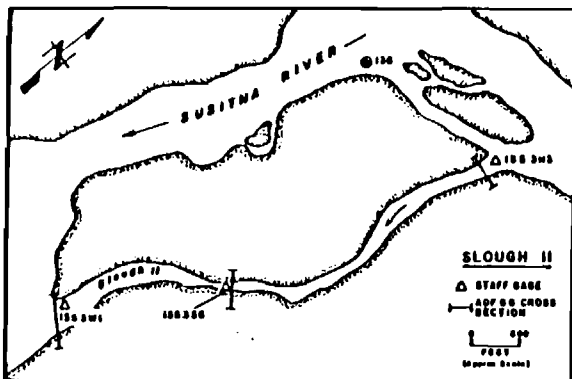


Figure 2-20 Cross section profiles developed for staff gage sites within Side Slough II.