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# APPENDICES

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## SKAGIT RIVER SALMON AND STEELHEAD FRY STRANDING STUDIES

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### SEATTLE CITY LIGHT Environmental Affairs Division

●

March 1987

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R.W. BECK AND ASSOCIATES  
ENGINEERS ♦ CONSULTANTS

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SKF

1987

#1

2 OF 2

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Salmon Stranding 1986

uncorrected valves at 0700 A.M

Date	Start* Cfs	End* NEWH	MARBLEMOUNT <sup>Flow</sup> Scheduled	Actual	AMPLITUDE* Scheduled	Actual	Ramp Scheduled	Rate** Actual	End times** at Newhalem Hour
MAR 13	5790	1720	3000	2191(3050)	4000	4070	1000	1044	2335
14	3780	1690	3000	2396(2940)	2000	2090	1000	1090	2345
15	6360	2490	3500	2920(3540)	4000	3870	1000	970	2330
16	6800	2730	3500	3096(3730)	4000	4070	5000	5390	2325
17	5980	2030	3000	2453(3010)	4000	3950	5000	5340	2330
18	4020	2020	3000	2396(2920)	2000	2000	5000	5820	2330
19	4580	2550	3500	2798(3370)	2000	2030	1000	1020	2330
20	4750	2720	3500	2920(3510)	2000	2030	5000	4950	2330
26	6340	2320	3500	2942(3490) (3490)	4000	4020	1000	960	2325
27	5660	2310	3500	3232(3730)	2000	3320	5000	5940	2330
Apr 1	3520	1520	3000	2610(3160)	2000	2000	1000	1000	2245
2	3900	1870	3500	3140(3780)	2000	2030	1000	960	2245
3	5600	1520	3000	2282(2790)	4000	4080	5000	5340	2210
4	5730	1730	3000	2356(2900)	4000	4000	1000	980	2240
5	6380	2350	3500	6815(3440)	4000	4030	5000	4540	2245
6	3850	1810	3000	2352(2880)	2000	2040	5000	7720	2245
7	4430	2420	3500	2836(3420)	2000	2010	5000	4760	2245
8	4450	2420	3500	3096(3690)	2000	2030	1000	940	2235
9	5690	1840	3000	2550(3120)	4000	3850	5000	4410	2235
10	3730	1750	3000	2915(2940)	2000	1980	1000	960	2235
11	7230	1790	3000	2356(2890)	2000	5440	1000	1100	2200
12	6380	2290	3500	2773(3300)	2000	4090	1000	1010	2215
13	5030	1960	3000	No data	4000	3070	5000	6190	2225
14	6460	2440	3500	No data	4000	4020	5000	3990	2230

\* Taken from USGS 15-minute interval flow records (Marblemt Correction - .25 ft.)  
 \*\* Estimated from Power Strip charts  
 • Deviations of possibly significant size

# Salmon Stranding 1986

Date	Start*	End* cfs	MARBLEMOUNT *		AMPLITUDE*		Ramp Rate **		End times** at Newhalen Hour
	cfs	NEWH	Scheduled	Actual	Scheduled	Actual	Scheduled	Actual cfs/hr	
MAR 13	5790	1720	3000	2491	4000	4070	1000	1044	2335
14	3780	1690	3000	2396	2000	2090	1000	1090	2345
15	6360	2490	3500	2920	4000	3870	1000	970	2330
16	6800	2730	3500	3096	4000	4070	5000	5390	2325
17	5980	2030	3000	2453	4000	3950	5000	5340	2330
18	4020	2020	3000	2396	2000	2000	5000	5820	2330
19	4580	2550	3500	2798	2000	2030	1000	1020	2330
20	4750	2720	3500	2920	2000	2030	5000	4950	2330
26	6340	2320	3500	2942	4000	4020	1000	960	2325
27	<del>5400</del> <sup>4800</sup> → 2400**	<del>2340</del>	3500	3232	2000	<del>2000</del> 2000	5000	5940	2330
APR 1	3520	1520	3000	2610	2000	2000	1000	1000	2245
2	3900	1870	3500	3140	2000	2030	1000	960	2245
3	5600	1520	3000	2282	4000	4080	5000	5340	2210
4	5730	1730	3000	2356	4000	4000	1000	980	2240
5	6380	2350	3500	2815	4000	4030	5000	4540	2245
6	3850	1810	3000	2358	2000	2040	5000	7720	2245
7	4430	2420	3500	2836	2000	2010	5000	4760	2245
8	4450	2420	3500	3096	2000	2030	1000	940	2235
9	5690	1840	3000	2550	4000	3850	5000	4410	2235
10	3730	1750	3000	2415	2000	1980	1000	960	2235
11	<del>7250</del> <sup>6850</sup> → 1790 u.s.g.		3000	2356	2000	<del>5440</del> 4060	1000	1100	2200
12	<del>6380</del> → 2290		3500	2773	2000	<del>4090</del> 4070	1000	1010	2215
13	5030	1960	3000	No data	4000	3070	5000	6190	2225
14	6460	2440	3500	No data	4000	4020	5000	3990	2230

\* Taken from USGS 15-minute interval flow records (Marblemt correction -.25 ft.)

\*\* Estimated from Power Strip charts

• Duration of discharge significant size

# Steelhead Stranding 1986

Date	Starting flow*		Amplitude*		Ramp Rate** (cfs/hr.)		End	Time** Hour
		End flow*	Scheduled	actual	scheduled	actual		
Aug 2	5430	3310	2000	2120	1000	• 510 (2.83 hr)/2760 (0.17 hr)	2400	
2 day	3310	1440	2000	1870	1000	1000	0500 day	
3	5410	3330	2000	2080	1000	1019	2355	
4	5430	1410	4000	4020	5000	4910	2400	
5	5490	1410	4000	4090	500/5000	450 (3.0 hr)/8270 (0.33 hr)	2350	
6	5370	1410	4000	3960	1000	990	2400	
7	5370	3360	2000	2010	5000	6190	2355	
9	5410	1420	4000	3990	1000	1030	2355	
10	5370	1400	4000	3970	5000	5440	2400	
11	5450	3330	2000	2120	1000	960	2400	
11 day	3330	1390	2000	1940	1000	1120	0500 day	
12	5470	3310	2000	2160	5000	6420	2400	
12 day	3320	1360	2000	1960	5000	• 8480	0330 day	
13	5540	3290	2000	2250	500/5000	† 421 (4.25 hr)/6990 (0.08 hr)	2400	
14	5410	1400	4000	4010	500/5000	† 348 (4.25 hr)/4580 (0.58 hr)	2410	
15	5390	1410	4000	3980	500/5000	† 477 (3.25 hr)/6240 (0.42 hr)	2355	
16	5500	3410	2000	2100	500/5000	† 409 (3.50 hr)/6390 (0.08 hr)	2400	
16 day	3370	1400	2000	1970	5000	6600	0320 day	
17	5410	3390	2000	2020	5000	6020	2346	
18	5410	1500	4000	3910	5000	6050	2400	
19	5450	1460	4000	3990	1000	940	2355	
20	5540	3410	2000	2130	1000	• 650	2400	

\* Taken from USGS 15-minute intervals readings at Newhalem gauge.

\*\* Calculated from strip charts unless otherwise indicated.

† Partially reconstructed from USGS 15-minute interval readings at Newh. gauge.

• Possible significant deviation

# Pothole Stranding 1985

Date	Starting CFS*		End Flow*		Amplitude*		Ramp Rate (cfs/hr)	
	Start Time	End Time	scheduled	actual	scheduled	actual**		
Feb 23	2200	0030	5257	2718	2500	2539	1000	1040
MAR 2	2345	0015	5580	4548	1000	1032	2000	1780
3	2300	0015	5599	3110	2500	2489	2000	2150
9	1930	2320	6484	2502	4000	3982	1000	980
10	1930	2320	6547	2502	4000	4045	1000	950
16	2050	2320	5010	2526	2500	2484	1000	1044
17	2217	2320	5124	3970	1000	1154	2000 •	1270
23	2110	2300	6358	2370	4000	3988	2000	2040
24	2145	2300	6400	3805	2500	2595	2000	2060
30	2140	2250	6379	3880	2500	2499	2000	1770
31	2050	2240	6379	2370	4000	4009	2000	2050
APR 6	2130	2230	3835	2802	1000	1033	1000	1073
7	2130	2230	3835	2766	1000	1069	1000	1190
MAY 15	2000	2230	4055	1720	1000 •	2335	2000 •	960
16	1455	2220	4140	1720	4000 •	2920	2000 •	1014

\* Start and end flows and amplitudes are taken from USGS 15-minute interval readings at Newhalem gauge.

\*\* Ramp rates are calculated from the strip charts from Gorge powerhouse that show instantaneous power output.

- Possibly significant deviation

SKAGIT RIVER SALMON AND STEELHEAD  
FRY STRANDING STUDIES  
(APPENDICES)  
SEATTLE CITY LIGHT  
ENVIRONMENTAL AFFAIRS DIVISION

## APPENDIX A

### SKAGIT RIVER HYDROGRAPHS FOR MARBLEMOUNT AND NEWHALEM USGS STREAM GAGES

USGS discharge versus time hydrographs are presented showing the actual flows for each daily test for both Newhalem and Marblemount for the Summer 1985 and Spring 1986 gravel bar stranding tests. Please refer to figure I-1 for schematic definitions of the downramp beginning flow, amplitude fluctuation, ramp rate, and ending flow or see Section III of this report.

#### TESTING PARAMETERS

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1. 1985 Summer Gravel Bar Stranding Study (August 1 - 28)

‡ Constant Beginning Flow = 5400 cfs

‡ Downramp Amplitude Fluctuation A1 = 2000 cfs  
A2 = 4000 cfs

‡ Downramp Ramping Rate R1 = Accelerated Ramp Rate (See Section III)  
R2 = 1000 cfs/hour  
R3 = 5000 cfs/hour

‡ All testing levels were to be achieved at the Newhalem USGS Stream Gage

2. 1986 Spring Gravel Bar Stranding Study (March 12 - April 17)

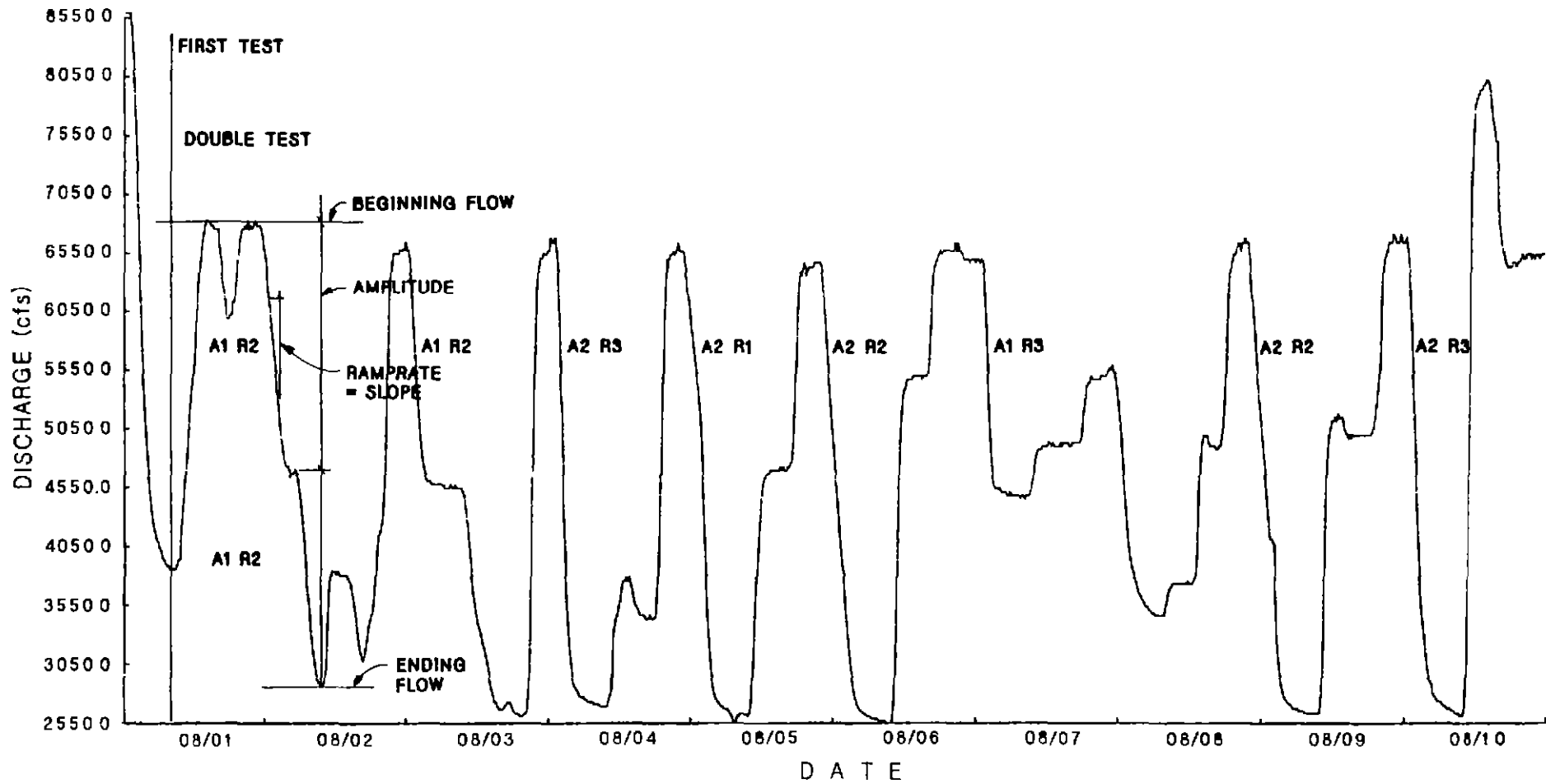
‡ Downramp Ending Flow E1 = 3000 cfs  
E2 = 3500 cfs

‡ Downramp Amplitude Fluctuation A1 = 2000 cfs  
A2 = 4000 cfs

‡ Downramping Rate R1 = 1000 cfs  
R2 = 5000 cfs

‡ All testing levels were to be achieved at the Newhalem USGS Stream Gage except the Ending Flow which was to occur at the Marblemount USGS Stream gage

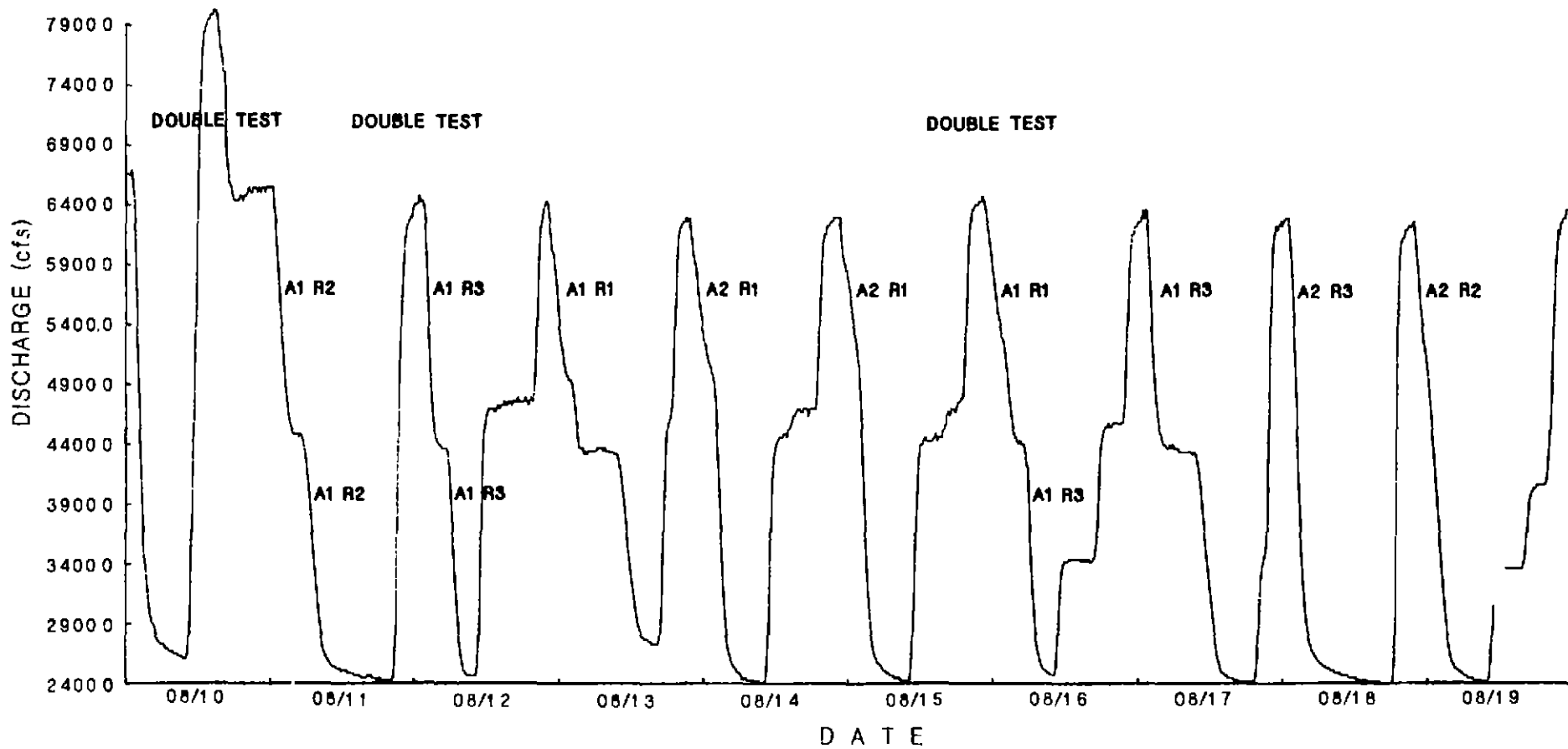
**DISCHARGE VS. TIME HYDROGRAPH**  
**SKAGIT RIVER AT MARBLEMOUNT**  
**August 1, 1985 - August 10, 1985**  
**WATER YEAR 1985**



**NOTE: BEGINNING FLOWS FROM NEWHALEM WERE CONSTANT AT APPROXIMATELY 5400 CFS. SEE HYDROLOGY SECTION OF REPORT FOR TEST DESCRIPTIONS.**

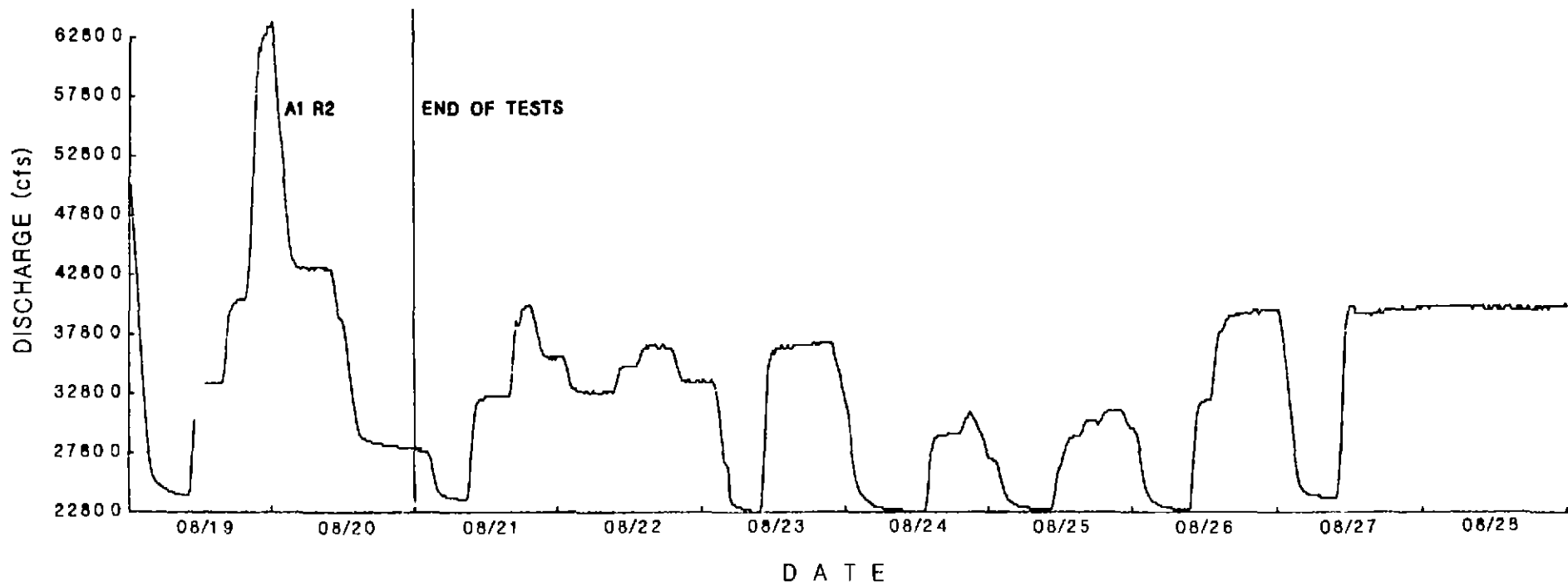


**DISCHARGE VS. TIME HYDROGRAPH**  
**SKAGIT RIVER AT MARBLEMOUNT**  
 August 10, 1985 - August 19, 1985  
 WATER YEAR 1985



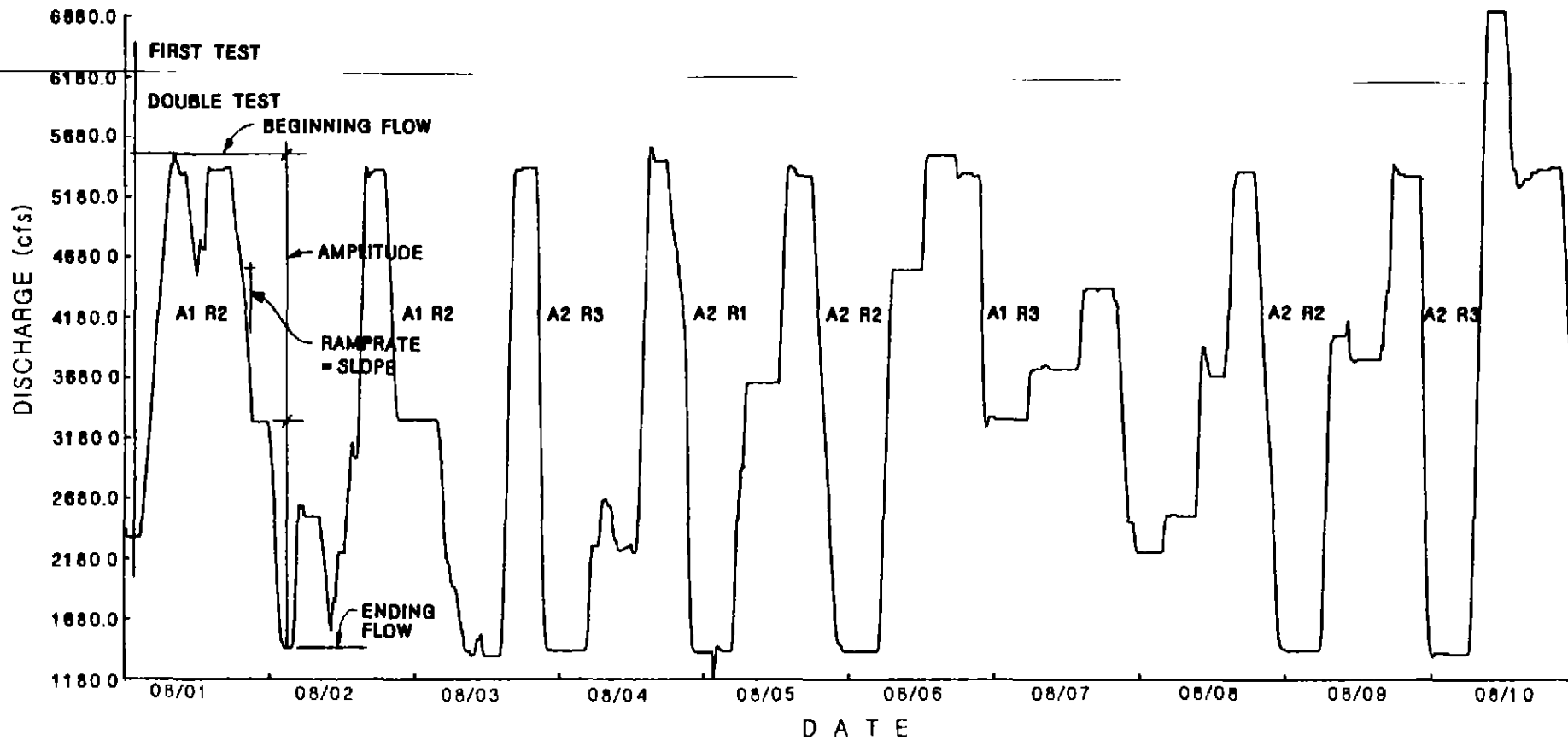
**NOTE: BEGINNING FLOWS FROM NEWHALEM WERE CONSTANT AT APPROXIMATELY 5400 CFS.  
 SEE HYDROLOGY SECTION OF REPORT FOR TEST DESCRIPTIONS.**

DISCHARGE VS. TIME HYDROGRAPH  
SKAGIT RIVER AT MARBLEMOUNT  
August 19, 1985 - August 28, 1985  
WATER YEAR 1985



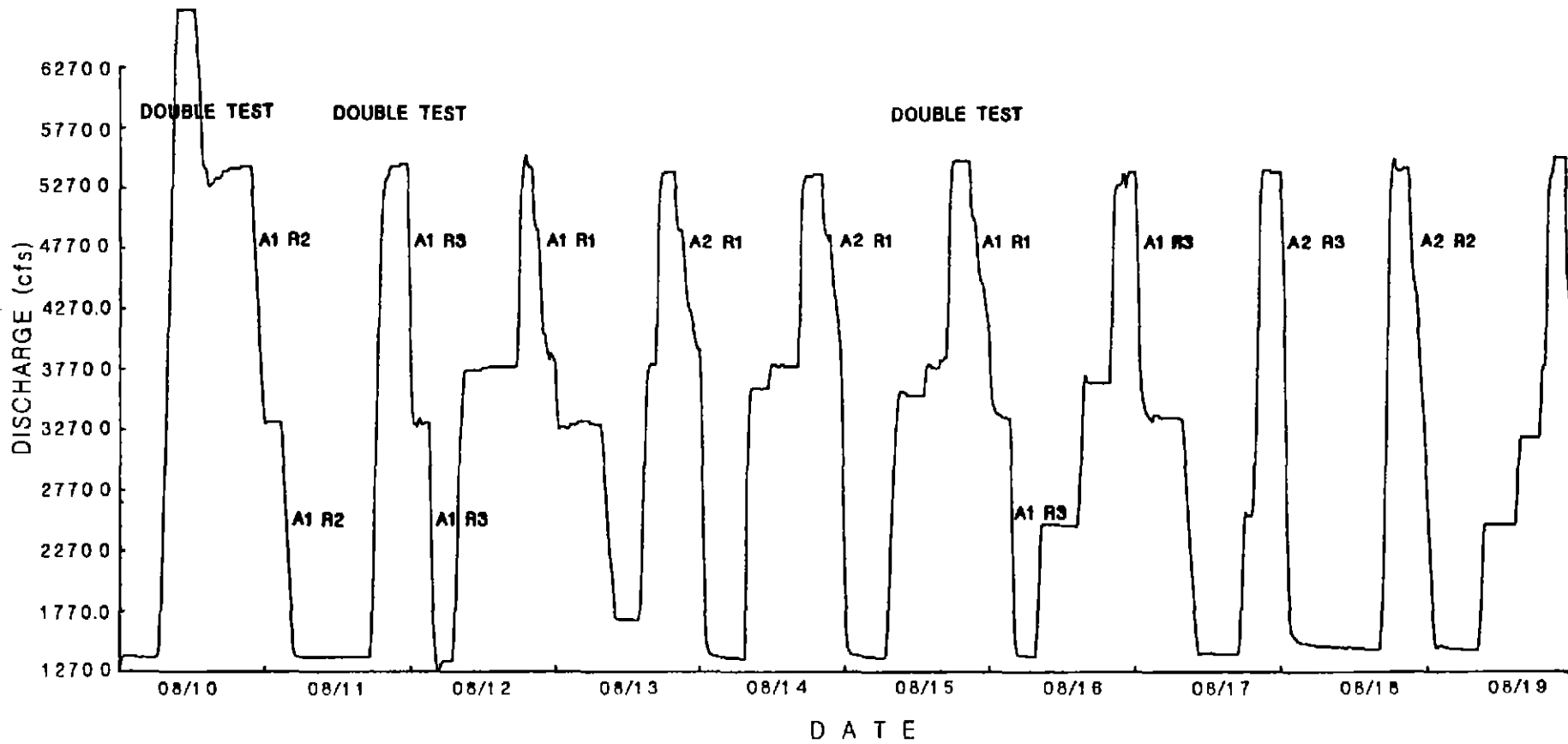
NOTE: BEGINNING FLOWS FROM NEWHALEM WERE CONSTANT AT APPROXIMATELY 5400 CFS.  
SEE HYDROLOGY SECTION OF REPORT FOR TEST DESCRIPTIONS.

**DISCHARGE VS. TIME HYDROGRAPH**  
**SKAGIT RIVER AT NEWHALEM**  
**August 1, 1985 - August 10, 1985**  
**WATER YEAR 1985**



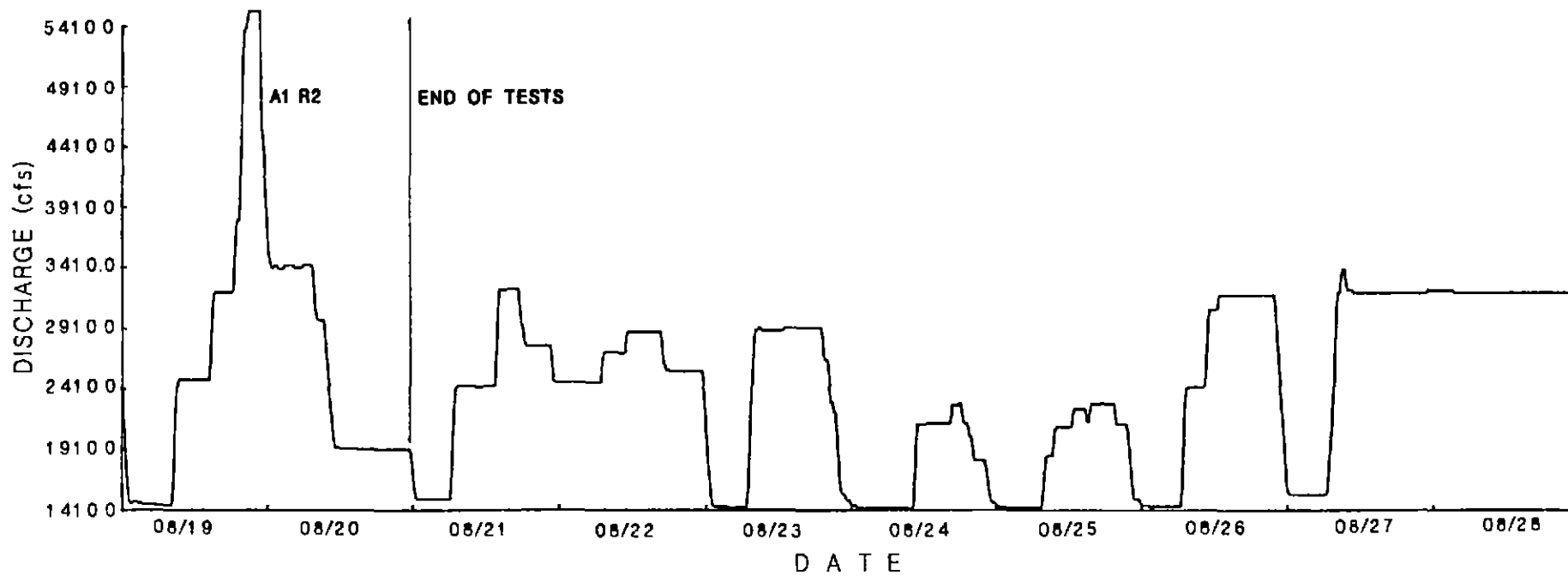
**NOTE: BEGINNING FLOWS FROM NEWHALEM WERE CONSTANT AT APPROXIMATELY 5400 CFS.  
 SEE HYDROLOGY SECTION OF REPORT FOR TEST DESCRIPTIONS.**

**DISCHARGE VS. TIME HYDROGRAPH**  
**SKAGIT RIVER AT NEWHALEM**  
**August 10, 1985 - August 19, 1985**  
**WATER YEAR 1985**



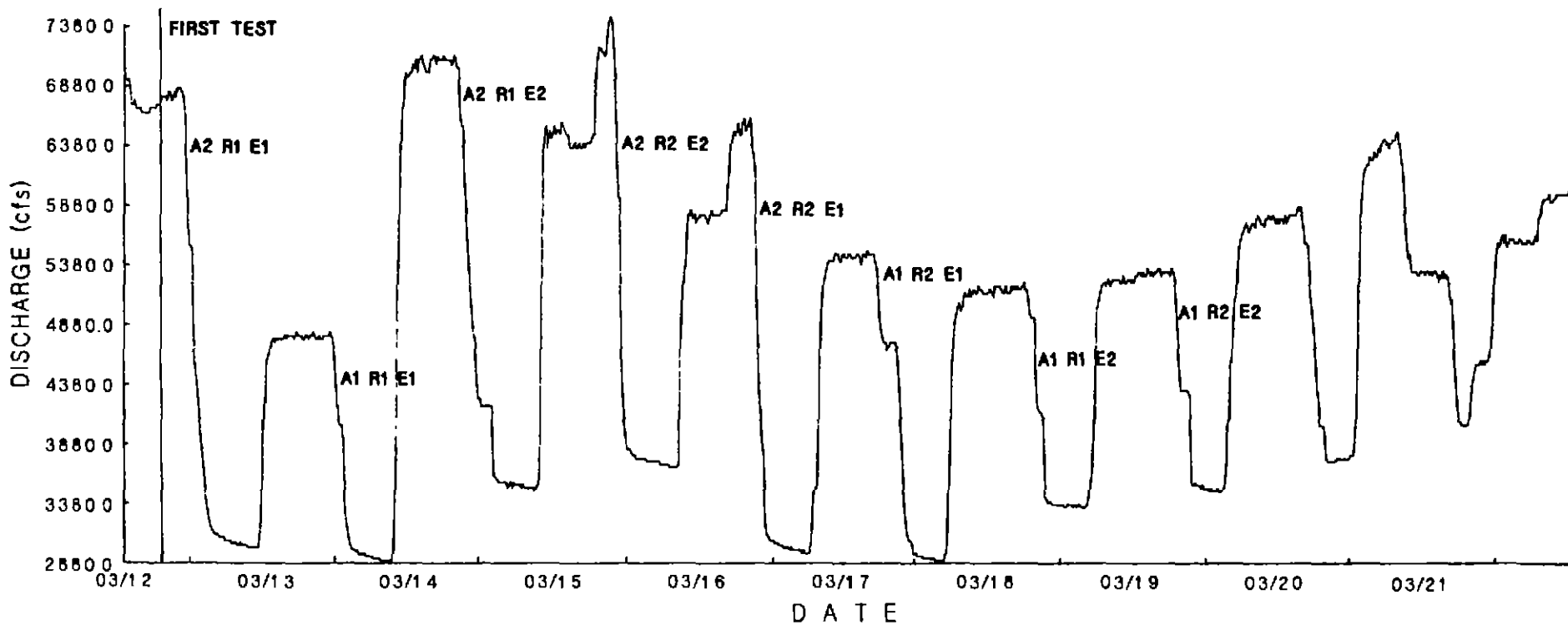
**NOTE: BEGINNING FLOWS FROM NEWHALEM WERE CONSTANT AT APPROXIMATELY 5400 CFS.  
 SEE HYDROLOGY SECTION OF REPORT FOR TEST DESCRIPTIONS.**

**DISCHARGE VS. TIME HYDROGRAPH**  
**SKAGIT RIVER AT NEWHALEM**  
**August 19, 1985 - August 28, 1985**  
**WATER YEAR 1985**



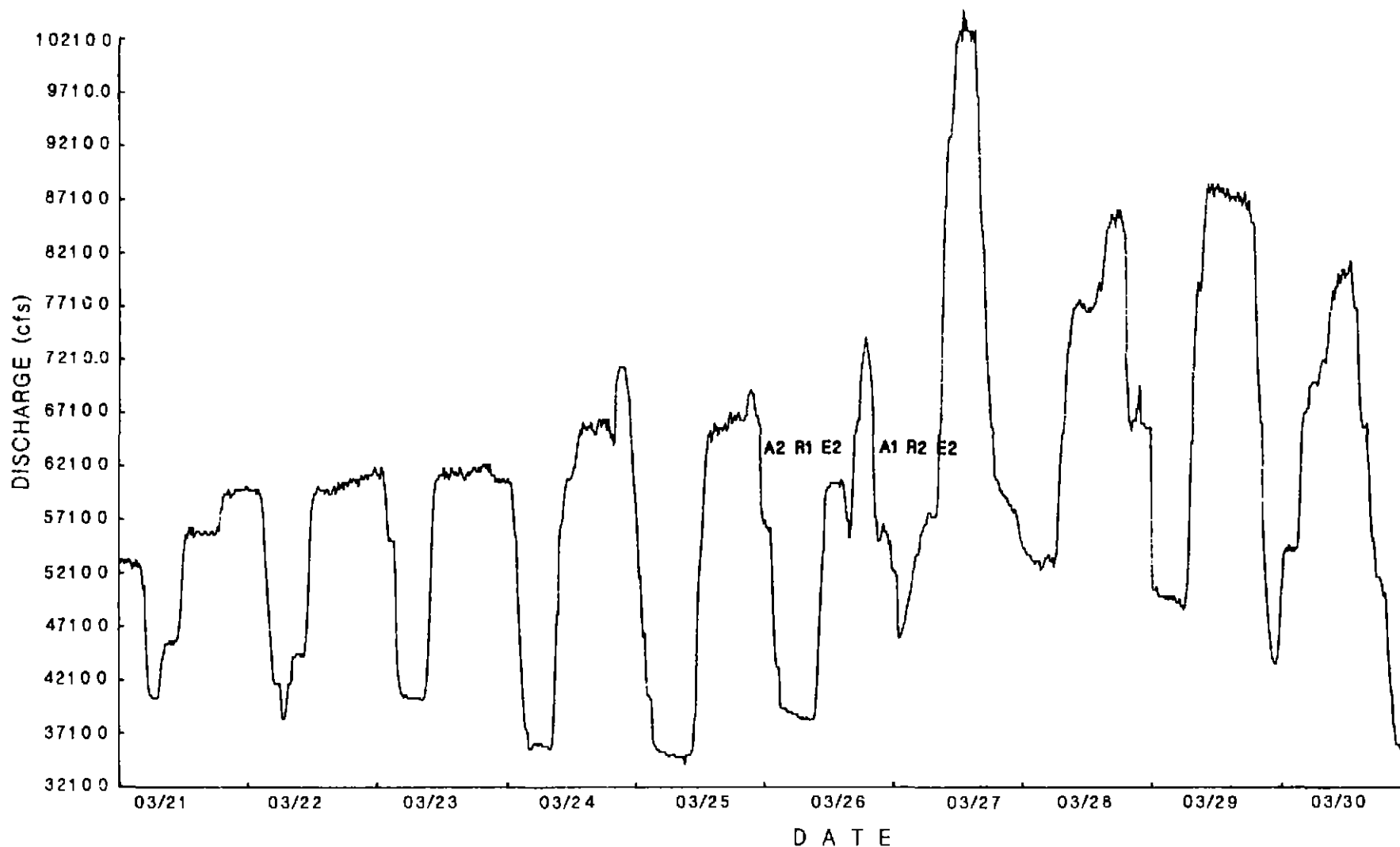
**NOTE: BEGINNING FLOWS FROM NEWHALEM WERE CONSTANT AT APPROXIMATELY 5400 CFS. SEE HYDROLOGY SECTION OF REPORT FOR TEST DESCRIPTIONS.**

**DISCHARGE VS. TIME HYDROGRAPH**  
**SKAGIT RIVER AT MARBLEMOUNT**  
 March 12, 1986 - March 21, 1986  
 WATER YEAR 1986



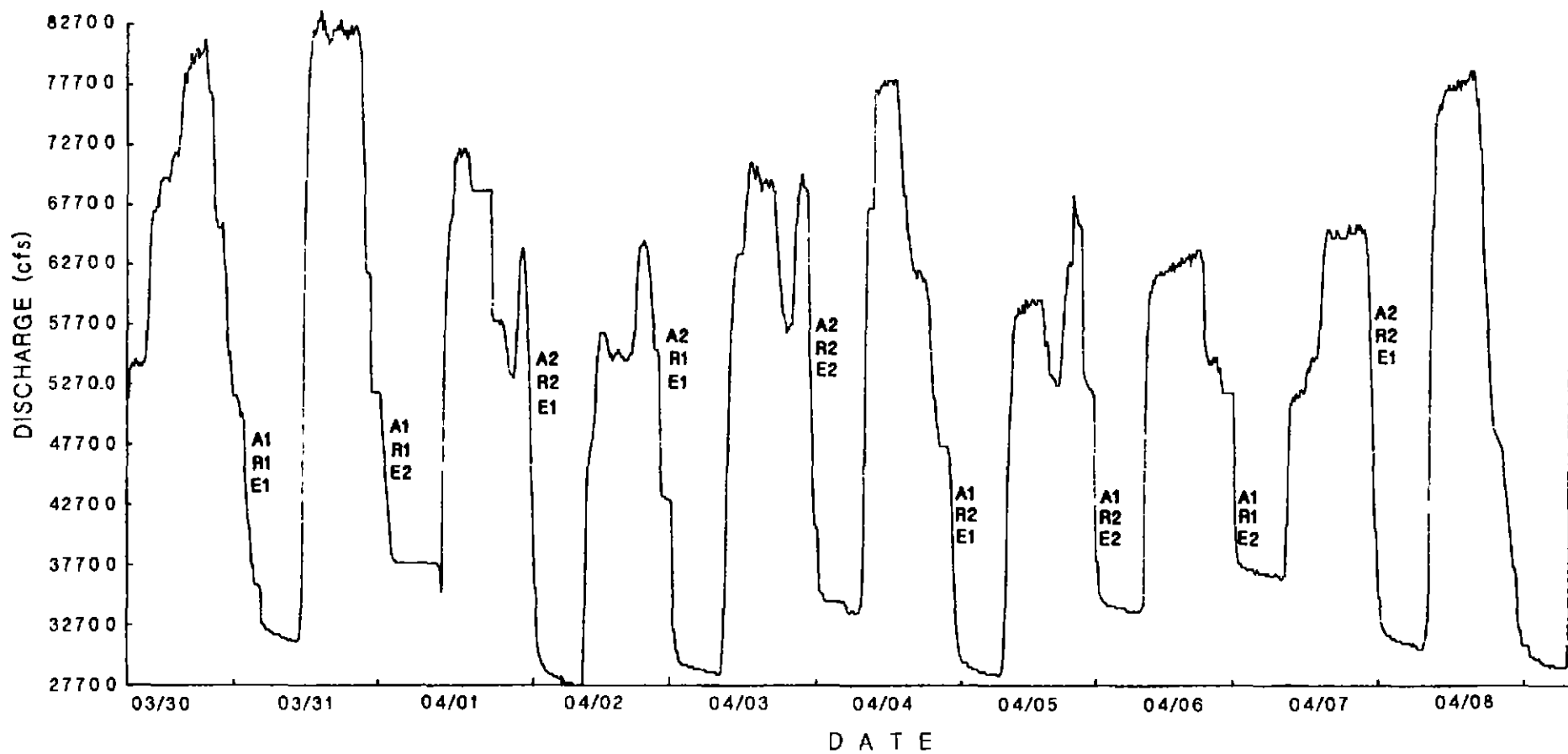
NOTE: ENDING FLOWS AT MARBLEMOUNT USGS GAGE WERE EITHER 3000 CFS OR 3500 CFS. SEE HYDROLOGY SECTION OF REPORT FOR TEST DESCRIPTIONS.

**DISCHARGE VS. TIME HYDROGRAPH**  
**SKAGIT RIVER AT MARBLEMOUNT**  
**March 21, 1986 - March 30, 1986**  
**WATER YEAR 1986**



**NOTE: ENDING FLOWS AT MARBLEMOUNT USGS GAGE WERE EITHER 3000 CFS OR 3500 CFS. SEE HYDROLOGY SECTION OF REPORT FOR TEST DESCRIPTIONS.**

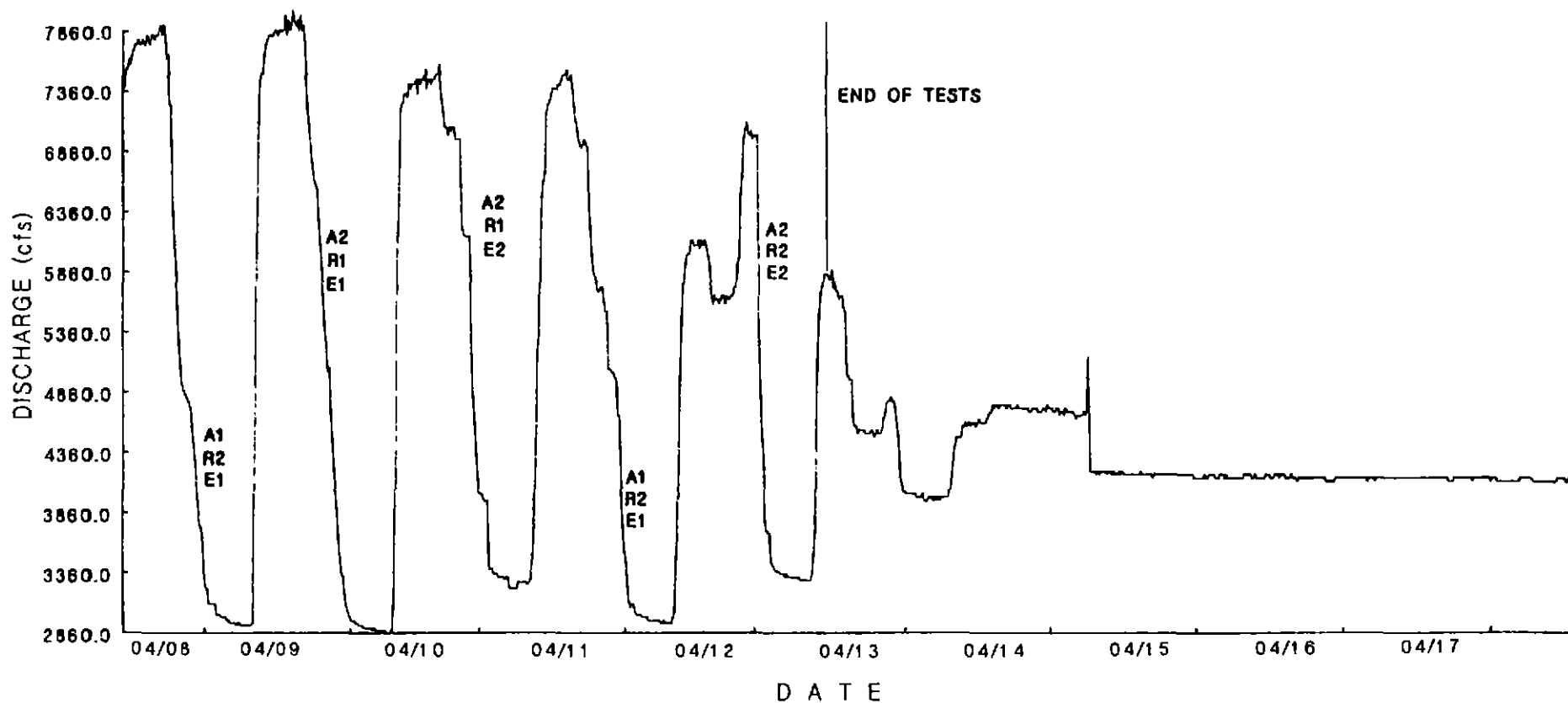
**DISCHARGE VS. TIME HYDROGRAPH**  
**SKAGIT RIVER AT MARBLEMOUNT**  
**March 30, 1986 - April 8, 1986**  
**WATER YEAR 1986**



**NOTE: ENDING FLOWS AT MARBLEMOUNT USGS GAGE WERE EITHER 3000 CFS OR 3500 CFS. SEE HYDROLOGY SECTION OF REPORT FOR TEST DESCRIPTIONS.**

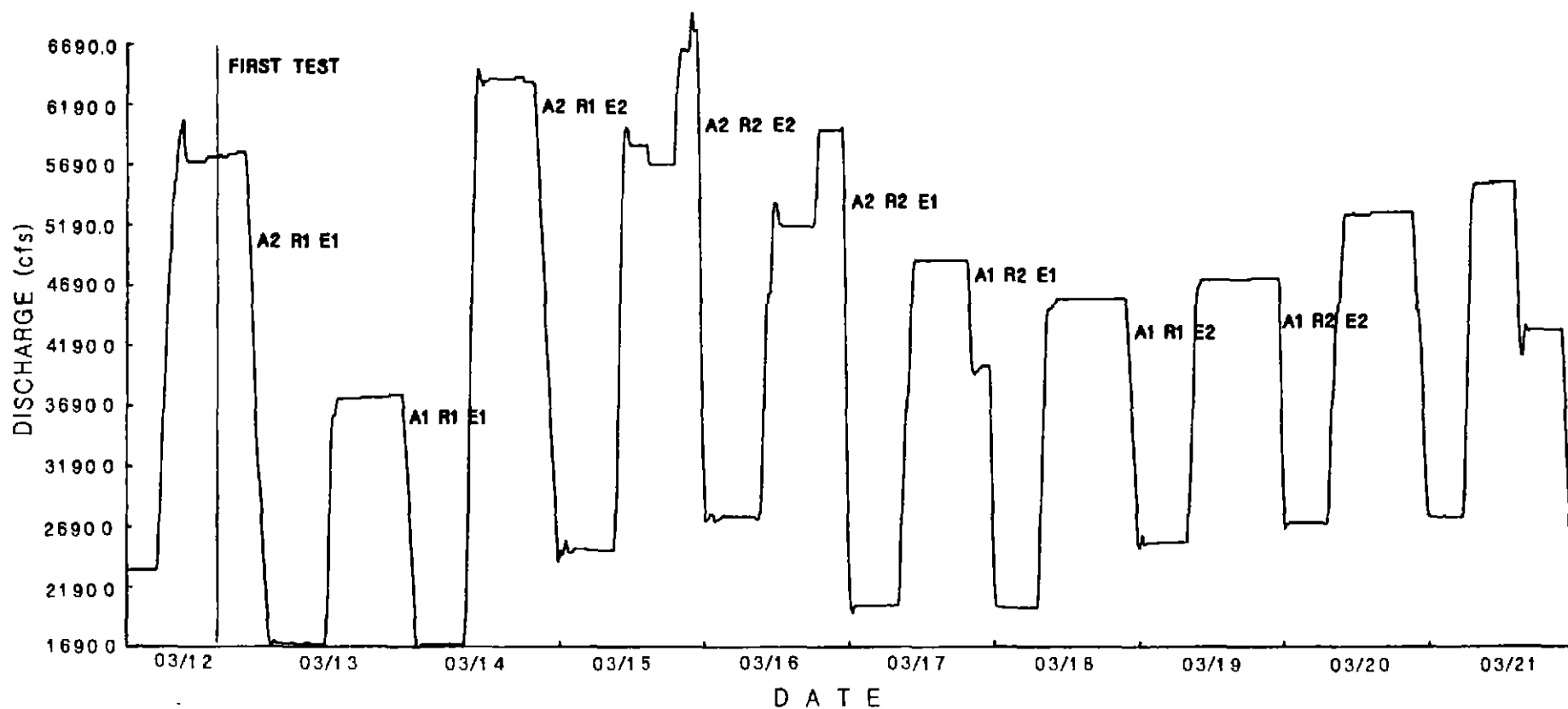


**DISCHARGE VS. TIME HYDROGRAPH**  
**SKAGIT RIVER AT MARBLEMOUNT**  
**April 8, 1986 - April 17, 1986**  
**WATER YEAR 1986**



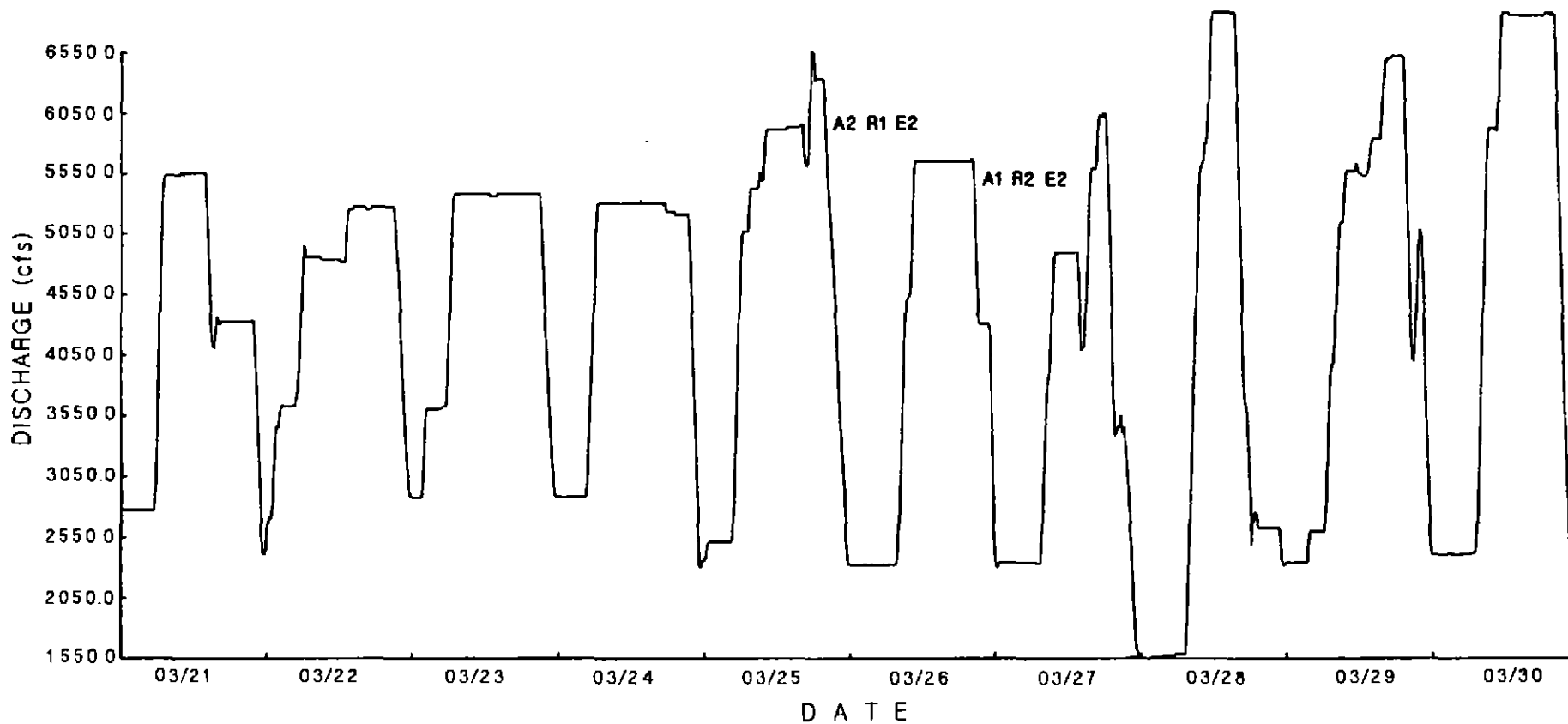
**NOTE: ENDING FLOWS AT MARBLEMOUNT USGS GAGE WERE EITHER 3000 CFS OR 3500 CFS. SEE HYDROLOGY SECTION OF REPORT FOR TEST DESCRIPTIONS.**

**DISCHARGE VS. TIME HYDROGRAPH**  
**SKAGIT RIVER AT NEWHALEM**  
**March 12, 1985 - March 21, 1985**  
**WATER YEAR 1985**



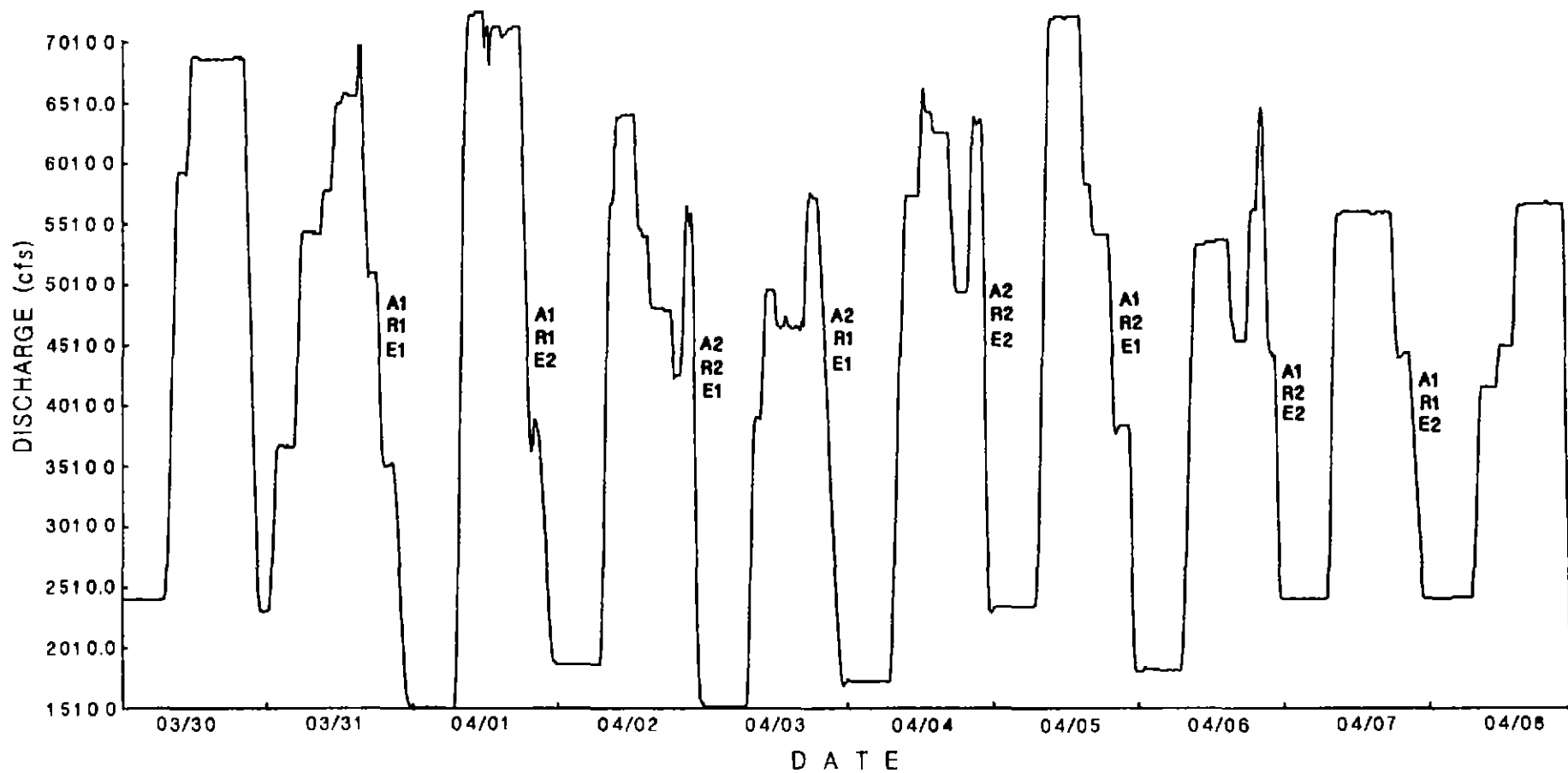
**NOTE: ENDING FLOWS AT MARBLEMOUNT USGS GAGE WERE EITHER 3000 CFS OR 3500 CFS. SEE HYDROLOGY SECTION OF REPORT FOR TEST DESCRIPTIONS.**

DISCHARGE VS. TIME HYDROGRAPH  
SKAGIT RIVER AT NEWHALEM  
March 21, 1985 - March 30, 1985  
WATER YEAR 1985



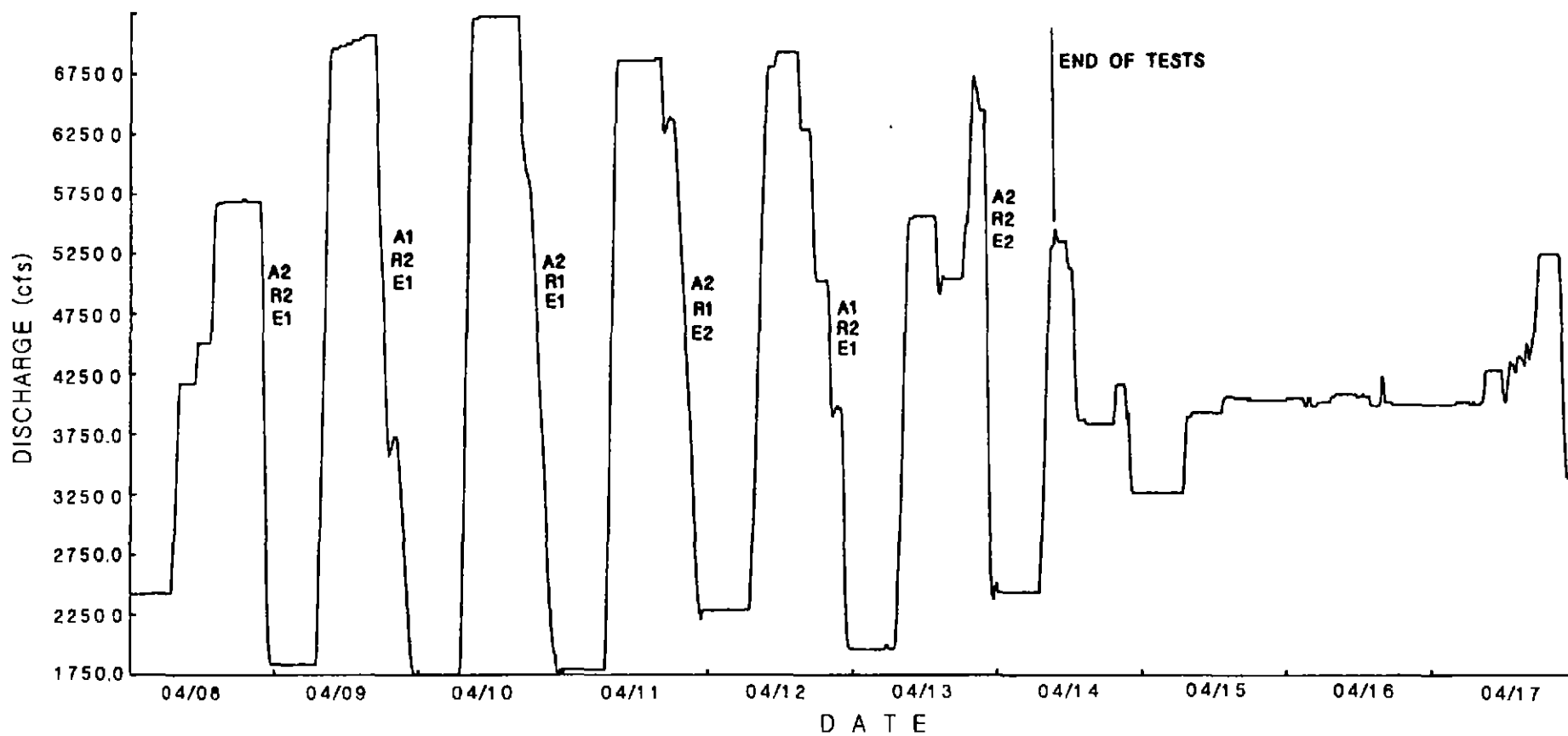
NOTE: ENDING FLOWS AT MARBLEMOUNT USGS GAGE WERE EITHER 3000 CFS OR 3500 CFS. SEE HYDROLOGY SECTION OF REPORT FOR TEST DESCRIPTIONS.

**DISCHARGE VS. TIME HYDROGRAPH**  
**SKAGIT RIVER AT NEWHALEM**  
**March 30, 1985 - April 8, 1985**  
**WATER YEAR 1985**



**NOTE: ENDING FLOWS AT MARBLEMOUNT USGS GAGE WERE EITHER 3000 CFS OR 3500 CFS. SEE HYDROLOGY SECTION OF REPORT FOR TEST DESCRIPTIONS.**

**DISCHARGE VS. TIME HYDROGRAPH**  
**SKAGIT RIVER AT NEWHALEM**  
**April 8, 1985 - April 17, 1985**  
**WATER YEAR 1985**



**NOTE: ENDING FLOWS AT MARBLEMOUNT USGS GAGE WERE EITHER 3000 CFS OR 3500 CFS. SEE HYDROLOGY SECTION OF REPORT FOR TEST DESCRIPTIONS.**

Table A-15 Requested Versus Actual Daily Flow Parameters For The Spring 1985  
Pothole Trapping And Stranding Study

Test Date	Downramp		Amplitude†		Downramp Rate	
	Starting Flow† (cfs)	Ending Flow† (cfs)	Scheduled (cfs)	Actual (cfs)	Scheduled (cfs)	Actual† (cfs)
2/23	5,257	2,718	2,500	2,539	1,000	1,040
3/02	5,580	4,548	1,000	1,032	2,000	1,780
3/03	5,599	3,110	2,500	2,489	2,000	2,150
3/09	6,484	2,502	4,000	3,982	1,000	980
3/10	6,547	2,502	4,000	4,045	1,000	950
3/16	5,010	2,526	2,500	2,484	1,000	1,044
3/17	5,124	3,970	1,000	1,154	2,000 /a	1,270
3/23	6,358	2,370	4,000	3,988	2,000	2,040
3/24	6,400	3,805	2,500	2,595	2,000	2,060
3/30	6,379	3,880	2,500	2,499	2,000	1,770
3/31	6,379	2,370	4,000	4,009	2,000	2,050
4/06	3,835	2,802	1,000	1,033	1,000	1,073
4/07	3,835	2,766	1,000	1,069	1,000	1,190
5/15	4,055	1,720	1,000 /a	2,335	2,000 /a	960
5/16	4,140	1,720	4,000 /a	2,420	2,000 /a	1,014

† Starting and ending flows and amplitudes were taken from USGS 15-minute interval readings at Newhalen

†† Ramp rates are calculated from Gorge powerhouse strip charts which show instantaneous power output

/a Scheduled to actual deviations that were greater than 10% of requested

Table A-16 Requested Versus Actual Daily Flow Parameters For The Summer 1985  
Steelhead Fry Gravel Bar Stranding Study

Test Date	Newhalen Flows <sup>‡</sup>		Downramp Amplitude <sup>‡</sup>		Downramping Rate <sup>‡‡</sup>	
	Starting	Ending	Scheduled	Actual	Scheduled	Actual
8/02 (night)	5,430	3,310	2,000	2,120	1,000	510/2,760
8/02 (day)	3,310	1,440	2,000	1,870	1,000	1,000
8/03	5,410	3,330	2,000	2,080	1,000	1,019
8/04	5,430	1,410	4,000	4,020	5,000	4,910
8/05	5,490	1,410	4,000	4,090	# 500/5,000	450/8,270
8/06	5,370	1,410	4,000	3,960	1,000	990
8/07	5,370	3,360	2,000	2,010	5,000	6,190
8/09	5,410	1,420	4,000	3,990	1,000	1,030
8/10	5,370	1,400	4,000	3,970	5,000	5,440
8/11 (night)	5,450	3,330	2,000	2,120	1,000	960
8/11 (day)	3,330	1,390	2,000	1,940	1,000	1,120
8/12 (night)	5,470	3,310	2,000	2,160	5,000	6,420
8/12 (day)	3,320	1,360	2,000	1,960	5,000	8,480
8/13	5,540	3,290	2,000	2,250	# 500/5,000	421/6,990
8/14	5,410	1,400	4,000	4,010	# 500/5,000	348/4,580
8/15	5,390	1,410	4,000	3,980	# 500/5,000	477/6,390
8/16 (night)	5,500	3,410	2,000	2,100	# 500/5,000	409/6,390
8/16 (day)	3,370	1,400	2,000	1,970	5,000	6,600
8/17	5,410	3,390	2,000	2,020	5,000	6,020
8/18	5,410	1,500	4,000	3,910	5,000	6,050
8/19	5,450	1,460	4,000	3,990	1,000	940
8/20	5,540	3,410	2,000	2,130	1,000	650

<sup>‡</sup> taken from USGS 15-minute intervals readings at Newhalen gauge

<sup>‡‡</sup> calculated from strip charts unless otherwise specified

# partially reconstructed from USGS 15-minute readings at Newhalen gauge

Table A-17 Requested Versus Actual Daily Flow Parameters For The Spring 1986  
 Gravel Bar Salmon Fry Stranding Study

Test Date	Newhalen Flows Starting‡ Ending‡	Marblecount Scheduled	Endflows‡ Actual	Amplitude Scheduled Actual	Downramp Rates‡ Scheduled Actual
3/13	5,790 1,720	3,000	3,050	4,000 4,070	1,000 1,044
3/14	3,780 1,690	3,000	2,940	2,000 2,090	1,000 1,090
3/15	6,360 2,490	3,500	3,540	4,000 3,870	1,000 970
3/16	6,800 2,730	3,500	3,730	4,000 4,070	5,000 5,390
3/17	5,980 2,030	3,000	3,010	4,000 3,950	5,000 5,340
3/18	4,020 2,020	3,000	2,920	2,000 2,000	5,000 5,820
3/19	4,580 2,550	3,500	3,370	2,000 2,030	1,000 1,020
3/20	4,750 2,720	3,500	3,510	2,000 2,030	5,000 4,950
3/26	6,340 2,320	3,500	3,490	4,000 4,020	1,000 960
3/27	4,400 2,400	3,500	3,830	2,000 2,000	5,000 5,940
4/01	3,520 1,520	3,000	3,160	2,000 2,000	1,000 1,000
4/02	3,900 1,870	3,500	3,780	2,000 2,030	1,000 960
4/03	5,600 1,520	3,000	2,790	4,000 4,080	5,000 5,340
4/04	5,730 1,730	3,000	2,900	4,000 4,000	1,000 980
4/05	6,380 2,350	3,500	3,440	4,000 4,030	5,000 4,540
4/06	3,850 1,810	3,000	2,880	2,000 2,040	5,000 7,720
4/07	4,430 2,420	3,500	3,420	2,000 2,010	5,000 4,760
4/08	4,450 2,420	3,500	3,690	2,000 2,030	1,000 940
4/09	5,690 1,840	3,000	3,120	4,000 3,850	5,000 4,410
4/10	3,730 1,750	3,000	2,940	2,000 1,980	1,000 960
4/11	5,850 1,790	3,000	2,890	4,000 4,060	1,000 1,100
4/12	6,360 2,290	3,500	3,320	4,000 4,070	1,000 1,100
4/13	5,030 1,960	3,000	no data	4,000 3,070	5,000 6,190
4/14	6,460 2,440	3,500	no data	4,000 4,020	5,000 3,990

‡ Taken from the USGS 15-minute flow records

‡‡ Estimated from the Power Strip Charts

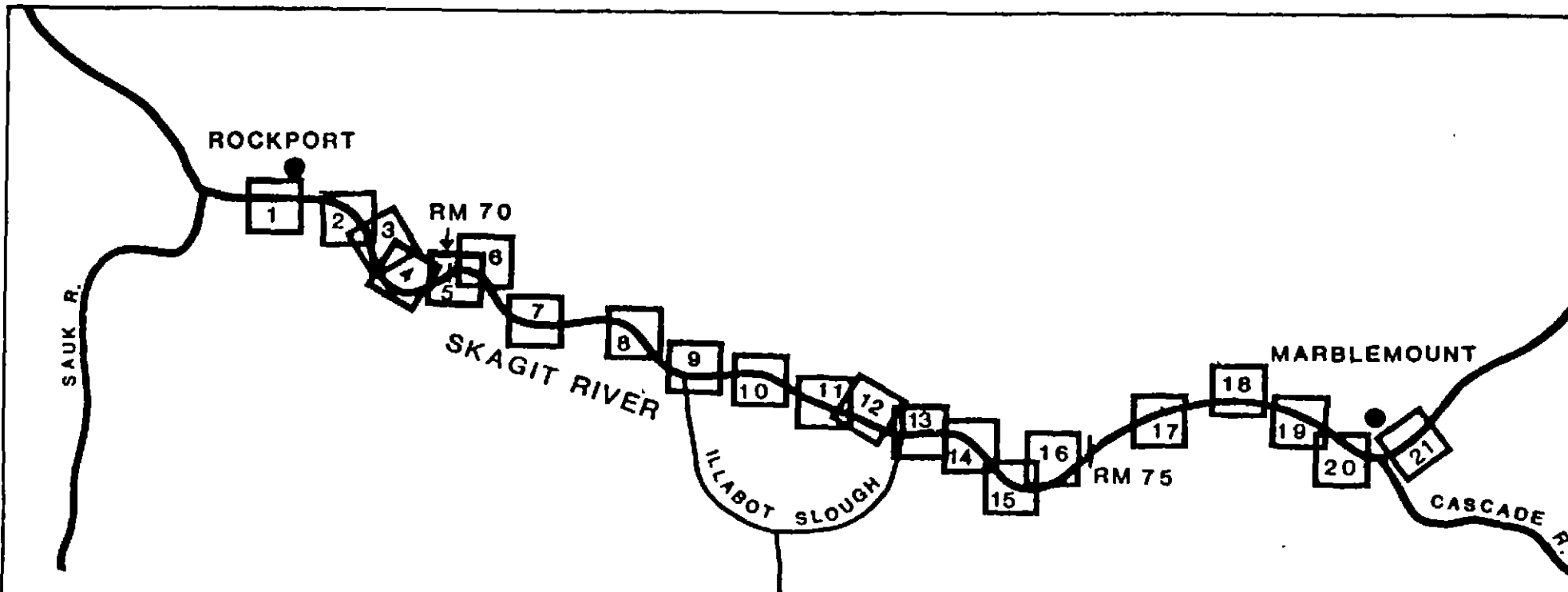
‡a Scheduled to actual deviations that were greater than 10% of requested



APPENDIX B



POTHOLE AND GRAVEL BAR STRANDING LOCATION MAPS

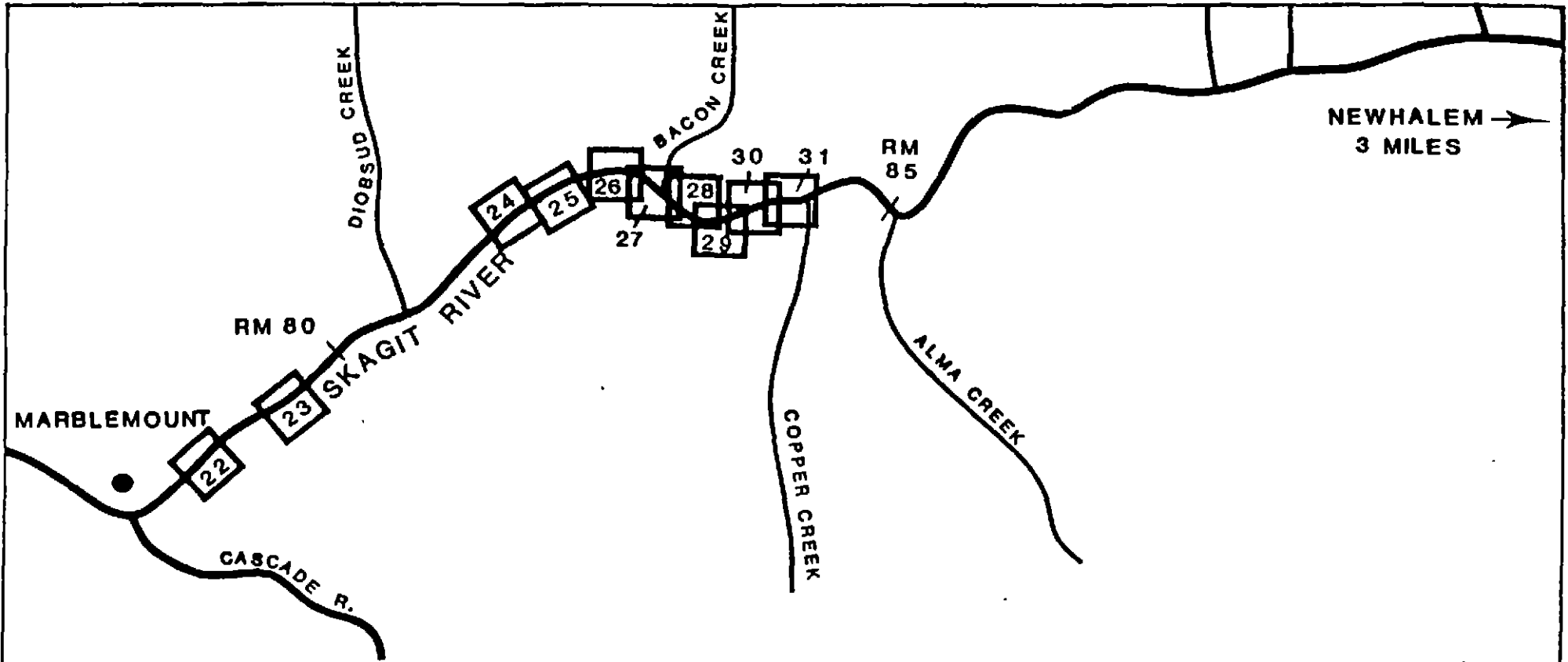
The following maps were originally produced by Jones and Stokes Associates, INC. and modified by R. W. Beck and Associates for our use. The first two pages of this appendix show the location and code number for the individual bar sites within the study area. The pages following these provide site specific details for each bar which include individual pothole locations and gravel bar stranding study sites.



- |                   |  |
|-------------------|--|
| 1 ROCKPORT BAR    | 12 HOOPER'S SLOUGH                       |
| 2 WAYNE'S SWIM    | 13 RICK'S SURPRISE & INACCESSIBLE ISLAND |
| 3 LOWER TIN SHACK | 14 CARNAGE                               |
| 4 UPPER TIN SHACK | 15 POWER BAR                             |
| 5 BAD SPOT        | 16 DRY BAR                               |
| 6 EAGLE BAR       | 17 NORTH O'BRIAN'S FERRY                 |
| 7 FORBIDDEN BAR   | 18 SECLUSION ISLAND                      |
| 8 J.R. BAR        | 19 BIG EDDY                              |
| 9 BEAVER ISLAND   | 20 TEFLON BAR                            |
| 10 STUMP HAVEN    | 21 MARBLEMOUNT SLOUGH                    |
| 11 MODEL POTHOLE  |  |

**LEGEND FOR POTHOLE MAPS**

	POTHOLE LOCATION
	NEW RIVER GAUGE
	OLD RIVER GAUGE
	BENCHMARK
	LOGS AND DEBRIS

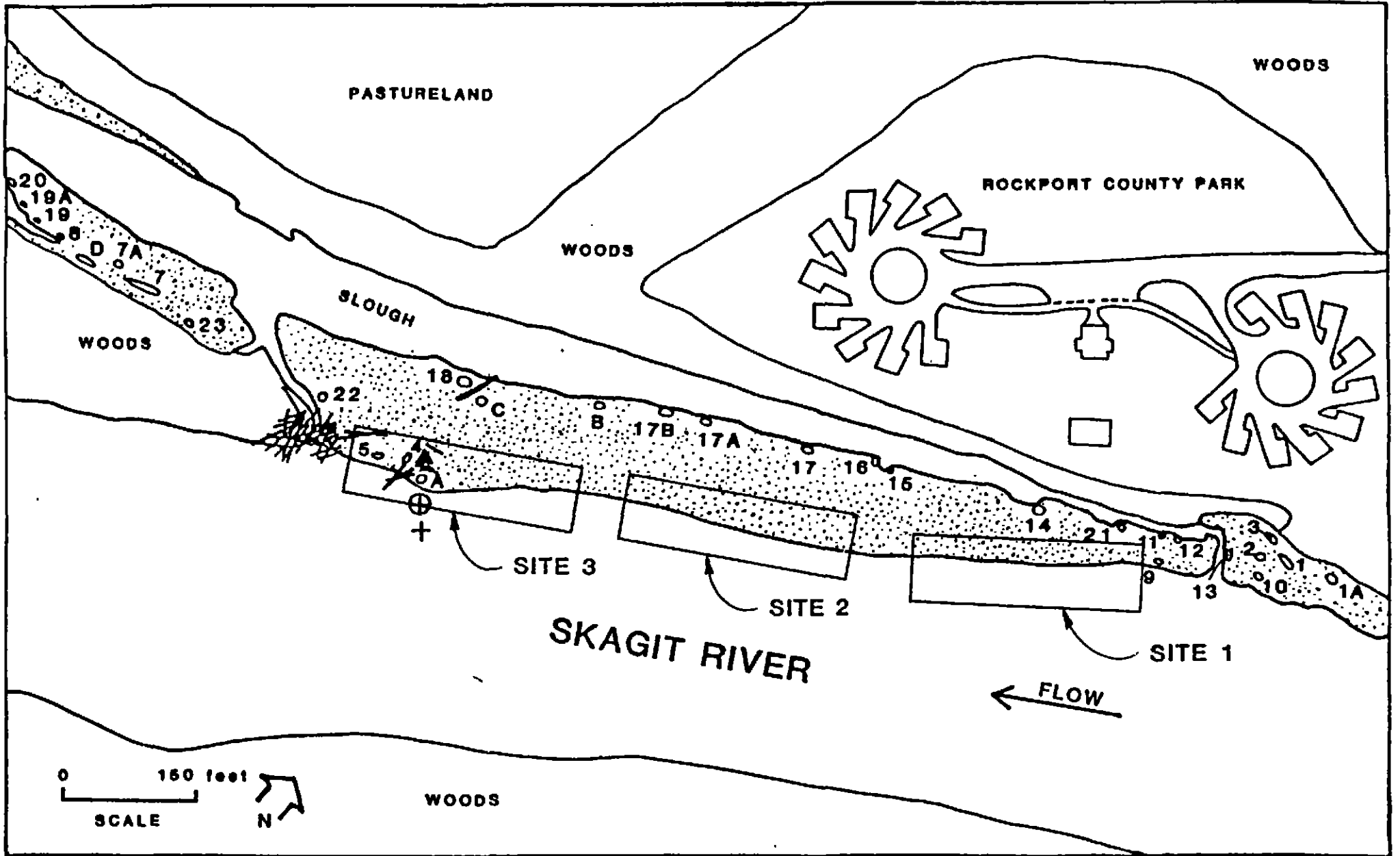


- 22 RAINIER BAR
- 23 FUNGUS BAR
- 24 SAM'S BAR
- 25 MAPLE BAR
- 26 BACON CREEK

- 27 FACE BAR & OINK BAR
- 28 DRIFTWOOD BAR
- 29 MINIBAR
- 30 FLOWER POTHOLE
- 31 COPPER CREEK

SKAGIT RIVER POTHoles STUDY  
 JONES & STOKES ASSOCIATES, INC.

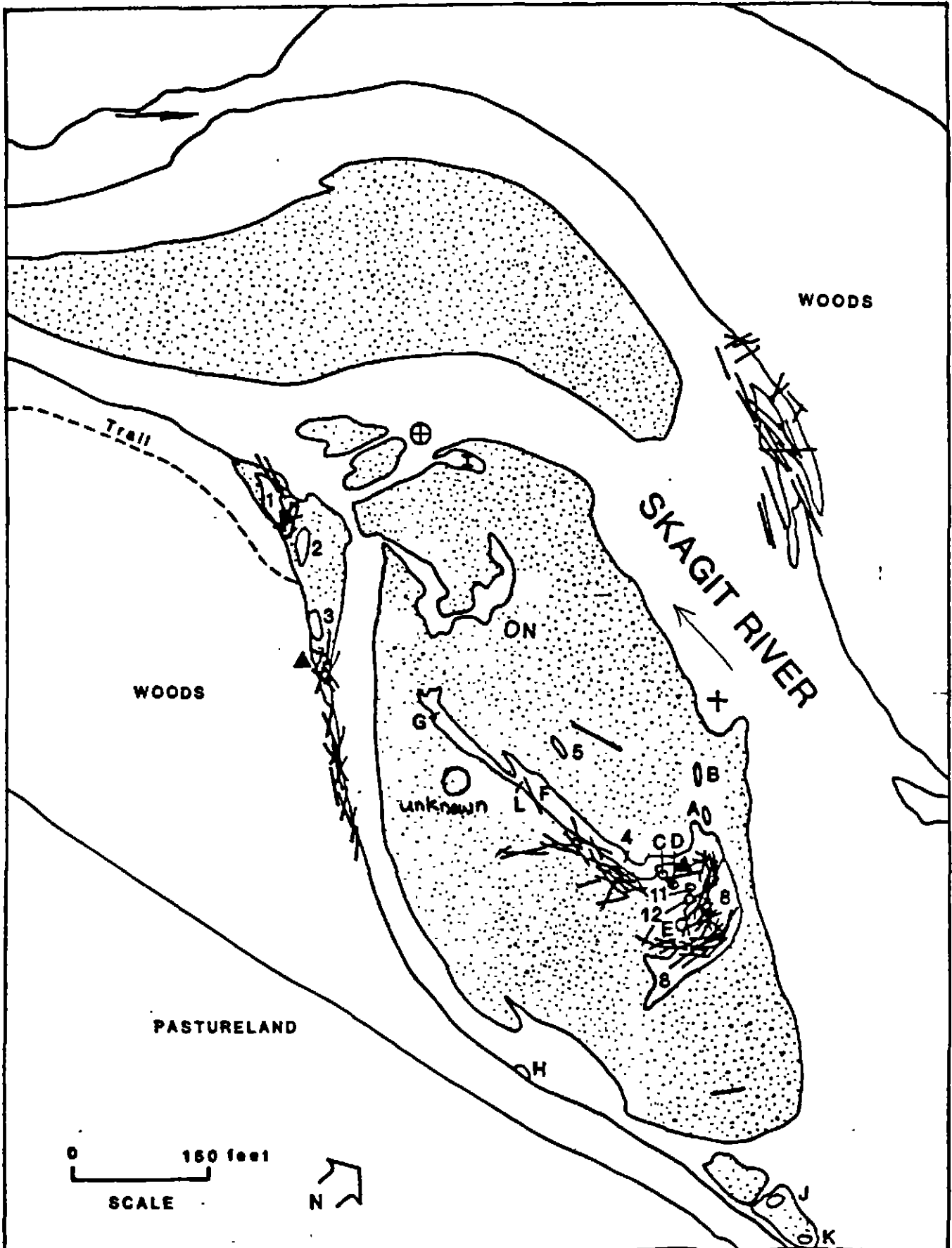
POTHOLE MAP INDEX  
 (MAPS 21-31)

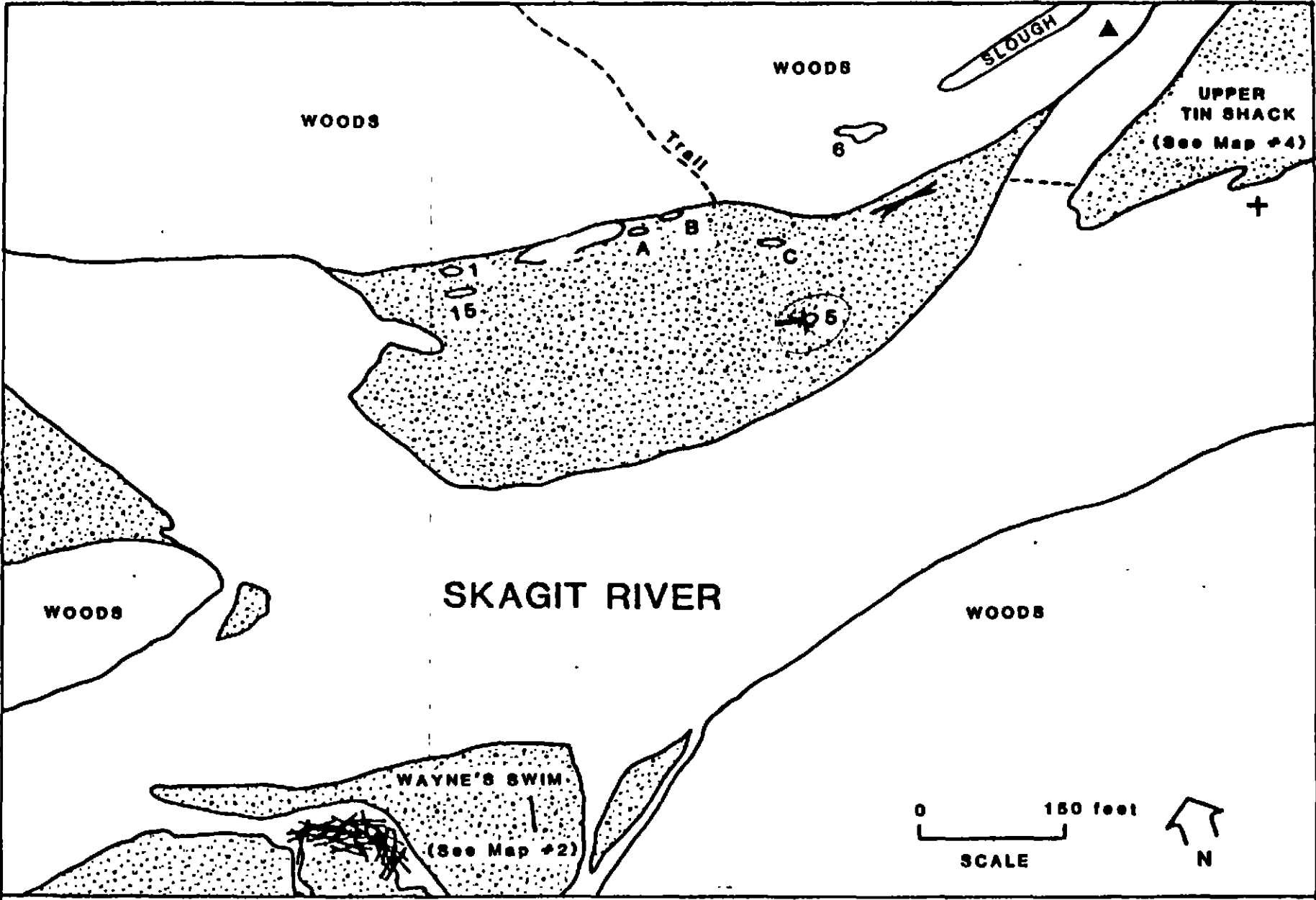


SKAGIT RIVER POTHOLE STUDY  
 JONES & STOKES ASSOCIATES, INC.

ROCKPORT BAR  
 RM-67.6

1

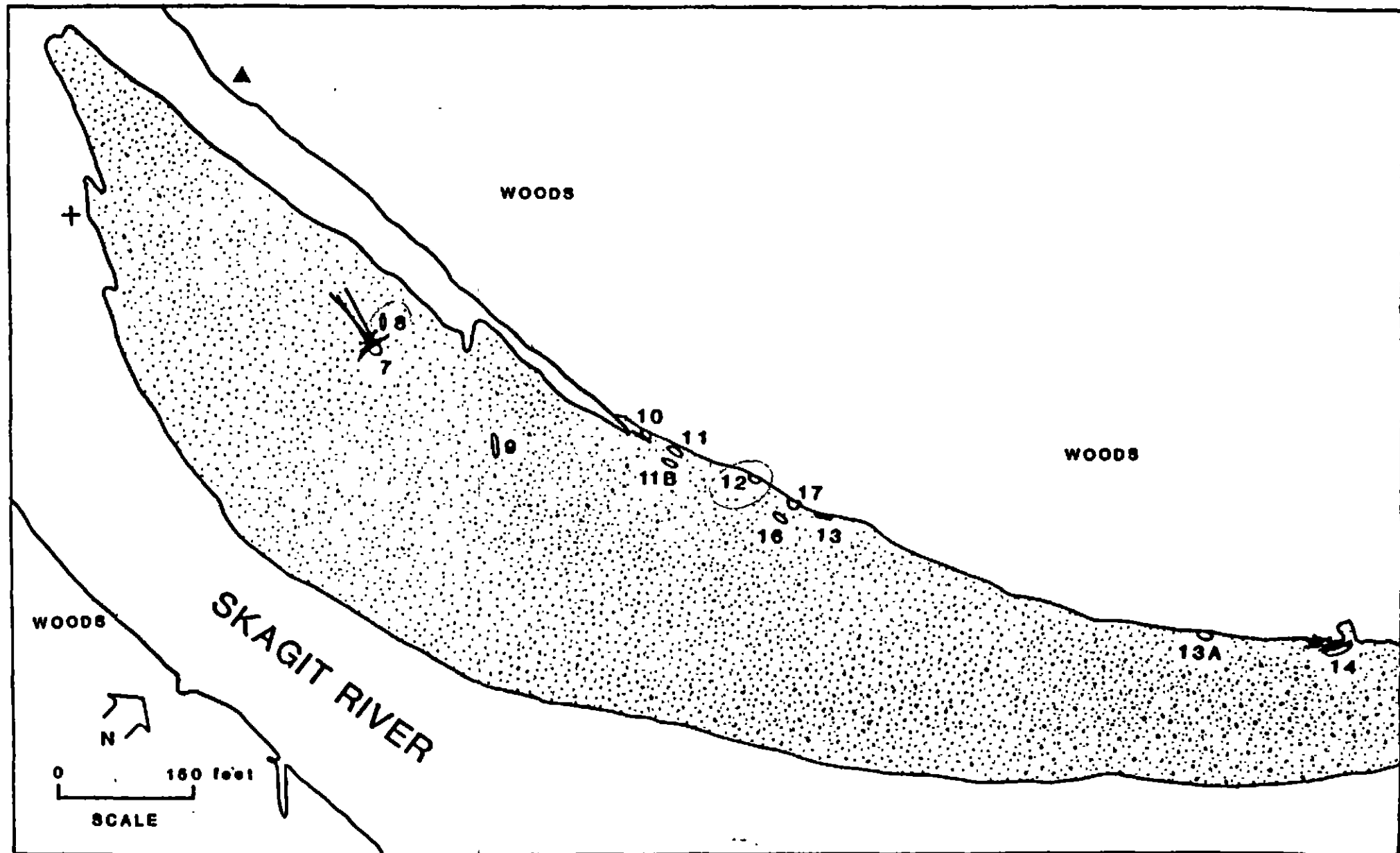




SKAGIT RIVER POTHoles STUDY  
JONES & STOKES ASSOCIATES, INC.

LOWER TIN SHACK  
RM-66.3

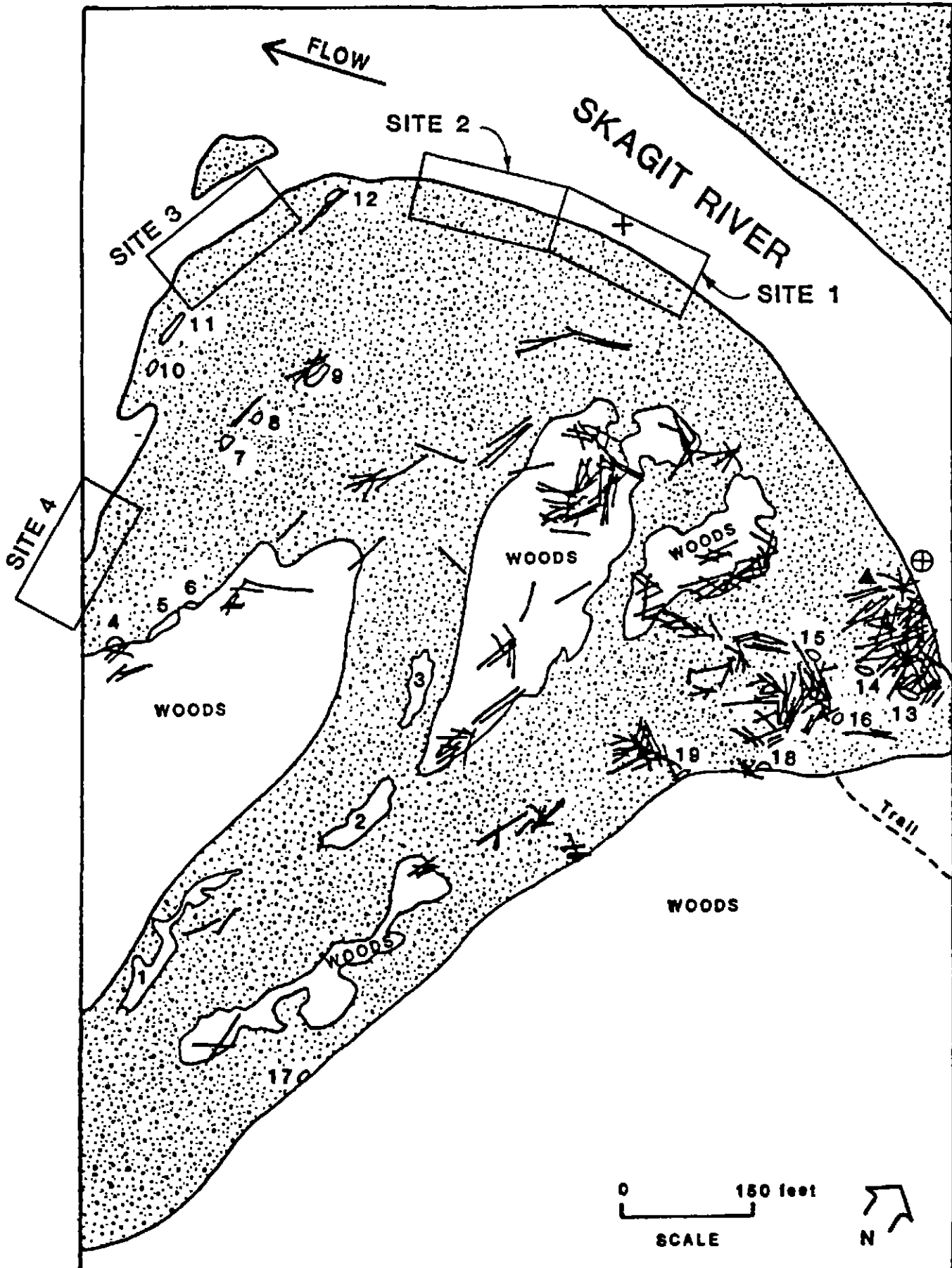
3



SKAGIT RIVER POTHOLES STUDY  
 JONES & STOKES ASSOCIATES, INC.

UPPER TIN SHACK  
 RM-68.3

4

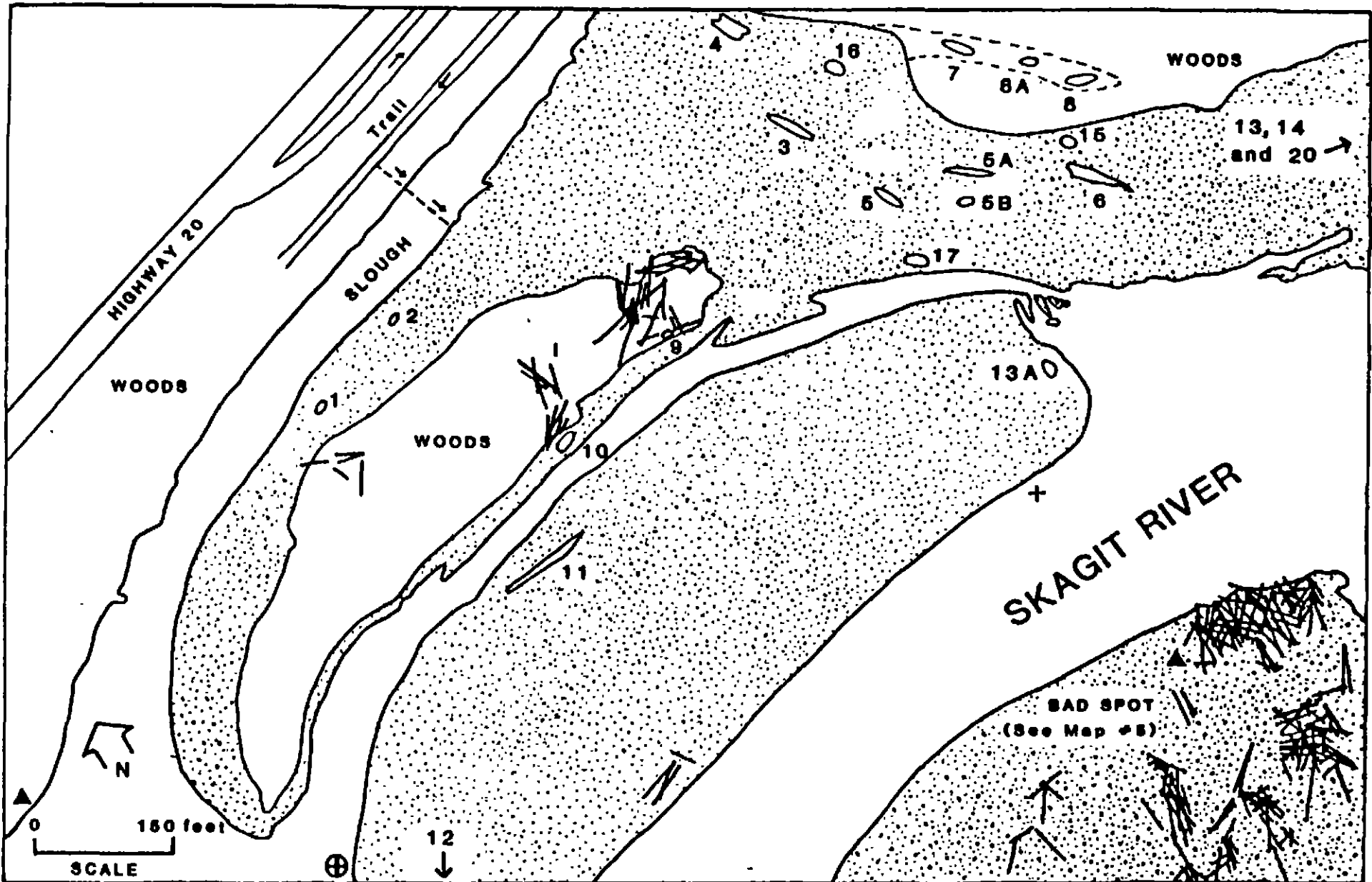


SKAGIT RIVER POTHOLES STUDY  
 JONES & STOKES ASSOCIATES, INC.

BAD SPOT  
 RM-70.0

5

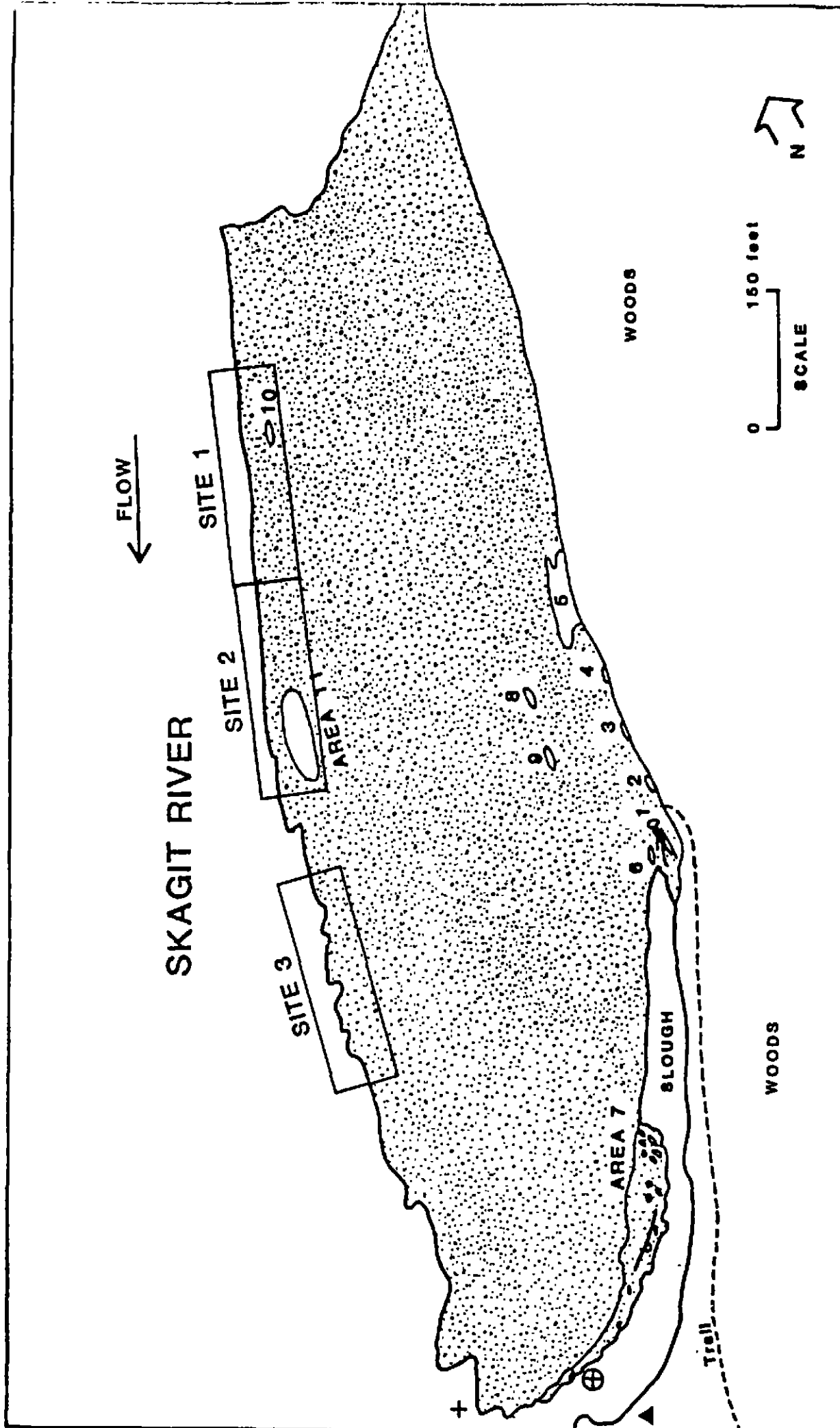


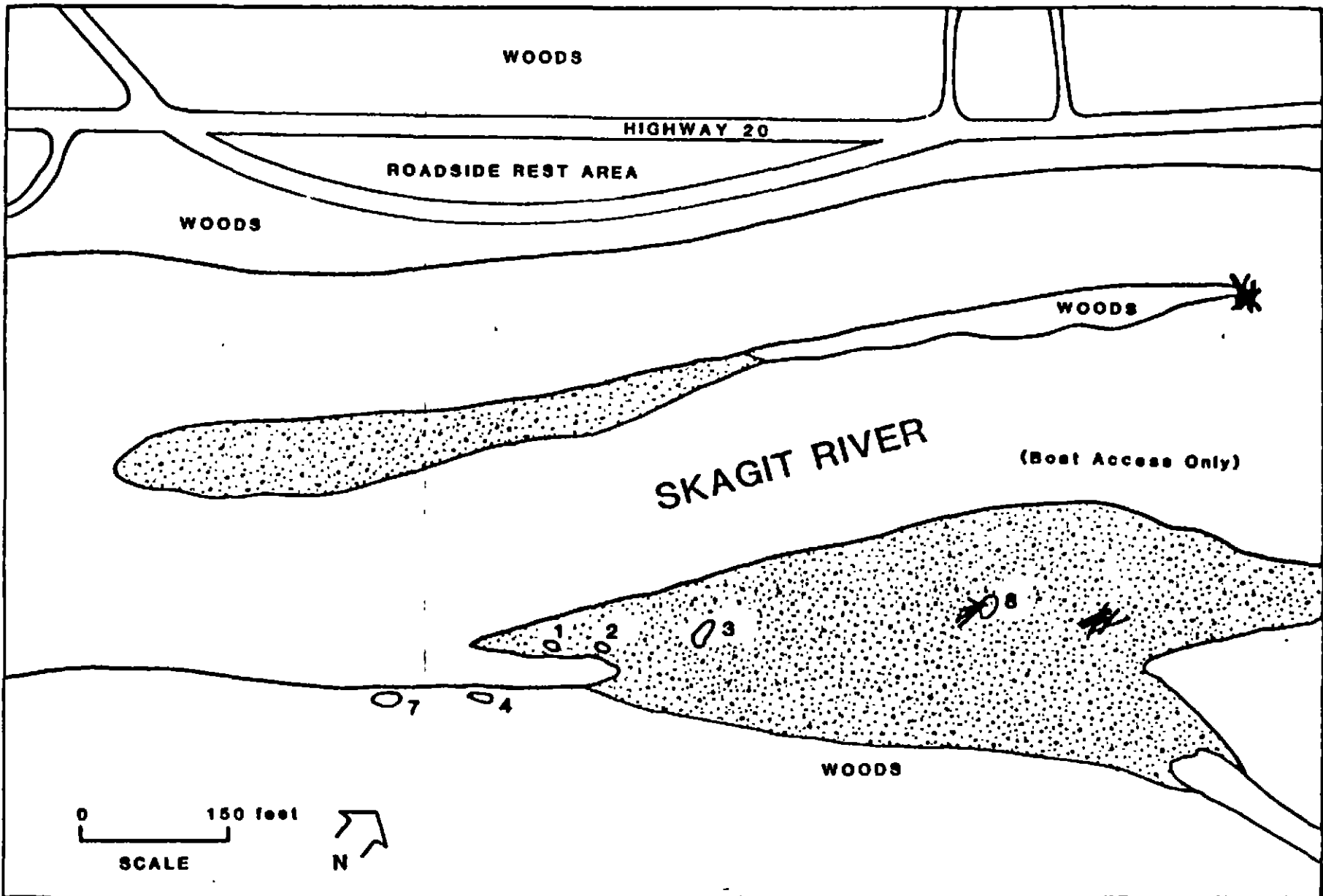


SKAGIT RIVER POTHOLES STUDY  
 JONES & STOKES ASSOCIATES, INC.

EAGLE BAR  
 RM-70.1

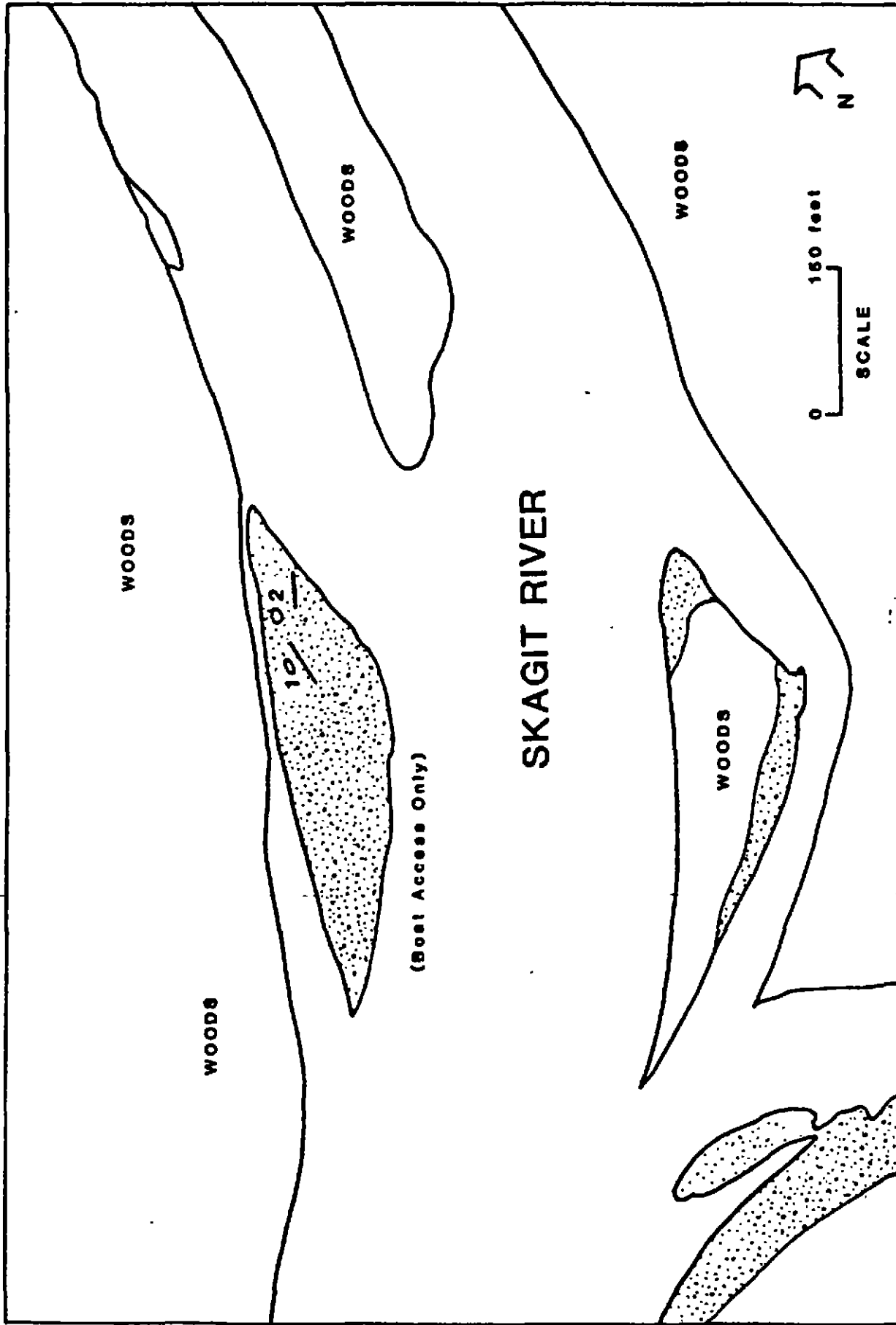
6





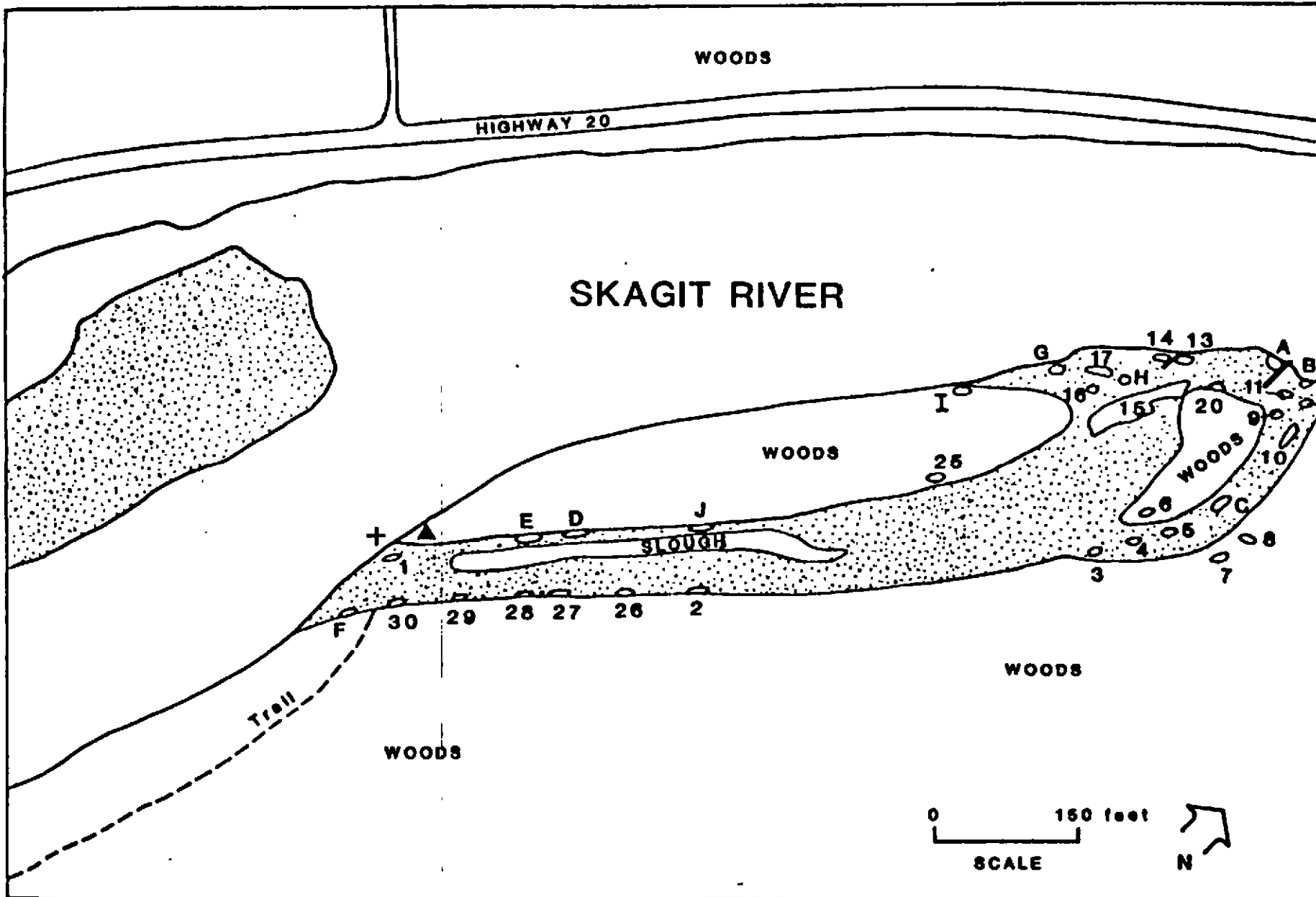
SKAGIT RIVER POTHOLES STUDY  
 JONES & STOKES ASSOCIATES, INC.

J.R. BAR  
 RM-71.1



SKAGIT RIVER POTHOLES STUDY  
JONES & STOKES ASSOCIATES, INC.

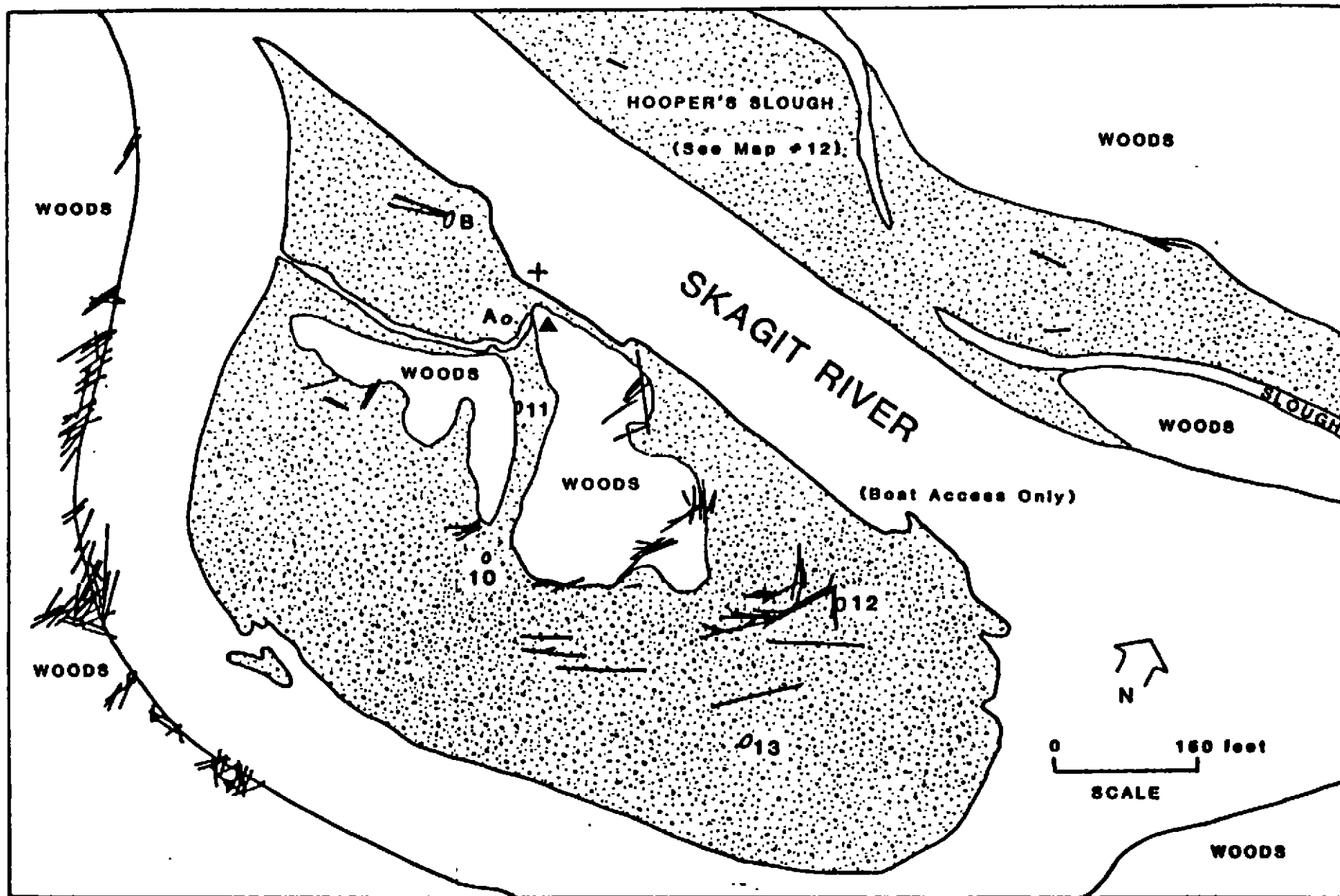
BEAVER ISLAND  
RM-71.4



SKAGIT RIVER POTHOLES STUDY  
 JONES & STOKES ASSOCIATES, INC.

STUMP HAVEN  
 RM-72.2

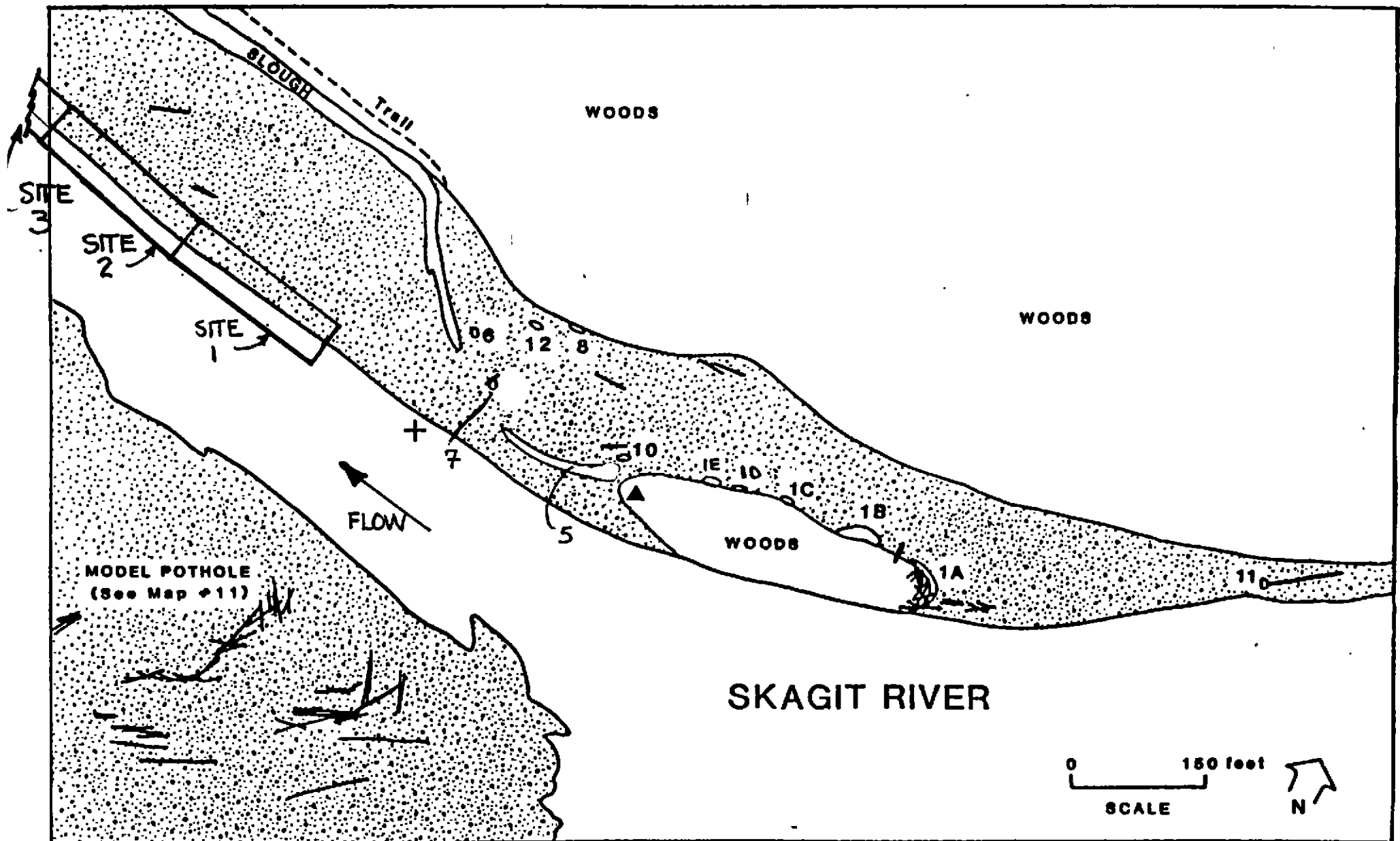
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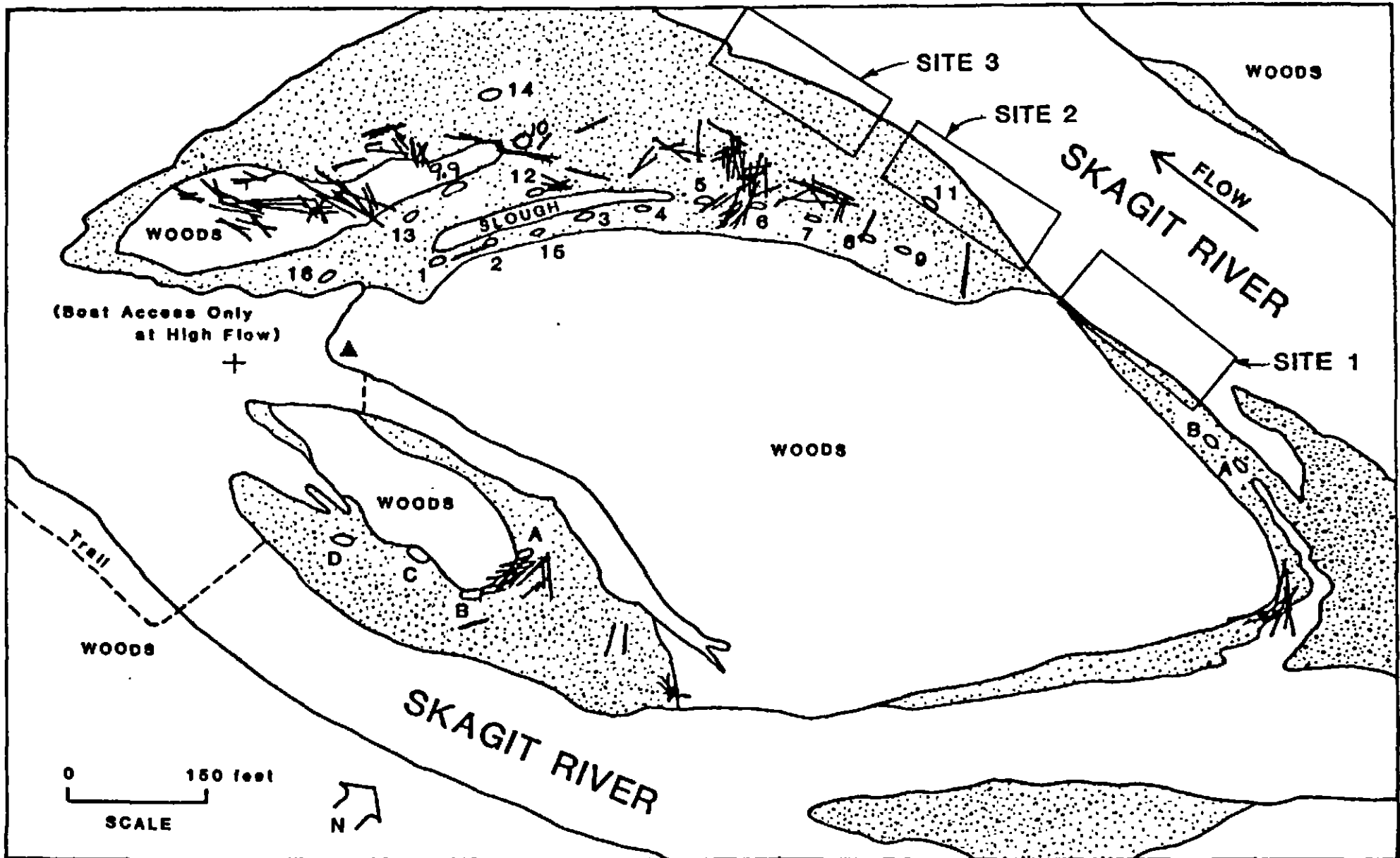


SKAGIT RIVER POTHOLE STUDY  
 JONES & STOKES ASSOCIATES, INC.

MODEL POTHOLE  
 RM-72.6

11

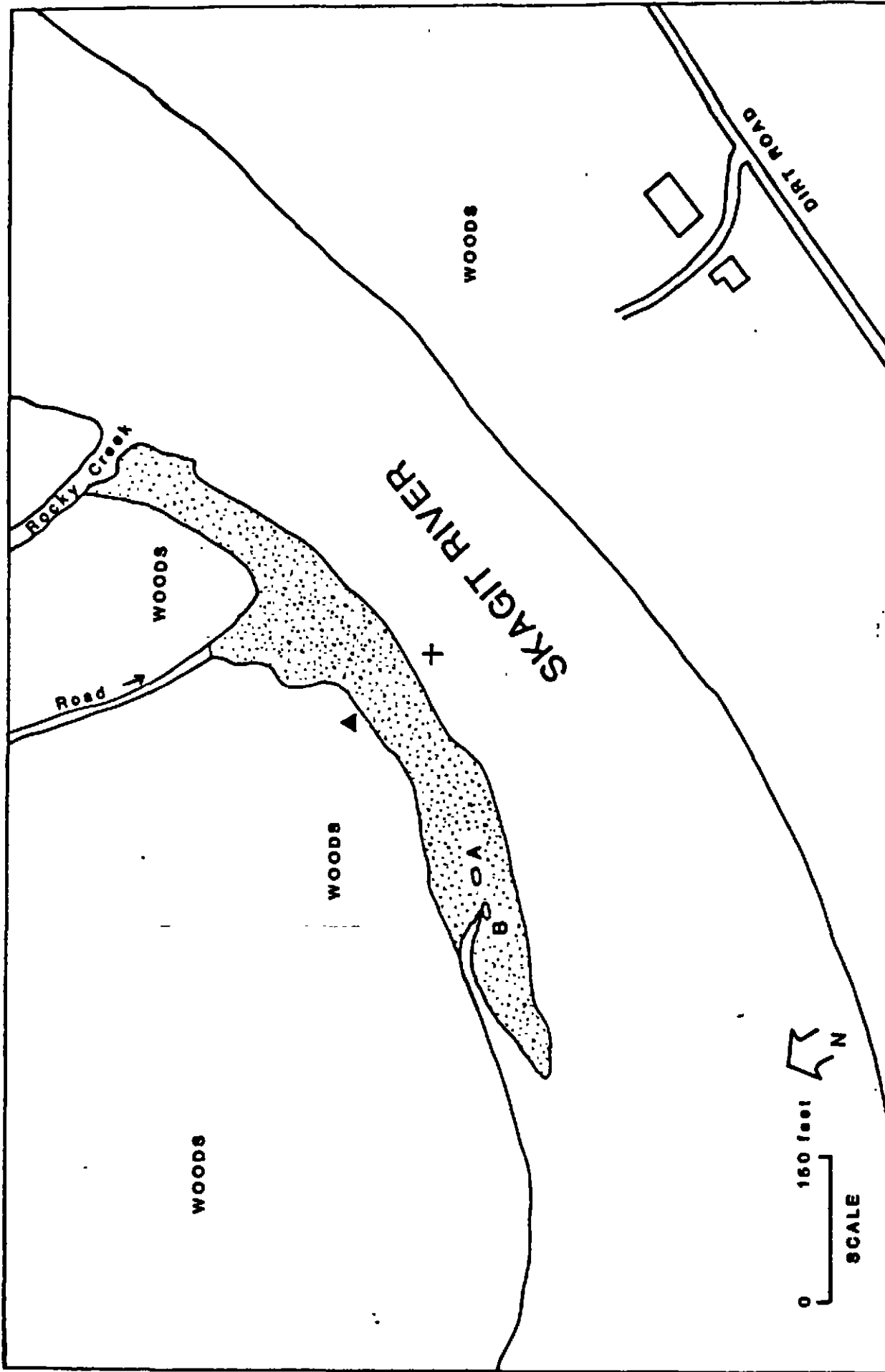


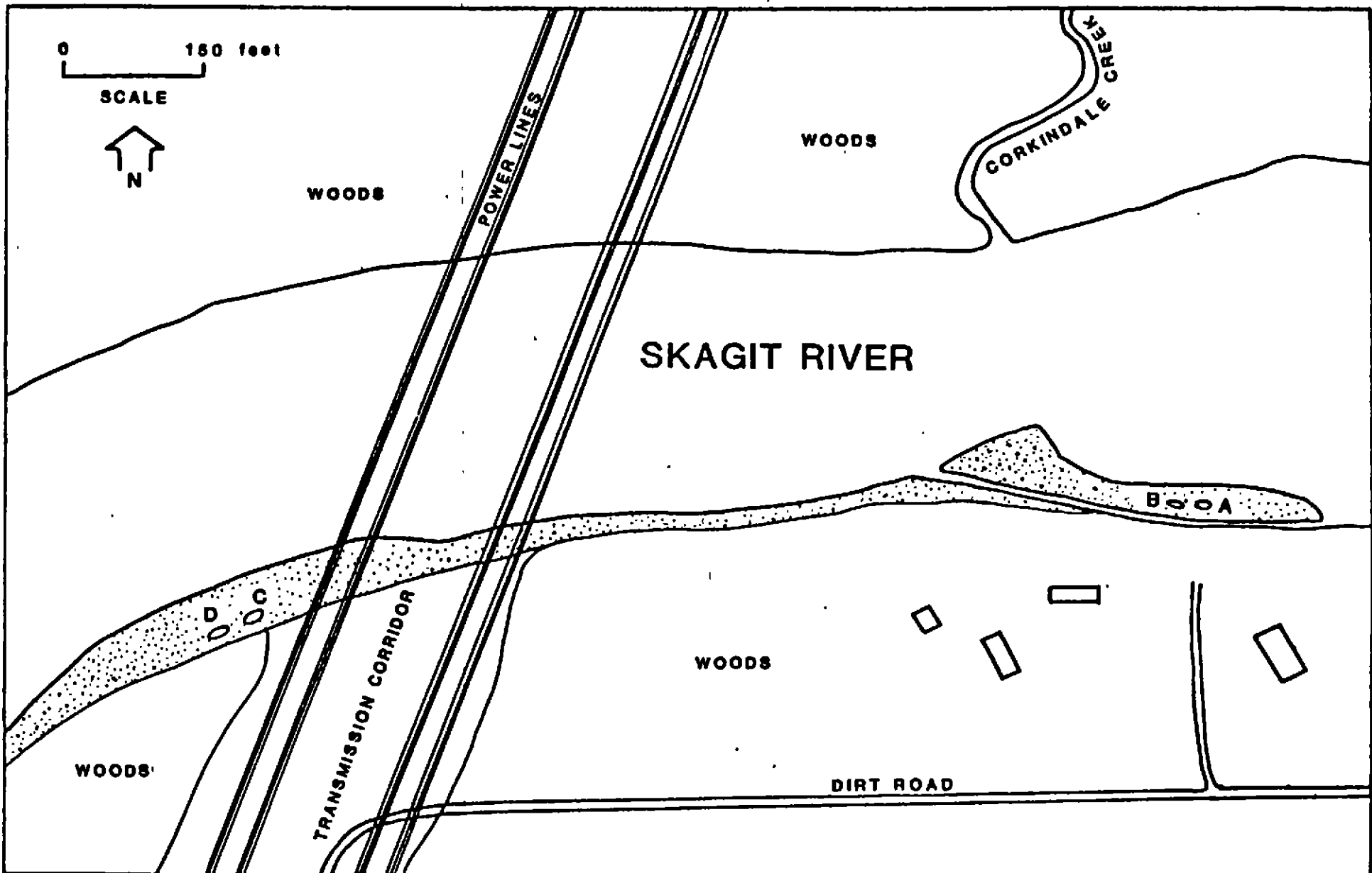


SKAGIT RIVER POTHOLES STUDY  
 JONES & STOKES ASSOCIATES, INC.

RICK'S SURPRISE & INACCESSIBLE ISLAND  
 RM-73.0 RM-73.1



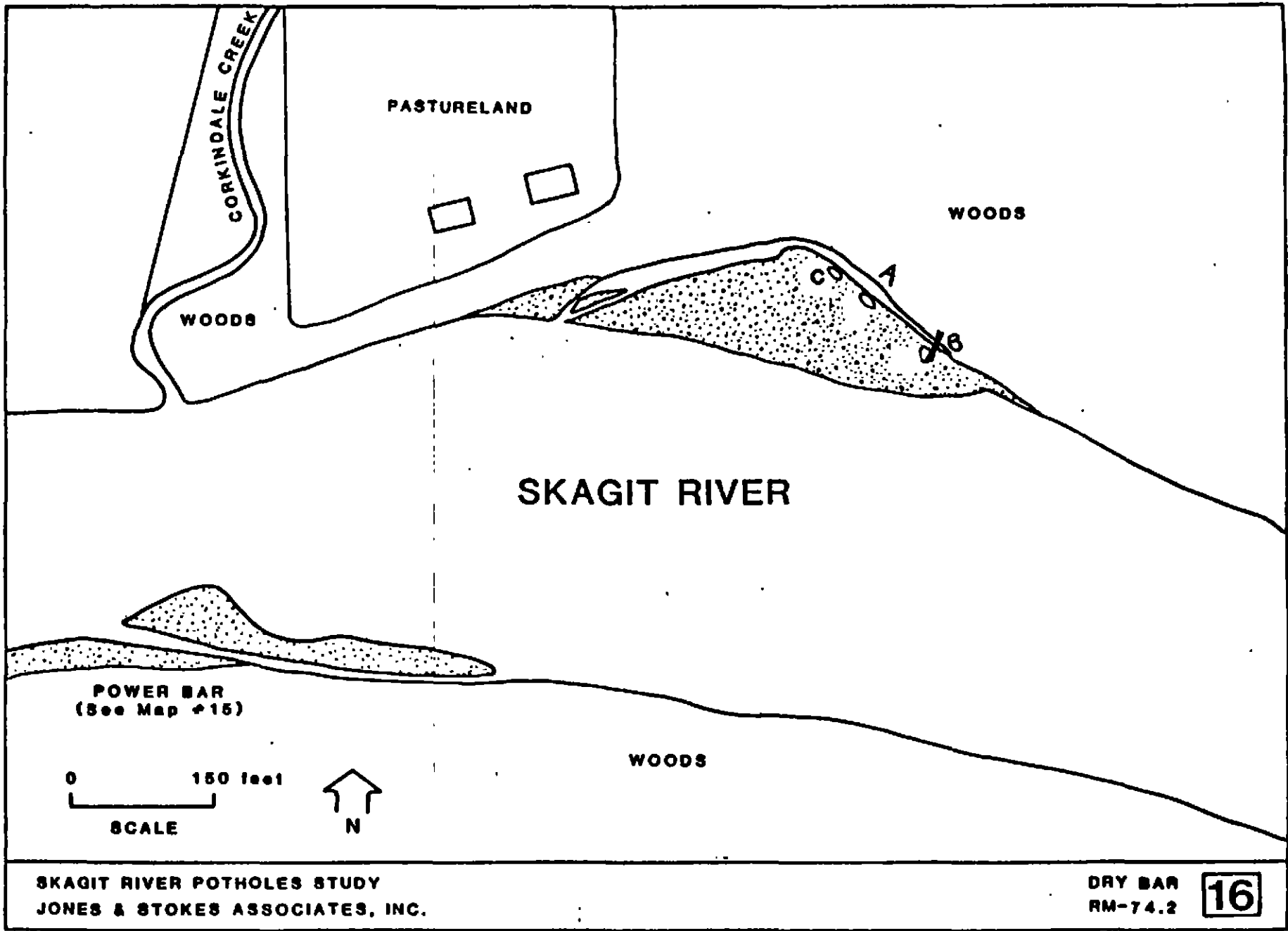




SKAGIT RIVER POTHOLES STUDY  
JONES & STOKES ASSOCIATES, INC.

POWER BAR  
RM-74.0

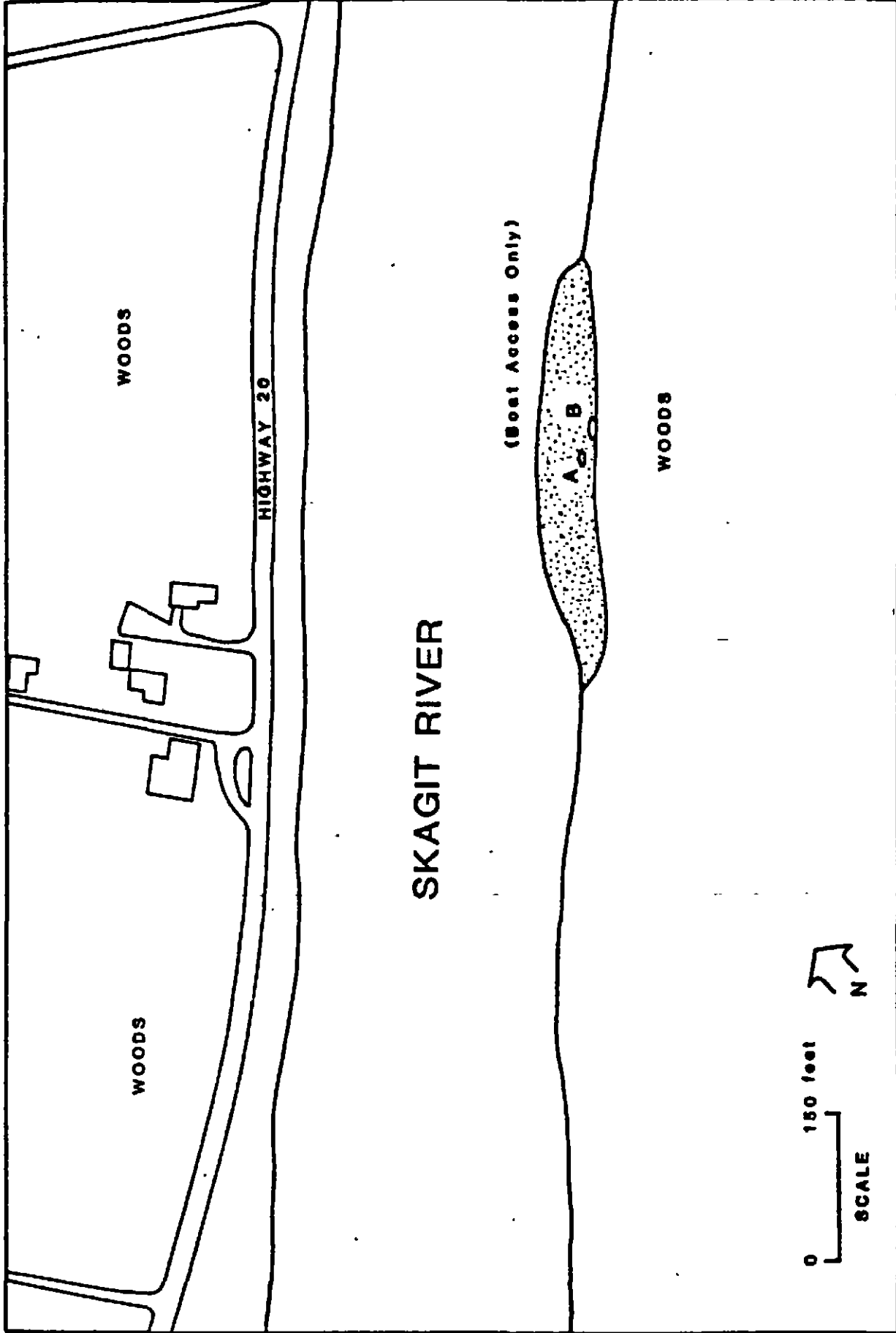
15



SKAGIT RIVER POTHOLES STUDY  
 JONES & STOKES ASSOCIATES, INC.

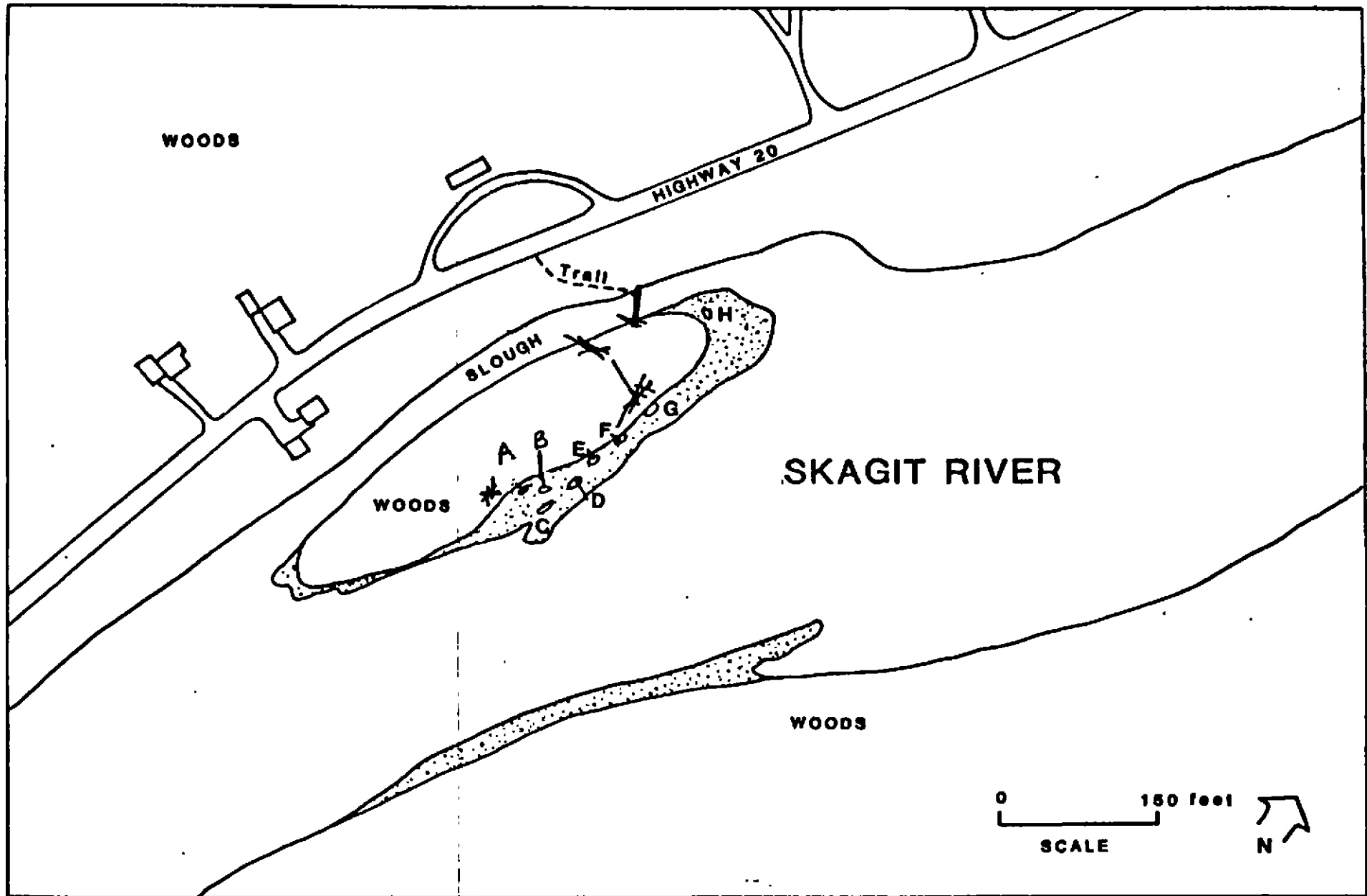
DRY BAR  
 RM-74.2

16



SKAGIT RIVER POTHoles STUDY  
JONES & STOKES ASSOCIATES, INC.

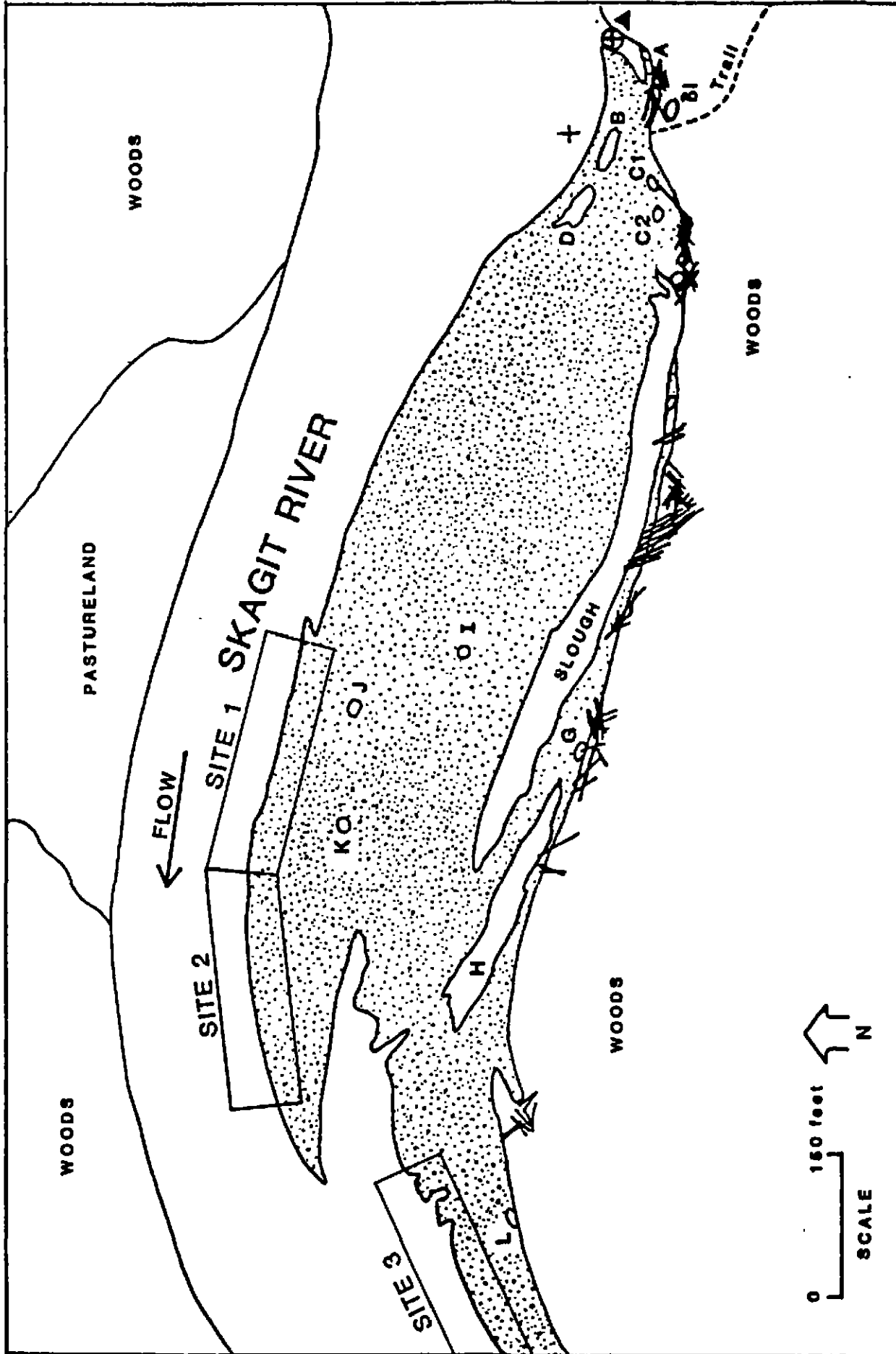
NORTH O'BRIAN'S FERRY  
RM-76.0

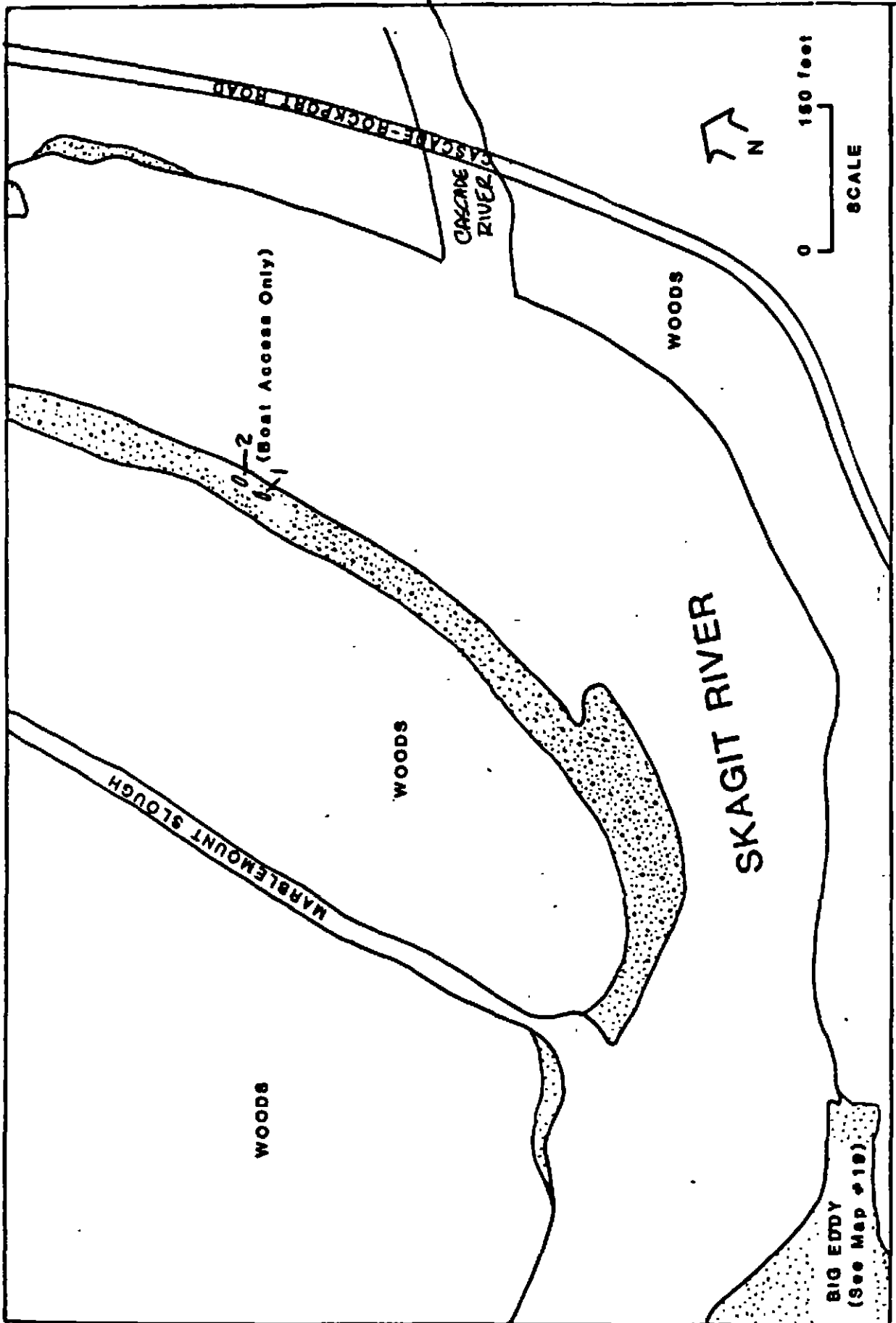


SKAGIT RIVER POTHOLES STUDY  
JONES & STOKES ASSOCIATES, INC.

SECLUSION ISLAND  
RM-76.3

18





20

TEFLON BAR  
RM-77.7

SKAGIT RIVER POTHOLES STUDY  
JONES & STOKES ASSOCIATES, INC.

BIG EDDY  
(See Map #19)

0 150 feet  
SCALE



WOODS

SKAGIT RIVER

WOODS

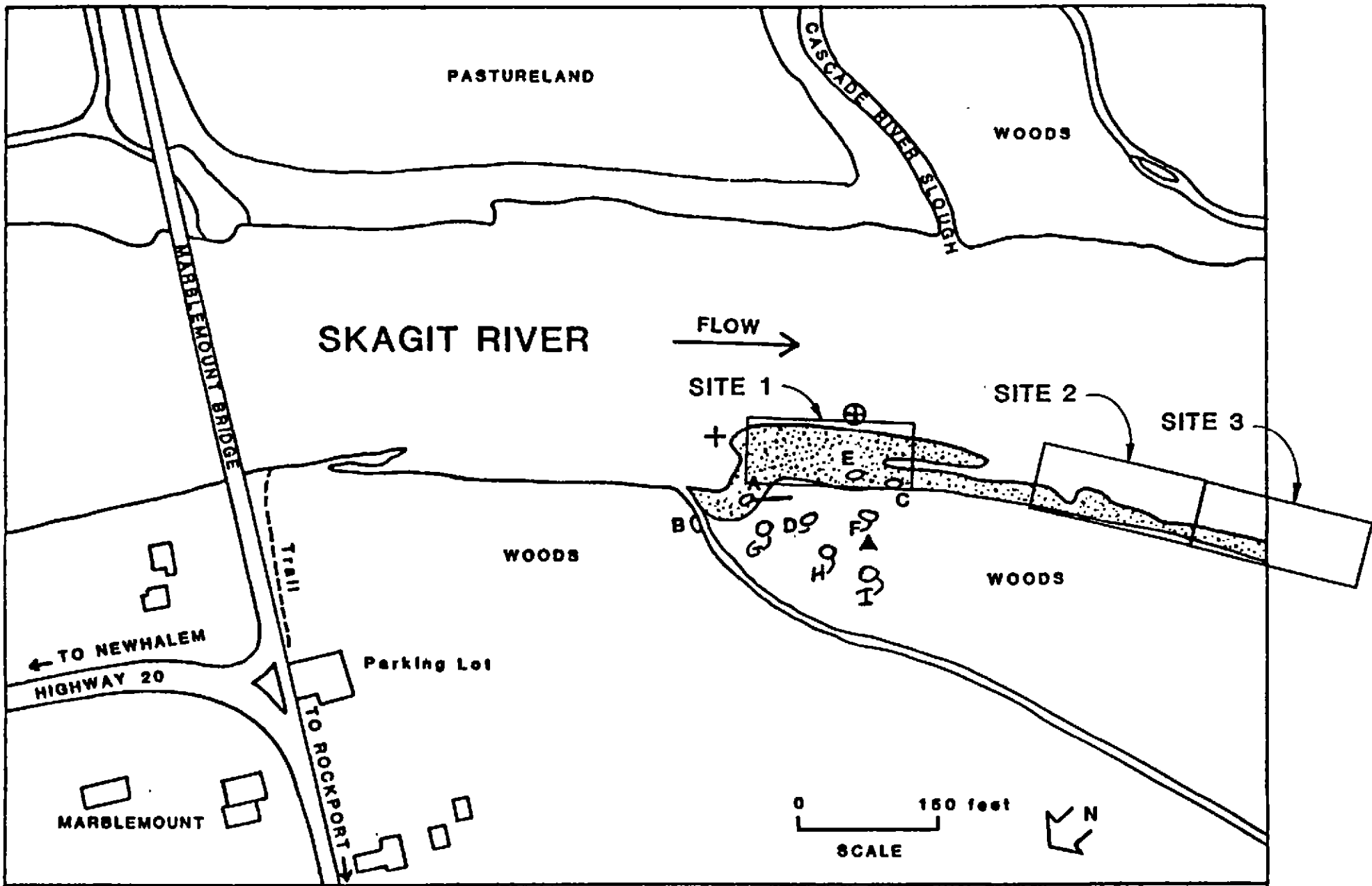
WOODS

MARBLEMOUNT SLOUGH

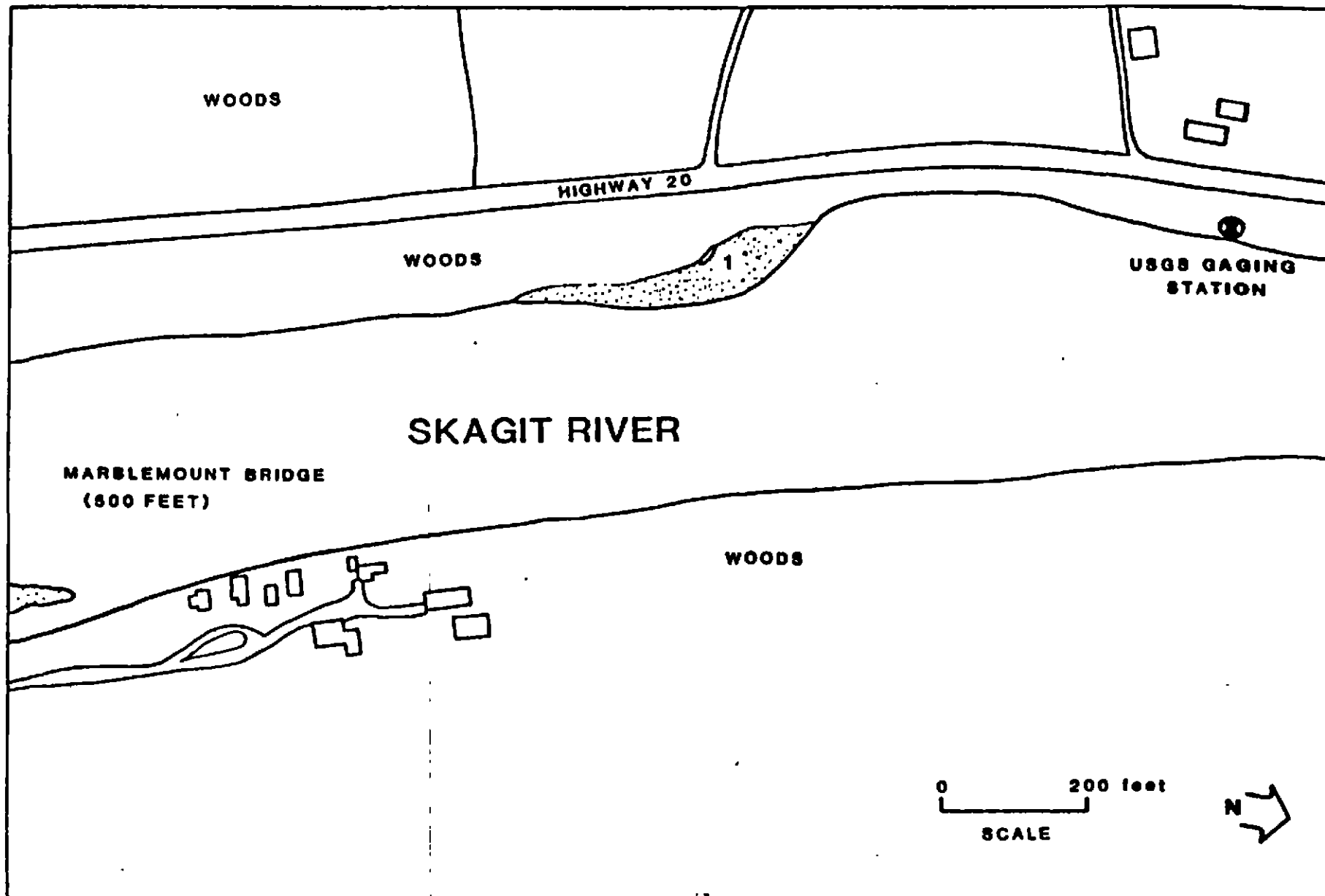
0-2 (Boat Access Only)

CASCADE RIVER

CASCADE-ROCKPORT ROAD



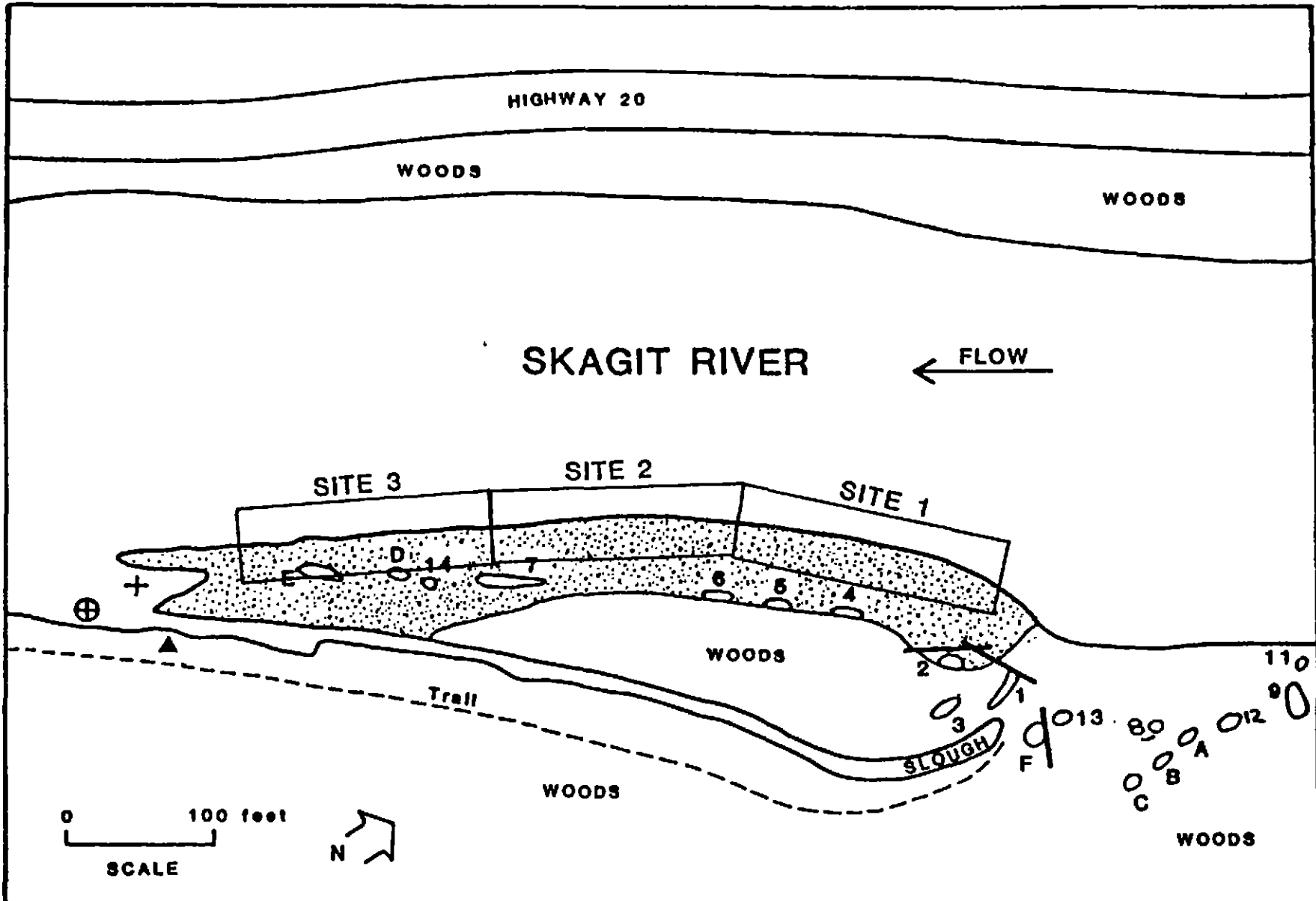




SKAGIT RIVER POTHoles STUDY  
JONES & STOKES ASSOCIATES, INC.

RAINIER BAR  
RM- 78.3

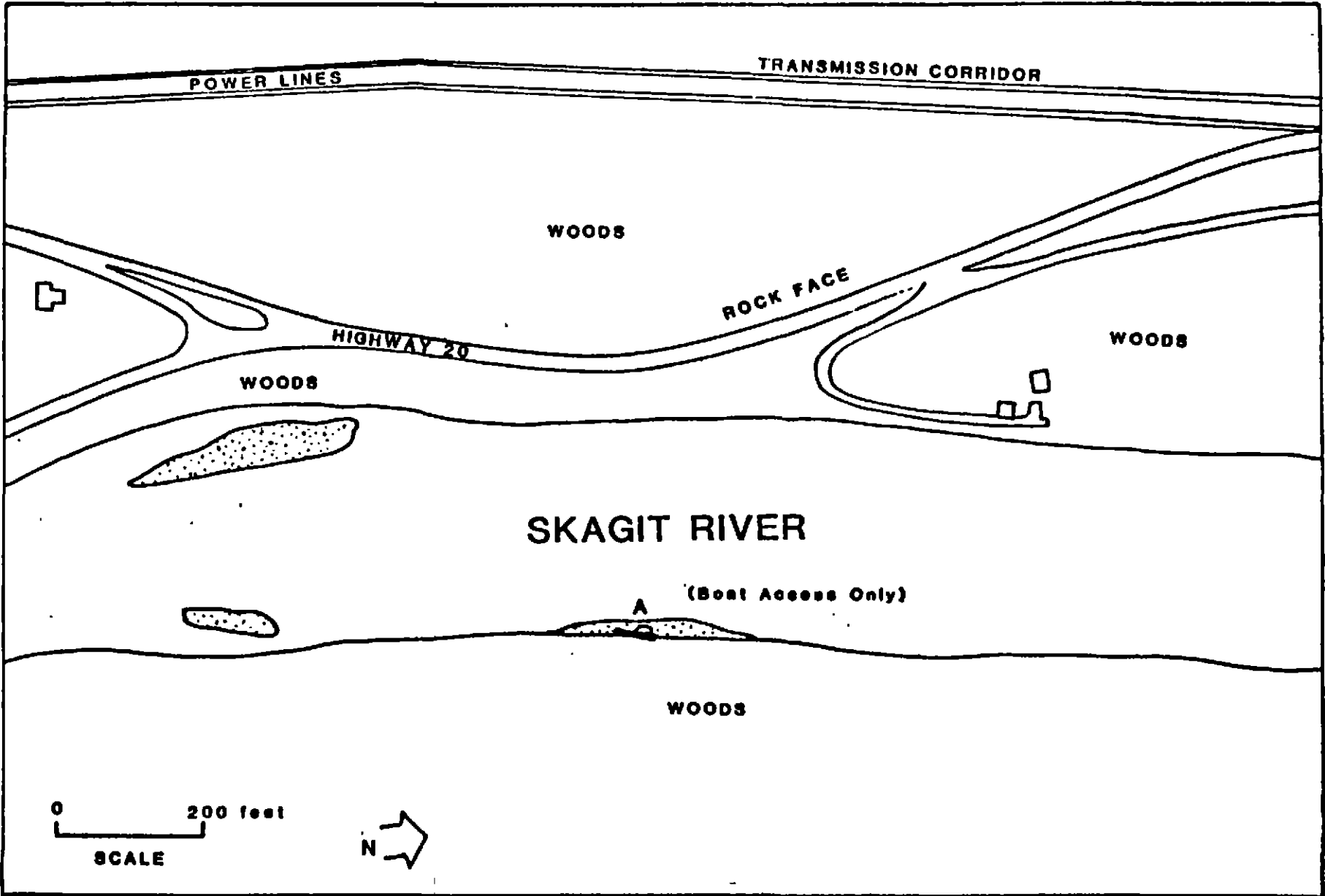
22



SKAGIT RIVER POTHOLES STUDY  
 JONES & STOKES ASSOCIATES, INC.

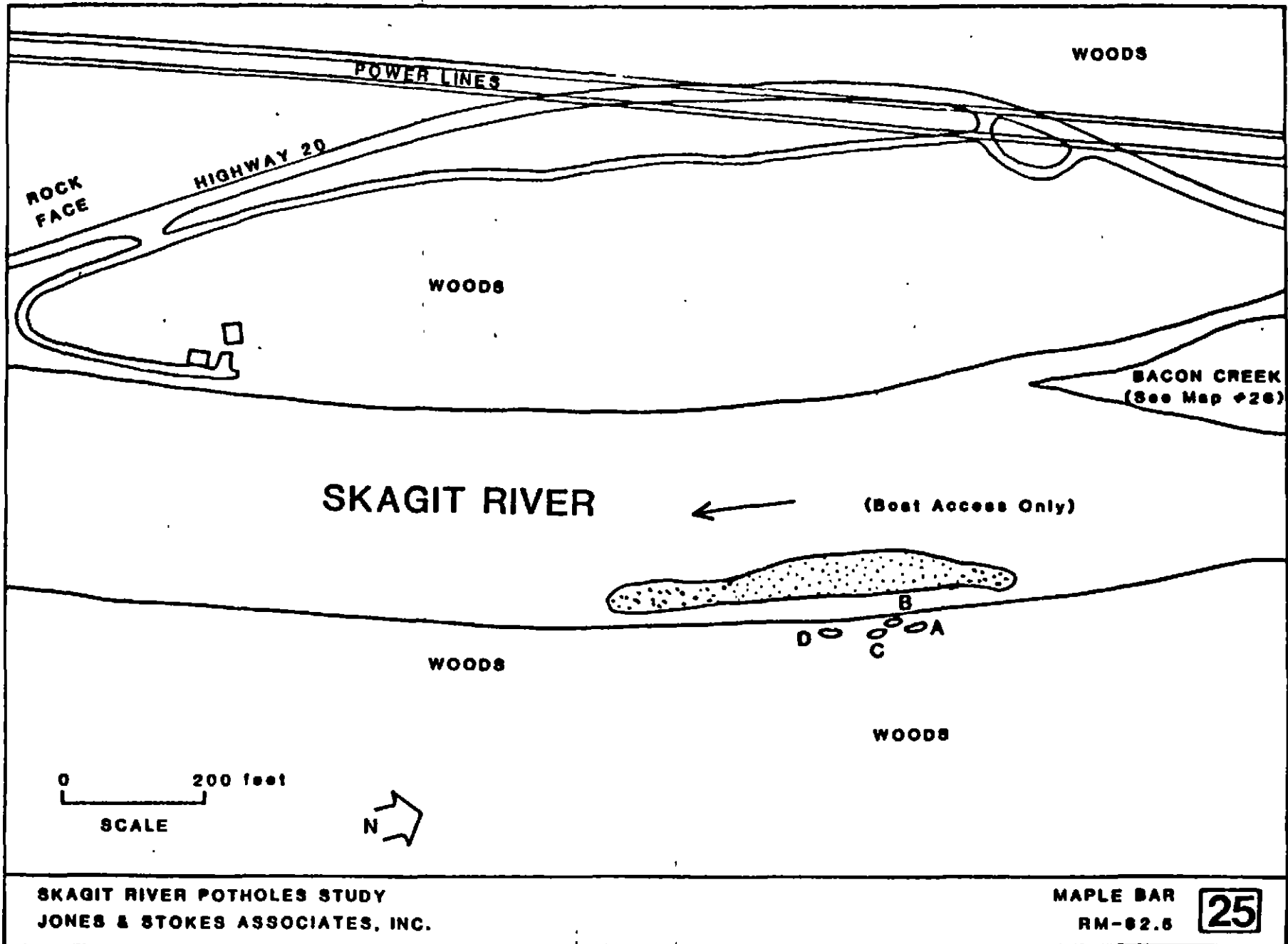
FUNGUS BAR  
 RM-78.6

23



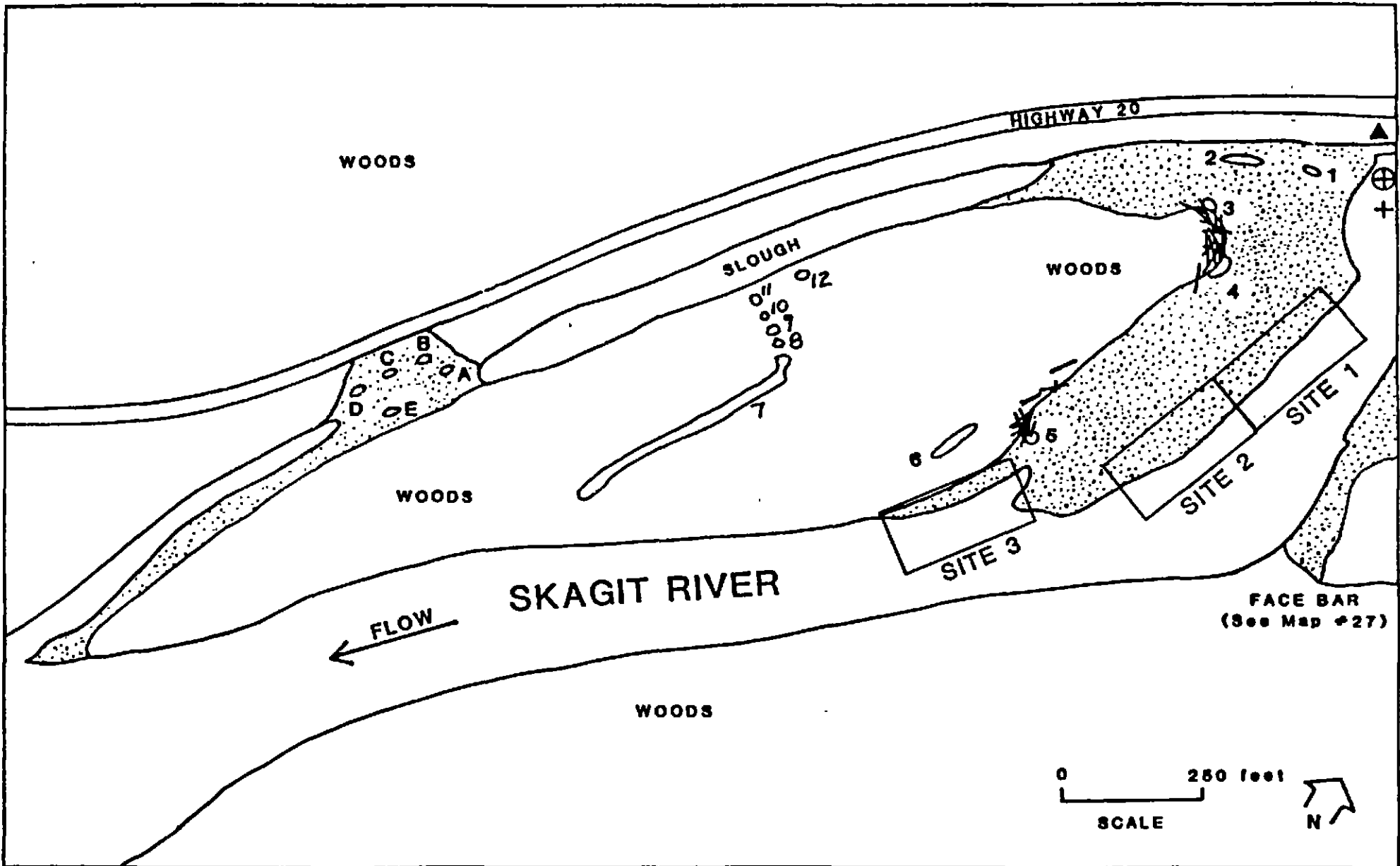
SKAGIT RIVER POTHoles STUDY  
JONES & STOKES ASSOCIATES, INC.

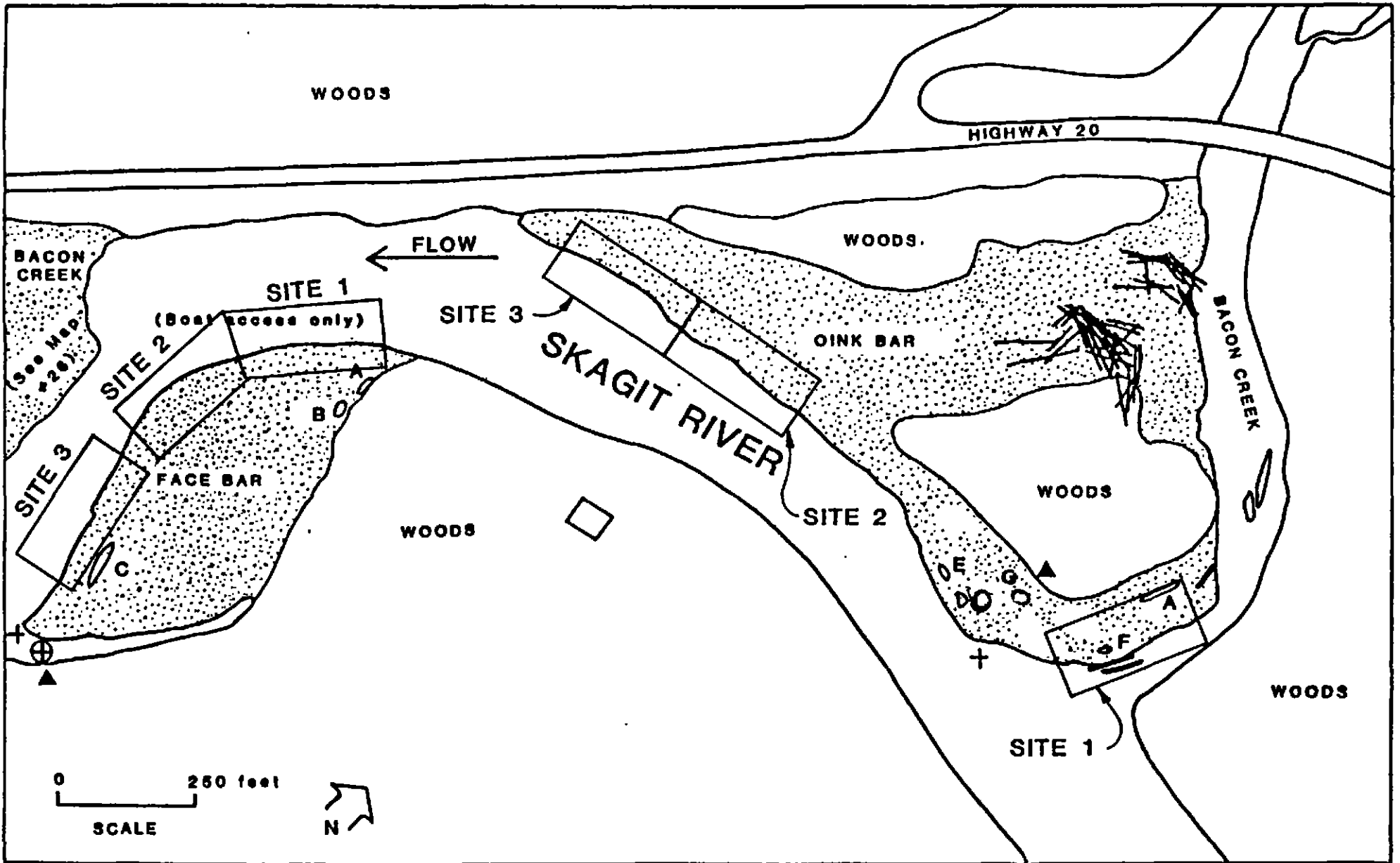
SAM'S BAR  
RM- 82.0

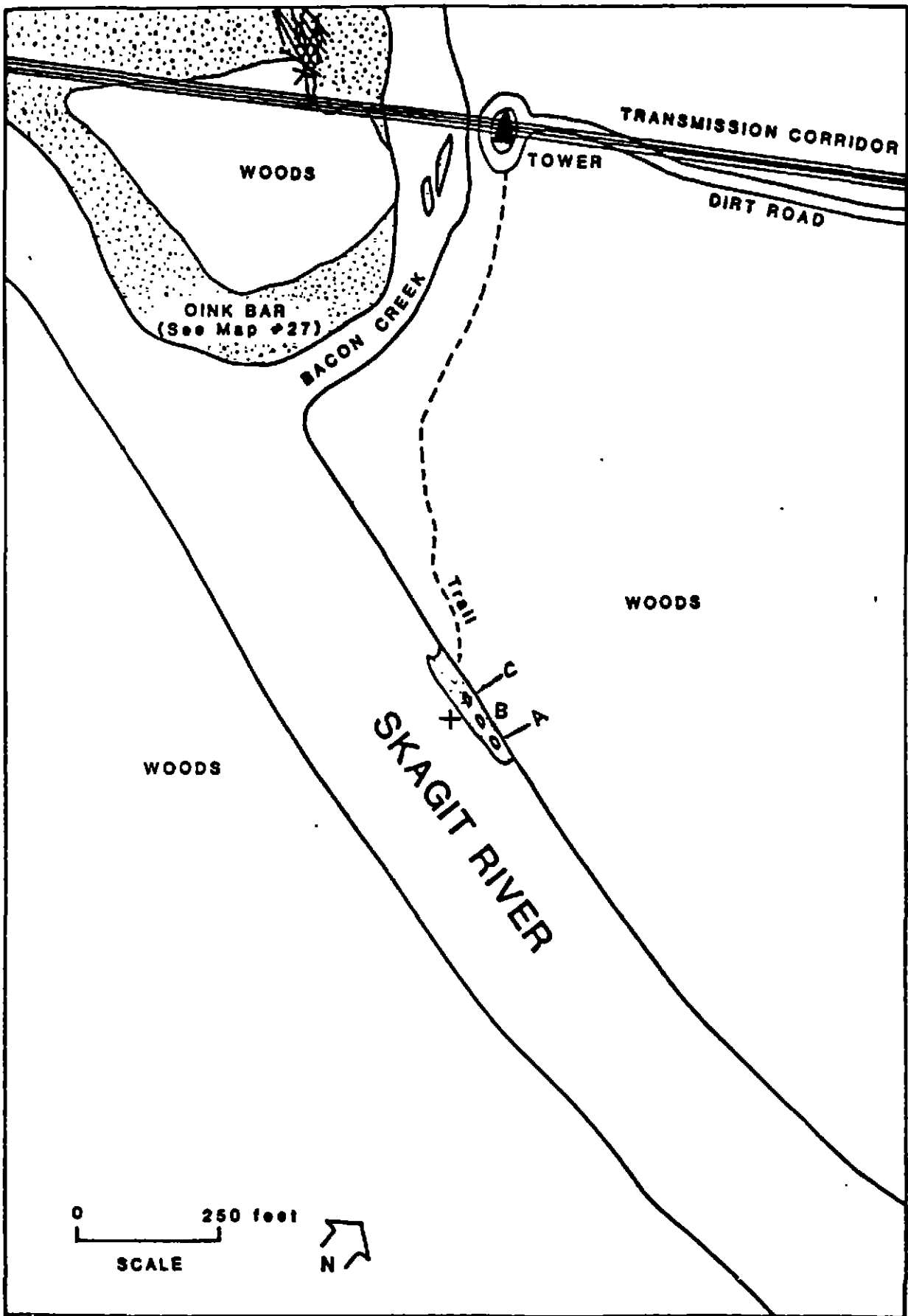


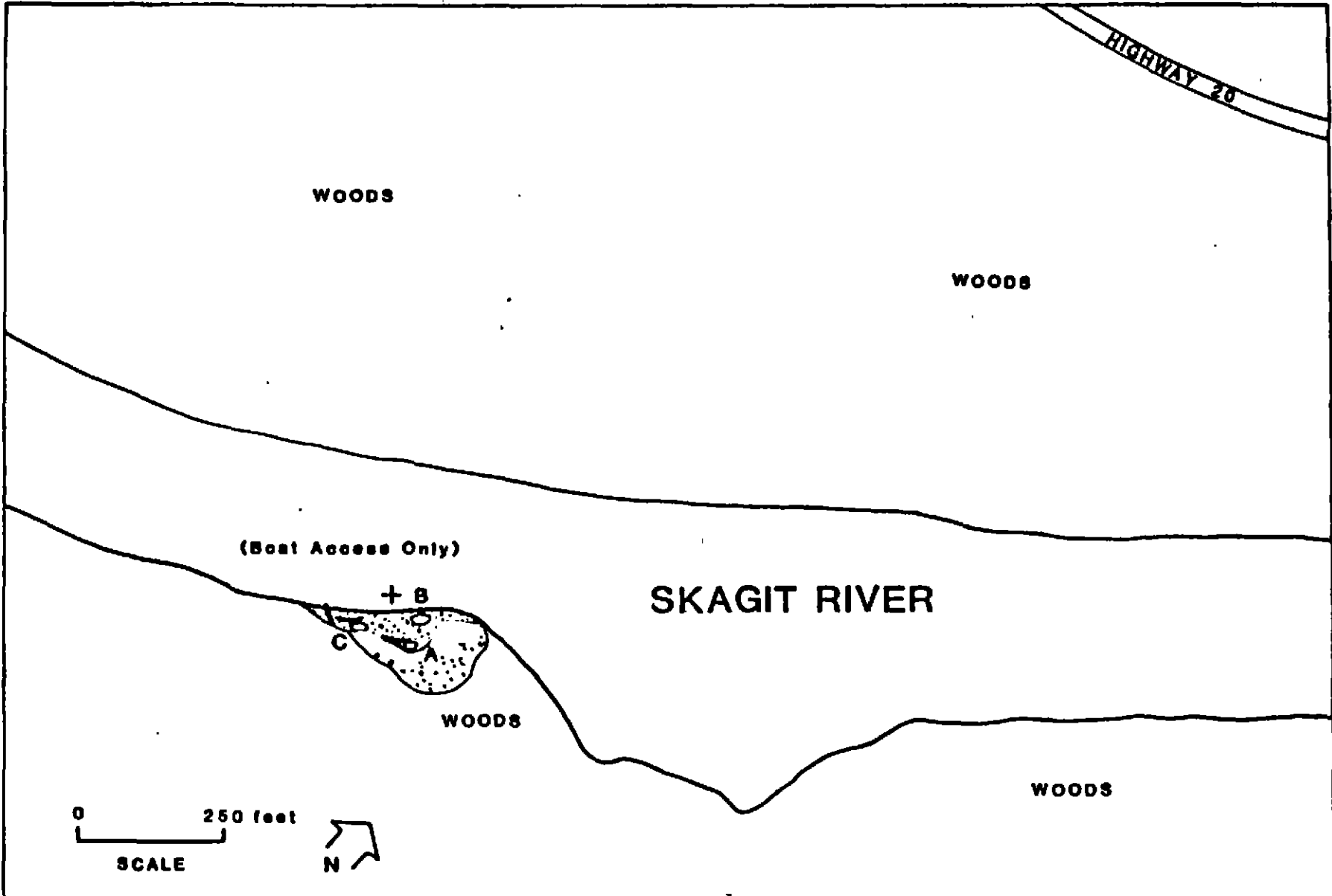
SKAGIT RIVER POTHOLES STUDY  
 JONES & STOKES ASSOCIATES, INC.

MAPLE BAR  
 RM-02.6









0 250 feet

SCALE

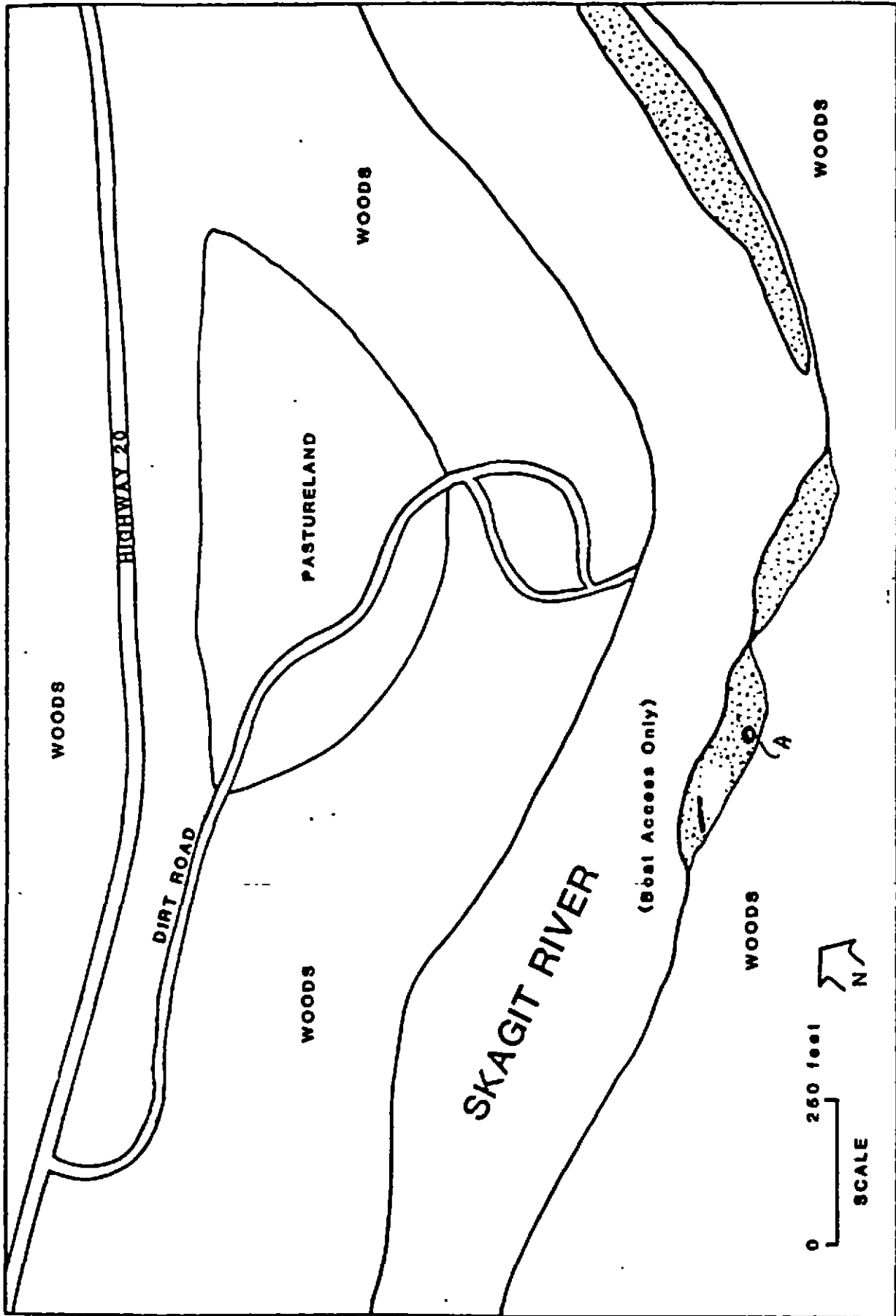


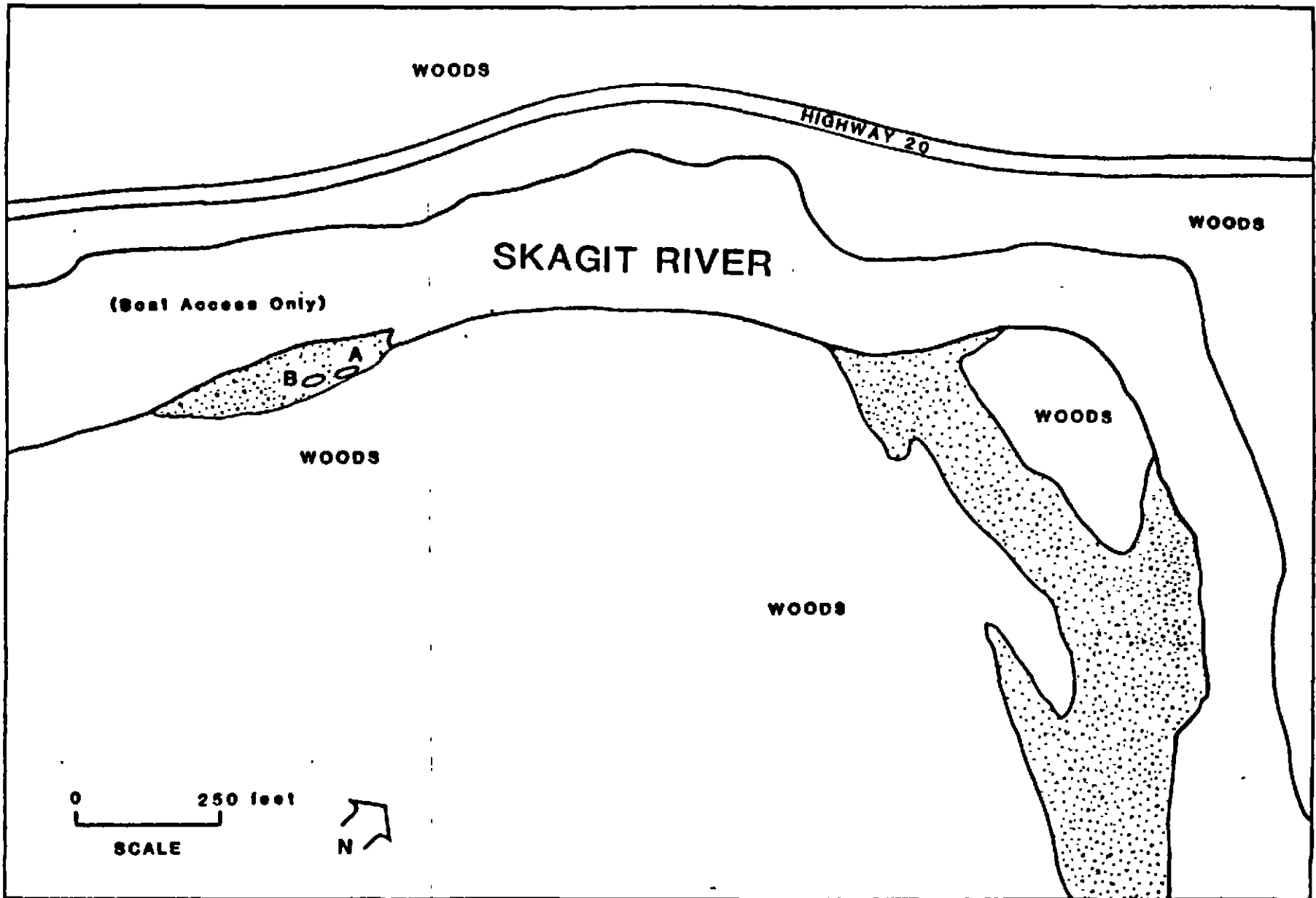
SKAGIT RIVER POTHOLES STUDY  
JONES & STOKES ASSOCIATES, INC.

MINIBAR  
RM- 63.3

29







SKAGIT RIVER POTHOLES STUDY  
JONES & STOKES ASSOCIATES, INC.

COPPER CREEK  
RM-84.0

31

## APPENDIX C

### DATA COLLECTION FORMS AND PROCEDURE MANUALS

Several collection forms and field procedure manuals were used through the course of this project. These forms and manuals are presented in the following order:

1. Data collection procedure manual for the Spring 1985 pothole stranding and trapping study.
2. Pothole trapping and stranding data work sheet (used during the 1985 spring pothole study)
3. Pothole trapping and stranding summary sheet (used during the 1985 spring pothole study)
4. Data collection procedure manual for the Summer/Fall 1985 gravel bar stranding study.
5. Gravel bar stranding data form used during the summer/fall 1985 steelhead and coho fry gravel bar stranding study.
6. Data collection procedure manual for the Spring 1986 salmon gravel bar stranding study.
7. Gravel bar "stranding location" data form used during the spring 1986 salmon gravel bar stranding study.
8. Gravel bar stranding "fish length" data form used during the spring 1986 salmon gravel bar stranding study.
9. Pothole trapping and stranding "work sheet" data form used during the spring 1986 salmon gravel bar stranding study.

OBSERVATIONS MANUAL  
SKAGIT POTHOLE SURVEYS

General

Each observer is assigned a pothole area containing one or more pothole for which he/she will be responsible. Each notebook contains a set of maps explaining how to access each of the 33 pothole areas (Pothole Area Access Maps) and another set of pothole location maps showing the location of each pothole and its code identifier within each pothole area (Pothole Location Maps). Two data sheet types are also provided; the first "Data Sheet No. 1" is a work sheet form which information collected will periodically be transferred to "Data Sheet No. 2" which functions as a data summary sheet. The following shall describe the procedures used to complete these data sheets so that all data collected will be standardized throughout the study.

Contents of Data Notebook

Each notebook should contain the following items:

- a. Observation manual
- b. Pothole Area Access Maps
- c. Pothole Location Maps
- d. List of In-Sample Potholes
- e. Daily Assignment Sheet (one for each observer)
- f. List of Pothole Areas and Codes
- g. Standard to Military Conversion Table
- h. Pencils

Data Sheet No. 1

To clarify data entry locations an example of the data required is included in this manual. Each entry category has been identified by a number. The following will describe each data category separately. Each pothole should be visited at least once every 30 minutes. The following information should be recorded as indicated.

Observations Manual

- 2 -

Entry No. 1 - Observer

- a. Supply Observer's name

Entry No. 2 - Date

- a. Month and Date should be numeric (i.e. 1=January, 12=December)

Entry No. 3 - Pothole Area Location

- a. First in Parenthesis, enter Pothole Area location as shown on coding list supplied in notebook.
- b. Second, enter pothole area location by name as shown on list provided.

Entry No. 4 - Pothole Number

- a. Each work sheet will contain data for only one pothole for each day. If an observer is responsible for eight (8) potholes, then eight (8) separate worksheets will be required, one for each pothole.
- b. Enter one pothole number from the assignment list.

Entry No. 5 - Time

- a. Time should be recorded in military time (24 hr. time) for each observation made.
- b. Conversion from standard to military time can be made using the conversion table supplied.

Entry No. 6 - Pothole Depth

- a. Pothole depth shall be recorded in one-tenth (1/10) foot increments. Each pothole has a temporary rebar staff gage with a 3 foot length of fiberglass tape affixed to it. The observer will record the water level each time the pothole is visited.

Entry No. 7 - Stream Gage Reading

- a. Stream gages are located at all of the major pothole areas. Refer to location maps to determine position(s) of each gage.
- b. The gage should be read and measured at least one every 30 minutes. During the period when potholes are connected and disconnected, it would be essential

to have a stream gage reading(s) taken more frequently.

- c. Yard sticks are affixed to fence posts. These measurements should be made to the closest inch.

Entry No. 8 - Pothole Water Temperature

- a. Pothole water temperature should be taken at least once every hour with the thermometers provided. Surface water temperature is adequate.

Entry No. 9 - Fry Trapped

- a. Two methods for counting fry will be used. Visual counts and electroshocking counts. Visual counts will be made for all potholes being observed. In addition to these visual observations, electroshocking counts will be made at selected potholes.
- b. Two accurate counts of fry trapped will be required for each pothole site. Counts should be made carefully when observation conditions are good. Good counts will take some time (5-10 minutes) and patience. Accuracy is critical! Once the two good counts have been made at a specific pothole no others will be required for the remainder of the day.

Entry No. 10 - Number Stranded

- a. When a pothole goes dry or nearly dry, fry stranding observations must be made. Only one good count of the fry stranded is required for each pothole, each day.
- b. Remove all fish counted as stranded so they are not recorded twice.
- c. If possible, identify fish species and record number of each fry type stranded in comments category.

Entry No. 11 - Connectivity/Disconnectivity Status

- a. Record the connectivity/disconnectivity status of each pothole every time the pothole is observed (once/30 minutes). There are four entry codes:
  - 1 = Connected (When pothole is connected to the main channel, it is considered connected.)
  - 2 = Almost Disconnected (When the pothole is close to becoming separated from the main channel water.)

- 3 = Disconnected (When pothole is not connected by river water, it is disconnected.)
- 4 = Almost Connected (When the pothole is nearly connected by water to main channel, it is almost connected.)

- b. When potholes are almost connected or disconnected it is essential that stream gage readings and pothole gage readings area made.
- c. When possible, observe and record connection and disconnection flows at potholes other than those assigned. However do not let this interfere with the assigned pothole observations.

Entry No. 12 - Comments

- a. Comment types are variable, but could include general site or pothole conditions, tape or rebar repair needs, trapping stranding comments, etc.

DATA SHEET NUMBER 2  
SUMMARY SHEET

The Summary Data Sheet (Number 2) will have one entry per day for each of the assigned potholes and one line for any additional potholes for which observations were made in conjunction with the assigned potholes. The information entered on this data form will come from, in part, "work sheet" Number 1. The following describes in detail the procedure used to enter this data. Refer to the example data form attached.

Entry No. 1 - Date

- a. Observation month and date will be recorded with numerals (1=January, 12=December).

Entry No. 2 - Observer Initials

Entry No. 3 - Weather

- a. Use the following codes
  - 1 = sunny and clear
  - 2 = partial cloudy
  - 3 = cloudy
  - 4 = cloudy and raining

Observations Manual

- 5 -

Entry No. 4 - Pothole Location

- a. Enter the pothole area location code (1-31) as shown on the code sheet supplied.

Entry No. 5 - Pothole Number

- a. Enter pothole alpha-numeric code shown on list supplied or from tape markers at pothole site.

Entry No. 6 - Fry Trapped

- a. Number Trapped - Take the average from the observed fry from the work sheet and enter this number on the data sheet.
- b. Method - Enter Code for method used  
1 = visual  
2 = electroshock

note: When pothole is shocked this figure will always be used rather than the visual observations.

Entry No. 7 - Number Stranded

- a. Enter the total number of fish from each pothole stranded.

Entry No. 8 - Disconnection (leave blank if not observed)

- a. Time - At disconnection record time from work sheet in military time (24 hour time).
- b. Gage Reading - Transfer gage reading at time of disconnection from work sheet, if disconnection is not observed, leave it blank.
- c. Pothole Depth - Transfer pothole water depth reading from work sheet for time of disconnection.

Entry No. 9 - Connection (leave blank if not observed)

- a. refer to 8a.
- b. refer to 8b.
- c. refer to 8c.

Entry No. 10 - Pothole Depth Minimum and Maximum

- a. Minimum Depth - From work sheet record minimum pothole depth observed.



Observations Manual

- 6 -

- b. Time - Record from work sheet the military time of the minimum pothole depth observed.
- c. Stream Gage Reading - Record from the work sheet the stream gage reading observed at the pothole depth for the observation period.

note: Follow same procedure for Maximum depth.

OBSERVER: \_\_\_\_\_ DATE: \_\_\_\_\_

POTHOLE LOCATION: \_\_\_\_\_ POTHOLE NO. \_\_\_\_\_

DATA WORK SHEET

TIME	POTHOLE DEPTH	STREAM GAGE READING	POTHOLE WATER TEMPERATURE	NUMBER TRAPPED	NUMBER STRANDED	CONNECTIVITY/DISCONNECTIVITY (See Legend)	COMMENTS *

- LEGEND: CONNECTIVITY/DISCONNECTIVITY CODES**
- 1 = Connected
  - 2 = Almost Disconnected
  - 3 = Disconnected
  - 4 = Almost Connected

\* Comments should include general conditions, trapping/stranding comments, pothole repairs needed.



## Gravel Bar Stranding Test Procedure

### Purpose

Delete significance of various physical and hydraulic parameters on gravel bar stranding of steelhead fry.

### Assumptions

### Testing Approach

Six (6) combinations of gravel bar types will be selected for study under various combinations of amplitude fluctuation and ramping rate. Each test will begin at the same starting flow to maintain consistently in the gravel bars exposed downstream. Each of the twelve (12) study locations will have as many as three (3) study sites on them. Each site will be exactly 200 feet long. The width of the individual sites will be determined by amplitude fluctuation (i.e., the greater the fluctuation the larger the exposed area). Gravel bars with steep gradients will have shorter average widths than a gravel bar with a more gradual gradient. The high water and low water line created by the amplitude fluctuation tested must be established to determine exposed gravel bar area. To accomplish this, two (2) methods will be used. First, if the down ramp occurs overnight without precipitation the high water mark will be wetted on substrate. This line can then be better defined with markers. A second method will involve floats attached to each of the three (3) reference point rebars or secondary rebars. These floats will be slightly wetted so that the wind does not strand them above the high water mark. As water is ramped up the floats will move downstream on the water's edge. The floats will then be stranded at the high water mark when the water recedes during the subsequent down ramp. The location of the floats will represent high water edge. The low water mark can be determined by the observer each morning since the low water line will be established by the water's edge.

When an observer first begins work at a gravel bar site the following sequence will be followed.

### Sampling Sequence

1. Initial Data Requirements
  - a. Record date, gravel bar location, gravel bar site, and observer initials.

2. Mark High Water and Low Water Line

- a. Flagging markers should be placed along waters edge approximately every 50 feet along entire waters edge. This is low waters edge.
- b. Flagging markers should then be placed along high water line. High water line can be identified two ways. First by position of float markders, and second by edge of wetted gravel. Marker flagging should be placed every 25 feet along this highwater line.
- c. Repeat for all stations (sites) on gravel bar area.

3. Search Gravel Bar Station (Site)

- a. Begin searching along high water edge searching approximately a three (3) foot wide band of gravel for stranded fry. Maintain a constant pace and search width. Do not turn over rocks or debris. If a stranded fry is observed, do not move. Place a flagging marker (with code) at fry location. Anchor marker with a rock. Continue to search and mark fry until low water is reached.
- b. Repeat for all stations (sites) on gravel bar area.

4. Measurement of Water Line and Fry Marker Locations

- a. Attach 200 foot tape to Reference Point 1 (upstream reference point) and measure distance to all high water, low water, and fry locations upstream of Reference Point 2. Record all data including codes on fry location markers.
- b. Next, repeat procedure from reference point 2 (middle reference point) for all markers within entire station (site). Record all data.
- c. Next, repeat procedure from Reference Point 3. Measure all markers downstream of Reference Point 2. Measure and record data in a similar fashion.
- d. Check data form to confirm that each measurement point has two (2) coordinates entered on data form. If data point is missing remeasure to complete data form.

5. Fry Collection

- a. Low water markers must be left in place on double test days.

- b. Place stranded fry from each station into one (1) plastic bag. (1 bag/station). Place a write in rain marker in each bag with station number and gravel bar location on it.
- c. Flagging markers must be collected before site is left for day.

6. High Water Marker Bouys

- a. High water marker bouys must be placed near waters edge before leaving gravel bar area.

7. Double Tests Only

- a. Place a marker at waters edge.
- b. Repeat "a." for each station every 30 minutes.
- c. Repeat "3.a. and b." from previous low water lijne to the waters edge.
- d. Confirm that test is complete. When no more gravel bar is exposed over a 30 minute period the test is over. (As indicated from step "7.a. and b.").
- e. Repeat 4 and 5 above.

CONTROL TEST OUTLINE

Purpose

Determine sampling accuracy of our visual observation technique and to determine fry ability to escape into the subgravel areas rather than strand.

Assumptions

1. Fry stranded on gravel bar are all visible on the surface of the gravel bar.
2. Fry do not re-enter gravel once they have emerged. Thus a fry that is at risk of stranding does strand and can not move back into the sub-gravel.

Test Approach

The control test will be completed three (3) times, once during each third of the 18 test period (early, middle, and late). The general approach to this test assumes that each observer follows the same sequence of instructions each time the bar is searched (see approach to tests). We will assume that the last thing an observer does at each bar is to collect fish stranded. The importance of this assumption becomes evident.

At randomly selected gravel bars (two sites at each of three gravel bar locations) steelhead fry will be placed at know locations on the bar. Prior to placement, these fry will be selected from a group of live fry taken from potholes. These fish will be representative of the smallest fry available (most vulnerable size we assume). These fry will be marked with a flouresant pigment for later verifications. These fry will be released with water to create a semi-natural situation that will allow fish to move sub-gravel or to strand normally. Once fry have been placed on bars, their locations will be identified to compare with observer coordinates and document release point. The observers will then be watched until their work is complete, with the exception of fish collection. At this point, a crew supervisor will check data to determine how accurately observers were able to locate stranded fish. Marked fish that were not located will then be recovered to verify presence. The supervisor will note which fry were located and which fry were missed. Differences between the actual number of planted fish and estimated will provide an adjustment factor for observer accuracy and may also allow for a better understanding of evasive behavior.

POTHOLE SURVEY PROCEDURE  
(for in-sample potholes)

Materials Needed

Pothole data sheet, map, and pencil.

Steps

1. Locate pothole
  - Enter pothole number in column 1
2. Determine connection status
  - If pothole is DISCONNECTED enter "DIS" in column 2
  - If pothole is CONNECTED enter "CON" in column 2
3. Location of ping-pong ball
  - If inside pothole enter "IN" in column 3
  - If outside pothole enter "OUT" in column 3
4. Drainage status
  - If pothole is dry or nearly dry enter "DRY" in column 4
  - If pothole contains water enter "WET" in column 4
5. Time
  - Read watch enter time in column 5
6. Number trapped
  - Enter the number of live trapped fish in column 6
7. Number stranded
  - Enter the number of stranded fish in column 7
  - Collect dead fish in plastic bag (1 bag per bar) label bag
8. Comments
  - Altered conditions
  - Repairs needed
  - Functioning of ball
  - General comments



SKAGIT GRAVEL BAR STRANDING STUDY DATA FORM

DATE \_\_\_\_\_ STATION # \_\_\_\_\_ GRAVEL BAR LOCATION \_\_\_\_\_

OBSERVER \_\_\_\_\_ WEATHER \_\_\_\_\_

		REFERENCE POINTS			TIME	
		NUMBER 1	NUMBER 2	NUMBER 3	MEASUREMENT 1	MEASUREMENT 2
HIGH WATER LINE						
LOW WATER LINE						
FISH	CODE #				LENGTH (cm)	SPECIES
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

GRAVEL BAR STRANDING  
TEST PROCEDURE

Purpose

Delete significance of various physical and hydraulic parameters on gravel bar stranding of salmon fry.

Testing Approach

Six (6) combinations of gravel bar types will be selected for study under various combinations of amplitude fluctuation and ramping rate. Each test will end at a pre-determined flow. Each of the twelve (12) study locations will have as many as three (3) study sites on them. Each site will be exactly 200 feet long. The width of the individual sites will be determined by amplitude fluctuation (i.e., the greater the fluctuation the larger the exposed area). Gravel bars with steep gradients will have shorter average widths than a gravel bar with a more gradual gradient. The high water and low water line created by the amplitude fluctuation tested must be established to determine exposed gravel bar area. To accomplish this, two (2) methods will be used. First, if the down ramp occurs overnight without precipitation, the high water mark will be wetted on the substrate. This line can then be better defined with markers. A second method will involve the use of wood chips placed on the tops of rocks in front of the three (3) reference point rebars. When an observer returns to the site the following day the high waterline will be established by noting where the wood chips are washed off the tops of the rocks. Each day as the observer finishes at a site, he or she will replace the wood chips on the rocks in front of the reference rebars. The low water mark can be determined by the observer each morning since the low water line will be established by the waters edge.

When an observer first begins work at a gravel bar site, the following sequence will be followed.

Sampling Sequence

1. Initial Data Requirements
  - a. Record date, gravel bar location, gravel bar site, and observer initials.
2. Mark High Water and Low Water Line
  - a. Flagging markers should be placed along waters edge approximately every 50 feet along entire waters edge. This is low waters edge.
  - b. Flagging markers should then be placed along the high water line. High water line can be identified two (2) ways. First by the wood chip method, and second, by edge or wetted gravel. Marker flagging should be placed every 25 feet along this high water line.

Sampling Sequence (Continued)

- c. Repeat for all sites on gravel bar area.
3. Search Gravel Bar Site
    - a. Begin searching along high water edge searching approximately a 3 feet wide band of gravel for stranded fry. Maintain a constant pace and search width. Do not turn over rocks or debris. If a stranded fry is observed, do not move. Place a flagging marker (with code) at fry location. Anchor marker with a rock. Continue to search and mark fry until low water line is reached.
    - b. Repeat for all sites on gravel bar area.
4. Measurement of Water Line and Fry Marker Locations
    - a. Attach 200 foot tape to Reference Point 1 (upstream reference point) and measure distance to all high water, low water, and fry locations upstream of Reference Point 2. Record all data including codes on fry location markers.
    - b. Next, repeat procedure from Reference Point 2 (middle reference point) for all markers within entire site. Record all data.
    - c. Next, repeat procedure from Reference Point 3. Measure all markers downstream of Reference Point 2. Measure and record data in a similar fashion.
    - d. Check data form to confirm that each measurement point has exactly two (2) coordinates entered on data form. If data point is missing remeasure to complete data form.
5. Fry Collection
    - a. Place stranded fry from each gravel bar into one (1) plastic bottle. Place a write-in-rain-marker in each bottle with the gravel bar location written on it.
    - b. Flagging markers must be collected before site is left for day.
6. High Water Marker Wood Chips/Bark
    - a. High water marker chips must be placed near the assumed high water edge before leaving gravel bar area for the day. Place a line of wood chips in a line out from the reference rebar on top of the gravel.

POTHOLE SURVEY PROCEDURE  
(for in-sample potholes)

Materials Needed

Pothole data sheet, map and pencil.

Steps

1. Locate pothole
  - Enter pothole number in column 1
2. Determine connection status
  - If pothole is DISCONNECTED enter "DIS" in column 2
  - If pothole is CONNECTED enter "CON" in column 2
3. Drainage status
  - If pothole is dry or nearly dry enter "DRY" in column 4
  - If pothole contains water enter "WET" in column 4
4. Time
  - Read watch enter time in column 5
5. Number stranded
  - Enter the number of stranded fish in column 7
  - Collect dead fish in plastic bag (1 bag per bar) label bag
6. Comments
  - Altered condition
  - Repairs needed
  - General comments

NOTEBOOK CONTENTS  
AND FIELD EQUIPMENT

Each notebook and observer should have this equipment.

1. Access Maps
2. Site Location Maps
3. Skagit River Maps
4. Project Calendar
5. Gravel Bar Stranding Forms
6. Pothole Sampling Forms and List of Potholes
7. Pencils
8. 100 Foot or 200 Foot Tape Measures
9. Fish Sample Bottle
10. Write-in-the-rain labels

GRAVEL BAR INVENTORY

<u>LOCATION</u>	<u>NO. BAR SITES</u>
Rockport	3
Bad Spot	4
Forbidden Bar	3
Inaccessible Island	3
Big Eddie	3
Hooper Slough	3
Fungus Bar	3
Bacon Creek	3
Face Bar	3
Oink Bar	3
Diobsud Creek	2
Marblemount	3

Post:

Page

Date \_\_\_\_\_ Gravel Bar (Code) \_\_\_\_\_ (\_\_\_\_) Station # \_\_\_\_\_  
 Observer \_\_\_\_\_ R \_\_\_\_ R \_\_\_\_ E \_\_\_\_ Dry/Wet \_\_\_\_\_

Reference Points

			No. 1	No. 2	No. 3
High Water Line					
Low Water Line					
	No. of Fish	Fish Code			
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

- Codes**
- Gravel Bars
- 01 Rockport
  - 05 Bad Spot
  - 07 Forbidden
  - 12 Hooper Slough
  - 13 Inaccessible Is.
  - 19 Big Eddy
  - 21 Marblemount
  - 23 Fungus Bar
  - 40 Diobsud Creek
  - 26 Bacon Creek
  - 27 Face Bar
  - 41 Oink Bar
- Dry/Wet
- 1 = Dry
  - 2 = Wet

**1986 Skagit Gravel Bar Stranding Study**

**Fish Length Data Form**

**Test:**

**Page**

**Date** \_\_\_\_\_ **Gravel Bar (Code)** \_\_\_\_\_ (\_\_\_\_)

**Observer** \_\_\_\_\_ **A** \_\_\_ **R** \_\_\_ **E** \_\_\_

	<b>Length (cm)</b>	<b>Species</b>
<b>1</b>		
<b>2</b>		
<b>3</b>		
<b>4</b>		
<b>5</b>		
<b>6</b>		
<b>7</b>		
<b>8</b>		
<b>9</b>		
<b>10</b>		
<b>11</b>		
<b>12</b>		
<b>13</b>		
<b>14</b>		
<b>15</b>		
<b>16</b>		
<b>17</b>		
<b>18</b>		
<b>19</b>		
<b>20</b>		
<b>21</b>		
<b>22</b>		
<b>23</b>		
<b>24</b>		
<b>25</b>		

<b>Codes</b>	
<b>Gravel Bars</b>	
01	Rockport
05	Bad Spot
07	Forbidden
12	Hooper Slough
13	Inaccessible Is.
19	Big Eddy
21	Marblemount
23	Fungus Bar
40	Diobsud Creek
26	Bacon Creek
27	Face Bar
41	Oink Bar
<b>Species Codes</b>	
1	chinook
2	steelhead
3	coho
4	chum
5	pink





APPENDIX D

SPRING 1985 SALMON FRY POTHOLE TRAPPING AND STRANDING STUDY DATA SUMMARY

This appendix includes a summary of the trapped and stranded fry from each pothole area studied for each of the fifteen tests completed (See Table D-1) followed by summary data for each pothole observation completed during the study (See Table D-2).

LEGEND FOR TABLE D-2

POTHOLE LOCATION - PLEASE SEE FIGURE I-1

POTHOLE NUMBER - PLEASE REFER TO MAPS IN APPENDIX B

DATE OF OBSERVATION - AS DISPLAYED IN FIGURE D-2

ALL OTHER DATA TYPES ARE SELF-EXPLANATORY

TABLE D-1  
 NUMBER OF FRY TRAPPED AND STRANDED IN POTHOLES  
 BY SAMPLING DATE AND TEST TYPE FOR THE SUM OF ALL INDIVIDUAL  
 POTHOLE OBSERVATIONS DURING THE SPRING 1985 POTHOLE STUDY

D A T E	TEST TYPE	TOTAL FRY TRAPPED	TOTAL FRY STRANDED	NUMBER OF INDIVIDUAL POTHOLE OBSERVATIONS
FEBRUARY 23, 1985	A2/R1	24	0	40
MARCH 2	A1/R2	10	0	90
MARCH 3	A2/R2	144	29	116
MARCH 9	A3/R1	423	67	86
MARCH 10	A3/R1	796	57	84
MARCH 16	A2/R1	953	95	106
MARCH 17	A1/R2	417	5	84
MARCH 23	A3/R2	303	50	95
MARCH 24	A2/R2	242	6	87
MARCH 30	A2/R2	71	2	71
MARCH 31	A3/R2	904	90	98
APRIL 8	A1/R1	1690	7	96
APRIL 7	A1/R1	939	5	87
MAY 15 (1)	A1/R2	1363	17	108
MAY 16 (1)	A3/R2	750	2	77

Amplitude: A1 = 1000 cfs  
 A2 = 2500 cfs  
 A3 = 4000 cfs

Ramp Rate: R1 = 1000 cfs/hr  
 R2 = 2000 cfs/hr

(1). United States Geological Survey hydraulic flow data was not available  
 for this sampling date

TABLE D-2 SUMMARY DATA OF THE 1985 POTHOLE STUDY

POTHOLE LOCATION	POTHOLE NUMBER	DATE OF OBSERVATION	NUMBER OF TRAPPED FRY	NUMBER OF STRANDED FRY	DEPTH OF POTHOLE WHEN OBSERVED DISCONNECTED	DEPTH OF POTHOLE WHEN OBSERVED CONNECTED	MINIMUM DEPTH DURING OBSERVATION	MAXIMUM DEPTH DURING OBSERVATION
1 1	1	02/23/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1 1	1	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1 1	1	03/09/85	0	0	-1.0000	-1.0000	0.00000	0.70000
1 1	1	03/10/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1 1	1	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1 1	1	03/17/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1 1	1	03/23/85	0	5	-1.0000	-1.0000	0.00000	0.00000
1 1	1	03/24/85	1	1	-1.0000	-1.0000	0.00000	0.20000
1 1	1	03/30/85	3	0	-1.0000	-1.0000	0.10000	0.20000
1 1	1	03/31/85	0	11	-1.0000	-1.0000	0.00000	0.00000
1 1	1	04/06/85	3	2	-1.0000	-1.0000	0.00000	0.20000
1 1	1	04/07/85	2	2	-1.0000	-1.0000	0.00000	0.20000
1 1	1	05/15/85	2	0	-1.0000	-1.0000	0.30000	0.50000
1 1	1	05/16/85	20	0	-1.0000	-1.0000	-1.00000	-1.00000
1 11	11	02/23/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1 11	11	03/16/85	0	0	-1.0000	-1.0000	0.20000	0.20000
1 11	11	03/17/85	0	0	-1.0000	-1.0000	0.40000	0.50000
1 12	12	03/09/85	0	0	-1.0000	0.3000	0.20000	0.30000
1 12	12	03/10/85	0	0	-1.0000	-1.0000	0.20000	0.20000
1 12	12	05/15/85	0	1	-1.0000	-1.0000	0.20000	0.90000
1 13	13	02/23/85	0	0	-1.0000	-1.0000	0.30000	0.30000
1 13	13	03/03/85	0	0	0.3000	-1.0000	0.30000	0.30000
1 13	13	03/09/85	0	0	-1.0000	0.5000	0.30000	0.50000
1 13	13	03/10/85	1	0	-1.0000	-1.0000	0.30000	0.30000
1 13	13	03/16/85	0	0	-1.0000	-1.0000	0.30000	0.30000
1 13	13	03/23/85	0	0	-1.0000	-1.0000	0.30000	0.30000
1 13	13	03/24/85	0	0	-1.0000	-1.0000	0.40000	0.40000
1 13A	13A	03/16/85	0	0	-1.0000	-1.0000	0.30000	0.30000
1 13A	13A	03/23/85	0	0	-1.0000	-1.0000	0.30000	0.30000
1 13A	13A	03/24/85	0	0	-1.0000	-1.0000	0.30000	0.30000
1 14	14	02/23/85	15	0	-1.0000	-1.0000	1.10000	1.10000
1 14	14	03/03/85	10	0	1.2000	-1.0000	1.20000	1.20000
1 14	14	03/09/85	9	0	-1.0000	-1.0000	1.00000	1.00000
1 14	14	03/16/85	10	0	-1.0000	-1.0000	1.00000	0.90000
1 14	14	03/17/85	9	0	-1.0000	-1.0000	1.20000	1.20000
1 14	14	03/31/85	14	0	-1.0000	-1.0000	1.20000	1.20000
1 14	14	04/06/85	3	0	-1.0000	-1.0000	1.20000	1.20000

TABLE LEGEND

POTHOLE LOCATION - SEE FIGURE 1-1  
 POTHOLE NUMBER - SEE APPENDIX B MAPS  
 DATE OF OBSERVATION - SEE FIGURE D-2

POTHOLE LOCATION	POTHOLE NUMBER	DATE OF OBSERVATION	NUMBER OF TRAPPED FRY	NUMBER OF STRANDED FRY	DEPTH OF POTHOLE WHEN OBSERVED DISCONNECTED	DEPTH OF POTHOLE WHEN OBSERVED CONNECTED	MINIMUM DEPTH DURING OBSERVATION	MAXIMUM DEPTH DURING OBSERVATION
1	14	05/15/85	20	0	-1.0000	-1.0000	1.20000	1.40000
1	15	02/23/85	0	0	-1.0000	-1.0000	0.40000	0.40000
1	15	03/03/85	20	0	0.4000	-1.0000	0.40000	0.40000
1	15	03/09/85	2	0	-1.0000	-1.0000	0.30000	0.50000
1	15	03/10/85	2	0	-1.0000	-1.0000	0.30000	0.40000
1	15	03/16/85	1	0	-1.0000	-1.0000	0.30000	0.30000
1	15	03/17/85	3	0	-1.0000	-1.0000	0.40000	0.40000
1	15	03/31/85	17	0	-1.0000	-1.0000	0.40000	0.40000
1	16A	02/23/85	1	0	-1.0000	-1.0000	0.10000	0.20000
1	16A	03/09/85	0	0	-1.0000	0.2000	0.20000	0.20000
1	16A	03/09/85	0	0	-1.0000	0.2000	0.20000	0.20000
1	16A	03/16/85	0	0	-1.0000	0.2000	0.00000	0.20000
1	17	03/03/85	1	1	0.7000	-1.0000	0.60000	0.70000
1	17	03/09/85	0	3	-1.0000	-1.0000	0.60000	0.70000
1	17	03/10/85	2	0	-1.0000	-1.0000	0.50000	0.60000
1	17	03/31/85	15	0	-1.0000	-1.0000	0.60000	0.60000
1	17	05/15/85	30	0	-1.0000	-1.0000	0.30000	0.90000
1	17A	02/23/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	17A	03/03/85	0	1	-1.0000	-1.0000	0.00000	0.00000
1	17A	03/09/85	0	1	-1.0000	0.0000	0.00000	0.00000
1	17A	03/23/85	0	2	-1.0000	-1.0000	0.00000	0.00000
1	17A	03/31/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	17A	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.20000
1	17B	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	17B	03/17/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	17B	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.20000
1	18	02/23/85	0	0	-1.0000	-1.0000	0.40000	0.40000
1	18	04/06/85	7	0	-1.0000	-1.0000	0.70000	0.70000
1	18	04/07/85	7	0	-1.0000	-1.0000	0.70000	0.70000
1	19	03/16/85	0	0	-1.0000	-1.0000	0.10000	0.10000
1	19	03/23/85	0	1	-1.0000	-1.0000	0.30000	0.30000
1	19A	03/03/85	0	4	-1.0000	-1.0000	0.00000	0.00000
1	19A	03/09/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	19A	03/10/85	1	1	-1.0000	-1.0000	0.00000	0.10000
1	19A	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	19A	03/17/85	0	0	-1.0000	-1.0000	0.10000	0.20000
1	19A	03/23/85	0	1	-1.0000	-1.0000	0.10000	0.10000
1	19A	03/24/85	0	0	-1.0000	-1.0000	0.30000	0.40000
1	19A	03/31/85	1	1	-1.0000	-1.0000	0.30000	0.30000
1	19A	04/06/85	0	0	-1.0000	-1.0000	0.40000	0.50000
1	1A	02/23/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	1A	03/02/85	0	0	-1.0000	-1.0000	0.00000	0.10000
1	1A	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	1A	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	1A	03/17/85	0	2	-1.0000	-1.0000	0.00000	0.00000
1	1A	03/23/85	0	0	-1.0000	0.1000	0.00000	0.10000
1	1A	03/24/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	1A	03/30/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	1A	03/31/85	0	0	-1.0000	-1.0000	0.00000	0.00000

TABLE LEGEND

POTHOLE LOCATION - SEE FIGURE I-1  
POTHOLE NUMBER - SEE APPENDIX B MAPS  
DATE OF OBSERVATION - SEE FIGURE D-2

POTHOLE LOCATION	POTHOLE NUMBER	DATE OF OBSERVATION	NUMBER OF TRAPPED FRY	NUMBER OF STRANDED FRY	DEPTH OF POTHOLE WHEN OBSERVED DISCONNECTED	DEPTH OF POTHOLE WHEN OBSERVED CONNECTED	MINIMUM DEPTH DURING OBSERVATION	MAXIMUM DEPTH DURING OBSERVATION
1	1A	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	2	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	20	02/23/85	0	0	-1.0000	-1.0000	1.20000	1.20000
1	20	03/09/85	2	0	-1.0000	-1.0000	0.20000	0.40000
1	20	03/10/85	1	0	-1.0000	0.4000	0.20000	0.40000
1	20	03/16/85	2	0	-1.0000	-1.0000	0.10000	0.10000
1	21	05/15/85	0	0	-1.0000	-1.0000	0.30000	0.90000
1	22	03/02/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	22	03/02/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	22	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
1	23	03/02/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	23	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	23	04/07/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	3	03/02/85	0	0	-1.0000	0.6000	0.60000	1.00000
1	3	03/03/85	2	1	-1.0000	-1.0000	0.20000	0.20000
1	3	03/03/85	2	1	-1.0000	-1.0000	0.20000	0.20000
1	3	03/23/85	0	5	-1.0000	0.1000	0.00000	0.10000
1	3	03/24/85	1	0	-1.0000	-1.0000	0.30000	0.40000
1	3	03/31/85	0	0	-1.0000	-1.0000	0.00000	0.60000
1	3	04/06/85	2	0	-1.0000	-1.0000	0.30000	0.40000
1	4	02/23/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	4	03/02/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	4	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	4	03/09/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	4	03/10/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	4	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	4	03/17/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	4	03/24/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	4	03/30/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	4	03/31/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	4	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	4	04/07/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	5	02/23/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	5	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	6	02/23/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	6	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	6	03/09/85	0	1	-1.0000	0.0000	0.00000	0.00000
1	6	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	6	03/17/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	6	03/24/85	0	0	-1.0000	-1.0000	0.00000	0.10000
1	6	03/30/85	0	0	-1.0000	-1.0000	0.00000	0.10000
1	6	03/31/85	0	2	-1.0000	-1.0000	0.00000	0.00000
1	6	04/06/85	0	0	-1.0000	-1.0000	0.10000	0.20000
1	6	04/07/85	0	0	-1.0000	-1.0000	0.10000	0.20000
1	6	05/15/85	0	0	-1.0000	-1.0000	0.00000	0.60000
1	7	03/09/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	7	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	7	03/17/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	7	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000

TABLE LEGEND

POTHOLE LOCATION - SEE FIGURE I-1  
 POTHOLE NUMBER - SEE APPENDIX B MAPS  
 DATE OF OBSERVATION - SEE FIGURE D-2

POTHOLE LOCATION	POTHOLE NUMBER	DATE OF OBSERVATION	NUMBER OF TRAPPED FRY	NUMBER OF STRANDED FRY	DEPTH OF POTHOLE WHEN OBSERVED DISCONNECTED	DEPTH OF POTHOLE WHEN OBSERVED CONNECTED	MINIMUM DEPTH DURING OBSERVATION	MAXIMUM DEPTH DURING OBSERVATION
1	7A	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	7A	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	7A	03/17/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	7A	03/30/85	0	0	-1.0000	0.0000	0.00000	0.00000
1	7A	03/31/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	7A	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	7A	04/07/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	B	03/03/85	0	0	0.3000	-1.0000	0.30000	0.30000
1	B	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.10000
1	B	03/17/85	1	0	-1.0000	-1.0000	0.30000	0.30000
1	B	03/31/85	0	0	-1.0000	-1.0000	0.30000	0.30000
1	B	05/15/85	0	0	-1.0000	-1.0000	0.20000	0.70000
1	9	03/09/85	0	0	-1.0000	-1.0000	0.30000	0.30000
1	A	02/23/85	0	0	-1.0000	-1.0000	1.20000	1.30000
1	B	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.10000
1	B	04/07/85	0	0	-1.0000	-1.0000	0.00000	0.10000
1	C	02/23/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	C	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	D	03/02/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	D	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	D	03/17/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	D	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000
1	D	04/07/85	0	0	-1.0000	-1.0000	0.00000	0.00000
2	1	05/15/85	13	0	-1.0000	-1.0000	1.80000	1.80000
2	11	02/23/85	5	0	-1.0000	-1.0000	0.20000	0.20000
2	11	03/16/85	0	0	-1.0000	-1.0000	0.10000	0.10000
2	11	05/15/85	2	0	-1.0000	-1.0000	0.40000	0.40000
2	11	05/16/85	4	0	-1.0000	-1.0000	-1.00000	-1.00000
2	12	02/23/85	0	0	-1.0000	-1.0000	0.00000	0.10000
2	12	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.40000
2	12	03/09/85	0	0	-1.0000	0.2000	0.00000	0.20000
2	12	03/10/85	0	0	-1.0000	-1.0000	0.00000	0.20000
2	12	03/16/85	0	0	-1.0000	0.5000	0.00000	0.50000
2	12	03/17/85	0	0	-1.0000	-1.0000	0.10000	0.30000
2	12	03/23/85	0	0	-1.0000	0.1000	0.00000	0.30000
2	12	03/24/85	0	0	-1.0000	-1.0000	0.30000	0.40000
2	12	03/30/85	0	0	-1.0000	1.1000	0.30000	0.40000
2	12	03/31/85	0	0	-1.0000	-1.0000	0.00000	0.30000
2	12	04/06/85	1	0	-1.0000	-1.0000	0.10000	0.40000
2	12	04/07/85	3	0	-1.0000	-1.0000	0.20000	0.30000
2	12	05/15/85	0	0	-1.0000	-1.0000	0.10000	0.10000
2	12	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
2	12	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
2	2	03/03/85	52	0	-1.0000	-1.0000	1.60000	1.80000
2	2	03/09/85	43	0	-1.0000	2.7000	1.40000	1.50000
2	2	03/10/85	31	0	-1.0000	-1.0000	1.30000	1.60000
2	2	03/16/85	21	0	-1.0000	1.7000	1.20000	1.70000
2	2	03/17/85	28	0	-1.0000	-1.0000	1.60000	1.70000
2	2	03/23/85	4	0	-1.0000	1.5000	1.40000	1.50000

TABLE LEGEND

POTHOLE LOCATION - SEE FIGURE I-1  
POTHOLE NUMBER - SEE APPENDIX B MAPS  
DATE OF OBSERVATION - SEE FIGURE D-2

POTHOLE LOCATION	POTHOLE NUMBER	DATE OF OBSERVATION	NUMBER OF TRAPPED FRY	NUMBER OF STRANDED FRY	DEPTH OF POTHOLE WHEN OBSERVED DISCONNECTED	DEPTH OF POTHOLE WHEN OBSERVED CONNECTED	MINIMUM DEPTH DURING OBSERVATION	MAXIMUM DEPTH DURING OBSERVATION
2 2	2	03/24/85	18	0	-1.0000	0.7000	1.80000	1.90000
2 2	2	03/30/85	1	0	-1.0000	2.5000	1.80000	1.90000
2 2	2	03/31/85	82	0	-1.0000	-1.0000	1.50000	1.60000
2 2	2	04/06/85	73	0	-1.0000	1.8000	1.70000	1.90000
2 2	2	04/07/85	42	0	-1.0000	-1.0000	1.80000	1.90000
2 2	2	05/15/85	35	0	-1.0000	-1.0000	1.60000	1.60000
2 2	2	05/16/85	30	0	1.8000	-1.0000	-1.00000	-1.00000
2 3	3	03/09/85	4	0	-1.0000	1.4000	0.80000	0.70000
2 3	3	03/10/85	47	0	-1.0000	-1.0000	0.80000	1.10000
2 3	3	03/16/85	80	0	-1.0000	0.8000	0.60000	0.80000
2 3	3	03/17/85	46	0	-1.0000	-1.0000	1.00000	1.10000
2 3	3	03/31/85	175	0	-1.0000	-1.0000	1.00000	1.00000
2 3	3	04/06/85	75	0	-1.0000	1.1000	1.10000	1.10000
2 3	3	04/07/85	64	0	-1.0000	-1.0000	1.10000	1.10000
2 3	3	05/15/85	100	0	-1.0000	-1.0000	0.90000	0.90000
2 3	3	05/16/85	40	0	1.1000	-1.0000	-1.00000	-1.00000
2 4	4	03/09/85	0	0	1.3000	1.7000	1.30000	1.70000
2 4	4	03/10/85	0	0	1.3000	1.5000	1.20000	1.50000
2 4	4	03/16/85	0	0	1.3000	-1.0000	1.20000	1.30000
2 4	4	03/23/85	0	0	1.3000	1.3000	1.30000	1.40000
2 5	5	02/23/85	0	0	-1.0000	-1.0000	0.30000	0.50000
2 5	5	03/02/85	0	0	-1.0000	-1.0000	1.00000	1.20000
2 5	5	03/03/85	0	0	-1.0000	-1.0000	0.50000	0.60000
2 5	5	03/09/85	0	0	-1.0000	-1.0000	0.30000	1.20000
2 5	5	03/10/85	0	0	-1.0000	-1.0000	0.20000	0.60000
2 5	5	03/10/85	0	0	-1.0000	-1.0000	0.20000	0.60000
2 5	5	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.00000
2 5	5	03/17/85	0	0	-1.0000	-1.0000	0.60000	0.70000
2 5	5	03/23/85	0	0	-1.0000	-1.0000	0.30000	0.90000
2 5	5	03/24/85	0	0	-1.0000	-1.0000	0.60000	0.80000
2 5	5	03/30/85	0	0	-1.0000	-1.0000	0.70000	0.70000
2 5	5	03/31/85	0	0	-1.0000	-1.0000	0.40000	0.50000
2 5	5	04/06/85	0	0	-1.0000	-1.0000	0.60000	0.70000
2 5	5	04/07/85	0	0	-1.0000	-1.0000	0.60000	0.70000
2 5	5	05/15/85	7	0	-1.0000	-1.0000	0.40000	0.40000
2 5	5	05/15/85	7	0	-1.0000	-1.0000	0.40000	0.70000
2 5	5	05/16/85	13	2	-1.0000	-1.0000	-1.00000	-1.00000
2 A	A	03/09/85	0	0	-1.0000	0.2000	0.10000	0.20000
2 A	A	03/10/85	0	0	-1.0000	0.3000	0.10000	0.30000
2 A	A	03/16/85	1	1	-1.0000	0.1000	0.00000	0.10000
2 A	A	03/23/85	0	0	-1.0000	0.2000	0.10000	0.20000
2 A	A	05/15/85	0	0	-1.0000	-1.0000	0.10000	0.10000
2 B	B	05/15/85	1	0	-1.0000	-1.0000	0.20000	0.20000
2 C	C	02/23/85	0	0	-1.0000	-1.0000	0.60000	0.70000
2 C	C	03/16/85	0	0	-1.0000	-1.0000	0.40000	0.40000
2 C	C	05/15/85	0	0	-1.0000	-1.0000	0.70000	0.70000
2 F	F	03/09/85	0	0	0.7000	1.2000	0.60000	0.80000
2 F	F	03/10/85	13	0	0.6000	0.8000	0.50000	0.80000
2 F	F	03/16/85	0	0	0.6000	-1.0000	0.40000	0.60000

TABLE LEGEND

POTHOLE LOCATION - SEE FIGURE I-1  
POTHOLE NUMBER - SEE APPENDIX B MAPS  
DATE OF OBSERVATION - SEE FIGURE D-2



POTHOLE LOCATION	POTHOLE NUMBER	DATE OF OBSERVATION	NUMBER OF TRAPPED FRY	NUMBER OF STRANDED FRY	DEPTH OF POTHOLE WHEN OBSERVED DISCONNECTED	DEPTH OF POTHOLE WHEN OBSERVED CONNECTED	MINIMUM DEPTH DURING OBSERVATION	MAXIMUM DEPTH DURING OBSERVATION
2	6	02/23/85	0	0	1.4000	-1.0000	1.40000	1.50000
2	H	02/23/85	0	0	-1.0000	-1.0000	0.70000	0.70000
2	H	03/31/85	0	0	-1.0000	-1.0000	0.70000	0.80000
2	J	03/16/85	35	0	-1.0000	-1.0000	1.10000	1.10000
2	J	05/15/85	17	0	-1.0000	-1.0000	0.90000	0.90000
2	N	03/09/85	0	0	-1.0000	-1.0000	0.00000	0.00000
2	N	03/10/85	0	0	-1.0000	-1.0000	0.00000	0.00000
2	N	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.00000
2	N	03/17/85	0	0	-1.0000	-1.0000	0.00000	0.00000
2	N	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000
2	N	04/07/85	0	0	-1.0000	-1.0000	0.00000	0.00000
2	N	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
3	10	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
3	11	03/09/85	0	0	-1.0000	1.2000	1.00000	1.20000
3	11	05/16/85	4	0	-1.0000	-1.0000	-1.00000	-1.00000
3	11B	02/23/85	2	0	-1.0000	-1.0000	0.30000	0.30000
3	11B	03/09/85	0	0	-1.0000	0.6000	0.30000	0.60000
3	11B	05/16/85	30	0	-1.0000	-1.0000	-1.00000	-1.00000
3	12	02/23/85	0	0	-1.0000	-1.0000	0.00000	0.00000
3	12	03/02/85	0	0	-1.0000	-1.0000	0.20000	0.20000
3	12	03/09/85	0	0	-1.0000	-1.0000	0.00000	0.00000
3	12	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
3	15	02/23/85	0	0	-1.0000	-1.0000	0.00000	0.00000
3	5	02/23/85	0	0	-1.0000	-1.0000	0.90000	0.90000
3	5	03/02/85	0	0	-1.0000	-1.0000	1.30000	1.30000
3	5	03/09/85	0	0	-1.0000	-1.0000	0.80000	1.20000
3	5	03/23/85	0	0	-1.0000	-1.0000	0.90000	1.00000
3	5	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
3	6	02/23/85	0	0	-1.0000	-1.0000	3.00000	3.00000
3	7	02/23/85	0	0	-1.0000	-1.0000	1.10000	1.10000
3	7	03/09/85	0	0	-1.0000	-1.0000	1.00000	1.60000
3	7	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
3	8	02/23/85	0	0	-1.0000	-1.0000	0.00000	0.00000
3	8	03/02/85	0	0	-1.0000	-1.0000	0.00000	0.00000
3	8	03/09/85	0	0	-1.0000	-1.0000	0.00000	0.20000
3	8	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
3	9	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
4	1	03/30/85	0	0	-1.0000	-1.0000	1.10000	0.90000
4	1	03/31/85	0	0	-1.0000	-1.0000	0.90000	0.90000
4	1	05/15/85	0	0	-1.0000	-1.0000	0.80000	0.80000
4	10	03/10/85	0	0	-1.0000	-1.0000	0.00000	0.20000
4	10	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	10	03/17/85	0	0	-1.0000	-1.0000	0.10000	0.10000
4	10	03/23/85	0	0	-1.0000	-1.0000	0.20000	0.00000
4	10	03/24/85	0	0	-1.0000	-1.0000	0.40000	0.20000
4	10	03/30/85	0	0	-1.0000	-1.0000	0.40000	0.50000
4	10	03/31/85	0	0	-1.0000	-1.0000	0.10000	0.30000
4	10	04/06/85	0	0	-1.0000	-1.0000	0.20000	1.40000
4	10	04/07/85	0	0	-1.0000	-1.0000	0.20000	0.20000

TABLE LEGEND

POTHOLE LOCATION - SEE FIGURE I-1  
POTHOLE NUMBER - SEE APPENDIX B MAPS  
DATE OF OBSERVATION - SEE FIGURE D-2

POTHOLE LOCATION	POTHOLE NUMBER	DATE OF OBSERVATION	NUMBER OF TRAPPED FRY	NUMBER OF STRANDED FRY	DEPTH OF POTHOLE WHEN OBSERVED DISCONNECTED	DEPTH OF POTHOLE WHEN OBSERVED CONNECTED	MINIMUM DEPTH DURING OBSERVATION	MAXIMUM DEPTH DURING OBSERVATION
4	10	05/15/85	0	0	-1.0000	-1.0000	0.10000	0.20000
4	11	03/02/85	10	0	-1.0000	1.2000	1.20000	1.20000
4	11	03/03/85	0	0	-1.0000	-1.0000	0.20000	0.30000
4	11	03/10/85	0	0	-1.0000	-1.0000	0.90000	1.20000
4	11	03/16/85	0	0	-1.0000	-1.0000	0.60000	0.80000
4	11	03/17/85	0	0	-1.0000	-1.0000	1.00000	1.10000
4	11	03/23/85	0	0	-1.0000	-1.0000	1.10000	1.50000
4	11	03/24/85	0	0	-1.0000	-1.0000	1.20000	1.20000
4	11	03/30/85	0	0	-1.0000	1.2000	1.10000	1.20000
4	11	03/31/85	0	0	-1.0000	-1.0000	1.20000	1.00000
4	11	04/06/85	0	0	-1.0000	-1.0000	1.20000	1.00000
4	11	04/07/85	0	0	-1.0000	-1.0000	1.20000	1.10000
4	11	05/15/85	6	0	-1.0000	-1.0000	0.90000	1.00000
4	11B	03/10/85	4	1	-1.0000	-1.0000	0.20000	0.50000
4	11B	03/16/85	0	10	-1.0000	-1.0000	0.10000	0.20000
4	11B	03/17/85	0	0	-1.0000	-1.0000	0.40000	0.40000
4	11B	03/23/85	1	0	-1.0000	-1.0000	0.50000	0.40000
4	11B	03/24/85	4	0	-1.0000	-1.0000	0.50000	0.50000
4	11B	03/30/85	8	1	-1.0000	0.6000	0.60000	0.60000
4	11B	03/31/85	16	0	-1.0000	-1.0000	0.70000	0.50000
4	11B	04/06/85	25	0	-1.0000	-1.0000	0.70000	0.70000
4	11B	04/07/85	25	0	-1.0000	-1.0000	0.50000	0.50000
4	11B	05/15/85	25	0	-1.0000	-1.0000	0.50000	0.60000
4	12	03/02/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	12	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	12	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	12	03/10/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	12	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	12	03/17/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	12	03/23/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	12	03/24/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	12	03/30/85	0	0	-1.0000	-1.0000	0.00000	0.20000
4	12	03/31/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	12	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	12	04/07/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	12	05/15/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	13	03/02/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	13	03/30/85	0	0	-1.0000	-1.0000	0.00000	0.20000
4	13	03/31/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	13	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	13	04/07/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	13A	03/02/85	0	0	-1.0000	-1.0000	0.30000	1.60000
4	13A	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	13A	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	13A	04/07/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	14	03/02/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	14	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	14	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	14	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000

TABLE LEGEND

POTHOLE LOCATION - SEE FIGURE I-1  
POTHOLE NUMBER - SEE APPENDIX B MAPS  
DATE OF OBSERVATION - SEE FIGURE D-2

POTHOLE LOCATION	POTHOLE NUMBER	DATE OF OBSERVATION	NUMBER OF TRAPPED FRY	NUMBER OF STRANDED FRY	DEPTH OF POTHOLE WHEN OBSERVED DISCONNECTED	DEPTH OF POTHOLE WHEN OBSERVED CONNECTED	MINIMUM DEPTH DURING OBSERVATION	MAXIMUM DEPTH DURING OBSERVATION
4	14	04/07/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	15	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	16	03/02/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	16	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	17	03/02/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	17	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	5	03/02/85	0	0	-1.0000	-1.0000	1.30000	1.30000
4	5	03/03/85	0	0	-1.0000	-1.0000	1.00000	1.20000
4	5	03/10/85	0	0	-1.0000	-1.0000	0.80000	1.00000
4	5	03/16/85	0	0	-1.0000	-1.0000	0.60000	0.70000
4	5	03/17/85	0	0	-1.0000	-1.0000	0.90000	1.00000
4	5	03/17/85	0	0	-1.0000	-1.0000	0.90000	1.00000
4	5	03/24/85	0	0	-1.0000	-1.0000	1.80000	1.00000
4	5	03/30/85	0	0	-1.0000	-1.0000	1.20000	1.40000
4	5	03/31/85	0	0	-1.0000	-1.0000	1.10000	0.90000
4	5	05/15/85	0	0	-1.0000	-1.0000	0.90000	0.90000
4	7	03/02/85	0	0	-1.0000	-1.0000	1.50000	1.50000
4	7	03/03/85	0	0	-1.0000	-1.0000	1.20000	1.30000
4	7	03/10/85	0	0	-1.0000	-1.0000	1.00000	1.50000
4	7	03/16/85	0	0	-1.0000	-1.0000	0.80000	1.10000
4	7	03/16/85	0	0	-1.0000	-1.0000	0.80000	1.10000
4	7	03/17/85	0	0	-1.0000	-1.0000	1.20000	1.20000
4	7	03/23/85	0	0	-1.0000	-1.0000	1.10000	1.30000
4	7	03/24/85	0	0	-1.0000	-1.0000	1.40000	1.30000
4	7	03/30/85	0	0	-1.0000	-1.0000	1.40000	1.60000
4	7	03/31/85	0	0	-1.0000	-1.0000	1.20000	1.10000
4	7	04/06/85	0	0	-1.0000	-1.0000	1.30000	1.20000
4	7	04/07/85	0	0	-1.0000	-1.0000	1.30000	1.30000
4	7	05/15/85	2	0	-1.0000	-1.0000	1.10000	1.70000
4	8	03/02/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	8	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	8	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	8	03/10/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	8	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	8	03/17/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	8	03/23/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	8	03/24/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	8	03/30/85	0	0	-1.0000	-1.0000	0.00000	0.20000
4	8	03/31/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	8	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	8	04/07/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	8	05/15/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	9	03/03/85	0	0	-1.0000	-1.0000	0.10000	0.30000
4	9	04/07/85	0	0	-1.0000	-1.0000	0.30000	0.20000
4	9	05/15/85	0	0	-1.0000	-1.0000	0.00000	0.00000
4	C	03/02/85	0	0	-1.0000	-1.0000	3.00000	3.00000
5	1	02/23/85	0	0	-1.0000	-1.0000	2.30000	2.40000
5	1	03/02/85	0	0	-1.0000	-1.0000	2.70000	2.80000
5	1	03/03/85	7	0	-1.0000	-1.0000	1.60000	1.70000

TABLE LEGEND

POTHOLE LOCATION - SEE FIGURE I-1  
POTHOLE NUMBER - SEE APPENDIX B MAPS  
DATE OF OBSERVATION - SEE FIGURE D-2

POTHOLE LOCATION	POTHOLE NUMBER	DATE OF OBSERVATION	NUMBER OF TRAPPED FRY	NUMBER OF STRANDED FRY	DEPTH OF POTHOLE WHEN OBSERVED DISCONNECTED	DEPTH OF POTHOLE WHEN OBSERVED CONNECTED	MINIMUM DEPTH DURING OBSERVATION	MAXIMUM DEPTH DURING OBSERVATION
5 1	1	03/09/85	9	0	-1.0000	-1.0000	1.50000	1.80000
5 1	1	03/10/85	16	0	-1.0000	-1.0000	1.40000	1.50000
5 1	1	03/16/85	15	0	-1.0000	-1.0000	1.10000	1.40000
5 1	1	03/17/85	14	0	-1.0000	-1.0000	1.50000	1.60000
5 1	1	03/23/85	10	0	-1.0000	-1.0000	1.40000	1.40000
5 1	1	03/24/85	1	0	-1.0000	-1.0000	1.90000	1.90000
5 1	1	03/30/85	8	0	-1.0000	-1.0000	1.70000	1.80000
5 1	1	03/31/85	7	0	-1.0000	-1.0000	1.70000	1.70000
5 1	1	04/06/85	33	0	-1.0000	-1.0000	1.60000	1.60000
5 1	1	04/07/85	17	0	-1.0000	-1.0000	1.60000	1.60000
5 1	1	05/15/85	70	0	-1.0000	-1.0000	1.40000	1.40000
5 1	1	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
5 10	10	03/03/85	0	0	1.0000	-1.0000	1.00000	1.00000
5 10	10	03/09/85	0	0	-1.0000	1.0000	0.40000	1.00000
5 10	10	03/10/85	0	0	-1.0000	-1.0000	0.50000	1.20000
5 10	10	03/16/85	0	0	-1.0000	1.1000	1.10000	1.10000
5 10	10	03/17/85	0	0	-1.0000	-1.0000	1.10000	1.20000
5 10	10	03/23/85	0	0	-1.0000	-1.0000	0.70000	0.70000
5 10	10	05/15/85	0	0	0.9000	-1.0000	0.90000	0.90000
5 11	11	03/09/85	0	0	-1.0000	-1.0000	0.00000	0.00000
5 11	11	03/10/85	0	0	-1.0000	-1.0000	0.00000	1.20000
5 11	11	03/16/85	0	0	-1.0000	0.2000	0.00000	0.20000
5 11	11	03/17/85	0	0	-1.0000	-1.0000	0.00000	0.00000
5 11	11	03/30/85	0	0	-1.0000	-1.0000	0.10000	0.10000
5 11	11	03/31/85	0	0	-1.0000	-1.0000	0.00000	0.00000
5 11	11	04/06/85	1	0	-1.0000	-1.0000	0.10000	0.10000
5 11	11	05/15/85	0	0	-1.0000	-1.0000	0.00000	0.00000
5 12	12	02/23/85	1	0	-1.0000	-1.0000	0.80000	0.80000
5 12	12	03/02/85	0	0	-1.0000	-1.0000	0.30000	0.30000
5 12	12	03/03/85	18	0	-1.0000	-1.0000	0.90000	1.00000
5 12	12	03/09/85	40	0	-1.0000	1.6000	0.70000	1.60000
5 12	12	03/10/85	52	0	-1.0000	-1.0000	0.70000	1.10000
5 12	12	03/16/85	32	0	-1.0000	-1.0000	0.60000	1.10000
5 12	12	03/17/85	23	0	-1.0000	-1.0000	1.00000	1.00000
5 12	12	03/23/85	3	0	-1.0000	-1.0000	0.80000	0.80000
5 12	12	03/24/85	17	0	-1.0000	-1.0000	1.10000	1.10000
5 12	12	03/30/85	3	0	-1.0000	1.4000	1.00000	1.40000
5 12	12	03/31/85	0	0	-1.0000	-1.0000	0.80000	0.80000
5 12	12	04/06/85	49	0	-1.0000	-1.0000	1.00000	1.00000
5 12	12	04/07/85	54	0	-1.0000	-1.0000	1.00000	1.00000
5 12	12	05/15/85	58	0	-1.0000	-1.0000	0.80000	1.30000
5 12	12	05/16/85	7	0	-1.0000	-1.0000	-1.00000	-1.00000
5 13	13	03/02/85	0	0	-1.0000	-1.0000	0.00000	0.00000
5 13	13	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000
5 13	13	03/09/85	0	0	-1.0000	0.2000	0.00000	0.20000
5 13	13	03/10/85	0	0	-1.0000	-1.0000	0.00000	0.00000
5 13	13	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.00000
5 13	13	03/17/85	0	0	-1.0000	-1.0000	0.00000	0.00000
5 13	13	03/23/85	0	0	-1.0000	-1.0000	0.00000	0.00000

TABLE LEGEND

POTHOLE LOCATION - SEE FIGURE I-1  
POTHOLE NUMBER - SEE APPENDIX B MAPS  
DATE OF OBSERVATION - SEE FIGURE D-2

POTHOLE LOCATION	POTHOLE NUMBER	DATE OF OBSERVATION	NUMBER OF TRAPPED FRY	NUMBER OF STRANDED FRY	DEPTH OF POTHOLE WHEN OBSERVED DISCONNECTED	DEPTH OF POTHOLE WHEN OBSERVED CONNECTED	MINIMUM DEPTH DURING OBSERVATION	MAXIMUM DEPTH DURING OBSERVATION
5 13	13	03/24/85	0	0	-1.0000	-1.0000	0.00000	0.00000
5 13	13	03/30/85	0	1	-1.0000	0.1000	0.00000	0.00000
5 13	13	03/31/85	0	0	-1.0000	-1.0000	0.00000	0.00000
5 13	13	04/06/85	2	4	-1.0000	-1.0000	0.00000	0.00000
5 13	13	04/07/85	0	0	-1.0000	-1.0000	0.00000	0.00000
5 14	14	02/23/85	0	0	-1.0000	-1.0000	0.00000	0.00000
5 14	14	03/02/85	0	0	-1.0000	-1.0000	0.40000	0.60000
5 14	14	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000
5 14	14	03/09/85	0	0	-1.0000	-1.0000	0.00000	0.70000
5 14	14	03/10/85	0	0	-1.0000	-1.0000	0.00000	0.00000
5 14	14	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.00000
5 14	14	03/17/85	0	0	-1.0000	-1.0000	0.00000	0.00000
5 14	14	03/23/85	0	0	-1.0000	-1.0000	0.00000	0.00000
5 14	14	03/24/85	0	0	-1.0000	-1.0000	0.10000	0.10000
5 14	14	03/30/85	1	0	-1.0000	-1.0000	0.10000	0.70000
5 14	14	03/31/85	0	0	-1.0000	-1.0000	0.00000	0.00000
5 14	14	04/06/85	13	0	-1.0000	-1.0000	0.10000	0.10000
5 14	14	04/07/85	7	0	-1.0000	-1.0000	0.20000	0.20000
5 14	14	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
5 15	15	03/02/85	0	0	-1.0000	-1.0000	0.30000	0.40000
5 15	15	03/02/85	0	0	-1.0000	-1.0000	0.60000	1.60000
5 15	15	03/03/85	0	0	-1.0000	-1.0000	1.00000	1.20000
5 15	15	03/09/85	1	0	-1.0000	-1.0000	0.80000	1.50000
5 15	15	03/10/85	0	0	-1.0000	-1.0000	0.70000	1.00000
5 15	15	03/16/85	0	0	-1.0000	-1.0000	0.60000	0.80000
5 15	15	03/17/85	1	0	-1.0000	-1.0000	1.00000	1.10000
5 15	15	03/23/85	0	0	-1.0000	-1.0000	0.80000	0.80000
5 15	15	03/24/85	0	0	-1.0000	-1.0000	1.30000	1.40000
5 15	15	03/30/85	0	0	-1.0000	-1.0000	1.20000	1.60000
5 15	15	03/31/85	0	0	-1.0000	-1.0000	1.00000	1.00000
5 15	15	04/06/85	0	0	-1.0000	-1.0000	1.10000	1.10000
5 15	15	04/07/85	30	0	-1.0000	-1.0000	1.10000	1.10000
5 15	15	05/16/85	100	0	-1.0000	-1.0000	-1.00000	-1.00000
5 16	16	03/02/85	0	0	-1.0000	-1.0000	0.30000	0.40000
5 16	16	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000
5 17	17	02/23/85	0	0	-1.0000	-1.0000	0.10000	0.20000
5 17	17	03/02/85	0	0	0.3000	-1.0000	0.30000	0.30000
5 17	17	03/03/85	0	0	-1.0000	-1.0000	0.20000	0.30000
5 17	17	03/09/85	1	0	-1.0000	-1.0000	0.20000	0.30000
5 17	17	03/10/85	0	0	-1.0000	-1.0000	0.10000	0.20000
5 17	17	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.00000
5 17	17	03/17/85	0	0	-1.0000	-1.0000	0.10000	0.10000
5 17	17	03/23/85	0	0	-1.0000	-1.0000	0.10000	0.10000
5 17	17	03/31/85	5	0	-1.0000	-1.0000	0.20000	0.20000
5 17	17	04/06/85	0	0	-1.0000	-1.0000	0.20000	0.20000
5 17	17	04/07/85	0	0	-1.0000	-1.0000	0.10000	0.10000
5 17	17	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
5 18	18	03/02/85	0	0	-1.0000	-1.0000	0.00000	0.00000
5 18	18	03/23/85	0	0	-1.0000	-1.0000	0.00000	0.00000

TABLE LEGEND

POTHOLE LOCATION - SEE FIGURE I-1  
 POTHOLE NUMBER - SEE APPENDIX B MAPS  
 DATE OF OBSERVATION - SEE FIGURE D-2

POTHOLE LOCATION	POTHOLE NUMBER	DATE OF OBSERVATION	NUMBER OF TRAPPED FRY	NUMBER OF STRANDED FRY	DEPTH OF POTHOLE WHEN OBSERVED DISCONNECTED	DEPTH OF POTHOLE WHEN OBSERVED CONNECTED	MINIMUM DEPTH DURING OBSERVATION	MAXIMUM DEPTH DURING OBSERVATION
5 18	03/24/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
5 19	03/02/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
5 19	03/02/85	0	0	-1.0000	-1.0000	0.60000	1.60000	
5 19	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
5 19	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
5 19	04/07/85	0	0	-1.0000	-1.0000	0.00000	0.10000	
5 2	02/23/85	0	0	-1.0000	-1.0000	1.50000	1.60000	
5 2	03/02/85	0	0	-1.0000	-1.0000	1.70000	1.80000	
5 2	03/03/85	5	0	-1.0000	-1.0000	1.50000	1.80000	
5 2	03/09/85	14	0	-1.0000	-1.0000	1.50000	1.70000	
5 2	03/10/85	8	0	-1.0000	-1.0000	1.30000	1.70000	
5 2	03/16/85	17	0	-1.0000	-1.0000	1.00000	1.20000	
5 2	03/17/85	0	0	-1.0000	-1.0000	1.30000	1.40000	
5 2	03/23/85	8	0	-1.0000	-1.0000	1.30000	1.30000	
5 2	03/24/85	1	0	-1.0000	-1.0000	1.60000	1.70000	
5 2	03/30/85	6	0	-1.0000	-1.0000	1.60000	1.60000	
5 2	03/31/85	9	0	-1.0000	-1.0000	1.50000	1.50000	
5 2	04/06/85	14	0	-1.0000	-1.0000	1.40000	1.40000	
5 2	04/07/85	9	0	-1.0000	-1.0000	1.40000	1.40000	
5 2	05/15/85	80	0	-1.0000	-1.0000	1.30000	1.30000	
5 2	05/16/85	15	0	-1.0000	-1.0000	-1.00000	-1.00000	
5 3	02/23/85	0	0	-1.0000	-1.0000	0.80000	0.90000	
5 3	03/02/85	0	0	-1.0000	-1.0000	1.10000	1.10000	
5 3	03/03/85	0	0	-1.0000	-1.0000	0.90000	1.10000	
5 3	03/09/85	0	0	-1.0000	-1.0000	0.80000	1.00000	
5 3	03/10/85	0	0	-1.0000	-1.0000	0.60000	1.00000	
5 3	03/16/85	0	0	-1.0000	-1.0000	0.40000	0.60000	
5 3	03/17/85	0	0	-1.0000	-1.0000	0.70000	0.80000	
5 3	03/23/85	0	0	-1.0000	-1.0000	0.70000	0.70000	
5 3	03/24/85	0	0	-1.0000	-1.0000	1.10000	1.10000	
5 3	03/30/85	0	0	-1.0000	-1.0000	0.90000	1.00000	
5 3	03/31/85	0	0	-1.0000	-1.0000	0.90000	0.90000	
5 3	04/06/85	0	0	-1.0000	-1.0000	0.80000	0.80000	
5 3	04/07/85	0	0	-1.0000	-1.0000	0.80000	0.80000	
5 3	05/15/85	2	0	-1.0000	-1.0000	0.70000	0.70000	
5 3	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000	
5 4	02/23/85	0	0	-1.0000	-1.0000	0.40000	0.50000	
5 4	03/02/85	0	0	-1.0000	-1.0000	0.80000	0.80000	
5 4	03/03/85	0	0	-1.0000	-1.0000	0.50000	0.70000	
5 4	03/09/85	0	0	-1.0000	-1.0000	0.40000	0.50000	
5 4	03/10/85	1	0	-1.0000	-1.0000	0.30000	0.50000	
5 4	03/16/85	0	0	-1.0000	-1.0000	0.20000	0.40000	
5 4	03/17/85	0	0	-1.0000	-1.0000	0.50000	0.60000	
5 4	03/23/85	0	0	-1.0000	-1.0000	0.40000	0.40000	
5 4	03/24/85	0	0	-1.0000	-1.0000	0.70000	0.70000	
5 4	03/30/85	0	0	-1.0000	-1.0000	0.60000	0.70000	
5 4	03/31/85	0	0	-1.0000	-1.0000	0.50000	0.50000	
5 4	04/06/85	0	0	-1.0000	-1.0000	0.60000	0.60000	
5 4	04/07/85	0	0	-1.0000	-1.0000	0.60000	0.60000	

TABLE LEGEND

POTHOLE LOCATION - SEE FIGURE J-1  
POTHOLE NUMBER - SEE APPENDIX B MAPS  
DATE OF OBSERVATION - SEE FIGURE D-2

POTHOLE LOCATION	POTHOLE NUMBER	DATE OF OBSERVATION	NUMBER OF TRAPPED FRY	NUMBER OF STRANDED FRY	DEPTH OF POTHOLE WHEN OBSERVED DISCONNECTED	DEPTH OF POTHOLE WHEN OBSERVED CONNECTED	MINIMUM DEPTH DURING OBSERVATION	MAXIMUM DEPTH DURING OBSERVATION
5 4	4	05/15/85	0	1	-1.0000	-1.0000	0.60000	0.60000
5 4	4	05/16/85	1	0	-1.0000	-1.0000	-1.00000	-1.00000
5 5	5	03/02/85	0	0	-1.0000	-1.0000	1.80000	1.80000
5 5	5	03/03/85	2	0	-1.0000	-1.0000	1.40000	1.60000
5 5	5	03/09/85	6	0	-1.0000	-1.0000	1.30000	1.40000
5 5	5	03/10/85	5	0	-1.0000	-1.0000	1.30000	1.50000
5 5	5	03/16/85	3	0	-1.0000	-1.0000	1.10000	1.20000
5 5	5	03/17/85	3	0	-1.0000	-1.0000	1.40000	1.40000
5 5	5	03/23/85	3	0	-1.0000	-1.0000	1.20000	1.20000
5 5	5	03/24/85	2	0	-1.0000	-1.0000	1.60000	1.10000
5 5	5	03/30/85	1	0	-1.0000	-1.0000	1.50000	1.80000
5 5	5	03/31/85	2	0	-1.0000	-1.0000	1.40000	1.40000
5 5	5	04/06/85	3	0	-1.0000	-1.0000	1.50000	1.50000
5 5	5	04/07/85	3	0	-1.0000	-1.0000	1.50000	1.50000
5 5	5	05/15/85	2	0	-1.0000	-1.0000	1.60000	1.60000
5 5	5	05/16/85	6	0	-1.0000	-1.0000	-1.00000	-1.00000
5 6	6	02/23/85	0	0	-1.0000	-1.0000	0.40000	0.50000
5 6	6	03/02/85	0	0	-1.0000	-1.0000	0.90000	0.90000
5 6	6	03/03/85	0	0	-1.0000	-1.0000	0.50000	0.70000
5 6	6	03/09/85	1	0	-1.0000	-1.0000	0.40000	0.90000
5 6	6	03/10/85	0	0	-1.0000	-1.0000	0.40000	0.50000
5 6	6	03/16/85	0	0	-1.0000	-1.0000	0.20000	0.30000
5 6	6	03/17/85	0	0	-1.0000	-1.0000	0.50000	0.60000
5 6	6	03/23/85	0	0	-1.0000	-1.0000	0.30000	0.30000
5 6	6	03/24/85	0	0	-1.0000	-1.0000	0.70000	0.80000
5 6	6	03/30/85	0	0	-1.0000	-1.0000	0.60000	0.80000
5 6	6	03/31/85	0	0	-1.0000	-1.0000	0.50000	0.50000
5 6	6	04/06/85	0	0	-1.0000	-1.0000	0.60000	0.60000
5 6	6	04/07/85	0	0	-1.0000	-1.0000	0.60000	0.60000
5 6	6	05/15/85	6	0	-1.0000	-1.0000	0.70000	1.60000
5 6	6	05/16/85	2	0	-1.0000	-1.0000	-1.00000	-1.00000
5 7	7	03/16/85	0	0	-1.0000	-1.0000	0.90000	0.90000
5 7	7	03/30/85	0	0	-1.0000	-1.0000	1.30000	1.70000
5 7	7	03/31/85	0	0	-1.0000	-1.0000	1.10000	1.10000
5 7	7	05/15/85	30	0	-1.0000	-1.0000	1.40000	1.40000
5 8	8	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.00000
5 8	8	03/30/85	0	0	-1.0000	-1.0000	0.40000	0.80000
5 8	8	03/31/85	0	0	-1.0000	-1.0000	0.30000	0.30000
5 8	8	05/15/85	0	0	-1.0000	-1.0000	0.40000	0.60000
5 9	9	05/15/85	4	0	-1.0000	-1.0000	-1.00000	-1.00000
6 1	1	02/23/85	0	0	-1.0000	-1.0000	0.00000	0.00000
6 1	1	03/02/85	0	0	-1.0000	0.2000	0.10000	0.30000
6 1	1	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000
6 1	1	03/09/85	0	0	-1.0000	0.5000	0.00000	0.60000
6 1	1	03/10/85	0	1	-1.0000	-1.0000	0.00000	0.00000
6 1	1	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.00000
6 1	1	03/17/85	0	0	-1.0000	-1.0000	0.00000	0.00000
6 1	1	03/23/85	0	2	-1.0000	0.4000	0.00000	0.00000
6 1	1	03/24/85	0	5	-1.0000	-1.0000	0.00000	0.10000

TABLE LEGEND

POTHOLE LOCATION - SEE FIGURE 1-1  
POTHOLE NUMBER - SEE APPENDIX B MAPS  
DATE OF OBSERVATION - SEE FIGURE D-2

POTHOLE LOCATION	POTHOLE NUMBER	DATE OF OBSERVATION	NUMBER OF TRAPPED FRY	NUMBER OF STRANDED FRY	DEPTH OF POTHOLE WHEN OBSERVED DISCONNECTED	DEPTH OF POTHOLE WHEN OBSERVED CONNECTED	MINIMUM DEPTH DURING OBSERVATION	MAXIMUM DEPTH DURING OBSERVATION
6 1		03/30/85	0	0	-1.0000	0.5000	0.00000	0.10000
6 1		03/31/85	0	1	-1.0000	-1.0000	0.00000	0.00000
6 1		04/07/85	0	0	-1.0000	-1.0000	0.00000	0.00000
6 1		05/15/85	0	0	-1.0000	-1.0000	0.00000	0.00000
6 1		05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
6 10		03/02/85	0	0	-1.0000	-1.0000	1.80000	2.20000
6 10		03/09/85	60	17	0.7000	1.3000	0.70000	2.40000
6 10		03/10/85	200	2	0.7000	0.6000	0.60000	0.60000
6 10		03/16/85	150	0	-1.0000	0.6000	0.60000	0.60000
6 10		03/23/85	100	2	0.7000	0.7000	0.70000	0.70000
6 10		03/31/85	200	10	0.7000	-1.0000	0.70000	0.70000
6 10		05/15/85	250	0	-1.0000	-1.0000	0.70000	0.70000
6 11		03/09/85	0	32	-1.0000	0.6000	0.00000	0.60000
6 11		03/10/85	0	20	-1.0000	-1.0000	0.00000	0.30000
6 11		03/16/85	0	0	-1.0000	-1.0000	0.00000	0.20000
6 11		03/17/85	9	0	-1.0000	-1.0000	0.20000	0.30000
6 11		03/23/85	0	27	-1.0000	0.9000	0.00000	0.10000
6 11		03/24/85	4	0	0.3000	0.2000	0.20000	0.30000
6 11		03/30/85	5	0	0.2000	0.4000	0.20000	0.30000
6 11		03/31/85	0	25	-1.0000	-1.0000	0.00000	0.10000
6 11		04/06/85	25	0	-1.0000	0.5000	0.20000	0.20000
6 11		05/15/85	0	0	-1.0000	-1.0000	0.10000	0.10000
6 11		05/16/85	89	0	-1.0000	-1.0000	-1.00000	-1.00000
6 12		03/23/85	0	0	-1.0000	0.5000	0.10000	0.10000
6 13		03/24/85	0	0	-1.0000	0.1000	0.00000	0.00000
6 13		03/30/85	0	0	-1.0000	-1.0000	0.10000	0.10000
6 13		03/31/85	0	0	-1.0000	-1.0000	0.00000	0.10000
6 13		04/06/85	0	0	-1.0000	-1.0000	0.10000	0.20000
6 13		04/07/85	0	0	-1.0000	-1.0000	0.10000	0.20000
6 13		05/15/85	0	0	-1.0000	-1.0000	0.00000	0.00000
6 13A		03/09/85	100	0	-1.0000	0.9000	0.60000	0.90000
6 13A		03/10/85	31	0	-1.0000	0.6000	0.60000	0.60000
6 13A		03/23/85	50	0	-1.0000	0.7000	0.60000	0.90000
6 13A		05/15/85	0	0	1.4000	-1.0000	1.40000	1.40000
6 14		03/31/85	0	9	-1.0000	-1.0000	0.00000	0.10000
6 14		04/06/85	0	0	-1.0000	-1.0000	0.30000	0.30000
6 14		04/07/85	0	0	-1.0000	-1.0000	0.20000	0.30000
6 14		05/15/85	2	0	-1.0000	-1.0000	0.20000	0.20000
6 15		03/02/85	0	0	-1.0000	-1.0000	0.00000	0.00000
6 15		03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000
6 16		03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000
6 16		03/09/85	0	0	-1.0000	-1.0000	0.00000	0.00000
6 16		03/10/85	0	0	-1.0000	-1.0000	0.00000	0.00000
6 16		03/30/85	0	0	-1.0000	-1.0000	0.00000	0.00000
6 16		03/31/85	0	0	-1.0000	-1.0000	0.00000	0.00000
6 16		04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000
6 16		04/07/85	0	0	-1.0000	-1.0000	0.00000	0.00000
6 16		05/15/85	0	0	-1.0000	-1.0000	0.00000	0.00000
6 16		05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000

TABLE LEGEND

POTHOLE LOCATION - SEE FIGURE I-1  
POTHOLE NUMBER - SEE APPENDIX B MAPS  
DATE OF OBSERVATION - SEE FIGURE D-2



POTHOLE LOCATION	POTHOLE NUMBER	DATE OF OBSERVATION	NUMBER OF TRAPPED FRY	NUMBER OF STRANDED FRY	DEPTH OF POTHOLE WHEN OBSERVED DISCONNECTED	DEPTH OF POTHOLE WHEN OBSERVED CONNECTED	MINIMUM DEPTH DURING OBSERVATION	MAXIMUM DEPTH DURING OBSERVATION
6 17	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
6 17	03/17/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
6 17	05/15/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
6 19	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
6 2	03/02/85	0	0	-1.0000	-1.0000	0.50000	0.50000	
6 2	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
6 2	03/23/85	0	0	-1.0000	0.8000	0.00000	0.00000	
6 2	03/24/85	0	0	-1.0000	-1.0000	0.10000	0.30000	
6 2	05/15/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
6 2	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000	
6 20	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
6 20	04/07/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
6 3	02/23/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
6 3	03/02/85	0	0	-1.0000	-1.0000	0.30000	0.50000	
6 3	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.20000	
6 3	03/09/85	0	0	-1.0000	0.3000	0.00000	0.30000	
6 3	03/10/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
6 3	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
6 3	03/17/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
6 3	03/23/85	0	0	-1.0000	-1.0000	0.00000	0.10000	
6 3	03/24/85	0	0	-1.0000	-1.0000	0.10000	0.40000	
6 3	03/30/85	0	0	-1.0000	-1.0000	0.20000	0.40000	
6 3	03/31/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
6 3	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.10000	
6 3	04/07/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
6 3	05/15/85	0	0	-1.0000	-1.0000	0.00000	0.40000	
6 3	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000	
6 4	03/02/85	0	0	-1.0000	-1.0000	0.80000	1.00000	
6 4	03/03/85	2	0	0.7000	-1.0000	0.50000	0.70000	
6 4	03/16/85	0	0	-1.0000	-1.0000	0.10000	0.40000	
6 4	03/17/85	1	0	-1.0000	-1.0000	0.70000	0.70000	
6 4	03/30/85	0	0	-1.0000	0.8000	0.10000	0.30000	
6 4	03/31/85	0	0	-1.0000	-1.0000	0.50000	0.70000	
6 4	04/06/85	15	0	0.7000	0.7000	0.70000	0.70000	
6 4	04/07/85	2	0	-1.0000	0.7000	0.70000	0.70000	
6 4	05/15/85	5	0	-1.0000	0.7000	0.50000	0.70000	
6 4	05/16/85	4	0	-1.0000	-1.0000	-1.00000	-1.00000	
6 5	02/23/85	0	0	-1.0000	-1.0000	1.70000	4.00000	
6 5	03/02/85	0	0	-1.0000	-1.0000	0.90000	1.00000	
6 5	03/03/85	0	0	-1.0000	-1.0000	0.30000	0.70000	
6 5	03/09/85	0	0	-1.0000	-1.0000	0.20000	0.70000	
6 5	03/09/85	0	0	-1.0000	-1.0000	0.20000	0.70000	
6 5	03/10/85	0	0	-1.0000	-1.0000	0.20000	0.50000	
6 5	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.10000	
6 5	03/17/85	0	0	-1.0000	-1.0000	0.30000	0.40000	
6 5	03/23/85	0	0	-1.0000	-1.0000	0.20000	0.60000	
6 5	03/24/85	0	0	-1.0000	-1.0000	0.60000	1.00000	
6 5	03/30/85	0	0	-1.0000	-1.0000	0.60000	0.90000	
6 5	03/31/85	0	0	-1.0000	-1.0000	0.40000	0.70000	

TABLE LEGEND

POTHOLE LOCATION - SEE FIGURE I-1  
POTHOLE NUMBER - SEE APPENDIX B MAPS  
DATE OF OBSERVATION - SEE FIGURE D-2

POTHOLE LOCATION	POTHOLE NUMBER	DATE OF OBSERVATION	NUMBER OF TRAPPED FRY	NUMBER OF STRANDED FRY	DEPTH OF POTHOLE WHEN OBSERVED DISCONNECTED	DEPTH OF POTHOLE WHEN OBSERVED CONNECTED	MINIMUM DEPTH DURING OBSERVATION	MAXIMUM DEPTH DURING OBSERVATION
6 5	04/06/85	2	0	-1.0000	-1.0000	0.40000	0.50000	
6 5	04/07/85	2	0	-1.0000	-1.0000	0.40000	0.50000	
6 5	05/15/85	0	0	-1.0000	-1.0000	0.10000	0.10000	
6 5	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000	
6 5A	02/23/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
6 5A	03/02/85	0	0	-1.0000	-1.0000	0.20000	0.30000	
6 5A	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
6 5A	03/09/85	0	0	-1.0000	-1.0000	0.00000	0.10000	
6 5A	03/10/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
6 5A	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
6 5A	03/17/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
6 5A	03/23/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
6 5A	03/24/85	0	0	-1.0000	-1.0000	0.00000	0.40000	
6 5A	03/30/85	0	0	-1.0000	-1.0000	0.10000	0.30000	
6 5A	03/31/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
6 5A	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
6 5A	04/07/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
6 5A	05/15/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
6 5A	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000	
6 5B	05/15/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
6 5B	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000	
6 6	03/02/85	0	0	-1.0000	-1.0000	0.80000	0.80000	
6 6	03/03/85	0	0	-1.0000	-1.0000	0.40000	0.70000	
6 6	03/09/85	0	0	-1.0000	-1.0000	0.30000	0.70000	
6 6	03/10/85	0	0	-1.0000	-1.0000	0.20000	0.60000	
6 6	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.10000	
6 6	03/17/85	0	0	-1.0000	-1.0000	0.30000	0.60000	
6 6	04/06/85	15	0	-1.0000	-1.0000	0.40000	0.60000	
6 6	04/06/85	15	0	-1.0000	-1.0000	0.40000	0.60000	
6 6	04/07/85	16	0	-1.0000	-1.0000	0.40000	0.60000	
6 6	05/15/85	0	0	-1.0000	-1.0000	0.30000	0.30000	
6 6	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000	
6 7	03/02/85	0	0	-1.0000	-1.0000	0.30000	0.50000	
6 7	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.20000	
6 7	03/09/85	0	0	-1.0000	-1.0000	0.00000	0.70000	
6 7	03/10/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
6 7	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
6 7	03/17/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
6 7	03/23/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
6 7	03/24/85	0	0	-1.0000	-1.0000	0.10000	0.40000	
6 7	03/31/85	0	0	-1.0000	-1.0000	0.00000	0.10000	
6 7	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
6 7	04/07/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
6 7	05/15/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
6 7	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000	
6 8	03/02/85	0	0	-1.0000	-1.0000	0.70000	0.70000	
6 8	03/03/85	0	0	-1.0000	-1.0000	0.50000	0.50000	
6 8	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.10000	
6 8	04/06/85	0	0	-1.0000	-1.0000	0.40000	0.50000	

TABLE LEGEND

POTHOLE LOCATION - SEE FIGURE I-1  
POTHOLE NUMBER - SEE APPENDIX B MAPS  
DATE OF OBSERVATION - SEE FIGURE D-2

POTHOLE LOCATION	POTHOLE NUMBER	DATE OF OBSERVATION	NUMBER OF TRAPPED FRY	NUMBER OF STRANDED FRY	DEPTH OF POTHOLE WHEN OBSERVED DISCONNECTED	DEPTH OF POTHOLE WHEN OBSERVED CONNECTED	MINIMUM DEPTH DURING OBSERVATION	MAXIMUM DEPTH DURING OBSERVATION
6 B	04/07/85	0	0	-1.0000	-1.0000	0.40000	0.40000	
6 B	05/15/85	0	0	-1.0000	-1.0000	0.20000	0.40000	
6 B	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000	
6 BA	03/03/85	0	0	-1.0000	-1.0000	0.60000	0.60000	
6 BA	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.10000	
6 BA	05/15/85	0	0	-1.0000	-1.0000	0.20000	0.30000	
6 BA	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000	
6 9	03/02/85	0	0	-1.0000	-1.0000	1.40000	1.40000	
6 9	03/09/85	0	3	-1.0000	0.4000	0.40000	0.40000	
6 9	03/10/85	0	1	0.4000	0.5000	0.40000	0.40000	
6 9	03/16/85	0	0	-1.0000	0.6000	0.30000	0.60000	
6 9	03/23/85	1	3	0.4000	0.4000	0.40000	0.40000	
6 9	05/15/85	0	0	0.3000	-1.0000	0.30000	1.60000	
7 1	03/03/85	0	0	-1.0000	-1.0000	1.10000	1.10000	
7 1	03/09/85	0	0	-1.0000	-1.0000	0.90000	0.90000	
7 1	03/17/85	0	0	-1.0000	-1.0000	0.90000	0.90000	
7 1	03/23/85	0	0	-1.0000	-1.0000	0.80000	1.00000	
7 1	03/24/85	0	0	-1.0000	-1.0000	1.10000	1.20000	
7 1	03/30/85	0	0	-1.0000	-1.0000	1.00000	1.00000	
7 1	04/06/85	0	0	-1.0000	-1.0000	1.00000	1.00000	
7 1	05/15/85	0	0	-1.0000	-1.0000	0.80000	0.90000	
7 1	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000	
7 10	03/23/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
7 10	03/24/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
7 10	03/30/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
7 10	03/31/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
7 10	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
7 10	04/07/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
7 10	05/15/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
7 10	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000	
7 11	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
7 11	03/10/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
7 11	03/30/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
7 11	03/31/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
7 11	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
7 11	05/15/85	0	0	-1.0000	-1.0000	0.00000	0.00000	
7 11	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000	
7 2	03/02/85	0	0	-1.0000	-1.0000	1.30000	1.30000	
7 2	03/03/85	0	0	-1.0000	-1.0000	0.70000	0.90000	
7 2	03/09/85	0	0	-1.0000	-1.0000	0.60000	0.80000	
7 2	03/10/85	0	0	-1.0000	-1.0000	0.60000	0.80000	
7 2	03/16/85	0	0	-1.0000	-1.0000	0.30000	0.40000	
7 2	03/17/85	0	0	-1.0000	-1.0000	0.60000	0.70000	
7 2	03/23/85	0	0	-1.0000	-1.0000	0.50000	0.70000	
7 2	03/24/85	0	0	-1.0000	-1.0000	0.80000	1.00000	
7 2	03/30/85	0	0	-1.0000	-1.0000	0.90000	1.10000	
7 2	03/31/85	0	0	-1.0000	-1.0000	0.70000	0.90000	
7 2	04/06/85	0	0	-1.0000	-1.0000	0.80000	0.80000	
7 2	04/07/85	0	0	-1.0000	-1.0000	0.80000	0.80000	

TABLE LEGEND

POTHOLE LOCATION - SEE FIGURE I-1  
POTHOLE NUMBER - SEE APPENDIX B MAPS  
DATE OF OBSERVATION - SEE FIGURE D-2

POTHOLE LOCATION	POTHOLE NUMBER	DATE OF OBSERVATION	NUMBER OF TRAPPED FRY	NUMBER OF STRANDED FRY	DEPTH OF POTHOLE WHEN OBSERVED DISCONNECTED	DEPTH OF POTHOLE WHEN OBSERVED CONNECTED	MINIMUM DEPTH DURING OBSERVATION	MAXIMUM DEPTH DURING OBSERVATION
7 2		05/15/85	10	0	-1.0000	-1.0000	0.60000	0.60000
7 2		05/16/85	20	0	-1.0000	-1.0000	-1.00000	-1.00000
7 3		03/09/85	0	0	-1.0000	-1.0000	0.00000	0.00000
7 3		03/16/85	0	0	-1.0000	-1.0000	0.00000	0.00000
7 3		03/17/85	0	0	-1.0000	-1.0000	0.00000	0.00000
7 3		03/23/85	0	0	-1.0000	-1.0000	0.00000	0.00000
7 3		03/24/85	0	0	-1.0000	-1.0000	0.00000	0.00000
7 3		03/30/85	0	0	-1.0000	-1.0000	0.00000	0.00000
7 3		03/31/85	0	0	-1.0000	-1.0000	0.00000	0.00000
7 3		04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000
7 3		05/15/85	0	0	-1.0000	-1.0000	0.00000	0.00000
7 3		05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
7 4		03/16/85	0	0	-1.0000	-1.0000	0.00000	0.00000
7 4		03/17/85	0	0	-1.0000	-1.0000	0.00000	0.00000
7 4		03/30/85	0	0	-1.0000	-1.0000	0.00000	0.00000
7 4		04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000
7 4		05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
7 5		03/02/85	0	0	-1.0000	-1.0000	1.50000	1.50000
7 5		03/03/85	0	0	-1.0000	-1.0000	1.30000	1.30000
7 5		03/09/85	0	0	-1.0000	-1.0000	0.90000	1.20000
7 5		03/10/85	0	0	-1.0000	-1.0000	0.80000	1.10000
7 5		03/16/85	0	0	-1.0000	-1.0000	0.60000	0.70000
7 5		03/17/85	0	0	-1.0000	-1.0000	0.90000	1.00000
7 5		03/23/85	0	0	-1.0000	-1.0000	0.80000	1.10000
7 5		03/24/85	0	0	-1.0000	-1.0000	1.20000	1.40000
7 5		03/30/85	0	0	-1.0000	-1.0000	1.20000	1.30000
7 5		03/31/85	0	0	-1.0000	-1.0000	1.10000	1.30000
7 5		04/06/85	0	0	-1.0000	-1.0000	1.10000	1.20000
7 5		04/07/85	0	0	-1.0000	-1.0000	1.10000	1.20000
7 5		05/15/85	0	0	-1.0000	-1.0000	0.90000	0.90000
7 5		05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
7 6		03/02/85	0	0	-1.0000	-1.0000	0.30000	0.30000
7 6		03/03/85	0	0	-1.0000	-1.0000	0.20000	0.20000
7 6		03/09/85	0	0	-1.0000	0.3000	0.20000	0.30000
7 6		03/10/85	0	0	-1.0000	0.2000	0.20000	0.20000
7 6		03/16/85	0	0	-1.0000	-1.0000	0.00000	0.10000
7 6		03/17/85	0	0	-1.0000	0.2000	0.20000	0.30000
7 6		03/23/85	0	0	-1.0000	0.4000	0.20000	0.20000
7 6		03/31/85	0	0	-1.0000	-1.0000	0.20000	0.30000
7 6		05/15/85	0	0	-1.0000	-1.0000	0.20000	0.30000
7 7		03/03/85	0	0	-1.0000	-1.0000	0.30000	0.40000
7 7		03/09/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
7 7		03/10/85	0	0	-1.0000	0.3000	0.20000	0.40000
7 7		03/16/85	5	0	-1.0000	0.9000	-1.00000	-1.00000
7 7		03/17/85	0	0	0.8000	-1.0000	0.80000	0.80000
7 7		03/23/85	3	2	0.7000	0.9000	0.70000	0.80000
7 7		03/31/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
7 7		04/06/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
7 7		04/07/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000

TABLE LEGEND

POTHOLE LOCATION - SEE FIGURE I-1  
POTHOLE NUMBER - SEE APPENDIX B MAPS  
DATE OF OBSERVATION - SEE FIGURE D-2

POTHOLE LOCATION	POTHOLE NUMBER	DATE OF OBSERVATION	NUMBER OF TRAPPED FRY	NUMBER OF STRANDED FRY	DEPTH OF POTHOLE WHEN OBSERVED DISCONNECTED	DEPTH OF POTHOLE WHEN OBSERVED CONNECTED	MINIMUM DEPTH DURING OBSERVATION	MAXIMUM DEPTH DURING OBSERVATION
7 7		05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
7 8		03/02/85	0	0	-1.0000	-1.0000	0.00000	0.00000
7 8		03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000
7 8		03/09/85	0	0	-1.0000	-1.0000	0.00000	0.00000
7 8		03/10/85	0	0	-1.0000	-1.0000	0.00000	0.00000
7 8		03/16/85	0	0	-1.0000	-1.0000	0.00000	0.00000
7 8		03/17/85	0	0	-1.0000	-1.0000	0.00000	0.00000
7 8		03/23/85	0	0	-1.0000	-1.0000	0.00000	0.00000
7 8		03/24/85	0	0	-1.0000	-1.0000	0.00000	0.00000
7 8		03/30/85	0	0	-1.0000	-1.0000	0.00000	0.00000
7 8		03/31/85	0	0	-1.0000	-1.0000	0.00000	0.00000
7 8		04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000
7 8		04/07/85	0	0	-1.0000	-1.0000	0.00000	0.00000
7 8		05/15/85	0	0	-1.0000	-1.0000	0.00000	0.00000
7 8		05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
7 9		03/09/85	0	0	-1.0000	-1.0000	0.00000	0.00000
7 9		03/17/85	0	0	-1.0000	-1.0000	0.00000	0.00000
7 9		03/23/85	0	0	-1.0000	-1.0000	0.00000	0.00000
7 9		03/24/85	0	0	-1.0000	-1.0000	0.00000	0.00000
7 9		04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000
7 9		04/07/85	0	0	-1.0000	-1.0000	0.00000	0.00000
7 9		05/15/85	0	0	-1.0000	-1.0000	0.00000	0.00000
7 9		05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
7 X		03/16/85	5	42	-1.0000	0.2000	0.10000	0.20000
7 X		03/17/85	0	0	-1.0000	-1.0000	0.70000	0.70000
7 X		03/23/85	0	0	-1.0000	0.3000	0.10000	0.20000
7 Y		03/16/85	0	7	-1.0000	-1.0000	0.00000	0.30000
7 Y		03/31/85	1	0	-1.0000	-1.0000	0.20000	0.20000
7 Z		03/31/85	0	14	-1.0000	-1.0000	0.00000	0.00000
8 1		03/17/85	0	0	-1.0000	-1.0000	0.00000	0.00000
8 2		03/17/85	0	0	-1.0000	-1.0000	0.00000	0.00000
8 3		03/17/85	0	0	-1.0000	-1.0000	0.00000	0.00000
8 4		03/17/85	0	0	-1.0000	-1.0000	0.00000	0.00000
8 7		03/17/85	0	0	-1.0000	-1.0000	0.00000	0.00000
8 8		03/17/85	0	0	-1.0000	-1.0000	0.00000	0.00000
10 1		03/09/85	0	0	-1.0000	0.2000	0.00000	0.20000
10 1		03/10/85	0	0	-1.0000	-1.0000	0.00000	0.00000
10 1		03/16/85	0	0	-1.0000	-1.0000	0.00000	0.00000
10 1		03/17/85	0	0	-1.0000	-1.0000	0.70000	0.70000
10 1		03/23/85	0	0	-1.0000	-1.0000	0.60000	1.30000
10 1		04/07/85	12	0	-1.0000	-1.0000	0.90000	0.90000
10 1		05/15/85	15	0	-1.0000	0.7000	0.60000	0.70000
10 10		03/03/85	0	0	-1.0000	-1.0000	1.70000	1.70000
10 10		03/30/85	0	0	-1.0000	1.7000	1.70000	1.70000
10 10		03/31/85	0	0	-1.0000	-1.0000	1.50000	1.50000
10 10		04/06/85	40	0	-1.0000	1.7000	1.70000	1.90000
10 12		03/03/85	0	0	-1.0000	-1.0000	1.10000	1.10000
10 12		05/15/85	3	0	-1.0000	1.5000	1.00000	1.50000
10 12		05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000

TABLE LEGEND

POTHOLE LOCATION - SEE FIGURE I-1  
POTHOLE NUMBER - SEE APPENDIX B MAPS  
DATE OF OBSERVATION - SEE FIGURE D-2

POTHOLE LOCATION	POTHOLE NUMBER	DATE OF OBSERVATION	NUMBER OF TRAPPED FRY	NUMBER OF STRANDED FRY	DEPTH OF POTHOLE WHEN OBSERVED DISCONNECTED	DEPTH OF POTHOLE WHEN OBSERVED CONNECTED	MINIMUM DEPTH DURING OBSERVATION	MAXIMUM DEPTH DURING OBSERVATION
10 13	13	03/03/85	0	0	0.8000	-1.0000	0.80000	0.80000
10 13	13	03/03/85	0	0	-1.0000	0.5000	0.50000	0.50000
10 13	13	03/09/85	3	0	-1.0000	1.1000	0.20000	1.10000
10 13	13	03/10/85	0	0	-1.0000	0.7000	0.40000	0.70000
10 13	13	03/16/85	6	0	-1.0000	0.6000	0.20000	0.30000
10 13	13	03/17/85	0	0	-1.0000	-1.0000	0.10000	0.10000
10 13	13	03/31/85	8	0	-1.0000	-1.0000	0.50000	0.50000
10 14	14	03/03/85	0	0	-1.0000	0.5000	0.50000	0.50000
10 14	14	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000
10 14	14	03/09/85	15	1	-1.0000	1.0000	0.30000	1.00000
10 14	14	03/10/85	1	0	-1.0000	0.6000	0.30000	0.60000
10 14	14	03/16/85	4	4	-1.0000	0.5000	0.00000	0.10000
10 14	14	03/17/85	0	0	0.8000	-1.0000	0.80000	0.80000
10 14	14	03/31/85	10	0	-1.0000	-1.0000	0.40000	0.40000
10 15	15	03/03/85	9	0	-1.0000	-1.0000	1.30000	1.30000
10 15	15	03/03/85	1	0	-1.0000	-1.0000	1.30000	1.30000
10 15	15	03/09/85	59	0	-1.0000	2.0000	2.00000	2.00000
10 15	15	03/10/85	1	0	-1.0000	-1.0000	2.20000	2.20000
10 15	15	03/16/85	70	0	-1.0000	1.9000	1.70000	1.90000
10 15	15	03/17/85	70	0	-1.0000	-1.0000	2.20000	2.20000
10 15	15	03/23/85	0	0	-1.0000	-1.0000	2.00000	2.80000
10 15	15	03/24/85	70	0	-1.0000	-1.0000	2.30000	2.30000
10 15	15	03/30/85	0	0	-1.0000	-1.0000	2.30000	2.30000
10 15	15	03/31/85	50	0	-1.0000	-1.0000	1.80000	1.80000
10 15	15	04/06/85	1000	0	-1.0000	-1.0000	2.20000	2.20000
10 15	15	04/07/85	208	0	-1.0000	-1.0000	2.20000	2.20000
10 15	15	05/15/85	50	0	-1.0000	2.3000	2.20000	2.30000
10 15	15	05/16/85	150	0	-1.0000	-1.0000	-1.00000	-1.00000
10 16	16	03/03/85	0	0	-1.0000	-1.0000	0.30000	0.30000
10 16	16	03/10/85	0	0	-1.0000	-1.0000	0.00000	0.00000
10 16	16	03/23/85	0	0	-1.0000	-1.0000	0.00000	0.00000
10 16	16	03/31/85	1	1	-1.0000	-1.0000	0.20000	0.20000
10 16	16	05/15/85	0	2	-1.0000	-1.0000	0.00000	0.10000
10 16	16	05/16/85	1	0	-1.0000	-1.0000	-1.00000	-1.00000
10 17	17	03/03/85	0	0	0.5000	-1.0000	0.50000	0.50000
10 17	17	03/03/85	0	0	0.5000	-1.0000	0.50000	0.50000
10 17	17	03/23/85	0	0	-1.0000	-1.0000	0.80000	1.50000
10 2	2	03/03/85	0	0	-1.0000	-1.0000	1.10000	1.10000
10 26	26	03/03/85	0	0	-1.0000	-1.0000	0.60000	0.60000
10 27	27	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000
10 3	3	03/03/85	0	0	-1.0000	-1.0000	0.80000	0.80000
10 3	3	03/03/85	0	0	-1.0000	0.8000	0.80000	0.80000
10 4	4	03/03/85	0	0	-1.0000	-1.0000	1.70000	1.70000
10 4	4	03/03/85	0	0	-1.0000	-1.0000	1.80000	1.80000
10 4	4	03/17/85	0	0	-1.0000	-1.0000	1.80000	1.80000
10 4	4	05/15/85	15	0	-1.0000	-1.0000	1.48000	1.40000
10 4	4	05/16/85	20	0	-1.0000	-1.0000	-1.00000	-1.00000
10 5	5	03/03/85	0	0	-1.0000	-1.0000	1.80000	1.80000
10 5	5	03/03/85	0	0	-1.0000	-1.0000	1.70000	1.70000

TABLE LEGEND

POTHOLE LOCATION - SEE FIGURE I-1  
POTHOLE NUMBER - SEE APPENDIX B MAPS  
DATE OF OBSERVATION - SEE FIGURE D-2

POTHOLE LOCATION	POTHOLE NUMBER	DATE OF OBSERVATION	NUMBER OF TRAPPED FRY	NUMBER OF STRANDED FRY	DEPTH OF POTHOLE WHEN OBSERVED DISCONNECTED	DEPTH OF POTHOLE WHEN OBSERVED CONNECTED	MINIMUM DEPTH DURING OBSERVATION	MAXIMUM DEPTH DURING OBSERVATION
10	6	03/03/85	0	0	-1.0000	-1.0000	1.00000	1.00000
10	6	03/03/85	0	0	-1.0000	-1.0000	1.10000	1.10000
10	7	03/03/85	0	0	-1.0000	-1.0000	0.70000	0.70000
10	8	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000
10	8	04/07/85	0	0	-1.0000	-1.0000	1.30000	1.30000
10	9	03/03/85	0	0	-1.0000	-1.0000	0.60000	0.60000
10	9	03/23/85	0	0	-1.0000	-1.0000	0.70000	1.10000
10	9	03/24/85	0	0	-1.0000	-1.0000	0.10000	0.10000
10	A	03/10/85	0	1	-1.0000	0.5000	0.30000	0.50000
10	A	03/16/85	0	0	-1.0000	1.0000	0.30000	0.30000
10	A	03/23/85	0	0	-1.0000	-1.0000	0.30000	1.40000
10	A	03/24/85	3	0	-1.0000	-1.0000	0.30000	0.30000
10	A	05/15/85	0	0	-1.0000	-1.0000	0.70000	0.70000
10	B	03/03/85	0	0	-1.0000	-1.0000	1.20000	1.20000
10	B	03/09/85	0	0	-1.0000	1.5000	0.90000	1.50000
10	B	03/23/85	0	0	-1.0000	-1.0000	1.10000	1.70000
10	C	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000
10	D	03/23/85	0	0	-1.0000	-1.0000	1.40000	1.80000
10	D	03/23/85	0	0	-1.0000	-1.0000	1.40000	1.80000
10	E	03/23/85	0	0	-1.0000	-1.0000	1.00000	1.40000
10	E	05/15/85	50	0	-1.0000	0.3000	0.40000	0.30000
10	F	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000
10	F	03/09/85	0	3	-1.0000	0.5000	0.00000	0.50000
10	F	03/10/85	0	1	-1.0000	-1.0000	0.00000	0.00000
10	F	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.00000
10	F	03/17/85	0	0	-1.0000	-1.0000	0.00000	0.00000
10	F	03/30/85	0	0	-1.0000	-1.0000	0.00000	0.00000
10	F	05/15/85	0	0	-1.0000	-1.0000	0.00000	0.00000
10	G	03/03/85	0	0	0.7000	-1.0000	0.70000	0.70000
10	G	03/09/85	0	0	-1.0000	1.1000	0.50000	1.10000
10	G	03/10/85	1	0	-1.0000	0.7000	0.50000	0.70000
10	G	03/16/85	1	0	-1.0000	1.0000	0.40000	0.60000
10	G	03/31/85	0	0	-1.0000	-1.0000	0.70000	0.70000
10	G	05/15/85	6	0	-1.0000	0.9000	0.60000	0.90000
10	H	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000
10	H	05/15/85	0	0	-1.0000	-1.0000	0.30000	0.50000
10	H	05/16/85	1	0	-1.0000	-1.0000	-1.00000	-1.00000
10	I	05/15/85	0	0	-1.0000	-1.0000	0.50000	0.50000
10	J	03/16/85	0	5	-1.0000	-1.0000	0.70000	0.70000
11	10	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000
11	10	04/07/85	0	0	-1.0000	-1.0000	0.00000	0.00000
11	A	03/09/85	18	0	-1.0000	-1.0000	0.60000	0.60000
11	A	03/10/85	19	0	-1.0000	-1.0000	0.60000	0.60000
11	A	03/16/85	0	0	-1.0000	-1.0000	0.80000	0.80000
11	A	04/06/85	30	0	-1.0000	1.1000	1.00000	1.10000
11	A	04/07/85	30	0	-1.0000	-1.0000	0.80000	0.80000
11	B	03/16/85	150	0	-1.0000	-1.0000	2.30000	2.30000
11	B	03/17/85	150	0	-1.0000	-1.0000	2.70000	2.70000
11	B	04/06/85	64	0	-1.0000	2.5000	1.30000	1.30000

TABLE LEGEND

POTHOLE LOCATION - SEE FIGURE I-1  
POTHOLE NUMBER - SEE APPENDIX B MAPS  
DATE OF OBSERVATION - SEE FIGURE D-2

POTHOLE LOCATION	POTHOLE NUMBER	DATE OF OBSERVATION	NUMBER OF TRAPPED FRY	NUMBER OF STRANDED FRY	DEPTH OF POTHOLE WHEN OBSERVED DISCONNECTED	DEPTH OF POTHOLE WHEN OBSERVED CONNECTED	MINIMUM DEPTH DURING OBSERVATION	MAXIMUM DEPTH DURING OBSERVATION
11	B	04/07/85	64	0	-1.0000	-1.0000	2.60000	2.60000
12	10	03/09/85	0	0	-1.0000	-1.0000	0.00000	0.00000
12	10	03/10/85	0	0	-1.0000	-1.0000	0.00000	0.00000
12	10	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.00000
12	10	03/17/85	0	0	-1.0000	-1.0000	0.10000	0.20000
12	10	03/23/85	0	0	-1.0000	0.6000	0.00000	0.60000
12	10	03/24/85	0	0	-1.0000	-1.0000	0.20000	0.30000
12	10	03/30/85	0	0	-1.0000	-1.0000	0.30000	0.00000
12	10	03/31/85	0	0	-1.0000	-1.0000	0.00000	0.00000
12	10	04/06/85	0	0	-1.0000	-1.0000	0.50000	0.50000
12	10	04/07/85	0	0	-1.0000	-1.0000	0.30000	0.30000
12	10	05/15/85	0	0	-1.0000	-1.0000	0.00000	0.00000
12	11	03/16/85	20	0	-1.0000	1.5000	1.30000	1.50000
12	11	03/23/85	1	0	-1.0000	1.2000	1.10000	1.70000
12	11	03/31/85	50	0	-1.0000	-1.0000	1.20000	1.20000
12	11	05/15/85	0	0	-1.0000	-1.0000	1.40000	1.40000
12	11	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
12	12	03/31/85	0	0	-1.0000	-1.0000	0.00000	0.00000
12	12	04/07/85	0	0	-1.0000	-1.0000	0.00000	0.00000
12	13	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000
12	14	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000
12	16	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000
12	1A	03/31/85	100	0	-1.0000	-1.0000	0.80000	0.80000
12	1B	03/16/85	108	0	1.2000	1.2000	1.20000	1.20000
12	1B	03/31/85	15	0	-1.0000	-1.0000	1.80000	1.80000
12	1C	03/10/85	0	0	-1.0000	-1.0000	1.60000	1.60000
12	1C	03/16/85	20	0	1.3000	1.3000	1.20000	1.30000
12	1C	03/31/85	0	0	-1.0000	-1.0000	1.90000	1.90000
12	1D	03/09/85	0	0	-1.0000	1.0000	0.00000	1.20000
12	1D	03/10/85	0	0	-1.0000	0.3000	0.00000	0.30000
12	1D	03/16/85	0	0	-1.0000	0.4000	0.00000	0.40000
12	1D	03/17/85	0	2	-1.0000	-1.0000	0.10000	0.00000
12	1D	03/23/85	0	0	-1.0000	0.3000	0.00000	0.90000
12	1D	03/24/85	1	0	-1.0000	-1.0000	0.10000	0.20000
12	1D	03/30/85	0	0	-1.0000	-1.0000	0.10000	0.30000
12	1D	03/31/85	0	0	-1.0000	-1.0000	0.00000	0.00000
12	1D	04/07/85	0	3	-1.0000	-1.0000	0.00000	0.20000
12	1D	05/15/85	0	0	-1.0000	-1.0000	0.00000	0.00000
12	1E	03/09/85	23	0	-1.0000	-1.0000	1.80000	2.20000
12	1E	03/10/85	41	0	-1.0000	-1.0000	0.70000	0.80000
12	1E	03/16/85	58	0	-1.0000	1.8000	1.60000	1.80000
12	1E	03/17/85	59	1	-1.0000	-1.0000	1.90000	2.00000
12	1E	03/23/85	3	0	-1.0000	1.8000	1.70000	2.00000
12	1E	03/24/85	10	0	-1.0000	-1.0000	2.20000	2.10000
12	1E	03/30/85	21	0	-1.0000	-1.0000	2.00000	2.10000
12	1E	03/31/85	30	0	-1.0000	-1.0000	1.90000	1.90000
12	1E	04/07/85	50	0	-1.0000	-1.0000	2.00000	2.00000
12	1E	05/15/85	75	0	-1.0000	-1.0000	1.70000	1.70000
12	5	03/10/85	0	8	-1.0000	-1.0000	0.10000	0.10000

TABLE LEGEND

POTHOLE LOCATION - SEE FIGURE 1-1  
POTHOLE NUMBER - SEE APPENDIX B MAPS  
DATE OF OBSERVATION - SEE FIGURE D-2



POTHOLE LOCATION	POTHOLE NUMBER	DATE OF OBSERVATION	NUMBER OF TRAPPED FRY	NUMBER OF STRANDED FRY	DEPTH OF POTHOLE WHEN OBSERVED DISCONNECTED	DEPTH OF POTHOLE WHEN OBSERVED CONNECTED	MINIMUM DEPTH DURING OBSERVATION	MAXIMUM DEPTH DURING OBSERVATION
12	5	03/16/85	0	1	-1.0000	-1.0000	0.10000	0.10000
12	5	03/17/85	0	0	-1.0000	-1.0000	0.20000	0.20000
12	5	03/31/85	10	0	-1.0000	-1.0000	0.20000	0.20000
12	5	04/07/85	10	0	-1.0000	-1.0000	0.20000	0.20000
12	6	03/02/85	0	0	-1.0000	-1.0000	0.80000	0.90000
12	6	03/30/85	0	0	-1.0000	-1.0000	0.70000	0.70000
12	6	03/31/85	0	0	-1.0000	-1.0000	0.70000	0.70000
12	6	05/15/85	15	0	-1.0000	-1.0000	0.10000	0.70000
12	6	05/16/85	6	0	-1.0000	-1.0000	-1.00000	-1.00000
12	8	03/02/85	0	0	-1.0000	-1.0000	0.20000	0.40000
12	8	03/30/85	0	0	-1.0000	-1.0000	0.00000	0.00000
12	8	03/31/85	0	0	-1.0000	-1.0000	0.00000	0.00000
12	8	04/07/85	0	0	-1.0000	-1.0000	0.00000	0.00000
12	A	03/10/85	50	8	-1.0000	1.0000	1.00000	0.90000
12	D	03/09/85	1	1	-1.0000	0.1000	0.10000	0.10000
13	10	03/09/85	0	0	-1.0000	-1.0000	0.30000	0.30000
13	10	03/10/85	0	0	-1.0000	-1.0000	0.00000	0.30000
13	10	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.30000
13	10	03/17/85	0	0	-1.0000	-1.0000	0.50000	0.50000
13	10	03/24/85	0	0	-1.0000	-1.0000	0.50000	0.50000
13	10	04/06/85	0	0	-1.0000	-1.0000	0.50000	0.50000
13	10	04/07/85	0	0	-1.0000	-1.0000	0.50000	0.50000
13	10	05/15/85	0	0	-1.0000	-1.0000	0.20000	0.50000
13	10	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
13	11	03/03/85	0	14	-1.0000	-1.0000	0.00000	0.10000
13	11	03/09/85	0	0	-1.0000	0.7000	0.00000	0.20000
13	11	03/10/85	0	0	-1.0000	0.7000	0.00000	0.70000
13	11	03/16/85	0	10	-1.0000	0.1000	0.00000	0.10000
13	11	03/23/85	0	0	-1.0000	-1.0000	0.00000	0.00000
13	11	03/31/85	0	2	-1.0000	-1.0000	0.00000	0.00000
13	11	05/15/85	0	0	-1.0000	-1.0000	0.00000	0.00000
13	12	03/02/85	0	0	-1.0000	-1.0000	0.70000	0.80000
13	12	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000
13	12	03/09/85	0	0	-1.0000	-1.0000	0.40000	0.40000
13	12	03/10/85	0	0	-1.0000	-1.0000	0.20000	0.30000
13	12	03/16/85	0	0	-1.0000	-1.0000	0.20000	0.20000
13	12	03/17/85	0	0	-1.0000	-1.0000	0.50000	0.50000
13	12	03/23/85	0	0	-1.0000	-1.0000	0.30000	0.30000
13	12	03/24/85	0	0	-1.0000	-1.0000	0.60000	0.60000
13	12	03/30/85	0	0	-1.0000	-1.0000	0.70000	0.70000
13	12	03/31/85	0	0	-1.0000	-1.0000	0.50000	0.50000
13	12	04/07/85	0	0	-1.0000	-1.0000	0.50000	0.50000
13	12	05/15/85	0	0	-1.0000	-1.0000	0.00000	0.20000
13	12	05/16/85	17	0	-1.0000	-1.0000	-1.00000	-1.00000
13	13	03/02/85	0	0	-1.0000	-1.0000	0.00000	0.10000
13	13	04/07/85	0	0	-1.0000	-1.0000	0.00000	0.00000
13	13	05/15/85	0	0	-1.0000	-1.0000	0.00000	0.00000
13	13	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
13	14	04/07/85	0	0	-1.0000	-1.0000	0.00000	0.00000

TABLE LEGEND

POTHOLE LOCATION - SEE FIGURE I-1  
POTHOLE NUMBER - SEE APPENDIX B MAPS  
DATE OF OBSERVATION - SEE FIGURE D-2

POTHOLE LOCATION	POTHOLE NUMBER	DATE OF OBSERVATION	NUMBER OF TRAPPED FRY	NUMBER OF STRANDED FRY	DEPTH OF POTHOLE WHEN OBSERVED DISCONNECTED	DEPTH OF POTHOLE WHEN OBSERVED CONNECTED	MINIMUM DEPTH DURING OBSERVATION	MAXIMUM DEPTH DURING OBSERVATION
13 14	14	05/15/85	0	0	-1.0000	-1.0000	0.00000	0.00000
13 14	14	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
13 16	16	03/24/85	0	0	-1.0000	-1.0000	0.00000	0.00000
13 16	16	03/30/85	0	0	-1.0000	-1.0000	0.00000	0.00000
13 16	16	03/31/85	0	0	-1.0000	-1.0000	0.00000	0.00000
13 16	16	04/07/85	0	0	-1.0000	-1.0000	0.00000	0.00000
13 16	16	05/15/85	0	0	-1.0000	-1.0000	0.00000	0.00000
13 16	16	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
13 3	3	03/03/85	0	0	-1.0000	-1.0000	0.40000	0.50000
13 3	3	05/15/85	0	0	-1.0000	-1.0000	0.20000	0.20000
13 3	3	05/16/85	6	0	-1.0000	-1.0000	-1.00000	-1.00000
13 4	4	03/02/85	0	0	-1.0000	-1.0000	0.60000	0.60000
13 4	4	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000
13 4	4	05/15/85	0	0	-1.0000	-1.0000	0.00000	0.10000
13 4	4	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
13 5	5	03/02/85	0	0	-1.0000	-1.0000	0.80000	1.00000
13 5	5	03/03/85	0	0	-1.0000	-1.0000	0.40000	0.40000
13 5	5	03/09/85	0	0	-1.0000	-1.0000	0.20000	0.40000
13 5	5	03/10/85	0	0	-1.0000	-1.0000	0.00000	0.40000
13 5	5	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.20000
13 5	5	03/17/85	0	0	-1.0000	-1.0000	0.40000	0.40000
13 5	5	03/23/85	0	0	-1.0000	-1.0000	0.00000	0.00000
13 5	5	03/24/85	0	0	-1.0000	-1.0000	0.50000	0.50000
13 5	5	03/30/85	0	0	-1.0000	-1.0000	0.60000	0.60000
13 5	5	03/31/85	0	0	-1.0000	-1.0000	0.30000	0.30000
13 5	5	04/06/85	0	0	-1.0000	-1.0000	0.40000	0.50000
13 5	5	04/07/85	0	0	-1.0000	-1.0000	0.50000	0.50000
13 5	5	05/15/85	2	0	-1.0000	-1.0000	0.20000	0.40000
13 5	5	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
13 6	6	05/15/85	0	0	-1.0000	-1.0000	0.20000	0.40000
13 6	6	05/16/85	8	0	0.50000	-1.0000	-1.00000	-1.00000
13 7	7	03/02/85	0	0	-1.0000	-1.0000	1.30000	1.40000
13 7	7	03/09/85	0	0	-1.0000	-1.0000	0.80000	0.80000
13 7	7	03/10/85	0	0	-1.0000	-1.0000	0.60000	0.80000
13 7	7	03/23/85	0	0	-1.0000	-1.0000	0.70000	0.70000
13 7	7	03/24/85	0	0	-1.0000	-1.0000	1.00000	1.00000
13 7	7	03/30/85	0	0	-1.0000	-1.0000	1.10000	1.10000
13 7	7	03/31/85	0	0	-1.0000	-1.0000	0.90000	0.90000
13 7	7	04/06/85	18	1	-1.0000	-1.0000	1.00000	1.00000
13 7	7	04/07/85	18	0	-1.0000	-1.0000	1.00000	1.00000
13 7	7	05/15/85	47	0	-1.0000	-1.0000	0.80000	1.00000
13 7	7	05/16/85	109	0	1.00000	-1.0000	-1.00000	-1.00000
13 8	8	03/02/85	0	0	-1.0000	-1.0000	1.10000	1.20000
13 8	8	05/15/85	3	0	-1.0000	-1.0000	0.30000	0.70000
13 8	8	05/16/85	1	0	0.70000	-1.0000	-1.00000	-1.00000
13 9	9	03/02/85	0	0	-1.0000	-1.0000	1.00000	1.00000
13 9	9	03/30/85	0	0	-1.0000	-1.0000	0.70000	0.70000
13 9	9	03/31/85	0	0	-1.0000	-1.0000	0.70000	0.70000
13 9	9	05/15/85	58	0	-1.0000	-1.0000	0.30000	0.60000

TABLE LEGEND

POTHOLE LOCATION - SEE FIGURE 1-1  
POTHOLE NUMBER - SEE APPENDIX B MAPS  
DATE OF OBSERVATION - SEE FIGURE D-2

POTHOLE LOCATION	POTHOLE NUMBER	DATE OF OBSERVATION	NUMBER OF TRAPPED FRY	NUMBER OF STRANDED FRY	DEPTH OF POTHOLE WHEN DISCONNECTED	DEPTH OF POTHOLE WHEN OBSERVED CONNECTED	MINIMUM DEPTH DURING OBSERVATION	MAXIMUM DEPTH DURING OBSERVATION
13	9	05/16/85	6	0	0.6000	-1.0000	-1.0000	-1.0000
13	9.9	05/15/85	0	0	-1.0000	-1.0000	0.1000	0.4000
13	9.9	05/16/85	0	0	-1.0000	-1.0000	-1.0000	-1.0000
13	A	03/10/85	0	0	-1.0000	0.6000	0.6000	0.6000
13	A	03/16/85	5	3	-1.0000	0.9000	0.9000	0.9000
13	A	03/23/85	3	0	-1.0000	1.0000	1.0000	1.0000
13	B	03/10/85	30	3	-1.0000	0.9000	0.9000	0.9000
13	B	03/16/85	14	12	-1.0000	0.9000	0.9000	0.9000
13	B	03/23/85	9	0	-1.0000	1.0000	1.0000	1.0000
13	C	03/31/85	8	1	-1.0000	-1.0000	0.8000	0.8000
13	C	03/31/85	8	1	-1.0000	-1.0000	0.4000	0.4000
13	D	03/31/85	0	5	-1.0000	-1.0000	0.0000	0.0000
14	A	03/03/85	1	0	-1.0000	-1.0000	0.0000	0.1000
14	A	03/10/85	0	8	-1.0000	-1.0000	0.3000	0.3000
14	A	03/24/85	3	0	-1.0000	-1.0000	0.3000	0.3000
14	A	03/24/85	3	0	-1.0000	-1.0000	0.3000	0.3000
14	A	03/30/85	14	0	-1.0000	-1.0000	0.2000	0.2000
14	A	03/31/85	0	1	-1.0000	-1.0000	0.0000	0.0000
14	A	03/31/85	0	1	-1.0000	-1.0000	0.0000	0.0000
14	A	04/06/85	0	0	-1.0000	0.4000	0.1000	0.4000
14	A	04/07/85	0	0	-1.0000	-1.0000	0.2000	0.4000
14	A	05/15/85	0	12	-1.0000	-1.0000	0.0000	0.6000
14	B	03/03/85	0	0	-1.0000	-1.0000	0.9000	0.9000
14	B	03/30/85	0	0	0.6000	-1.0000	0.6000	0.6000
14	B	03/31/85	1	0	-1.0000	-1.0000	0.5000	0.5000
14	B	03/31/85	1	0	-1.0000	-1.0000	0.5000	0.5000
14	B	05/15/85	0	0	-1.0000	-1.0000	0.4000	0.4000
16	A	03/03/85	0	0	-1.0000	-1.0000	0.0000	0.0000
16	B	03/03/85	0	0	0.5000	-1.0000	0.5000	0.5000
16	C	03/03/85	0	0	-1.0000	0.2000	0.2000	0.2000
17	A	03/10/85	75	0	-1.0000	0.4000	0.4000	0.4000
17	B	03/10/85	125	2	-1.0000	0.3000	0.3000	0.3000
18	7	03/02/85	0	0	-1.0000	-1.0000	1.9000	1.9000
18	A	03/02/85	0	0	-1.0000	-1.0000	0.9000	0.9000
18	A	03/02/85	0	0	-1.0000	-1.0000	1.0000	1.0000
18	A	03/03/85	0	0	-1.0000	-1.0000	1.8000	1.8000
18	B	03/02/85	0	0	-1.0000	-1.0000	1.9000	1.9000
18	B	03/03/85	0	0	-1.0000	-1.0000	1.7000	1.7000
18	C	03/02/85	0	0	-1.0000	-1.0000	0.0000	0.0000
18	C	03/03/85	0	0	-1.0000	-1.0000	0.0000	0.0000
18	D	03/02/85	0	0	-1.0000	-1.0000	0.0000	0.0000
18	D	03/03/85	0	0	-1.0000	-1.0000	0.0000	0.0000
18	E	03/02/85	0	0	-1.0000	-1.0000	0.0000	0.0000
18	E	03/03/85	0	0	-1.0000	-1.0000	0.0000	0.0000
18	F	03/02/85	0	0	-1.0000	-1.0000	0.0000	0.0000
18	F	03/03/85	0	0	-1.0000	-1.0000	0.0000	0.0000
18	G	03/02/85	0	0	-1.0000	-1.0000	0.0000	0.0000
18	G	03/03/85	0	0	-1.0000	-1.0000	0.0000	0.0000
18	H	03/02/85	0	0	-1.0000	-1.0000	0.0000	0.0000

TABLE LEGEND

POTHOLE LOCATION - SEE FIGURE I-1  
POTHOLE NUMBER - SEE APPENDIX B MAPS  
DATE OF OBSERVATION - SEE FIGURE D-2

POTHOLE LOCATION	POTHOLE NUMBER	DATE OF OBSERVATION	NUMBER OF TRAPPED FRY	NUMBER OF STRANDED FRY	DEPTH OF POTHOLE WHEN OBSERVED DISCONNECTED	DEPTH OF POTHOLE WHEN OBSERVED CONNECTED	MINIMUM DEPTH DURING OBSERVATION	MAXIMUM DEPTH DURING OBSERVATION
18	H	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000
19	H	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000
19	I	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000
19	J	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000
19	K	03/02/85	0	0	-1.0000	-1.0000	0.00000	0.00000
19	K	03/03/85	0	0	-1.0000	-1.0000	0.00000	0.00000
19	K	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000
21	A	03/09/85	0	0	-1.0000	-1.0000	1.90000	1.90000
21	A	03/10/85	29	0	-1.0000	-1.0000	1.80000	1.80000
21	B	03/09/85	0	0	1.3000	-1.0000	1.30000	1.30000
21	B	03/23/85	0	0	-1.0000	0.4000	0.40000	0.40000
21	C	03/02/85	0	0	-1.0000	-1.0000	0.00000	0.00000
21	D	03/02/85	0	0	-1.0000	-1.0000	0.00000	0.00000
21	D	03/23/85	0	0	-1.0000	-1.0000	0.00000	0.00000
21	D	03/24/85	0	0	-1.0000	-1.0000	0.00000	0.00000
21	E	03/02/85	0	0	-1.0000	-1.0000	0.00000	0.00000
21	E	03/23/85	0	0	-1.0000	-1.0000	1.40000	1.30000
21	F	03/02/85	0	0	-1.0000	-1.0000	0.00000	0.00000
21	G	03/02/85	0	0	2.5000	-1.0000	2.50000	2.50000
21	H	03/02/85	0	0	1.0000	-1.0000	1.00000	1.00000
21	I	03/02/85	0	0	1.6000	-1.0000	1.60000	1.60000
22	1	03/24/85	0	0	-1.0000	-1.0000	0.00000	0.00000
22	B	03/23/85	35	0	-1.0000	-1.0000	0.90000	0.90000
22	C	03/23/85	0	0	-1.0000	0.6000	0.60000	0.60000
23	1	03/23/85	7	0	-1.0000	-1.0000	0.60000	0.60000
23	1	03/24/85	0	0	-1.0000	-1.0000	0.50000	0.70000
23	11	03/02/85	0	0	-1.0000	-1.0000	0.00000	0.00000
23	12	03/02/85	0	0	-1.0000	-1.0000	0.30000	0.30000
23	14	03/02/85	0	0	-1.0000	-1.0000	0.00000	0.00000
23	2	03/02/85	0	0	-1.0000	-1.0000	0.60000	0.60000
23	3	03/23/85	0	0	-1.0000	-1.0000	0.10000	0.10000
23	3	03/24/85	0	0	-1.0000	-1.0000	0.30000	0.30000
23	3	03/30/85	0	0	-1.0000	-1.0000	0.30000	0.30000
23	3	03/30/85	0	0	-1.0000	-1.0000	0.30000	0.30000
23	3	03/30/85	0	0	-1.0000	-1.0000	0.30000	0.30000
23	3	04/06/85	0	0	-1.0000	-1.0000	0.30000	0.30000
23	3	04/07/85	0	0	-1.0000	-1.0000	0.30000	0.30000
23	4	03/02/85	0	0	1.7000	-1.0000	1.70000	1.70000
23	4	03/23/85	30	0	-1.0000	-1.0000	1.20000	1.20000
23	4	03/24/85	97	0	-1.0000	1.6000	1.60000	1.60000
23	4	04/07/85	132	0	-1.0000	-1.0000	1.50000	1.50000
23	5	03/02/85	0	0	0.3000	-1.0000	0.30000	0.30000
23	5	03/23/85	0	0	-1.0000	-1.0000	0.00000	0.00000
23	5	03/24/85	1	0	-1.0000	-1.0000	0.20000	0.30000
23	5	04/07/85	0	0	-1.0000	-1.0000	0.40000	0.40000
23	5	04/07/85	0	0	-1.0000	-1.0000	0.40000	0.40000
23	6	03/02/85	0	0	0.7000	-1.0000	0.70000	0.70000
23	6	03/23/85	0	0	-1.0000	-1.0000	0.00000	0.00000
23	6	03/24/85	0	0	-1.0000	-1.0000	0.40000	0.40000

TABLE LEGEND

POTHOLE LOCATION - SEE FIGURE I-1  
POTHOLE NUMBER - SEE APPENDIX B MAPS  
DATE OF OBSERVATION - SEE FIGURE D-2

POTHOLE LOCATION	POTHOLE NUMBER	DATE OF OBSERVATION	NUMBER OF TRAPPED FRY	NUMBER OF STRANDED FRY	DEPTH OF POTHOLE WHEN OBSERVED DISCONNECTED	DEPTH OF POTHOLE WHEN OBSERVED CONNECTED	MINIMUM DEPTH DURING OBSERVATION	MAXIMUM DEPTH DURING OBSERVATION
23	6	03/30/85	0	0	-1.0000	-1.0000	0.30000	0.30000
23	6	03/30/85	0	0	-1.0000	-1.0000	0.30000	0.30000
23	6	04/07/85	0	0	-1.0000	-1.0000	0.10000	0.10000
23	7	03/02/85	0	0	0.7000	-1.0000	0.70000	0.70000
23	7	03/30/85	0	0	-1.0000	-1.0000	0.50000	0.50000
23	7	03/30/85	0	0	-1.0000	-1.0000	0.50000	0.50000
23	7	04/06/85	0	0	-1.0000	-1.0000	0.30000	0.30000
23	7	04/07/85	0	0	-1.0000	-1.0000	0.30000	0.30000
23	9	03/02/85	0	0	1.5000	-1.0000	1.50000	1.50000
23	B	04/06/85	137	0	-1.0000	-1.0000	0.90000	0.90000
23	C	04/06/85	0	0	-1.0000	-1.0000	1.40000	1.40000
23	C	04/07/85	57	0	-1.0000	-1.0000	1.40000	1.40000
23	E	03/23/85	0	0	-1.0000	0.1000	0.10000	0.10000
24	1	03/23/85	0	0	-1.0000	-1.0000	0.00000	0.00000
26	1	03/03/85	0	0	-1.0000	1.4000	1.30000	1.40000
26	1	03/03/85	12	7	-1.0000	-1.0000	0.80000	0.80000
26	1	03/09/85	12	5	-1.0000	0.6000	0.40000	0.60000
26	1	03/10/85	9	0	-1.0000	-1.0000	0.40000	2.30000
26	1	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.60000
26	1	03/17/85	0	0	-1.0000	-1.0000	0.40000	0.60000
26	1	03/23/85	3	0	-1.0000	0.3000	0.30000	0.30000
26	1	03/24/85	2	0	-1.0000	0.8000	0.80000	1.00000
26	1	03/30/85	0	0	-1.0000	-1.0000	2.40000	2.40000
26	1	03/31/85	10	0	-1.0000	-1.0000	0.50000	0.20000
26	1	04/06/85	0	0	-1.0000	-1.0000	0.50000	0.70000
26	1	04/07/85	0	0	-1.0000	-1.0000	0.40000	0.40000
26	1	05/15/85	0	0	-1.0000	-1.0000	0.10000	0.10000
26	11	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000
26	11	04/07/85	0	0	-1.0000	-1.0000	0.00000	0.00000
26	12	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000
26	12	04/07/85	0	0	-1.0000	-1.0000	0.00000	0.00000
26	2	03/16/85	50	0	-1.0000	-1.0000	0.50000	0.60000
26	2	03/17/85	0	0	-1.0000	-1.0000	0.80000	0.80000
26	2	03/30/85	0	0	-1.0000	-1.0000	1.20000	0.90000
26	2	03/31/85	0	0	-1.0000	-1.0000	1.00000	0.90000
26	2	04/07/85	50	0	0.9000	-1.0000	0.90000	0.80000
26	2	05/15/85	65	0	-1.0000	-1.0000	0.60000	0.60000
26	2	05/15/85	70	0	-1.0000	-1.0000	0.40000	0.50000
26	3	03/23/85	0	0	-1.0000	-1.0000	0.70000	1.00000
26	3	03/24/85	0	0	-1.0000	-1.0000	1.00000	1.10000
26	3	03/30/85	0	0	-1.0000	-1.0000	1.20000	1.30000
26	3	03/31/85	0	0	-1.0000	-1.0000	0.60000	0.90000
26	4	03/03/85	0	0	-1.0000	-1.0000	2.20000	2.20000
26	4	03/03/85	0	0	2.7000	-1.0000	2.70000	2.80000
26	4	03/09/85	0	0	-1.0000	2.1000	2.10000	3.70000
26	4	03/10/85	0	0	-1.0000	-1.0000	2.00000	2.00000
26	4	03/16/85	60	0	-1.0000	-1.0000	1.50000	1.90000
26	4	03/17/85	0	0	-1.0000	-1.0000	1.80000	2.00000
26	4	03/23/85	2	0	-1.0000	-1.0000	2.00000	2.20000

TABLE LEGEND

POTHOLE LOCATION - SEE FIGURE 1-1  
POTHOLE NUMBER - SEE APPENDIX B MAPS  
DATE OF OBSERVATION - SEE FIGURE D-2

POTHOLE LOCATION	POTHOLE NUMBER	DATE OF OBSERVATION	NUMBER OF TRAPPED FRY	NUMBER OF STRANDED FRY	DEPTH OF POTHOLE WHEN OBSERVED DISCONNECTED	DEPTH OF POTHOLE WHEN OBSERVED CONNECTED	MINIMUM DEPTH DURING OBSERVATION	MAXIMUM DEPTH DURING OBSERVATION
26	4	03/23/85	2	0	-1.0000	-1.0000	2.00000	2.20000
26	4	03/24/85	3	0	-1.0000	-1.0000	2.30000	2.70000
26	4	03/31/85	0	0	-1.0000	-1.0000	1.80000	1.80000
26	4	04/06/85	25	0	-1.0000	-1.0000	0.80000	1.00000
26	4	04/07/85	25	0	-1.0000	-1.0000	1.80000	1.80000
26	4	05/15/85	50	0	-1.0000	-1.0000	1.50000	1.50000
26	4	05/15/85	50	1	-1.0000	-1.0000	1.60000	1.60000
26	5	04/06/85	0	0	-1.0000	-1.0000	0.00000	0.00000
26	5	04/07/85	0	0	-1.0000	-1.0000	0.00000	0.00000
26	6	03/09/85	0	0	-1.0000	-1.0000	0.40000	0.50000
26	6	03/10/85	0	0	-1.0000	-1.0000	0.00000	0.00000
26	6	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.00000
26	6	03/17/85	0	0	-1.0000	-1.0000	0.00000	0.10000
26	7	03/09/85	0	0	-1.0000	-1.0000	0.70000	1.10000
26	7	03/10/85	0	0	-1.0000	-1.0000	0.90000	0.70000
26	7	03/16/85	0	0	-1.0000	-1.0000	0.20000	0.40000
26	7	03/17/85	0	0	-1.0000	-1.0000	0.60000	0.80000
26	A	03/31/85	0	0	-1.0000	-1.0000	0.50000	0.60000
26	A	03/31/85	58	5	-1.0000	-1.0000	0.50000	0.50000
26	A	04/07/85	0	0	-1.0000	-1.0000	0.10000	0.20000
26	A	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
26	B	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
26	C	03/16/85	0	0	-1.0000	-1.0000	1.00000	1.00000
26	C	03/17/85	0	0	-1.0000	-1.0000	1.10000	1.20000
26	C	05/16/85	15	0	-1.0000	-1.0000	-1.00000	-1.00000
26	D	03/31/85	0	0	-1.0000	-1.0000	0.50000	0.80000
26	D	05/16/85	25	0	-1.0000	-1.0000	-1.00000	-1.00000
27	A	03/16/85	10	0	-1.0000	-1.0000	0.30000	0.30000
27	A	03/23/85	25	0	-1.0000	-1.0000	0.40000	0.40000
27	A	05/15/85	3	0	-1.0000	-1.0000	0.40000	0.40000
27	A	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
27	B	05/15/85	0	0	-1.0000	-1.0000	0.40000	0.40000
27	D	05/15/85	0	0	-1.0000	-1.0000	0.20000	0.20000
27	D	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
27	E	05/15/85	0	0	-1.0000	-1.0000	0.90000	0.90000
27	F	03/16/85	0	0	0.2000	-1.0000	0.20000	0.20000
27	F	05/16/85	0	0	-1.0000	-1.0000	-1.00000	-1.00000
27	G	03/09/85	0	0	-1.0000	-1.0000	0.00000	0.30000
27	G	03/16/85	0	0	-1.0000	-1.0000	0.00000	0.00000
27	G	03/23/85	0	0	-1.0000	-1.0000	0.20000	0.50000
27	G	03/23/85	0	0	-1.0000	-1.0000	0.00000	0.30000
29	B	03/23/85	0	0	-1.0000	1.3000	1.30000	1.30000
29	C	03/23/85	0	0	-1.0000	1.0000	1.00000	1.00000

TABLE LEGEND

POTHOLE LOCATION - SEE FIGURE 1-1  
POTHOLE NUMBER - SEE APPENDIX B MAPS  
DATE OF OBSERVATION - SEE FIGURE D-2

## APPENDIX E

### RESIDENCE TIME OF SALMONID FRY IN POTHOLES OF THE SKAGIT RIVER

This study was conducted by David A. Troutt and Dr. Gilbert B. Pauley of the Washington Cooperative Fisheries Research Unit for R. W. Beck and Associates as part and in conjunction with the pothole and gravelbar trapping and stranding studies funded by Seattle City Light.

This primary purpose of this work was to study the residence time of salmonid fry in potholes along the Skagit River. This results of this report are summarized in Section IV of this report.

STRANDING OF JUVENILE SALMONIDS  
IN POTHoles ALONG THE SKAGIT RIVER

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Part I  
Final Report

for

R.W. Beck and Associates  
Seattle, Washington  
1986



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## ACKNOWLEDGMENTS

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## ABSTRACT

The movement of juvenile salmonids in the upper Skagit River was studied in relation to fry stranding that occurs in potholes due to fluctuating river water levels. The study was performed during the spring (March to May) and the summer (August and September) because these are the times of greatest juvenile salmonid abundance in the river. The study focused on 28 known potholes located between the mouths of the Sauk River and Bacon Creek on the Skagit River in Washington State.

When the river level is raised to maximum flows, the potholes are connected allowing the fish to move freely among them. The movement of the fish in and out of these potholes was followed over time by analyzing the ratio of marked to unmarked fish remaining in the potholes after specific time intervals. Factors considered to influence the movement of fish out of the potholes were the amount of cover, the physical location of the pothole with respect to the main river channel, the size of the fish, and the season. In the spring season, chinook salmon fry (Oncorhynchus tshawytscha) were the dominant species captured, while the summer season involved both steelhead trout (Salmo gairdneri) and coho salmon (O. kisutch). The results of the spring study indicated that juvenile chinook salmon spent an average of 2.5 days in potholes once they became trapped, while coho fry spent an average of 1.3 days in potholes. Chum salmon stayed the least time at 0.5 days. Results of the summer study indicated that young steelhead spent an average of 1.6 days in potholes once they became trapped, and coho fry spent 1.4 days. In the case of all four species of fish for both seasons (spring and summer), the length of residency in the potholes was positively correlated with an increase in the amount of cover available. During both seasons (spring and summer), all three species of salmon exhibited a distinct preference for potholes

located on side channels. Only steelhead showed no apparent preference for potholes based on location.

## INTRODUCTION

The Skagit River flows out of the northwestern Cascade Mountains in the Canadian Province of British Columbia. The river continues south for some 50 miles before entering the State of Washington via Whatcom county. The Skagit River then meanders south and west through Skagit County where it enters Puget Sound near the town of LaConner (Figure 1).

The early 1900's marked the beginning of hydroelectric power development by the City of Seattle on the Skagit River. Gorge Dam, the first of three dams, is located at river mile (RM) 96.6. Gorge is a relatively small dam with 6,600 acre-feet of usable storage. The second dam, Diablo, is located 4.3 miles upstream from Gorge Dam. Diablo is considerably larger with a usable storage of nearly 50,000 acre-feet. The third and largest structure on the Skagit River, Ross Dam, is located at RM 105 and provides 1,053,000 acre-feet of usable storage (Figure 1).

When the Federal Power Commission (FPC) issued the City of Seattle its first license (No. 553) in 1968, it required a minimum flow release of 1000 cfs from Gorge Dam. During routine operations, the flows fluctuate on a daily basis in direct proportion to electrical demand. At low flows, small depressions and pools in and around various side channels and gravel bars become isolated from the main river as the water recedes and young fish concentrate in them. When the river level is raised due to maximum flows, these potholes become connected and confluent with the main river allowing the fish to move about freely. The Washington State Department of Fisheries has expressed concern that these daily flow changes and their resultant alteration of the river level might result in some additional mortality of the various species of juvenile salmonids that utilize the river for rearing. As a result of these concerns, several studies were

undertaken to investigate the effects that river flow fluctuations had on salmonid survival (Thompson 1970; Stober et al. 1982; Jones and Stokes 1984). The present work is an extension of those previous investigations. It was designed to look at residence time of four juvenile salmonids: chinook salmon (Oncorhynchus tshawytscha), coho salmon (O. Kisutch), chum salmon (O. Keta), and steelhead (Salmo gairdneri) in relation to the amount of cover present in the potholes and the location of the potholes in relation to the main river channel. In this study, we examined the potential problem caused by pothole stranding of young salmonids as previous investigations had dealt primarily with gravel bar stranding.

## 2.0 PREVIOUS INVESTIGATIONS

The Department of Fisheries and Seattle City Light entered into a cooperative study in 1969 to help set a flow regime to minimize mortality of the various species of salmonids present in the Skagit River (Thompson, 1970). Primary concern centered on juvenile spring chinook salmon (Oncorhynchus tshawytscha) and juvenile chum salmon (O. Keta). Thompson (1970) found that under certain conditions large numbers of chinook were being stranded and killed on gravel bars as the water levels receded. This finding prompted Thompson (1970) to recommend a minimum flow of 2800 cfs at Marblemount which would greatly reduce the potential mortality of juvenile chinook throughout the river. Because tributary inflows increased throughout the critical fish rearing period of February through May, the minimum flow allowed at Gorge Dam declined from 2500 cfs in February to 1700 cfs in May. In 1972, Seattle City Light requested that the Department of Fisheries investigate further the phenomenon of fry stranding on gravel bars to reevaluate the flow schedule proposed by Thompson (1970).

Subsequently, Phinney (1974) examined 5 different gravel bars along



the Skagit River in March of 1973, where he estimated the overall average number of fry stranded per square foot of gravel bar. This value was used in combination with aerial photographs taken over the Skagit River upstream from the confluence of the Baker River, to estimate the total area where potential stranding could occur at low flows. From these values, it was estimated that 33,500 fry were killed on March 17, and 239,000 fry were killed on March 18 under operating conditions outlined by Thompson (1970). Phinney (1974) concluded that Thompson's 1970 operating recommendations were not offering adequate protection for the juvenile salmon. Phinney (1974) concluded that the regulated fluctuations that occur between February and May needed to be reduced, and the rate of change needed to be reduced also. City Light informally agreed to increase minimum flow levels during periods of peak fry abundance.

Studies designed to assess the effects of flow fluctuations on spawning behavior, egg deposition efficiency, incubation, fry survival to emergence, and bar stranding of steelhead (Salmo gairdneri), and chinook and chum salmon juveniles were conducted by Stober et al. (1982) and Woodin et al. (1984). Stober et al. (1982) found that the size of the fish played a significant role in the stranding of steelhead fry, where it was observed that after steelhead reached 40 mm in length, they became less susceptible to stranding. Woodin et al. (1984) found that discharge timing greatly affected juvenile salmonid stranding, and they concluded that mortality could be greatly reduced if the major volume of water discharge took place before dawn.

The various studies to date regarding water volume fluctuations have focused on salmonid fry stranded on gravel bars with only a passing mention of juvenile salmonids being trapped in potholes (Woodin et al. 1984).

Potholes are formed as the river recedes leaving small hydrographic depressions and pools in and around various side channels isolated from the main river for prolonged periods of time. This results in the trapping of juvenile salmonids, which then are susceptible to elevated temperatures, reduced dissolved oxygen levels, avian predation, dewatering and crowding stress in these potholes.

### 3.0 OBJECTIVES

The primary objective of this study is to better understand the role pothole stranding plays in juvenile salmonid mortality. Although previous studies by Stober et al. (1982) and Woodin et al. (1984) mentioned pothole stranding on Rockport Bar, to date no study has focused specifically on this phenomenon.

Other objectives were to determine the length of residency for the various salmonid species encountered in the potholes; to evaluate the behavioral and environmental relationships that might lead to pothole trapping, residency, and subsequent mortality; and to make recommendations that will help reduce this phenomenon as a source of mortality.

### 4.0 MATERIALS AND METHODS

#### 4.1 Selection of Study Sites

A study documenting the location and number of potholes on the upper Skagit, between the mouths of the Sauk River and the Newhalem River has been performed during the spring (Jones and Stockes 1984). A preliminary survey of the potholes was performed in the weeks prior to the present study, so that a representative sample of "typical" potholes could be used during the study. From this survey of almost 150 potholes, 28 potholes were selected for study that regularly contained water, that frequently

were connected with the Skagit River, and that had previous sightings of trapped fish during low flow periods.

The test potholes represented a range of substrate, cover, and location conditions common to the majority of potholes along this reach of the Skagit. The potholes were classified into groups according to easily identifiable physical parameters thought to influence salmonid residency time. The first of these characteristics was pothole location: either (a) isolated from the main river on a side channel or back slough and often separated by distances of 10-100 m. or (b) adjacent to the main river with direct confluent connections to the river during high flows (4200+ cfs). Isolated potholes were studied on Rockport Bar, Upper Tin Shack, Hooper Slough, Marblemount Slough, and Bad Spot (Appendix I). Adjacent potholes studied were on Oink Bar, Carnage Bar, Model Pothole, Stump Haven, Waynes Swim, Big Eddy, and Hooper Slough (Appendix I).

Another factor expected to influence the residency time of young salmonids was the amount of available cover. Therefore, potholes were classified as having either (a) low or no cover, (b) moderate cover, or (c) heavy cover. Potholes containing no cover usually had a sand or mud bottom that provided no place for fish to hide. Oink Bar, Carnage Bar, Upper Tin Shack, and Waynes Swim A & E were examples having this miniscule amount of cover (Appendix I). Moderate cover consisted either of large cobble substrate, often with small amounts of grass and sticks or mud or sand bottoms with some grass, logs, leaves, or other type of cover. Obviously, there exists a wide range of substrate and cover combinations that fell into this moderate cover category. Oink Bar A, Hooper Slough II, Rockport 15 & 17, Model Pothole A, and Waynes Swim I were examples of this (Appendix I). Heavy cover consisted of large, deep potholes with a bottom composed

primarily of cobble and large stones and with some additional form of cover such as logs, deep undercut banks, root wad systems, or a combination of these. Marblemount Slough A, Model Pothole B, Stumphave, Hooper Slough 1E & B, and Bad Spot contained this type of pothole (Appendix I).

#### 4.2 Stream Flow Data

Seattle City Light maintained predictable flow levels and discharging rates at Gorge Dam according to requests made by R.W. Beck and Associates during the course of this study. These flows fluctuated between minimum flows of 2300 cfs in the spring and 1700 cfs in the summer and a maximum flow of 4500 cfs for both seasons. In addition to setting flow rates and fluctuations, discharging also was regulated to begin sometime at night so that the minimum flow was reached during darkness to minimize mortality (Woodin et al. 1984). The river level was then increased between 4 am and 5 am to maximum flows. Since the increased flow resulting from the release of water at Gorge Dam takes about 6 hours to reach Rockport Bar (Stober et al. 1982), certain potholes remain disconnected for at least 6 hours during daylight. This time lag gave us sufficient time to capture and mark the fish that were trapped in potholes before the water rose enough to cover them.

Tributary inflow was monitored by calling the Environmental Department of Seattle City Light. High tributary inflow (>1500 cfs) usually caused all the potholes to be confluent with the main body of water, thus preventing any pothole residency studies. This condition occurred frequently in March, April, and October.

#### 4.3 Study Techniques

The sampling routine remained the same throughout the study. The spring experiments took place between Friday and Monday, due to flow restrictions, while the summer experiments involved a daily sampling for

the first three weeks of August, and then three days a week during the middle of September.

The first day of the study involved selecting a series of 6 to 9 potholes in 3 different areas that would connect and disconnect with the main river during the next two days. Fish were removed from each pothole using a Smith-Root type VII electroshocker. The stunned fish were dip netted out of the pothole and placed into a recovery bucket for a few minutes. Mortalities were removed and the remaining fish anesthetized with MS-222. Total lengths were recorded, the fish marked, species recorded, and then the fish were released back into the same isolated pothole.

The fish were marked using a powdered fluorescent dye applied with a #4 acrylic artist's brush. The dye particles, ranging from 30-350 um, are taken into the brush fibers and "pushed" in a tail to head direction onto the rear third of the fish. A small mark on the caudal peduncle appears, which is readily visible to the trained eye. The dye is commercially available in a variety of colors, of which red, blue, orange, and chartreuse were used for this study. Dye applied in this manner is visible up until 40 days after application (Troutt and Pauley 1986).

After release into the potholes the fish were left for 24 hours, during which time subsequent confluence of the river and potholes allowed the fish to move freely. After 24 hours the potholes were electrofished once more. The fish taken were subjected to the same sampling routine as previously described, except that fish were checked for the presence of marks. Marked fish were noted and then all fish released to the pothole of origin. This procedure was repeated again after 24 hours (48 hours after the marking of the fish). Each pothole was checked once more 7 days after the initial test.

A limited test was conducted on the spring chinook. These fish were marked using a multicolored fluorescent pigment dye propelled by a 100 psi air jet (Jackson 1959).

#### 4.4 Data Analysis

The data were collected and analyzed as a single mark with multiple recapture study. By following the ratio of marked fish remaining in the potholes over time, the residency time of the fish (or "survival" of fish in the originally marked population) can be estimated since all of the fish in the pothole were originally marked ( $m$ ), the average of the ratio of the number of recaptures at time  $t+1$  to the number of marks present in the population at time  $t$  will give an estimate of survival in terms of residency in the pothole (Ricker 1975). These fish do not necessarily die, but are simply assumed to leave the pothole.

$$\left\langle \left( \frac{R_{i+1}}{R_i} \right) \right\rangle_n = S$$

The natural log of the survival rate gives the instantaneous rate of mortality ( $z$ ).

$$S = e^{-z}$$

$$-\ln S = z$$

The length of residency easily can be derived by taking the inverse of the instantaneous mortality rate ( $K$ ) according to Ricker (1975).

$$K = 1/z$$

The average residency is calculated easily by doubling this  $z$  value (Robson 1960, 1961; Hinton 1982). The underlying assumption of this basis calculation is that the fish are distributed uniformly through time. This assumption is more clearly understood by analyzing the movement of the fish

in potholes through time. A fish removed for marking on day 1 may be at the beginning or end of its stay in the pothole. A sample of fish would have residents distributed normally over time. Therefore, an average estimate would place any given fish somewhere near the middle of its stay. Doubling this value gives an average length of stay.

$2K$ =average length of residency

The average length of residency for the various factors considered are analyzed using a t-test for means at the .05 confidence level with  $n+n-2$  degrees of freedom

## 5.0 RESULTS

### 5.1 Spring

The mark and recapture data for juvenile salmonid stranding is presented in Appendix II. A total of 1400 fish were captured between March 1 and May 16. Chinook salmon fry were the only species encountered in March. Chum salmon and coho salmon juveniles entered the potholes in April, but chinook still comprised 67% of the total number of fish marked (Fig. 2). Although chinook fry were still dominant by a wide margin in May, chum salmon increased and coho salmon decreased (Figs. 2). The overall average residencies of all 3 species for spring are presented in Fig. 3: chinook fry average 2.4 days as pothole residents; coho fry spent an average of 1.4 days in the potholes; and chum fry spent an average of only .5 days in the potholes.

The first variable considered to affect the average length of stay in potholes was season. Chinook fry averaged nearly 2.6 days of pothole residency in March, 2.3 days in April, and 2.4 days in May (Fig. 4). Coho juveniles spent an average of 1.4 days in the pothole during April, and 1.3

days in May (Fig. 5). Average residency for chum fry was .13 days in April and .49 days in May (Fig. 5). Tests for statistical significance show that residency does not change over time for all species. The associated standard deviations, ranges, and number of potholes used to obtain these average residencies are presented in Appendix.

The amount of cover a pothole affords to juvenile salmonids was another factor considered to influence residency. For both chinook and coho fry, t-tests at the .05 level of significance show that the average length of stay increased with increased pothole cover (Table 1). Chinook fry spent an average of 1.31 days in potholes with no cover and over 3.0 days in potholes with moderate to heavy cover (Fig. 5). Coho fry showed a similar trend, averaging .7 days in potholes with no cover and 2.3 days in potholes with moderate to heavy cover (Fig. 5). Chum salmon spent so little time in potholes that there was not any significant statistical relationship but the trend appeared similar to coho and chinook (Fig. 5).

Pothole location relative to the main river also affected pothole residency time. Once again, both chinook and coho salmon juveniles show significant statistical relationships using t-tests at the .05 level of significance (Table 2). Chinook averaged 1.9 days in potholes on back sloughs or side channels (Fig. 6). Coho fry also favored side channel potholes, averaging 2.0 days in them and only .27 days in potholes along the main river (Fig. 6). Although chum salmon spent very little time in potholes, they appear to follow the same trend (Fig. 6).

The last factor considered to influence fry residency was the length of the fish (Fig. 7). The seasonal average for stranded chinook fry was 42.6 mm; for stranded coho fry was 39.4 mm; and for stranded chum fry was 41.9 mm. A trend of increasing length was evident among the chinook found in the potholes as time passed. The young chinook averaged 40.9 mm in



March, 43.0 mm in April, and 45.0 mm in May. The smallest chinook fry marked was 36.0 mm and the largest was 47.0 mm.

On the other hand, coho and chum fry average lengths decreased over time during the study. Coho averaged 42.6 mm in April and only 37.8 mm in May. The chum fry averaged 43.2 mm in April, and dropped to 40.7 mm in May.

### 5.2 Summer Data

The summer sampling season, conducted during August and September, dealt primarily with coho salmon fry and steelhead trout juveniles. A total of 1600 fish were captured and marked during this part of the study. The species composition in potholes for the month of August was 64% steelhead and 36% coho (Fig. 2). This was reversed in September, with coho fry making up the majority of fish encountered in the potholes (56%), while steelhead comprised the remaining 46% (Fig. 2).

The overall average residency time for steelhead during the summer sampling season was 1.61 days and for coho salmon it was 1.4 days (Fig. 3). The standard deviations, median, and number of potholes used are tabulated in Appendix III.

A breakdown of the average length of stay on a monthly basis is presented in Figure 4. Residencies averaged 1.4 days for steelhead and 1.75 days for coho in August, while steelhead averaged 1.9 days and coho averaged .75 days in September. The reduction in residency for coho was a significant one at the alpha .10 level. The trend for steelhead was not statistically significant, even though the trend was upward and the reverse of coho salmon.

The next factor considered to influence the fry residency in potholes was available cover. Coho averaged .3 days in potholes with no cover, 1.6

days in potholes with moderate cover, and 2.0 days in potholes with heavy cover (Fig. 4). A t-test on these means at the alpha .05 level shows that residency is significantly longer in potholes with moderate to heavy cover (Table 3). Steelhead averaged 1.4 days in potholes with no cover, and 1.6 and 1.8 days in potholes with moderate to heavy cover (Fig. 4). However, the steelhead fry showed no statistical difference in residency for the various cover possibilities using a t-test at the alpha .05 level.

Both steelhead and coho juveniles showed no statistical difference in pothole residencies relative to pothole location using a t-test at the alpha .05 level (Table 4). However, coho fry did appear to favor the side channels where they averaged 1.2 days in potholes adjacent to the main river and 1.8 days in potholes located on side sloughs or back channels (Fig. 6). Steelhead fry averaged 1.6 days for both pothole locations (Fig. 6).

## 6.0 DISCUSSION

Potholes tend to provide juvenile salmonids an area of reduced flow, some protection from predators, preferred rearing habitat, and a potential food supply that is better than other areas of the river or back channels (Woodin et al. 1984). As river flows are reduced, these areas of fish concentration become isolated from the main river. If flows are dropped low enough and held there for prolonged periods of time, the potholes may dry up completely and kill all the entrapped fish.

### 6.1 Spring

Results of the mark-recapture study in the Spring of 1985 reveal that chinook and coho salmon fry tend to spend appreciable amounts of time in potholes, while chum salmon are found to spend relatively little time in the potholes by comparison. These results agree with previous behavior studies of these species (Hoar 1951, 1956; Neave 1955; Lister and Genoe

1970; Reiser and Bjornn 1979; Thorpe 1981; Godin 1981).

#### 6.1.1 Chum

Hoar (1956) found that chum salmon fry move immediately downstream toward salt water after emerging from the gravel with the peak out migration occurring somewhere between the end of April and the middle of May. The short residency time (0.5 days) in the potholes for chum salmon is the approximate time the marked fish are trapped in the potholes immediately after a water level drop, and before the river level rises and reconnects the potholes to the main stream. Of 73 chum salmon marked and released during the spring season, only 3 were recaptured in potholes. Since the residency time in any one pothole is short, individual chum salmon appear to be susceptible to only one discharging event cycle in the pothole where they were originally captured.

#### 6.1.2 Chinook

The spring study focused on the movement of juvenile spring chinook salmon. Chinook fry present in the river at this time are the offspring of spring and summer adults that returned to the upper Skagit River in 1984. Adult fish spawn in mid-September and October in the tailouts of the larger pools in the main river. Chinook fry normally emerge from the gravel in the Skagit River from January through April and the young spend the next 90-110 days in the river before migrating out to Puget Sound (Neave 1955). It is during this period of freshwater residency that chinook fry are susceptible to pothole trapping and stranding.

Spring study results show that chinook fry spend an average of nearly 2.5 days in the pothole of original capture. Therefore, these fry are susceptible to 3 or 4 discharging event cycles once they enter a pothole. If fry enter and reside in other potholes after leaving the pothole they

were marked in, they are again susceptible to multiple discharging events. Recaptures from a release of 235 fish marked with fluorescent dye using the traditional high pressure spray technique of Jackson (1959), seem to indicate that chinook fry become trapped in additional potholes further downstream from the point where they were first trapped and marked. Although 200 fish in a river containing hundreds of thousands of fry is a miniscule amount, 5 of these fish were found a week later concentrated in one pothole almost 2 miles downstream. From this observation, it may be assumed that fry become trapped in a pothole because the habitat, cover, or food is considerably more attractive than the surrounding areas of the river. It is also possible that only a portion of the fish population is attracted to these potholes, hence the high propensity toward recapture of the same individuals. Because of this attraction, the young salmonids may selectively search out similar areas downstream once they move out of earlier potholes that they first encounter.

A comparison of the influence of the physical location of the potholes on length of stay also indicates a trend. Chinook fry spent a full day more in potholes located on side sloughs than in those located along the main river. Lister and Genoe (1970) found that young post-emergence chinook salmon preferred the relatively slow waters found in back eddies and side sloughs. The chinook salmon that we captured in potholes were small post-emergent fry. As the water rises, most of the potholes along the main river are inundated with rapidly moving water, while water in the back slough potholes moves much more slowly. It is probable that because these back slough areas contain water with less velocity, the fry tend to reside in the potholes located there for the longest time.

Young fry will seek out cover (Lister and Genoe 1970; Reiser and Bjornn 1979). Cover appeared to play a role in pothole residency time,

with chinook fry residing in potholes with moderate to heavy cover twice as long as in potholes with little or no cover. The combination of adequate cover and slow water is apparently what makes these areas a desired habitat for young chinook salmon.

Chinook fry length was correlated with pothole residency. Chinook fry up to 48 mm total length seemed to be susceptible to pothole trapping and stranding. Only one chinook over 50 mm was captured in a pothole. Upon reaching a length of about 48 mm, chinook fry appear to move offshore to seek out faster water. Lister and Genoe (1970) found that as chinook fry in the Big Qualicum River grew larger, they sought out faster water in which to feed.

#### 6.1.3 Coho

Juvenile coho were susceptible to pothole stranding during April and May. These fry were the offspring of coho returning in the fall of 1984. Adult coho spawn primarily in tributaries to the Skagit River above the Sauk River confluence. Coho juveniles emerge in April and May and many move down the tributaries into the Skagit River at that time. Coho fry rear in freshwater for a year or more (Neave 1955).

The residency time of the coho fry at 1.5 days makes them susceptible to 2 or 3 discharging event cycles before they move out of the pothole. Whether or not coho fry move into other potholes after leaving their initial pothole is not clear. In an experiment at Rockport Bar where coho salmon from three adjacent potholes were marked with different colors, none were recaptured in any other pothole once they left their original pothole. The same experiment with chinook fry resulted in the recapture of chinook salmon in different potholes, some of which were upstream from the original pothole. Coho may be adversely effected by potholes and avoid them after

an initial experience with them.

Pothole location influenced the length of stay for coho juveniles. Coho fry resided in potholes adjacent to the main river for only 0.3 days, while coho fry in back slough potholes remained 2.0 days. Emerging coho fry seek out the slower water found in back eddies and side sloughs according to Lister and Genoe (1970). This behavior may be a function of water velocity rather than any preference for one pothole over another.

Cover availability also played a large role in coho fry pothole residency. Residency in potholes containing moderate to heavy cover was three times greater than in potholes with little or no cover. This behavior agrees with information concerning habitat selection by coho fry gathered by other investigators (Lister and Genoe 1970; Reiser and Bjornn 1979). In this respect, they are like chinook fry, and seek out the slower water present in back sloughs where adequate cover of some sort is present.

The size of coho fry found in potholes also affected their length of residency. Although some yearling coho greater than 80 mm were caught, no age 0 coho over 43 mm were found in potholes during the spring study. Spot shocking of several areas on the main river produced age 0 coho up to 47 mm in May. It appears that, as coho get larger, they seek out faster water (Lister and Genoe 1970).

## 6.2 Summer

Species composition in potholes shifted from predominately steelhead in August to a majority of coho in September. Behavioral studies (Chapman 1965; Frasier 1969; Lister and Genoe 1970; Reiser and Bjornn 1979; Allee 1981) suggest that emergent coho favor slower water and tend to seek out areas such as these potholes. As the fish increase in size, a preference for faster water develops at which time the coho move out into the faster moving riffle sections of the river (Lister and Genoe 1970). Young coho

over the length of 60 mm revert back to preferring slower water and move into the pools and side channels (Allee 1981). Emerging steelhead fry seek out slow water, but, as they grow, they reside in faster moving water. Changes in species composition could result either from steelhead fry choosing to move out of potholes, a size induced preference of habitat by one or both species or from steelhead being forced out by the coho fry through competitive interaction (Allee 1981).

#### 6.2.1 Steelhead

Steelhead trout fry trapped in potholes in the summer of 1985 were the progeny of adults returning to the upper Skagit and its tributaries in the summer, fall, and winter of 1984. Adult steelhead spawn sometime between December and May, and fry emerge from late July through August. Some emergent fry make their way down to the Skagit River from August through October, although many steelhead fry spend most of their freshwater residency in the tributaries they were spawned in.

Once steelhead fry move into the Skagit River, they become susceptible to pothole stranding and spend an average of 1.6 days in potholes. This subjects young steelhead to 1 or 2 discharging event cycles before they move out of the pothole. Although the average residency time for individual steelhead does not appear to change over the summer season, the actual number of fish stranded became greatly reduced.

Steelhead fry showed no difference in residency time relative to cover concentration of pothole location. This lack of preference may be due to an early attraction to faster water, thereby avoiding potholes, or it may be due to the presence of more aggressive coho salmon which may force steelhead fry out of the potholes as suggested by Allee (1981) and Reiser and Bjornn (1979). This behavior may be a size-related phenomenon as the

young coho are larger than the steelhead at this time. Previous fry stranding studies on the Skagit River (Stober et al. 1982) found that there was a dearth of steelhead fry in the nearshore area once they reached 47 mm. In fact, once they reached 40 mm, even though they were still present in the nearshore areas, they became less susceptible to gravel bar stranding (Stober et al. 1982). Stober et al. (1982) found that by October 1, young steelhead had grown to this size and moved out of the potholes. The results of our study, where the actual number of steelhead stranded in potholes dropped substantially from August to September and reached almost zero by the second week of October agree with those of Stober et al. (1982), as no steelhead over 45 mm were found in any potholes during the study. Once fish reach 46 mm they move to areas of the river where they are no longer susceptible to stranding.

#### 6.2.2 Coho

Near the end of the spring study, coho fry began to move offshore into faster moving water, thus becoming less susceptible to pothole stranding. But sometime during June or July the coho moved back into the slower waters in areas that made them vulnerable to pothole stranding. The overall residency time for coho fry in potholes during the summer was nearly 1.5 days. This subjected them to 1 or 2 discharging event cycles. The significant reduction in residency time between August and September may be due to an increase in average size (42 mm in August to 54 mm in September) which may cause the majority of coho fry to move into deeper pools in search of uncrowded space as suggested by Allee (1981).

Coho fry encountered in potholes during the summer season, like those found in the spring study, resided up to five times longer in potholes containing moderate to heavy cover than in potholes with little or no cover. Coho are well known to associate closely with cover (Lister and



Genoe 1970; Reiser and Bjornn 1979). The physical location of potholes also influenced residency time, as coho fry stayed a full day longer in potholes located on side sloughs. The search for slow water by coho fry may explain this increased residency time.

#### 7.0 CONCLUSION

This study on salmonid pothole residency provided strong evidence that coho, chinook, and steelhead fry all reside in potholes for prolonged periods of time, generally making them vulnerable to repeated discharging event cycles. Chinook and coho salmon, and steelhead trout were particularly susceptible to repeated and/or prolonged stranding. This vulnerability probably increases the odds that a high mortality rate may occur among these fish, especially if the potholes dry up.

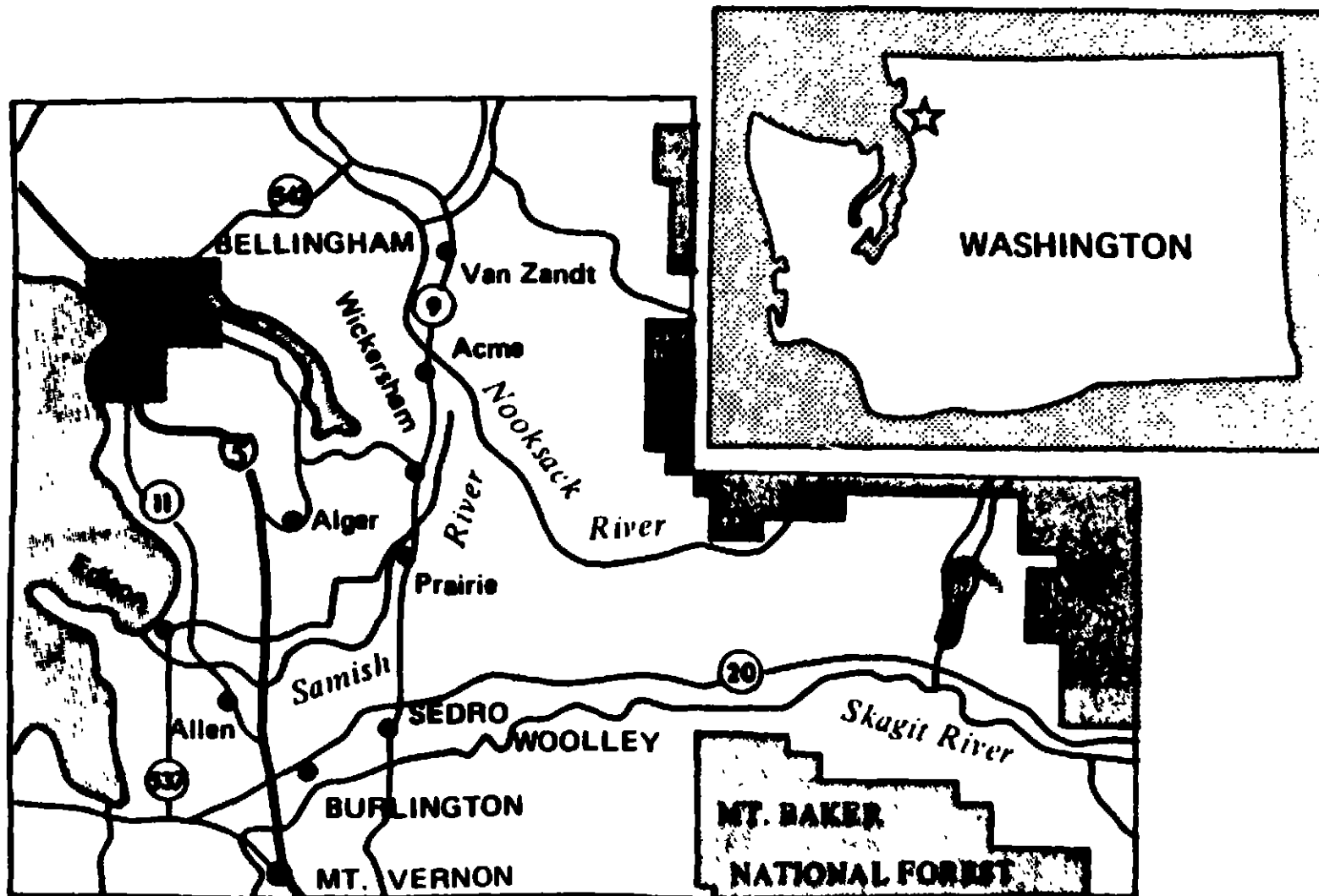
Mortality of these trapped fish can result from several factors. The fish that are unfortunate enough to be trapped in potholes with no cover are easy targets for avian predators, such as crows, bald eagles, ospreys, great blue herons, and kingfishers. If the trapped fish are not eaten, they may suffocate due to potentially lethal levels of dissolved oxygen or succumb to elevated water temperatures or die when the potholes dry up. In other words, salmon fry trapped in potholes following lowered river flow levels face a gauntlet of life threatening situations.

Techniques of water management need to be developed to reduce potential mortality to salmonids due to pothole stranding. An effort should be made to lengthen the time between maximum and minimum flows; gradually decrease the discharge volume at the dam over a long time period. This would give the fish an opportunity to move out of the pothole and into the main river if they are so inclined.

Minimum flows should be maintained at levels that do not dry out large

numbers of potholes. Unfortunately, a majority of the potholes with heavy amounts of cover are located in areas that are without water for long periods of time. The young salmonids seek out the cover in these areas for protection, but are then left high and dry when the river level drops. Reducing this phenomenon would greatly reduce the potential mortality of the young chinook, coho, and steelhead.

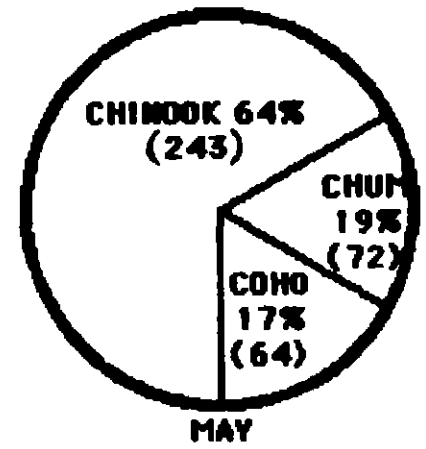
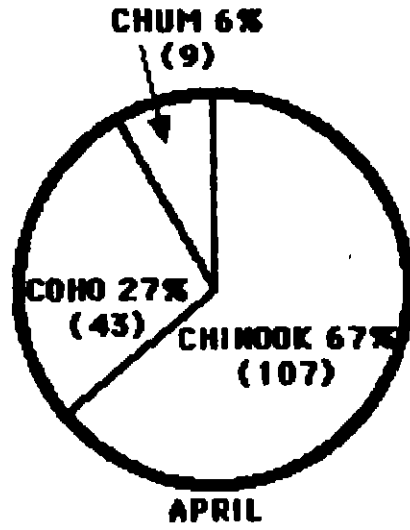
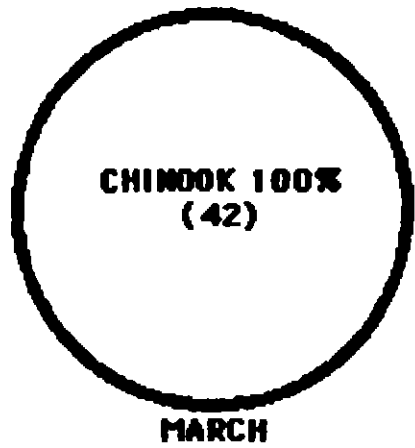
The potential for extensive mortality does exist on the upper Skagit River under current water management practices. Incorrect management decisions can easily destroy the majority of a year's salmon production, not only in potholes but also on gravel bars. Further studies are needed to determine the effect of falling river water levels on pothole stranding. Also, a detailed study of fish movement on the upper Skagit River would be greatly beneficial. Increased water storage could be scheduled to coincide with juvenile fish movements. The knowledge gained through the study, and proposed future studies, would hopefully preserve the fish populations on the Skagit River and other rivers where hydroelectric dams are located.



University of Washington Cartographic Laboratory

Figure 1. MAP OF SKAGIT RIVER SYSTEM.

**SPRING POTHOLE STUDY**



**SUMMER POTHOLE STUDY**

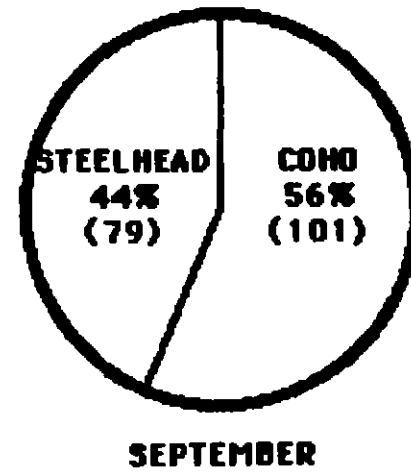
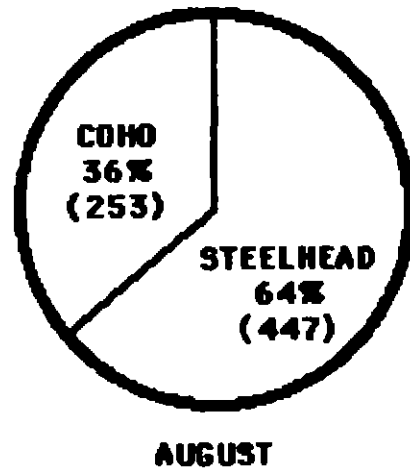


Figure 2. SALMONID SPECIES COMPOSITION IN POTHOLE DURING VARIOUS MONTHS. NUMBER IN BRACKETS INDICATES ACTUAL FISH COUNT.

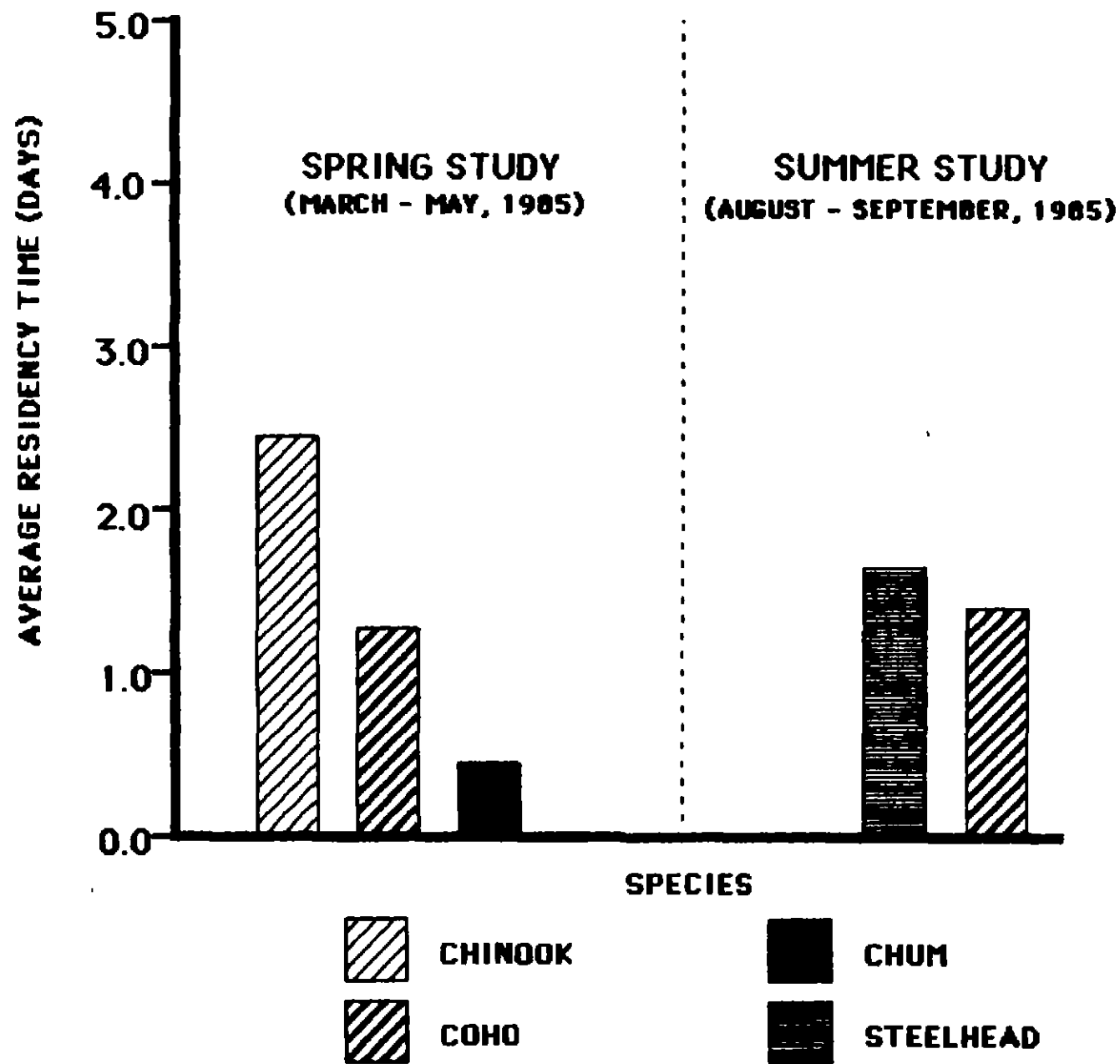


Figure 3. AVERAGE RESIDENCY TIME OF JUVENILE SALMONIDS IN POTHOLES DURING THE SPRING AND SUMMER (ALL MONTHS COMBINED).

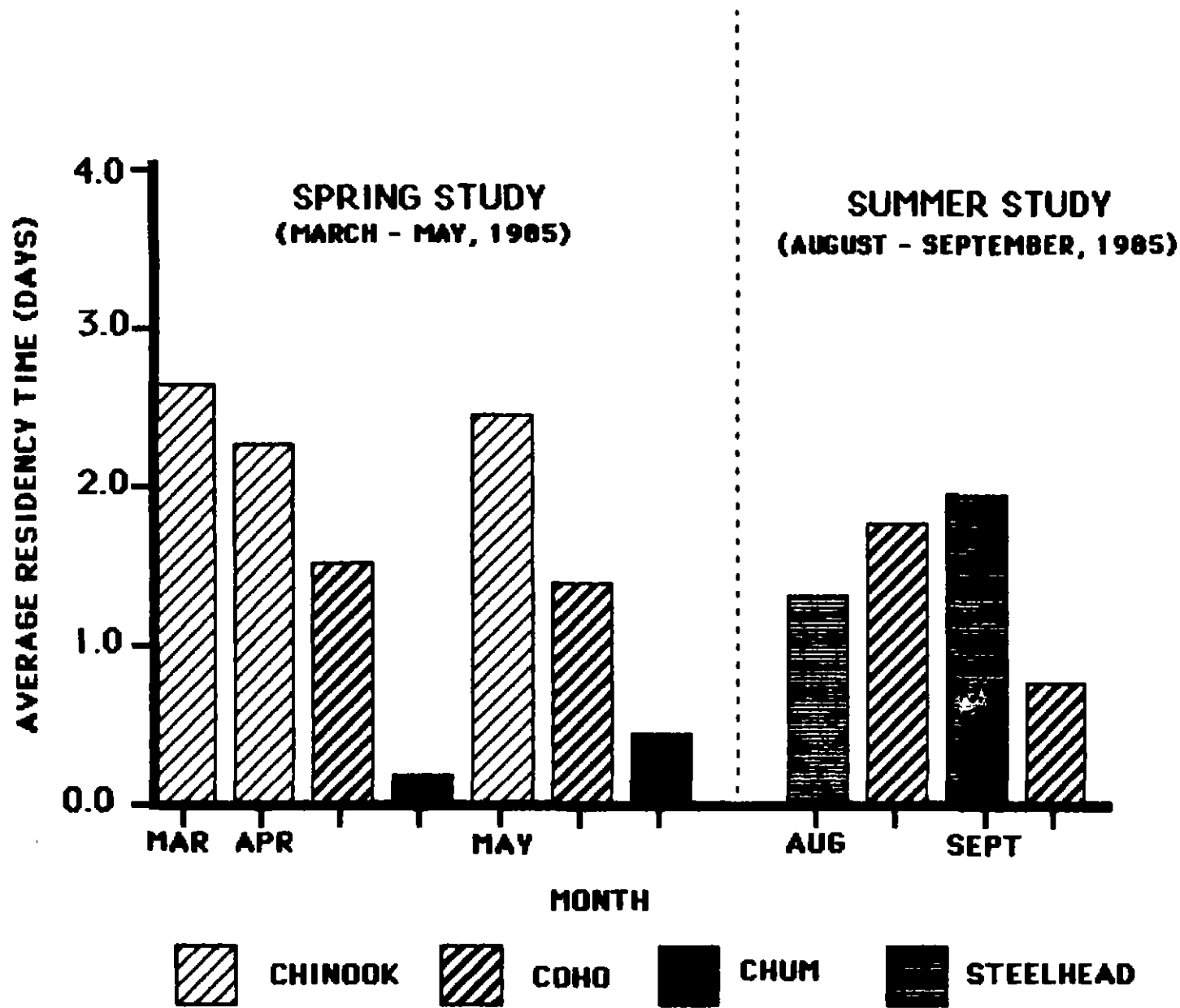


Figure 4. AVERAGE RESIDENCY TIME OF SALMONID FRY IN POTHOLES BY MONTH.

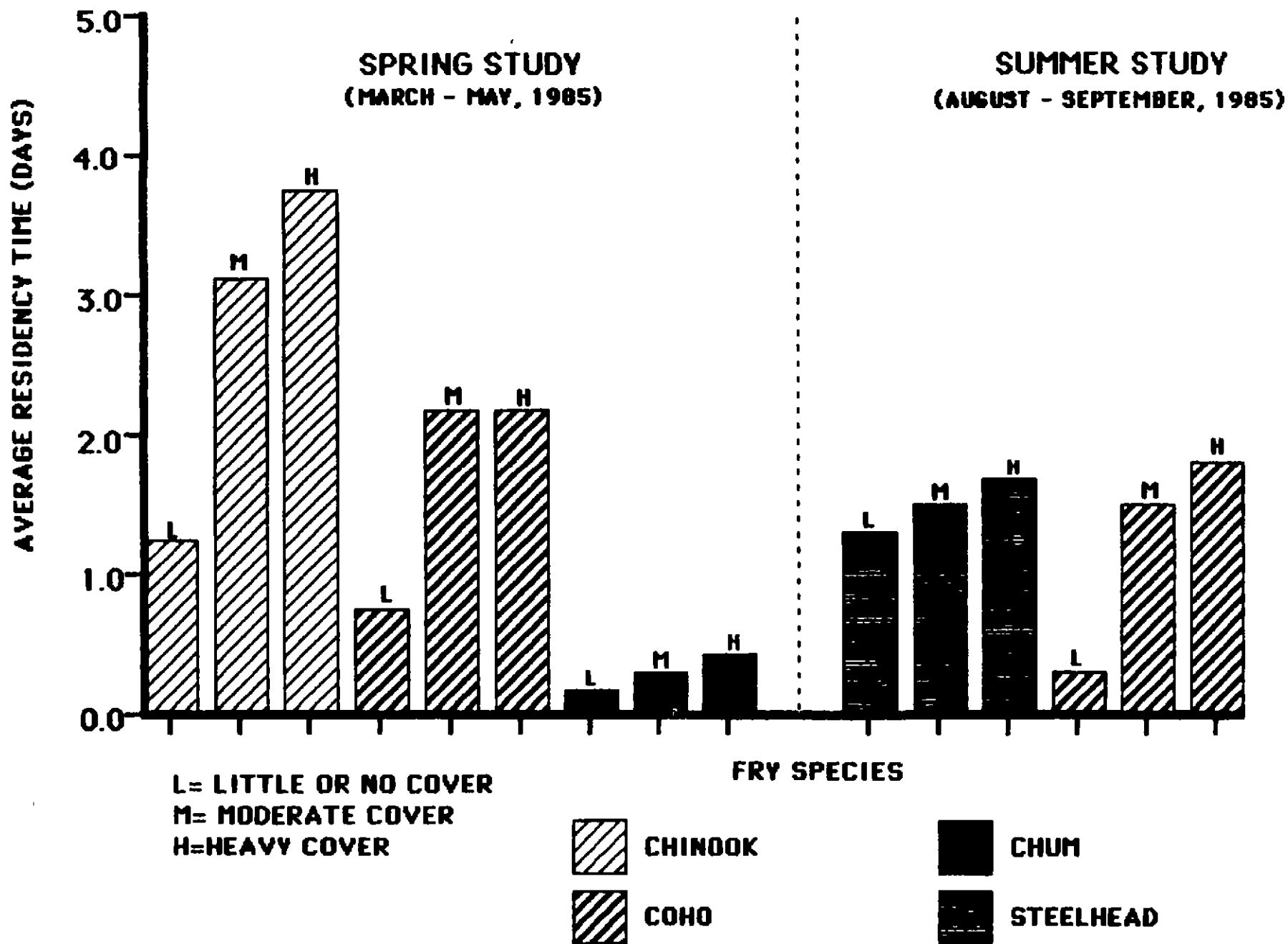


Figure 5. AVERAGE RESIDENCY TIME OF SALMONID FRY IN POTHOLES WITH THREE DIFFERENT LEVELS OF COVER.

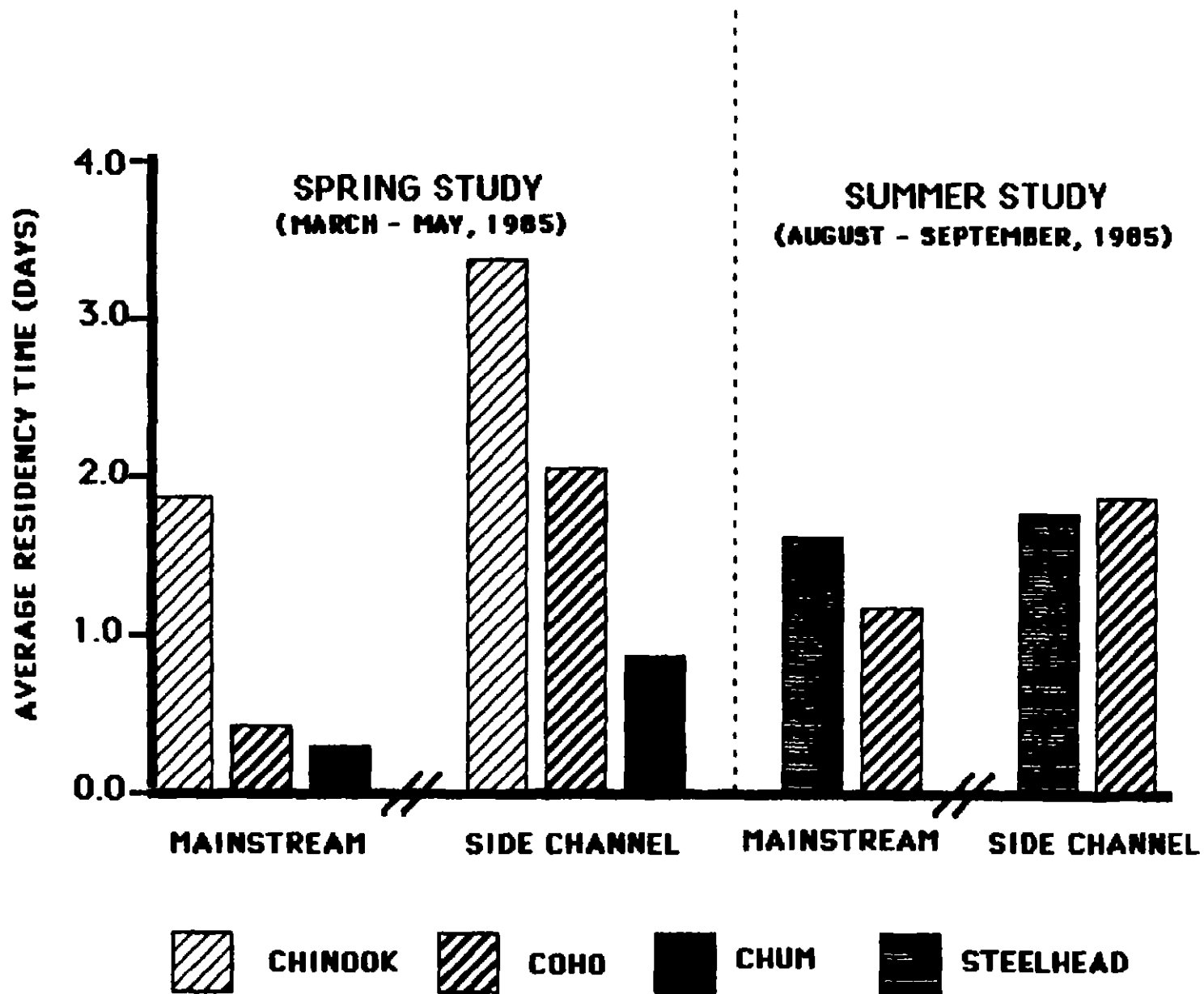


Figure 6. AVERAGE RESIDENCY TIME OF SALMONID FRY IN POTHOLES LOCATED NEAR THE MAIN STREAM AND THOSE LOCATED NEAR SIDE CHANNELS.



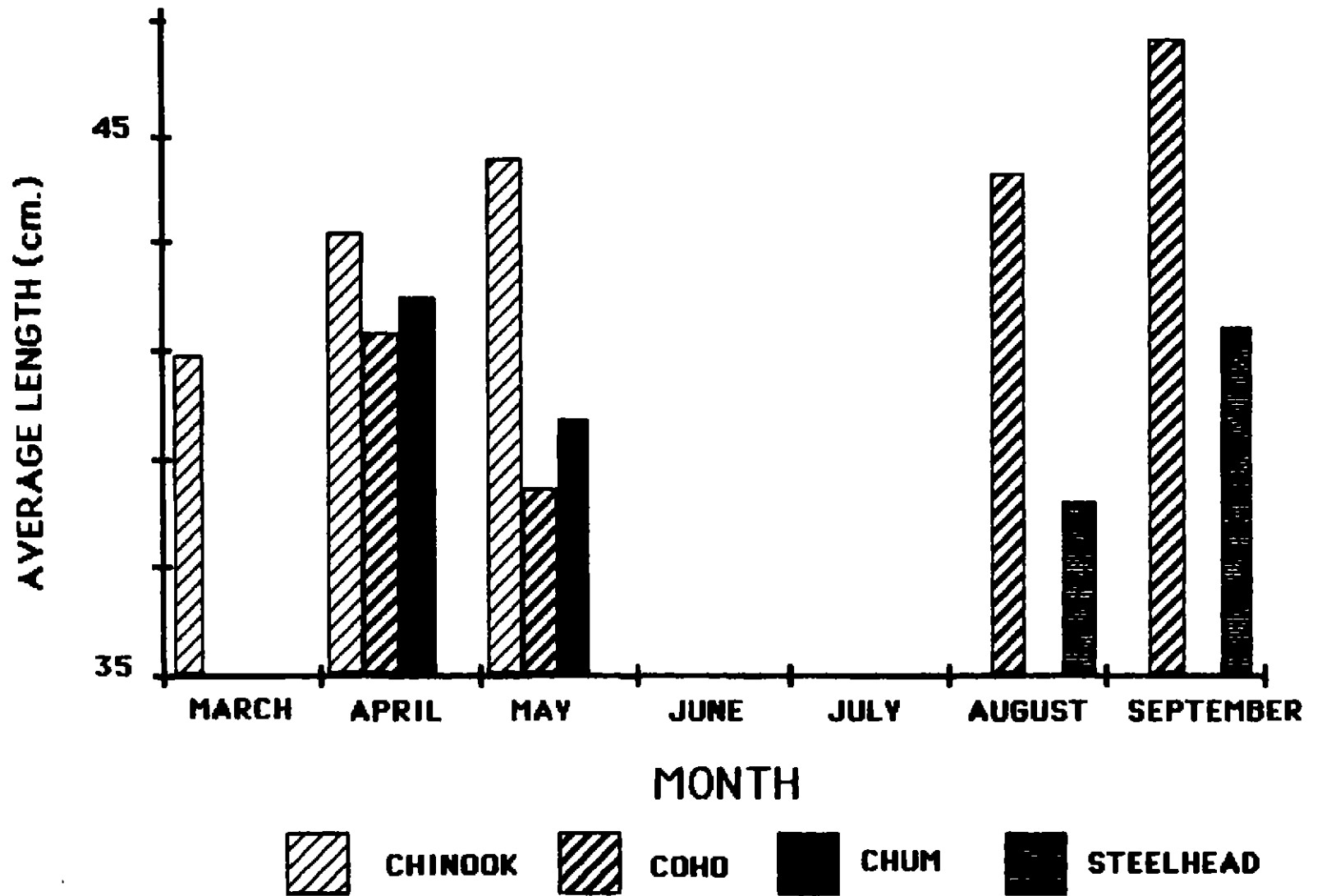


Figure 7. AVERAGE LENGTH OF SALMONIDS IN POTHOLES DURING EACH MONTH OF STUDY.

Table 1. Mean residency values relative to available cover for spring study.

Species	Amount of Cover		
	Low	Moderate	Heavy
Chinook	1.31*	3.17*	3.71*
Coho	0.69*	2.34*	2.32*
Chum	0.11	0.23	0.32

\* Significant t-test at alpha .05 level.

Table 2. Mean residency values relative to pothole location for spring study.

Species	Pothole Location	
	Mainstream	Side Slough
Chinook	1.31*	3.20*
Coho	0.27*	1.98*
Chum	0.13	0.71

\* Significant t-test at alpha .05 level.

Table 3. Mean residency values relative to available cover for summer study.

Species	Amount of Cover		
	Low	Moderate	Heavy
Coho	0.32*	1.57*	2.02*
Steelhead	1.43	1.62	1.78

\* Significant t-test at alpha .05 level.

Table 4. Mean residency values relative to pothole location for summer study. No significant t-tests were found at alpha .05 level.

Species	Pothole Location	
	Mainstream	Side Slough
Coho	1.20	1.75
Steelhead	1.58	1.64

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COMPARISON OF THREE FLOURESCENT DYE APPLICATION METHODS  
FOR MARKING JUVENILE STEELHEAD TROUT (SALMO GAIRDNERI)

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Part II

Final Report to R.W. Beck and Associates  
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## Abstract

Three different methods of dye marking young steelhead trout (Salmo gairdneri) were tested for dye retention, stress and mortality. Thirty juvenile fish, averaging 50-60 mm in total length, were used in each test. Fish were marked using either compressed air, hyperosmotic solution, or acrylic paint brush. Thirty fish were used as handling controls for each test, and were handled identically to the test fish, except that actual dye particles were not used. Finally, thirty untreated and unhandled fish served as an overall control.

The compressed air sprayed fish retained the dye for the 90 day duration of the study. Fish receiving dye by the other two methods retained dye for considerably less time. Dye applied with a paint brush lasted up to 41 days, while hyperosmotic marked fish retained the dye for only 15 days.

Mortalities were not observed in any of the three experimental groups of fish. Fish marked using the compressed air were the most stressed as determined by feeding behavior, while fish marked by the paint brush or hyperosmotic solution technique showed much less stress in their feeding behavior.

## Introduction

It was the purpose of this study to examine the differences in three techniques used to apply a fluorescent pigment to fish. This study was undertaken in conjunction with a field project on the Skagit River (Troutt and Pauley 1986) which involved marking and recapturing of several species of juvenile salmonids stranded in "potholes" due to fluctuating water levels.

The use of compressed air to impregnate dyes into fish skin is the most popular method of mass marking fish and was first reported by Jackson (1959). Variations of this spray technique have proven successful with various salmonids (Phinney et al. 1967; Hennick and Tyler 1970; Odense and Logan 1974; Phinney 1974) as well as several species of warmwater fishes (Ware 1968). Phinney et al. (1967) concluded that this technique is fast, inexpensive, does not affect the survival of the fish, and that the mark is retained for at least 130 days.

Two additional methods of dye marking salmonids were tested and compared to the compressed air method with the idea of finding a longer lasting dye that could be applied under less stressful conditions than the spray method. The hyperosmotic solution technique is a modification of a method developed to vaccinate rainbow trout (Salmo gairdneri) using the osmotic difference between the fish and their ambient water (Fender and Amend 1978). The second technique simply involved the application of the fluorescent dye particles directly to fish with a number two rounded acrylic artist's brush. This paper presents the results of using these three different techniques on mark retention time of the dye and behavioral changes of the fish as determined by feeding times.

## Materials and Methods

Seven 150 gallons circular tanks each with running water were set up at the University of Washington School of Fisheries hatchery. Each tank contained 30 yearling (50-60 mm total length) steelhead trout (S. gairdneri). One tank was used as an overall control for the entire experiment. These fish were not handled at any time during the course of the experiment. The other six tanks consisted of an experimental tank and associated control tank for each of the three techniques analyzed. The test fish were marked with the dye by either one of three methods described below: (1) compressed air spray, (2) hyperosmotic solution, or (3) paint brush. The associated control fish were subjected to one of the three test procedures and handled in an identical manner as the test fish except that no dye was used.

Dye retention time and behavioral alteration to the fish caused by the dye application were examined. Behavioral alteration, or stress, was determined by feeding fish in the various tanks at one hour intervals and noting whether or not all the fish would feed freely. The fish were fed only enough to stimulate the feeding response, not enough to fill their stomachs. The overall control fish were fed the same amount of food on the same schedule to be sure the fish were not being overfed and that any lack of feeding by experimental fish was due to stress and not the lack of food.

Dye retention was examined by placing every fish under a blacklight every third day. This procedure was continued for the first four weeks, after which time fish were checked every seventh day until the end of the study for the presence of dye.

The materials used to mark the fish with the compressed air spray technique were (1) compressed oxygen storage tank (scuba tank @ 110 psi),

(2) red fluorescent pigment (75% solution of particles sized 50-350 um), (3) modified sandblasting gun with attachment hoses, (4) modified scuba regulator and pressure gauge, (5) MS-222, and (6) a wooden containment marking box (48" long x 12" wide x 4" deep) and screens to cover the box.

The fish were first anesthetized with MS-222 to ease handling stress and then placed in the marking box. The screen was laid over the fish to keep them from moving while the mark was being applied. The sand blasting gun was held over each fish at a distance of about 8", and each fish received one shot of pigment. Fish were placed in a recovery tank before returning them to their respective test tanks.

Materials used for the hyperosmotic immersion technique were (1) red fluorescent pigment (75% solution, sized 50-350 um), (2) 5% NaCl hyperosmotic solution, and (3) a one gallon bucket.

The 5% NaCl solution was placed in the bucket. An amount of dye, equal to the amount of salt, was stirred into the solution and allowed to sit for 2 minutes to permit the dye particles to suspend in the solution.

The fish were placed in the hyperosmotic solution for two minutes. The fish were allowed to recover in fresh water, then returned to their test tanks.

The materials for the last technique tested, the paint brush method, were (1) a number two rounded acrylic artist brush, (2) red fluorescent dye pigment (75% solution, sized 50-350 um), and (3) MS-222. The paint brush technique is the simplest method to use. The fish were anesthetized with MS-222. Individual fish were removed from the MS-222 solution and excess water was removed to aid in mark application. The brush was dipped into a vial containing the dye particles and then pushed in a tail to head direction starting on the caudal peduncle.

## Results

Dye retention was longest using the compressed air spray technique. The fish marked by this method retained their marks throughout the entire 90 days of the study (Fig. 1). The fish marked by the hyperosmotic solution method retained their mark the least amount of time (Fig. 1), with only 80% of the fish marked after 12 days, 50% after 15 days, and all traces of dye marks gone after 18 days. Dye solution apparently entered the fish through the lateral line, gills, and the eye sockets, as these were the only areas with observable dye particles, using this method.

The dye retention time of fish marked by the paint brush method fell between those of the other two methods (Fig. 1). All fish retained their dye marks through 27 days, after which time retention dropped to 82% at 34 days, 53% at 41 days, and no observable dye retention after 48 days.

Behavioral changes caused by these three individual marking techniques as assessed by feeding changes are shown in Table 1. Using feeding as the criterion, the compressed air spray technique was clearly the most stressful method tested. Fish marked using this technique did not resume normal feeding until 8 hours after receiving their marks. The second most stressful technique was the hyperosmotic solution, but here normal feeding resumed rather quickly after only 2 hours. The paint brush technique stressed the fish the least, with all fish resuming normal feeding patterns within the first hour. There were no mortalities observed with any of the three marking techniques tested.

## Discussion

It is clear from the results of our tests with these three marking techniques that the traditional compressed air spray method of applying

fluorescent dye is the best for long term retention of the dye. This would appear to be the choice to study fish movements in a river system for any prolonged length of time that young fish would be present. The retention of the dye mark using this technique throughout the duration of this study for 90 days agrees well with other investigators using this method. Phinney et al. 1967 observed dye after 130 days. Ware (1968) experimented with channel catfish and found 100% of the fish were still marked after 10 months. Phinney (1974) reported the dye marks were found on salmon 14 months after marking. It is probable that we would have observed dye marks present for several more weeks or months had we continued the experiment. This technique may not be as suitable for a short term study, where normal feeding and possibly other physiological functions are altered for a brief duration. Although our method of determining stress, through the lack of feeding, is rather simplistic, it displays the potential of this spray method to alter the behavior of fish for up to eight hours after marking.

We conclude that of the three methods tested, the paint brush technique would be the best choice for a short term behavior and movement study where the fish cannot be held for a prolonged period of time, because the fish appear normal within one hour after marking. Since the mark is 100% retained up to 27 days, studies of moderate duration could be undertaken. One tremendous advantage of the paint brush technique over the other two techniques is the ability to place multiple markings in exactly the same anatomical position on each fish. The spray technique allows at most two different marks on the fish, while with refinement the fish can carry 4 to 6 different brush markings.

The hyperosmotic solution technique allows but a single dye mark to be used. However, application of the fluorescent dye with the hyperosmotic solution may be the method of choice under certain circumstances. Although

100% retention is maintained for only 9 days, a large number of fish can be marked with ease in a short time, with a minimal amount of equipment needed, and without imparting a great deal of stress on the fish due to minimum handling and no need for anesthetic. Variations of this hyperosmotic technique should be examined in the future, since Phinney et al. 1967 indicated air pressure and dye particle size could alter retention time. Different NaCl concentrations, various durations of emersion time, and different amounts and sizes of dye particles suspended in solution are among the factors that may influence hyperosmotic dye mark retention time. By manipulating these factors, it may be possible to extend the dye retention time with hyperosmotic solution and develop a highly desirable mass marking technique.

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### PERCENT OF FISH RETAINING DYE MARKERS

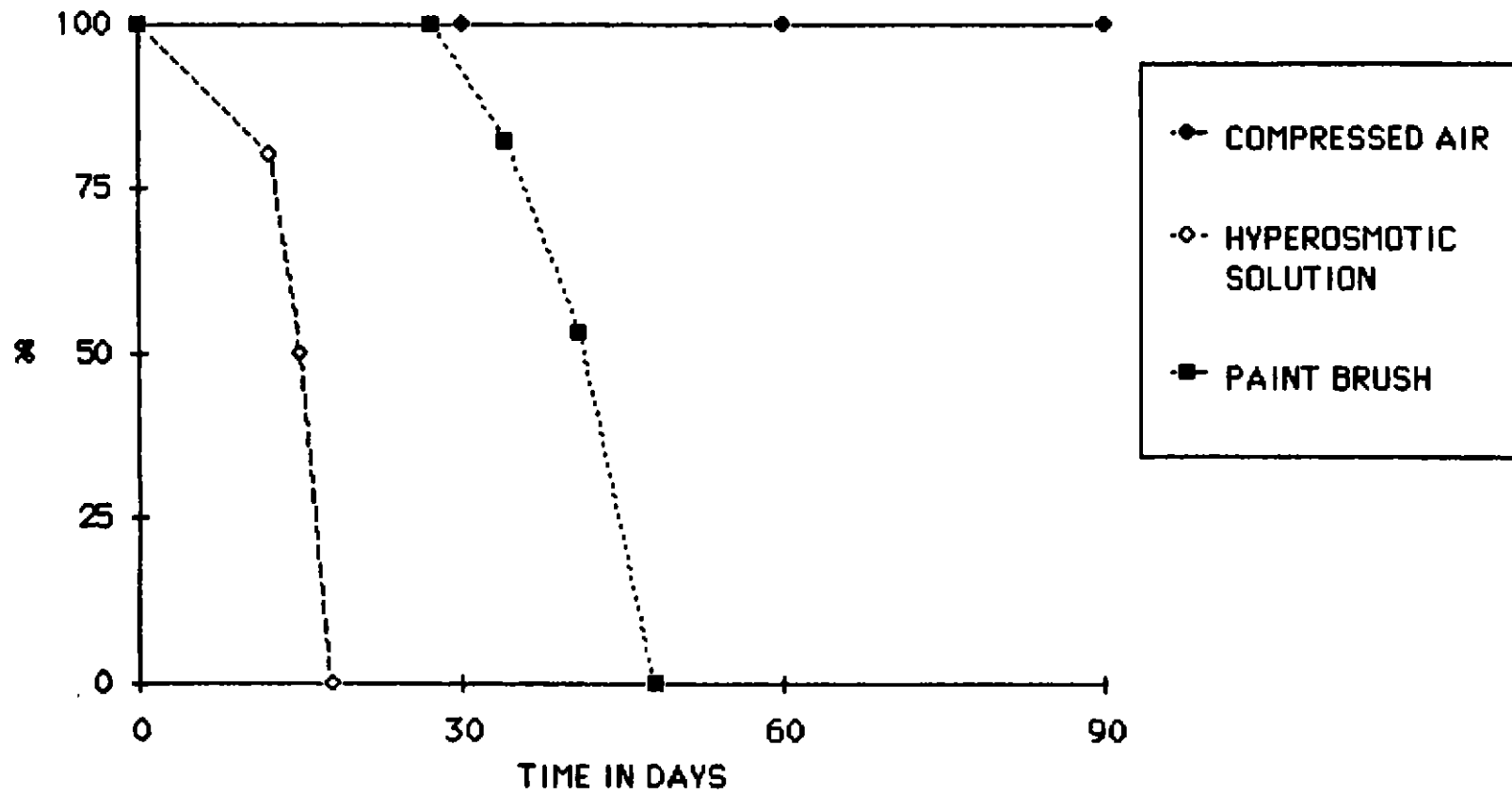


Figure 1. RETENTION TIME OF FLOURESCENT DYE MARK ON JUVENILE STEELHEAD (*Salmo gairdneri*)

Table 1. Stress measured as hours after handling that all the fish show a normal feeding response.

	Paint Brush	Hyperosmotic Solution	Compressed Spray	Control
Test	1	2	8	0
Control	1	2	1	0

APPENDIX F

SUMMER/FALL 1985 STEELHEAD AND COHO FRY GRAVEL BAR STRANDING DATA SUMMARY

This appendix includes a summary of the stranded fry from each of the twelve (12) gravel bar locations studied for each of the eighteen (18) tests completed (See Table F-1) followed by summary data for each gravel bar observation completed during the study (See Table F-2).

**TABLE F-1** NUMBER OF FRY STRANDED ON THE THIRTY-FIVE (35)  
GRAVEL BAR TEST-SITES BY DATE AND TEST TYPE DURING THE  
SUMMER 1985 GRAVEL BAR STEELHEAD STRANDING STUDY

D A T E	TOTAL FRY STRANDED	-----EVENT DESCRIPTION-----			
		AMP	RAMP	Double Test AMP      RAMP	
AUGUST 2, 1985	292	A1	R2	A1	R2
AUGUST 3	21	A1	R2		
AUGUST 4	209	A2	R3		
AUGUST 5	176	A2	R1		
AUGUST 6	217	A2	R2		
AUGUST 7	66	A1	R3		
AUGUST 8	166	A2	R2		
AUGUST 10	233	A2	R3		
AUGUST 11	59	A1	R2	A1	R2
AUGUST 12	113	A1	R3	A1	R3
AUGUST 13	22	A1	R1		
AUGUST 14	192	A2	R1		
AUGUST 15	145	A2	R1		
AUGUST 16	41	A1	R1	A1	R3
AUGUST 17	39	A1	R3		
AUGUST 18	82	A2	R3		
AUGUST 19	76	A2	R2		
AUGUST 20	22	A1	R2		

Amplitude: A1 = 2000 cfs  
A2 = 4000 cfs

Ramp Rate: R1 = 500 cfs/hr for 1/2 hour then 5000 cfs/hr (1).  
R2 = 1000 cfs/hr  
R3 = 5000 cfs/hr

(1). The accelerated ramp rate for the A2 = 4000 cfs tests had an actual downramp of 500 cfs/hr for 1.5 hours rather than 0.5 hours.



DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/02/85	DIOBSUD CR	1	rainy	-0-	22.000	87.000	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	-0-	22.000	87.000	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	-0-	22.000	87.000	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	-0-	16.500	92.000	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	-0-	16.500	92.000	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	-0-	16.500	92.000	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	-0-	16.500	92.000	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	-0-	16.500	92.000	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	-0-	16.500	92.000	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	-0-	16.500	92.000	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	-0-	11.500	95.600	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	-0-	11.500	95.600	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	-0-	11.500	95.600	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	-0-	11.500	95.600	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	-0-	40.000	75.000	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	-0-	40.000	75.000	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	-0-	8.0000	98.600	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	-0-	8.0000	98.600	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	-0-	8.0000	98.600	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	-0-	8.0000	98.600	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	-0-	8.0000	98.600	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	95.000	6.4000	-0-	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	98.000	6.0000	-0-	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	98.000	6.0000	-0-	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	98.000	6.0000	-0-	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	95.000	7.0000	-0-	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	95.000	7.0000	-0-	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	94.000	7.5000	-0-	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	94.000	7.5000	-0-	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	94.000	7.5000	-0-	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	94.000	7.5000	-0-	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	-0-	78.500	52.200	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	-0-	42.600	93.500	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	-0-	43.000	95.000	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	-0-	65.000	71.400	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	-0-	81.700	49.300	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	-0-	89.000	40.000	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	-0-	25.000	85.000	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	-0-	25.000	85.000	-0-	-0-
08/02/85	DIOBSUD CR	1	rainy	-0-	25.000	85.000	-0-	-0-
08/02/85	DIOBSUD CR	2	rainy	-0-	37.500	68.000	-0-	-0-
08/02/85	DIOBSUD CR	2	rainy	34.600	74.500	-0-	-0-	-0-
08/02/85	DIOBSUD CR	2	rainy	-0-	38.800	69.000	-0-	-0-
08/02/85	DIOBSUD CR	2	rainy	-0-	22.900	96.500	-0-	-0-
08/02/85	DIOBSUD CR	2	rainy	34.000	74.000	-0-	-0-	-0-
08/02/85	FACE BAR	1	rainy	-0-	79.200	24.800	2.40	STH
08/02/85	FACE BAR	1	rainy	-0-	79.300	20.700	2.90	STH
08/02/85	FACE BAR	1	rainy	-0-	84.000	17.400	3.00	STH
08/02/85	FACE BAR	1	rainy	-0-	62.500	39.700	2.50	STH
08/02/85	FACE BAR	1	rainy	-0-	32.900	70.100	2.80	STH
08/02/85	FACE BAR	1	rainy	92.400	15.500	-0-	3.00	STH

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/02/85	FACE BAR	2	rainy	-0-	-0-	-0-	-0-	-0-
08/02/85	FACE BAR	3	rainy	-0-	-0-	-0-	3.10	STH
08/02/85	FUNGUS BAR	1	cloudy	-0-	93.600	56.000	-0-	STH
08/02/85	FUNGUS BAR	1	cloudy	-0-	92.900	70.600	-0-	STH
08/02/85	FUNGUS BAR	1	cloudy	-0-	92.900	70.800	-0-	STH
08/02/85	FUNGUS BAR	1	cloudy	-0-	75.300	86.300	-0-	STH
08/02/85	FUNGUS BAR	1	cloudy	-0-	61.300	99.800	-0-	STH
08/02/85	FUNGUS BAR	1	cloudy	60.200	60.200	-0-	3.00	STH
08/02/85	FUNGUS BAR	1	cloudy	59.500	62.400	-0-	3.70	STH
08/02/85	FUNGUS BAR	1	cloudy	53.500	63.700	-0-	3.70	STH
08/02/85	FUNGUS BAR	1	cloudy	82.500	48.300	-0-	11.0	STH
08/02/85	FUNGUS BAR	1	cloudy	73.000	60.200	-0-	3.20	STH
08/02/85	FUNGUS BAR	1	cloudy	66.100	60.200	-0-	3.00	STH
08/02/85	FUNGUS BAR	1	cloudy	63.300	58.300	-0-	3.50	STH
08/02/85	FUNGUS BAR	1	cloudy	62.000	58.500	-0-	3.20	STH
08/02/85	FUNGUS BAR	1	cloudy	-0-	106.90	31.000	-0-	STH
08/02/85	FUNGUS BAR	1	cloudy	-0-	98.490	53.700	-0-	STH
08/02/85	FUNGUS BAR	1	cloudy	58.100	49.300	-0-	3.00	STH
08/02/85	FUNGUS BAR	2	rainy	-0-	-0-	-0-	4.00	STH
08/02/85	FUNGUS BAR	2	rainy	-0-	-0-	-0-	2.80	STH
08/02/85	FUNGUS BAR	2	rainy	-0-	-0-	-0-	3.00	STH
08/02/85	FUNGUS BAR	2	rainy	-0-	-0-	-0-	2.90	STH
08/02/85	FUNGUS BAR	2	rainy	-0-	58.100	82.500	3.20	STH
08/02/85	FUNGUS BAR	2	rainy	-0-	61.400	78.300	3.00	STH
08/02/85	FUNGUS BAR	2	rainy	-0-	61.500	76.500	-0-	-0-
08/02/85	FUNGUS BAR	2	rainy	10.000	61.800	65.300	-0-	-0-
08/02/85	FUNGUS BAR	2	rainy	-0-	68.900	65.700	-0-	-0-
08/02/85	FUNGUS BAR	2	rainy	-0-	72.000	65.400	-0-	-0-
08/02/85	FUNGUS BAR	2	rainy	-0-	74.500	98.500	-0-	-0-
08/02/85	FUNGUS BAR	2	rainy	-0-	74.700	67.500	-0-	-0-
08/02/85	FUNGUS BAR	2	rainy	-0-	67.000	58.400	-0-	-0-
08/02/85	FUNGUS BAR	2	rainy	-0-	76.800	48.500	-0-	-0-
08/02/85	FUNGUS BAR	2	rainy	-0-	81.400	50.400	-0-	-0-
08/02/85	FUNGUS BAR	2	rainy	-0-	85.000	46.200	-0-	-0-
08/02/85	FUNGUS BAR	2	rainy	-0-	83.900	45.800	-0-	-0-
08/02/85	FUNGUS BAR	2	rainy	-0-	82.400	45.400	-0-	-0-
08/02/85	FUNGUS BAR	2	rainy	-0-	97.400	43.700	-0-	-0-
08/02/85	FUNGUS BAR	2	rainy	-0-	97.300	41.600	-0-	-0-
08/02/85	FUNGUS BAR	2	rainy	-0-	107.40	38.400	-0-	-0-
08/02/85	FUNGUS BAR	2	rainy	-0-	18.600	32.300	-0-	-0-
08/02/85	FUNGUS BAR	2	rainy	-0-	19.000	36.100	-0-	-0-
08/02/85	FUNGUS BAR	2	rainy	-0-	100.80	36.300	-0-	-0-
08/02/85	FUNGUS BAR	2	rainy	-0-	76.100	43.300	-0-	-0-
08/02/85	FUNGUS BAR	2	rainy	100.00	15.300	-0-	4.00	STH
08/02/85	FUNGUS BAR	2	rainy	98.300	56.000	-0-	3.50	STH
08/02/85	FUNGUS BAR	2	rainy	96.900	62.700	-0-	3.60	STH
08/02/85	FUNGUS BAR	2	rainy	98.900	43.500	-0-	3.20	STH
08/02/85	FUNGUS BAR	2	rainy	99.100	41.900	-0-	3.00	STH
08/02/85	FUNGUS BAR	2	rainy	99.400	41.500	-0-	3.00	STH
08/02/85	FUNGUS BAR	2	rainy	-0-	51.400	-0-	3.10	STH
08/02/85	FUNGUS BAR	2	RAINY	63.200	94.900	-0-	7.50	STH

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/02/85	FUNGUS BAR	2	RAINY	62.500	99.900	-0-	7.10	STH
08/02/85	FUNGUS BAR	2	RAINY	76.400	68.400	-0-	5.40	STH
08/02/85	FUNGUS BAR	2	RAINY	77.000	66.400	-0-	3.00	STH
08/02/85	FUNGUS BAR	2	RAINY	69.500	65.500	-0-	3.10	STH
08/02/85	FUNGUS BAR	2	RAINY	68.300	65.800	-0-	3.80	STH
08/02/85	FUNGUS BAR	2	rainy	69.500	65.500	-0-	3.10	STH
08/02/85	FUNGUS BAR	2	rainy	68.300	65.800	-0-	3.80	STH
08/02/85	FUNGUS BAR	2	rainy	70.000	53.600	-0-	3.50	STH
08/02/85	FUNGUS BAR	2	RAINY	88.400	32.000	-0-	-0-	STH
08/02/85	FUNGUS BAR	2	RAINY	68.700	100.00	-0-	7.00	STH
08/02/85	FUNGUS BAR	2	RAINY	66.500	88.900	-0-	5.50	STH
08/02/85	FUNGUS BAR	3	rainy	31.600	79.900	-0-	3.00	STH
08/02/85	FUNGUS BAR	3	rainy	-0-	60.300	58.700	-0-	-0-
08/02/85	FUNGUS BAR	3	rainy	34.400	73.900	-0-	3.20	STH
08/02/85	FUNGUS BAR	3	rainy	36.700	74.400	-0-	2.90	STH
08/02/85	FUNGUS BAR	3	rainy	70.300	-0-	-0-	2.70	STH
08/02/85	FUNGUS BAR	3	rainy	41.000	74.100	-0-	3.40	STH
08/02/85	FUNGUS BAR	3	rainy	39.300	101.90	-0-	2.90	STH
08/02/85	FUNGUS BAR	3	rainy	40.500	100.30	-0-	3.20	STH
08/02/85	FUNGUS BAR	3	rainy	42.900	86.030	-0-	3.20	STH
08/02/85	FUNGUS BAR	3	rainy	36.300	81.100	-0-	-0-	-0-
08/02/85	FUNGUS BAR	3	rainy	68.200	51.700	-0-	-0-	-0-
08/02/85	FUNGUS BAR	3	rainy	66.800	50.900	-0-	-0-	-0-
08/02/85	FUNGUS BAR	3	rainy	-0-	78.500	50.900	-0-	-0-
08/02/85	FUNGUS BAR	3	rainy	-0-	17.500	92.400	5.80	COHO
08/02/85	FUNGUS BAR	3	rainy	25.900	92.100	-0-	3.30	STH
08/02/85	FUNGUS BAR	3	rainy	-0-	74.900	31.900	3.10	STH
08/02/85	FUNGUS BAR	3	rainy	25.600	91.900	-0-	2.80	STH
08/02/85	MARBLE MT	1	cloudy	66.000	48.000	-0-	-0-	-0-
08/02/85	MARBLE MT	1	cloudy	66.000	48.000	-0-	-0-	-0-
08/02/85	MARBLE MT	1	cloudy	66.000	48.000	-0-	-0-	-0-
08/02/85	MARBLE MT	1	cloudy	75.000	40.200	-0-	-0-	-0-
08/02/85	MARBLE MT	1	cloudy	75.000	40.200	-0-	-0-	-0-
08/02/85	MARBLE MT	1	cloudy	-0-	32.000	79.000	3.10	STH
08/02/85	MARBLE MT	1	cloudy	-0-	74.700	38.600	3.30	STH
08/02/85	MARBLE MT	1	cloudy	52.300	65.600	-0-	-0-	-0-
08/02/85	MARBLE MT	1	cloudy	91.500	29.600	-0-	-0-	-0-
08/02/85	MARBLE MT	1	cloudy	77.700	40.400	-0-	-0-	-0-
08/02/85	MARBLE MT	1	cloudy	77.700	40.400	-0-	-0-	-0-
08/02/85	MARBLE MT	1	cloudy	77.700	40.400	-0-	-0-	-0-
08/02/85	MARBLE MT	2	cloudy	-0-	-0-	-0-	-0-	-0-
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.20	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.00	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.00	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.70	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.20	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	0.00	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	0.00	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	0.00	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.40	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.10	STH

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.



DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.60	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.50	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.40	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.30	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.60	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.50	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.30	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.80	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	2.90	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.30	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.10	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.10	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.50	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	2.90	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.40	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.30	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.20	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.10	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.20	STH
08/02/85	MARBLE MT	3	cloudy	-0-	16.000	106.00	3.30	STH
08/02/85	MARBLE MT	3	cloudy	-0-	25.000	79.000	3.20	STH
08/02/85	MARBLE MT	3	cloudy	-0-	25.000	79.000	3.50	STH
08/02/85	MARBLE MT	3	cloudy	-0-	25.000	79.000	3.30	STH
08/02/85	MARBLE MT	3	cloudy	-0-	92.400	92.400	-0-	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.20	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.50	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.60	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.10	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.20	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.90	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.70	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.20	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	4.20	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.60	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.00	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	4.20	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.40	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.20	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.50	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.70	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.20	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.30	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.20	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	2.50	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.10	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.70	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.30	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	2.90	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	3.50	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	0.00	STH
08/02/85	MARBLE MT	3	cloudy	68.000	36.600	-0-	0.00	STH

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/02/85	DINK BAR	1	rainy	-0-	-0-	-0-	-0-	-0-
08/02/85	DINK BAR	2	rainy	-0-	-0-	-0-	-0-	-0-
08/02/85	DINK BAR	3	wet	-0-	-0-	-0-	-0-	-0-
08/02/85	ROCKPORT	1	RAINEY	-0-	78.200	30.400	-0-	-0-
08/02/85	ROCKPORT	1	RAINEY	-0-	93.100	16.300	-0-	-0-
08/02/85	ROCKPORT	1	RAINEY	-0-	81.800	23.400	-0-	-0-
08/02/85	ROCKPORT	1	RAINEY	-0-	70.400	33.600	-0-	-0-
08/02/85	ROCKPORT	1	RAINEY	-0-	65.600	37.000	-0-	-0-
08/02/85	ROCKPORT	1	RAINEY	-0-	57.600	42.800	-0-	-0-
08/02/85	ROCKPORT	1	RAINEY	-0-	53.800	46.700	-0-	-0-
08/02/85	ROCKPORT	1	RAINEY	-0-	51.800	99.000	-0-	-0-
08/02/85	ROCKPORT	1	RAINEY	-0-	50.000	50.600	-0-	-0-
08/02/85	ROCKPORT	1	RAINEY	-0-	44.800	56.900	-0-	-0-
08/02/85	ROCKPORT	1	RAINEY	-0-	42.200	59.000	-0-	-0-
08/02/85	ROCKPORT	1	RAINEY	-0-	41.600	60.000	-0-	-0-
08/02/85	ROCKPORT	1	RAINEY	-0-	41.700	60.000	-0-	-0-
08/02/85	ROCKPORT	1	RAINEY	-0-	38.400	63.700	-0-	-0-
08/02/85	ROCKPORT	1	RAINEY	-0-	34.500	66.400	-0-	-0-
08/02/85	ROCKPORT	1	RAINEY	-0-	33.200	68.300	-0-	-0-
08/02/85	ROCKPORT	1	RAINEY	-0-	27.300	74.700	-0-	-0-
08/02/85	ROCKPORT	1	RAINEY	-0-	9.8300	89.900	-0-	-0-
08/02/85	ROCKPORT	1	RAINEY	-0-	10.000	96.000	-0-	-0-
08/02/85	ROCKPORT	1	RAINEY	-0-	10.000	96.000	-0-	-0-
08/02/85	ROCKPORT	1	RAINEY	-0-	93.100	16.300	-0-	-0-
08/02/85	ROCKPORT	1	RAINEY	-0-	90.900	17.900	-0-	-0-
08/02/85	ROCKPORT	1	RAINEY	-0-	90.700	18.700	-0-	-0-
08/02/85	ROCKPORT	1	RAINEY	-0-	84.300	21.300	-0-	-0-
08/02/85	ROCKPORT	1	RAINEY	-0-	83.500	21.000	-0-	-0-
08/02/85	ROCKPORT	1	RAINEY	-0-	82.400	21.800	-0-	-0-
08/02/85	ROCKPORT	1	RAINEY	-0-	78.200	30.400	-0-	-0-
08/02/85	ROCKPORT	1	RAINEY	-0-	81.800	23.400	-0-	-0-
08/02/85	ROCKPORT	1	RAINEY	-0-	82.500	22.500	-0-	-0-
08/02/85	ROCKPORT	2	RAINEY	27.800	76.600	-0-	-0-	-0-
08/02/85	ROCKPORT	2	RAINEY	15.600	91.800	-0-	-0-	-0-
08/02/85	ROCKPORT	2	RAINEY	32.600	70.900	-0-	-0-	-0-
08/02/85	ROCKPORT	2	RAINEY	34.500	68.500	-0-	-0-	-0-
08/02/85	ROCKPORT	2	RAINEY	49.000	57.600	-0-	-0-	-0-
08/02/85	ROCKPORT	2	RAINEY	28.100	76.300	-0-	-0-	-0-
08/02/85	ROCKPORT	2	RAINEY	-0-	23.700	92.300	-0-	-0-
08/02/85	ROCKPORT	2	RAINEY	-0-	30.900	81.800	-0-	-0-
08/02/85	ROCKPORT	2	RAINEY	-0-	54.900	53.700	-0-	-0-
08/02/85	ROCKPORT	2	RAINEY	-0-	54.900	53.700	-0-	-0-
08/02/85	ROCKPORT	2	RAINEY	84.000	26.900	-0-	-0-	-0-
08/02/85	ROCKPORT	2	RAINEY	85.500	25.400	-0-	-0-	-0-
08/02/85	ROCKPORT	2	RAINEY	96.200	22.900	-0-	-0-	-0-
08/02/85	ROCKPORT	2	RAINEY	49.300	57.100	-0-	-0-	-0-
08/02/85	ROCKPORT	2	RAINEY	49.700	56.200	-0-	-0-	-0-
08/02/85	ROCKPORT	2	RAINEY	50.000	56.000	-0-	-0-	-0-
08/02/85	ROCKPORT	2	RAINEY	50.000	55.800	-0-	-0-	-0-
08/02/85	ROCKPORT	2	RAINEY	79.300	30.800	-0-	-0-	-0-
08/02/85	ROCKPORT	2	RAINEY	100.60	23.200	-0-	-0-	-0-

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/02/85	ROCKPORT	3	RAINEY	21.900	92.000	-0-	-0-	STH
08/02/85	ROCKPORT	3	RAINEY	-0-	74.400	47.100	-0-	STH
08/02/85	ROCKPORT	3	RAINEY	-0-	71.500	49.700	-0-	STH
08/03/85	BACON CR	1	rainy	-0-	98.700	23.800	3.10	STH
08/03/85	BACON CR	2	rainy	-0-	-0-	-0-	-0-	-0-
08/03/85	BACON CR	3	rainy	-0-	-0-	-0-	-0-	-0-
08/03/85	BAD SPOT	1	rainy	-0-	30.200	91.500	2.50	STH
08/03/85	BAD SPOT	2	rainy	-0-	91.500	37.600	2.80	STH
08/03/85	BAD SPOT	3	rainy	-0-	-0-	-0-	-0-	-0-
08/03/85	BAD SPOT	4	rainy	-0-	-0-	-0-	-0-	-0-
08/03/85	BIG EDDY	1	rainy	-0-	-0-	-0-	-0-	-0-
08/03/85	BIG EDDY	2	rainy	-0-	-0-	-0-	-0-	-0-
08/03/85	BIG EDDY	3	rainy	-0-	-0-	-0-	-0-	-0-
08/03/85	DIOBSUD CR	1	rainy	-0-	-0-	-0-	-0-	-0-
08/03/85	DIOBSUD CR	2	rainy	-0-	30.700	73.600	3.10	STH
08/03/85	FACE BAR	1	rainy	86.500	16.700	-0-	-0-	-0-
08/03/85	FACE BAR	1	rainy	-0-	17.100	87.800	-0-	-0-
08/03/85	FACE BAR	1	rainy	66.700	36.600	-0-	-0-	-0-
08/03/85	FACE BAR	1	rainy	71.800	30.800	-0-	-0-	-0-
08/03/85	FACE BAR	1	rainy	57.600	47.600	-0-	-0-	-0-
08/03/85	FACE BAR	1	rainy	59.000	42.200	-0-	-0-	-0-
08/03/85	FACE BAR	1	rainy	28.300	75.800	-0-	-0-	-0-
08/03/85	FACE BAR	1	rainy	24.300	76.600	-0-	-0-	-0-
08/03/85	FACE BAR	2	rainy	-0-	-0-	-0-	-0-	-0-
08/03/85	FACE BAR	3	rainy	-0-	-0-	-0-	-0-	-0-
08/03/85	FORBIDDEN	1	rainy	52.900	59.400	-0-	3.20	STH
08/03/85	FORBIDDEN	2	rainy	-0-	-0-	-0-	-0-	-0-
08/03/85	FORBIDDEN	3	CLEAR	0.0000	-0-	-0-	-0-	-0-
08/03/85	FUNGUS BAR	1	rainy	-0-	-0-	-0-	-0-	-0-
08/03/85	FUNGUS BAR	2	rainy	61.300	38.300	-0-	3.30	STH
08/03/85	FUNGUS BAR	2	rainy	68.900	30.900	-0-	4.40	STH
08/03/85	FUNGUS BAR	2	rainy	20.700	85.400	-0-	3.20	STH
08/03/85	FUNGUS BAR	2	rainy	57.200	42.600	-0-	3.30	STH
08/03/85	FUNGUS BAR	3	rainy	-0-	-0-	-0-	-0-	-0-
08/03/85	INACCESSIB	1	rainy	-0-	-0-	-0-	-0-	-0-
08/03/85	INACCESSIB	2	rainy	98.000	12.500	-0-	2.30	STH
08/03/85	INACCESSIB	3	rainy	-0-	-0-	-0-	-0-	-0-
08/03/85	MARBLE MT	1	CLEAR	0.0000	-0-	-0-	-0-	-0-
08/03/85	MARBLE MT	2	rainy	-0-	-0-	-0-	-0-	-0-
08/03/85	MARBLE MT	3	rainy	-0-	-0-	-0-	-0-	-0-
08/03/85	DINK BAR	1	rainy	-0-	-0-	-0-	-0-	-0-
08/03/85	DINK BAR	2	rainy	-0-	-0-	-0-	-0-	-0-
08/03/85	DINK BAR	3	rainy	-0-	-0-	-0-	-0-	-0-
08/03/85	ROCKPORT	1	CLOUDY	39.700	58.500	-0-	2.90	STH
08/03/85	ROCKPORT	2	CLOUDY	85.000	29.700	-0-	2.90	STH
08/03/85	ROCKPORT	3	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/03/85	WAYNE SWIM	1	rainy	35.800	66.000	-0-	-0-	sth
08/03/85	WAYNE SWIM	2	rainy	-0-	-0-	-0-	-0-	-0-
08/04/85	BACON CR	1	RAINY	78.700	50.700	-0-	3.10	STH
08/04/85	BACON CR	2	RAINY	-0-	-0-	-0-	-0-	-0-
08/04/85	BACON CR	3	RAINY	-0-	-0-	-0-	-0-	-0-

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/04/85	BAD SPOT	1	RAINY	-0-	30.700	90.000	2.90	STH
08/04/85	BAD SPOT	1	RAINY	-0-	51.500	59.000	2.70	STH
08/04/85	BAD SPOT	1	RAINY	50.300	84.500	-0-	3.00	STH
08/04/85	BAD SPOT	1	RAINY	-0-	37.300	88.000	3.20	STH
08/04/85	BAD SPOT	2	RAINY	-0-	30.300	100.00	2.90	STH
08/04/85	BAD SPOT	2	RAINY	97.000	42.000	-0-	3.00	STH
08/04/85	BAD SPOT	2	RAINY	-0-	74.000	37.700	2.90	STH
08/04/85	BAD SPOT	2	RAINY	-0-	29.800	96.600	3.10	STH
08/04/85	BAD SPOT	2	RAINY	-0-	30.300	100.00	3.10	STH
08/04/85	BAD SPOT	2	RAINY	-0-	61.900	57.600	-0-	STH
08/04/85	BAD SPOT	3	RAINY	-0-	85.600	47.000	2.80	STH
08/04/85	BAD SPOT	3	RAINY	-0-	95.500	44.200	-0-	STH
08/04/85	BAD SPOT	3	RAINY	-0-	85.600	47.000	3.10	STH
08/04/85	BAD SPOT	3	RAINY	-0-	85.600	47.000	2.80	STH
08/04/85	BAD SPOT	3	RAINY	-0-	99.200	39.300	-0-	STH
08/04/85	BAD SPOT	3	RAINY	-0-	85.600	47.000	-0-	STH
08/04/85	BAD SPOT	4	RAINY	-0-	-0-	-0-	-0-	-0-
08/04/85	BIG EDDY	1	RAINY	52.300	66.900	-0-	3.00	STH
08/04/85	BIG EDDY	1	RAINY	-0-	41.400	75.000	3.20	STH
08/04/85	BIG EDDY	1	RAINY	66.900	45.700	-0-	3.00	STH
08/04/85	BIG EDDY	1	RAINY	75.500	46.100	-0-	3.20	STH
08/04/85	BIG EDDY	1	RAINY	50.700	72.500	-0-	3.00	STH
08/04/85	BIG EDDY	1	RAINY	79.600	40.900	-0-	2.90	STH
08/04/85	BIG EDDY	2	RAINY	79.400	33.200	-0-	3.10	STH
08/04/85	BIG EDDY	2	RAINY	68.700	43.600	-0-	3.30	STH
08/04/85	BIG EDDY	2	RAINY	-0-	31.600	83.400	3.30	STH
08/04/85	BIG EDDY	3	RAINY	-0-	-0-	-0-	-0-	-0-
08/04/85	DIOBSUD CR	1	RAINY	42.500	105.00	-0-	3.30	STH
08/04/85	DIOBSUD CR	1	RAINY	-0-	73.000	53.600	3.20	STH
08/04/85	DIOBSUD CR	1	RAINY	-0-	76.000	53.000	-0-	STH
08/04/85	DIOBSUD CR	1	RAINY	-0-	79.000	55.000	-0-	STH
08/04/85	DIOBSUD CR	1	RAINY	-0-	79.000	55.000	-0-	STH
08/04/85	DIOBSUD CR	1	RAINY	-0-	79.000	55.000	-0-	STH
08/04/85	DIOBSUD CR	1	RAINY	60.000	57.700	-0-	2.90	STH
08/04/85	DIOBSUD CR	1	RAINY	40.800	102.00	-0-	2.80	STH
08/04/85	DIOBSUD CR	1	RAINY	45.000	103.00	-0-	3.10	STH
08/04/85	DIOBSUD CR	1	RAINY	45.000	103.00	-0-	-0-	STH
08/04/85	DIOBSUD CR	1	RAINY	-0-	79.000	55.000	3.00	STH
08/04/85	DIOBSUD CR	1	RAINY	42.500	105.00	-0-	3.50	STH
08/04/85	DIOBSUD CR	1	RAINY	42.500	105.00	-0-	3.40	STH
08/04/85	DIOBSUD CR	1	RAINY	42.500	105.00	-0-	2.70	STH
08/04/85	DIOBSUD CR	1	RAINY	42.500	105.00	-0-	3.00	STH
08/04/85	DIOBSUD CR	1	RAINY	-0-	73.000	53.600	-0-	STH
08/04/85	DIOBSUD CR	1	RAINY	-0-	70.000	53.800	2.70	STH
08/04/85	DIOBSUD CR	1	RAINY	-0-	70.000	53.800	2.90	STH
08/04/85	DIOBSUD CR	1	RAINY	-0-	76.000	53.000	-0-	STH
08/04/85	DIOBSUD CR	1	RAINY	-0-	76.000	53.000	-0-	STH
08/04/85	DIOBSUD CR	1	RAINY	-0-	76.000	53.000	-0-	STH
08/04/85	DIOBSUD CR	1	RAINY	-0-	76.000	53.000	-0-	STH
08/04/85	DIOBSUD CR	1	RAINY	-0-	76.000	53.000	-0-	STH
08/04/85	DIOBSUD CR	1	RAINY	-0-	79.000	55.000	-0-	STH
08/04/85	DIOBSUD CR	1	RAINY	-0-	76.000	53.000	2.70	STH

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/04/85	DIOBSUD CR	1	RAINY	40.800	102.00	-0-	3.20	STH
08/04/85	DIOBSUD CR	1	RAINY	40.800	102.00	-0-	3.10	STH
08/04/85	DIOBSUD CR	1	RAINY	42.500	105.00	-0-	3.20	STH
08/04/85	DIOBSUD CR	1	RAINY	-0-	73.000	53.600	-0-	STH
08/04/85	DIOBSUD CR	2	RAINY	31.000	89.700	-0-	2.80	STH
08/04/85	DIOBSUD CR	2	RAINY	30.500	78.000	-0-	3.40	STH
08/04/85	DIOBSUD CR	2	RAINY	20.500	81.000	-0-	2.90	STH
08/04/85	DIOBSUD CR	2	RAINY	36.500	77.000	-0-	3.20	STH
08/04/85	DIOBSUD CR	2	RAINY	27.000	87.600	-0-	3.50	STH
08/04/85	DIOBSUD CR	2	RAINY	31.000	78.000	-0-	2.80	STH
08/04/85	FACE BAR	1	RAINY	-0-	47.000	53.600	3.10	STH
08/04/85	FACE BAR	1	RAINY	89.500	23.000	-0-	3.00	STH
08/04/85	FACE BAR	1	RAINY	-0-	43.800	56.000	3.00	STH
08/04/85	FACE BAR	1	RAINY	101.90	25.600	-0-	2.90	STH
08/04/85	FACE BAR	1	RAINY	101.10	23.100	-0-	3.00	STH
08/04/85	FACE BAR	1	RAINY	77.100	25.800	-0-	3.50	STH
08/04/85	FACE BAR	1	RAINY	77.400	29.600	-0-	3.50	STH
08/04/85	FACE BAR	1	RAINY	78.300	31.300	-0-	3.50	STH
08/04/85	FACE BAR	1	RAINY	85.000	23.500	-0-	3.20	STH
08/04/85	FACE BAR	1	RAINY	26.400	77.400	-0-	3.10	STH
08/04/85	FACE BAR	1	RAINY	42.600	62.900	-0-	3.50	STH
08/04/85	FACE BAR	1	RAINY	51.700	54.000	-0-	3.10	STH
08/04/85	FACE BAR	1	RAINY	71.200	35.500	-0-	3.40	STH
08/04/85	FACE BAR	1	RAINY	-0-	69.600	47.100	3.40	STH
08/04/85	FACE BAR	1	RAINY	-0-	76.600	23.500	3.10	STH
08/04/85	FACE BAR	1	RAINY	-0-	35.400	65.700	3.50	STH
08/04/85	FACE BAR	1	RAINY	-0-	40.600	63.500	3.00	STH
08/04/85	FACE BAR	1	RAINY	-0-	38.200	62.900	3.50	STH
08/04/85	FACE BAR	1	RAINY	-0-	35.100	65.700	3.40	STH
08/04/85	FACE BAR	1	RAINY	-0-	12.000	97.900	2.70	STH
08/04/85	FACE BAR	1	RAINY	102.50	21.100	-0-	3.20	STH
08/04/85	FACE BAR	1	RAINY	-0-	47.500	53.300	3.00	STH
08/04/85	FACE BAR	2	RAINY	-0-	-0-	-0-	-0-	-0-
08/04/85	FACE BAR	3	RAINY	-0-	-0-	-0-	-0-	-0-
08/04/85	FORBIDDEN	1	RAINY	66.800	59.800	-0-	3.00	STH
08/04/85	FORBIDDEN	1	RAINY	64.200	47.900	-0-	3.30	STH
08/04/85	FORBIDDEN	1	RAINY	33.100	98.500	-0-	3.30	STH
08/04/85	FORBIDDEN	2	RAINY	-0-	-0-	-0-	-0-	-0-
08/04/85	FORBIDDEN	3	RAINY	-0-	25.100	85.200	4.60	STH
08/04/85	FORBIDDEN	3	RAINY	-0-	94.600	15.600	3.50	STH
08/04/85	FORBIDDEN	3	RAINY	28.400	78.600	-0-	3.30	STH
08/04/85	FUNGUS BAR	1	RAINY	-0-	98.000	37.900	-0-	-0-
08/04/85	FUNGUS BAR	1	RAINY	-0-	78.700	45.500	-0-	-0-
08/04/85	FUNGUS BAR	1	RAINY	-0-	40.500	75.500	-0-	-0-
08/04/85	FUNGUS BAR	1	RAINY	-0-	67.400	31.100	-0-	-0-
08/04/85	FUNGUS BAR	1	RAINY	-0-	35.100	95.500	-0-	-0-
08/04/85	FUNGUS BAR	1	RAINY	-0-	36.000	96.300	-0-	-0-
08/04/85	FUNGUS BAR	1	RAINY	-0-	77.400	34.800	-0-	-0-
08/04/85	FUNGUS BAR	2	RAINY	-0-	60.400	41.700	-0-	-0-
08/04/85	FUNGUS BAR	2	RAINY	83.000	44.900	-0-	-0-	-0-
08/04/85	FUNGUS BAR	2	RAINY	24.800	75.100	-0-	-0-	-0-

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/04/85	FUNGUS BAR	2	RAINY	102.10	31.900	-0-	-0-	-0-
08/04/85	FUNGUS BAR	2	RAINY	-0-	43.500	58.000	-0-	-0-
08/04/85	FUNGUS BAR	2	RAINY	83.000	39.900	-0-	-0-	-0-
08/04/85	FUNGUS BAR	2	RAINY	92.900	42.500	-0-	-0-	-0-
08/04/85	FUNGUS BAR	2	RAINY	-0-	80.600	32.800	-0-	-0-
08/04/85	FUNGUS BAR	2	RAINY	60.100	58.800	-0-	-0-	-0-
08/04/85	FUNGUS BAR	2	RAINY	39.600	64.800	-0-	-0-	-0-
08/04/85	FUNGUS BAR	2	RAINY	64.300	41.600	-0-	-0-	-0-
08/04/85	FUNGUS BAR	2	RAINY	32.900	73.400	-0-	-0-	-0-
08/04/85	FUNGUS BAR	2	RAINY	28.600	76.800	-0-	-0-	-0-
08/04/85	FUNGUS BAR	2	RAINY	28.800	76.800	-0-	-0-	-0-
08/04/85	FUNGUS BAR	2	RAINY	81.200	24.600	-0-	-0-	-0-
08/04/85	FUNGUS BAR	2	RAINY	23.900	90.100	-0-	-0-	-0-
08/04/85	FUNGUS BAR	2	RAINY	-0-	34.000	73.000	-0-	-0-
08/04/85	FUNGUS BAR	2	RAINY	-0-	33.400	72.800	-0-	-0-
08/04/85	FUNGUS BAR	2	RAINY	-0-	33.400	72.800	-0-	-0-
08/04/85	FUNGUS BAR	2	RAINY	-0-	43.900	65.100	-0-	-0-
08/04/85	FUNGUS BAR	2	RAINY	-0-	93.500	75.800	-0-	-0-
08/04/85	FUNGUS BAR	2	RAINY	23.900	100.20	-0-	-0-	-0-
08/04/85	FUNGUS BAR	2	RAINY	-0-	71.800	31.500	-0-	-0-
08/04/85	FUNGUS BAR	2	RAINY	15.000	85.200	-0-	-0-	-0-
08/04/85	FUNGUS BAR	2	RAINY	42.500	64.200	-0-	-0-	-0-
08/04/85	FUNGUS BAR	2	RAINY	20.100	87.700	-0-	-0-	-0-
08/04/85	FUNGUS BAR	3	RAINY	-0-	90.200	27.000	-0-	-0-
08/04/85	FUNGUS BAR	3	RAINY	28.000	103.60	-0-	-0-	-0-
08/04/85	FUNGUS BAR	3	RAINY	-0-	49.400	63.200	-0-	-0-
08/04/85	FUNGUS BAR	3	RAINY	-0-	87.000	28.100	-0-	-0-
08/04/85	FUNGUS BAR	3	RAINY	49.600	64.600	-0-	-0-	-0-
08/04/85	INACCESSIB	1	RAINY	15.000	85.000	-0-	-0-	-0-
08/04/85	INACCESSIB	1	RAINY	-0-	80.300	22.800	-0-	-0-
08/04/85	INACCESSIB	1	RAINY	-0-	10.200	101.20	-0-	-0-
08/04/85	INACCESSIB	1	RAINY	-0-	80.400	22.700	-0-	-0-
08/04/85	INACCESSIB	1	RAINY	-0-	79.200	23.700	-0-	-0-
08/04/85	INACCESSIB	2	RAINY	-0-	28.300	99.100	-0-	-0-
08/04/85	INACCESSIB	2	RAINY	-0-	42.200	103.00	-0-	-0-
08/04/85	INACCESSIB	2	RAINY	-0-	15.800	99.400	-0-	-0-
08/04/85	INACCESSIB	3	RAINY	-0-	-0-	-0-	-0-	-0-
08/04/85	MARBLE MT	1	RAINY	-0-	68.400	50.700	-0-	-0-
08/04/85	MARBLE MT	1	RAINY	65.200	48.300	-0-	-0-	-0-
08/04/85	MARBLE MT	1	RAINY	51.700	62.200	-0-	-0-	-0-
08/04/85	MARBLE MT	1	RAINY	79.800	23.200	-0-	-0-	-0-
08/04/85	MARBLE MT	1	RAINY	88.600	14.800	-0-	-0-	-0-
08/04/85	MARBLE MT	1	RAINY	-0-	20.000	105.00	-0-	-0-
08/04/85	MARBLE MT	1	RAINY	-0-	19.800	102.40	-0-	-0-
08/04/85	MARBLE MT	1	RAINY	-0-	18.400	100.70	-0-	-0-
08/04/85	MARBLE MT	1	RAINY	-0-	15.400	97.500	-0-	-0-
08/04/85	MARBLE MT	1	RAINY	-0-	53.700	80.300	-0-	-0-
08/04/85	MARBLE MT	1	RAINY	-0-	43.000	74.800	-0-	-0-
08/04/85	MARBLE MT	1	RAINY	-0-	49.700	71.400	-0-	-0-
08/04/85	MARBLE MT	1	RAINY	-0-	50.100	69.400	-0-	-0-
08/04/85	MARBLE MT	1	RAINY	-0-	47.300	65.600	-0-	-0-

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/04/85	MARBLE MT	1	RAINY	62.600	43.500	-0-	-0-	-0-
08/04/85	MARBLE MT	1	RAINY	75.600	24.400	-0-	-0-	-0-
08/04/85	MARBLE MT	1	RAINY	76.500	24.000	-0-	-0-	-0-
08/04/85	MARBLE MT	1	RAINY	80.200	21.400	-0-	-0-	-0-
08/04/85	MARBLE MT	1	RAINY	78.800	23.700	-0-	-0-	-0-
08/04/85	MARBLE MT	1	RAINY	-0-	51.400	62.400	-0-	-0-
08/04/85	MARBLE MT	2	RAINY	35.800	66.400	-0-	-0-	-0-
08/04/85	MARBLE MT	2	RAINY	-0-	45.200	58.600	-0-	-0-
08/04/85	MARBLE MT	2	RAINY	-0-	17.800	84.200	-0-	-0-
08/04/85	MARBLE MT	2	RAINY	-0-	63.500	36.700	-0-	-0-
08/04/85	MARBLE MT	2	RAINY	-0-	63.500	36.700	-0-	-0-
08/04/85	MARBLE MT	2	RAINY	7.4000	94.400	-0-	-0-	-0-
08/04/85	MARBLE MT	2	RAINY	28.700	73.600	-0-	-0-	-0-
08/04/85	MARBLE MT	2	RAINY	5.0000	99.800	-0-	-0-	-0-
08/04/85	MARBLE MT	2	RAINY	-0-	45.200	58.600	-0-	-0-
08/04/85	MARBLE MT	3	RAINY	-0-	19.700	81.000	-0-	-0-
08/04/85	MARBLE MT	3	RAINY	-0-	23.200	77.300	-0-	-0-
08/04/85	MARBLE MT	3	RAINY	-0-	34.900	65.300	-0-	-0-
08/04/85	MARBLE MT	3	RAINY	-0-	22.400	78.400	-0-	-0-
08/04/85	MARBLE MT	3	RAINY	20.300	80.300	-0-	-0-	-0-
08/04/85	MARBLE MT	3	RAINY	25.800	73.800	-0-	-0-	-0-
08/04/85	MARBLE MT	3	RAINY	-0-	32.300	67.600	-0-	-0-
08/04/85	DINK BAR	1	RAINY	-0-	61.200	59.800	3.50	STH
08/04/85	DINK BAR	1	RAINY	-0-	38.800	90.300	3.30	STH
08/04/85	DINK BAR	1	RAINY	-0-	50.000	72.500	3.00	STH
08/04/85	DINK BAR	1	RAINY	-0-	34.200	93.600	3.60	STH
08/04/85	DINK BAR	1	RAINY	-0-	24.500	94.800	3.10	STH
08/04/85	DINK BAR	1	RAINY	94.000	31.800	-0-	3.00	STH
08/04/85	DINK BAR	1	RAINY	72.700	49.500	-0-	3.40	STH
08/04/85	DINK BAR	1	RAINY	-0-	43.000	96.700	3.20	STH
08/04/85	DINK BAR	2	RAINY	-0-	73.000	45.500	3.50	STH
08/04/85	DINK BAR	2	RAINY	-0-	40.500	86.800	3.00	STH
08/04/85	DINK BAR	2	RAINY	-0-	66.700	40.800	3.30	STH
08/04/85	DINK BAR	2	RAINY	88.000	18.000	-0-	3.60	STH
08/04/85	DINK BAR	2	RAINY	91.500	32.500	-0-	3.80	STH
08/04/85	DINK BAR	2	RAINY	89.000	30.600	-0-	3.20	STH
08/04/85	DINK BAR	2	RAINY	43.400	117.50	-0-	3.30	STH
08/04/85	DINK BAR	2	RAINY	-0-	20.600	95.500	3.20	STH
08/04/85	DINK BAR	3	RAINY	-0-	26.600	76.300	3.50	STH
08/04/85	DINK BAR	3	RAINY	93.500	30.800	-0-	3.30	STH
08/04/85	DINK BAR	3	RAINY	93.200	29.000	-0-	3.20	STH
08/04/85	DINK BAR	3	RAINY	88.700	30.400	-0-	3.20	STH
08/04/85	DINK BAR	3	RAINY	89.700	30.000	-0-	3.50	STH
08/04/85	DINK BAR	3	RAINY	87.500	38.000	-0-	3.60	STH
08/04/85	DINK BAR	3	RAINY	86.400	33.100	-0-	3.50	STH
08/04/85	DINK BAR	3	RAINY	82.400	34.700	-0-	3.40	STH
08/04/85	DINK BAR	3	RAINY	81.700	35.200	-0-	3.10	STH
08/04/85	DINK BAR	3	RAINY	76.900	38.800	-0-	3.70	STH
08/04/85	DINK BAR	3	RAINY	91.700	30.500	-0-	3.30	STH
08/04/85	DINK BAR	3	RAINY	40.000	82.900	-0-	3.20	STH
08/04/85	DINK BAR	3	RAINY	38.400	89.000	-0-	3.10	STH

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/04/85	DINK BAR	3	RAINY	71.300	40.600	-0-	3.10	STH
08/04/85	ROCKPORT	1	CLOUDY	31.100	75.200	-0-	3.50	STH
08/04/85	ROCKPORT	1	CLOUDY	96.800	29.900	-0-	3.20	STH
08/04/85	ROCKPORT	1	CLOUDY	-0-	56.500	62.900	3.60	STH
08/04/85	ROCKPORT	1	CLOUDY	73.400	41.200	-0-	3.60	STH
08/04/85	ROCKPORT	2	CLOUDY	38.100	101.30	-0-	3.50	STH
08/04/85	ROCKPORT	2	CLOUDY	-0-	99.600	40.600	2.80	STH
08/04/85	ROCKPORT	2	CLOUDY	42.900	88.700	-0-	3.20	STH
08/04/85	ROCKPORT	3	CLOUDY	60.700	70.200	-0-	3.10	STH
08/04/85	ROCKPORT	3	CLOUDY	40.300	92.800	-0-	3.50	STH
08/04/85	WAYNE SWIM	1	RAINY	0.0000	-0-	-0-	-0-	-0-
08/04/85	WAYNE SWIM	2	RAINY	0.0000	-0-	-0-	-0-	-0-
08/05/85	BACON CR	1	CLEAR DRY	-0-	-0-	-0-	-0-	-0-
08/05/85	BACON CR	2	CLEAR DRY	-0-	-0-	-0-	-0-	-0-
08/05/85	BACON CR	3	CLEAR DRY	-0-	-0-	-0-	-0-	-0-
08/05/85	BAD SPOT	1	SUN / DRY	75.000	46.500	-0-	3.30	STH
08/05/85	BAD SPOT	1	SUN / DRY	95.000	37.300	-0-	3.00	STH
08/05/85	BAD SPOT	2	SUN / DRY	-0-	29.500	101.00	3.10	STH
08/05/85	BAD SPOT	2	SUN / DRY	-0-	63.900	50.800	2.90	STH
08/05/85	BAD SPOT	2	SUN / DRY	-0-	50.000	69.800	3.20	STH
08/05/85	BAD SPOT	3	SUN / DRY	-0-	-0-	-0-	-0-	-0-
08/05/85	BAD SPOT	4	SUN / DRY	-0-	-0-	-0-	-0-	-0-
08/05/85	BIG EDDY	1	SUN / DRY	50.300	72.700	-0-	3.20	STH
08/05/85	BIG EDDY	1	SUN / DRY	37.200	99.700	-0-	3.20	STH
08/05/85	BIG EDDY	2	SUN / DRY	-0-	-0-	-0-	-0-	-0-
08/05/85	BIG EDDY	3	SUN / DRY	-0-	-0-	-0-	-0-	-0-
08/05/85	DIOBSUD CR	1	CLEAR DRY	47.900	106.60	-0-	3.20	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	47.900	106.60	-0-	3.10	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	46.700	109.00	-0-	3.10	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	40.700	107.70	-0-	3.10	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	38.800	106.20	-0-	3.20	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	48.100	105.70	-0-	3.30	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	43.000	106.80	-0-	3.20	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	32.600	94.200	-0-	3.50	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	42.300	96.400	-0-	3.00	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	36.500	92.300	-0-	3.20	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	35.700	104.30	-0-	2.90	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	42.700	106.40	-0-	2.90	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	42.400	105.60	-0-	3.20	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	42.400	105.60	-0-	3.10	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	42.400	106.70	-0-	3.20	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	57.700	65.900	-0-	3.20	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	59.100	63.800	-0-	3.20	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	53.800	60.700	-0-	2.80	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	54.600	67.500	-0-	3.30	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	44.500	-0-	-0-	3.20	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	-0-	-0-	-0-	3.00	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	41.200	107.90	-0-	2.90	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	62.300	50.900	-0-	3.50	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	72.800	57.200	-0-	3.30	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	52.500	111.10	-0-	3.20	STH

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.



DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/05/85	DIOBSUD CR	1	CLEAR DRY	42.200	99.900	-0-	3.20	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	40.800	100.80	-0-	3.50	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	40.100	102.90	-0-	3.20	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	35.700	100.20	-0-	3.00	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	46.200	94.000	-0-	3.20	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	34.500	94.800	-0-	3.60	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	48.700	76.000	-0-	-0-	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	51.000	75.300	-0-	-0-	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	47.100	77.300	-0-	-0-	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	49.400	70.900	-0-	3.30	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	41.100	89.430	-0-	3.00	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	50.700	77.300	-0-	-0-	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	49.300	77.300	-0-	-0-	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	49.300	77.300	-0-	-0-	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	50.100	105.00	-0-	3.50	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	72.800	57.200	-0-	-0-	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	74.800	51.600	-0-	3.10	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	70.200	51.000	-0-	3.20	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	51.000	70.300	-0-	3.10	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	55.500	72.800	-0-	3.20	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	60.100	73.300	-0-	3.20	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	50.600	66.200	-0-	3.50	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	42.400	106.40	-0-	3.30	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	42.500	106.80	-0-	3.50	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	42.800	106.00	-0-	3.30	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	42.700	106.40	-0-	3.00	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	58.000	54.000	-0-	3.50	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	58.000	54.000	-0-	-0-	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	63.400	48.800	-0-	3.20	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	50.200	105.00	-0-	3.00	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	75.700	39.500	-0-	3.20	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	74.500	44.000	-0-	3.30	STH
08/05/85	DIOBSUD CR	1	CLEAR DRY	-0-	-0-	-0-	3.00	STH
08/05/85	DIOBSUD CR	2	CLEAR DRY	-0-	-0-	-0-	-0-	-0-
08/05/85	FACE BAR	1	CLEAR DRY	74.400	48.500	-0-	3.60	STH
08/05/85	FACE BAR	1	CLEAR DRY	92.200	45.300	-0-	3.50	STH
08/05/85	FACE BAR	1	CLEAR DRY	94.700	39.000	-0-	3.40	STH
08/05/85	FACE BAR	1	CLEAR DRY	98.500	31.700	-0-	3.40	STH
08/05/85	FACE BAR	1	CLEAR DRY	47.600	68.200	-0-	3.30	STH
08/05/85	FACE BAR	1	CLEAR DRY	-0-	50.100	61.200	3.60	STH
08/05/85	FACE BAR	1	CLEAR DRY	78.100	43.100	-0-	3.70	STH
08/05/85	FACE BAR	1	CLEAR DRY	-0-	32.700	89.000	3.20	STH
08/05/85	FACE BAR	1	CLEAR DRY	-0-	29.500	95.400	3.70	STH
08/05/85	FACE BAR	1	CLEAR DRY	46.300	68.300	-0-	3.30	STH
08/05/85	FACE BAR	1	CLEAR DRY	-0-	45.100	69.400	3.50	STH
08/05/85	FACE BAR	1	CLEAR DRY	99.200	29.900	-0-	3.70	STH
08/05/85	FACE BAR	1	CLEAR DRY	99.700	28.700	-0-	3.30	STH
08/05/85	FACE BAR	1	CLEAR DRY	49.000	78.200	-0-	3.30	STH
08/05/85	FACE BAR	2	CLEAR DRY	56.700	60.700	-0-	3.20	STH
08/05/85	FACE BAR	2	CLEAR DRY	33.000	73.400	-0-	3.70	STH
08/05/85	FACE BAR	3	CLEAR DRY	-0-	-0-	-0-	-0-	-0-

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DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/05/85	FORBIDDEN	1	SUN / DRY	45.300	72.000	-0-	2.50	STH
08/05/85	FORBIDDEN	1	SUN / DRY	44.000	78.000	-0-	2.70	STH
08/05/85	FORBIDDEN	1	SUN / DRY	42.000	65.000	-0-	3.20	STH
08/05/85	FORBIDDEN	2	SUN / DRY	-0-	-0-	-0-	-0-	-0-
08/05/85	FORBIDDEN	3	SUN / DRY	-0-	-0-	-0-	-0-	-0-
08/05/85	FUNGUS BAR	1	SUN / DRY	30.700	71.000	-0-	3.50	STH
08/05/85	FUNGUS BAR	2	CLEAR DRY	-0-	72.100	42.500	4.00	STH
08/05/85	FUNGUS BAR	2	CLEAR DRY	-0-	33.700	96.300	3.20	STH
08/05/85	FUNGUS BAR	2	CLEAR DRY	37.800	68.400	-0-	3.30	STH
08/05/85	FUNGUS BAR	2	CLEAR DRY	-0-	101.80	24.700	3.30	STH
08/05/85	FUNGUS BAR	2	CLEAR DRY	-0-	71.200	40.900	3.10	STH
08/05/85	FUNGUS BAR	2	CLEAR DRY	-0-	72.400	43.000	3.00	STH
08/05/85	FUNGUS BAR	2	CLEAR DRY	-0-	69.800	44.600	3.20	STH
08/05/85	FUNGUS BAR	2	CLEAR DRY	-0-	109.40	35.300	-0-	STH
08/05/85	FUNGUS BAR	3	CLEAR DRY	-0-	-0-	-0-	-0-	-0-
08/05/85	INACCESSIB	1	SUN / DRY	-0-	73.700	36.500	-0-	-0-
08/05/85	INACCESSIB	2	SUN / DRY	-0-	-0-	-0-	-0-	-0-
08/05/85	INACCESSIB	3	SUN / DRY	-0-	-0-	-0-	-0-	-0-
08/05/85	MARBLE MT	1	CLEAR DRY	-0-	-0-	-0-	3.20	STH
08/05/85	MARBLE MT	1	CLEAR DRY	-0-	56.300	58.100	3.10	STH
08/05/85	MARBLE MT	1	CLEAR DRY	-0-	51.200	70.000	3.70	STH
08/05/85	MARBLE MT	1	CLEAR DRY	-0-	79.000	24.200	3.50	STH
08/05/85	MARBLE MT	1	CLEAR DRY	-0-	72.100	46.100	3.30	STH
08/05/85	MARBLE MT	1	CLEAR DRY	-0-	-0-	-0-	3.30	STH
08/05/85	MARBLE MT	2	CLEAR DRY	-0-	49.000	50.900	3.50	STH
08/05/85	MARBLE MT	2	CLEAR DRY	53.500	83.500	-0-	3.60	STH
08/05/85	MARBLE MT	2	CLEAR DRY	18.000	96.360	-0-	3.40	STH
08/05/85	MARBLE MT	2	CLEAR DRY	29.400	88.400	-0-	3.50	STH
08/05/85	MARBLE MT	2	CLEAR DRY	37.800	91.800	-0-	3.40	STH
08/05/85	MARBLE MT	2	CLEAR DRY	-0-	78.200	24.000	3.50	STH
08/05/85	MARBLE MT	2	CLEAR DRY	-0-	89.700	59.400	3.60	STH
08/05/85	MARBLE MT	2	CLEAR DRY	-0-	49.500	55.000	3.30	STH
08/05/85	MARBLE MT	2	CLEAR DRY	-0-	62.600	40.100	3.20	STH
08/05/85	MARBLE MT	2	CLEAR DRY	14.300	100.60	-0-	3.10	STH
08/05/85	MARBLE MT	2	CLEAR DRY	9.8000	95.000	-0-	3.50	STH
08/05/85	MARBLE MT	3	CLEAR DRY	51.300	54.000	-0-	3.20	STH
08/05/85	MARBLE MT	3	CLEAR DRY	-0-	31.600	74.300	3.70	STH
08/05/85	MARBLE MT	3	CLEAR DRY	-0-	16.600	83.900	3.60	STH
08/05/85	MARBLE MT	3	CLEAR DRY	62.400	20.000	-0-	3.20	STH
08/05/85	DINK BAR	1	CLEAR DRY	69.500	53.500	-0-	2.70	STH
08/05/85	DINK BAR	1	CLEAR DRY	68.000	55.000	-0-	2.60	STH
08/05/85	DINK BAR	1	CLEAR DRY	69.500	53.500	-0-	3.20	STH
08/05/85	DINK BAR	1	CLEAR DRY	46.500	78.000	-0-	3.20	STH
08/05/85	DINK BAR	1	CLEAR DRY	69.500	53.500	-0-	3.20	STH
08/05/85	DINK BAR	1	CLEAR DRY	69.500	53.500	-0-	2.90	STH
08/05/85	DINK BAR	1	CLEAR DRY	91.000	50.000	-0-	3.70	STH
08/05/85	DINK BAR	1	CLEAR DRY	103.00	46.000	-0-	2.80	STH
08/05/85	DINK BAR	1	CLEAR DRY	66.000	58.000	-0-	3.20	STH
08/05/85	DINK BAR	1	CLEAR DRY	69.500	53.500	-0-	2.90	STH
08/05/85	DINK BAR	1	CLEAR DRY	69.500	53.500	-0-	2.30	STH
08/05/85	DINK BAR	1	CLEAR DRY	69.500	53.500	-0-	2.50	STH

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DATE OF STRAND	GRAVEL BAR LOCATION - NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/05/85	DINK BAR	1	CLEAR DRY	46.500	78.000	-0-	2.50	STH
08/05/85	DINK BAR	1	CLEAR DRY	66.000	58.000	-0-	2.80	STH
08/05/85	DINK BAR	2	CLEAR DRY	26.500	109.00	-0-	3.40	STH
08/05/85	DINK BAR	2	CLEAR DRY	37.500	112.00	-0-	-0-	STH
08/05/85	DINK BAR	2	CLEAR DRY	45.000	114.00	-0-	-0-	STH
08/05/85	DINK BAR	2	CLEAR DRY	36.000	113.50	-0-	3.20	STH
08/05/85	DINK BAR	2	CLEAR DRY	37.500	112.00	-0-	3.30	STH
08/05/85	DINK BAR	2	CLEAR DRY	-0-	50.000	53.000	-0-	-0-
08/05/85	DINK BAR	2	CLEAR DRY	-0-	41.000	76.000	-0-	-0-
08/05/85	DINK BAR	2	CLEAR DRY	48.000	93.000	-0-	3.40	STH
08/05/85	DINK BAR	3	CLEAR DRY	83.000	32.500	-0-	3.00	STH
08/05/85	DINK BAR	3	CLEAR DRY	86.000	33.000	-0-	3.80	STH
08/05/85	DINK BAR	3	CLEAR DRY	88.000	24.500	-0-	3.20	STH
08/05/85	DINK BAR	3	CLEAR DRY	87.000	30.000	-0-	3.50	STH
08/05/85	ROCKPORT	1	CLOUDY	94.600	21.500	-0-	2.90	STH
08/05/85	ROCKPORT	1	CLOUDY	-0-	83.500	40.800	3.00	STH
08/05/85	ROCKPORT	1	CLOUDY	-0-	87.500	37.600	-0-	-0-
08/05/85	ROCKPORT	1	CLOUDY	-0-	55.000	65.300	3.00	STH
08/05/85	ROCKPORT	1	CLOUDY	-0-	80.800	42.300	3.00	STH
08/05/85	ROCKPORT	2	CLOUDY	88.300	45.300	-0-	-0-	-0-
08/05/85	ROCKPORT	2	CLOUDY	90.400	48.100	-0-	-0-	-0-
08/05/85	ROCKPORT	2	CLOUDY	73.200	59.200	-0-	-0-	-0-
08/05/85	ROCKPORT	2	CLOUDY	75.400	58.700	-0-	-0-	-0-
08/05/85	ROCKPORT	2	CLOUDY	-0-	76.200	52.200	-0-	-0-
08/05/85	ROCKPORT	2	CLOUDY	-0-	81.700	47.300	-0-	-0-
08/05/85	ROCKPORT	2	CLOUDY	-0-	33.700	99.800	-0-	-0-
08/05/85	ROCKPORT	2	CLOUDY	-0-	56.300	70.700	-0-	-0-
08/05/85	ROCKPORT	2	CLOUDY	-0-	64.300	62.500	-0-	-0-
08/05/85	ROCKPORT	2	CLOUDY	-0-	65.500	61.600	-0-	-0-
08/05/85	ROCKPORT	2	CLOUDY	-0-	64.600	60.000	-0-	-0-
08/05/85	ROCKPORT	2	CLOUDY	-0-	67.000	62.700	-0-	-0-
08/05/85	ROCKPORT	2	CLOUDY	-0-	91.100	44.900	-0-	-0-
08/05/85	ROCKPORT	3	CLEAR	99.500	34.400	-0-	-0-	-0-
08/05/85	ROCKPORT	3	CLEAR	80.100	50.800	-0-	-0-	-0-
08/05/85	ROCKPORT	3	CLEAR	48.500	86.200	-0-	-0-	-0-
08/05/85	ROCKPORT	3	CLEAR	50.000	83.900	-0-	-0-	-0-
08/05/85	ROCKPORT	3	CLEAR	58.300	77.600	-0-	-0-	-0-
08/05/85	ROCKPORT	3	CLEAR	71.500	54.600	-0-	-0-	-0-
08/05/85	ROCKPORT	3	CLEAR	80.100	50.800	-0-	-0-	-0-
08/05/85	ROCKPORT	3	CLEAR	-0-	53.000	71.100	-0-	-0-
08/05/85	ROCKPORT	3	CLEAR	-0-	53.100	72.100	-0-	-0-
08/05/85	ROCKPORT	3	CLEAR	98.900	27.000	-0-	-0-	-0-
08/05/85	ROCKPORT	3	CLEAR	-0-	37.400	104.30	-0-	-0-
08/05/85	ROCKPORT	3	CLEAR	-0-	33.600	83.200	-0-	-0-
08/05/85	ROCKPORT	3	CLEAR	-0-	36.100	87.700	-0-	-0-
08/05/85	ROCKPORT	3	CLEAR	-0-	37.900	87.800	-0-	-0-
08/05/85	ROCKPORT	3	CLEAR	-0-	46.700	73.900	-0-	-0-
08/05/85	ROCKPORT	3	CLEAR	-0-	56.000	67.700	-0-	-0-
08/05/85	WAYNE SWIM	1	SUN / DRY	18.900	94.800	-0-	3.00	STH
08/05/85	WAYNE SWIM	2	SUN / DRY	-0-	-0-	-0-	-0-	-0-
08/06/85	BACON CR	1	CLEAR	0.0000	-0-	-0-	-0-	-0-

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DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/06/85	BACON CR	2	CLEAR	0.0000	-0-	-0-	-0-	-0-
08/06/85	BACON CR	3	CLEAR	0.0000	-0-	-0-	-0-	-0-
08/06/85	BAD SPOT	1	SUNNY	42.000	80.800	-0-	-0-	-0-
08/06/85	BAD SPOT	2	SUNNY	-0-	81.000	68.000	-0-	-0-
08/06/85	BAD SPOT	2	SUNNY	-0-	85.700	25.500	-0-	-0-
08/06/85	BAD SPOT	2	SUNNY	-0-	80.700	44.000	3.00	-0-
08/06/85	BAD SPOT	2	SUNNY	-0-	78.500	29.000	-0-	-0-
08/06/85	BAD SPOT	2	SUNNY	-0-	77.700	34.000	-0-	-0-
08/06/85	BAD SPOT	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/06/85	BAD SPOT	4	SUNNY	-0-	-0-	-0-	-0-	-0-
08/06/85	R16 EDDY	1	CLEAR	45.800	75.600	-0-	3.00	-0-
08/06/85	R16 EDDY	1	CLEAR	32.300	103.00	-0-	3.10	-0-
08/06/85	R16 EDDY	2	CLEAR	-0-	-0-	-0-	-0-	-0-
08/06/85	R16 EDDY	3	CLEAR	-0-	-0-	-0-	-0-	-0-
08/06/85	DIOBSUD CR	1	CLEAR	28.300	80.600	-0-	-0-	STH
08/06/85	DIOBSUD CR	1	CLEAR	35.700	75.200	-0-	3.10	STH
08/06/85	DIOBSUD CR	1	CLEAR	28.300	80.600	-0-	-0-	STH
08/06/85	DIOBSUD CR	1	CLEAR	28.300	80.600	-0-	-0-	STH
08/06/85	DIOBSUD CR	1	CLEAR	32.900	78.400	-0-	3.20	STH
08/06/85	DIOBSUD CR	1	CLEAR	28.300	80.600	-0-	-0-	STH
08/06/85	DIOBSUD CR	1	CLEAR	22.200	87.500	-0-	3.20	STH
08/06/85	DIOBSUD CR	1	CLEAR	29.300	81.200	-0-	3.10	STH
08/06/85	DIOBSUD CR	1	CLEAR	25.900	85.900	-0-	2.90	STH
08/06/85	DIOBSUD CR	1	CLEAR	25.900	85.900	-0-	3.30	STH
08/06/85	DIOBSUD CR	1	CLEAR	25.900	85.900	-0-	3.10	STH
08/06/85	DIOBSUD CR	1	CLEAR	30.300	81.900	-0-	3.10	STH
08/06/85	DIOBSUD CR	1	CLEAR	30.300	81.900	-0-	-0-	STH
08/06/85	DIOBSUD CR	1	CLEAR	30.300	81.900	-0-	-0-	STH
08/06/85	DIOBSUD CR	1	CLEAR	29.300	81.200	-0-	3.00	STH
08/06/85	DIOBSUD CR	1	CLEAR	23.800	85.900	-0-	3.30	STH
08/06/85	DIOBSUD CR	1	CLEAR	87.200	12.600	-0-	3.20	STH
08/06/85	DIOBSUD CR	1	CLEAR	90.300	9.9000	-0-	-0-	STH
08/06/85	DIOBSUD CR	1	CLEAR	90.300	9.9000	-0-	-0-	STH
08/06/85	DIOBSUD CR	1	CLEAR	90.300	9.9000	-0-	-0-	STH
08/06/85	DIOBSUD CR	1	CLEAR	90.300	9.9000	-0-	-0-	STH
08/06/85	DIOBSUD CR	1	CLEAR	32.900	78.400	-0-	3.30	STH
08/06/85	DIOBSUD CR	1	CLEAR	31.400	77.300	-0-	-0-	STH
08/06/85	DIOBSUD CR	1	CLEAR	87.200	12.600	-0-	3.20	STH
08/06/85	DIOBSUD CR	1	CLEAR	94.800	7.0000	-0-	3.20	STH
08/06/85	DIOBSUD CR	1	CLEAR	94.800	7.0000	-0-	3.30	STH
08/06/85	DIOBSUD CR	1	CLEAR	94.800	7.0000	-0-	3.20	STH
08/06/85	DIOBSUD CR	1	CLEAR	96.300	6.9000	-0-	-0-	STH
08/06/85	DIOBSUD CR	1	CLEAR	96.300	6.9000	-0-	-0-	STH
08/06/85	DIOBSUD CR	1	CLEAR	17.200	91.600	-0-	3.30	STH
08/06/85	DIOBSUD CR	1	CLEAR	-0-	37.200	115.70	-0-	STH
08/06/85	DIOBSUD CR	1	CLEAR	-0-	37.200	115.70	-0-	STH
08/06/85	DIOBSUD CR	1	CLEAR	27.200	84.600	-0-	-0-	STH
08/06/85	DIOBSUD CR	1	CLEAR	25.700	84.800	-0-	3.30	STH
08/06/85	DIOBSUD CR	1	CLEAR	27.200	84.300	-0-	2.90	STH
08/06/85	DIOBSUD CR	1	CLEAR	27.200	84.300	-0-	3.10	STH
08/06/85	DIOBSUD CR	1	CLEAR	27.200	84.300	-0-	3.20	STH

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.



DATE OF STRAND	GRAVEL BAR LOCATION -NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/06/85	DIOBSUD CR	1	CLEAR	40.200	72.800	-0-	3.30	STH
08/06/85	DIOBSUD CR	1	CLEAR	42.900	59.400	-0-	2.90	STH
08/06/85	DIOBSUD CR	1	CLEAR	42.900	74.800	-0-	3.10	STH
08/06/85	DIOBSUD CR	1	CLEAR	-0-	42.400	65.000	3.40	STH
08/06/85	DIOBSUD CR	1	CLEAR	-0-	42.400	65.000	3.40	STH
08/06/85	DIOBSUD CR	1	CLEAR	-0-	42.400	65.000	3.40	STH
08/06/85	DIOBSUD CR	1	CLEAR	69.500	51.200	-0-	3.10	STH
08/06/85	DIOBSUD CR	1	CLEAR	62.700	42.800	-0-	3.20	STH
08/06/85	DIOBSUD CR	1	CLEAR	-0-	28.600	107.40	3.10	STH
08/06/85	DIOBSUD CR	1	CLEAR	40.700	105.40	-0-	3.10	STH
08/06/85	DIOBSUD CR	1	CLEAR	45.400	106.50	-0-	3.60	STH
08/06/85	DIOBSUD CR	1	CLEAR	46.600	107.20	-0-	3.20	STH
08/06/85	DIOBSUD CR	1	CLEAR	46.600	107.20	-0-	3.20	STH
08/06/85	DIOBSUD CR	1	CLEAR	46.600	107.20	-0-	3.10	STH
08/06/85	DIOBSUD CR	1	CLEAR	46.200	106.70	-0-	3.50	STH
08/06/85	DIOBSUD CR	1	CLEAR	46.100	106.70	-0-	3.20	STH
08/06/85	DIOBSUD CR	1	CLEAR	-0-	61.900	54.000	-0-	STH
08/06/85	DIOBSUD CR	1	CLEAR	-0-	60.300	53.800	3.20	STH
08/06/85	DIOBSUD CR	1	CLEAR	-0-	60.300	53.800	-0-	STH
08/06/85	DIOBSUD CR	1	CLEAR	-0-	60.300	53.800	-0-	STH
08/06/85	DIOBSUD CR	1	CLEAR	-0-	68.900	47.800	-0-	STH
08/06/85	DIOBSUD CR	1	CLEAR	-0-	77.200	54.500	-0-	STH
08/06/85	DIOBSUD CR	1	CLEAR	-0-	74.000	45.100	-0-	STH
08/06/85	DIOBSUD CR	1	CLEAR	-0-	72.500	45.200	3.20	STH
08/06/85	DIOBSUD CR	1	CLEAR	74.500	36.300	-0-	3.30	STH
08/06/85	DIOBSUD CR	1	CLEAR	85.900	44.700	-0-	3.30	STH
08/06/85	DIOBSUD CR	1	CLEAR	78.600	20.500	-0-	3.30	STH
08/06/85	DIOBSUD CR	1	CLEAR	78.600	20.500	-0-	3.00	STH
08/06/85	DIOBSUD CR	1	CLEAR	85.200	14.400	-0-	-0-	STH
08/06/85	DIOBSUD CR	1	CLEAR	85.200	14.400	-0-	-0-	STH
08/06/85	DIOBSUD CR	1	CLEAR	85.200	14.400	-0-	-0-	STH
08/06/85	DIOBSUD CR	1	CLEAR	62.500	60.500	-0-	3.30	STH
08/06/85	DIOBSUD CR	1	CLEAR	60.300	59.900	-0-	3.10	STH
08/06/85	DIOBSUD CR	1	CLEAR	60.000	58.200	-0-	3.30	STH
08/06/85	DIOBSUD CR	1	CLEAR	67.400	61.400	-0-	3.10	STH
08/06/85	DIOBSUD CR	1	CLEAR	85.000	13.500	-0-	3.30	STH
08/06/85	DIOBSUD CR	1	CLEAR	65.600	52.000	-0-	3.10	STH
08/06/85	DIOBSUD CR	1	CLEAR	65.600	52.000	-0-	3.30	STH
08/06/85	DIOBSUD CR	1	CLEAR	87.200	12.600	-0-	3.20	STH
08/06/85	DIOBSUD CR	1	CLEAR	85.200	14.400	-0-	-0-	STH
08/06/85	DIOBSUD CR	1	CLEAR	85.200	14.400	-0-	-0-	STH
08/06/85	DIOBSUD CR	1	CLEAR	-0-	30.600	102.80	3.10	STH
08/06/85	DIOBSUD CR	1	CLEAR	-0-	32.700	105.30	3.30	STH
08/06/85	DIOBSUD CR	1	CLEAR	-0-	32.400	104.40	-0-	STH
08/06/85	DIOBSUD CR	1	CLEAR	-0-	32.800	100.70	3.30	STH
08/06/85	DIOBSUD CR	1	CLEAR	-0-	34.600	101.60	-0-	STH
08/06/85	DIOBSUD CR	1	CLEAR	-0-	35.600	100.20	-0-	STH
08/06/85	DIOBSUD CR	1	CLEAR	-0-	59.300	53.800	-0-	STH
08/06/85	DIOBSUD CR	1	CLEAR	86.000	13.500	-0-	3.20	STH
08/06/85	DIOBSUD CR	1	CLEAR	86.000	13.500	-0-	3.60	STH
08/06/85	DIOBSUD CR	1	CLEAR	86.000	13.500	-0-	3.20	STH

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/06/85	DIOBSUD CR	1	CLEAR	35.500	76.500	-0-	3.50	STH
08/06/85	DIOBSUD CR	1	CLEAR	35.500	76.500	-0-	2.80	STH
08/06/85	DIOBSUD CR	1	CLEAR	86.800	12.500	-0-	-0-	STH
08/06/85	DIOBSUD CR	1	CLEAR	35.500	76.500	-0-	3.20	STH
08/06/85	DIOBSUD CR	2	CLEAR	-0-	56.000	57.000	3.40	STH
08/06/85	DIOBSUD CR	2	CLEAR	48.000	65.000	-0-	3.40	STH
08/06/85	DIOBSUD CR	2	CLEAR	101.00	23.000	-0-	3.10	STH
08/06/85	DIOBSUD CR	2	CLEAR	-0-	29.000	78.000	3.10	STH
08/06/85	DIOBSUD CR	2	CLEAR	45.500	58.000	-0-	3.30	STH
08/06/85	DIOBSUD CR	2	CLEAR	72.000	36.000	-0-	3.80	STH
08/06/85	DIOBSUD CR	2	CLEAR	-0-	29.000	78.000	3.30	STH
08/06/85	DIOBSUD CR	2	CLEAR	71.000	38.000	-0-	3.50	STH
08/06/85	DIOBSUD CR	2	CLEAR	36.000	71.000	-0-	3.40	STH
08/06/85	DIOBSUD CR	2	CLEAR	72.000	35.500	-0-	3.90	STH
08/06/85	FACE BAR	1	CLEAR	78.700	31.100	-0-	3.50	STH
08/06/85	FACE BAR	1	CLEAR	52.900	80.700	-0-	3.40	STH
08/06/85	FACE BAR	1	CLEAR	71.900	43.200	-0-	3.50	STH
08/06/85	FACE BAR	1	CLEAR	68.800	50.800	-0-	3.40	STH
08/06/85	FACE BAR	1	CLEAR	-0-	65.400	33.700	3.20	STH
08/06/85	FACE BAR	1	CLEAR	87.700	40.700	-0-	3.20	STH
08/06/85	FACE BAR	1	CLEAR	97.800	19.100	-0-	3.00	STH
08/06/85	FACE BAR	1	CLEAR	38.100	95.600	-0-	3.40	STH
08/06/85	FACE BAR	1	CLEAR	48.500	52.600	-0-	3.10	STH
08/06/85	FACE BAR	1	CLEAR	-0-	25.200	93.600	3.30	STH
08/06/85	FACE BAR	1	CLEAR	87.800	45.100	-0-	3.80	STH
08/06/85	FACE BAR	1	CLEAR	46.500	89.400	-0-	3.70	STH
08/06/85	FACE BAR	2	CLEAR	-0-	-0-	-0-	-0-	-0-
08/06/85	FACE BAR	3	CLEAR	-0-	-0-	-0-	-0-	-0-
08/06/85	FORBIDDEN	1	CLEAR	41.000	83.000	-0-	2.80	STH
08/06/85	FORBIDDEN	1	CLEAR	95.300	32.300	-0-	3.40	STH
08/06/85	FORBIDDEN	1	CLEAR	83.500	29.000	-0-	3.10	STH
08/06/85	FORBIDDEN	1	CLEAR	84.000	35.300	-0-	2.90	STH
08/06/85	FORBIDDEN	1	CLEAR	29.800	91.000	-0-	3.60	STH
08/06/85	FORBIDDEN	1	CLEAR	83.300	26.400	-0-	3.10	STH
08/06/85	FORBIDDEN	1	CLEAR	95.000	32.500	-0-	3.20	STH
08/06/85	FORBIDDEN	1	CLEAR	52.100	56.000	-0-	3.00	STH
08/06/85	FORBIDDEN	2	CLEAR	-0-	-0-	-0-	-0-	-0-
08/06/85	FORBIDDEN	3	CLEAR	0.0000	-0-	-0-	-0-	-0-
08/06/85	FUNGUS BAR	1	CLEAR	79.100	22.300	-0-	4.20	STH
08/06/85	FUNGUS BAR	1	CLEAR	33.500	68.500	-0-	3.40	STH
08/06/85	FUNGUS BAR	1	CLEAR	-0-	97.300	18.400	3.30	STH
08/06/85	FUNGUS BAR	2	CLEAR	77.000	34.700	-0-	2.80	STH
08/06/85	FUNGUS BAR	2	CLEAR	-0-	24.600	75.900	3.00	STH
08/06/85	FUNGUS BAR	2	CLEAR	83.200	17.000	-0-	3.80	STH
08/06/85	FUNGUS BAR	2	CLEAR	75.800	34.700	-0-	3.60	STH
08/06/85	FUNGUS BAR	2	CLEAR	-0-	98.900	23.200	3.40	STH
08/06/85	FUNGUS BAR	2	CLEAR	86.800	12.800	-0-	3.00	STH
08/06/85	FUNGUS BAR	3	CLEAR	19.300	99.900	-0-	3.30	STH
08/06/85	INACCESSIB	1	CLEAR	44.400	67.600	-0-	-0-	-0-
08/06/85	INACCESSIB	1	CLEAR	13.700	98.600	-0-	-0-	-0-
08/06/85	INACCESSIB	1	CLEAR	36.000	95.100	-0-	-0-	-0-

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DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/06/85	INACCESSIB	2	CLEAR	0.0000	-0-	-0-	-0-	-0-
08/06/85	INACCESSIB	3	CLEAR	0.0000	-0-	-0-	-0-	-0-
08/06/85	MARBLE MT	1	CLEAR	-0-	86.500	20.400	3.10	STH
08/06/85	MARBLE MT	1	CLEAR	-0-	30.900	105.60	3.50	STH
08/06/85	MARBLE MT	1	CLEAR	59.700	47.000	-0-	3.00	STH
08/06/85	MARBLE MT	1	CLEAR	-0-	94.200	56.900	3.50	STH
08/06/85	MARBLE MT	1	CLEAR	-0-	31.200	78.900	3.30	STH
08/06/85	MARBLE MT	2	CLEAR	12.400	97.200	-0-	3.20	STH
08/06/85	MARBLE MT	2	CLEAR	-0-	97.900	25.200	-0-	STH
08/06/85	MARBLE MT	3	CLEAR	-0-	92.200	23.200	4.50	COHD
08/06/85	MARBLE MT	3	CLEAR	-0-	15.900	84.100	3.10	STH
08/06/85	MARBLE MT	3	CLEAR	-0-	15.600	85.500	3.40	STH
08/06/85	DINK BAR	1	CLEAR	73.000	74.000	-0-	2.90	STH
08/06/85	DINK BAR	1	CLEAR	-0-	47.000	78.000	3.20	STH
08/06/85	DINK BAR	1	CLEAR	-0-	53.000	69.000	3.20	STH
08/06/85	DINK BAR	1	CLEAR	-0-	53.000	72.000	3.00	STH
08/06/85	DINK BAR	1	CLEAR	-0-	55.000	70.000	-0-	-0-
08/06/85	DINK BAR	2	CLEAR	89.000	31.000	-0-	3.30	-0-
08/06/85	DINK BAR	2	CLEAR	-0-	30.000	76.000	3.40	-0-
08/06/85	DINK BAR	2	CLEAR	-0-	43.500	77.000	3.00	-0-
08/06/85	DINK BAR	3	CLEAR	61.000	52.000	-0-	3.20	STH
08/06/85	DINK BAR	3	CLEAR	98.000	21.000	-0-	3.20	STH
08/06/85	DINK BAR	3	CLEAR	-0-	22.000	98.000	-0-	-0-
08/06/85	ROCKPORT	1	CLEAR	51.000	69.300	-0-	-0-	-0-
08/06/85	ROCKPORT	1	CLEAR	103.40	39.400	-0-	-0-	-0-
08/06/85	ROCKPORT	1	CLEAR	103.40	39.400	-0-	-0-	-0-
08/06/85	WAYNE SWIM	1	SUNNY	0.0000	-0-	-0-	-0-	-0-
08/06/85	WAYNE SWIM	2	SUNNY	0.0000	-0-	-0-	-0-	-0-
08/07/85	BACON CR	1	RAIN	0.0000	-0-	-0-	-0-	-0-
08/07/85	BACON CR	2	RAIN	0.0000	-0-	-0-	-0-	-0-
08/07/85	BACON CR	3	RAIN	0.0000	-0-	-0-	-0-	-0-
08/07/85	BAD SPOT	1	RAIN	0.0000	-0-	-0-	-0-	-0-
08/07/85	BAD SPOT	2	RAIN	53.700	59.200	-0-	3.10	-0-
08/07/85	BAD SPOT	2	RAIN	-0-	67.400	43.200	3.50	-0-
08/07/85	BAD SPOT	2	RAIN	-0-	-0-	-0-	-0-	-0-
08/07/85	BAD SPOT	3	RAIN	-0-	-0-	-0-	-0-	-0-
08/07/85	BIG EDDY	1	RAIN	0.0000	-0-	-0-	-0-	-0-
08/07/85	BIG EDDY	2	RAIN	0.0000	-0-	-0-	-0-	-0-
08/07/85	BIG EDDY	3	RAIN	0.0000	-0-	-0-	-0-	-0-
08/07/85	DIOBSUD CR	1	RAIN	64.800	56.800	-0-	3.40	-0-
08/07/85	DIOBSUD CR	1	RAIN	69.400	45.400	-0-	3.50	-0-
08/07/85	DIOBSUD CR	1	RAIN	102.20	34.800	-0-	3.10	-0-
08/07/85	DIOBSUD CR	1	RAIN	106.00	34.300	-0-	3.30	-0-
08/07/85	DIOBSUD CR	1	RAIN	64.800	53.200	-0-	3.10	-0-
08/07/85	DIOBSUD CR	1	RAIN	64.600	52.000	-0-	3.30	-0-
08/07/85	DIOBSUD CR	1	RAIN	66.500	52.000	-0-	3.10	-0-
08/07/85	DIOBSUD CR	1	RAIN	64.000	53.000	-0-	3.20	-0-
08/07/85	DIOBSUD CR	1	RAIN	62.300	47.400	-0-	3.10	-0-
08/07/85	DIOBSUD CR	1	RAIN	-0-	31.300	103.00	3.40	-0-
08/07/85	DIOBSUD CR	1	RAIN	-0-	32.700	97.800	3.00	-0-
08/07/85	DIOBSUD CR	1	RAIN	24.500	98.500	-0-	3.50	-0-

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.



DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/07/85	DIOBSUD CR	1	RAIN	49.000	60.300	-0-	3.30	-0-
08/07/85	DIOBSUD CR	1	RAIN	57.800	57.700	-0-	3.00	-0-
08/07/85	DIOBSUD CR	1	RAIN	58.100	56.100	-0-	3.30	-0-
08/07/85	DIOBSUD CR	1	RAIN	54.000	60.700	-0-	3.40	-0-
08/07/85	DIOBSUD CR	1	RAIN	54.300	49.300	-0-	3.10	-0-
08/07/85	DIOBSUD CR	1	RAIN	54.300	49.700	-0-	3.60	-0-
08/07/85	DIOBSUD CR	1	RAIN	54.200	50.200	-0-	3.10	-0-
08/07/85	DIOBSUD CR	1	RAIN	83.200	34.600	-0-	3.10	-0-
08/07/85	DIOBSUD CR	1	RAIN	106.50	35.200	-0-	3.20	-0-
08/07/85	DIOBSUD CR	1	RAIN	107.70	36.000	-0-	3.50	-0-
08/07/85	DIOBSUD CR	1	RAIN	-0-	34.500	105.50	3.20	-0-
08/07/85	DIOBSUD CR	1	RAIN	-0-	37.500	107.80	3.40	-0-
08/07/85	DIOBSUD CR	1	RAIN	-0-	32.500	104.60	3.00	-0-
08/07/85	DIOBSUD CR	1	RAIN	102.20	34.800	-0-	3.10	-0-
08/07/85	DIOBSUD CR	1	RAIN	83.200	34.600	-0-	3.10	-0-
08/07/85	DIOBSUD CR	1	RAIN	101.50	34.800	-0-	3.10	-0-
08/07/85	DIOBSUD CR	1	RAIN	92.200	33.200	-0-	3.60	-0-
08/07/85	DIOBSUD CR	1	RAIN	100.20	27.300	-0-	3.20	-0-
08/07/85	DIOBSUD CR	1	RAIN	101.50	34.800	-0-	3.10	-0-
08/07/85	DIOBSUD CR	1	RAIN	100.70	34.900	-0-	3.30	-0-
08/07/85	DIOBSUD CR	2	RAIN	-0-	-0-	-0-	-0-	-0-
08/07/85	FACE BAR	1	RAIN	0.0000	52.300	48.100	2.90	-0-
08/07/85	FACE BAR	1	RAIN	0.0000	35.700	63.700	3.40	-0-
08/07/85	FACE BAR	2	RAIN	-0-	45.500	76.500	3.20	-0-
08/07/85	FACE BAR	2	RAIN	92.800	24.600	-0-	3.10	-0-
08/07/85	FACE BAR	2	RAIN	-0-	81.100	29.500	3.10	-0-
08/07/85	FACE BAR	3	RAIN	-0-	-0-	-0-	-0-	-0-
08/07/85	FORBIDDEN	1	RAIN	26.000	103.00	-0-	3.00	STH
08/07/85	FORBIDDEN	1	RAIN	26.000	103.00	-0-	3.10	STH
08/07/85	FORBIDDEN	2	RAIN	-0-	-0-	-0-	-0-	-0-
08/07/85	FORBIDDEN	3	RAIN	-0-	-0-	-0-	-0-	-0-
08/07/85	FUNGUS BAR	1	RAIN	0.0000	-0-	-0-	-0-	-0-
08/07/85	FUNGUS BAR	2	RAIN	-0-	101.40	24.700	3.00	STH
08/07/85	FUNGUS BAR	2	RAIN	47.700	55.100	-0-	3.20	STH
08/07/85	FUNGUS BAR	2	RAIN	25.600	87.200	-0-	3.30	STH
08/07/85	FUNGUS BAR	3	RAIN	25.000	83.300	-0-	3.70	-0-
08/07/85	FUNGUS BAR	3	RAIN	40.500	65.900	-0-	3.40	-0-
08/07/85	FUNGUS BAR	3	RAIN	36.800	71.900	-0-	3.50	-0-
08/07/85	FUNGUS BAR	3	RAIN	34.100	73.900	-0-	3.40	-0-
08/07/85	FUNGUS BAR	3	RAIN	-0-	29.300	47.100	3.10	-0-
08/07/85	FUNGUS BAR	3	RAIN	-0-	62.200	37.300	3.10	-0-
08/07/85	INACCESSIB	1	RAIN	0.0000	-0-	-0-	-0-	-0-
08/07/85	INACCESSIB	2	RAIN	0.0000	-0-	-0-	-0-	-0-
08/07/85	INACCESSIB	3	RAIN	0.0000	-0-	-0-	-0-	-0-
08/07/85	MARBLE MT	1	RAIN	75.700	27.200	-0-	3.40	STH
08/07/85	MARBLE MT	1	RAIN	80.300	22.600	-0-	3.20	STH
08/07/85	MARBLE MT	1	RAIN	80.600	22.500	-0-	3.50	STH
08/07/85	MARBLE MT	1	RAIN	75.800	27.300	-0-	3.60	STH
08/07/85	MARBLE MT	1	RAIN	76.900	25.800	-0-	3.40	STH
08/07/85	MARBLE MT	1	RAIN	65.300	37.900	-0-	3.10	STH
08/07/85	MARBLE MT	1	RAIN	-0-	84.700	25.200	3.30	STH

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/07/85	MARBLE MT	1	RAIN	-0-	14.800	102.20	2.90	STH
08/07/85	MARBLE MT	1	RAIN	60.200	42.500	-0-	3.60	STH
08/07/85	MARBLE MT	1	RAIN	-0-	92.700	25.100	2.90	STH
08/07/85	MARBLE MT	2	RAIN	-0-	-0-	-0-	-0-	-0-
08/07/85	MARBLE MT	3	RAIN	73.600	25.900	-0-	3.30	STH
08/07/85	MARBLE MT	3	RAIN	-0-	32.000	56.700	3.50	STH
08/07/85	MARBLE MT	3	RAIN	-0-	43.100	68.500	3.50	STH
08/07/85	DINK BAR	1	RAIN	0.0000	-0-	-0-	-0-	-0-
08/07/85	DINK BAR	2	RAIN	92.500	15.000	-0-	3.30	-0-
08/07/85	DINK BAR	2	RAIN	-0-	33.000	75.000	4.20	-0-
08/07/85	DINK BAR	2	RAIN	-0-	34.500	76.500	-0-	-0-
08/07/85	DINK BAR	3	RAIN	-0-	-0-	-0-	-0-	-0-
08/07/85	WAYNE SWIM	1	RAIN	0.0000	-0-	-0-	-0-	-0-
08/07/85	WAYNE SWIM	2	RAIN	0.0000	-0-	-0-	-0-	-0-
08/08/85	BACON CR	1	wet	-0-	-0-	-0-	-0-	-0-
08/08/85	BACON CR	2	RAINY	-0-	-0-	-0-	-0-	-0-
08/08/85	BACON CR	3	RAINY	-0-	-0-	-0-	-0-	-0-
08/08/85	BAD SPOT	1	RAINY	-0-	-0-	-0-	-0-	-0-
08/08/85	BAD SPOT	2	RAINY	-0-	48.000	75.500	3.20	STH
08/08/85	BAD SPOT	3	RAINY	-0-	-0-	-0-	-0-	-0-
08/08/85	BAD SPOT	4	RAINY	-0-	-0-	-0-	-0-	-0-
08/08/85	BIG EDDY	1	RAINY	-0-	-0-	-0-	-0-	-0-
08/08/85	BIG EDDY	2	RAINY	-0-	-0-	-0-	-0-	-0-
08/08/85	BIG EDDY	3	RAINY	-0-	-0-	-0-	-0-	-0-
08/08/85	DIOBSUD CR	1	RAINY	-0-	76.300	43.500	3.50	STH
08/08/85	DIOBSUD CR	1	RAINY	76.100	50.700	-0-	3.40	STH
08/08/85	DIOBSUD CR	1	RAINY	106.80	28.100	-0-	3.40	STH
08/08/85	DIOBSUD CR	1	RAINY	113.60	38.100	-0-	3.30	STH
08/08/85	DIOBSUD CR	1	RAINY	91.000	47.000	-0-	3.20	STH
08/08/85	DIOBSUD CR	1	RAINY	101.70	27.200	-0-	3.50	STH
08/08/85	DIOBSUD CR	1	RAINY	60.400	62.700	-0-	2.90	STH
08/08/85	DIOBSUD CR	1	RAINY	-0-	62.400	61.500	3.20	STH
08/08/85	DIOBSUD CR	1	RAINY	-0-	39.300	105.20	3.50	STH
08/08/85	DIOBSUD CR	1	RAINY	-0-	70.200	40.200	3.20	STH
08/08/85	DIOBSUD CR	1	RAINY	-0-	69.200	39.000	3.40	STH
08/08/85	DIOBSUD CR	1	RAINY	32.700	95.300	-0-	3.60	STH
08/08/85	DIOBSUD CR	1	RAINY	58.600	55.900	-0-	3.40	STH
08/08/85	DIOBSUD CR	1	RAINY	57.500	60.900	-0-	3.40	STH
08/08/85	DIOBSUD CR	1	RAINY	-0-	37.000	85.800	3.10	STH
08/08/85	DIOBSUD CR	1	RAINY	-0-	32.600	95.200	3.40	STH
08/08/85	DIOBSUD CR	2	RAINY	-0-	59.100	50.800	3.40	STH
08/08/85	DIOBSUD CR	2	RAINY	-0-	43.100	62.300	3.40	STH
08/08/85	DIOBSUD CR	2	RAINY	-0-	30.500	73.000	3.20	STH
08/08/85	DIOBSUD CR	2	RAINY	-0-	19.700	89.000	3.30	STH
08/08/85	DIOBSUD CR	2	RAINY	-0-	21.800	84.700	3.40	STH
08/08/85	DIOBSUD CR	2	RAINY	-0-	27.000	80.500	3.30	STH
08/08/85	FACE BAR	1	RAINY	89.400	33.700	-0-	3.10	STH
08/08/85	FACE BAR	1	RAINY	92.200	20.100	-0-	3.20	STH
08/08/85	FACE BAR	1	RAINY	-0-	37.800	72.900	2.90	STH
08/08/85	FACE BAR	2	RAINY	-0-	-0-	-0-	-0-	-0-
08/08/85	FACE BAR	3	RAINY	-0-	-0-	-0-	-0-	-0-

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/08/85	FORBIDDEN	1	RAINY	39.400	77.500	-0-	3.00	STH
08/08/85	FORBIDDEN	2	RAINY	-0-	-0-	-0-	-0-	-0-
08/08/85	FORBIDDEN	3	RAINY	-0-	-0-	-0-	-0-	-0-
08/08/85	FUNGUS BAR	1	RAINY	44.100	58.700	-0-	2.20	STH
08/08/85	FUNGUS BAR	1	RAINY	-0-	-0-	-0-	3.00	STH
08/08/85	FUNGUS BAR	1	RAINY	89.400	18.100	-0-	2.20	STH
08/08/85	FUNGUS BAR	1	RAINY	68.200	33.400	-0-	2.50	STH
08/08/85	FUNGUS BAR	2	RAINY	71.600	50.100	-0-	3.50	STH
08/08/85	FUNGUS BAR	2	RAINY	-0-	71.400	34.700	3.70	STH
08/08/85	FUNGUS BAR	2	RAINY	-0-	94.300	31.800	3.40	STH
08/08/85	FUNGUS BAR	2	RAINY	72.600	48.900	-0-	3.30	STH
08/08/85	FUNGUS BAR	2	RAINY	-0-	31.500	85.000	3.30	STH
08/08/85	FUNGUS BAR	2	RAINY	72.200	51.100	-0-	4.00	STH
08/08/85	FUNGUS BAR	2	RAINY	68.100	52.200	-0-	4.00	STH
08/08/85	FUNGUS BAR	2	RAINY	70.900	54.300	-0-	3.20	STH
08/08/85	FUNGUS BAR	2	RAINY	72.200	54.400	-0-	3.40	STH
08/08/85	FUNGUS BAR	3	RAINY	-0-	92.200	26.600	3.70	STH
08/08/85	FUNGUS BAR	3	RAINY	37.600	73.300	-0-	3.40	STH
08/08/85	FUNGUS BAR	3	RAINY	50.400	65.700	-0-	3.30	STH
08/08/85	FUNGUS BAR	3	RAINY	-0-	86.900	27.200	3.90	STH
08/08/85	FUNGUS BAR	3	RAINY	35.600	78.900	-0-	3.70	STH
08/08/85	FUNGUS BAR	3	RAINY	24.400	85.500	-0-	3.20	STH
08/08/85	FUNGUS BAR	3	RAINY	25.600	94.900	-0-	3.70	STH
08/08/85	INACCESSIB	1	RAINY	87.100	-14.600	-0-	-0-	-0-
08/08/85	INACCESSIB	1	RAINY	98.600	-6.1000	-0-	-0-	-0-
08/08/85	INACCESSIB	2	RAINY	71.300	42.200	-0-	3.60	STH
08/08/85	INACCESSIB	2	RAINY	99.500	29.600	-0-	3.90	STH
08/08/85	INACCESSIB	3	RAINY	96.900	30.100	-0-	3.90	STH
08/08/85	MARBLE MT	1	RAINY	-0-	61.500	59.900	3.10	STH
08/08/85	MARBLE MT	1	RAINY	-0-	56.400	66.500	3.10	STH
08/08/85	MARBLE MT	1	RAINY	-0-	14.300	99.200	3.50	STH
08/08/85	MARBLE MT	1	RAINY	-0-	53.000	62.300	3.20	STH
08/08/85	MARBLE MT	1	RAINY	-0-	89.700	18.100	3.60	STH
08/08/85	MARBLE MT	1	RAINY	-0-	87.300	19.400	3.20	STH
08/08/85	MARBLE MT	2	RAINY	34.800	65.400	-0-	3.00	STH
08/08/85	MARBLE MT	2	RAINY	35.900	63.800	-0-	3.30	STH
08/08/85	MARBLE MT	3	RAINY	-0-	24.200	74.900	3.30	STH
08/08/85	MARBLE MT	3	RAINY	-0-	27.600	71.700	3.30	STH
08/08/85	MARBLE MT	3	RAINY	-0-	24.500	74.800	3.30	STH
08/08/85	MARBLE MT	3	RAINY	-0-	24.700	74.500	3.20	STH
08/08/85	DINK BAR	1	RAINY	-0-	42.000	75.200	2.30	STH
08/08/85	DINK BAR	1	RAINY	56.000	54.900	-0-	2.60	STH
08/08/85	DINK BAR	1	RAINY	48.000	71.800	-0-	3.40	STH
08/08/85	DINK BAR	1	RAINY	-0-	41.000	94.000	2.70	STH
08/08/85	DINK BAR	1	RAINY	84.000	50.000	-0-	3.20	STH
08/08/85	DINK BAR	2	RAINY	-0-	64.000	45.000	3.30	STH
08/08/85	DINK BAR	2	RAINY	-0-	110.000	31.000	2.80	STH
08/08/85	DINK BAR	3	RAINY	-0-	-0-	-0-	-0-	-0-
08/08/85	WAYNE SWIM	1	RAINY	-0-	-0-	-0-	-0-	-0-
08/08/85	WAYNE SWIM	2	RAINY	-0-	-0-	-0-	-0-	-0-
08/09/85	BACON CR	1	RAINY	-0-	-0-	-0-	-0-	-0-

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DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/09/85	BACON CR	2	RAINY	55.100	97.600	-0-	3.10	STH
08/09/85	BACON CR	3	RAINY	-0-	-0-	-0-	-0-	-0-
08/09/85	BAD SPOT	1	RAINY	-0-	-0-	-0-	-0-	-0-
08/09/85	BAD SPOT	2	RAINY	-0-	-0-	-0-	-0-	-0-
08/09/85	BAD SPOT	3	RAINY	-0-	-0-	-0-	-0-	-0-
08/09/85	BAD SPOT	4	RAINY	-0-	-0-	-0-	-0-	-0-
08/09/85	BIG EDDY	1	RAINY	-0-	46.000	16.700	3.00	STH
08/09/85	BIG EDDY	1	RAINY	58.000	54.000	-0-	3.20	STH
08/09/85	BIG EDDY	2	RAINY	-0-	-0-	-0-	-0-	-0-
08/09/85	BIG EDDY	3	RAINY	-0-	-0-	-0-	-0-	-0-
08/09/85	DIOBSUD CR	1	RAINY	50.100	84.400	-0-	2.90	STH
08/09/85	DIOBSUD CR	1	RAINY	42.300	103.30	-0-	3.30	STH
08/09/85	DIOBSUD CR	1	RAINY	41.500	105.20	-0-	3.30	STH
08/09/85	DIOBSUD CR	1	RAINY	44.600	102.50	-0-	3.40	STH
08/09/85	DIOBSUD CR	1	RAINY	42.100	102.20	-0-	3.20	STH
08/09/85	DIOBSUD CR	1	RAINY	36.800	99.520	-0-	3.10	STH
08/09/85	DIOBSUD CR	1	RAINY	43.400	105.20	-0-	3.00	STH
08/09/85	DIOBSUD CR	1	RAINY	49.200	86.000	-0-	3.00	STH
08/09/85	DIOBSUD CR	1	RAINY	54.500	76.400	-0-	3.20	STH
08/09/85	DIOBSUD CR	1	RAINY	98.600	7.0000	-0-	3.00	STH
08/09/85	DIOBSUD CR	1	RAINY	98.600	7.0000	-0-	3.00	STH
08/09/85	DIOBSUD CR	1	RAINY	98.600	7.0000	-0-	2.50	STH
08/09/85	DIOBSUD CR	1	RAINY	98.600	7.0000	-0-	3.10	STH
08/09/85	DIOBSUD CR	1	RAINY	98.600	7.0000	-0-	3.10	STH
08/09/85	DIOBSUD CR	1	RAINY	98.600	7.0000	-0-	3.00	STH
08/09/85	DIOBSUD CR	1	RAINY	98.600	7.0000	-0-	3.00	STH
08/09/85	DIOBSUD CR	1	RAINY	98.600	7.0000	-0-	2.60	STH
08/09/85	DIOBSUD CR	1	RAINY	55.400	76.100	-0-	3.00	STH
08/09/85	DIOBSUD CR	1	RAINY	61.700	69.600	-0-	3.10	STH
08/09/85	DIOBSUD CR	1	RAINY	80.100	48.800	-0-	3.00	STH
08/09/85	DIOBSUD CR	1	RAINY	102.30	25.600	-0-	3.10	STH
08/09/85	DIOBSUD CR	1	RAINY	99.300	8.8000	-0-	2.90	STH
08/09/85	DIOBSUD CR	1	RAINY	98.600	7.0000	-0-	3.30	STH
08/09/85	DIOBSUD CR	1	RAINY	46.100	106.60	-0-	3.50	STH
08/09/85	DIOBSUD CR	1	RAINY	47.100	107.70	-0-	3.50	STH
08/09/85	DIOBSUD CR	1	RAINY	45.400	107.10	-0-	3.00	STH
08/09/85	DIOBSUD CR	1	RAINY	40.100	104.10	-0-	3.20	STH
08/09/85	DIOBSUD CR	1	RAINY	40.100	103.10	-0-	3.20	STH
08/09/85	DIOBSUD CR	1	RAINY	40.100	103.70	-0-	3.40	STH
08/09/85	DIOBSUD CR	1	RAINY	40.100	105.10	-0-	2.50	STH
08/09/85	DIOBSUD CR	1	RAINY	98.900	8.1000	-0-	4.20	STH
08/09/85	DIOBSUD CR	1	RAINY	98.600	7.0000	-0-	3.40	STH
08/09/85	DIOBSUD CR	1	RAINY	38.200	105.10	-0-	5.00	COHC
08/09/85	DIOBSUD CR	1	RAINY	98.600	7.0000	-0-	3.10	STH
08/09/85	DIOBSUD CR	1	RAINY	99.200	8.5000	-0-	3.10	STH
08/09/85	DIOBSUD CR	1	RAINY	98.100	8.2000	-0-	3.40	STH
08/09/85	DIOBSUD CR	1	RAINY	98.600	7.0000	-0-	3.20	STH
08/09/85	DIOBSUD CR	1	RAINY	98.900	7.9000	-0-	3.00	STH
08/09/85	DIOBSUD CR	2	RAINY	-0-	26.200	79.400	2.50	STH
08/09/85	DIOBSUD CR	2	RAINY	-0-	38.600	55.000	2.50	STH
08/09/85	DIOBSUD CR	2	RAINY	-0-	21.200	49.600	3.00	STH

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/09/85	FORBIDDEN	1	RAINY	53.800	71.300	-0-	3.20	STH
08/09/85	FORBIDDEN	2	RAINY	-0-	-0-	-0-	-0-	-0-
08/09/85	FORBIDDEN	3	RAINY	-0-	-0-	-0-	-0-	-0-
08/09/85	FUNGUS BAR	1	RAINY	-0-	-0-	-0-	-0-	-0-
08/09/85	FUNGUS BAR	2	RAINY	-0-	75.500	30.100	2.70	STH
08/09/85	FUNGUS BAR	2	RAINY	-0-	90.600	18.100	2.60	STH
08/09/85	FUNGUS BAR	3	RAINY	17.400	92.300	-0-	2.50	STH
08/09/85	FUNGUS BAR	3	RAINY	24.100	96.800	-0-	-0-	-0-
08/09/85	FUNGUS BAR	3	RAINY	63.300	38.700	-0-	2.60	STH
08/09/85	FUNGUS BAR	3	RAINY	-0-	90.700	27.300	2.60	STH
08/09/85	FUNGUS BAR	3	RAINY	26.200	112.70	-0-	-0-	-0-
08/09/85	FUNGUS BAR	3	RAINY	33.700	73.800	-0-	2.60	STH
08/09/85	FUNGUS BAR	3	RAINY	-0-	90.700	27.300	2.60	STH
08/09/85	FUNGUS BAR	3	RAINY	-0-	23.900	101.30	3.00	STH
08/09/85	FUNGUS BAR	3	RAINY	33.700	73.800	-0-	2.60	STH
08/09/85	FUNGUS BAR	3	RAINY	33.700	73.800	-0-	2.50	STH
08/09/85	INACCESSIB	1	RAINY	37.900	75.800	-0-	-0-	-0-
08/09/85	INACCESSIB	1	RAINY	37.900	75.800	-0-	-0-	-0-
08/09/85	INACCESSIB	2	RAINY	-0-	-0-	-0-	-0-	-0-
08/09/85	INACCESSIB	3	RAINY	-0-	-0-	-0-	-0-	-0-
08/09/85	MARBLE MT	1	RAINY	-0-	106.00	42.000	3.00	STH
08/09/85	MARBLE MT	1	RAINY	-0-	89.000	48.000	2.90	STH
08/09/85	MARBLE MT	1	RAINY	-0-	61.300	56.000	2.60	STH
08/09/85	MARBLE MT	1	RAINY	-0-	55.000	65.700	3.20	STH
08/09/85	MARBLE MT	1	RAINY	-0-	41.400	78.000	3.20	STH
08/09/85	MARBLE MT	1	RAINY	-0-	30.500	80.000	2.70	STH
08/09/85	MARBLE MT	1	RAINY	-0-	87.000	48.000	3.10	STH
08/09/85	MARBLE MT	1	RAINY	-0-	82.000	54.000	3.70	STH
08/09/85	MARBLE MT	1	RAINY	92.500	26.000	-0-	3.20	STH
08/09/85	MARBLE MT	1	RAINY	-0-	100.00	53.700	3.10	STH
08/09/85	MARBLE MT	1	RAINY	-0-	55.000	72.000	3.10	STH
08/09/85	MARBLE MT	1	RAINY	-0-	47.500	85.000	3.50	STH
08/09/85	MARBLE MT	1	RAINY	-0-	93.000	45.400	3.20	STH
08/09/85	MARBLE MT	1	RAINY	78.000	56.000	-0-	3.60	STH
08/09/85	MARBLE MT	1	RAINY	75.400	26.000	-0-	-0-	STH
08/09/85	MARBLE MT	1	RAINY	91.600	15.000	-0-	3.00	STH
08/09/85	MARBLE MT	1	RAINY	90.400	45.400	-0-	3.10	STH
08/09/85	MARBLE MT	1	RAINY	103.50	33.000	-0-	3.30	STH
08/09/85	MARBLE MT	1	RAINY	-0-	101.00	56.000	3.40	STH
08/09/85	MARBLE MT	1	RAINY	-0-	93.000	53.000	3.30	STH
08/09/85	MARBLE MT	1	RAINY	88.000	13.000	-0-	3.10	STH
08/09/85	MARBLE MT	1	RAINY	100.00	36.000	-0-	3.30	STH
08/09/85	MARBLE MT	1	RAINY	114.50	37.000	-0-	3.70	STH
08/09/85	MARBLE MT	2	RAINY	92.000	20.400	-0-	3.20	STH
08/09/85	MARBLE MT	2	RAINY	11.800	93.500	-0-	3.40	STH
08/09/85	MARBLE MT	2	RAINY	87.000	60.000	-0-	2.90	STH
08/09/85	MARBLE MT	2	RAINY	-0-	36.000	94.400	3.20	STH
08/09/85	MARBLE MT	2	RAINY	-0-	104.00	48.000	3.20	STH
08/09/85	MARBLE MT	2	RAINY	95.300	54.000	-0-	3.00	STH
08/09/85	MARBLE MT	2	RAINY	-0-	105.00	21.600	2.80	STH
08/09/85	MARBLE MT	2	RAINY	-0-	105.00	43.600	3.20	STH

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/09/85	MARBLE MT	2	RAINY	46.400	117.00	-0-	3.20	STH
08/09/85	MARBLE MT	2	RAINY	-0-	103.00	23.000	2.80	STH
08/09/85	MARBLE MT	2	RAINY	-0-	36.000	72.000	3.10	STH
08/09/85	MARBLE MT	2	RAINY	88.000	58.000	-0-	3.20	STH
08/09/85	MARBLE MT	2	RAINY	96.000	56.000	-0-	3.00	STH
08/09/85	MARBLE MT	2	RAINY	-0-	25.300	90.000	3.50	STH
08/09/85	MARBLE MT	2	RAINY	-0-	28.000	90.000	3.10	STH
08/09/85	MARBLE MT	2	RAINY	-0-	53.700	57.400	3.10	STH
08/09/85	MARBLE MT	2	RAINY	-0-	92.000	33.400	2.90	STH
08/09/85	MARBLE MT	3	RAINY	48.700	111.70	-0-	3.00	STH
08/09/85	MARBLE MT	3	RAINY	26.300	98.000	-0-	3.20	STH
08/09/85	MARBLE MT	3	RAINY	52.000	62.000	-0-	3.10	STH
08/09/85	MARBLE MT	3	RAINY	46.800	110.00	-0-	3.50	STH
08/09/85	MARBLE MT	3	RAINY	59.000	98.000	-0-	2.80	STH
08/09/85	MARBLE MT	3	RAINY	44.000	75.000	-0-	3.20	STH
08/09/85	MARBLE MT	3	RAINY	44.000	75.000	-0-	3.40	STH
08/09/85	MARBLE MT	3	RAINY	-0-	-0-	-0-	3.10	STH
08/09/85	MARBLE MT	3	RAINY	-0-	-0-	-0-	3.80	STH
08/09/85	MARBLE MT	3	RAINY	84.000	72.000	-0-	3.70	STH
08/09/85	MARBLE MT	3	RAINY	47.600	115.00	-0-	3.70	STH
08/09/85	MARBLE MT	3	RAINY	55.400	98.500	-0-	2.90	STH
08/09/85	MARBLE MT	3	RAINY	-0-	45.000	57.000	3.10	STH
08/09/85	MARBLE MT	3	RAINY	-0-	76.500	31.000	3.00	STH
08/09/85	MARBLE MT	3	RAINY	28.000	98.000	-0-	3.10	STH
08/09/85	MARBLE MT	3	RAINY	38.400	74.000	-0-	3.00	STH
08/09/85	MARBLE MT	3	RAINY	44.000	75.000	-0-	3.60	STH
08/09/85	MARBLE MT	3	RAINY	44.000	75.000	-0-	3.40	STH
08/09/85	MARBLE MT	3	RAINY	95.500	55.000	-0-	3.20	STH
08/09/85	MARBLE MT	3	RAINY	-0-	32.000	68.000	3.20	STH
08/09/85	MARBLE MT	3	RAINY	44.000	75.000	-0-	3.30	STH
08/09/85	MARBLE MT	3	RAINY	78.700	60.000	-0-	4.80	STH
08/09/85	MARBLE MT	3	RAINY	95.500	55.000	-0-	3.40	STH
08/09/85	MARBLE MT	3	RAINY	84.000	72.000	-0-	3.30	STH
08/09/85	MARBLE MT	3	RAINY	84.000	57.000	-0-	3.30	STH
08/09/85	MARBLE MT	3	RAINY	40.000	54.000	-0-	3.40	STH
08/09/85	MARBLE MT	3	RAINY	44.000	75.000	-0-	3.50	STH
08/09/85	MARBLE MT	3	RAINY	-0-	49.000	81.300	3.40	STH
08/09/85	MARBLE MT	3	RAINY	-0-	49.000	81.300	3.50	STH
08/09/85	MARBLE MT	3	RAINY	-0-	49.000	81.300	3.20	STH
08/09/85	MARBLE MT	3	RAINY	-0-	49.000	81.300	3.50	STH
08/09/85	MARBLE MT	3	RAINY	-0-	49.000	81.300	3.60	STH
08/09/85	MARBLE MT	3	RAINY	93.600	52.000	-0-	3.60	STH
08/09/85	MARBLE MT	3	RAINY	54.500	54.000	-0-	3.40	STH
08/09/85	MARBLE MT	3	RAINY	44.000	75.000	-0-	3.70	STH
08/09/85	MARBLE MT	3	RAINY	44.000	75.000	-0-	3.40	STH
08/09/85	MARBLE MT	3	RAINY	64.000	43.500	-0-	3.20	STH
08/09/85	MARBLE MT	3	RAINY	66.000	45.000	-0-	3.60	STH
08/09/85	DINK BAR	1	RAINY	103.70	42.900	-0-	3.20	STH
08/09/85	DINK BAR	1	RAINY	25.600	87.900	-0-	3.60	STH
08/09/85	DINK BAR	1	RAINY	62.600	90.400	-0-	3.30	STH
08/09/85	DINK BAR	1	RAINY	104.10	41.900	-0-	3.00	STH

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/09/85	DINK BAR	1	RAINY	33.700	70.000	-0-	2.90	STH
08/09/85	DINK BAR	1	RAINY	45.100	60.700	-0-	3.00	STH
08/09/85	DINK BAR	1	RAINY	106.70	41.900	-0-	3.00	STH
08/09/85	DINK BAR	2	RAINY	-0-	92.500	26.200	3.20	STH
08/09/85	DINK BAR	2	RAINY	96.200	27.500	-0-	3.20	STH
08/09/85	DINK BAR	2	RAINY	34.800	91.400	-0-	3.20	STH
08/09/85	DINK BAR	3	RAINY	88.500	16.500	-0-	3.30	STH
08/09/85	DINK BAR	3	RAINY	-0-	20.700	93.700	3.00	STH
08/09/85	DINK BAR	3	RAINY	28.900	96.400	-0-	5.00	COMO
08/09/85	DINK BAR	3	RAINY	87.400	30.300	-0-	3.30	STH
08/09/85	ROCKPORT	1	RAINY	45.700	68.500	-0-	-0-	STH
08/09/85	ROCKPORT	1	RAINY	82.300	39.700	-0-	-0-	STH
08/09/85	ROCKPORT	2	RAINY	-0-	83.600	21.900	-0-	STH
08/09/85	ROCKPORT	2	RAINY	-0-	98.600	29.000	-0-	STH
08/09/85	ROCKPORT	2	RAINY	-0-	88.000	40.900	-0-	STH
08/09/85	ROCKPORT	2	RAINY	-0-	47.800	60.200	-0-	STH
08/09/85	ROCKPORT	3	RAINY	-0-	47.800	60.200	-0-	STH
08/09/85	ROCKPORT	3	RAINY	-0-	90.100	19.100	-0-	STH
08/09/85	ROCKPORT	3	RAINY	-0-	45.600	58.500	-0-	STH
08/09/85	ROCKPORT	3	RAINY	-0-	40.400	67.500	-0-	STH
08/09/85	ROCKPORT	3	RAINY	-0-	33.000	102.80	-0-	STH
08/09/85	ROCKPORT	3	RAINY	-0-	35.600	79.800	-0-	STH
08/09/85	ROCKPORT	3	RAINY	-0-	31.800	100.50	-0-	STH
08/09/85	ROCKPORT	3	RAINY	-0-	47.800	65.000	-0-	STH
08/09/85	ROCKPORT	3	RAINY	-0-	40.000	74.300	-0-	STH
08/09/85	WAYNE SWIM	1	RAINY	-0-	-0-	-0-	-0-	-0-
08/09/85	WAYNE SWIM	2	RAINY	-0-	-0-	-0-	-0-	-0-
08/10/85	BACON CR	1	CLEAR	47.400	83.000	-0-	-0-	-0-
08/10/85	BACON CR	1	CLEAR	-0-	95.000	30.000	-0-	-0-
08/10/85	BACON CR	2	CLEAR	-0-	-0-	-0-	-0-	-0-
08/10/85	BACON CR	3	CLEAR	-0-	-0-	-0-	-0-	-0-
08/10/85	BAD SPOT	1	CLEAR	-0-	56.700	53.700	3.10	-0-
08/10/85	BAD SPOT	2	CLEAR	-0-	-0-	-0-	-0-	-0-
08/10/85	BAD SPOT	3	CLEAR	-0-	92.800	42.800	2.90	-0-
08/10/85	BAD SPOT	4	CLEAR	-0-	-0-	-0-	-0-	-0-
08/10/85	BIG EDDY	1	OVERCAST	18.700	32.800	-0-	3.00	-0-
08/10/85	BIG EDDY	2	OVERCAST	-0-	-0-	-0-	-0-	-0-
08/10/85	BIG EDDY	3	OVERCAST	-0-	-0-	-0-	-0-	-0-
08/10/85	DIOBSUD CR	1	CLEAR	40.200	102.40	-0-	3.30	STH
08/10/85	DIOBSUD CR	1	CLEAR	-0-	80.000	54.100	-0-	-0-
08/10/85	DIOBSUD CR	1	CLEAR	42.200	105.20	-0-	2.90	STH
08/10/85	DIOBSUD CR	1	CLEAR	46.200	106.80	-0-	4.00	STH
08/10/85	DIOBSUD CR	1	CLEAR	46.000	105.90	-0-	2.90	STH
08/10/85	DIOBSUD CR	1	CLEAR	47.900	107.20	-0-	3.10	STH
08/10/85	DIOBSUD CR	1	CLEAR	71.100	46.000	-0-	3.00	STH
08/10/85	DIOBSUD CR	1	CLEAR	53.000	72.700	-0-	3.00	STH
08/10/85	DIOBSUD CR	1	CLEAR	-0-	78.800	53.900	-0-	-0-
08/10/85	DIOBSUD CR	1	CLEAR	39.100	103.70	-0-	3.00	STH
08/10/85	DIOBSUD CR	1	CLEAR	38.500	103.80	-0-	2.90	STH
08/10/85	DIOBSUD CR	1	CLEAR	97.600	18.600	-0-	3.10	STH
08/10/85	DIOBSUD CR	1	CLEAR	94.000	40.800	-0-	3.40	STH

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/10/85	DIOBSUD CR	1	CLEAR	94.400	40.900	-0-	3.00	STH
08/10/85	DIOBSUD CR	2	CLEAR	15.900	85.400	-0-	3.20	-0-
08/10/85	DIOBSUD CR	2	CLEAR	25.900	77.100	-0-	3.20	-0-
08/10/85	DIOBSUD CR	2	CLEAR	68.700	41.400	-0-	3.60	-0-
08/10/85	DIOBSUD CR	2	CLEAR	45.700	65.700	-0-	3.30	-0-
08/10/85	DIOBSUD CR	2	CLEAR	61.700	62.600	-0-	3.30	STH
08/10/85	DIOBSUD CR	2	CLEAR	76.100	34.500	-0-	3.00	-0-
08/10/85	DIOBSUD CR	2	CLEAR	35.100	70.800	-0-	3.20	-0-
08/10/85	FACE BAR	1	OVERCAST	-0-	38.800	61.500	3.40	STH
08/10/85	FACE BAR	1	OVERCAST	-0-	65.700	44.100	-0-	-0-
08/10/85	FACE BAR	1	OVERCAST	-0-	34.400	68.900	3.40	STH
08/10/85	FACE BAR	1	OVERCAST	-0-	33.900	69.400	3.80	STH
08/10/85	FACE BAR	1	OVERCAST	-0-	34.200	69.100	3.40	STH
08/10/85	FACE BAR	1	OVERCAST	-0-	34.400	68.900	3.10	STH
08/10/85	FACE BAR	1	OVERCAST	-0-	34.400	68.900	3.30	STH
08/10/85	FACE BAR	1	OVERCAST	-0-	42.500	58.800	3.40	STH
08/10/85	FACE BAR	1	OVERCAST	-0-	33.700	69.300	3.30	STH
08/10/85	FACE BAR	1	OVERCAST	-0-	32.400	67.000	3.40	STH
08/10/85	FACE BAR	1	OVERCAST	-0-	36.400	67.600	3.10	STH
08/10/85	FACE BAR	1	OVERCAST	-0-	34.400	68.900	3.30	STH
08/10/85	FACE BAR	1	OVERCAST	-0-	37.900	64.100	-0-	-0-
08/10/85	FACE BAR	1	OVERCAST	-0-	38.400	63.300	-0-	-0-
08/10/85	FACE BAR	1	OVERCAST	-0-	38.800	62.900	-0-	-0-
08/10/85	FACE BAR	1	OVERCAST	21.000	80.800	-0-	-0-	-0-
08/10/85	FACE BAR	1	OVERCAST	22.100	80.000	-0-	3.20	STH
08/10/85	FACE BAR	1	OVERCAST	28.900	72.400	-0-	3.40	STH
08/10/85	FACE BAR	1	OVERCAST	-0-	69.700	46.400	-0-	-0-
08/10/85	FACE BAR	1	OVERCAST	-0-	34.400	68.900	3.60	STH
08/10/85	FACE BAR	1	OVERCAST	-0-	34.400	68.900	3.40	STH
08/10/85	FACE BAR	1	OVERCAST	-0-	70.000	30.400	-0-	-0-
08/10/85	FACE BAR	1	OVERCAST	-0-	72.100	28.700	3.50	STH
08/10/85	FACE BAR	1	OVERCAST	-0-	72.900	22.900	3.20	STH
08/10/85	FACE BAR	1	OVERCAST	-0-	78.500	21.900	-0-	-0-
08/10/85	FACE BAR	1	OVERCAST	-0-	77.200	23.400	3.10	STH
08/10/85	FACE BAR	1	OVERCAST	-0-	91.600	10.000	-0-	-0-
08/10/85	FACE BAR	1	OVERCAST	-0-	108.10	28.700	3.80	STH
08/10/85	FACE BAR	1	OVERCAST	-0-	108.10	28.700	3.30	STH
08/10/85	FACE BAR	1	OVERCAST	-0-	38.300	62.500	3.40	STH
08/10/85	FACE BAR	1	OVERCAST	-0-	19.500	89.700	3.10	STH
08/10/85	FACE BAR	1	OVERCAST	-0-	31.100	73.800	3.30	STH
08/10/85	FACE BAR	1	OVERCAST	23.400	77.500	-0-	3.50	STH
08/10/85	FACE BAR	1	OVERCAST	22.600	78.400	-0-	3.70	STH
08/10/85	FACE BAR	1	OVERCAST	37.500	64.200	-0-	3.80	STH
08/10/85	FACE BAR	1	OVERCAST	-0-	81.600	43.400	3.20	STH
08/10/85	FACE BAR	1	OVERCAST	-0-	66.600	34.400	3.60	STH
08/10/85	FACE BAR	1	OVERCAST	85.100	28.400	-0-	3.10	STH
08/10/85	FACE BAR	1	OVERCAST	94.500	32.300	-0-	-0-	-0-
08/10/85	FACE BAR	1	OVERCAST	23.700	77.200	-0-	3.30	STH
08/10/85	FACE BAR	1	OVERCAST	10.000	92.300	-0-	3.10	STH
08/10/85	FACE BAR	1	OVERCAST	16.000	89.200	-0-	-0-	-0-
08/10/85	FACE BAR	1	OVERCAST	-0-	8.8000	92.800	-0-	-0-

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.



DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/10/85	FACE BAR	1	OVERCAST	-0-	38.000	63.500	-0-	-0-
08/10/85	FACE BAR	1	OVERCAST	53.700	56.700	-0-	3.80	STH
08/10/85	FACE BAR	1	OVERCAST	-0-	33.300	70.200	3.00	STH
08/10/85	FACE BAR	1	OVERCAST	40.200	83.400	-0-	-0-	-0-
08/10/85	FACE BAR	1	OVERCAST	-0-	38.500	87.300	-0-	-0-
08/10/85	FACE BAR	1	OVERCAST	-0-	29.000	85.900	-0-	-0-
08/10/85	FACE BAR	1	OVERCAST	-0-	24.200	92.600	3.50	STH
08/10/85	FACE BAR	1	OVERCAST	-0-	28.800	75.900	3.40	STH
08/10/85	FACE BAR	2	OVERCAST	33.900	71.900	-0-	3.40	STH
08/10/85	FACE BAR	2	OVERCAST	29.000	81.200	-0-	-0-	-0-
08/10/85	FACE BAR	2	OVERCAST	-0-	30.100	97.600	-0-	-0-
08/10/85	FACE BAR	2	OVERCAST	45.200	70.500	-0-	-0-	-0-
08/10/85	FACE BAR	2	OVERCAST	25.700	87.900	-0-	-0-	-0-
08/10/85	FACE BAR	2	OVERCAST	-0-	28.900	106.50	-0-	-0-
08/10/85	FACE BAR	2	OVERCAST	99.900	37.100	-0-	-0-	-0-
08/10/85	FACE BAR	2	OVERCAST	83.000	34.100	-0-	3.60	STH
08/10/85	FACE BAR	2	OVERCAST	42.300	77.700	-0-	-0-	-0-
08/10/85	FACE BAR	2	OVERCAST	58.500	53.200	-0-	-0-	-0-
08/10/85	FACE BAR	2	OVERCAST	25.900	78.800	-0-	3.20	STH
08/10/85	FACE BAR	3	OVERCAST	-0-	-0-	-0-	-0-	-0-
08/10/85	FORBIDDEN	1	CLOUDY	67.500	46.500	-0-	3.30	STH
08/10/85	FORBIDDEN	2	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/10/85	FORBIDDEN	3	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/10/85	FUNGUS BAR	1	CLEAR	20.000	90.000	-0-	3.80	STH
08/10/85	FUNGUS BAR	1	CLEAR	-0-	-0-	-0-	-0-	FLD
08/10/85	FUNGUS BAR	1	CLEAR	20.000	92.000	-0-	3.20	STH
08/10/85	FUNGUS BAR	1	CLEAR	0.0000	20.000	100.00	-0-	-0-
08/10/85	FUNGUS BAR	1	CLEAR	20.000	90.000	-0-	3.90	STH
08/10/85	FUNGUS BAR	2	CLEAR	-0-	51.000	66.000	3.30	-0-
08/10/85	FUNGUS BAR	2	CLEAR	-0-	55.000	58.000	3.50	-0-
08/10/85	FUNGUS BAR	2	CLEAR	-0-	53.000	61.000	3.20	-0-
08/10/85	FUNGUS BAR	2	CLEAR	-0-	62.000	49.000	2.90	-0-
08/10/85	FUNGUS BAR	2	CLEAR	-0-	60.000	52.000	3.10	-0-
08/10/85	FUNGUS BAR	2	CLEAR	-0-	100.00	16.000	3.10	-0-
08/10/85	FUNGUS BAR	2	CLEAR	-0-	60.000	40.000	3.10	-0-
08/10/85	FUNGUS BAR	2	CLEAR	-0-	69.000	39.000	3.60	-0-
08/10/85	FUNGUS BAR	2	CLEAR	-0-	83.000	42.000	3.10	-0-
08/10/85	FUNGUS BAR	2	CLEAR	-0-	50.000	62.000	3.20	-0-
08/10/85	FUNGUS BAR	2	CLEAR	-0-	51.000	56.000	3.60	-0-
08/10/85	FUNGUS BAR	2	CLEAR	70.000	40.000	-0-	3.10	STH
08/10/85	FUNGUS BAR	2	CLEAR	-0-	57.000	69.000	3.60	-0-
08/10/85	FUNGUS BAR	2	CLEAR	-0-	56.000	69.000	3.00	-0-
08/10/85	FUNGUS BAR	2	CLEAR	-0-	55.000	89.000	3.10	-0-
08/10/85	FUNGUS BAR	2	CLEAR	-0-	44.000	104.00	3.20	-0-
08/10/85	FUNGUS BAR	2	CLEAR	-0-	47.000	68.000	2.80	-0-
08/10/85	FUNGUS BAR	2	CLEAR	-0-	-0-	-0-	-0-	FLD
08/10/85	FUNGUS BAR	2	CLEAR	-0-	100.00	21.000	3.40	-0-
08/10/85	FUNGUS BAR	2	CLEAR	-0-	78.000	42.000	3.30	-0-
08/10/85	FUNGUS BAR	2	CLEAR	-0-	-0-	-0-	-0-	FLD
08/10/85	FUNGUS BAR	3	CLEAR	-0-	80.000	36.200	3.30	STH
08/10/85	FUNGUS BAR	3	CLEAR	-0-	83.000	39.500	2.90	STH

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/10/85	FUNGUS BAR	3	CLEAR	-0-	67.000	48.400	2.90	STH
08/10/85	FUNGUS BAR	3	CLEAR	-0-	77.000	24.000	2.70	STH
08/10/85	FUNGUS BAR	3	CLEAR	-0-	36.000	87.000	3.70	STH
08/10/85	FUNGUS BAR	3	CLEAR	-0-	20.000	100.00	3.00	STH
08/10/85	FUNGUS BAR	3	CLEAR	-0-	33.500	107.00	2.50	STH
08/10/85	FUNGUS BAR	3	CLEAR	70.000	48.000	-0-	2.80	STH
08/10/85	FUNGUS BAR	3	CLEAR	65.000	55.500	-0-	2.90	STH
08/10/85	FUNGUS BAR	3	CLEAR	69.000	66.000	-0-	3.40	STH
08/10/85	FUNGUS BAR	3	CLEAR	40.000	84.000	-0-	2.60	STH
08/10/85	FUNGUS BAR	3	CLEAR	94.000	78.000	-0-	2.60	STH
08/10/85	FUNGUS BAR	3	CLEAR	100.00	16.000	-0-	2.80	STH
08/10/85	FUNGUS BAR	3	CLEAR	108.00	21.000	-0-	3.30	STH
08/10/85	FUNGUS BAR	3	CLEAR	96.000	20.000	-0-	2.70	STH
08/10/85	FUNGUS BAR	3	CLEAR	96.000	20.400	-0-	3.20	STH
08/10/85	FUNGUS BAR	3	CLEAR	109.00	26.400	-0-	3.10	STH
08/10/85	FUNGUS BAR	3	CLEAR	88.000	19.000	-0-	2.80	STH
08/10/85	FUNGUS BAR	3	CLEAR	90.000	30.500	-0-	3.10	STH
08/10/85	FUNGUS BAR	3	CLEAR	78.000	27.300	-0-	2.90	STH
08/10/85	FUNGUS BAR	3	CLEAR	67.000	39.700	-0-	2.90	STH
08/10/85	FUNGUS BAR	3	CLEAR	60.000	50.000	-0-	3.10	STH
08/10/85	FUNGUS BAR	3	CLEAR	70.000	52.000	-0-	3.70	STH
08/10/85	FUNGUS BAR	3	CLEAR	-0-	62.000	65.000	3.30	STH
08/10/85	FUNGUS BAR	3	CLEAR	-0-	53.000	73.000	3.60	STH
08/10/85	FUNGUS BAR	3	CLEAR	-0-	51.200	60.000	3.10	STH
08/10/85	FUNGUS BAR	3	CLEAR	-0-	49.500	65.000	2.40	STH
08/10/85	FUNGUS BAR	3	CLEAR	-0-	47.600	64.600	2.90	STH
08/10/85	FUNGUS BAR	3	CLEAR	-0-	45.200	66.000	3.20	STH
08/10/85	FUNGUS BAR	3	CLEAR	-0-	45.200	65.400	2.80	STH
08/10/85	FUNGUS BAR	3	CLEAR	-0-	43.500	66.400	2.80	STH
08/10/85	FUNGUS BAR	3	CLEAR	-0-	43.000	67.000	4.10	STH
08/10/85	FUNGUS BAR	3	CLEAR	-0-	41.200	77.000	2.90	STH
08/10/85	FUNGUS BAR	3	CLEAR	-0-	41.500	78.000	3.60	STH
08/10/85	FUNGUS BAR	3	CLEAR	-0-	33.000	75.000	2.70	STH
08/10/85	FUNGUS BAR	3	CLEAR	-0-	26.000	86.000	3.10	STH
08/10/85	FUNGUS BAR	3	CLEAR	85.000	-0-	-0-	-0-	-0-
08/10/85	FUNGUS BAR	3	CLEAR	23.000	90.000	-0-	-0-	-0-
08/10/85	FUNGUS BAR	3	CLEAR	32.000	90.600	-0-	-0-	-0-
08/10/85	FUNGUS BAR	3	CLEAR	48.000	61.000	-0-	2.70	STH
08/10/85	FUNGUS BAR	3	CLEAR	50.000	78.300	-0-	3.40	STH
08/10/85	FUNGUS BAR	3	CLEAR	20.000	84.200	-0-	2.90	STH
08/10/85	FUNGUS BAR	3	CLEAR	25.000	85.000	-0-	3.20	STH
08/10/85	FUNGUS BAR	3	CLEAR	45.000	86.000	-0-	-0-	-0-
08/10/85	FUNGUS BAR	3	CLEAR	45.000	87.000	-0-	-0-	-0-
08/10/85	FUNGUS BAR	3	CLEAR	65.000	52.000	-0-	-0-	-0-
08/10/85	FUNGUS BAR	3	CLEAR	65.000	52.000	-0-	-0-	-0-
08/10/85	FUNGUS BAR	3	CLEAR	35.000	94.000	-0-	-0-	-0-
08/10/85	FUNGUS BAR	3	CLEAR	67.000	8.7000	-0-	-0-	-0-
08/10/85	FUNGUS BAR	3	CLEAR	92.000	-0-	-0-	-0-	-0-
08/10/85	INACCESSIB	1	PTLY CLDY	71.200	42.600	-0-	2.90	STH
08/10/85	INACCESSIB	1	PTLY CLDY	-0-	79.200	23.600	3.00	STH
08/10/85	INACCESSIB	1	PTLY CLDY	-0-	82.100	19.000	3.20	STH

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	RAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/10/85	INACCESSIB	2	PTLY CLDY	-0-	-0-	-0-	-0-	-0-
08/10/85	INACCESSIB	3	PTLY CLDY	-0-	36.200	70.700	2.90	STH
08/10/85	MARBLE MT	1	OVERCAST	99.400	21.500	-0-	2.80	-0-
08/10/85	MARBLE MT	1	OVERCAST	99.400	21.500	-0-	2.80	-0-
08/10/85	MARBLE MT	1	OVERCAST	-0-	77.300	44.900	-0-	-0-
08/10/85	MARBLE MT	1	OVERCAST	100.30	23.900	-0-	3.20	-0-
08/10/85	MARBLE MT	1	OVERCAST	-0-	75.900	56.700	3.10	-0-
08/10/85	MARBLE MT	1	OVERCAST	-0-	83.100	51.300	-0-	-0-
08/10/85	MARBLE MT	1	OVERCAST	75.900	26.000	-0-	3.10	-0-
08/10/85	MARBLE MT	1	OVERCAST	-0-	87.400	37.900	3.00	-0-
08/10/85	MARBLE MT	1	OVERCAST	-0-	99.300	52.500	3.50	-0-
08/10/85	MARBLE MT	1	OVERCAST	-0-	107.10	62.200	3.10	-0-
08/10/85	MARBLE MT	1	OVERCAST	75.900	26.000	-0-	2.80	-0-
08/10/85	MARBLE MT	1	OVERCAST	79.700	21.600	-0-	2.80	-0-
08/10/85	MARBLE MT	1	OVERCAST	96.500	22.800	-0-	2.90	-0-
08/10/85	MARBLE MT	1	OVERCAST	38.700	82.800	-0-	2.90	-0-
08/10/85	MARBLE MT	1	OVERCAST	-0-	30.000	83.800	3.20	-0-
08/10/85	MARBLE MT	1	OVERCAST	75.900	26.000	-0-	3.20	-0-
08/10/85	MARBLE MT	1	OVERCAST	85.500	12.900	-0-	2.90	-0-
08/10/85	MARBLE MT	1	OVERCAST	-0-	16.000	92.800	2.50	-0-
08/10/85	MARBLE MT	1	OVERCAST	6.6000	101.20	-0-	3.10	-0-
08/10/85	MARBLE MT	1	OVERCAST	-0-	73.800	61.200	3.40	-0-
08/10/85	MARBLE MT	1	OVERCAST	75.900	26.000	-0-	3.20	-0-
08/10/85	MARBLE MT	1	OVERCAST	75.900	26.000	-0-	2.90	-0-
08/10/85	MARBLE MT	2	OVERCAST	95.300	9.9000	-0-	2.80	-0-
08/10/85	MARBLE MT	2	OVERCAST	20.100	93.900	-0-	3.10	-0-
08/10/85	MARBLE MT	2	OVERCAST	13.600	92.600	-0-	3.20	-0-
08/10/85	MARBLE MT	2	OVERCAST	87.900	16.100	-0-	2.90	-0-
08/10/85	MARBLE MT	2	OVERCAST	33.200	71.000	-0-	3.80	-0-
08/10/85	MARBLE MT	3	OVERCAST	-0-	-0-	-0-	-0-	-0-
08/10/85	DINK BAR	1	PTLY CLDY	112.00	25.000	-0-	3.30	STH
08/10/85	DINK BAR	1	PTLY CLDY	47.600	60.100	-0-	3.40	STH
08/10/85	DINK BAR	1	PTLY CLDY	47.300	58.600	-0-	3.10	-0-
08/10/85	DINK BAR	1	PTLY CLDY	108.00	29.000	-0-	4.70	-0-
08/10/85	DINK BAR	2	PTLY CLDY	-0-	64.200	46.000	3.30	STH
08/10/85	DINK BAR	2	PTLY CLDY	-0-	92.700	19.000	3.40	STH
08/10/85	DINK BAR	3	PTLY CLDY	-0-	16.700	91.400	3.00	STH
08/10/85	ROCKPORT	1	PTLY CDLY	-0-	52.300	49.000	3.10	STH
08/10/85	ROCKPORT	1	PTLY CDLY	-0-	16.200	92.500	3.80	STH
08/10/85	ROCKPORT	1	PTLY CDLY	97.600	14.300	-0-	3.60	STH
08/10/85	ROCKPORT	1	PTLY CDLY	20.900	79.300	-0-	3.00	STH
08/10/85	ROCKPORT	1	PTLY CDLY	51.400	55.500	-0-	3.40	STH
08/10/85	ROCKPORT	1	PTLY CDLY	-0-	55.200	47.800	3.10	STH
08/10/85	ROCKPORT	1	PTLY CDLY	-0-	70.700	31.600	3.70	STH
08/10/85	ROCKPORT	1	PTLY CDLY	55.500	45.100	-0-	3.40	STH
08/10/85	ROCKPORT	2	PTLY CDLY	-0-	36.500	76.000	3.40	STH
08/10/85	ROCKPORT	2	PTLY CDLY	-0-	38.600	82.800	3.10	STH
08/10/85	ROCKPORT	2	PTLY CDLY	-0-	26.400	89.900	3.70	STH
08/10/85	ROCKPORT	2	PTLY CDLY	-0-	97.100	20.500	3.10	STH
08/10/85	ROCKPORT	2	PTLY CDLY	-0-	56.000	-0-	-0-	-0-
08/10/85	ROCKPORT	2	PTLY CDLY	-0-	106.20	43.600	-0-	-0-

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/10/85	ROCKPORT	2	PTLY CDLY	-0-	65.200	41.500	3.40	STH
08/10/85	ROCKPORT	2	PTLY CDLY	88.500	25.100	-0-	3.30	STH
08/10/85	ROCKPORT	2	PTLY CDLY	-0-	26.200	91.200	3.10	STH
08/10/85	ROCKPORT	2	PTLY CDLY	-0-	26.200	91.200	3.50	STH
08/10/85	ROCKPORT	2	PTLY CDLY	-0-	96.600	16.500	3.50	STH
08/10/85	ROCKPORT	2	PTLY CDLY	-0-	69.500	42.600	3.40	STH
08/10/85	ROCKPORT	2	PTLY CDLY	-0-	89.400	26.800	3.20	STH
08/10/85	ROCKPORT	2	PTLY CDLY	-0-	56.600	58.400	3.30	STH
08/10/85	ROCKPORT	2	PTLY CDLY	-0-	92.500	14.900	-0-	STH
08/10/85	ROCKPORT	3	PTLY CDLY	29.700	89.000	-0-	3.40	STH
08/10/85	ROCKPORT	3	PTLY CDLY	-0-	46.700	73.700	-0-	-0-
08/10/85	ROCKPORT	3	PTLY CDLY	97.500	21.900	-0-	-0-	-0-
08/10/85	ROCKPORT	3	PTLY CDLY	-0-	77.200	26.800	-0-	-0-
08/10/85	WAYNE SWIM	1	PTLY CDLY	-0-	29.400	78.200	2.80	STH
08/10/85	WAYNE SWIM	2	PTLY CDLY	52.600	64.700	-0-	3.20	STH
08/10/85	WAYNE SWIM	2	PTLY CDLY	-0-	58.000	52.600	3.00	STH
08/11/85	BACON CR	1	SUNNY	50.400	97.300	-0-	3.50	STH
08/11/85	BACON CR	2	SUNNY	-0-	-0-	-0-	-0-	STH
08/11/85	BACON CR	3	SUNNY	-0-	-0-	-0-	-0-	STH
08/11/85	BAD SPOT	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/11/85	BAD SPOT	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/11/85	BAD SPOT	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/11/85	BAD SPOT	4	SUNNY	-0-	-0-	-0-	-0-	-0-
08/11/85	BIG EDDY	1	SUNNY	92.300	30.300	-0-	3.40	STH
08/11/85	BIG EDDY	1	SUNNY	43.000	78.700	-0-	3.20	STH
08/11/85	BIG EDDY	1	SUNNY	73.200	43.000	-0-	3.30	STH
08/11/85	BIG EDDY	2	SUNNY	77.500	31.200	-0-	3.60	STH
08/11/85	BIG EDDY	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/11/85	DIOBSUD CR	1	SUNNY	-0-	-0-	-0-	3.30	STH
08/11/85	DIOBSUD CR	2	SUNNY	-0-	-0-	-0-	-0-	STH
08/11/85	FACE BAR	1	SUNNY	14.900	85.700	-0-	3.20	STH
08/11/85	FACE BAR	1	SUNNY	-0-	63.200	36.500	3.20	STH
08/11/85	FACE BAR	1	SUNNY	48.200	53.300	-0-	3.40	STH
08/11/85	FACE BAR	1	SUNNY	87.200	19.400	-0-	3.40	STH
08/11/85	FACE BAR	1	SUNNY	-0-	26.500	74.900	3.50	STH
08/11/85	FACE BAR	1	SUNNY	45.500	55.400	-0-	3.40	STH
08/11/85	FACE BAR	1	SUNNY	-0-	69.000	44.800	3.30	STH
08/11/85	FACE BAR	2	SUNNY	73.700	47.600	-0-	3.50	STH
08/11/85	FACE BAR	2	SUNNY	92.600	42.500	-0-	3.20	STH
08/11/85	FACE BAR	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/11/85	FORBIDDEN	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/11/85	FORBIDDEN	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/11/85	FORBIDDEN	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/11/85	FUNGUS BAR	1	SUNNY	-0-	84.000	14.000	-0-	STH
08/11/85	FUNGUS BAR	1	SUNNY	-0-	103.00	11.800	-0-	STH
08/11/85	FUNGUS BAR	1	SUNNY	-0-	99.600	53.500	-0-	STH
08/11/85	FUNGUS BAR	1	SUNNY	-0-	37.700	82.700	3.20	STH
08/11/85	FUNGUS BAR	1	SUNNY	-0-	90.700	25.700	-0-	STH
08/11/85	FUNGUS BAR	1	SUNNY	17.000	102.00	-0-	3.50	STH
08/11/85	FUNGUS BAR	1	SUNNY	13.300	94.000	-0-	3.40	STH
08/11/85	FUNGUS BAR	2	SUNNY	-0-	66.000	71.000	3.50	STH

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/11/85	FUNGUS BAR	2	SUNNY	70.900	61.000	-0-	3.30	STH
08/11/85	FUNGUS BAR	2	SUNNY	-0-	53.500	74.900	3.00	STH
08/11/85	FUNGUS BAR	2	SUNNY	-0-	56.000	79.300	3.00	STH
08/11/85	FUNGUS BAR	2	SUNNY	16.400	84.600	-0-	3.50	STH
08/11/85	FUNGUS BAR	2	SUNNY	-0-	66.500	70.700	-0-	STH
08/11/85	FUNGUS BAR	2	SUNNY	78.600	53.700	-0-	3.60	STH
08/11/85	FUNGUS BAR	2	SUNNY	71.800	37.900	-0-	3.10	STH
08/11/85	FUNGUS BAR	2	SUNNY	-0-	100.50	39.000	-0-	STH
08/11/85	FUNGUS BAR	2	SUNNY	-0-	50.500	96.400	3.30	STH
08/11/85	FUNGUS BAR	2	SUNNY	-0-	79.000	34.600	-0-	STH
08/11/85	FUNGUS BAR	3	SUNNY	-0-	60.100	24.600	2.90	STH
08/11/85	FUNGUS BAR	3	SUNNY	45.700	57.000	-0-	3.00	STH
08/11/85	FUNGUS BAR	3	SUNNY	-0-	20.000	82.600	-0-	STH
08/11/85	FUNGUS BAR	3	SUNNY	70.900	47.000	-0-	2.90	STH
08/11/85	FUNGUS BAR	3	SUNNY	-0-	27.600	88.700	3.10	STH
08/11/85	FUNGUS BAR	3	SUNNY	22.000	80.400	-0-	3.20	STH
08/11/85	INACCESSIB	1	SUNNY	38.800	102.30	-0-	-0-	-0-
08/11/85	INACCESSIB	1	SUNNY	-0-	86.400	26.100	-0-	-0-
08/11/85	INACCESSIB	1	SUNNY	49.400	63.900	-0-	-0-	-0-
08/11/85	INACCESSIB	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/11/85	INACCESSIB	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/11/85	MARBLE MT	1	SUNNY	59.900	50.500	-0-	3.20	STH
08/11/85	MARBLE MT	1	SUNNY	55.000	99.400	-0-	3.00	STH
08/11/85	MARBLE MT	1	SUNNY	83.000	49.800	-0-	3.70	STH
08/11/85	MARBLE MT	1	SUNNY	101.70	22.300	-0-	2.50	STH
08/11/85	MARBLE MT	1	SUNNY	63.400	56.600	-0-	3.70	STH
08/11/85	MARBLE MT	2	SUNNY	13.000	90.500	-0-	3.40	STH
08/11/85	MARBLE MT	2	SUNNY	31.400	77.500	-0-	3.10	STH
08/11/85	MARBLE MT	2	SUNNY	-0-	20.200	84.500	3.50	STH
08/11/85	MARBLE MT	2	SUNNY	-0-	15.300	93.200	3.50	STH
08/11/85	MARBLE MT	2	SUNNY	13.000	90.500	-0-	3.30	STH
08/11/85	MARBLE MT	2	SUNNY	-0-	15.300	93.200	2.80	STH
08/11/85	MARBLE MT	3	SUNNY	67.900	32.300	-0-	2.80	STH
08/11/85	DINK BAR	1	SUNNY	-0-	-0-	-0-	-0-	STH
08/11/85	DINK BAR	2	SUNNY	-0-	-0-	-0-	-0-	STH
08/11/85	DINK BAR	3	SUNNY	-0-	-0-	-0-	-0-	STH
08/11/85	ROCKPORT	1	SUNNY	-0-	87.300	14.400	3.00	STH
08/11/85	ROCKPORT	1	SUNNY	-0-	85.200	19.800	3.00	STH
08/11/85	ROCKPORT	1	SUNNY	-0-	87.300	14.400	3.30	STH
08/11/85	ROCKPORT	2	SUNNY	61.000	74.800	-0-	3.10	STH
08/11/85	ROCKPORT	3	SUNNY	15.700	92.700	-0-	3.00	STH
08/11/85	WAYNE SWIM	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/11/85	WAYNE SWIM	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/12/85	BACON CR	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/12/85	BACON CR	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/12/85	BACON CR	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/12/85	BAD SPOT	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/12/85	BAD SPOT	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/12/85	BAD SPOT	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/12/85	BAD SPOT	4	SUNNY	-0-	-0-	-0-	-0-	-0-
08/12/85	BIG EDDY	1	SUNNY	-0-	-0-	-0-	-0-	-0-

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/12/85	RIG EDDY	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/12/85	BIG EDDY	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/12/85	DIOBSUD CR	1	SUNNY	44.300	102.10	-0-	3.10	STH
08/12/85	DIOBSUD CR	1	SUNNY	41.700	104.40	-0-	3.10	STH
08/12/85	DIOBSUD CR	1	SUNNY	59.900	49.100	-0-	3.20	STH
08/12/85	DIOBSUD CR	1	SUNNY	64.200	40.900	-0-	3.10	STH
08/12/85	DIOBSUD CR	1	SUNNY	72.600	34.500	-0-	3.00	STH
08/12/85	DIOBSUD CR	1	SUNNY	89.800	14.800	-0-	2.90	STH
08/12/85	DIOBSUD CR	1	SUNNY	103.40	26.600	-0-	3.10	STH
08/12/85	DIOBSUD CR	1	SUNNY	-0-	52.100	76.200	3.10	STH
08/12/85	DIOBSUD CR	1	SUNNY	35.400	105.70	-0-	3.10	STH
08/12/85	DIOBSUD CR	1	SUNNY	35.400	105.70	-0-	3.10	STH
08/12/85	DIOBSUD CR	1	SUNNY	42.100	106.60	-0-	3.00	STH
08/12/85	DIOBSUD CR	1	SUNNY	-0-	43.360	78.400	3.10	STH
08/12/85	DIOBSUD CR	1	SUNNY	26.600	90.200	-0-	3.30	STH
08/12/85	DIOBSUD CR	1	SUNNY	44.300	102.60	-0-	3.50	STH
08/12/85	DIOBSUD CR	1	SUNNY	-0-	41.760	78.600	3.10	STH
08/12/85	DIOBSUD CR	1	SUNNY	50.100	57.500	-0-	3.00	STH
08/12/85	DIOBSUD CR	1	SUNNY	26.600	90.200	-0-	3.30	STH
08/12/85	DIOBSUD CR	1	SUNNY	50.500	56.500	-0-	3.10	STH
08/12/85	DIOBSUD CR	2	SUNNY	23.300	98.760	-0-	3.50	STH
08/12/85	FACE BAR	1	SUNNY	24.600	77.500	-0-	3.50	STH
08/12/85	FACE BAR	1	SUNNY	-0-	60.000	39.700	4.20	STH
08/12/85	FACE BAR	1	SUNNY	43.600	59.900	-0-	3.40	STH
08/12/85	FACE BAR	1	SUNNY	14.800	85.400	-0-	3.40	STH
08/12/85	FACE BAR	1	SUNNY	25.100	75.400	-0-	3.30	STH
08/12/85	FACE BAR	1	SUNNY	28.500	72.000	-0-	3.00	STH
08/12/85	FACE BAR	1	SUNNY	63.700	42.500	-0-	3.10	STH
08/12/85	FACE BAR	1	SUNNY	40.600	86.000	-0-	3.00	STH
08/12/85	FACE BAR	1	SUNNY	41.200	59.200	-0-	3.40	STH
08/12/85	FACE BAR	1	SUNNY	43.800	56.200	-0-	3.50	STH
08/12/85	FACE BAR	1	SUNNY	-0-	62.100	38.400	3.20	STH
08/12/85	FACE BAR	1	SUNNY	44.600	58.900	-0-	3.40	STH
08/12/85	FACE BAR	1	SUNNY	9.1000	94.300	-0-	3.30	STH
08/12/85	FACE BAR	2	SUNNY	-0-	32.600	120.50	3.30	STH
08/12/85	FACE BAR	2	SUNNY	23.700	109.10	-0-	3.50	STH
08/12/85	FACE BAR	2	SUNNY	23.700	109.10	-0-	3.40	STH
08/12/85	FACE BAR	3	SUNNY	-0-	-0-	-0-	-0-	STH
08/12/85	FORBIDDEN	1	SUNNY	40.000	80.100	-0-	3.20	STH
08/12/85	FORBIDDEN	1	SUNNY	39.600	79.400	-0-	3.70	STH
08/12/85	FORBIDDEN	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/12/85	FORBIDDEN	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/12/85	FUNGUS BAR	1	SUNNY	62.900	41.400	-0-	-0-	STH
08/12/85	FUNGUS BAR	1	SUNNY	62.900	41.400	-0-	-0-	STH
08/12/85	FUNGUS BAR	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/12/85	FUNGUS BAR	3	SUNNY	98.600	16.700	-0-	3.30	STH
08/12/85	FUNGUS BAR	3	SUNNY	96.400	31.200	-0-	2.90	STH
08/12/85	INACCESSIB	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/12/85	INACCESSIB	2	SUNNY	31.600	68.800	-0-	3.30	STH
08/12/85	INACCESSIB	2	SUNNY	53.000	57.000	-0-	3.20	STH
08/12/85	INACCESSIB	2	SUNNY	30.100	90.900	-0-	3.40	STH

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/12/85	INACCESSIB	2	SUNNY	9.2000	90.300	-0-	3.20	STH
08/12/85	INACCESSIB	2	SUNNY	60.000	59.000	-0-	10.0	STH
08/12/85	INACCESSIB	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/12/85	MARBLE MT	1	SUNNY	100.50	40.500	-0-	-0-	STH
08/12/85	MARBLE MT	1	SUNNY	105.50	40.000	-0-	-0-	STH
08/12/85	MARBLE MT	1	SUNNY	95.000	42.000	-0-	-0-	STH
08/12/85	MARBLE MT	1	SUNNY	79.000	56.000	-0-	-0-	STH
08/12/85	MARBLE MT	1	SUNNY	82.000	63.000	-0-	-0-	STH
08/12/85	MARBLE MT	1	SUNNY	950.50	42.000	-0-	-0-	STH
08/12/85	MARBLE MT	1	SUNNY	106.50	43.000	-0-	3.40	STH
08/12/85	MARBLE MT	1	SUNNY	40.000	83.000	-0-	-0-	STH
08/12/85	MARBLE MT	1	SUNNY	110.00	37.000	-0-	3.30	STH
08/12/85	MARBLE MT	1	SUNNY	106.50	41.000	-0-	3.40	STH
08/12/85	MARBLE MT	1	SUNNY	44.400	106.00	-0-	-0-	STH
08/12/85	MARBLE MT	1	SUNNY	41.000	108.00	-0-	-0-	STH
08/12/85	MARBLE MT	2	SUNNY	-0-	23.000	95.000	3.40	STH
08/12/85	MARBLE MT	2	SUNNY	65.700	34.500	-0-	-0-	STH
08/12/85	MARBLE MT	2	SUNNY	68.000	32.000	-0-	-0-	STH
08/12/85	MARBLE MT	2	SUNNY	84.400	93.200	-0-	-0-	STH
08/12/85	MARBLE MT	2	SUNNY	42.400	65.600	-0-	-0-	STH
08/12/85	MARBLE MT	2	SUNNY	-0-	23.000	95.000	3.20	STH
08/12/85	MARBLE MT	2	SUNNY	-0-	22.500	95.000	3.30	STH
08/12/85	MARBLE MT	2	SUNNY	-0-	13.800	94.300	3.70	STH
08/12/85	MARBLE MT	2	SUNNY	66.300	33.700	-0-	-0-	STH
08/12/85	MARBLE MT	2	SUNNY	58.000	42.000	-0-	-0-	STH
08/12/85	MARBLE MT	2	SUNNY	-0-	14.500	94.000	-0-	STH
08/12/85	MARBLE MT	2	SUNNY	-0-	14.200	95.000	-0-	STH
08/12/85	MARBLE MT	2	SUNNY	-0-	14.700	95.000	-0-	STH
08/12/85	MARBLE MT	2	SUNNY	16.000	83.000	-0-	-0-	STH
08/12/85	MARBLE MT	3	SUNNY	99.000	8.5000	-0-	3.00	STH
08/12/85	MARBLE MT	3	SUNNY	47.000	62.800	-0-	3.20	STH
08/12/85	MARBLE MT	3	SUNNY	63.400	70.500	-0-	3.30	STH
08/12/85	MARBLE MT	3	SUNNY	99.000	9.5000	-0-	3.20	STH
08/12/85	MARBLE MT	3	SUNNY	-0-	57.000	74.000	3.20	STH
08/12/85	MARBLE MT	3	SUNNY	-0-	51.400	77.000	3.20	STH
08/12/85	MARBLE MT	3	SUNNY	-0-	55.400	70.500	2.90	STH
08/12/85	MARBLE MT	3	SUNNY	55.000	98.000	-0-	3.20	STH
08/12/85	MARBLE MT	3	SUNNY	58.000	43.000	-0-	-0-	STH
08/12/85	MARBLE MT	3	SUNNY	58.000	42.000	-0-	-0-	STH
08/12/85	MARBLE MT	3	SUNNY	52.000	60.500	-0-	3.10	STH
08/12/85	MARBLE MT	3	SUNNY	48.000	62.000	-0-	3.00	STH
08/12/85	MARBLE MT	3	SUNNY	47.000	63.500	-0-	3.30	STH
08/12/85	MARBLE MT	3	SUNNY	-0-	104.00	86.000	3.50	STH
08/12/85	MARBLE MT	3	SUNNY	-0-	78.300	68.000	3.30	STH
08/12/85	MARBLE MT	3	SUNNY	-0-	73.000	62.200	3.00	STH
08/12/85	MARBLE MT	3	SUNNY	34.000	96.000	-0-	2.90	STH
08/12/85	MARBLE MT	3	SUNNY	44.000	80.000	-0-	3.10	STH
08/12/85	MARBLE MT	3	SUNNY	67.000	45.600	-0-	3.10	STH
08/12/85	MARBLE MT	3	SUNNY	34.000	96.000	-0-	-0-	STH
08/12/85	MARBLE MT	3	SUNNY	70.000	95.000	-0-	-0-	STH
08/12/85	MARBLE MT	3	SUNNY	77.600	83.000	-0-	-0-	STH

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/12/85	MARBLE MT	3	SUNNY	59.000	68.000	-0-	-0-	STH
08/12/85	MARBLE MT	3	SUNNY	59.000	42.000	-0-	-0-	STH
08/12/85	MARBLE MT	3	SUNNY	-0-	71.700	65.000	3.70	STH
08/12/85	MARBLE MT	3	SUNNY	-0-	67.000	62.000	3.10	STH
08/12/85	MARBLE MT	3	SUNNY	50.000	50.000	-0-	-0-	STH
08/12/85	MARBLE MT	3	SUNNY	52.000	60.500	-0-	3.00	STH
08/12/85	MARBLE MT	3	SUNNY	-0-	106.00	41.000	3.20	STH
08/12/85	MARBLE MT	3	SUNNY	-0-	64.000	70.000	3.10	STH
08/12/85	MARBLE MT	3	SUNNY	-0-	62.000	68.000	3.30	STH
08/12/85	DINK BAR	1	SUNNY	-0-	51.300	71.200	3.20	STH
08/12/85	DINK BAR	1	SUNNY	-0-	50.900	71.900	3.50	STH
08/12/85	DINK BAR	1	SUNNY	-0-	51.700	71.000	3.30	STH
08/12/85	DINK BAR	1	SUNNY	-0-	51.700	71.000	3.10	STH
08/12/85	DINK BAR	2	SUNNY	90.200	26.500	-0-	3.00	STH
08/12/85	DINK BAR	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/12/85	ROCKPORT	1	SUNNY	-0-	52.600	49.000	3.00	STH
08/12/85	ROCKPORT	1	SUNNY	71.000	28.000	-0-	3.20	STH
08/12/85	ROCKPORT	1	SUNNY	-0-	52.000	48.700	3.10	STH
08/12/85	ROCKPORT	2	SUNNY	78.600	29.500	-0-	3.20	STH
08/12/85	ROCKPORT	3	SUNNY	101.00	13.000	-0-	2.90	STH
08/12/85	ROCKPORT	3	SUNNY	-0-	37.500	64.000	3.50	STH
08/12/85	WAYNE SWIM	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/12/85	WAYNE SWIM	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/13/85	BACON CR	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/13/85	BACON CR	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/13/85	BACON CR	3	dry/sunny	-0-	-0-	-0-	-0-	-0-
08/13/85	BAD SPDT	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/13/85	BAD SPDT	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/13/85	BAD SPDT	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/13/85	BAD SPDT	4	SUNNY	-0-	-0-	-0-	-0-	-0-
08/13/85	BIG EDDY	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/13/85	BIG EDDY	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/13/85	BIG EDDY	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/13/85	DIOBSUD CR	1	SUNNY	62.200	56.300	-0-	3.60	STH
08/13/85	DIOBSUD CR	1	SUNNY	71.190	46.900	-0-	3.00	STH
08/13/85	DIOBSUD CR	1	SUNNY	-0-	28.500	92.800	-0-	STH
08/13/85	DIOBSUD CR	1	SUNNY	62.700	55.100	-0-	3.20	STH
08/13/85	DIOBSUD CR	1	SUNNY	65.900	61.900	-0-	3.10	STH
08/13/85	DIOBSUD CR	1	SUNNY	102.90	32.300	-0-	3.20	STH
08/13/85	DIOBSUD CR	1	SUNNY	78.590	31.800	-0-	2.90	STH
08/13/85	DIOBSUD CR	1	SUNNY	-0-	30.900	91.100	3.30	STH
08/13/85	DIOBSUD CR	1	SUNNY	64.200	40.900	-0-	3.50	STH
08/13/85	DIOBSUD CR	1	SUNNY	17.400	98.300	-0-	3.50	STH
08/13/85	DIOBSUD CR	1	SUNNY	-0-	56.000	47.100	3.00	STH
08/13/85	DIOBSUD CR	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/13/85	FACE BAR	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/13/85	FACE BAR	2	SUNNY	27.800	75.600	-0-	2.80	STH
08/13/85	FACE BAR	2	SUNNY	47.000	63.900	-0-	3.80	STH
08/13/85	FACE BAR	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/13/85	FORBIDDEN	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/13/85	FORBIDDEN	2	SUNNY	-0-	-0-	-0-	-0-	-0-

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.



DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/13/85	FORBIDDEN	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/13/85	FUNGUS BAR	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/13/85	FUNGUS BAR	2	SUNNY	22.800	76.030	-0-	-0-	-0-
08/13/85	FUNGUS BAR	2	SUNNY	92.300	24.000	-0-	3.30	STH
08/13/85	FUNGUS BAR	2	SUNNY	-0-	100.30	17.300	3.50	STH
08/13/85	FUNGUS BAR	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/13/85	INACCESSIB	1	SUNNY	91.000	8.8000	-0-	3.40	STH
08/13/85	INACCESSIB	2	SUNNY	31.000	74.200	-0-	3.30	STH
08/13/85	INACCESSIB	3	dry/sunny	-0-	-0-	-0-	-0-	-0-
08/13/85	MARBLE MT	1	SUNNY	102.00	18.000	-0-	-0-	STH
08/13/85	MARBLE MT	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/13/85	MARBLE MT	3	SUNNY	-0-	46.400	57.000	-0-	STH
08/13/85	MARBLE MT	3	SUNNY	-0-	43.600	58.000	4.20	STH
08/13/85	MARBLE MT	3	SUNNY	-0-	101.30	23.000	2.50	STH
08/13/85	DINK BAR	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/13/85	DINK BAR	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/13/85	DINK BAR	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/13/85	ROCKPORT	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/13/85	ROCKPORT	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/13/85	ROCKPORT	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/13/85	WAYNE SWIM	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/13/85	WAYNE SWIM	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/14/85	BACON CR	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/14/85	BACON CR	2	SUNNY	73.000	63.500	-0-	3.40	STH
08/14/85	BACON CR	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/14/85	BAD SPOT	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/14/85	BAD SPOT	2	SUNNY	-0-	64.700	63.400	4.00	STH
08/14/85	BAD SPOT	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/14/85	BAD SPOT	4	SUNNY	-0-	-0-	-0-	-0-	-0-
08/14/85	BIG EDDY	1	SUNNY	47.600	86.600	-0-	3.00	STH
08/14/85	BIG EDDY	1	SUNNY	46.100	85.500	-0-	3.10	STH
08/14/85	BIG EDDY	2	SUNNY	-0-	48.400	65.000	3.10	STH
08/14/85	BIG EDDY	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/14/85	DIOBSUD CR	1	SUNNY	38.200	105.00	-0-	3.70	STH
08/14/85	DIOBSUD CR	1	SUNNY	50.300	112.10	-0-	3.40	STH
08/14/85	DIOBSUD CR	1	SUNNY	40.400	102.50	-0-	3.30	STH
08/14/85	DIOBSUD CR	1	SUNNY	-0-	42.300	103.00	2.30	STH
08/14/85	DIOBSUD CR	1	SUNNY	38.200	105.00	-0-	3.50	STH
08/14/85	DIOBSUD CR	1	SUNNY	-0-	-0-	-0-	-0-	STH
08/14/85	DIOBSUD CR	1	SUNNY	78.000	46.600	-0-	-0-	STH
08/14/85	DIOBSUD CR	1	SUNNY	-0-	42.300	103.00	3.20	STH
08/14/85	DIOBSUD CR	1	SUNNY	-0-	42.300	103.00	3.00	STH
08/14/85	DIOBSUD CR	1	SUNNY	40.400	102.50	-0-	4.00	STH
08/14/85	DIOBSUD CR	1	SUNNY	-0-	42.300	103.00	3.40	STH
08/14/85	DIOBSUD CR	1	SUNNY	41.500	105.30	-0-	3.30	STH
08/14/85	DIOBSUD CR	1	SUNNY	-0-	-0-	-0-	-0-	STH
08/14/85	DIOBSUD CR	1	SUNNY	40.400	102.50	-0-	3.40	STH
08/14/85	DIOBSUD CR	1	SUNNY	46.400	106.40	-0-	3.60	STH
08/14/85	DIOBSUD CR	1	SUNNY	40.400	102.50	-0-	3.40	STH
08/14/85	DIOBSUD CR	1	SUNNY	40.400	102.50	-0-	3.10	STH
08/14/85	DIOBSUD CR	1	SUNNY	-0-	42.300	103.00	3.40	STH

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/14/85	DIOBSUD CR	1	SUNNY	46.400	106.40	-0-	3.80	STH
08/14/85	DIOBSUD CR	1	SUNNY	46.400	106.40	-0-	3.20	STH
08/14/85	DIOBSUD CR	1	SUNNY	40.400	102.50	-0-	3.20	STH
08/14/85	DIOBSUD CR	1	SUNNY	46.400	106.40	-0-	3.00	STH
08/14/85	DIOBSUD CR	1	SUNNY	40.400	102.50	-0-	3.50	STH
08/14/85	DIOBSUD CR	1	SUNNY	46.400	106.40	-0-	3.50	STH
08/14/85	DIOBSUD CR	2	SUNNY	53.400	51.900	-0-	3.00	STH
08/14/85	DIOBSUD CR	2	SUNNY	90.500	24.900	-0-	3.00	STH
08/14/85	DIOBSUD CR	2	SUNNY	79.700	40.900	-0-	3.20	STH
08/14/85	DIOBSUD CR	2	SUNNY	41.200	106.30	-0-	2.90	STH
08/14/85	DIOBSUD CR	2	SUNNY	94.400	21.800	-0-	3.10	STH
08/14/85	DIOBSUD CR	2	SUNNY	39.600	80.300	-0-	2.90	STH
08/14/85	FACE BAR	1	SUNNY	-0-	56.000	54.000	4.00	STH
08/14/85	FACE BAR	1	SUNNY	85.400	35.000	-0-	3.40	STH
08/14/85	FACE BAR	1	SUNNY	-0-	56.000	54.000	3.30	STH
08/14/85	FACE BAR	1	SUNNY	-0-	59.300	49.500	3.20	STH
08/14/85	FACE BAR	1	SUNNY	83.800	39.200	-0-	3.70	STH
08/14/85	FACE BAR	1	SUNNY	-0-	70.500	41.200	3.60	STH
08/14/85	FACE BAR	1	SUNNY	-0-	56.000	54.000	3.30	STH
08/14/85	FACE BAR	1	SUNNY	91.000	24.300	-0-	3.20	STH
08/14/85	FACE BAR	1	SUNNY	-0-	59.300	49.500	3.20	STH
08/14/85	FACE BAR	1	SUNNY	-0-	59.300	49.500	3.40	STH
08/14/85	FACE BAR	1	SUNNY	-0-	59.300	49.500	3.50	STH
08/14/85	FACE BAR	1	SUNNY	-0-	56.000	54.000	4.00	STH
08/14/85	FACE BAR	1	SUNNY	-0-	65.700	49.200	3.40	STH
08/14/85	FACE BAR	1	SUNNY	-0-	45.600	67.000	3.20	STH
08/14/85	FACE BAR	1	SUNNY	83.900	25.400	-0-	3.80	STH
08/14/85	FACE BAR	1	SUNNY	-0-	97.900	28.000	3.50	STH
08/14/85	FACE BAR	1	SUNNY	95.300	29.300	-0-	3.50	STH
08/14/85	FACE BAR	1	SUNNY	39.100	84.800	-0-	3.30	STH
08/14/85	FACE BAR	1	SUNNY	39.200	81.000	-0-	3.80	STH
08/14/85	FACE BAR	1	SUNNY	79.600	31.400	-0-	3.30	STH
08/14/85	FACE BAR	1	SUNNY	-0-	45.600	67.000	3.30	STH
08/14/85	FACE BAR	1	SUNNY	101.70	29.400	-0-	3.60	STH
08/14/85	FACE BAR	1	SUNNY	-0-	56.000	54.000	4.00	STH
08/14/85	FACE BAR	1	SUNNY	-0-	56.000	54.000	3.60	STH
08/14/85	FACE BAR	1	SUNNY	-0-	56.000	54.000	3.70	STH
08/14/85	FACE BAR	1	SUNNY	-0-	56.000	54.000	3.40	STH
08/14/85	FACE BAR	1	SUNNY	103.80	22.400	-0-	3.40	STH
08/14/85	FACE BAR	1	SUNNY	-0-	59.300	49.500	3.50	STH
08/14/85	FACE BAR	1	SUNNY	-0-	104.00	24.400	3.60	STH
08/14/85	FACE BAR	1	SUNNY	102.80	19.500	-0-	-0-	STH
08/14/85	FACE BAR	1	SUNNY	-0-	82.300	35.200	3.30	STH
08/14/85	FACE BAR	1	SUNNY	-0-	56.000	54.000	3.30	STH
08/14/85	FACE BAR	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/14/85	FACE BAR	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/14/85	FORBIDDEN	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/14/85	FORBIDDEN	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/14/85	FORBIDDEN	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/14/85	FUNGUS BAR	1	SUNNY	113.70	63.000	-0-	3.50	STH
08/14/85	FUNGUS BAR	1	SUNNY	-0-	55.600	102.50	3.70	STH

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/14/85	FUNGUS BAR	1	SUNNY	-0-	95.500	-0-	-0-	STH
08/14/85	FUNGUS BAR	1	SUNNY	-0-	108.00	66.900	3.60	STH
08/14/85	FUNGUS BAR	1	SUNNY	51.900	49.800	-0-	3.00	STH
08/14/85	FUNGUS BAR	1	SUNNY	113.70	84.400	81.300	3.30	STH
08/14/85	FUNGUS BAR	1	SUNNY	91.300	35.600	-0-	3.30	STH
08/14/85	FUNGUS BAR	1	SUNNY	60.800	42.400	-0-	3.00	STH
08/14/85	FUNGUS BAR	1	SUNNY	-0-	108.00	66.900	3.60	STH
08/14/85	FUNGUS BAR	1	SUNNY	55.300	46.800	-0-	3.70	STH
08/14/85	FUNGUS BAR	1	SUNNY	55.300	46.800	-0-	5.40	COHO
08/14/85	FUNGUS BAR	1	SUNNY	-0-	-0-	70.500	-0-	STH
08/14/85	FUNGUS BAR	1	SUNNY	88.600	41.700	-0-	3.50	STH
08/14/85	FUNGUS BAR	1	SUNNY	91.300	35.600	-0-	3.20	STH
08/14/85	FUNGUS BAR	2	SUNNY	77.900	69.800	-0-	3.20	STH
08/14/85	FUNGUS BAR	2	SUNNY	110.90	45.900	-0-	4.10	STH
08/14/85	FUNGUS BAR	2	SUNNY	108.00	46.500	-0-	4.50	STH
08/14/85	FUNGUS BAR	2	SUNNY	75.000	50.500	-0-	3.80	STH
08/14/85	FUNGUS BAR	2	SUNNY	-0-	57.000	97.200	3.20	STH
08/14/85	FUNGUS BAR	2	SUNNY	-0-	88.500	54.100	3.30	STH
08/14/85	FUNGUS BAR	2	SUNNY	73.600	50.800	-0-	3.50	STH
08/14/85	FUNGUS BAR	2	SUNNY	86.300	34.000	-0-	3.60	STH
08/14/85	FUNGUS BAR	2	SUNNY	75.000	50.500	-0-	3.40	STH
08/14/85	FUNGUS BAR	2	SUNNY	-0-	57.000	97.200	3.20	STH
08/14/85	FUNGUS BAR	2	SUNNY	-0-	88.200	37.300	3.30	STH
08/14/85	FUNGUS BAR	2	SUNNY	73.600	50.800	-0-	3.10	STH
08/14/85	FUNGUS BAR	2	SUNNY	73.100	50.200	-0-	3.40	STH
08/14/85	FUNGUS BAR	2	SUNNY	70.300	53.700	-0-	3.30	STH
08/14/85	FUNGUS BAR	2	SUNNY	-0-	58.300	94.800	3.20	STH
08/14/85	FUNGUS BAR	2	SUNNY	-0-	78.900	59.600	3.30	STH
08/14/85	FUNGUS BAR	2	SUNNY	-0-	76.000	61.600	3.40	STH
08/14/85	FUNGUS BAR	2	SUNNY	-0-	101.30	38.300	3.20	STH
08/14/85	FUNGUS BAR	2	SUNNY	69.600	52.800	-0-	3.20	STH
08/14/85	FUNGUS BAR	2	SUNNY	77.300	102.80	-0-	-0-	STH
08/14/85	FUNGUS BAR	2	SUNNY	-0-	108.30	39.800	3.20	STH
08/14/85	FUNGUS BAR	3	SUNNY	36.900	78.400	-0-	3.20	STH
08/14/85	FUNGUS BAR	3	SUNNY	57.900	63.200	-0-	3.20	STH
08/14/85	FUNGUS BAR	3	SUNNY	-0-	40.800	83.700	3.20	STH
08/14/85	FUNGUS BAR	3	SUNNY	43.200	87.300	-0-	3.40	STH
08/14/85	FUNGUS BAR	3	SUNNY	90.000	34.800	-0-	3.40	STH
08/14/85	FUNGUS BAR	3	SUNNY	-0-	47.900	78.300	3.10	STH
08/14/85	FUNGUS BAR	3	SUNNY	62.100	55.600	-0-	3.50	STH
08/14/85	FUNGUS BAR	3	SUNNY	57.800	56.600	-0-	3.60	STH
08/14/85	FUNGUS BAR	3	SUNNY	33.900	105.40	-0-	4.00	STH
08/14/85	FUNGUS BAR	3	SUNNY	84.400	22.300	-0-	2.70	STH
08/14/85	FUNGUS BAR	3	SUNNY	104.90	34.600	-0-	3.20	STH
08/14/85	FUNGUS BAR	3	SUNNY	-0-	34.800	92.400	3.70	STH
08/14/85	FUNGUS BAR	3	SUNNY	41.600	87.300	-0-	3.20	STH
08/14/85	FUNGUS BAR	3	SUNNY	41.600	87.300	-0-	3.10	STH
08/14/85	INACCESSIB	1	SUNNY	-0-	65.200	43.300	3.30	STH
08/14/85	INACCESSIB	1	SUNNY	-0-	76.000	28.800	4.20	STH
08/14/85	INACCESSIB	1	SUNNY	-0-	76.000	28.800	3.70	STH
08/14/85	INACCESSIB	1	SUNNY	-0-	64.800	48.000	3.10	STH

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/14/85	INACCESSIB	2	SUNNY	69.500	37.500	-0-	3.50	STH
08/14/85	INACCESSIB	2	SUNNY	50.000	59.500	-0-	3.30	STH
08/14/85	INACCESSIB	3	SUNNY	-0-	48.900	69.200	7.00	STH
08/14/85	MARBLE MT	1	SUNNY	-0-	87.030	55.000	-0-	STH
08/14/85	MARBLE MT	1	SUNNY	-0-	89.430	55.500	-0-	STH
08/14/85	MARBLE MT	1	SUNNY	-0-	38.000	90.000	-0-	STH
08/14/85	MARBLE MT	1	SUNNY	100.00	34.000	-0-	-0-	STH
08/14/85	MARBLE MT	1	SUNNY	100.00	32.000	-0-	-0-	STH
08/14/85	MARBLE MT	1	SUNNY	-0-	41.000	90.000	-0-	STH
08/14/85	MARBLE MT	1	SUNNY	79.000	62.000	-0-	-0-	STH
08/14/85	MARBLE MT	1	SUNNY	95.000	27.000	-0-	-0-	STH
08/14/85	MARBLE MT	1	SUNNY	101.30	20.000	-0-	-0-	STH
08/14/85	MARBLE MT	1	SUNNY	106.00	28.000	-0-	-0-	STH
08/14/85	MARBLE MT	2	SUNNY	-0-	39.000	86.000	-0-	STH
08/14/85	MARBLE MT	2	SUNNY	-0-	39.000	84.000	-0-	STH
08/14/85	MARBLE MT	2	SUNNY	-0-	38.000	85.000	-0-	STH
08/14/85	MARBLE MT	2	SUNNY	-0-	39.000	86.000	-0-	STH
08/14/85	MARBLE MT	2	SUNNY	-0-	50.000	76.000	-0-	STH
08/14/85	MARBLE MT	2	SUNNY	7.0000	96.000	-0-	-0-	STH
08/14/85	MARBLE MT	2	SUNNY	46.000	60.000	-0-	-0-	STH
08/14/85	MARBLE MT	2	SUNNY	-0-	77.000	64.000	-0-	STH
08/14/85	MARBLE MT	2	SUNNY	90.000	50.000	-0-	-0-	STH
08/14/85	MARBLE MT	2	SUNNY	-0-	39.000	86.000	-0-	STH
08/14/85	MARBLE MT	2	SUNNY	-0-	39.000	86.000	-0-	STH
08/14/85	MARBLE MT	2	SUNNY	-0-	39.000	86.000	-0-	STH
08/14/85	MARBLE MT	2	SUNNY	37.000	83.200	-0-	-0-	STH
08/14/85	MARBLE MT	2	SUNNY	-0-	40.000	87.600	-0-	STH
08/14/85	MARBLE MT	2	SUNNY	-0-	70.000	72.400	-0-	STH
08/14/85	MARBLE MT	2	SUNNY	60.000	100.00	-0-	-0-	STH
08/14/85	MARBLE MT	2	SUNNY	-0-	94.300	40.300	-0-	STH
08/14/85	MARBLE MT	2	SUNNY	-0-	95.000	26.700	-0-	STH
08/14/85	MARBLE MT	2	SUNNY	-0-	67.000	52.200	-0-	STH
08/14/85	MARBLE MT	2	SUNNY	-0-	60.000	72.600	-0-	STH
08/14/85	MARBLE MT	2	SUNNY	-0-	39.000	86.000	-0-	STH
08/14/85	MARBLE MT	2	SUNNY	90.000	50.000	-0-	-0-	STH
08/14/85	MARBLE MT	2	SUNNY	90.000	73.000	-0-	-0-	STH
08/14/85	MARBLE MT	2	SUNNY	-0-	98.500	43.400	-0-	STH
08/14/85	MARBLE MT	2	SUNNY	38.000	65.000	-0-	-0-	STH
08/14/85	MARBLE MT	3	SUNNY	63.000	101.00	-0-	-0-	STH
08/14/85	MARBLE MT	3	SUNNY	62.000	98.000	-0-	-0-	STH
08/14/85	MARBLE MT	3	SUNNY	62.000	98.000	-0-	-0-	STH
08/14/85	MARBLE MT	3	SUNNY	62.000	98.000	-0-	-0-	STH
08/14/85	MARBLE MT	3	SUNNY	39.000	80.000	-0-	-0-	STH
08/14/85	MARBLE MT	3	SUNNY	39.000	80.000	-0-	-0-	STH
08/14/85	MARBLE MT	3	SUNNY	62.000	98.000	-0-	-0-	STH
08/14/85	MARBLE MT	3	SUNNY	-0-	101.00	98.400	-0-	STH
08/14/85	MARBLE MT	3	SUNNY	59.000	104.00	-0-	-0-	STH
08/14/85	MARBLE MT	3	SUNNY	82.000	50.500	-0-	-0-	STH
08/14/85	MARBLE MT	3	SUNNY	28.400	76.400	-0-	-0-	STH
08/14/85	MARBLE MT	3	SUNNY	39.000	80.000	-0-	-0-	STH
08/14/85	MARBLE MT	3	SUNNY	61.300	92.000	-0-	-0-	STH

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/14/85	MARBLE MT	3	SUNNY	62.000	94.000	-0-	-0-	STH
08/14/85	MARBLE MT	3	SUNNY	39.000	80.000	-0-	-0-	STH
08/14/85	MARBLE MT	3	SUNNY	39.000	80.000	-0-	-0-	STH
08/14/85	MARBLE MT	3	SUNNY	-0-	86.000	38.000	-0-	STH
08/14/85	MARBLE MT	3	SUNNY	-0-	65.000	44.000	-0-	STH
08/14/85	MARBLE MT	3	SUNNY	74.000	77.000	-0-	-0-	STH
08/14/85	MARBLE MT	3	SUNNY	46.500	112.70	-0-	-0-	STH
08/14/85	MARBLE MT	3	SUNNY	62.000	94.000	-0-	-0-	STH
08/14/85	MARBLE MT	3	SUNNY	62.000	94.000	-0-	-0-	STH
08/14/85	MARBLE MT	3	SUNNY	62.000	94.000	-0-	-0-	STH
08/14/85	MARBLE MT	3	SUNNY	62.000	94.000	-0-	-0-	STH
08/14/85	MARBLE MT	3	SUNNY	39.000	80.000	-0-	-0-	STH
08/14/85	MARBLE MT	3	SUNNY	42.000	79.000	-0-	-0-	STH
08/14/85	MARBLE MT	3	SUNNY	62.000	94.000	-0-	-0-	STH
08/14/85	MARBLE MT	3	SUNNY	70.000	82.000	-0-	-0-	STH
08/14/85	MARBLE MT	3	SUNNY	45.000	111.30	-0-	-0-	STH
08/14/85	DINK BAR	1	SUNNY	-0-	38.900	95.200	3.50	STH
08/14/85	DINK BAR	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/14/85	DINK BAR	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/14/85	ROCKPORT	1	CLEAR	-0-	-0-	-0-	-0-	-0-
08/14/85	ROCKPORT	2	CLEAR	83.400	34.500	-0-	3.00	STH
08/14/85	ROCKPORT	2	CLEAR	88.200	34.700	-0-	3.50	STH
08/14/85	ROCKPORT	3	CLEAR	12.300	51.500	-0-	3.30	STH
08/14/85	ROCKPORT	3	CLEAR	56.200	67.200	-0-	2.90	STH
08/14/85	WAYNE SWIM	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/14/85	WAYNE SWIM	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/15/85	BACON CR	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/15/85	BACON CR	2	clear	-0-	-0-	-0-	-0-	-0-
08/15/85	BACON CR	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/15/85	BAD SPOT	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/15/85	BAD SPOT	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/15/85	BAD SPOT	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/15/85	BAD SPOT	4	SUNNY	-0-	-0-	-0-	-0-	-0-
08/15/85	BIG EDDY	1	SUNNY	-0-	93.800	28.400	3.50	STH
08/15/85	BIG EDDY	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/15/85	BIG EDDY	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/15/85	DIOBSUD CR	1	SUNNY	36.200	92.300	-0-	2.50	STH
08/15/85	DIOBSUD CR	1	SUNNY	37.200	93.800	-0-	3.20	STH
08/15/85	DIOBSUD CR	1	SUNNY	-0-	98.000	25.400	3.50	STH
08/15/85	DIOBSUD CR	1	SUNNY	-0-	95.200	26.900	3.10	STH
08/15/85	DIOBSUD CR	1	SUNNY	-0-	96.600	18.400	2.50	STH
08/15/85	DIOBSUD CR	1	SUNNY	-0-	78.400	37.200	3.20	STH
08/15/85	DIOBSUD CR	1	SUNNY	-0-	84.100	27.500	3.30	STH
08/15/85	DIOBSUD CR	1	SUNNY	-0-	88.700	23.700	3.40	STH
08/15/85	DIOBSUD CR	1	SUNNY	-0-	78.400	37.200	3.00	STH
08/15/85	DIOBSUD CR	1	SUNNY	45.600	98.900	-0-	3.30	STH
08/15/85	DIOBSUD CR	1	SUNNY	41.600	99.400	-0-	3.50	STH
08/15/85	DIOBSUD CR	1	SUNNY	-0-	92.400	20.800	3.20	STH
08/15/85	DIOBSUD CR	1	SUNNY	37.400	95.300	-0-	3.40	STH
08/15/85	DIOBSUD CR	1	SUNNY	54.800	61.300	-0-	3.50	STH
08/15/85	DIOBSUD CR	1	SUNNY	69.600	46.100	-0-	3.50	STH

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/15/85	DIOBSUD CR	1	SUNNY	35.200	94.900	-0-	2.50	STH
08/15/85	DIOBSUD CR	1	SUNNY	44.500	101.90	-0-	3.00	STH
08/15/85	DIOBSUD CR	1	SUNNY	38.600	93.900	-0-	3.80	STH
08/15/85	DIOBSUD CR	1	SUNNY	-0-	88.700	23.700	3.40	STH
08/15/85	DIOBSUD CR	1	SUNNY	-0-	23.700	102.30	3.30	STH
08/15/85	DIOBSUD CR	1	SUNNY	33.300	91.500	-0-	3.40	STH
08/15/85	DIOBSUD CR	2	SUNNY	73.200	33.800	-0-	3.50	STH
08/15/85	DIOBSUD CR	2	SUNNY	91.000	24.800	-0-	3.20	STH
08/15/85	FACE BAR	1	SUNNY	-0-	35.100	74.300	3.50	STH
08/15/85	FACE BAR	1	SUNNY	-0-	27.700	87.000	3.60	STH
08/15/85	FACE BAR	1	SUNNY	-0-	33.400	77.400	3.60	STH
08/15/85	FACE BAR	1	SUNNY	99.400	22.700	-0-	2.60	STH
08/15/85	FACE BAR	1	SUNNY	97.600	37.500	-0-	2.90	STH
08/15/85	FACE BAR	1	SUNNY	97.600	37.500	-0-	2.90	STH
08/15/85	FACE BAR	1	SUNNY	94.300	23.200	-0-	3.00	STH
08/15/85	FACE BAR	1	SUNNY	90.000	32.000	-0-	3.00	STH
08/15/85	FACE BAR	1	SUNNY	-0-	42.800	63.000	2.90	STH
08/15/85	FACE BAR	1	SUNNY	-0-	68.800	44.000	3.10	STH
08/15/85	FACE BAR	1	SUNNY	-0-	103.00	19.500	3.20	STH
08/15/85	FACE BAR	1	SUNNY	-0-	58.300	47.000	2.60	STH
08/15/85	FACE BAR	1	SUNNY	-0-	67.000	47.000	3.40	STH
08/15/85	FACE BAR	1	SUNNY	-0-	44.500	64.000	-0-	STH
08/15/85	FACE BAR	1	SUNNY	87.000	38.300	-0-	3.50	STH
08/15/85	FACE BAR	1	SUNNY	-0-	24.000	89.000	3.50	STH
08/15/85	FACE BAR	1	SUNNY	-0-	25.400	99.400	3.10	STH
08/15/85	FACE BAR	1	SUNNY	-0-	40.000	96.400	3.10	STH
08/15/85	FACE BAR	1	SUNNY	-0-	57.100	47.700	3.20	STH
08/15/85	FACE BAR	1	SUNNY	-0-	25.400	87.700	3.30	STH
08/15/85	FACE BAR	1	SUNNY	-0-	36.300	91.000	2.90	STH
08/15/85	FACE BAR	1	SUNNY	34.800	77.000	-0-	3.00	STH
08/15/85	FACE BAR	1	SUNNY	38.000	74.000	-0-	2.80	STH
08/15/85	FACE BAR	1	SUNNY	-0-	55.000	55.500	3.60	STH
08/15/85	FACE BAR	1	SUNNY	-0-	55.000	55.500	3.60	STH
08/15/85	FACE BAR	1	SUNNY	47.000	85.000	-0-	3.20	STH
08/15/85	FACE BAR	1	SUNNY	25.300	85.000	-0-	3.10	STH
08/15/85	FACE BAR	1	SUNNY	-0-	30.000	98.000	3.50	STH
08/15/85	FACE BAR	1	SUNNY	17.700	96.000	-0-	3.20	STH
08/15/85	FACE BAR	1	SUNNY	32.300	104.50	-0-	3.20	STH
08/15/85	FACE BAR	1	SUNNY	-0-	61.000	47.600	3.00	STH
08/15/85	FACE BAR	1	SUNNY	27.000	88.000	-0-	3.50	STH
08/15/85	FACE BAR	1	SUNNY	26.000	86.500	-0-	2.70	STH
08/15/85	FACE BAR	1	SUNNY	-0-	80.000	31.000	3.20	STH
08/15/85	FACE BAR	1	SUNNY	76.000	35.000	-0-	-0-	STH
08/15/85	FACE BAR	1	SUNNY	49.700	-0-	-0-	-0-	STH
08/15/85	FACE BAR	1	SUNNY	50.000	70.000	-0-	-0-	STH
08/15/85	FACE BAR	1	SUNNY	76.000	39.000	-0-	-0-	STH
08/15/85	FACE BAR	1	SUNNY	60.600	51.000	-0-	3.20	STH
08/15/85	FACE BAR	1	SUNNY	62.000	55.000	-0-	3.10	STH
08/15/85	FACE BAR	1	SUNNY	64.000	58.000	-0-	-0-	STH
08/15/85	FACE BAR	1	SUNNY	28.500	82.700	-0-	3.10	STH
08/15/85	FACE BAR	1	SUNNY	24.000	94.000	-0-	3.40	STH

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/15/85	FACE BAR	2	SUNNY	101.20	35.600	-0-	-0-	STH
08/15/85	FACE BAR	2	SUNNY	102.00	41.000	-0-	-0-	STH
08/15/85	FACE BAR	2	SUNNY	30.000	101.00	-0-	-0-	STH
08/15/85	FACE BAR	2	SUNNY	37.600	70.500	-0-	-0-	STH
08/15/85	FACE BAR	2	SUNNY	35.500	76.000	-0-	-0-	STH
08/15/85	FACE BAR	2	SUNNY	33.500	72.000	-0-	-0-	STH
08/15/85	FACE BAR	2	SUNNY	18.400	94.000	-0-	-0-	STH
08/15/85	FACE BAR	2	SUNNY	30.000	79.000	-0-	-0-	STH
08/15/85	FACE BAR	2	SUNNY	37.600	70.500	-0-	-0-	STH
08/15/85	FACE BAR	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/15/85	FORBIDDEN	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/15/85	FORBIDDEN	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/15/85	FORBIDDEN	3	SUNNY	-0-	30.700	81.400	-0-	STH
08/15/85	FUNGUS BAR	1	SUNNY	94.000	61.800	-0-	3.30	STH
08/15/85	FUNGUS BAR	1	SUNNY	54.000	54.000	-0-	3.30	STH
08/15/85	FUNGUS BAR	1	SUNNY	102.50	41.000	-0-	3.40	STH
08/15/85	FUNGUS BAR	2	SUNNY	70.800	50.500	-0-	3.30	STH
08/15/85	FUNGUS BAR	2	SUNNY	-0-	15.000	87.600	-0-	STH
08/15/85	FUNGUS BAR	2	SUNNY	71.000	53.400	-0-	3.70	STH
08/15/85	FUNGUS BAR	2	SUNNY	87.200	65.300	-0-	3.20	STH
08/15/85	FUNGUS BAR	2	SUNNY	75.500	53.200	-0-	3.60	STH
08/15/85	FUNGUS BAR	2	SUNNY	30.800	41.300	-0-	3.00	STH
08/15/85	FUNGUS BAR	2	SUNNY	100.00	41.800	-0-	3.50	STH
08/15/85	FUNGUS BAR	2	SUNNY	71.600	53.400	-0-	3.90	STH
08/15/85	FUNGUS BAR	2	SUNNY	24.200	45.700	-0-	3.30	STH
08/15/85	FUNGUS BAR	2	SUNNY	76.300	51.800	-0-	4.20	STH
08/15/85	FUNGUS BAR	2	SUNNY	67.000	111.20	-0-	-0-	STH
08/15/85	FUNGUS BAR	3	SUNNY	31.000	69.700	-0-	3.60	STH
08/15/85	FUNGUS BAR	3	SUNNY	-0-	82.000	46.000	3.10	STH
08/15/85	FUNGUS BAR	3	SUNNY	-0-	30.300	95.000	3.00	STH
08/15/85	FUNGUS BAR	3	SUNNY	-0-	29.600	99.000	3.30	STH
08/15/85	FUNGUS BAR	3	SUNNY	40.000	74.500	-0-	3.60	STH
08/15/85	INACCESSIB	1	SUNNY	40.500	95.500	-0-	3.10	STH
08/15/85	INACCESSIB	1	SUNNY	16.500	98.300	-0-	4.50	STH
08/15/85	INACCESSIB	1	SUNNY	-0-	78.300	28.800	3.00	STH
08/15/85	INACCESSIB	1	SUNNY	-0-	76.300	26.800	2.50	STH
08/15/85	INACCESSIB	1	SUNNY	37.400	96.300	-0-	2.90	STH
08/15/85	INACCESSIB	1	SUNNY	38.600	96.600	-0-	2.50	STH
08/15/85	INACCESSIB	2	SUNNY	-0-	55.500	109.20	3.00	STH
08/15/85	INACCESSIB	2	SUNNY	-0-	71.400	75.000	3.30	STH
08/15/85	INACCESSIB	2	SUNNY	69.400	43.200	-0-	2.90	STH
08/15/85	INACCESSIB	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/15/85	MARBLE MT	1	SUNNY	-0-	39.900	86.100	3.20	STH
08/15/85	MARBLE MT	1	SUNNY	-0-	51.200	69.600	3.10	STH
08/15/85	MARBLE MT	1	SUNNY	-0-	83.200	37.200	2.90	STH
08/15/85	MARBLE MT	1	SUNNY	-0-	95.600	30.400	4.50	COHO
08/15/85	MARBLE MT	1	SUNNY	-0-	71.400	48.400	2.90	STH
08/15/85	MARBLE MT	1	SUNNY	-0-	30.600	106.00	2.90	STH
08/15/85	MARBLE MT	1	SUNNY	91.400	30.700	-0-	3.00	STH
08/15/85	MARBLE MT	1	SUNNY	91.300	26.600	-0-	3.10	STH
08/15/85	MARBLE MT	1	SUNNY	76.500	41.900	-0-	3.10	STH

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/15/85	MARBLE MT	1	SUNNY	-0-	80.700	58.900	2.80	STH
08/15/85	MARBLE MT	1	SUNNY	99.800	35.300	-0-	2.70	STH
08/15/85	MARBLE MT	1	SUNNY	84.700	34.200	-0-	3.20	STH
08/15/85	MARBLE MT	2	SUNNY	18.200	101.20	-0-	3.20	STH
08/15/85	MARBLE MT	3	SUNNY	57.400	93.000	-0-	3.70	STH
08/15/85	MARBLE MT	3	SUNNY	57.400	93.000	-0-	3.20	STH
08/15/85	MARBLE MT	3	SUNNY	52.000	11.400	-0-	3.20	STH
08/15/85	DINK BAR	1	SUNNY	-0-	53.400	69.400	1.50	STH
08/15/85	DINK BAR	1	SUNNY	-0-	53.400	69.400	1.70	STH
08/15/85	DINK BAR	1	SUNNY	23.900	90.200	-0-	4.10	STH
08/15/85	DINK BAR	1	SUNNY	32.600	72.900	-0-	3.00	STH
08/15/85	DINK BAR	1	SUNNY	34.900	72.000	-0-	2.80	STH
08/15/85	DINK BAR	1	SUNNY	-0-	61.000	68.900	3.60	STH
08/15/85	DINK BAR	1	SUNNY	34.900	72.000	-0-	3.10	STH
08/15/85	DINK BAR	1	SUNNY	34.900	72.000	-0-	3.40	STH
08/15/85	DINK BAR	1	SUNNY	34.400	71.700	-0-	3.20	STH
08/15/85	DINK BAR	1	SUNNY	34.900	72.000	-0-	3.30	STH
08/15/85	DINK BAR	1	SUNNY	45.000	65.500	-0-	3.00	STH
08/15/85	DINK BAR	1	SUNNY	45.200	65.400	-0-	3.30	STH
08/15/85	DINK BAR	1	SUNNY	90.500	44.300	-0-	3.20	STH
08/15/85	DINK BAR	1	SUNNY	34.900	72.000	-0-	3.00	STH
08/15/85	DINK BAR	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/15/85	ROCKPORT	1	SUNNY	-0-	105.70	42.400	3.30	STH
08/15/85	ROCKPORT	1	SUNNY	49.300	102.70	-0-	4.00	STH
08/15/85	ROCKPORT	1	SUNNY	49.300	102.70	-0-	3.30	STH
08/15/85	ROCKPORT	1	SUNNY	-0-	28.900	79.800	3.20	STH
08/15/85	ROCKPORT	2	SUNNY	-0-	23.740	98.200	2.90	STH
08/15/85	ROCKPORT	2	SUNNY	46.300	102.40	-0-	2.50	STH
08/15/85	ROCKPORT	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/15/85	ROCKPORT	3	SUNNY	-0-	69.940	63.740	3.50	STH
08/15/85	ROCKPORT	3	SUNNY	49.800	95.700	-0-	3.00	STH
08/15/85	ROCKPORT	3	SUNNY	-0-	108.20	49.340	3.00	STH
08/15/85	ROCKPORT	3	SUNNY	-0-	46.140	109.40	3.20	STH
08/15/85	WAYNE SWIM	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/15/85	WAYNE SWIM	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/16/85	BACON CR	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/16/85	BACON CR	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/16/85	BACON CR	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/16/85	BAD SPOT	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/16/85	BAD SPOT	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/16/85	BAD SPOT	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/16/85	BAD SPOT	4	SUNNY	-0-	-0-	-0-	-0-	-0-
08/16/85	R16 EDDY	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/16/85	R16 EDDY	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/16/85	R16 EDDY	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/16/85	DIOBSUD CR	1	SUNNY	-0-	17.300	90.700	3.50	STH
08/16/85	DIOBSUD CR	1	SUNNY	-0-	25.100	83.500	3.00	STH
08/16/85	DIOBSUD CR	1	SUNNY	-0-	10.500	95.900	3.30	STH
08/16/85	DIOBSUD CR	1	SUNNY	-0-	28.600	80.000	3.20	STH
08/16/85	DIOBSUD CR	1	SUNNY	-0-	24.400	83.400	3.50	STH
08/16/85	DIOBSUD CR	1	SUNNY	-0-	10.600	96.800	3.10	STH

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.



DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/16/85	DIOBSUD CR	1	SUNNY	-0-	25.900	82.700	2.80	STH
08/16/85	DIOBSUD CR	1	SUNNY	-0-	23.100	85.200	3.30	STH
08/16/85	DIOBSUD CR	1	SUNNY	-0-	34.600	76.200	3.40	STH
08/16/85	DIOBSUD CR	1	SUNNY	51.200	64.200	-0-	3.00	STH
08/16/85	DIOBSUD CR	1	SUNNY	86.600	14.200	-0-	3.20	STH
08/16/85	DIOBSUD CR	1	SUNNY	-0-	8.1200	97.600	3.20	STH
08/16/85	DIOBSUD CR	1	SUNNY	-0-	8.7200	97.300	2.80	STH
08/16/85	DIOBSUD CR	1	SUNNY	-0-	89.700	34.000	3.50	STH
08/16/85	DIOBSUD CR	1	SUNNY	-0-	22.100	84.700	3.40	STH
08/16/85	DIOBSUD CR	1	SUNNY	-0-	20.900	88.400	3.70	STH
08/16/85	DIOBSUD CR	1	SUNNY	-0-	19.800	88.100	2.80	STH
08/16/85	DIOBSUD CR	2	SUNNY	-0-	33.100	75.600	3.80	STH
08/16/85	FACE BAR	1	SUNNY	58.100	78.200	-0-	2.60	STH
08/16/85	FACE BAR	1	SUNNY	30.000	84.000	-0-	2.50	STH
08/16/85	FACE BAR	1	SUNNY	40.000	68.500	-0-	2.60	STH
08/16/85	FACE BAR	1	SUNNY	63.000	43.500	-0-	2.40	STH
08/16/85	FACE BAR	1	SUNNY	70.600	45.000	-0-	2.60	STH
08/16/85	FACE BAR	1	SUNNY	-0-	63.000	43.000	2.70	STH
08/16/85	FACE BAR	1	SUNNY	94.300	20.000	-0-	2.60	STH
08/16/85	FACE BAR	1	SUNNY	-0-	54.000	57.000	2.60	STH
08/16/85	FACE BAR	1	SUNNY	-0-	54.000	57.000	2.70	STH
08/16/85	FACE BAR	1	SUNNY	-0-	96.000	14.000	2.70	STH
08/16/85	FACE BAR	2	SUNNY	7.5000	97.000	-0-	-0-	STH
08/16/85	FACE BAR	2	SUNNY	62.000	53.000	-0-	2.60	STH
08/16/85	FACE BAR	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/16/85	FORBIDDEN	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/16/85	FORBIDDEN	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/16/85	FORBIDDEN	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/16/85	FUNGUS BAR	1	SUNNY	60.000	63.000	-0-	4.20	STH
08/16/85	FUNGUS BAR	2	SUNNY	-0-	37.200	89.200	3.30	STH
08/16/85	FUNGUS BAR	3	SUNNY	-0-	33.000	80.400	3.00	STH
08/16/85	INACCESSIB	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/16/85	INACCESSIB	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/16/85	INACCESSIB	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/16/85	MARBLE MT	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/16/85	MARBLE MT	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/16/85	MARBLE MT	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/16/85	DINK BAR	1	SUNNY	46.600	64.800	-0-	3.50	STH
08/16/85	DINK BAR	1	SUNNY	-0-	52.200	71.100	2.90	STH
08/16/85	DINK BAR	1	SUNNY	-0-	53.500	69.000	2.90	STH
08/16/85	DINK BAR	1	SUNNY	-0-	-0-	-0-	3.00	STH
08/16/85	DINK BAR	1	SUNNY	-0-	55.000	77.200	3.00	STH
08/16/85	DINK BAR	1	SUNNY	-0-	42.100	87.800	2.90	STH
08/16/85	DINK BAR	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/16/85	DINK BAR	3	SUNNY	39.200	84.200	-0-	3.00	STH
08/16/85	DINK BAR	3	SUNNY	33.600	87.500	-0-	3.00	STH
08/16/85	WAYNE SWIM	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/16/85	WAYNE SWIM	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/17/85	BACON CR	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/17/85	BACON CR	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/17/85	BACON CR	3	SUNNY	-0-	-0-	-0-	-0-	-0-

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/17/85	BAD SPOT	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/17/85	BAD SPOT	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/17/85	BAD SPOT	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/17/85	BAD SPOT	4	SUNNY	-0-	-0-	-0-	-0-	-0-
08/17/85	BIG EDDY	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/17/85	BIG EDDY	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/17/85	BIG EDDY	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/17/85	DIOBSUD CR	1	SUNNY	-0-	36.300	78.000	3.50	STH
08/17/85	DIOBSUD CR	1	SUNNY	60.400	48.100	-0-	3.20	STH
08/17/85	DIOBSUD CR	1	SUNNY	-0-	31.700	103.70	3.70	STH
08/17/85	DIOBSUD CR	1	SUNNY	75.600	45.800	-0-	3.10	STH
08/17/85	DIOBSUD CR	1	SUNNY	-0-	34.600	94.700	2.70	STH
08/17/85	DIOBSUD CR	1	SUNNY	-0-	31.700	103.20	3.30	STH
08/17/85	DIOBSUD CR	1	SUNNY	65.200	41.100	-0-	3.20	STH
08/17/85	DIOBSUD CR	1	SUNNY	-0-	40.400	86.200	3.00	STH
08/17/85	DIOBSUD CR	1	SUNNY	61.900	49.100	-0-	3.60	STH
08/17/85	DIOBSUD CR	1	SUNNY	58.200	55.000	-0-	3.10	STH
08/17/85	DIOBSUD CR	1	SUNNY	-0-	34.200	88.000	2.80	STH
08/17/85	DIOBSUD CR	1	SUNNY	26.200	91.300	-0-	3.50	STH
08/17/85	DIOBSUD CR	1	SUNNY	-0-	30.800	103.70	3.40	STH
08/17/85	DIOBSUD CR	1	SUNNY	66.100	48.000	-0-	2.40	STH
08/17/85	DIOBSUD CR	1	SUNNY	26.300	95.200	-0-	3.10	STH
08/17/85	DIOBSUD CR	1	SUNNY	-0-	29.300	88.000	3.10	STH
08/17/85	DIOBSUD CR	1	SUNNY	-0-	42.200	79.200	3.20	STH
08/17/85	DIOBSUD CR	1	SUNNY	-0-	29.900	86.400	3.10	STH
08/17/85	DIOBSUD CR	1	SUNNY	32.800	83.000	-0-	3.20	STH
08/17/85	DIOBSUD CR	1	SUNNY	-0-	29.900	86.400	3.20	STH
08/17/85	DIOBSUD CR	1	SUNNY	67.600	51.200	-0-	3.50	STH
08/17/85	DIOBSUD CR	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/17/85	FACE BAR	1	SUNNY	14.700	90.600	-0-	2.40	STH
08/17/85	FACE BAR	1	SUNNY	-0-	64.000	36.000	3.70	STH
08/17/85	FACE BAR	1	SUNNY	54.000	56.000	-0-	2.80	STH
08/17/85	FACE BAR	1	SUNNY	-0-	40.000	60.500	2.50	STH
08/17/85	FACE BAR	1	SUNNY	-0-	45.500	53.000	3.00	STH
08/17/85	FACE BAR	1	SUNNY	44.000	59.600	-0-	2.80	STH
08/17/85	FACE BAR	1	SUNNY	-0-	32.000	68.500	3.10	STH
08/17/85	FACE BAR	1	SUNNY	-0-	26.000	78.400	2.80	STH
08/17/85	FACE BAR	1	SUNNY	-0-	39.000	62.000	3.00	STH
08/17/85	FACE BAR	1	SUNNY	44.000	59.600	-0-	3.00	STH
08/17/85	FACE BAR	1	SUNNY	12.400	88.000	-0-	2.90	STH
08/17/85	FACE BAR	1	SUNNY	-0-	26.000	78.400	3.00	STH
08/17/85	FACE BAR	2	SUNNY	-0-	32.000	68.500	3.10	STH
08/17/85	FACE BAR	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/17/85	FORBIDDEN	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/17/85	FORBIDDEN	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/17/85	FORBIDDEN	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/17/85	FUNGUS BAR	1	SUNNY	75.400	27.200	-0-	3.30	STH
08/17/85	FUNGUS BAR	2	SUNNY	-0-	39.400	76.200	3.50	STH
08/17/85	FUNGUS BAR	2	SUNNY	83.800	16.800	-0-	3.50	STH
08/17/85	FUNGUS BAR	2	SUNNY	27.900	73.000	-0-	3.40	STH
08/17/85	FUNGUS BAR	3	SUNNY	21.700	88.300	-0-	3.50	STH

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/17/85	INACCESSIB	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/17/85	INACCESSIB	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/17/85	INACCESSIB	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/17/85	MARBLE MT	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/17/85	MARBLE MT	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/17/85	MARBLE MT	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/17/85	DINK BAR	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/17/85	DINK BAR	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/17/85	DINK BAR	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/17/85	ROCKPORT	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/17/85	ROCKPORT	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/17/85	ROCKPORT	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/17/85	WAYNE SWIM	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/17/85	WAYNE SWIM	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/18/85	BACON CR	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/18/85	BACON CR	2	SUNNY	54.000	68.400	-0-	2.80	STH
08/18/85	BACON CR	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/18/85	BAD SPOT	1	SUNNY	39.000	103.00	-0-	4.50	STH
08/18/85	BAD SPOT	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/18/85	BAD SPOT	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/18/85	BAD SPOT	4	SUNNY	-0-	-0-	-0-	-0-	-0-
08/18/85	BIG EDDY	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/18/85	BIG EDDY	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/18/85	BIG EDDY	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/18/85	DIOBSUD CR	1	SUNNY	78.500	20.100	-0-	3.40	COHO
08/18/85	DIOBSUD CR	1	SUNNY	71.700	26.700	-0-	3.20	STH
08/18/85	DIOBSUD CR	1	SUNNY	67.700	30.900	-0-	3.10	STH
08/18/85	DIOBSUD CR	1	SUNNY	67.800	30.800	-0-	2.90	STH
08/18/85	DIOBSUD CR	1	SUNNY	70.100	28.300	-0-	3.20	STH
08/18/85	DIOBSUD CR	2	SUNNY	20.200	82.600	-0-	2.90	STH
08/18/85	FACE BAR	1	SUNNY	98.400	19.700	-0-	3.50	STH
08/18/85	FACE BAR	1	SUNNY	-0-	79.400	21.700	3.40	STH
08/18/85	FACE BAR	1	SUNNY	-0-	65.800	35.800	3.30	STH
08/18/85	FACE BAR	1	SUNNY	-0-	65.800	35.800	3.10	STH
08/18/85	FACE BAR	1	SUNNY	17.200	84.800	-0-	2.40	STH
08/18/85	FACE BAR	1	SUNNY	-0-	65.800	35.800	3.50	STH
08/18/85	FACE BAR	1	SUNNY	42.800	60.200	-0-	3.00	STH
08/18/85	FACE BAR	1	SUNNY	42.800	60.200	-0-	3.30	STH
08/18/85	FACE BAR	1	SUNNY	-0-	65.800	35.800	3.40	STH
08/18/85	FACE BAR	1	SUNNY	65.000	36.800	-0-	3.20	STH
08/18/85	FACE BAR	1	SUNNY	87.500	29.600	-0-	-0-	STH
08/18/85	FACE BAR	1	SUNNY	97.400	7.8000	-0-	3.50	STH
08/18/85	FACE BAR	1	SUNNY	-0-	72.900	29.800	3.20	STH
08/18/85	FACE BAR	1	SUNNY	98.400	19.700	-0-	3.40	STH
08/18/85	FACE BAR	1	SUNNY	-0-	29.600	77.400	3.40	STH
08/18/85	FACE BAR	1	SUNNY	-0-	32.200	86.900	3.40	STH
08/18/85	FACE BAR	1	SUNNY	65.000	36.800	-0-	3.60	STH
08/18/85	FACE BAR	1	SUNNY	-0-	33.300	67.800	3.70	STH
08/18/85	FACE BAR	1	SUNNY	-0-	63.200	86.900	3.60	STH
08/18/85	FACE BAR	1	SUNNY	-0-	73.300	30.500	3.40	STH
08/18/85	FACE BAR	1	SUNNY	-0-	29.800	82.300	3.70	STH

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/18/85	FACE BAR	1	SUNNY	-0-	76.900	27.100	3.10	STH
08/18/85	FACE BAR	1	SUNNY	-0-	80.400	24.600	3.80	STH
08/18/85	FACE BAR	1	SUNNY	28.200	73.900	-0-	3.10	STH
08/18/85	FACE BAR	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/18/85	FACE BAR	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/18/85	FORBIDDEN	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/18/85	FORBIDDEN	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/18/85	FORBIDDEN	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/18/85	FUNGUS BAR	1	SUNNY	-0-	82.800	67.600	3.50	STH
08/18/85	FUNGUS BAR	1	SUNNY	-0-	105.80	15.700	3.60	STH
08/18/85	FUNGUS BAR	1	SUNNY	-0-	38.200	82.700	3.50	STH
08/18/85	FUNGUS BAR	1	SUNNY	-0-	53.400	61.700	3.50	STH
08/18/85	FUNGUS BAR	1	SUNNY	-0-	92.200	32.600	3.00	STH
08/18/85	FUNGUS BAR	1	SUNNY	-0-	52.500	85.700	3.30	STH
08/18/85	FUNGUS BAR	1	SUNNY	-0-	53.100	85.600	3.80	STH
08/18/85	FUNGUS BAR	2	SUNNY	107.20	34.700	-0-	3.20	STH
08/18/85	FUNGUS BAR	2	SUNNY	-0-	34.000	83.600	3.00	STH
08/18/85	FUNGUS BAR	2	SUNNY	-0-	29.200	76.700	3.40	STH
08/18/85	FUNGUS BAR	2	SUNNY	70.100	52.400	-0-	3.50	STH
08/18/85	FUNGUS BAR	2	SUNNY	-0-	106.60	39.000	3.70	STH
08/18/85	FUNGUS BAR	2	SUNNY	-0-	69.800	75.800	3.50	STH
08/18/85	FUNGUS BAR	2	SUNNY	79.000	29.000	-0-	3.30	STH
08/18/85	FUNGUS BAR	2	SUNNY	69.300	53.000	-0-	3.20	STH
08/18/85	FUNGUS BAR	2	SUNNY	69.300	53.000	-0-	4.20	COHO
08/18/85	FUNGUS BAR	2	SUNNY	86.700	38.500	-0-	3.10	STH
08/18/85	FUNGUS BAR	3	SUNNY	-0-	91.000	17.100	3.40	STH
08/18/85	FUNGUS BAR	3	SUNNY	85.300	25.000	-0-	3.30	STH
08/18/85	FUNGUS BAR	3	SUNNY	86.100	31.400	-0-	2.90	STH
08/18/85	FUNGUS BAR	3	SUNNY	35.700	76.700	-0-	2.70	STH
08/18/85	INACCESSIB	1	SUNNY	-0-	58.000	60.000	3.20	STH
08/18/85	INACCESSIB	1	SUNNY	41.500	95.700	-0-	3.70	STH
08/18/85	INACCESSIB	2	SUNNY	-0-	39.900	98.700	3.60	STH
08/18/85	INACCESSIB	3	SUNNY	52.000	104.50	-0-	3.70	STH
08/18/85	MARBLE MT	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/18/85	MARBLE MT	2	SUNNY	-0-	77.600	75.500	3.30	STH
08/18/85	MARBLE MT	2	SUNNY	-0-	81.000	76.900	3.50	STH
08/18/85	MARBLE MT	2	SUNNY	39.200	106.50	-0-	3.50	STH
08/18/85	MARBLE MT	2	SUNNY	-0-	50.800	83.500	3.40	STH
08/18/85	MARBLE MT	2	SUNNY	-0-	49.700	83.200	3.50	STH
08/18/85	MARBLE MT	2	SUNNY	83.000	67.400	-0-	3.00	STH
08/18/85	MARBLE MT	3	SUNNY	34.760	99.400	-0-	4.00	STH
08/18/85	MARBLE MT	3	SUNNY	-0-	57.500	42.200	3.40	STH
08/18/85	MARBLE MT	3	SUNNY	-0-	99.600	36.900	3.10	STH
08/18/85	MARBLE MT	3	SUNNY	34.760	99.400	-0-	3.40	STH
08/18/85	MARBLE MT	3	SUNNY	-0-	18.800	81.800	3.60	STH
08/18/85	MARBLE MT	3	SUNNY	54.000	85.600	-0-	3.60	STH
08/18/85	MARBLE MT	3	SUNNY	87.000	75.000	-0-	3.50	STH
08/18/85	MARBLE MT	3	SUNNY	54.900	49.900	-0-	3.10	STH
08/18/85	MARBLE MT	3	SUNNY	49.600	94.100	-0-	3.50	STH
08/18/85	MARBLE MT	3	SUNNY	112.60	61.000	-0-	4.00	STH
08/18/85	MARBLE MT	3	SUNNY	-0-	35.600	64.400	3.20	STH

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/18/85	MARBLE MT	3	SUNNY	-0-	42.500	58.000	3.40	STH
08/18/85	MARBLE MT	3	SUNNY	-0-	44.100	57.000	3.50	STH
08/18/85	MARBLE MT	3	SUNNY	-0-	35.600	64.400	3.60	STH
08/18/85	MARBLE MT	3	SUNNY	90.900	12.400	-0-	3.20	STH
08/18/85	DINK BAR	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/18/85	DINK BAR	2	SUNNY	40.500	-0-	-0-	4.00	STH
08/18/85	DINK BAR	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/18/85	ROCKPORT	1	SUNNY	64.700	44.700	-0-	3.10	STH
08/18/85	ROCKPORT	1	SUNNY	92.500	12.400	-0-	3.20	STH
08/18/85	ROCKPORT	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/18/85	ROCKPORT	3	SUNNY	-0-	27.900	91.500	3.20	STH
08/18/85	WAYNE SWIM	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/18/85	WAYNE SWIM	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/19/85	BACON CR	1	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/19/85	BACON CR	2	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/19/85	BACON CR	3	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/19/85	BAD SPOT	1	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/19/85	BAD SPOT	2	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/19/85	BAD SPOT	3	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/19/85	BAD SPOT	4	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/19/85	RIE EDDY	1	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/19/85	RIE EDDY	2	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/19/85	RIE EDDY	3	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/19/85	DIORESUD CR	1	clear	48.900	94.500	-0-	-0-	-0-
08/19/85	DIORESUD CR	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/19/85	FACE BAR	1	CLOUDY	98.300	29.900	-0-	-0-	STH
08/19/85	FACE BAR	1	CLOUDY	-0-	43.300	65.800	-0-	ETH
08/19/85	FACE BAR	1	CLOUDY	94.100	23.700	-0-	-0-	STH
08/19/85	FACE BAR	1	CLOUDY	16.300	97.500	-0-	-0-	STH
08/19/85	FACE BAR	1	CLOUDY	-0-	18.800	76.500	-0-	STH
08/19/85	FACE BAR	1	CLOUDY	-0-	73.400	57.300	-0-	STH
08/19/85	FACE BAR	1	CLOUDY	-0-	72.300	37.800	-0-	STH
08/19/85	FACE BAR	1	CLOUDY	94.100	23.700	-0-	-0-	STH
08/19/85	FACE BAR	1	CLOUDY	68.700	45.200	-0-	-0-	STH
08/19/85	FACE BAR	1	CLOUDY	-0-	24.100	86.900	-0-	STH
08/19/85	FACE BAR	1	CLOUDY	-0-	40.200	87.800	-0-	STH
08/19/85	FACE BAR	1	CLOUDY	-0-	50.400	52.000	-0-	STH
08/19/85	FACE BAR	2	CLOUDY	12.300	102.40	-0-	-0-	STH
08/19/85	FACE BAR	2	CLOUDY	59.200	66.300	-0-	-0-	STH
08/19/85	FACE BAR	2	CLOUDY	76.200	53.300	-0-	-0-	STH
08/19/85	FACE BAR	2	CLOUDY	16.700	96.700	-0-	-0-	STH
08/19/85	FACE BAR	3	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/19/85	FORBIDDEN	1	CLOUDY	40.300	80.300	-0-	-0-	-0-
08/19/85	FORBIDDEN	1	CLOUDY	40.300	80.300	-0-	-0-	-0-
08/19/85	FORBIDDEN	1	CLOUDY	43.200	107.70	-0-	-0-	-0-
08/19/85	FORBIDDEN	2	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/19/85	FORBIDDEN	3	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/19/85	FUNGUS BAR	1	CLOUDY	-0-	74.200	81.300	3.60	STH
08/19/85	FUNGUS BAR	2	CLOUDY	42.400	97.000	-0-	3.20	STH
08/19/85	FUNGUS BAR	2	CLOUDY	67.000	37.800	-0-	3.20	STH
08/19/85	FUNGUS BAR	2	CLOUDY	42.300	96.900	-0-	4.10	STH

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/19/85	FUNGUS BAR	3	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/19/85	INACCESSIB	1	SUNNY	-0-	77.600	25.300	3.40	STH
08/19/85	INACCESSIB	1	SUNNY	-0-	76.300	28.600	3.10	STH
08/19/85	INACCESSIB	1	SUNNY	-0-	81.600	21.300	3.50	STH
08/19/85	INACCESSIB	1	SUNNY	-0-	81.500	21.400	3.40	STH
08/19/85	INACCESSIB	2	SUNNY	-0-	-0-	-0-	-0-	-0-
08/19/85	INACCESSIB	3	SUNNY	-0-	-0-	-0-	-0-	-0-
08/19/85	MARBLE MT	1	SUNNY	-0-	-0-	-0-	-0-	-0-
08/19/85	MARBLE MT	2	clear	12.000	90.000	-0-	3.20	STH
08/19/85	MARBLE MT	2	clear	18.500	81.700	-0-	3.10	STH
08/19/85	MARBLE MT	2	clear	-0-	31.800	91.300	3.10	STH
08/19/85	MARBLE MT	2	clear	-0-	31.800	91.300	3.20	STH
08/19/85	MARBLE MT	2	clear	-0-	14.800	91.000	3.10	STH
08/19/85	MARBLE MT	2	clear	-0-	95.200	29.200	4.10	STH
08/19/85	MARBLE MT	2	clear	-0-	95.600	32.900	4.00	STH
08/19/85	MARBLE MT	2	clear	20.000	99.500	40.200	4.20	STH
08/19/85	MARBLE MT	2	clear	-0-	86.900	32.000	3.60	STH
08/19/85	MARBLE MT	2	clear	-0-	31.600	90.900	3.10	STH
08/19/85	MARBLE MT	3	CLOUDY	105.30	53.400	-0-	3.00	STH
08/19/85	MARBLE MT	3	CLOUDY	55.700	89.500	-0-	3.40	STH
08/19/85	MARBLE MT	3	CLOUDY	56.500	91.500	-0-	3.50	STH
08/19/85	MARBLE MT	3	CLOUDY	75.500	73.200	-0-	3.50	STH
08/19/85	MARBLE MT	3	CLOUDY	64.100	110.40	-0-	2.90	STH
08/19/85	MARBLE MT	3	CLOUDY	56.000	98.000	-0-	3.50	STH
08/19/85	MARBLE MT	3	CLOUDY	110.00	63.000	-0-	3.50	STH
08/19/85	MARBLE MT	3	CLOUDY	44.700	112.00	-0-	3.10	STH
08/19/85	MARBLE MT	3	CLOUDY	114.90	60.000	-0-	3.50	STH
08/19/85	MARBLE MT	3	CLOUDY	79.100	67.000	-0-	3.60	STH
08/19/85	MARBLE MT	3	CLOUDY	63.500	99.500	-0-	3.50	STH
08/19/85	MARBLE MT	3	CLOUDY	63.600	97.500	-0-	4.20	COHO
08/19/85	MARBLE MT	3	CLOUDY	105.60	53.200	-0-	3.20	STH
08/19/85	MARBLE MT	3	CLOUDY	58.000	90.300	-0-	1.50	STH
08/19/85	MARBLE MT	3	CLOUDY	55.000	85.600	-0-	4.80	COHO
08/19/85	MARBLE MT	3	CLOUDY	113.00	64.100	-0-	3.30	STH
08/19/85	MARBLE MT	3	CLOUDY	57.600	90.400	-0-	3.90	coho
08/19/85	MARBLE MT	3	CLOUDY	60.100	97.600	-0-	2.90	STH
08/19/85	MARBLE MT	3	CLOUDY	64.300	77.700	-0-	3.60	STH
08/19/85	MARBLE MT	3	CLOUDY	104.90	53.000	-0-	3.60	STH
08/19/85	MARBLE MT	3	CLOUDY	57.700	97.500	-0-	3.50	STH
08/19/85	MARBLE MT	3	CLOUDY	57.100	98.300	-0-	3.40	STH
08/19/85	MARBLE MT	3	CLOUDY	55.900	97.400	-0-	3.50	STH
08/19/85	MARBLE MT	3	CLOUDY	56.900	90.100	-0-	3.20	STH
08/19/85	MARBLE MT	3	CLOUDY	60.000	98.000	-0-	3.20	STH
08/19/85	DINK BAR	1	CLOUDY	-0-	51.700	70.500	3.50	STH
08/19/85	DINK BAR	2	clear	-0-	-0-	-0-	-0-	-0-
08/19/85	DINK BAR	3	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/19/85	ROCKPORT	1	CLOUDY	-0-	70.300	64.300	3.20	STH
08/19/85	ROCKPORT	1	CLOUDY	-0-	21.800	-0-	3.20	STH
08/19/85	ROCKPORT	1	CLOUDY	58.300	60.400	-0-	2.90	STH
08/19/85	ROCKPORT	1	CLOUDY	-0-	76.800	45.500	2.90	STH
08/19/85	ROCKPORT	1	CLOUDY	-0-	79.000	45.000	3.20	STH

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/19/85	ROCKPORT	1	CLOUDY	-0-	78.000	42.300	3.00	STH
08/19/85	ROCKPORT	1	CLOUDY	57.200	57.100	-0-	3.10	STH
08/19/85	ROCKPORT	2	CLOUDY	87.900	34.200	-0-	3.10	STH
08/19/85	ROCKPORT	2	CLOUDY	-0-	105.00	39.000	3.20	STH
08/19/85	ROCKPORT	2	CLOUDY	-0-	38.700	103.20	3.40	STH
08/19/85	ROCKPORT	3	CLOUDY	-0-	34.800	87.700	3.40	STH
08/19/85	ROCKPORT	3	CLOUDY	-0-	34.800	87.700	3.40	STH
08/19/85	ROCKPORT	3	CLOUDY	-0-	34.800	87.700	3.10	STH
08/19/85	WAYNE SWIM	1	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/19/85	WAYNE SWIM	2	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/20/85	BACON CR	1	CLOUDY	-0-	75.000	48.000	-0-	-0-
08/20/85	BACON CR	1	CLOUDY	-0-	27.000	88.400	-0-	-0-
08/20/85	BACON CR	1	CLOUDY	-0-	42.000	84.000	-0-	-0-
08/20/85	BACON CR	1	CLOUDY	36.600	92.500	-0-	-0-	-0-
08/20/85	BACON CR	2	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/20/85	BACON CR	3	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/20/85	BAD SPOT	1	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/20/85	BAD SPOT	2	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/20/85	BAD SPOT	3	CLOUDY	-0-	100.20	42.800	3.20	STH
08/20/85	BAD SPOT	4	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/20/85	BIG EDDY	1	CLOUDY	0.000	-0-	-0-	-0-	-0-
08/20/85	BIG EDDY	2	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/20/85	BIG EDDY	3	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/20/85	DIOBSUD CR	1	CLOUDY	-0-	83.700	27.100	3.00	STH
08/20/85	FACE BAR	1	CLOUDY	9.3000	91.800	-0-	3.10	STH
08/20/85	FACE BAR	1	CLOUDY	22.000	82.500	-0-	3.40	STH
08/20/85	FACE BAR	1	CLOUDY	21.500	81.600	-0-	3.30	STH
08/20/85	FACE BAR	1	CLOUDY	-0-	61.100	43.800	3.20	STH
08/20/85	FACE BAR	1	CLOUDY	-0-	32.700	67.700	3.40	STH
08/20/85	FACE BAR	1	CLOUDY	27.800	72.400	-0-	3.40	STH
08/20/85	FACE BAR	1	CLOUDY	14.300	87.300	-0-	3.20	STH
08/20/85	FACE BAR	2	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/20/85	FACE BAR	3	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/20/85	FORBIDDEN	1	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/20/85	FORBIDDEN	2	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/20/85	FORBIDDEN	3	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/20/85	FUNGUS BAR	1	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/20/85	FUNGUS BAR	2	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/20/85	FUNGUS BAR	3	CLOUDY	-0-	95.700	23.000	3.40	STH
08/20/85	INACCESSIB	1	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/20/85	INACCESSIB	2	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/20/85	INACCESSIB	3	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/20/85	MARBLE MT	1	CLOUDY	74.400	24.800	-0-	3.40	STH
08/20/85	MARBLE MT	1	CLOUDY	-0-	38.900	70.500	3.20	STH
08/20/85	MARBLE MT	2	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/20/85	MARBLE MT	3	CLOUDY	9.5000	95.000	-0-	3.40	STH
08/20/85	DINK BAR	1	CLOUDY	34.800	71.100	-0-	3.50	STH
08/20/85	DINK BAR	2	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/20/85	DINK BAR	3	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/20/85	ROCKPORT	1	CLOUDY	-0-	-0-	-0-	-0-	-0-
08/20/85	ROCKPORT	2	CLOUDY	-0-	31.000	100.30	3.10	STH

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.

DATE OF STRAND	GRAVEL BAR LOCATION NAME	STATION NUMBER	WEATHER	FISH COORDINATE REFERENCE POINT 1 (FT)	FISH COORDINATE REFERENCE POINT 2 (FT)	FISH COORDINATE REFERENCE POINT 3 (FT)	FISH LENGTH (CM)	SPECIES STRANDED
08/20/85	ROCKFORD	2	CLOUDY	-0-	32.200	103.50	-0-	STH
08/20/85	ROCKFORD	3	CLOUDY	0.0000	-0-	-0-	-0-	-0-
08/20/85	WAYNE SWIM	1	CLOUDY	-0-	85.200	38.200	1.70	STH
08/20/85	WAYNE SWIM	2	CLOUDY	35.300	96.600	-0-	4.50	COB

NOTE: FOR EACH STRANDED FRY THERE IS ONE LINE OF DATA.



APPENDIX B

LOG TRANSFORMED CELL MEAN DATA FOR THE 1986 STEELHEAR AND CONO FRY GRAVEL  
BAR STRANDING STUDY

Appendix 66

middle river  
(RIVLOC = 1)

N's, means and standard deviations based on dependent variable: LOGNUM

‡ Indicates statistics are collapsed over this factor

Factors: A R S B W	N	Mean	S.D.
1 1 1 1 1	297	0.991	1.182
1 1 1 1 2	147	1.401	1.277
2 1 1 1 1	150	0.590	0.921
1 1 1 1 3	99	1.059	1.260
1 2 1 1 1	97	0.816	1.078
1 3 1 1 1	101	1.091	1.190
1 1 1 1 4	124	1.500	1.264
1 1 2 1 1	173	0.626	0.969
1 1 1 1 5	135	1.017	1.121
1 1 1 2 1	158	0.969	1.235
1 1 1 1 6	99	1.132	1.246
1 1 1 2 2	99	1.074	1.229
1 1 1 1 7	99	0.768	1.037
1 1 1 1 8	50	1.473	1.310
1 2 1 1 1	47	1.241	1.257
1 3 1 1 1	50	1.478	1.274
2 1 1 1 1	49	0.677	1.064
2 2 1 1 1	50	0.421	0.680
2 3 1 1 1	51	0.711	0.972
1 1 1 1 9	61	2.071	1.171
1 1 2 1 2	86	0.925	1.132
2 1 1 1 1	63	0.948	1.102
2 1 2 1 1	87	0.321	0.659
1 1 1 1 10	69	1.495	1.194
1 1 1 2 2	78	1.314	1.347
2 1 1 1 2	70	0.542	0.805
2 1 1 2 1	80	0.677	1.016
1 1 1 1 11	50	1.504	1.258
1 1 1 1 12	48	1.631	1.359
1 1 1 1 13	49	1.069	1.165
2 1 1 1 1	49	0.753	1.124
2 1 1 1 2	51	0.549	0.804
2 1 1 1 3	50	0.473	0.801
1 1 1 1 14	42	1.683	1.303
1 1 2 1 1	57	0.600	1.015
1 2 1 1 1	41	1.157	1.271
1 2 2 1 1	56	0.570	0.840
1 3 1 1 1	41	1.656	1.175
1 3 2 1 1	60	0.705	1.044
1 1 1 1 15	46	0.992	1.202
1 1 1 2 2	53	1.117	1.317
1 2 1 1 2	45	0.881	0.915
1 2 1 2 1	52	0.764	1.208
1 3 1 1 1	48	1.168	1.217
1 3 1 2 1	53	1.021	1.172
1 1 1 1 16	32	1.255	1.336
1 1 1 1 17	34	1.015	1.294
1 1 1 1 18	33	0.915	1.160
1 2 1 1 1	33	0.806	1.140
1 2 1 1 2	31	1.034	1.186
1 2 1 1 3	33	0.628	0.886
1 3 1 1 1	34	1.333	1.230
1 3 1 1 2	34	1.168	1.232
1 3 1 1 3	33	0.762	1.058
1 1 1 1 19	36	1.471	1.037
1 1 1 2 2	88	1.512	1.352
1 1 1 1 20	...	0.855	1.111

	70	v. 280	v. 285
00228			
00101	41	1.689	1.353
00102	42	1.710	1.280
00103	41	1.097	1.075
00201	58	0.738	1.002
00202	57	0.605	0.957
00203	58	0.536	0.952
00011	47	1.217	1.090
00012	46	1.043	1.198
00013	46	0.786	1.053
00021	52	1.055	1.379
00022	53	1.100	1.266
00023	53	0.753	1.033
11100	21	2.218	1.018
12200	29	0.933	1.242
12100	20	1.850	1.395
12200	27	0.790	0.936
13100	20	2.136	1.102
13200	30	1.040	1.204
21100	21	1.147	1.357
21200	28	0.255	0.542
22100	21	0.498	0.666
22200	29	0.366	0.696
23100	21	1.199	1.077
23200	30	0.369	0.732
11010	23	1.531	1.325
11020	27	1.423	1.320
12010	22	1.267	0.917
12020	25	1.271	1.513
13010	24	1.735	1.277
13020	26	1.241	1.249
21010	20	0.453	0.770
21020	26	0.800	1.261
22010	20	0.569	0.816
22020	27	0.295	0.521
23010	24	0.601	0.851
23020	27	0.809	1.074
11001	17	1.351	1.257
11002	17	1.615	1.463
11003	16	1.451	1.263
12001	16	1.338	1.317
12002	14	1.696	1.300
12003	17	0.775	1.058
13001	17	1.814	1.219
13002	17	1.592	1.381
13003	16	1.001	1.139
21001	15	1.147	1.456
21002	17	0.415	0.741
21003	17	0.411	0.830
22001	17	0.305	0.652
22002	17	0.488	0.751
22003	16	0.473	0.657
23001	17	0.852	1.070
23002	17	0.745	0.917
23003	17	0.537	0.955
10110	18	1.956	1.056
10120	43	2.119	1.225
10210	51	1.337	1.208
10220	35	0.325	0.658
20110	18	0.987	0.774
20120	45	0.933	1.216
20210	52	0.388	0.763
20220	35	0.247	0.460
10101	20	2.124	1.186
10102	21	2.452	1.205
10103	20	1.617	1.065

1 1 2 1 1	30	1.091	1.146
1 1 2 1 2	27	0.992	1.120
1 1 2 1 3	29	0.692	1.130
2 1 1 1 1	21	1.275	1.399
2 1 1 1 2	21	0.968	0.866
2 1 1 1 3	21	0.601	0.904
2 1 2 1 1	28	0.360	0.652
2 1 2 1 2	30	0.256	0.617
2 1 2 1 3	29	0.381	0.720
1 1 1 1 1	24	1.702	1.057
1 1 1 1 2	22	1.705	1.240
1 1 1 1 3	23	1.088	1.229
1 1 1 2 1	26	1.321	1.415
1 1 1 2 2	26	1.567	1.474
1 1 1 2 3	26	1.052	1.131
2 1 1 1 1	23	0.711	0.869
2 1 1 1 2	24	0.436	0.775
2 1 1 1 3	23	0.483	0.752
2 1 1 2 1	26	0.789	1.314
2 1 1 2 2	27	0.650	0.829
2 1 1 2 3	27	0.465	0.855
1 1 1 1 1	12	1.537	1.114
1 1 1 2 1	30	1.741	1.384
1 1 2 1 1	34	0.800	1.188
1 1 2 2 1	23	0.304	0.594
1 2 1 1 1	12	1.084	0.812
1 2 1 2 1	29	1.188	1.430
1 2 2 1 1	32	0.807	0.951
1 2 2 2 1	22	0.230	0.495
1 3 1 1 1	12	1.797	1.112
1 3 1 2 1	29	1.600	1.215
1 3 2 1 1	36	0.959	1.197
1 3 2 2 1	24	0.322	0.616
1 1 1 1 1	14	1.943	1.395
1 1 1 1 2	14	1.899	1.290
1 1 1 1 3	14	1.207	1.172
1 1 2 1 1	18	0.720	1.035
1 1 2 1 2	20	0.396	0.890
1 1 2 1 3	19	0.700	1.134
1 2 1 1 1	13	1.038	1.411
1 2 1 1 2	14	1.605	1.371
1 2 1 1 3	14	0.820	0.948
1 2 2 1 1	20	0.656	0.934
1 2 2 1 2	17	0.563	0.768
1 2 2 1 3	19	0.487	0.835
1 3 1 1 1	14	2.041	1.107
1 3 1 1 2	14	1.626	1.251
1 3 1 1 3	13	1.275	1.116
1 3 2 1 1	20	0.837	1.079
1 3 2 1 2	20	0.848	1.141
1 3 2 1 3	20	0.428	0.894
1 1 1 1 1	15	1.164	1.162
1 1 1 1 2	16	0.833	1.270
1 1 1 1 3	15	0.991	1.227
1 1 1 2 1	17	1.335	1.504
1 1 1 2 2	18	1.177	1.330
1 1 1 2 3	18	0.852	1.134
1 2 1 1 1	16	1.042	0.973
1 2 1 1 2	14	1.061	0.886
1 2 1 1 3	15	0.541	0.840
1 2 1 2 1	17	0.585	1.268
1 2 1 2 2	17	1.011	1.414
1 2 1 2 3	18	0.701	0.941
1 3 1 1 1	16	1.443	1.160
1 3 1 1 2	16	1.237	1.388
1 3 1 1 3	14	0.877	1.076

03021	18	1.235	1.315
03022	18	1.107	1.112
03023	17	0.704	1.071
00111	12	1.580	0.955
00112	12	1.747	1.220
00113	12	1.087	0.873
00121	29	1.735	1.500
00122	30	1.695	1.323
00123	29	1.101	1.162
00211	35	1.093	1.118
00212	34	0.794	1.104
00213	34	0.679	1.101
00221	23	0.198	0.408
00222	23	0.324	0.607
00223	24	0.334	0.659
11110	6	2.045	1.095
11120	15	2.288	1.017
11210	17	1.350	1.380
11220	12	0.341	0.713
12110	6	1.254	0.862
12120	14	2.106	1.525
12210	16	1.189	0.963
12220	11	0.209	0.509
13110	6	2.569	0.892
13120	14	1.950	1.159
13210	18	1.457	1.282
13220	12	0.414	0.756
21110	6	1.029	0.955
21120	15	1.195	1.515
21210	17	0.250	0.602
21220	11	0.265	0.462
22110	6	0.912	0.800
22120	15	0.331	0.549
22210	17	0.448	0.810
22220	12	0.250	0.505
23110	6	1.017	0.690
23120	15	1.272	1.211
23210	18	0.462	0.872
23220	12	0.231	0.451
11101	7	1.805	1.304
11102	7	2.947	0.368
11103	7	1.903	0.827
11201	10	1.032	1.185
11202	10	0.683	1.170
11203	9	1.099	1.470
12101	6	1.981	1.534
12102	7	2.402	1.372
12103	7	1.157	1.198
12201	10	0.953	1.070
12202	7	0.990	0.786
12203	10	0.487	0.899
13101	7	2.566	0.651
13102	7	2.007	1.517
13103	6	1.785	0.956
13201	10	1.288	1.270
13202	10	1.302	1.276
13203	10	0.530	1.000
21101	7	2.080	1.572
21102	7	0.850	0.952
21103	7	0.512	1.080
21201	8	0.330	0.697
21202	10	0.110	0.347
21203	10	0.340	0.589
22101	7	0.230	0.608
22102	7	0.809	0.841
22103	7	0.454	0.448

2 2 2 1 1	10	0.358	0.707
2 2 2 1 2	10	0.264	0.630
2 2 2 1 3	9	0.487	0.811
2 3 1 1 1	7	1.516	1.259
2 3 1 1 2	7	1.244	0.867
2 3 1 1 3	7	0.838	1.120
2 3 2 1 1	10	0.387	0.628
2 3 2 1 2	10	0.395	0.815
2 3 2 1 3	10	0.326	0.816
1 1 1 1 1	8	1.427	1.231
1 1 1 1 2	8	1.492	1.492
1 1 1 1 3	7	1.695	1.422
1 1 1 2 1	9	1.282	1.351
1 1 1 2 2	9	1.725	1.518
1 1 1 2 3	9	1.260	1.176
1 2 1 1 1	8	1.521	0.858
1 2 1 1 2	6	1.622	0.500
1 2 1 1 3	8	0.581	0.948
1 2 1 2 1	8	1.156	1.705
1 2 1 2 2	8	1.751	1.716
1 2 1 2 3	9	0.948	1.175
1 3 1 1 1	8	2.159	1.028
1 3 1 1 2	8	1.981	1.437
1 3 1 1 3	8	1.065	1.204
1 3 1 2 1	9	1.507	1.350
1 3 1 2 2	9	1.247	1.312
1 3 1 2 3	8	0.936	1.150
2 1 1 1 1	7	0.867	1.087
2 1 1 1 2	8	0.173	0.490
2 1 1 1 3	6	0.374	0.589
2 1 1 2 1	8	1.395	1.753
2 1 1 2 2	9	0.629	0.882
2 1 1 2 3	9	0.440	0.987
2 1 1 3 1	8	0.562	0.876
2 2 1 1 1	6	0.641	0.897
2 2 1 1 2	7	0.495	0.771
2 2 1 1 3	9	0.077	0.231
2 2 1 2 1	9	0.353	0.617
2 2 1 2 2	9	0.455	0.602
2 2 1 2 3	8	0.727	0.811
2 3 1 1 1	8	0.494	0.893
2 3 1 1 2	8	0.581	0.948
2 3 1 1 3	9	0.963	1.298
2 3 1 2 1	9	0.967	0.930
2 3 1 2 2	9	0.497	1.018
2 3 1 2 3	9	0.497	1.018
1 1 1 1 1	6	1.654	1.162
1 1 1 1 2	6	2.619	0.931
1 1 1 1 3	6	1.590	0.885
1 1 1 2 1	14	2.326	1.178
1 1 1 2 2	15	2.386	1.322
1 1 1 2 3	14	1.626	1.088
1 1 2 1 1	18	1.719	1.055
1 1 2 1 2	16	1.363	1.185
1 1 2 1 3	17	0.909	1.304
1 1 2 2 1	12	0.149	0.359
1 1 2 2 2	11	0.452	0.781
1 1 2 2 3	12	0.384	0.775
2 1 1 1 1	6	1.506	0.800
2 1 1 1 2	6	0.876	0.765
2 1 1 1 3	6	0.578	0.522
2 1 1 2 1	15	1.183	1.593
2 1 1 2 2	15	1.004	0.926
2 1 1 2 3	15	0.611	1.034
2 1 2 1 1	17	0.431	0.753
2 1 2 1 2	18	0.289	0.741
2 1 2 1 3	17	0.449	0.830

2 2 2 2 1	11	0.252	0.467
2 2 2 2 2	12	0.207	0.388
2 2 2 2 3	12	0.283	0.549
1 1 1 1 1	4	1.573	1.071
1 1 1 1 2	4	1.796	1.403
1 1 1 1 3	4	1.242	1.109
1 1 1 2 1	10	2.091	1.530
1 1 1 2 2	10	1.940	1.320
1 1 1 2 3	10	1.193	1.255
1 1 2 1 1	11	1.015	1.205
1 1 2 1 2	12	0.511	1.102
1 1 2 1 3	11	0.899	1.305
1 1 2 2 1	7	0.256	0.453
1 1 2 2 2	6	0.224	0.429
1 1 2 2 3	8	0.425	0.850
1 2 1 1 1	4	1.062	0.884
1 2 1 1 2	4	1.669	0.563
1 2 1 1 3	4	0.520	0.664
1 2 1 2 1	9	1.027	1.641
1 2 1 2 2	10	1.580	1.614
1 2 1 2 3	10	0.940	1.047
1 2 2 1 1	12	1.035	1.038
1 2 2 1 2	10	0.818	0.893
1 2 2 1 3	11	0.548	0.925
1 2 2 2 1	8	0.087	0.245
1 2 2 2 2	7	0.198	0.338
1 2 2 2 3	8	0.402	0.745
1 3 1 1 1	4	2.105	0.828
1 3 1 1 2	4	1.777	1.777
1 3 1 1 3	4	1.496	0.663
1 3 1 2 1	10	2.015	1.240
1 3 1 2 2	10	1.565	1.090
1 3 1 2 3	9	1.176	1.294
1 3 2 1 1	12	1.222	1.199
1 3 2 1 2	12	1.057	1.274
1 3 2 1 3	12	0.598	1.113
1 3 2 2 1	8	0.260	0.516
1 3 2 2 2	8	0.535	0.893
1 3 2 2 3	8	0.173	0.321
1 1 1 1 1	2	1.099	1.554
1 1 1 1 2	2	2.900	0.271
1 1 1 1 3	2	2.138	0.490
1 1 1 2 1	5	2.086	1.263
1 1 1 2 2	5	2.966	0.428
1 1 1 2 3	5	1.808	0.962
1 1 2 1 1	6	1.537	1.258
1 1 2 1 2	6	1.023	1.430
1 1 2 1 3	5	1.518	1.683
1 1 2 2 1	4	0.275	0.549
1 1 2 2 2	4	0.173	0.347
1 1 2 2 3	4	0.576	1.151
1 2 1 1 1	2	1.320	0.886
1 2 1 1 2	2	1.748	0.919
1 2 1 1 3	2	0.693	0.980
1 2 1 2 1	4	2.312	1.795
1 2 1 2 2	5	2.663	1.521
1 2 1 2 3	5	1.384	1.320
1 2 2 1 1	6	1.588	0.922
1 2 2 1 2	4	1.560	0.347
1 2 2 1 3	6	0.543	1.029
1 2 2 2 1	4	0.000	0.000
1 2 2 2 2	3	0.231	0.400
1 2 2 2 3	4	0.402	0.805
1 3 1 1 1	2	2.544	1.064
1 3 1 1 2	2	3.208	1.023
1 3 1 1 3	2	1.954	0.490

1 3 1 2 1	5	2.575	0.594
1 3 1 2 2	5	1.527	1.476
1 3 1 2 3	4	1.699	1.190
1 3 2 1 1	6	2.031	1.083
1 3 2 1 2	6	1.572	1.370
1 3 2 1 3	6	0.768	1.248
1 3 2 2 1	4	0.173	0.347
1 3 2 2 2	4	0.896	1.179
1 3 2 2 3	4	0.173	0.347
2 1 1 1 1	2	2.047	0.361
2 1 1 1 2	2	0.693	0.980
2 1 1 1 3	2	0.347	0.490
2 1 1 2 1	5	2.093	1.917
2 1 1 2 2	5	0.910	1.050
2 1 1 2 3	5	0.578	1.293
2 1 2 1 1	5	0.389	0.870
2 1 2 1 2	6	0.000	0.000
2 1 2 1 3	6	0.384	0.661
2 1 2 2 1	3	0.231	0.400
2 1 2 2 2	4	0.275	0.549
2 1 2 2 3	4	0.275	0.549
2 2 1 1 1	2	0.805	1.138
2 2 1 1 2	2	1.589	0.287
2 2 1 1 3	2	0.347	0.490
2 2 1 2 1	5	0.000	0.000
2 2 1 2 2	5	0.497	0.784
2 2 1 2 3	5	0.497	0.480
2 2 2 1 1	6	0.480	0.885
2 2 2 1 2	6	0.324	0.794
2 2 2 1 3	6	0.555	0.904
2 2 2 2 1	4	0.173	0.347
2 2 2 2 2	4	0.173	0.347
2 2 2 2 3	4	0.402	0.805
2 3 1 1 1	2	1.666	0.396
2 3 1 1 2	2	0.347	0.490
2 3 1 1 3	2	1.040	0.490
2 3 1 2 1	5	1.456	1.524
2 3 1 2 2	5	1.600	0.709
2 3 1 2 3	5	0.757	1.339
2 3 2 1 1	6	0.414	0.648
2 3 2 1 2	6	0.543	1.029
2 3 2 1 3	6	0.427	1.047
2 3 2 2 1	4	0.347	0.693
2 3 2 2 2	4	0.173	0.347
2 3 2 2 3	4	0.173	0.347

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Fmax for testing homogeneity of between subjects variances=Not defined



N's, means and standard deviations based on dependent variable: LOGNUM

LOWER RIVER  
RIVLOC = 2

8 Indicates statistics are collapsed over this factor

Factors: A B C D	N	Mean	S.D.
8 8 8 8	299	0.391	0.641
1 8 8 8	139	0.178	0.401
2 8 8 8	160	0.576	0.746
8 1 8 8	77	0.874	0.793
8 2 8 8	222	0.223	0.478
8 8 1 8	127	0.516	0.751
8 8 2 8	172	0.298	0.530
8 8 8 1	87	0.583	0.763
8 8 8 2	108	0.387	0.613
8 8 8 3	104	0.234	0.508
1 1 8 8	34	0.370	0.516
1 2 8 8	105	0.116	0.336
2 1 8 8	43	1.272	0.750
2 2 8 8	117	0.320	0.561
1 8 1 8	57	0.218	0.424
1 8 2 8	82	0.151	0.385
2 8 1 8	70	0.759	0.866
2 8 2 8	90	0.433	0.606
1 8 8 1	35	0.277	0.465
1 8 8 2	54	0.233	0.466
1 8 8 3	50	0.050	0.204
2 8 8 1	52	0.789	0.853
2 8 8 2	54	0.541	0.703
2 8 8 3	54	0.405	0.633
8 1 1 8	43	1.052	0.835
8 1 2 8	34	0.648	0.684
8 2 1 8	84	0.242	0.527
8 2 2 8	138	0.212	0.448
8 1 8 1	20	1.004	0.878
8 1 8 2	30	0.947	0.776
8 1 8 3	27	0.696	0.743
8 2 8 1	67	0.458	0.683
8 2 8 2	78	0.172	0.355
8 2 8 3	77	0.072	0.241
8 8 1 1	34	0.859	0.864
8 8 1 2	48	0.463	0.729
8 8 1 3	45	0.314	0.592
8 8 2 1	53	0.407	0.638
8 8 2 2	60	0.326	0.500
8 8 2 3	59	0.173	0.428
1 1 1 8	18	0.430	0.534
1 1 2 8	16	0.303	0.504
1 2 1 8	39	0.120	0.325
1 2 2 8	66	0.114	0.345
2 1 1 8	25	1.500	0.721
2 1 2 8	18	0.955	0.688
2 2 1 8	45	0.348	0.638
2 2 2 8	72	0.303	0.510
1 1 8 1	7	0.297	0.371
1 1 8 2	15	0.628	0.592
1 1 8 3	12	0.092	0.317
1 2 8 1	28	0.272	0.492
1 2 8 2	39	0.081	0.297
1 2 8 3	38	0.036	0.157
2 1 8 1	13	1.385	0.839

2 1 1 2	15	1.285	0.825
2 1 1 3	15	1.180	0.618
2 2 1 1	39	0.391	0.770
2 2 1 2	39	0.262	0.389
2 2 1 3	39	0.107	0.299
1 1 1 1	12	0.414	0.455
1 1 1 2	24	0.265	0.491
1 1 1 3	21	0.052	0.240
1 1 2 1	23	0.205	0.464
1 1 2 2	30	0.208	0.451
1 1 2 3	29	0.048	0.179
2 1 1 1	22	1.101	0.943
2 1 1 2	24	0.661	0.874
2 1 1 3	24	0.543	0.709
2 1 2 1	30	0.561	0.713
2 1 2 2	30	0.445	0.524
2 1 2 3	30	0.294	0.352
1 1 1 1	10	1.413	0.871
1 1 1 2	18	1.058	0.857
1 1 1 3	15	0.804	0.744
1 1 2 1	10	0.595	0.705
1 1 2 2	12	0.779	0.635
1 1 2 3	12	0.561	0.751
1 2 1 1	24	0.628	0.764
1 2 1 2	30	0.106	0.282
1 2 1 3	30	0.069	0.279
1 2 2 1	43	0.363	0.622
1 2 2 2	48	0.213	0.392
1 2 2 3	47	0.074	0.216
1 1 1 1	3	0.462	0.400
1 1 1 2	9	0.584	0.606
1 1 1 3	6	0.183	0.449
1 1 2 1	4	0.173	0.347
1 1 2 2	6	0.693	0.620
1 1 2 3	6	0.000	0.000
1 2 1 1	9	0.398	0.493
1 2 1 2	15	0.073	0.284
1 2 1 3	15	0.000	0.000
1 2 2 1	19	0.212	0.493
1 2 2 2	24	0.087	0.311
1 2 2 3	23	0.060	0.200
2 1 1 1	7	1.821	0.663
2 1 1 2	9	1.532	0.829
2 1 1 3	9	1.218	0.601
2 1 2 1	6	0.876	0.765
2 1 2 2	6	0.865	0.697
2 1 2 3	6	1.122	0.697
2 2 1 1	15	0.765	0.875
2 2 1 2	15	0.139	0.287
2 2 1 3	15	0.139	0.389
2 2 2 1	24	0.482	0.694
2 2 2 2	24	0.339	0.428
2 2 2 3	24	0.087	0.234

Fmax for testing homogeneity of between subjects variances=Not defined

ALL DATA  
(EXCEPT DAYNIGHT  
DOUBLETESTS)

N's, means and standard deviations based on dependent variable: LOGNUM

‡ Indicates statistics are collapsed over this factor

Factors: R A B C M	N	Mean	S.D.
1 1 1 1 1	396	0.690	0.995
1 1 1 1 2	297	0.991	1.182
2 1 1 1 1	299	0.391	0.641
2 1 1 1 2	289	0.392	0.748
2 2 1 1 1	307	0.971	1.112
2 2 1 1 2	201	1.260	1.147
2 2 2 1 1	395	0.400	0.760
2 2 2 1 2	266	0.778	0.993
2 2 2 2 1	330	0.619	0.993
2 2 2 2 2	186	0.875	1.081
2 2 2 3 1	207	0.715	1.016
2 2 2 3 2	203	0.495	0.851
2 2 3 1 1	150	0.590	0.921
2 2 3 1 2	147	1.401	1.277
2 2 3 2 1	139	0.178	0.401
2 2 3 2 2	160	0.576	0.746
2 2 3 3 1	124	1.500	1.264
2 2 3 3 2	173	0.627	0.969
2 2 3 3 3	77	0.874	0.793
2 2 3 3 4	222	0.223	0.478
2 2 3 3 5	139	1.017	1.121
2 2 3 3 6	158	0.969	1.235
2 2 3 3 7	127	0.516	0.751
2 2 3 3 8	172	0.298	0.530
2 2 3 3 9	99	1.132	1.244
2 2 3 3 10	99	1.074	1.229
2 2 3 3 11	99	0.768	1.037
2 2 3 3 12	87	0.583	0.763
2 2 3 3 13	108	0.387	0.613
2 2 3 3 14	104	0.234	0.508
2 2 3 3 15	97	0.746	0.974
2 2 3 3 16	192	0.214	0.518
2 2 3 3 17	104	1.740	1.088
2 2 3 3 18	203	0.576	0.900
2 2 3 3 19	127	0.396	0.679
2 2 3 3 20	142	0.389	0.800
2 2 3 3 21	139	1.126	1.102
2 2 3 3 22	168	0.842	1.108
2 2 3 3 23	84	0.554	0.934
2 2 3 3 24	105	0.387	0.668
2 2 3 3 25	100	0.262	0.619
2 2 3 3 26	102	1.140	1.125
2 2 3 3 27	102	1.054	1.191
2 2 3 3 28	103	0.721	0.979
2 2 3 3 29	79	1.243	0.950
2 2 3 3 30	122	1.271	1.262
2 2 3 3 31	187	0.581	0.946
2 2 3 3 32	208	0.237	0.490
2 2 3 3 33	61	1.465	1.253
2 2 3 3 34	72	1.392	1.156
2 2 3 3 35	68	0.938	0.971
2 2 3 3 36	125	0.588	0.854
2 2 3 3 37	135	0.355	0.708
2 2 3 3 38	135	0.271	0.687
2 2 3 3 39	81	1.067	1.011
2 2 3 3 40	94	0.747	1.024

11113	91	0.552	0.804
11121	105	0.728	1.114
11122	113	0.609	1.013
11123	112	0.448	0.825
11100	63	0.948	1.102
11200	87	0.331	0.659
12100	61	2.071	1.171
12200	86	0.925	1.132
21100	34	0.370	0.516
21200	105	0.116	0.336
22100	43	1.272	0.750
22200	117	0.320	0.561
11010	70	0.542	0.805
11020	80	0.633	1.016
12010	69	1.499	1.194
12020	78	1.314	1.347
21010	57	0.218	0.424
21020	82	0.151	0.385
22010	70	0.759	0.866
22020	90	0.433	0.606
11001	49	0.753	1.124
11002	51	0.549	0.804
11003	50	0.473	0.801
12001	50	1.504	1.258
12002	48	1.631	1.359
12003	49	1.069	1.165
21001	35	0.277	0.465
21002	54	0.233	0.466
21003	50	0.050	0.204
22001	52	0.789	0.853
22002	54	0.541	0.703
22003	54	0.405	0.633
10110	36	1.471	1.037
10120	88	1.512	1.352
10210	103	0.858	1.111
10220	70	0.286	0.565
20110	43	1.052	0.835
20120	34	0.648	0.684
20210	84	0.242	0.527
20220	138	0.212	0.448
10101	41	1.689	1.353
10102	42	1.710	1.280
10103	41	1.097	1.075
10201	58	0.738	1.002
10202	57	0.605	0.957
10203	58	0.536	0.952
20101	20	1.004	0.878
20102	30	0.947	0.776
20103	27	0.696	0.743
20201	67	0.458	0.683
20202	78	0.172	0.355
20203	77	0.072	0.241
10011	47	1.217	1.090
10012	46	1.043	1.198
10013	46	0.786	1.053
10021	52	1.055	1.379
10022	53	1.100	1.266
10023	53	0.753	1.033
20011	34	0.859	0.864
20012	48	0.463	0.729
20013	45	0.314	0.592
20021	53	0.407	0.638
20022	60	0.326	0.500
20023	59	0.173	0.428
01110	36	0.708	0.714
01120	61	0.768	1.107

1 1 2 1 8	91	0.273	0.426
1 1 2 2 8	101	0.160	0.372
1 2 1 1 8	43	1.691	0.895
1 2 1 2 8	61	1.775	1.213
1 2 2 1 8	96	0.873	1.077
1 2 2 2 8	107	0.310	0.560
1 1 1 8 1	28	1.031	1.291
1 1 1 8 2	36	0.826	0.773
1 1 1 8 3	33	0.416	0.779
1 1 2 8 1	56	0.316	0.574
1 1 2 8 2	69	0.157	0.468
1 1 2 8 3	67	0.185	0.513
1 2 1 8 1	33	1.833	1.110
1 2 1 8 2	36	1.958	1.206
1 2 1 8 3	35	1.429	0.880
1 2 2 8 1	69	0.808	0.977
1 2 2 8 2	66	0.561	0.849
1 2 2 8 3	68	0.356	0.818
1 1 8 1 1	35	0.609	0.774
1 1 8 1 2	48	0.350	0.648
1 1 8 1 3	44	0.277	0.603
1 1 8 2 1	49	0.515	1.042
1 1 8 2 2	57	0.417	0.689
1 1 8 2 3	56	0.249	0.637
1 2 8 1 1	46	1.415	1.038
1 2 8 1 2	46	1.161	1.177
1 2 8 1 3	47	0.810	1.024
1 2 8 2 1	56	0.914	1.151
1 2 8 2 2	56	0.966	1.205
1 2 8 2 3	56	0.646	0.942
1 8 1 1 1	22	1.504	0.900
1 8 1 1 2	30	1.334	1.055
1 8 1 1 3	27	0.930	0.801
1 8 1 2 1	39	1.443	1.425
1 8 1 2 2	42	1.433	1.234
1 8 1 2 3	41	0.943	1.078
1 8 2 1 1	59	0.904	1.009
1 8 2 1 2	64	0.472	0.891
1 8 2 1 3	64	0.393	0.875
1 8 2 2 1	66	0.305	0.559
1 8 2 2 2	71	0.249	0.470
1 8 2 2 3	71	0.162	0.434
1 1 1 1 8	18	0.987	0.774
1 1 1 2 8	45	0.933	1.216
1 1 2 1 8	52	0.388	0.763
1 1 2 2 8	35	0.247	0.460
1 2 1 1 8	18	1.956	1.056
1 2 1 2 8	43	2.119	1.225
1 2 2 1 8	51	1.337	1.208
1 2 2 2 8	35	0.325	0.658
2 1 1 1 8	18	0.430	0.534
2 1 1 2 8	16	0.303	0.504
2 1 2 1 8	39	0.120	0.325
2 1 2 2 8	66	0.114	0.345
2 2 1 1 8	25	1.500	0.721
2 2 1 2 8	18	0.955	0.688
2 2 2 1 8	45	0.348	0.638
2 2 2 2 8	72	0.303	0.510
1 1 1 8 1	21	1.275	1.399
1 1 1 8 2	21	0.968	0.866
1 1 1 8 3	21	0.601	0.904
1 1 2 8 1	28	0.360	0.652
1 1 2 8 2	30	0.256	0.617
1 1 2 8 3	29	0.381	0.720
1 2 1 8 1	20	2.124	1.186
1 2 1 8 2	21	2.452	1.205

12183	20	1.617	1.000
12281	30	1.091	1.144
12282	27	0.992	1.120
12283	29	0.692	1.130
21181	7	0.297	0.371
21182	15	0.620	0.392
21183	12	0.092	0.317
21281	20	0.272	0.492
21282	39	0.001	0.297
21283	30	0.036	0.157
22181	13	1.305	0.839
22182	15	1.265	0.825
22183	15	1.180	0.610
22281	39	0.591	0.770
22282	39	0.262	0.389
22283	39	0.107	0.299
11811	23	0.711	0.889
11812	24	0.436	0.775
11813	23	0.483	0.752
11821	26	0.709	1.314
11822	27	0.650	0.829
11823	27	0.445	0.855
12811	24	1.702	1.057
12812	22	1.705	1.240
12813	23	1.000	1.229
12821	26	1.321	1.415
12822	26	1.567	1.474
12823	26	1.052	1.131
21811	12	0.414	0.455
21812	24	0.265	0.491
21813	21	0.052	0.240
21821	23	0.205	0.464
21822	30	0.200	0.451
21823	29	0.040	0.179
22811	22	1.101	0.943
22812	24	0.661	0.874
22813	24	0.543	0.709
22821	30	0.561	0.713
22822	30	0.445	0.524
22823	30	0.294	0.552
18111	12	1.500	0.955
18112	12	1.747	1.220
18113	12	1.007	0.873
18121	29	1.735	1.500
18122	30	1.695	1.323
18123	29	1.101	1.162
18211	35	1.093	1.118
18212	34	0.794	1.104
18213	34	0.679	1.101
18221	23	0.198	0.408
18222	23	0.324	0.607
18223	24	0.334	0.659
28111	10	1.413	0.871
28112	18	1.050	0.857
28113	15	0.804	0.744
28121	10	0.595	0.705
28122	12	0.779	0.635
28123	12	0.561	0.751
28211	24	0.620	0.764
28212	30	0.106	0.282
28213	30	0.069	0.279
28221	43	0.363	0.622
28222	40	0.213	0.392
28223	47	0.074	0.216
81111	9	1.150	0.844
81112	15	0.701	0.664

0 1 1 1 3	12	0.380	0.308
0 1 1 2 1	19	0.971	1.474
0 1 1 2 2	21	0.915	0.847
0 1 1 2 3	21	0.436	0.910
0 1 2 1 1	26	0.419	0.664
0 1 2 1 2	33	0.191	0.582
0 1 2 1 3	32	0.239	0.638
0 1 2 2 1	30	0.227	0.476
0 1 2 2 2	36	0.127	0.338
0 1 2 2 3	35	0.137	0.367
0 2 1 1 1	13	1.744	0.889
0 2 1 1 2	15	1.967	1.003
0 2 1 1 3	15	1.369	0.723
0 2 1 2 1	20	1.891	1.252
0 2 1 2 2	21	1.951	1.356
0 2 1 2 3	20	1.475	0.997
0 2 2 1 1	33	1.285	1.076
0 2 2 1 2	31	0.770	1.062
0 2 2 1 3	32	0.548	1.049
0 2 2 2 1	36	0.371	0.619
0 2 2 2 2	35	0.375	0.553
0 2 2 2 3	36	0.186	0.495
1 1 1 1 1	6	1.506	0.800
1 1 1 1 2	6	0.876	0.765
1 1 1 1 3	4	0.578	0.522
1 1 1 2 1	15	1.183	1.593
1 1 1 2 2	15	1.004	0.926
1 1 1 2 3	15	0.611	1.034
1 1 2 1 1	17	0.431	0.753
1 1 2 1 2	18	0.289	0.741
1 1 2 1 3	17	0.449	0.830
1 1 2 2 1	11	0.252	0.467
1 1 2 2 2	12	0.207	0.388
1 1 2 2 3	12	0.283	0.549
1 2 1 1 1	6	1.654	1.162
1 2 1 1 2	6	2.619	0.931
1 2 1 1 3	6	1.596	0.885
1 2 1 2 1	14	2.326	1.178
1 2 1 2 2	15	2.386	1.322
1 2 1 2 3	14	1.624	1.088
1 2 2 1 1	18	1.719	1.055
1 2 2 1 2	16	1.363	1.185
1 2 2 1 3	17	0.909	1.304
1 2 2 2 1	12	0.149	0.359
1 2 2 2 2	11	0.452	0.781
1 2 2 2 3	12	0.384	0.775
2 1 1 1 1	3	0.462	0.400
2 1 1 1 2	9	0.584	0.606
2 1 1 1 3	6	0.183	0.449
2 1 1 2 1	4	0.173	0.347
2 1 1 2 2	6	0.693	0.620
2 1 1 2 3	6	0.000	0.000
2 1 2 1 1	9	0.398	0.493
2 1 2 1 2	15	0.073	0.284
2 1 2 1 3	15	0.000	0.000
2 1 2 2 1	19	0.212	0.493
2 1 2 2 2	24	0.087	0.311
2 1 2 2 3	23	0.060	0.200
2 2 1 1 1	7	1.821	0.663
2 2 1 1 2	9	1.532	0.829
2 2 1 1 3	9	1.218	0.601
2 2 1 2 1	6	0.876	0.765
2 2 1 2 2	6	0.865	0.697
2 2 1 2 3	6	1.122	0.697
2 2 2 1 1	15	0.765	0.875
2 2 2 1 2	15	0.139	0.287

---

2 2 2 1 3	15	0.139	0.207
2 2 2 2 1	24	0.082	0.094
2 2 2 2 2	24	0.339	0.438
2 2 2 2 3	24	0.087	0.234

---

F<sub>max</sub> for testing homogeneity of between subjects variances=Not defined



APPENDIX H

SUMMARY OF DAY VS. NIGHT DOWNRAMPING TIME DATA USED IN A WILCOXON SIGNED  
RANK TEST FOR STEELHEAD FRY (1985)

TEST NUMBER - TEST NUMBER RELATES TO THE 24 TEST DATES SHOWN IN TABLE  
VI-14

X & Y COORDINATE OF FISH - LINEAL MEASUREMENTS IN FEET FROM A POINT  
OF ORIGIN AS SHOWN IN FIGURE III-3.

NUMBER OF FISH STRANDED - NUMBER OF FRY STRANDED AT A SPECIFIC SET OF  
COORDINATES.

FISH REFERENCE COORDINATES - RADIAL MEASUREMENTS OF STRANDED FRY  
LOCATIONS FROM SPECIFIC REFERENCE POINTS  
(SEE FIGURE III-3). THESE ARE  
UNTRANSFORMED FIELD DATA.

Wilcoxon Signed-Ranks tests for the subgroup: NDATE = 802

Dependent variables	N	Mean	S.D. Diff.	T (P-Val)	Signed Ranks			Z (P-Val)
					+	-	Tie	
LOGNUM		0.922			N	5	4	8
	17		1.369	0.32 (.7512)	Mean			0.53
LOGNDAY		0.815			Rank	5.400	4.500	(.5936)

Wilcoxon Signed-Ranks tests for the subgroup: NDATE = 811

Dependent variables	N	Mean	S.D. Diff.	T (P-Val)	Signed Ranks			Z (P-Val)
					+	-	Tie	
LOGNUM		0.407			N	9	5	20
	34		0.754	0.76 (.4516)	Mean			0.66
LOGNDAY		0.309			Rank	7.000	8.400	(.5073)

Wilcoxon Signed-Ranks tests for the subgroup: NDATE = 812

Dependent variables	N	Mean	S.D. Diff.	T (P-Val)	Signed Ranks			Z (P-Val)
					+	-	Tie	
LOGNUM		0.466			N	8	6	20
	34		0.747	0.44 (.6647)	Mean			0.47
LOGNDAY		0.410			Rank	7.500	7.500	(.6371)

Wilcoxon Signed-Ranks tests for the subgroup: NDATE = 816

Dependent variables	N	Mean	S.D. Diff.	T (P-Val)	Signed Ranks			Z (P-Val)
					+	-	Tie	
LOGNUM		0.132			N	2	6	23
	31		0.411	1.15 (.2577)	Mean			0.99
LOGNDAY		0.217			Rank	5.500	4.167	(.3204)

Wilcoxon Signed-Ranks tests

Dependent variables	N	Mean	S.D. Diff.	T (P-Val)	Signed Ranks			Z (P-Val)
					+	-	Tie	
LOGNUM		0.426			N	24	21	71
	116		0.796	0.52 (.6061)	Mean			0.40
LOGNDAY		0.388			Rank	23.021	22.976	(.6918)

Wilcoxon Signed-Ranks tests for the subgroup: NDATE = B02

Dependent variables	N	Mean	S.D. Diff.	T (P-Val)	Signed Ranks		Tie	Z (P-Val)
					+	-		
NUMFISH	17	5.412	16.755	0.32 (1.7542)	N 5	4	8	0.18 (1.8588)
NUMDAY		4.118			Mean Rank 4.200	6.000		

Wilcoxon Signed-Ranks tests for the subgroup: NDATE = B11

Dependent variables	N	Mean	S.D. Diff.	T (P-Val)	Signed Ranks		Tie	Z (P-Val)
					+	-		
NUMFISH	34	0.941	2.249	0.46 (.6503)	N 9	5	20	0.54 (.5905)
NUMDAY		0.765			Mean Rank 6.778	8.800		

Wilcoxon Signed-Ranks tests for the subgroup: NDATE = B12

Dependent variables	N	Mean	S.D. Diff.	T (P-Val)	Signed Ranks		Tie	Z (P-Val)
					+	-		
NUMFISH	34	1.176	4.378	0.63 (.5351)	N 8	6	20	0.03 (.9748)
NUMDAY		1.647			Mean Rank 6.500	8.833		

Wilcoxon Signed-Ranks tests for the subgroup: NDATE = B16

Dependent variables	N	Mean	S.D. Diff.	T (P-Val)	Signed Ranks		Tie	Z (P-Val)
					+	-		
NUMFISH	31	0.258	0.894	1.42 (.1651)	N 2	6	23	1.35 (.1756)
NUMDAY		0.484			Mean Rank 4.250	4.583		

Wilcoxon Signed-Ranks tests

Dependent variables	N	Mean	S.D. Diff.	T (P-Val)	Signed Ranks		Tie	Z (P-Val)
					+	-		
NUMFISH	116	1.483	6.822	0.07 (.9459)	N 24	21	71	0.09 (.9322)
NUMDAY		1.440			Mean Rank 21.250	25.000		

APPENDIX I

FRY STRANDING LOCATION VERSUS GRAVEL BAR FEATURES FOR STEELHEAD FRY GRAVEL  
BAR STRANDING (1985)

LEGEND



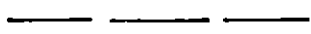
STRANDED FRY



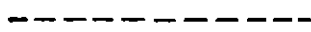
HIGH/HIGH WATERLINE



HIGH WATER



LOW WATERLINE



LOW/LOW WATERLINE



AUTO PART DEBRIS



DEBRIS PILE



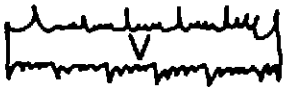
POTHOLE



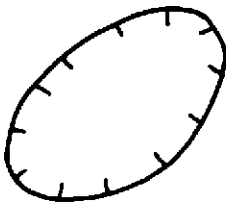
LOG



ROCK



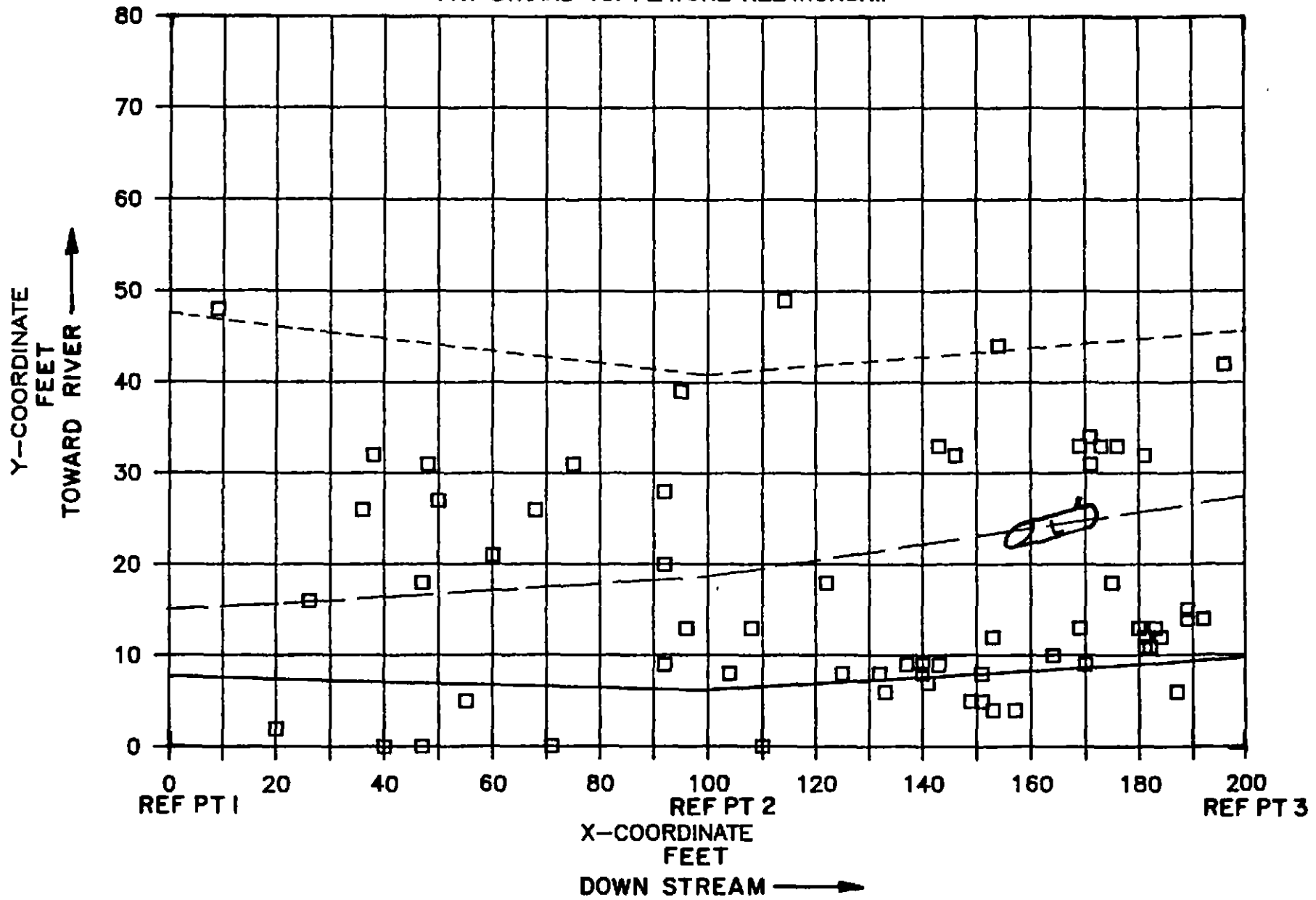
VEGETATION LINE



CHANNEL DEPRESSION

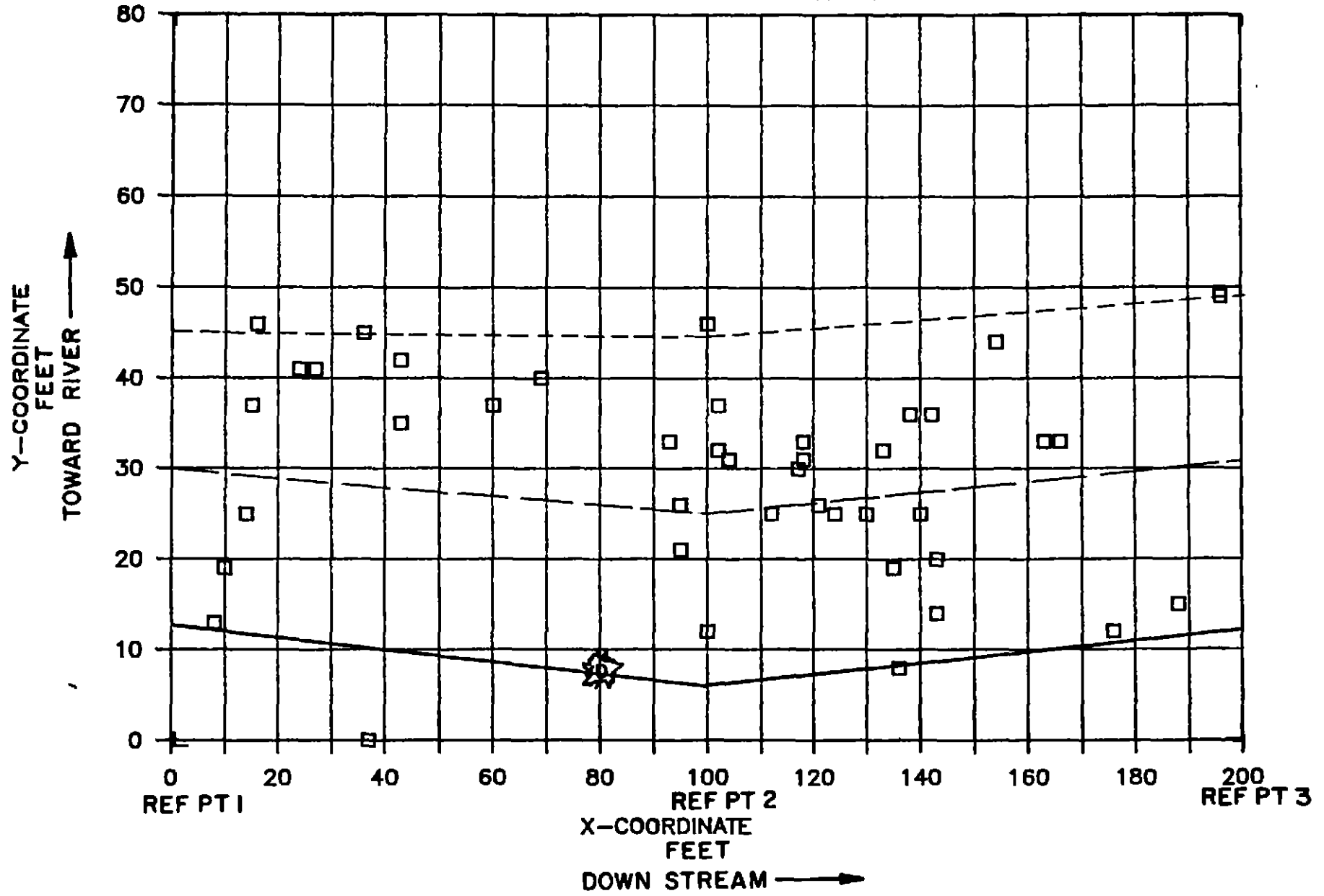
SUMMER 1985  
ROCKPORT BAR SITE 1

FRY STRAND VS. FEATURE RELATIONSHIP

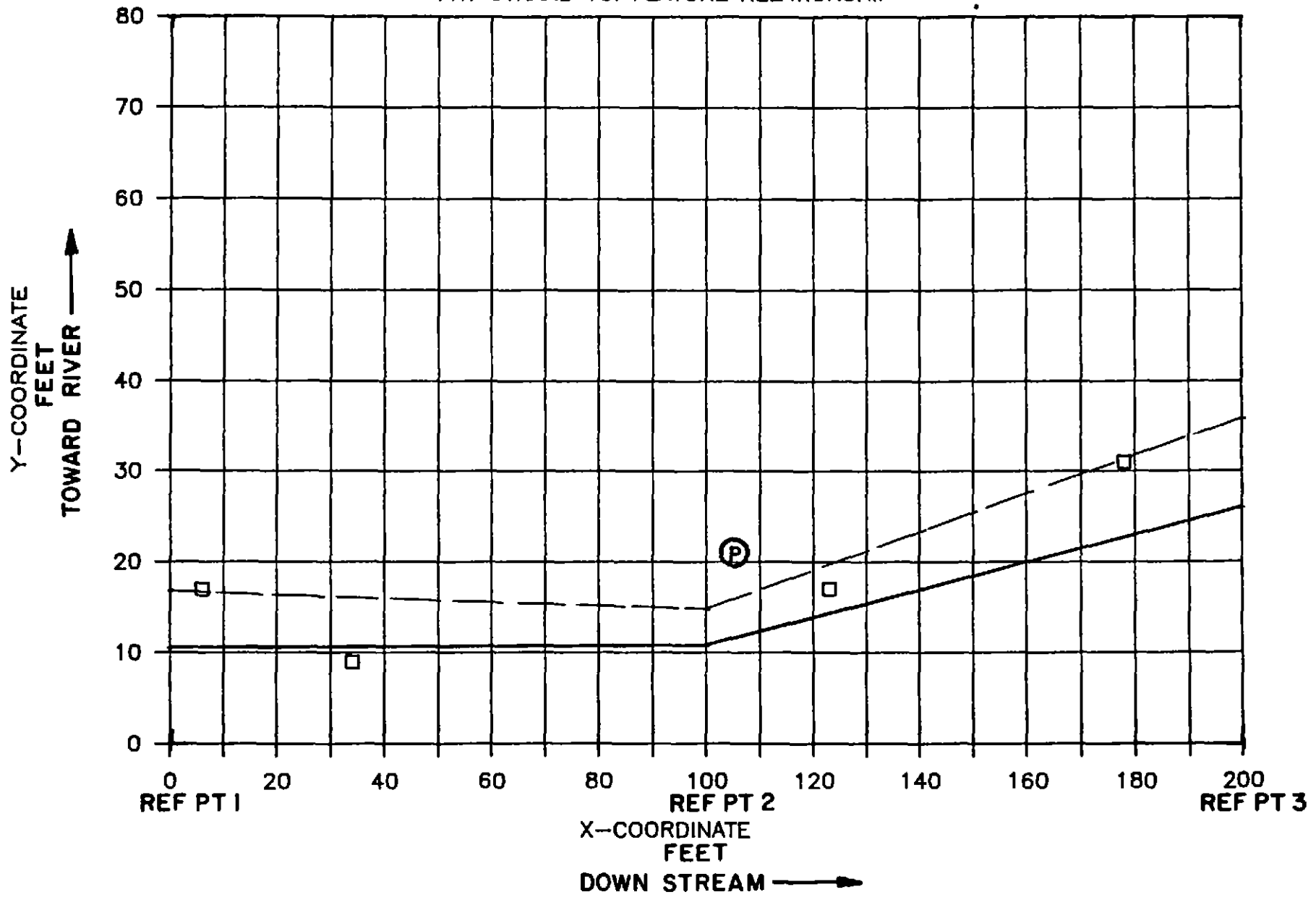


SUMMER 1985  
ROCKPORT BAR SITE 3

FRY STRAND VS. FEATURE RELATIONSHIP



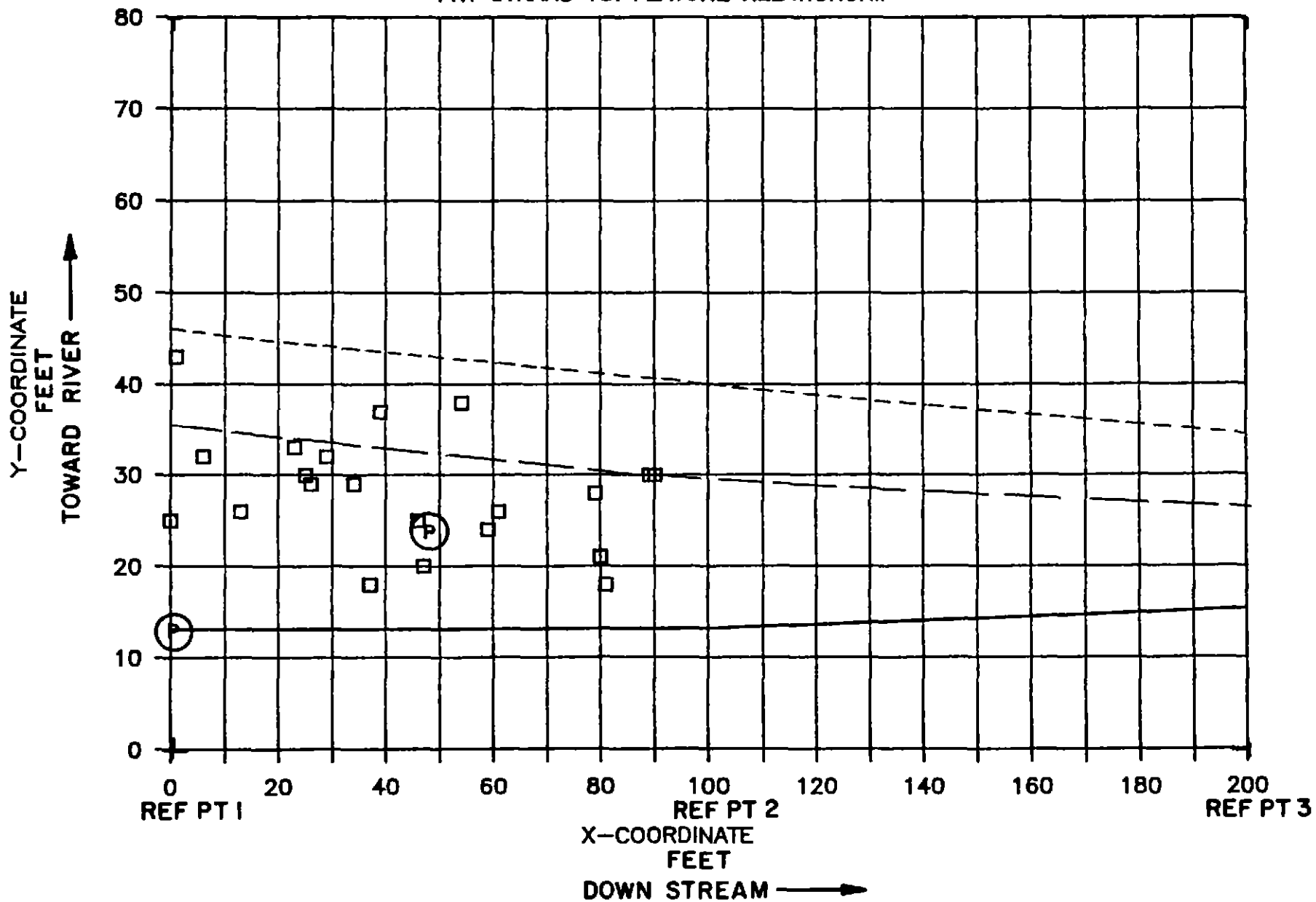
SUMMER 1985  
WAYNE SWIM SITE 1  
FRY STRAND VS. FEATURE RELATIONSHIP





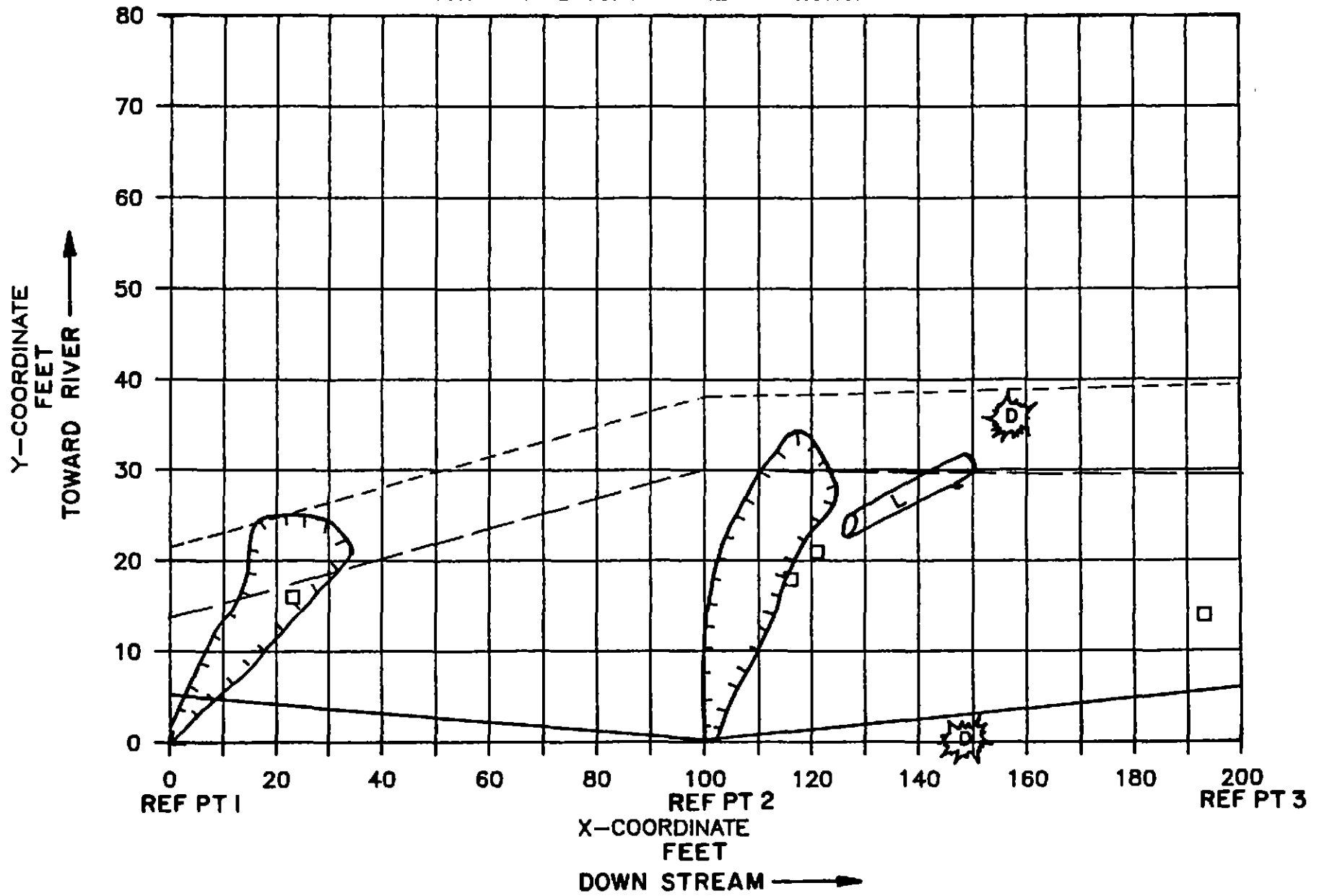
SUMMER 1985  
FORBIDDEN BAR SITE 1

FRY STRAND VS. FEATURE RELATIONSHIP

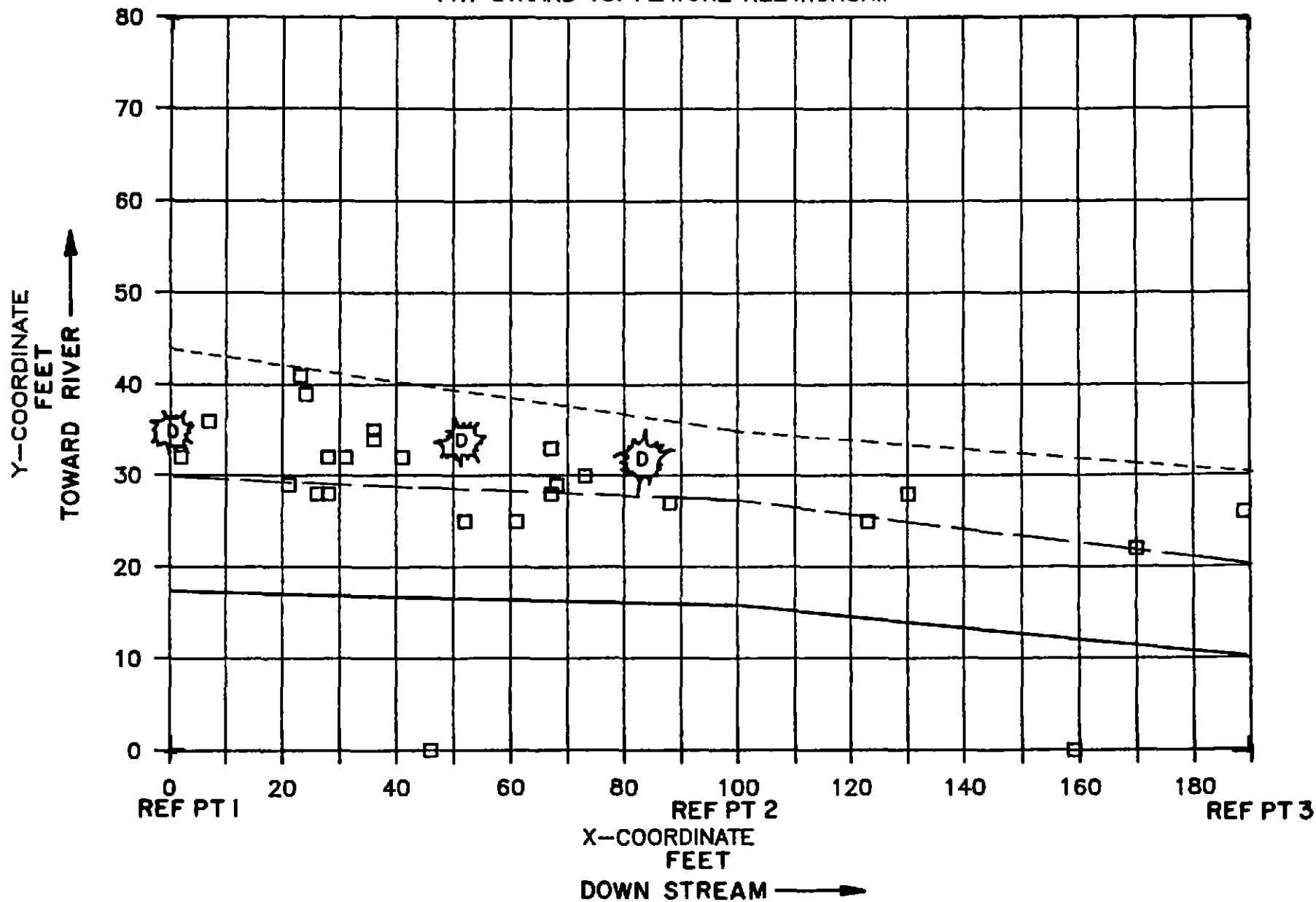


SUMMER 1985  
FORBIDDEN BAR SITE 3

FRY STRAND VS. FEATURE RELATIONSHIP

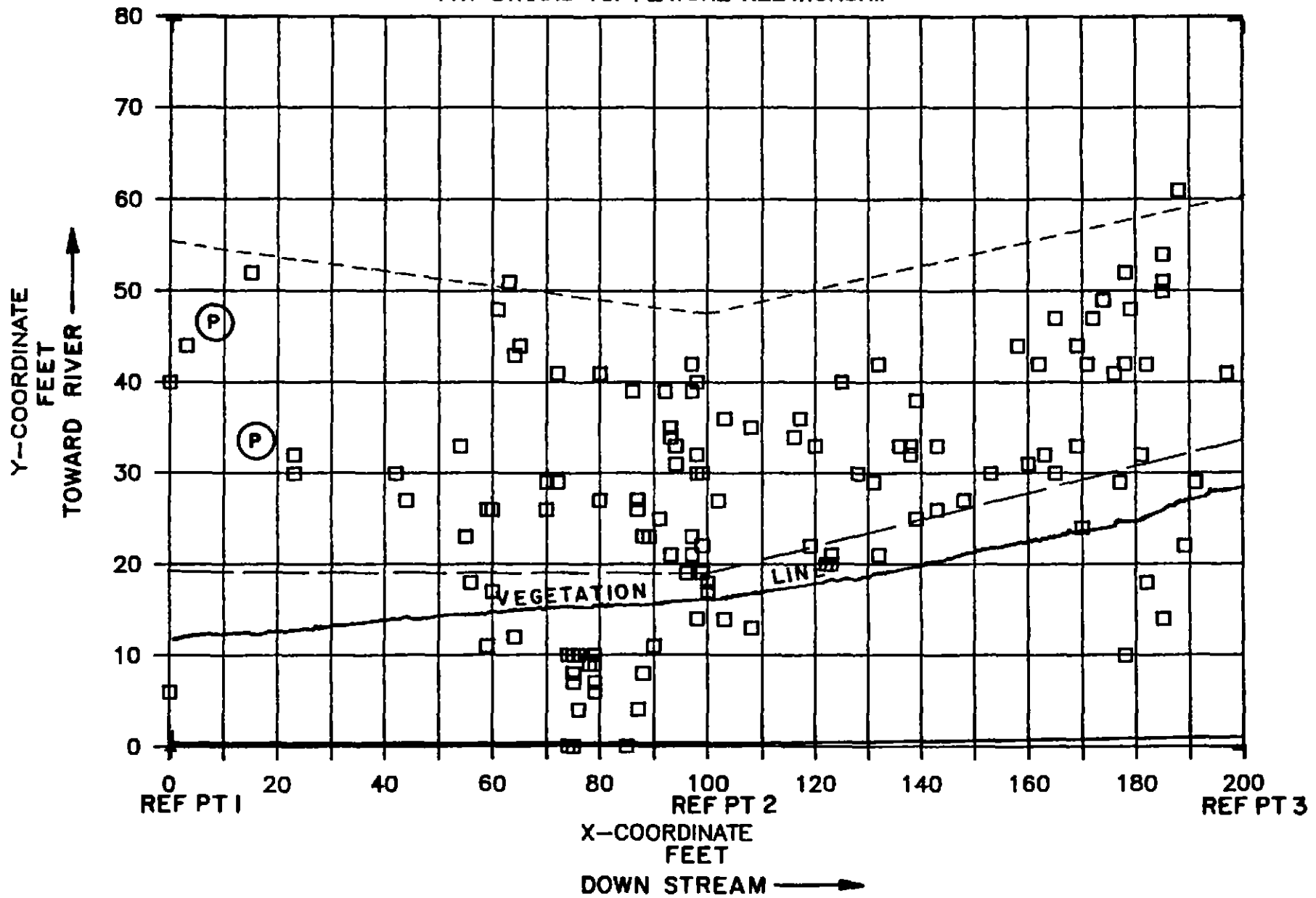


SUMMER 1985  
BIG EDDY STATION 1  
FRY STRAND VS. FEATURE RELATIONSHIP



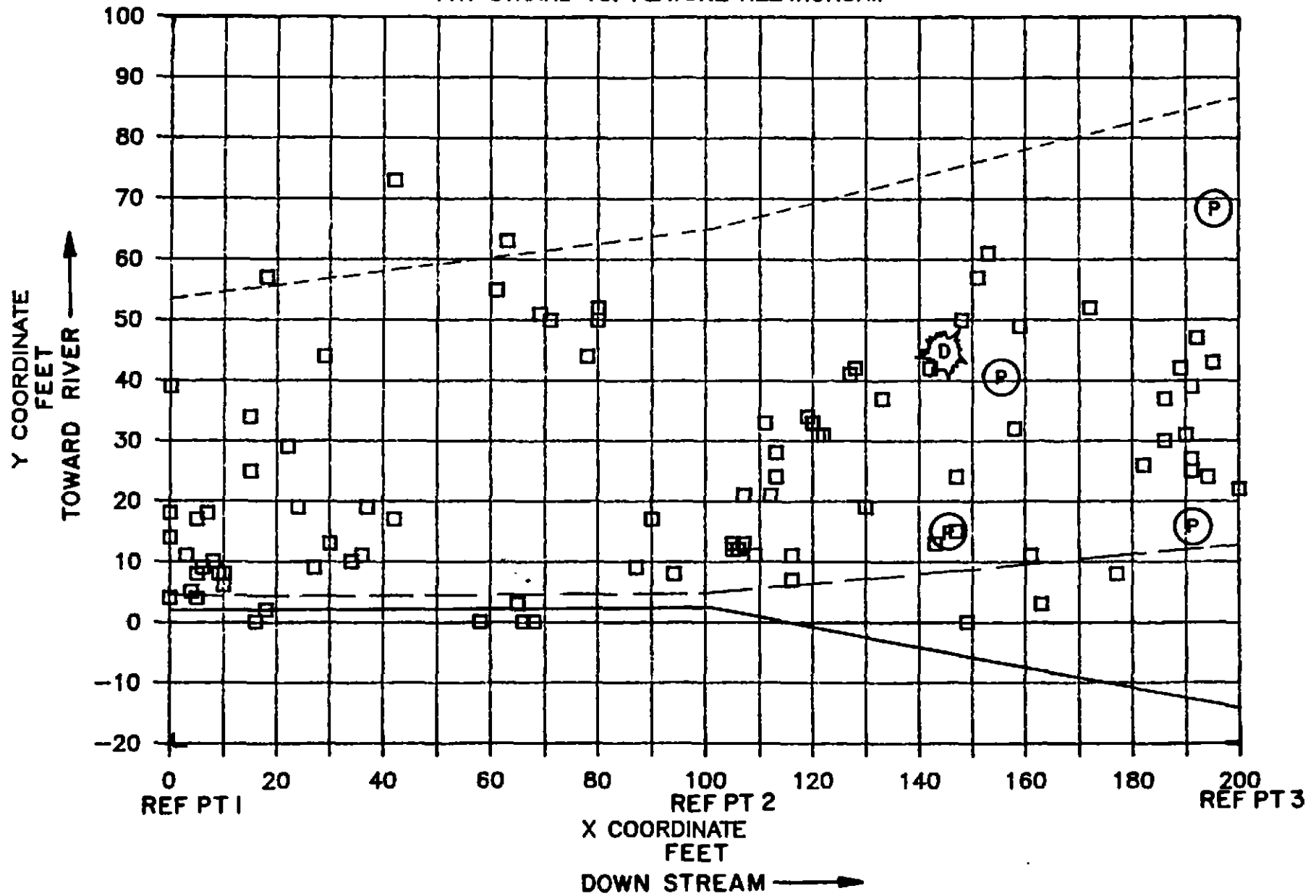
SUMMER 1985  
MARBLEMOUNT BAR SITE 1

FRY STRAND VS. FEATURE RELATIONSHIP



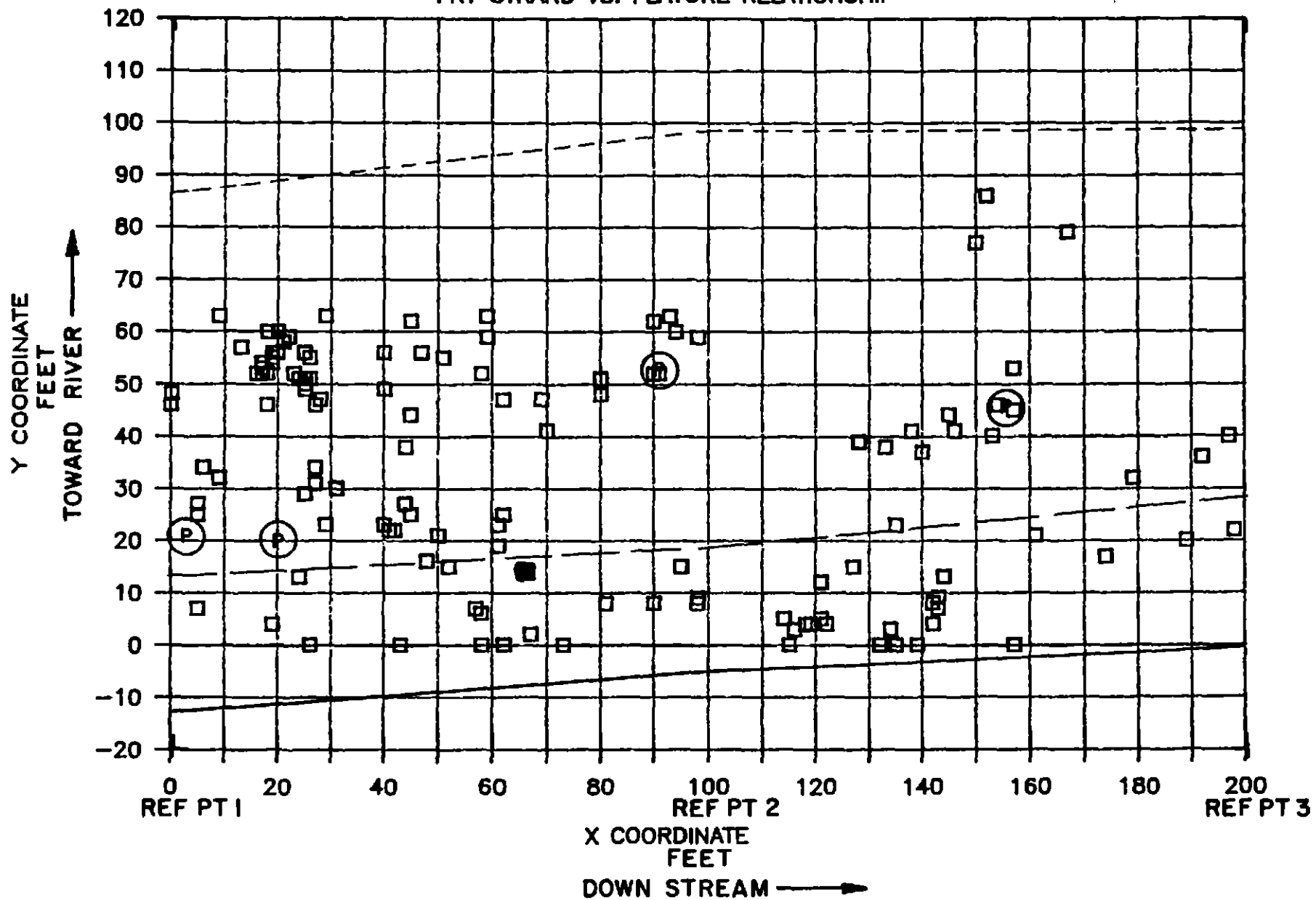
SUMMER 1985  
MARBLEMOUNT BAR SITE 2

FRY STRAND VS. FEATURE RELATIONSHIP



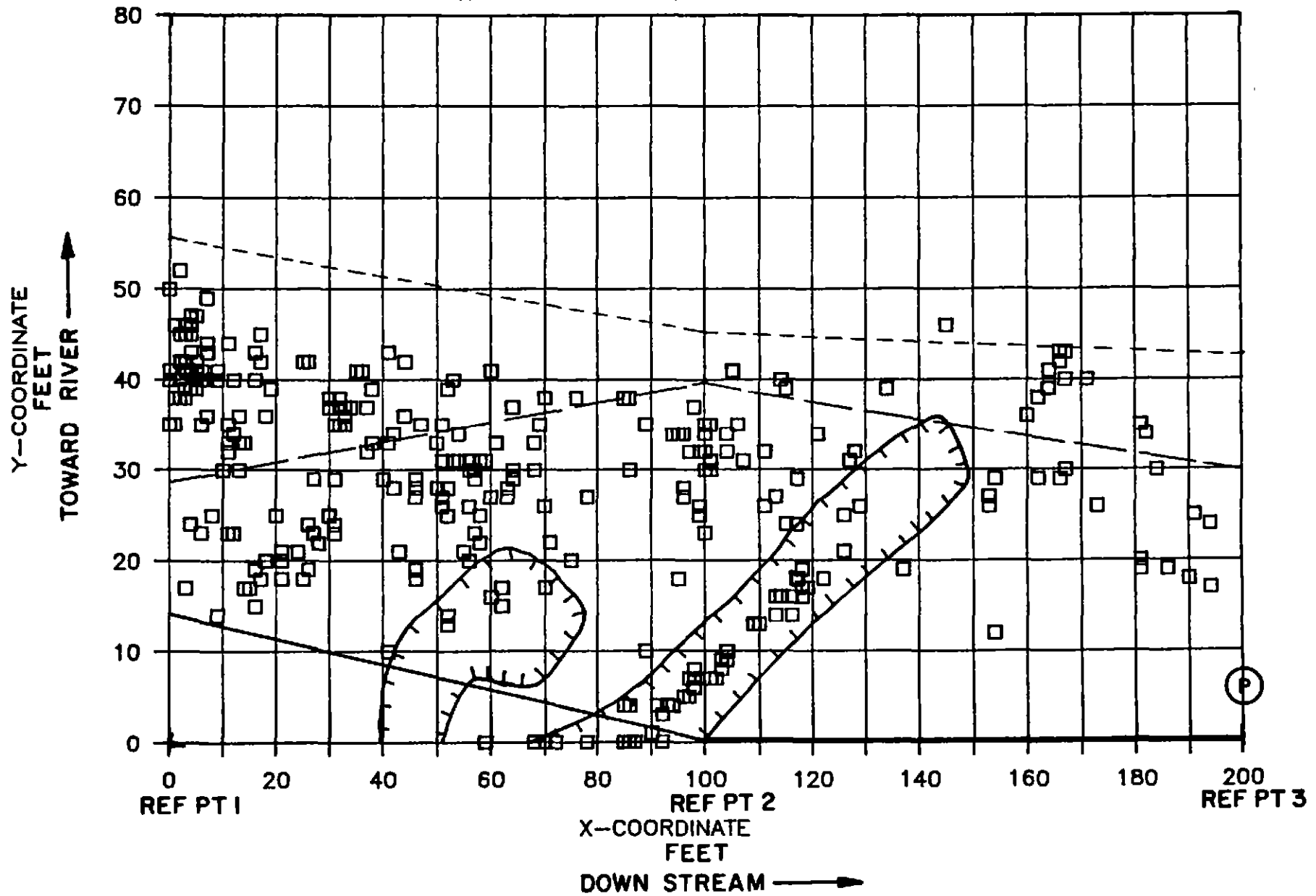
SUMMER 1985  
MARBLEMOUNT BAR SITE 3

FRY STRAND VS. FEATURE RELATIONSHIP



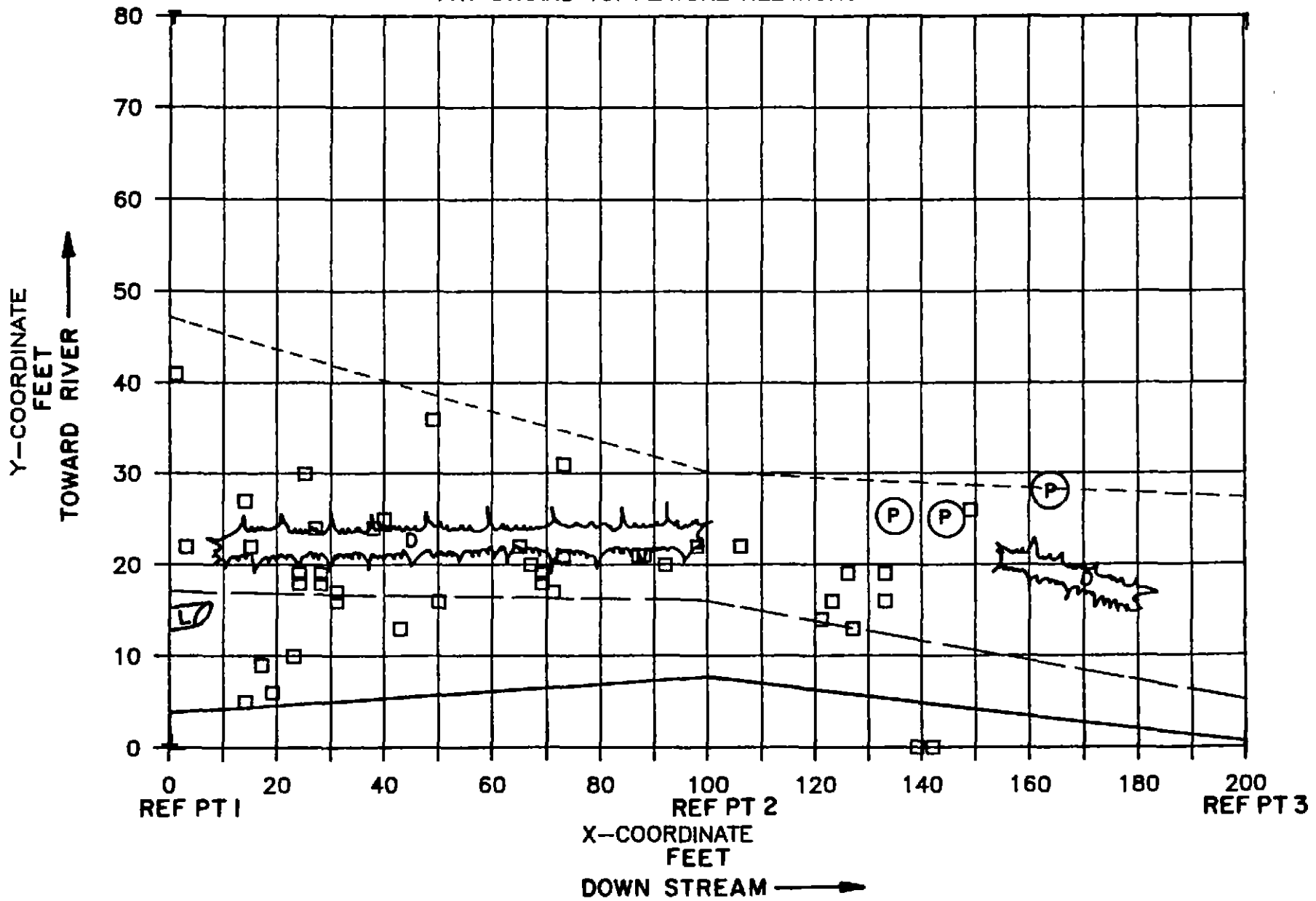
SUMMER 1985  
DIOBSUD CREEK SITE 1

FRY STRAND VS. FEATURE RELATIONSHIP



SUMMER 1985  
DIOBSUD CREEK SITE 2

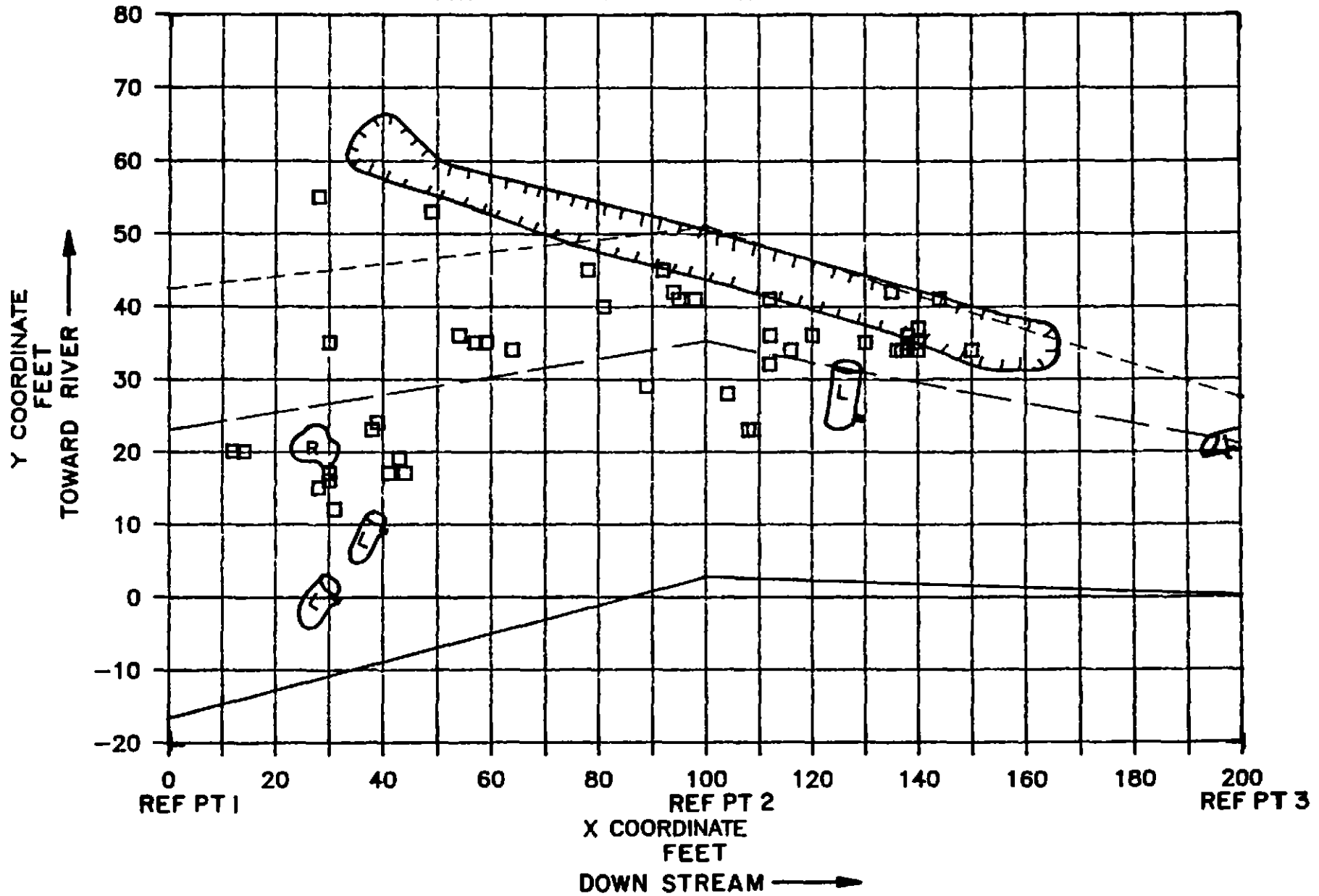
FRY STRAND VS. FEATURE RELATIONSHIP





SUMMER 1985  
POINK BAR SITE 1

FRY STRAND VS. FEATURE RELATIONSHIP



APPENDIX J

FRY STRANDING LOCATIONS FOR 1,000 VERSUS 5,000 CFS DOWNRAMPING RATES

LEGEND



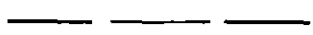
STRANDED FRY



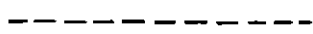
HIGH/HIGH WATERLINE



HIGH WATER



LOW WATERLINE



LOW/LOW WATERLINE



AUTO PART DEBRIS



DEBRIS PILE



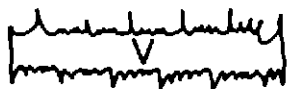
POTHOLE



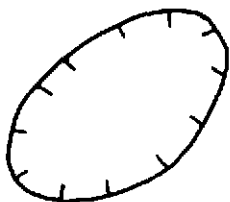
LOG



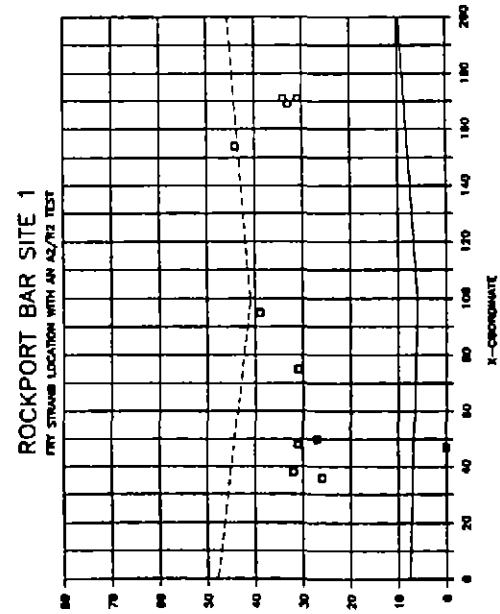
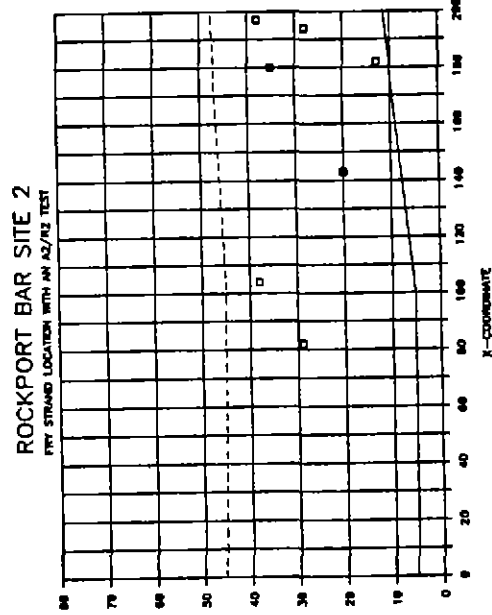
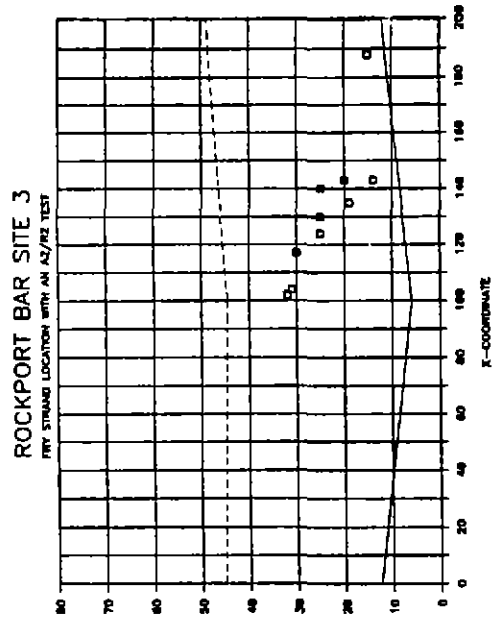
ROCK



VEGETATION LINE

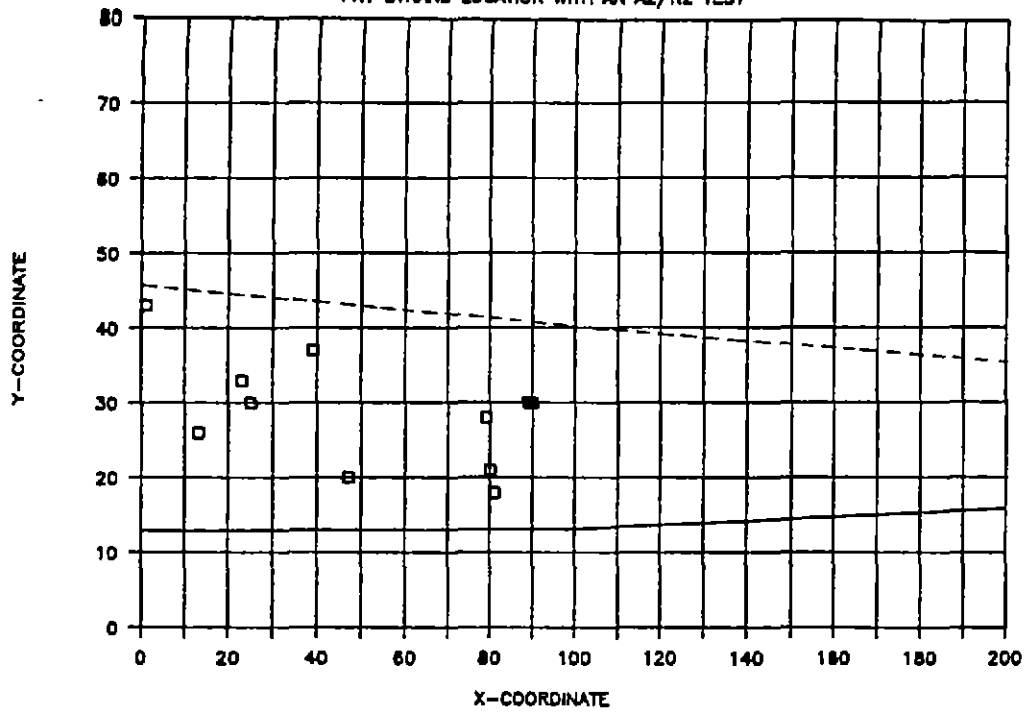


CHANNEL DEPRESSION



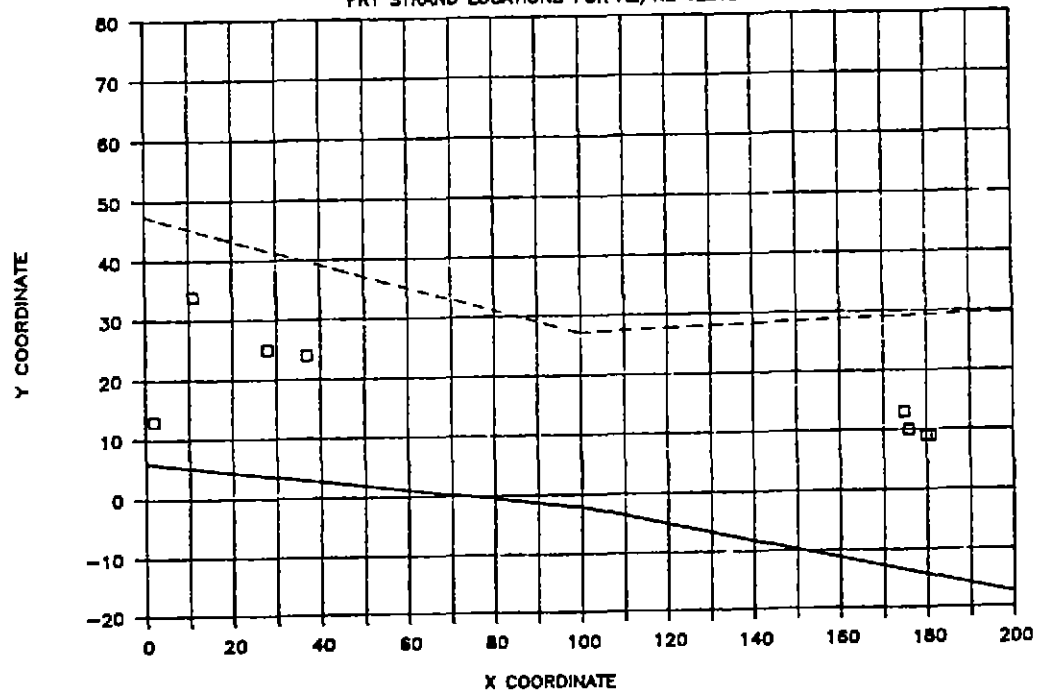
### FORBIDDEN BAR SITE 1

FRY STRAND LOCATION WITH AN A2/R2 TEST



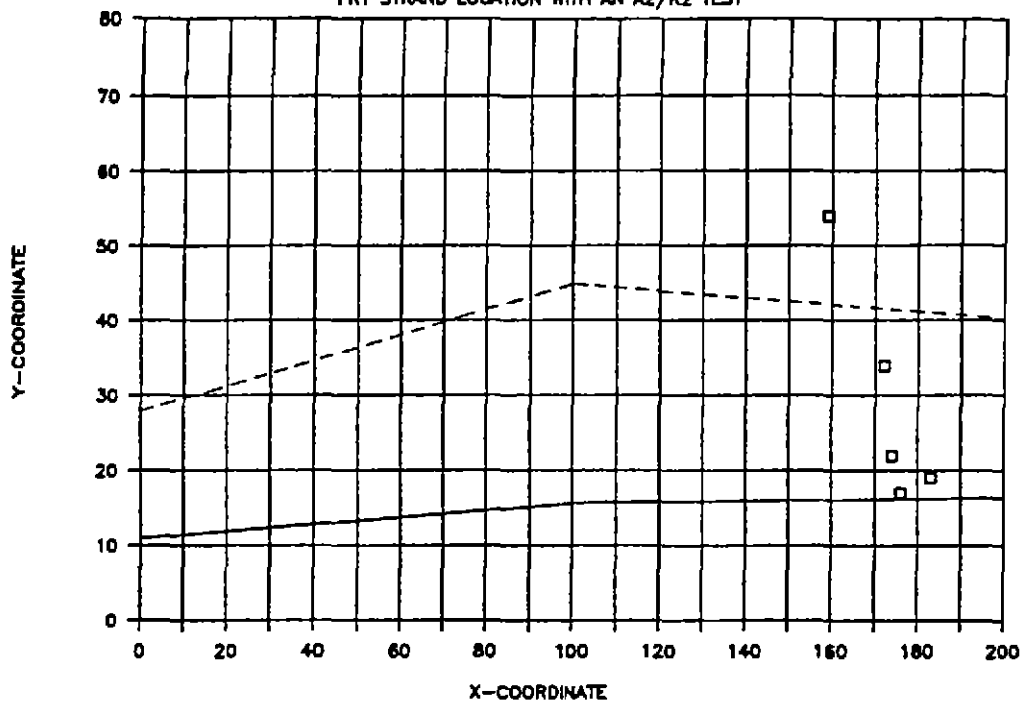
### INACCESSIBLE ISLAND SITE 1

FRY STRAND LOCATIONS FOR A2/R2 TESTS



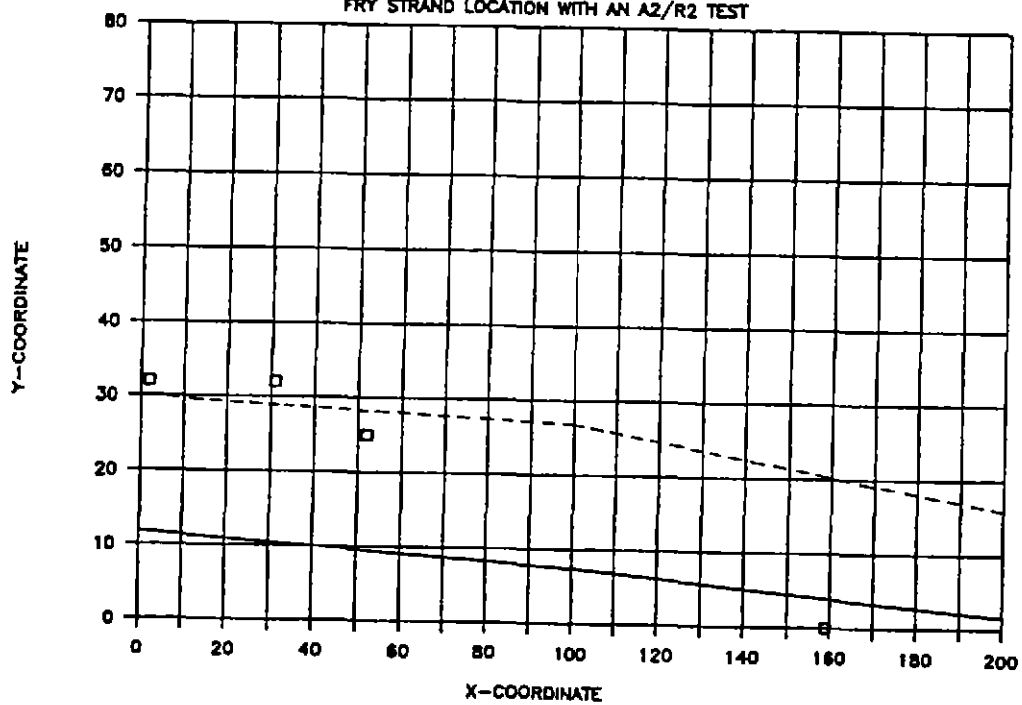
### BADSPOT BAR SITE 2

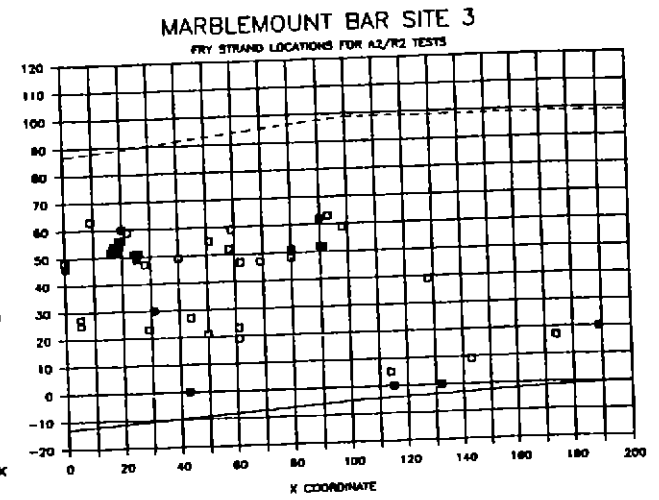
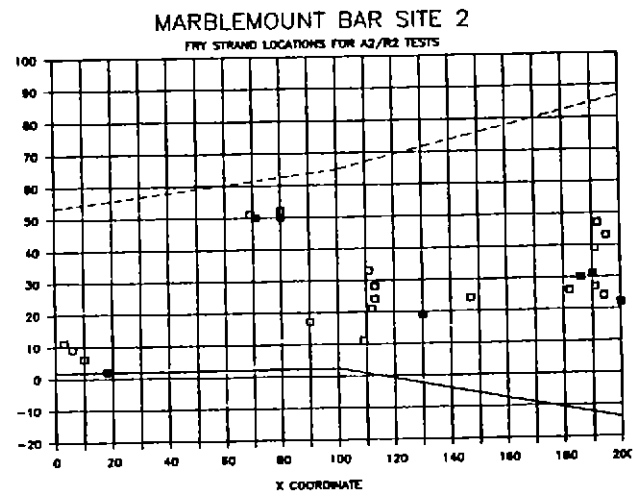
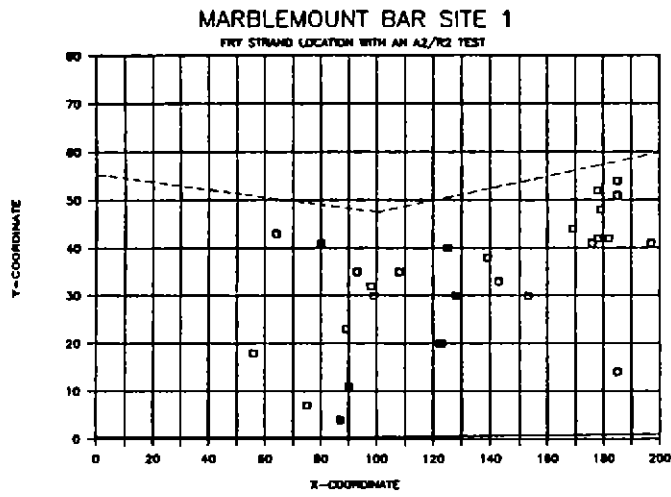
FRY STRAND LOCATION WITH AN A2/R2 TEST



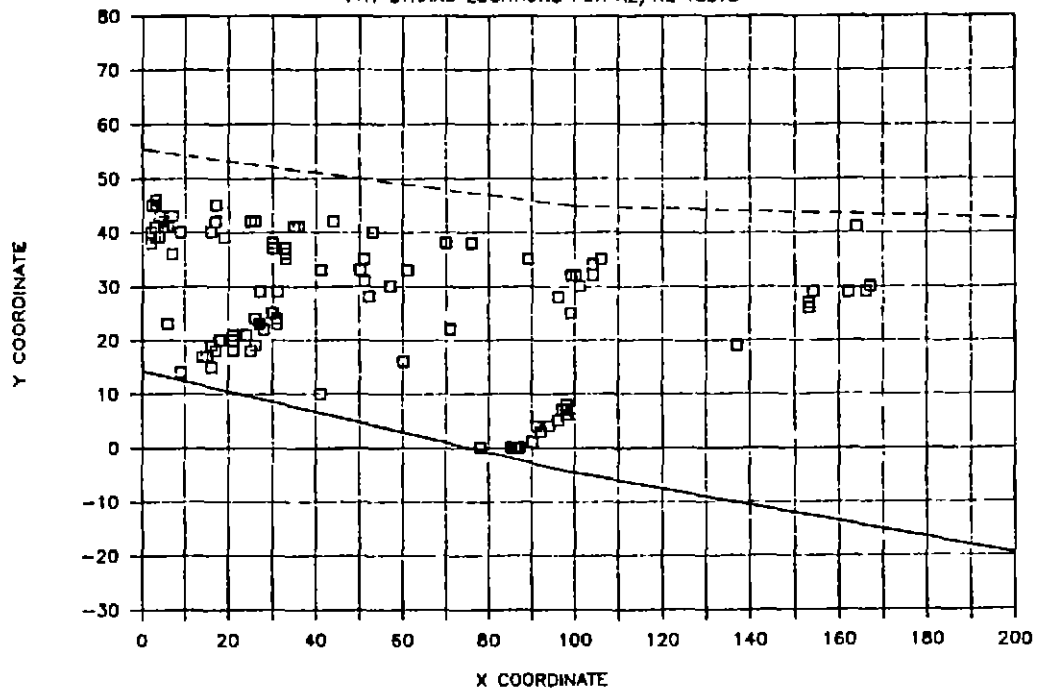
### BIG EDDY BAR SITE 2

FRY STRAND LOCATION WITH AN A2/R2 TEST

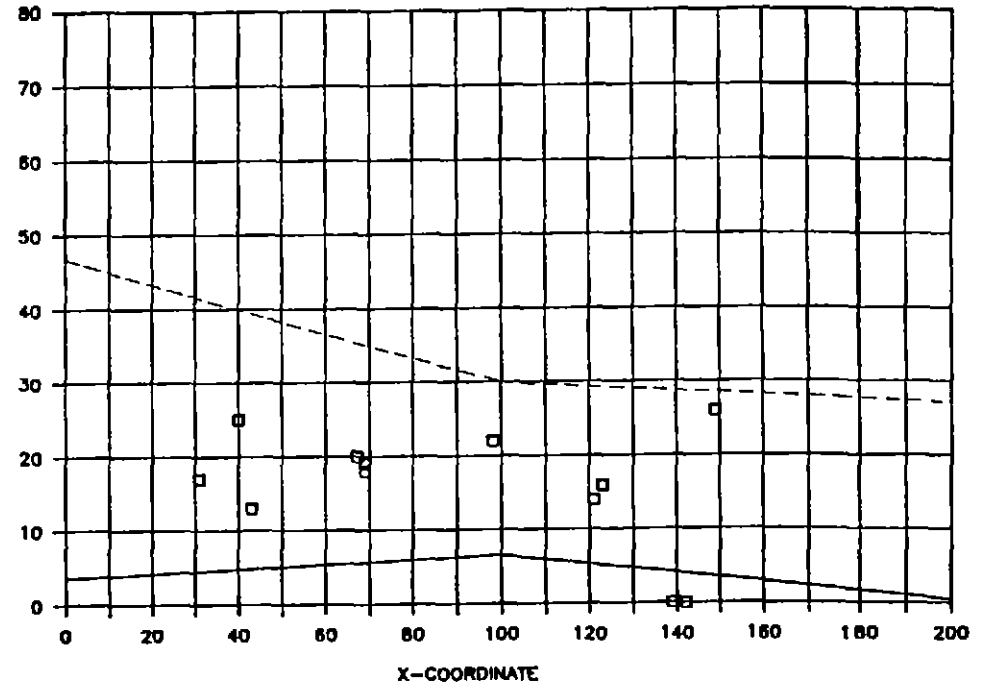




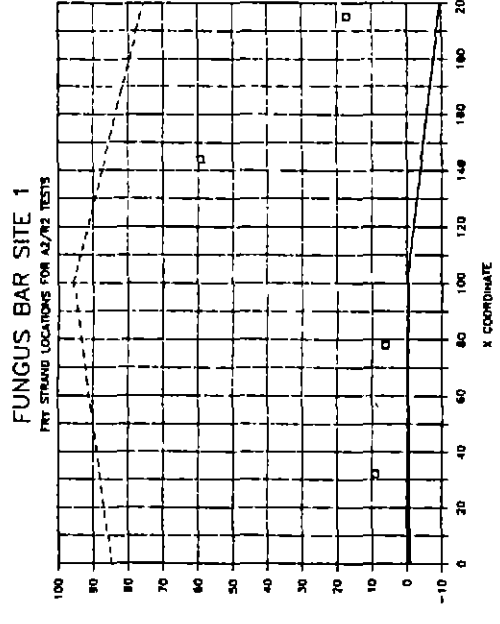
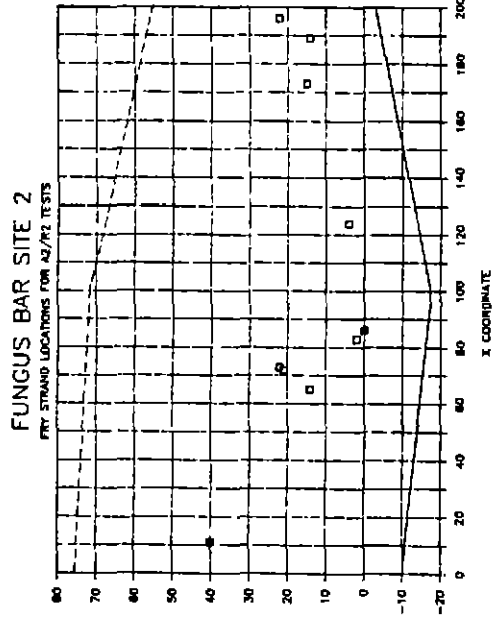
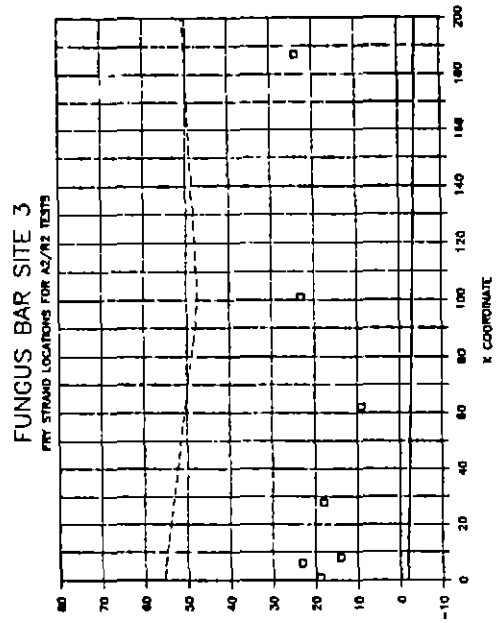
DI OBSUD CREEK SITE 1  
 FRY STRAND LOCATIONS FOR A2/R2 TESTS

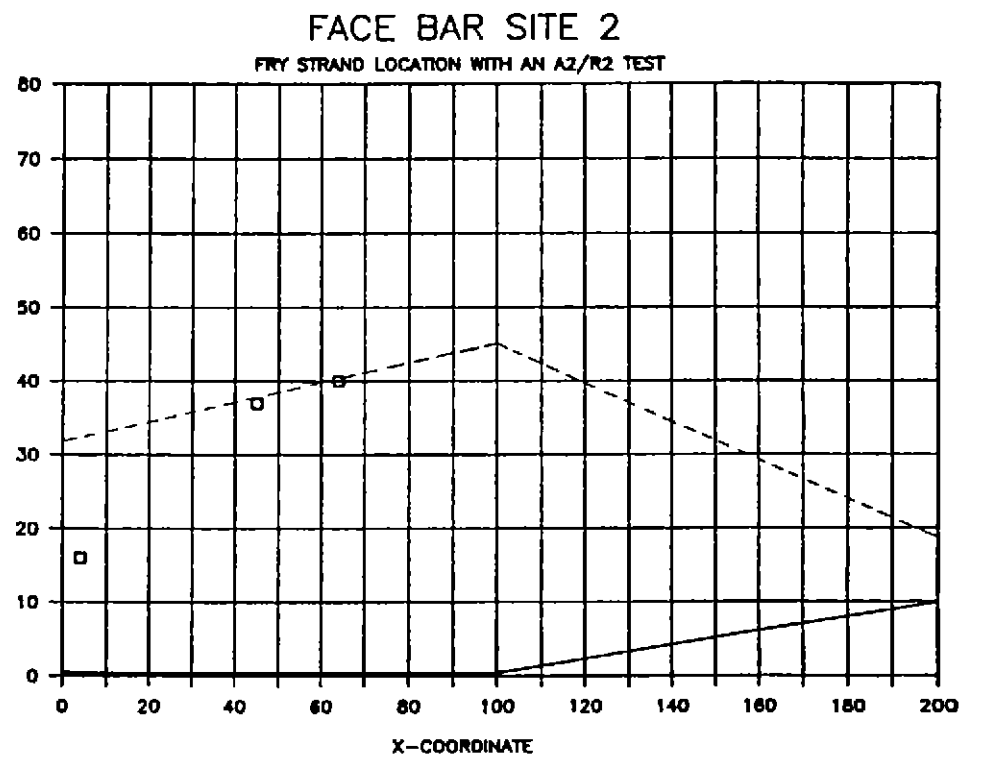
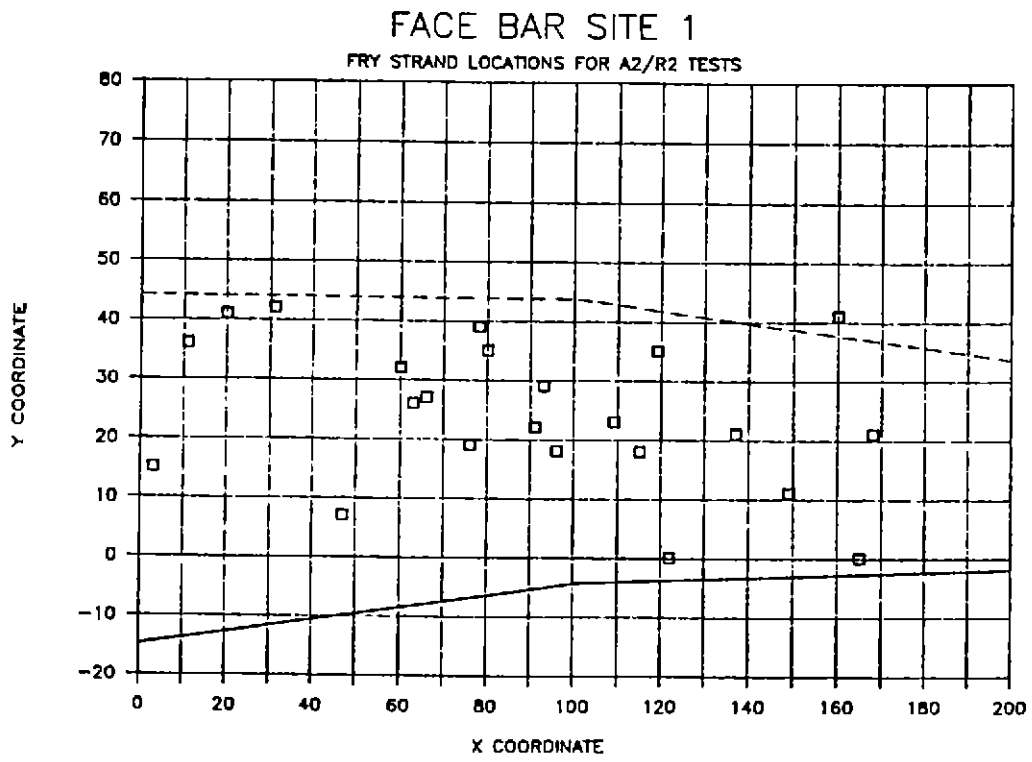


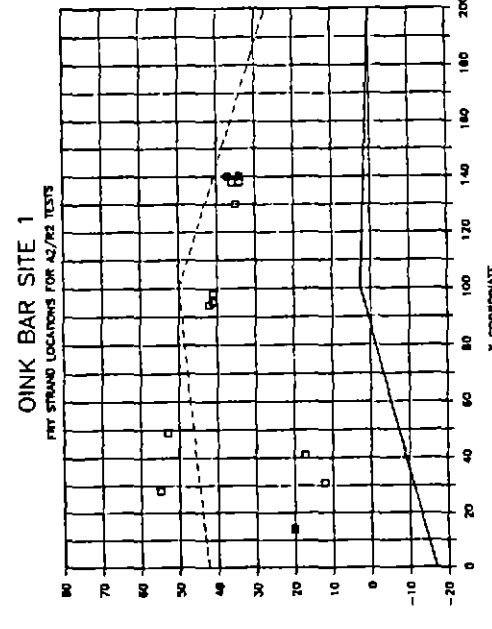
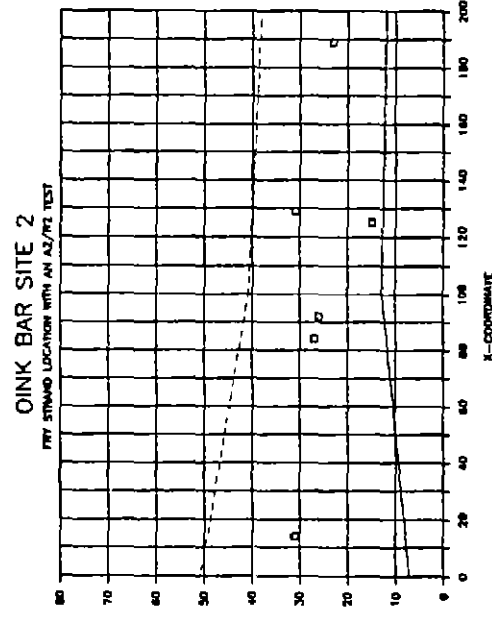
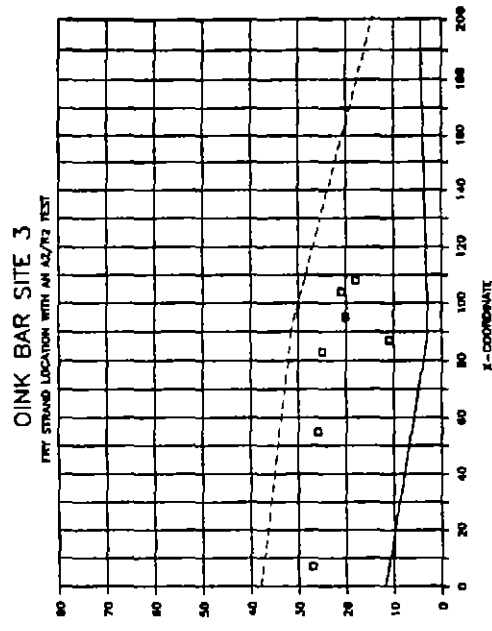
DI OBSUD CREEK BAR SITE 2  
 FRY STRAND LOCATION WITH AN A2/R2 TEST

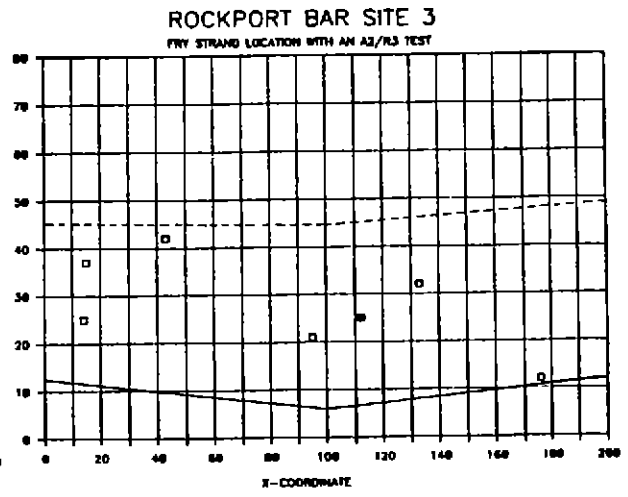
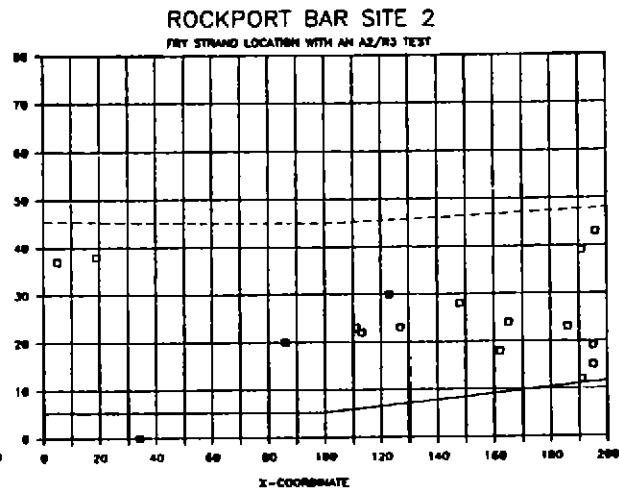
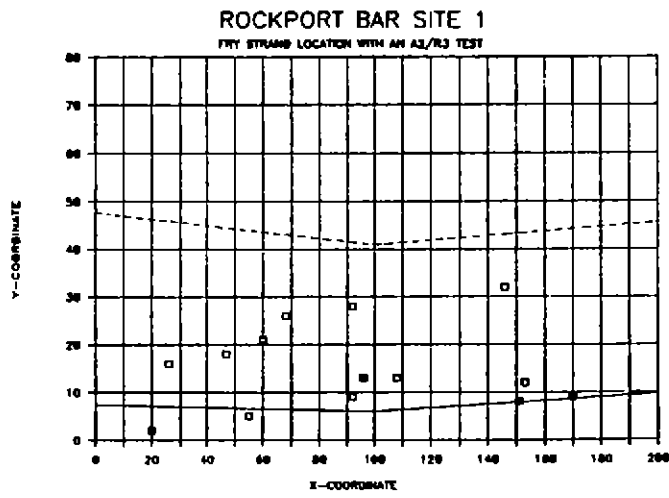


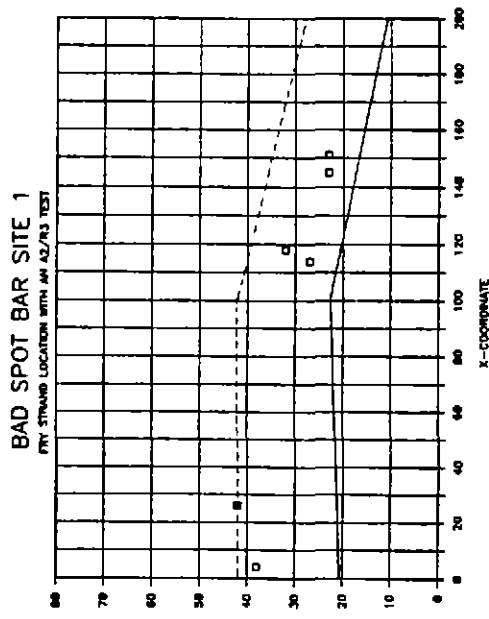
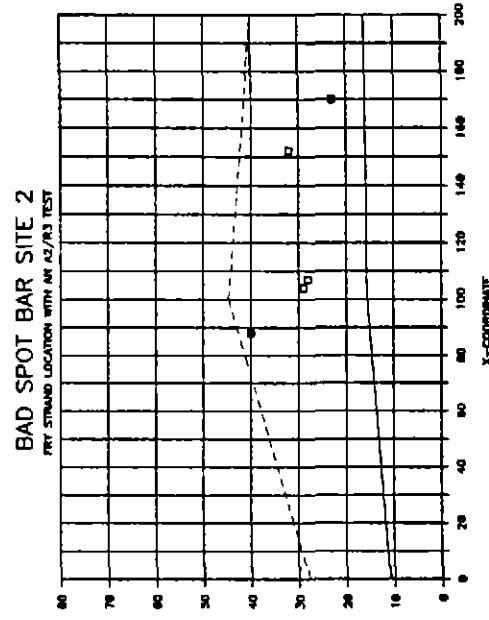
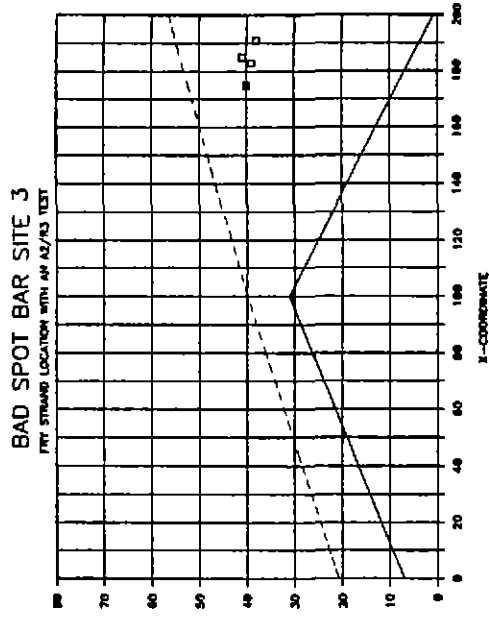




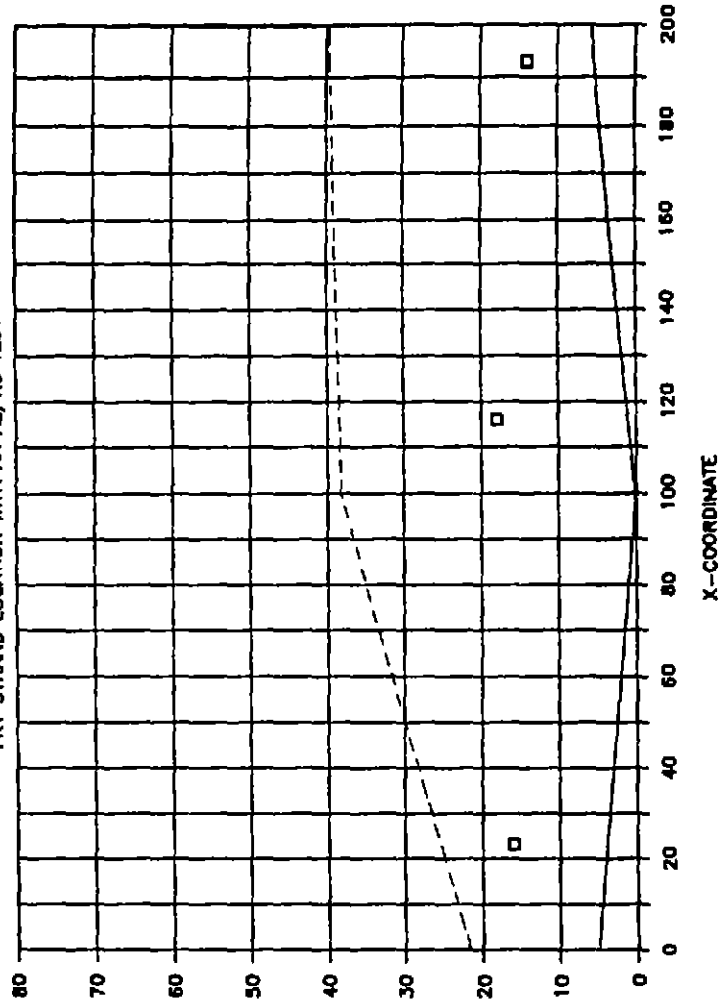




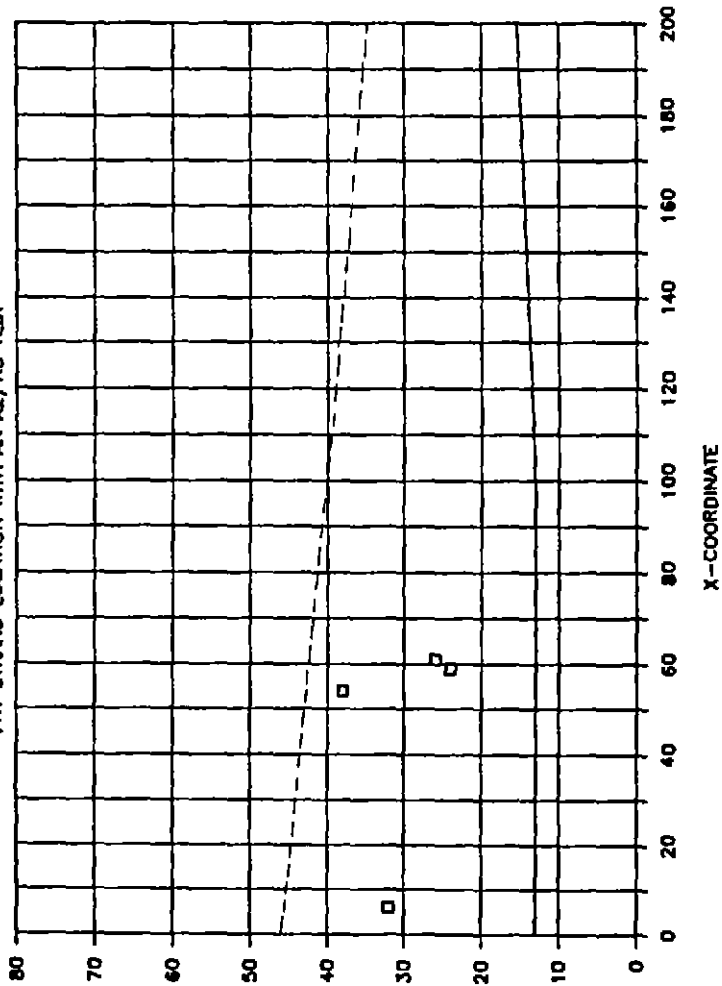




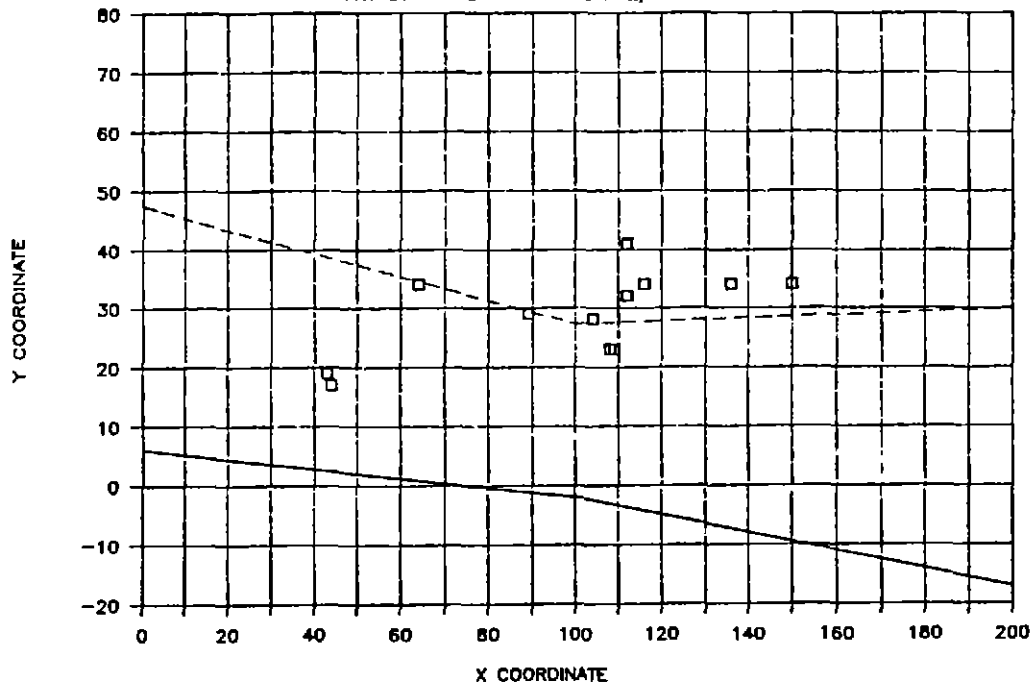
FORBIDDEN BAR SITE 3  
FRY STRAND LOCATION WITH AN A2/R3 TEST



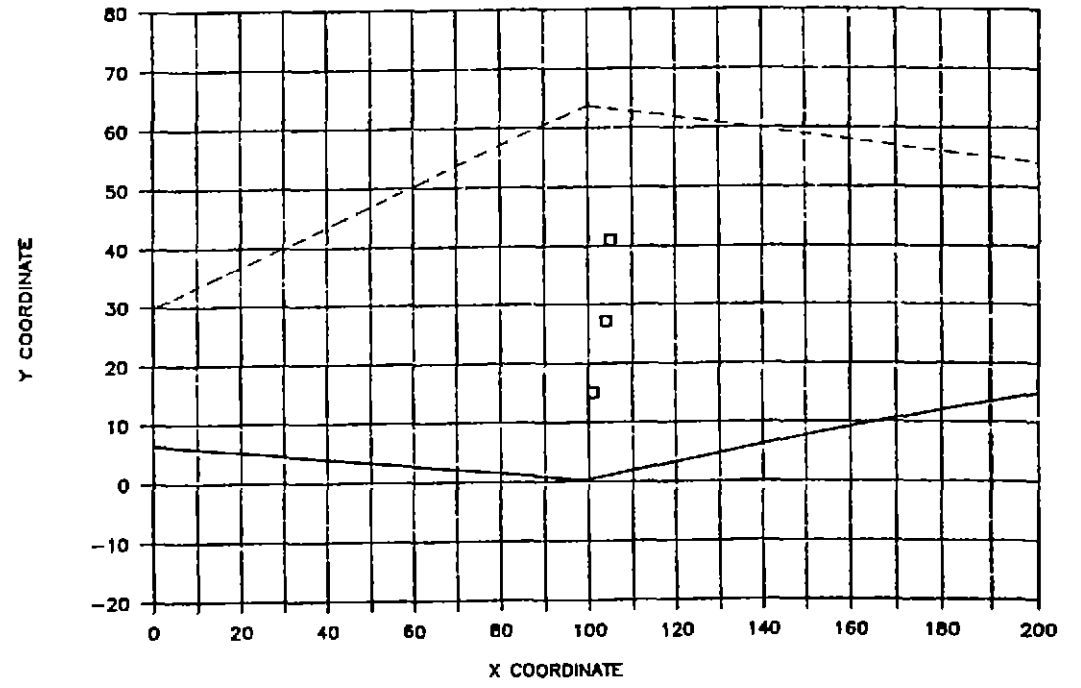
FORBIDDEN BAR SITE 1  
FRY STRAND LOCATION WITH AN A2/R3 TEST



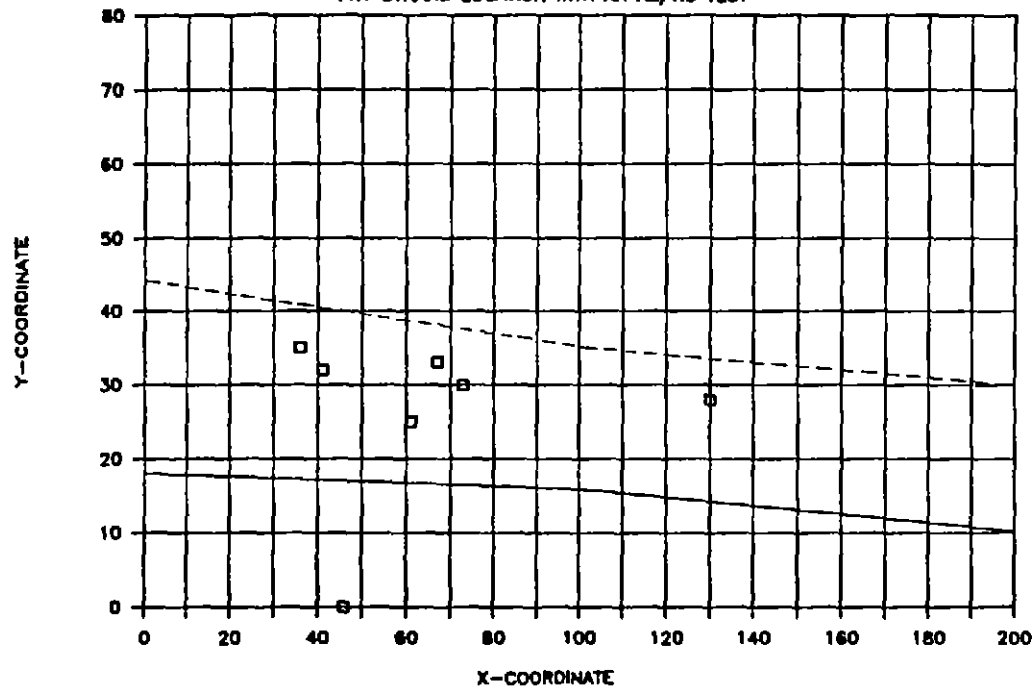
INACCESSIBLE ISLAND SITE 1  
 FRY STRAND LOCATIONS FOR A2/R3 TESTS



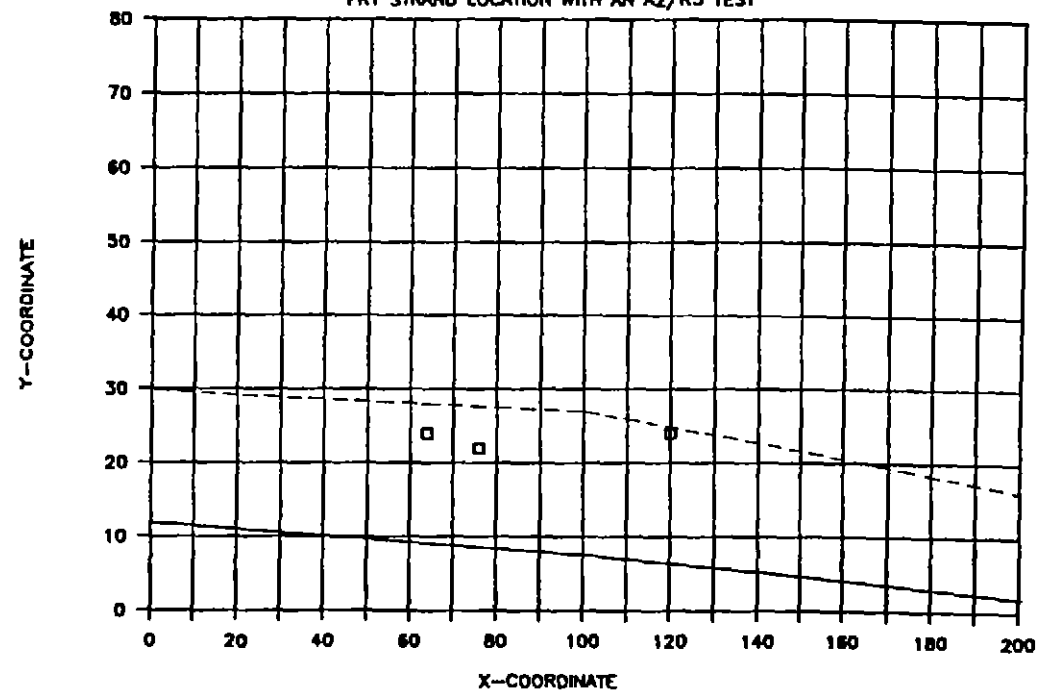
INACCESSIBLE ISLAND SITE 2  
 FRY STRAND LOCATIONS FOR A2/R3 TESTS



BIG EDDY BAR SITE 1  
 FRY STRAND LOCATION WITH AN A2/R3 TEST



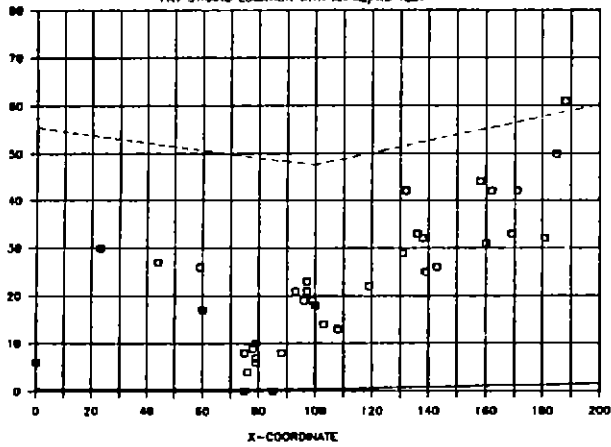
BIG EDDY BAR SITE 2  
 FRY STRAND LOCATION WITH AN A2/R3 TEST





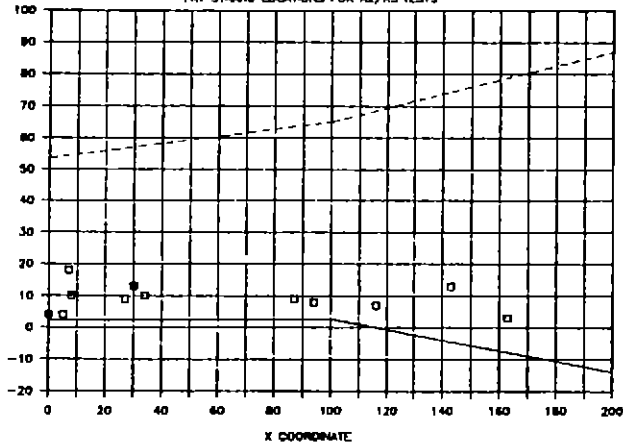
MARBLEMOUNT BAR SITE 1

FRY STRAND LOCATION WITH AN A2/R3 TEST



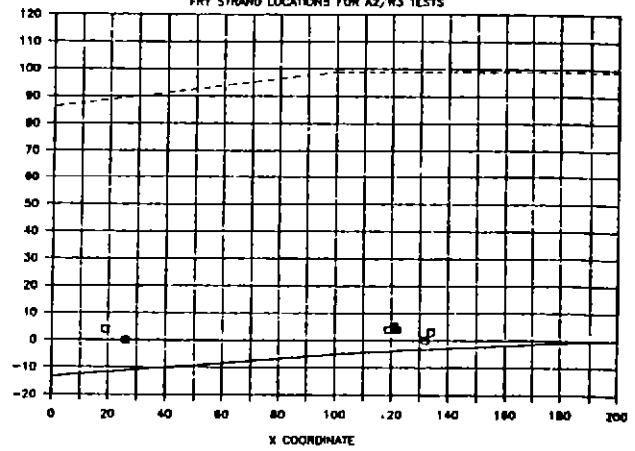
MARBLEMOUNT BAR SITE 2

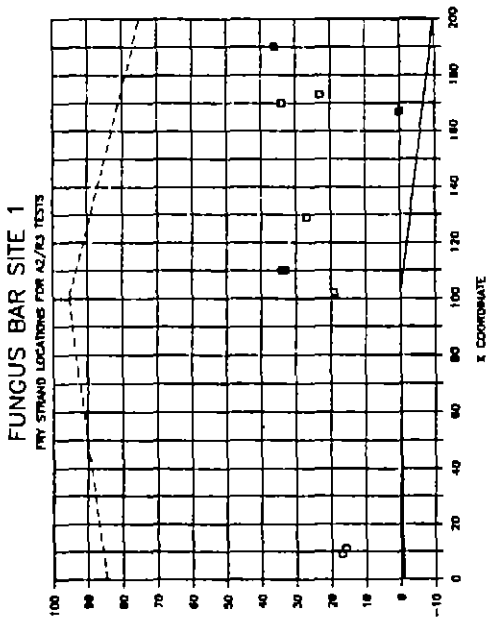
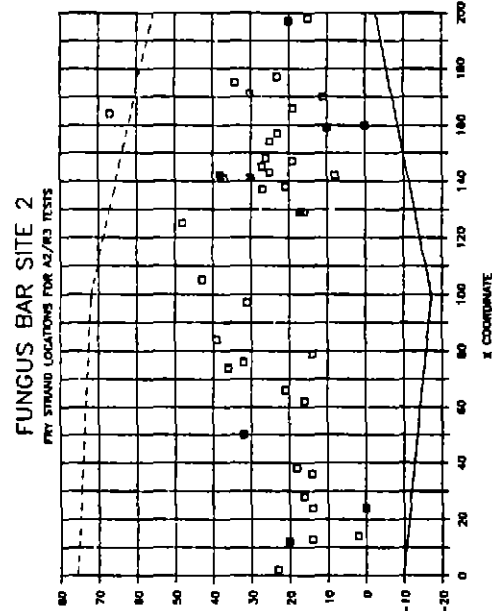
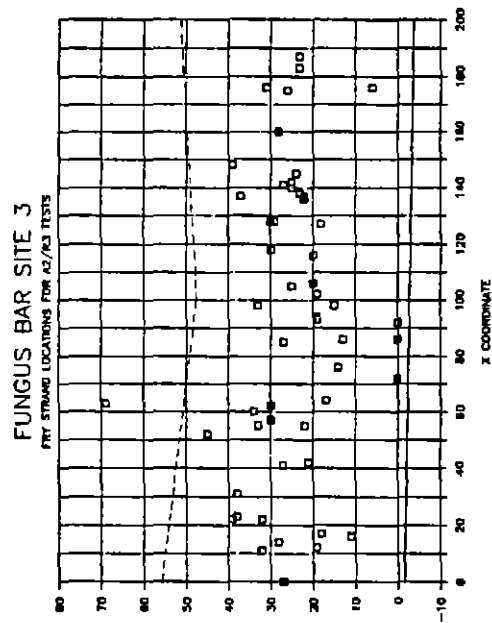
FRY STRAND LOCATIONS FOR A2/R3 TESTS



MARBLEMOUNT BAR SITE 3

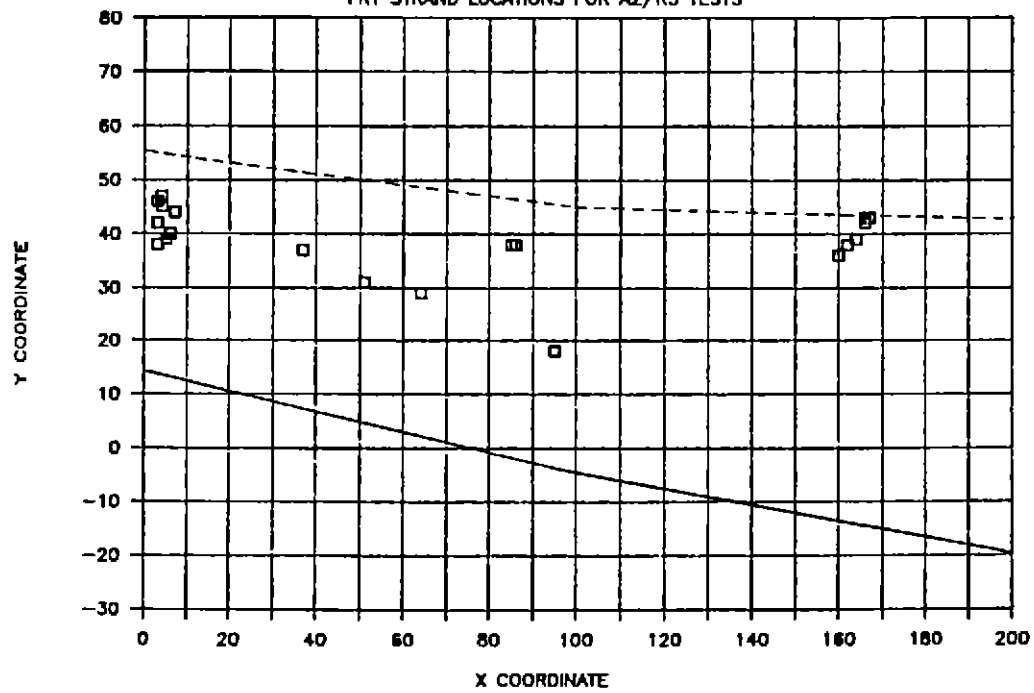
FRY STRAND LOCATIONS FOR A2/R3 TESTS



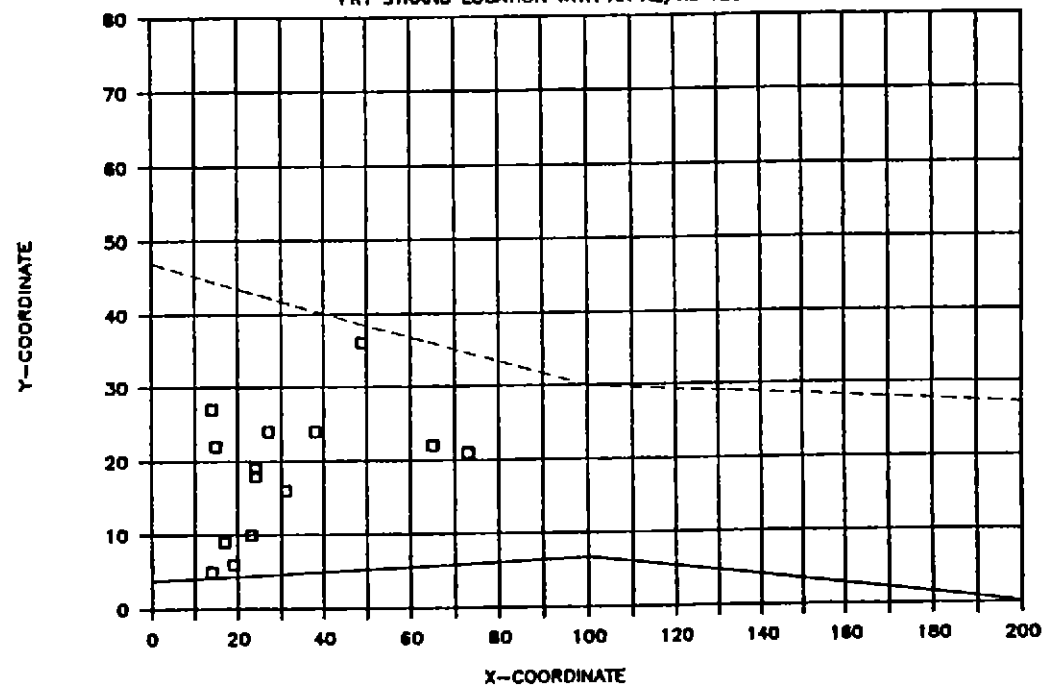


Y COORDINATE

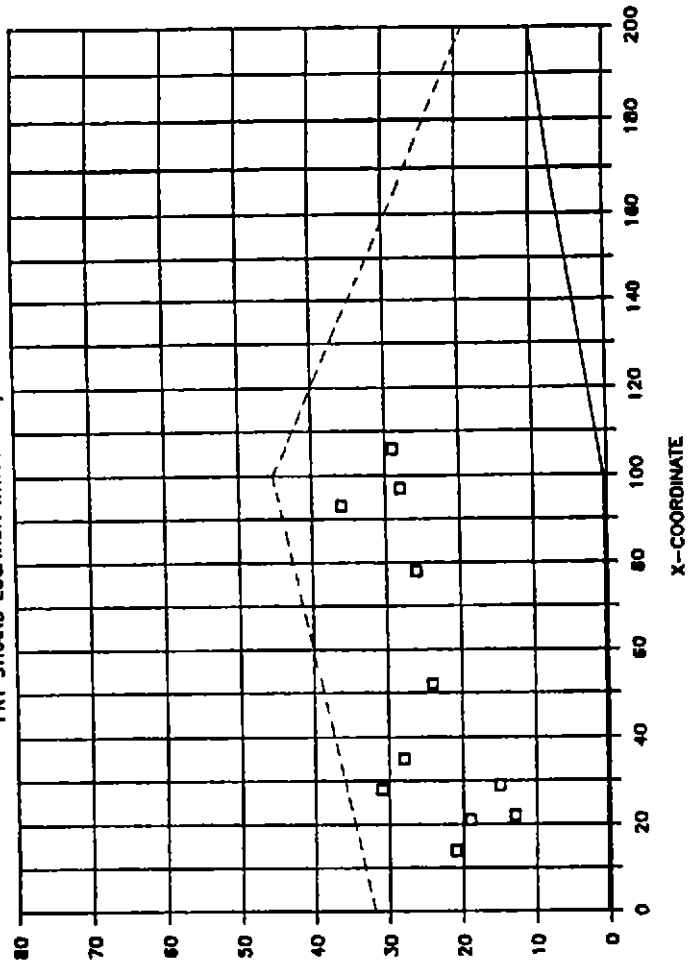
DI OBSUD CREEK SITE 1  
 FRY STRAND LOCATIONS FOR A2/R3 TESTS



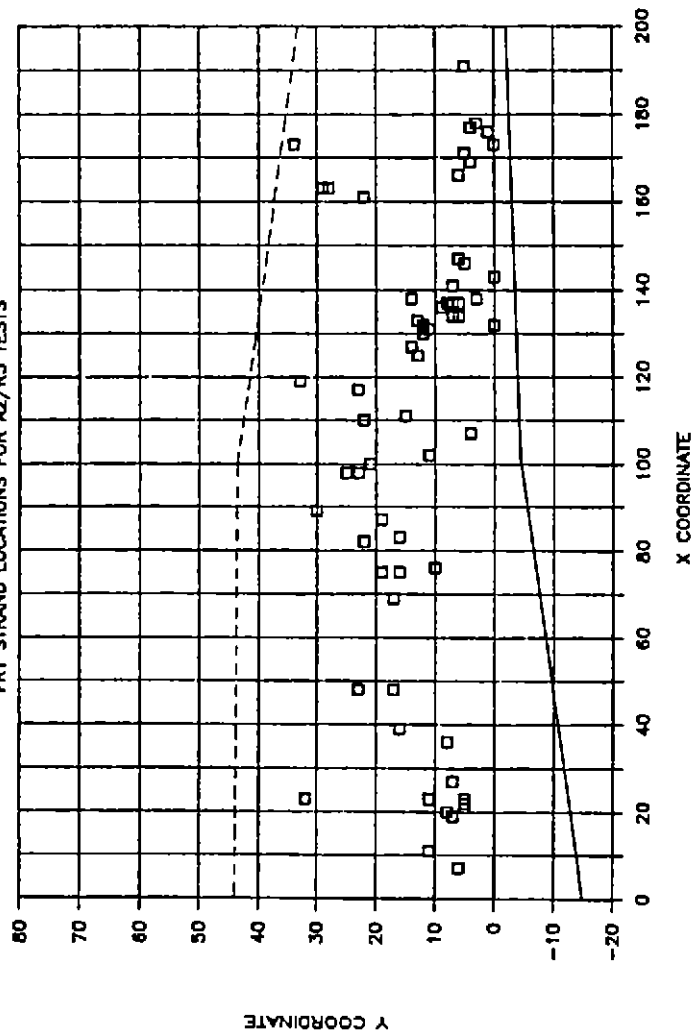
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 FRY STRAND LOCATION WITH AN A2/R3 TEST

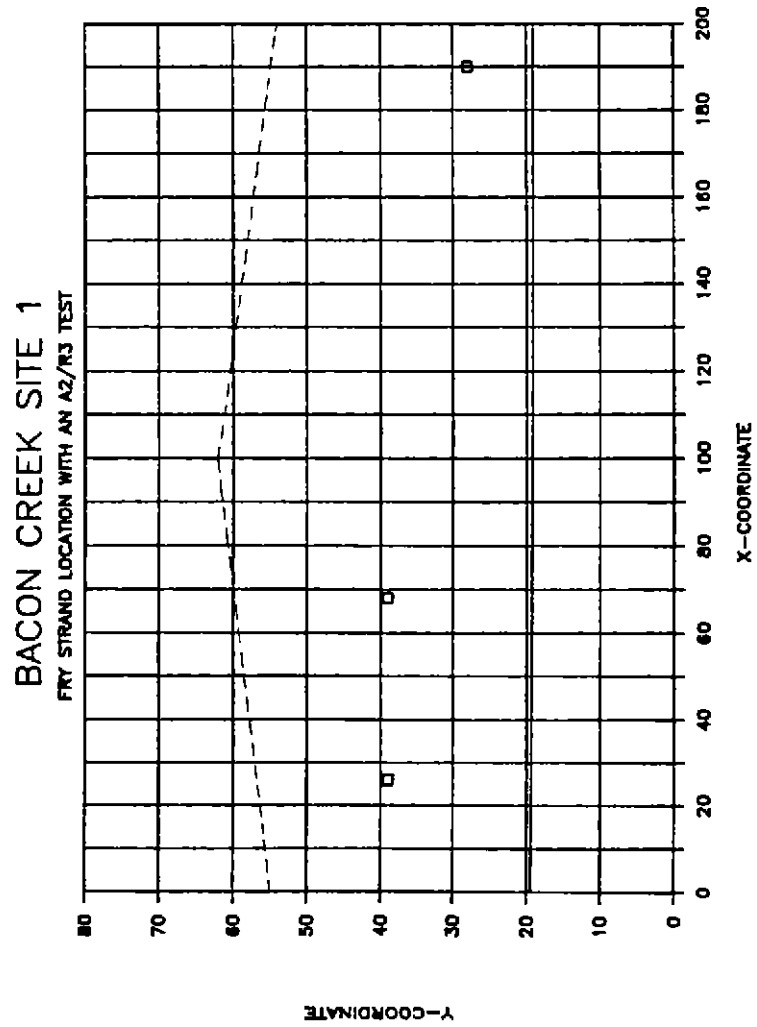


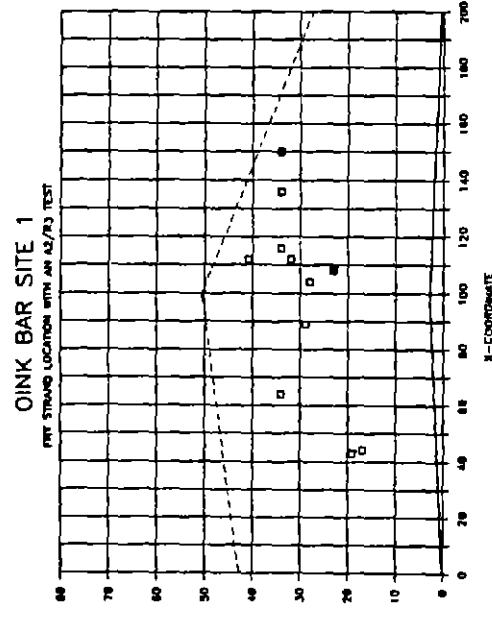
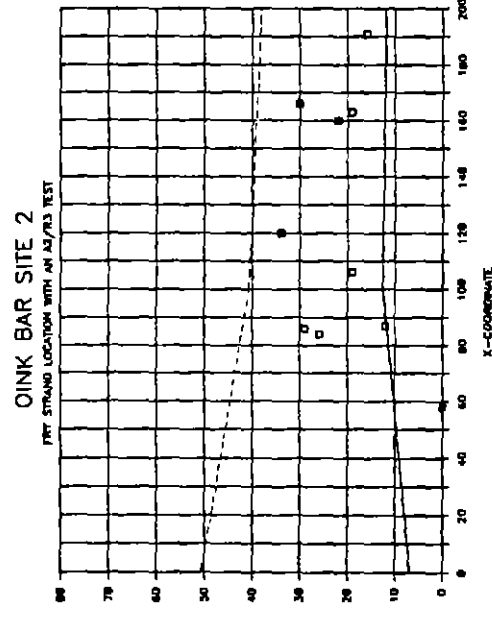
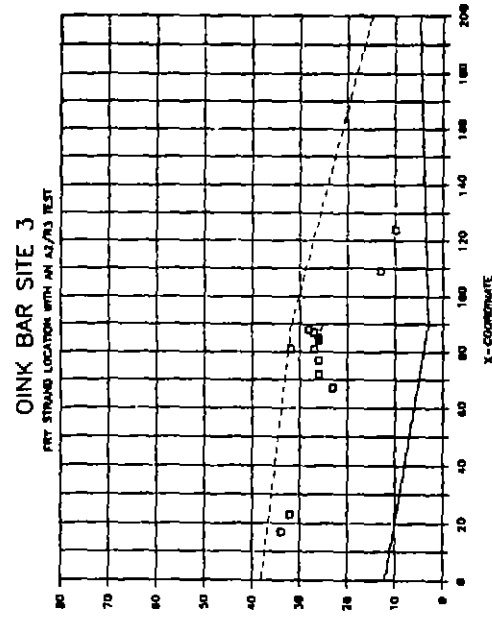
### FACE BAR SITE 2 FRY STRAND LOCATION WITH AN A2/R3 TEST



### FACE BAR SITE 1 FRY STRAND LOCATIONS FOR A2/R3 TESTS







Y-COORDINATE

APPENDIX K

FRY STRANDING LOCATIONS FOR ACCELERATED VERSUS CONSTANT (5,000 CFS/HOUR)  
RAMPING RATES

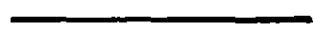
LEGEND



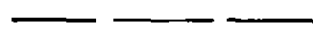
STRANDED FRY



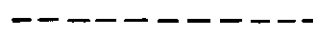
HIGH/HIGH WATERLINE



HIGH WATER



LOW WATERLINE



LOW/LOW WATERLINE



AUTO PART DEBRIS



DEBRIS PILE



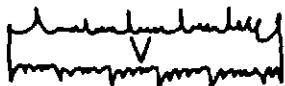
POTHOLE



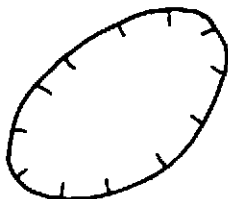
LOG



ROCK



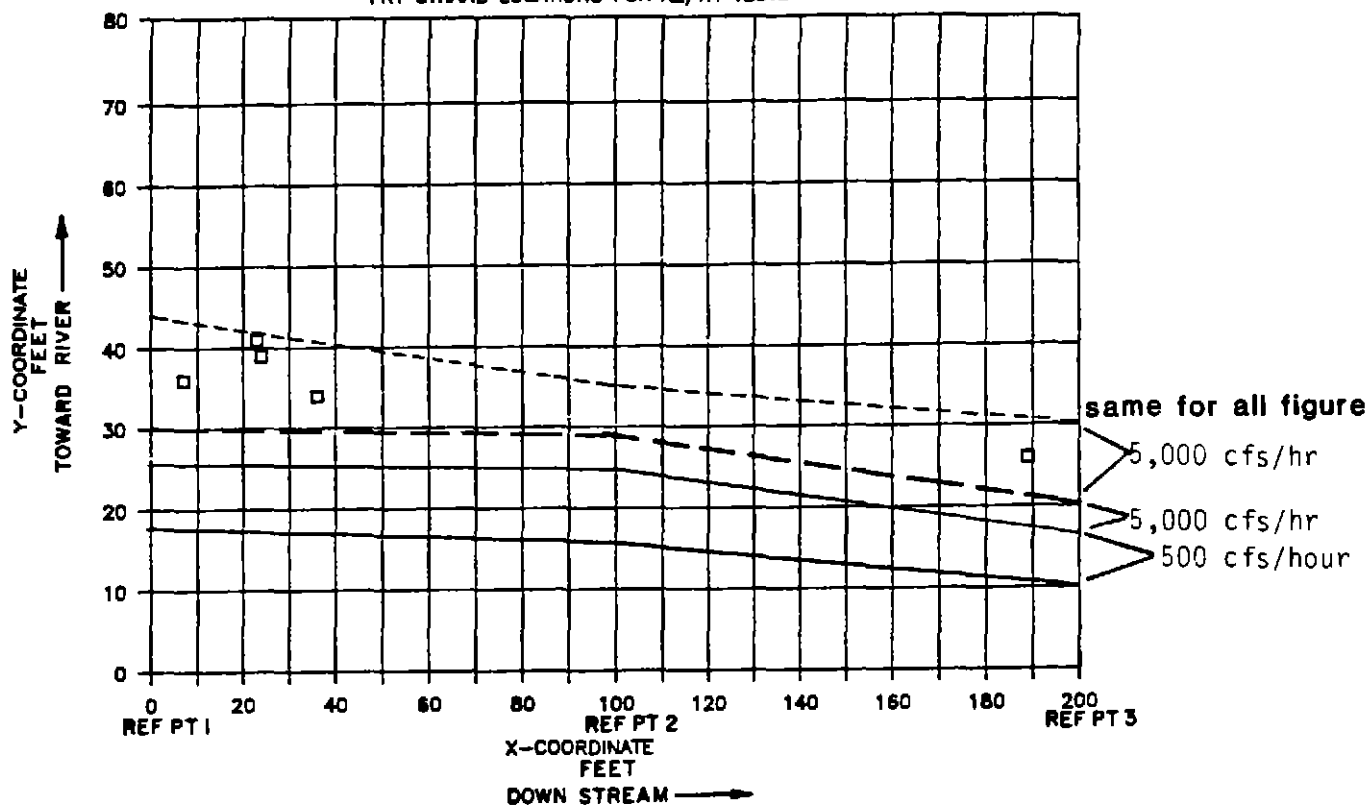
VEGETATION LINE



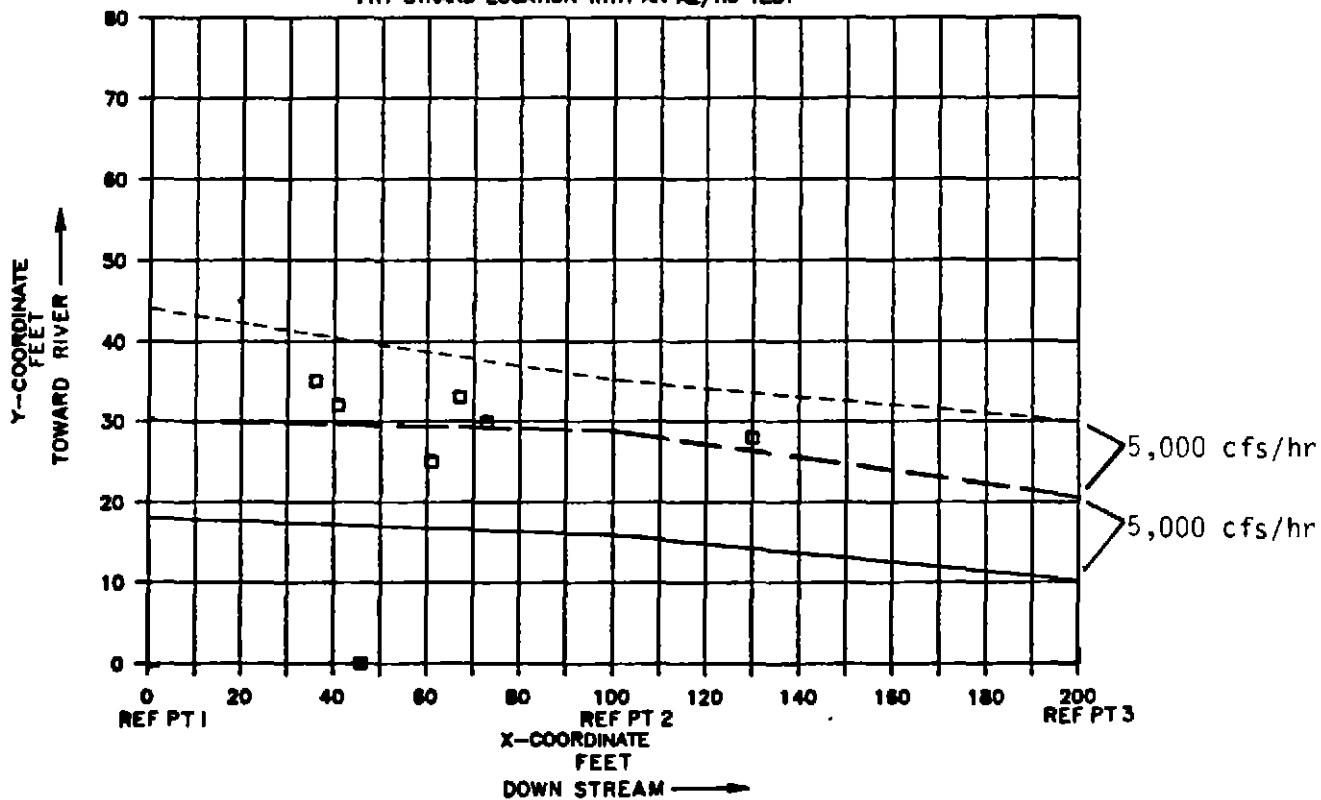
CHANNEL DEPRESSION



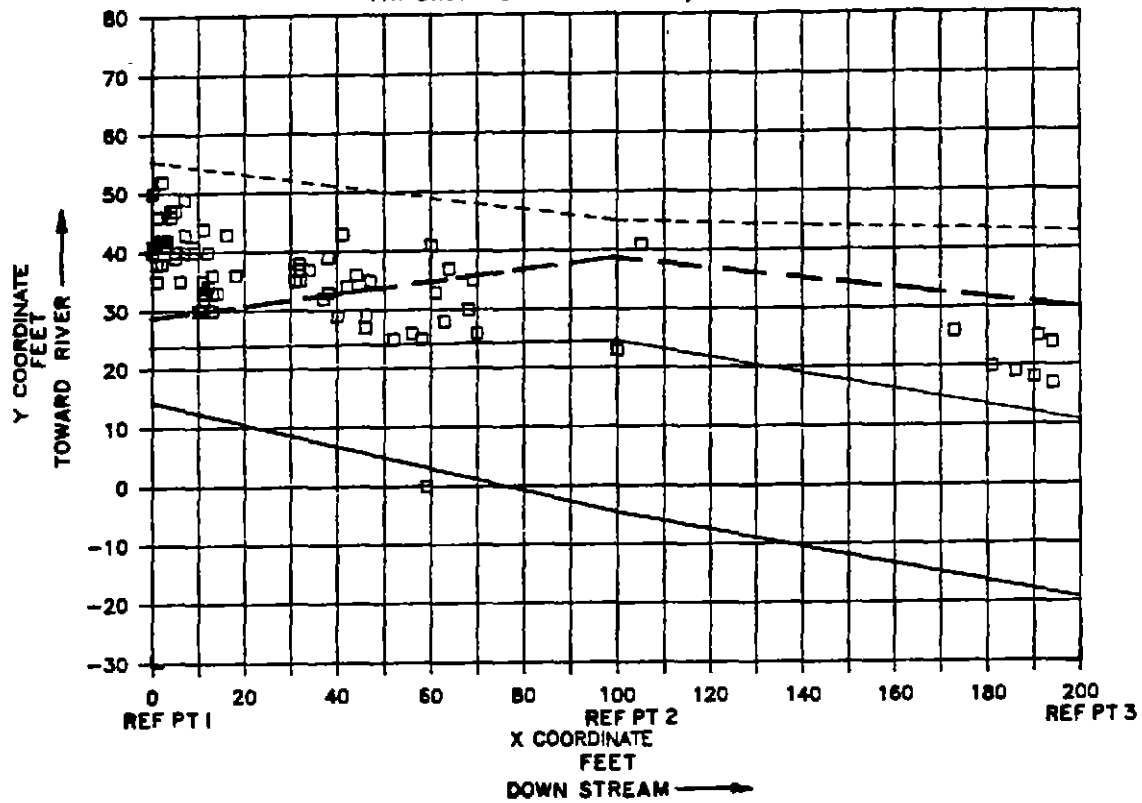
**SUMMER 1985**  
**-BIG EDDY SITE 1**  
 FRY STRAND LOCATIONS FOR A2/R1 TESTS



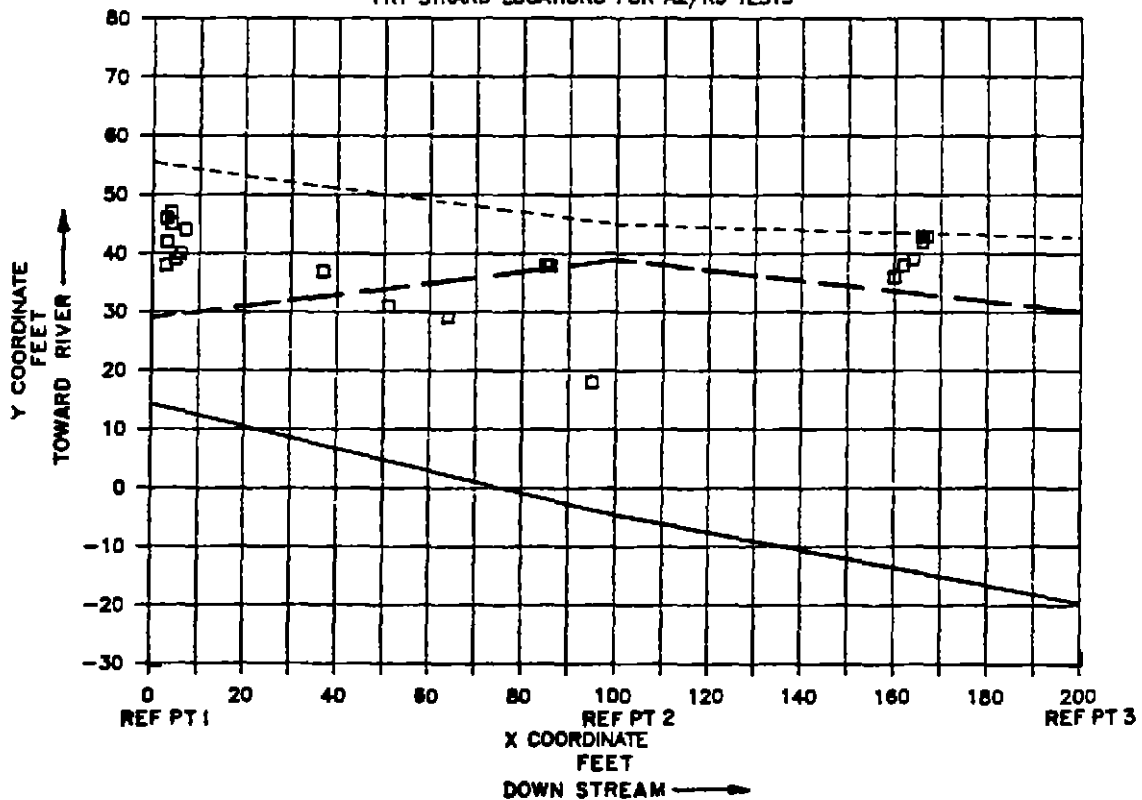
**SUMMER 1985**  
**BIG EDDY BAR SITE 1**  
 FRY STRAND LOCATION WITH AN A2/R3 TEST



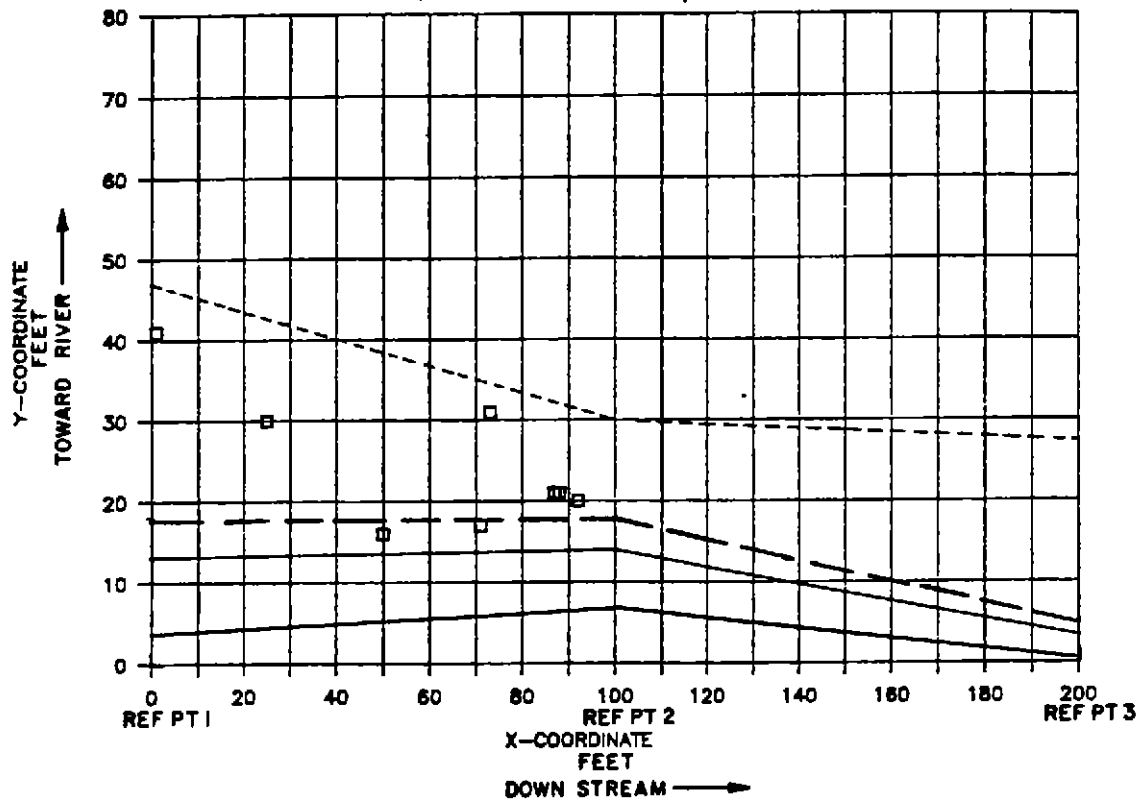
**SUMMER 1985**  
**DI OBSUD CREEK SITE 1**  
 FRY STRAND LOCATIONS FOR A2/R1 TESTS



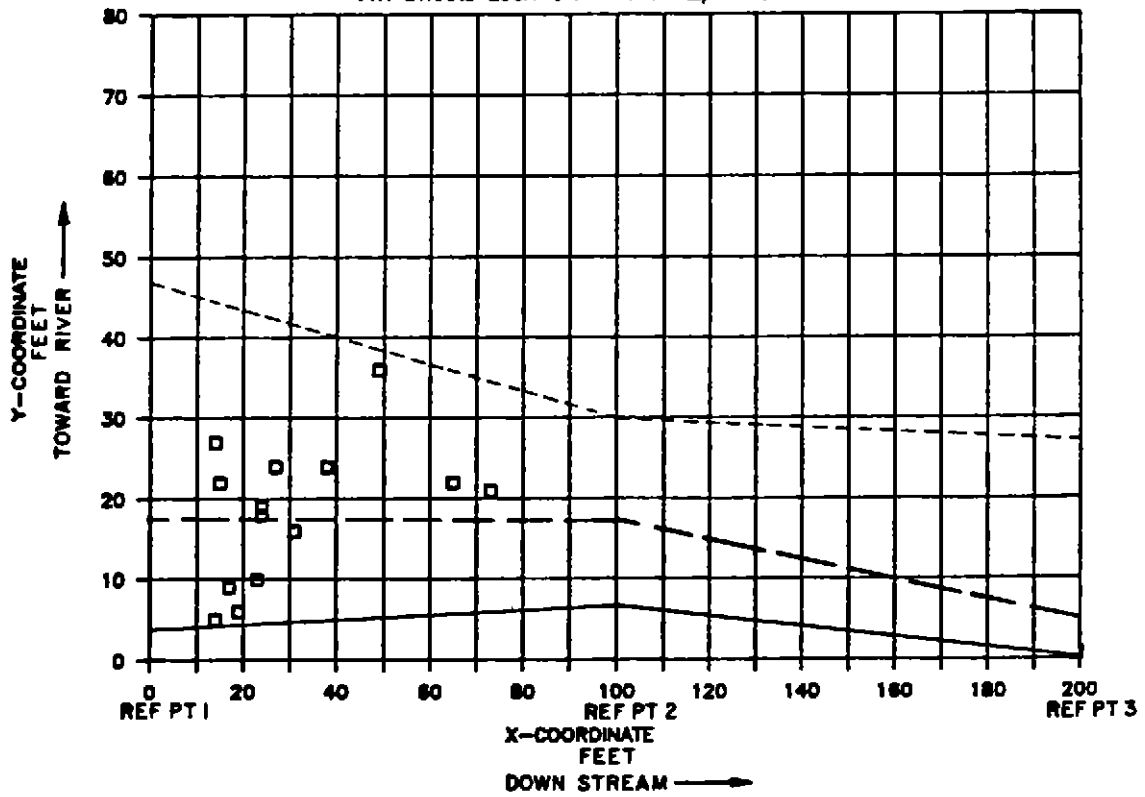
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**DI OBSUD CREEK SITE 1**  
 FRY STRAND LOCATIONS FOR A2/R3 TESTS



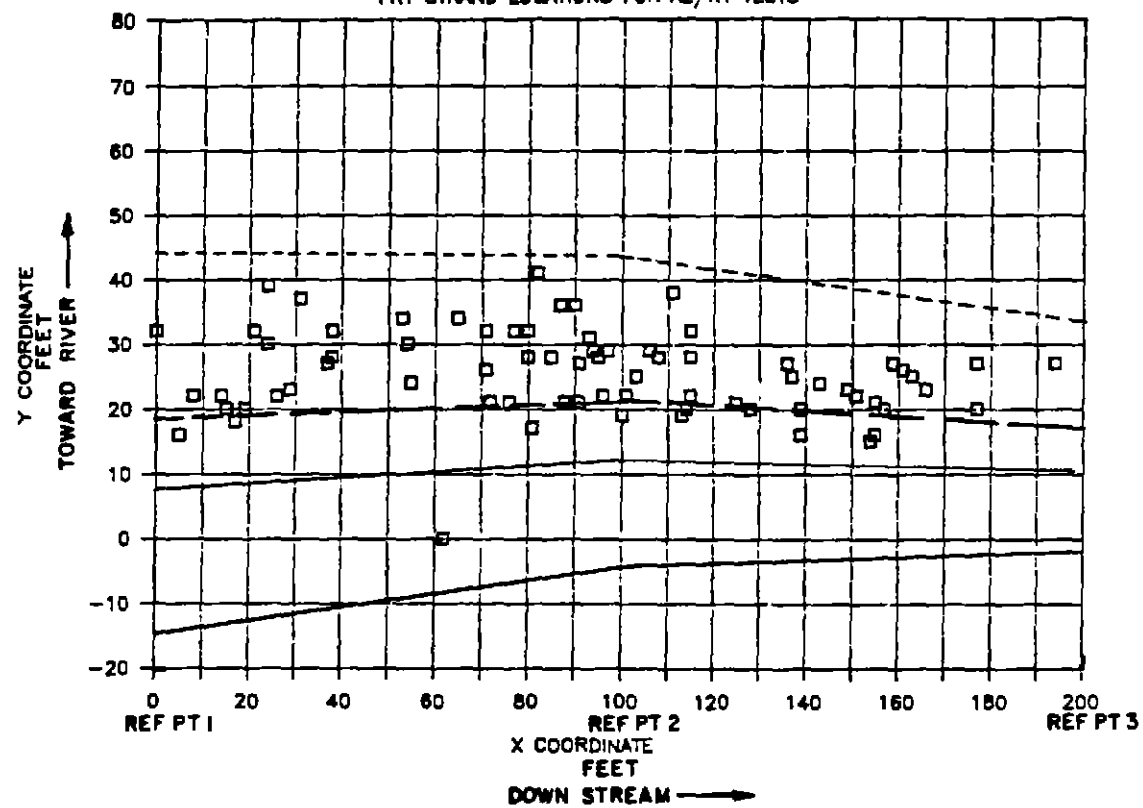
**SUMMER 1985**  
**DI OBSUD CREEK SITE 2**  
 FRY STRAND LOCATIONS FOR A2/R1 TESTS



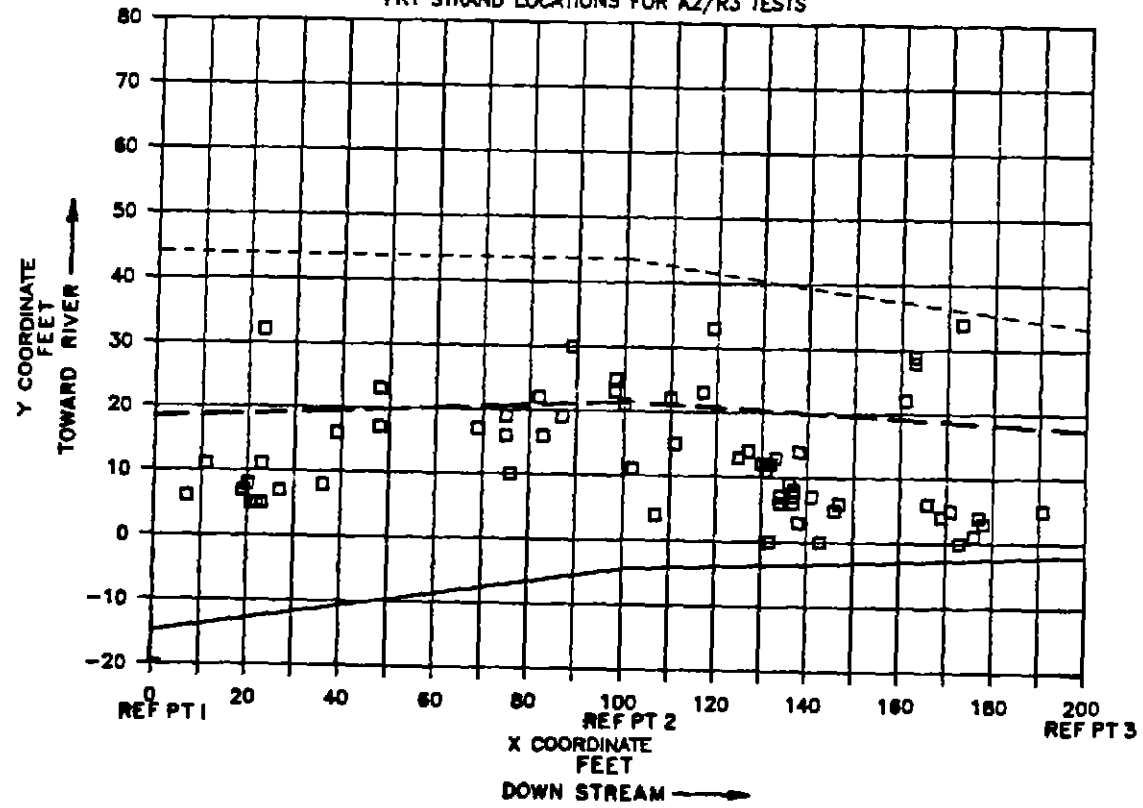
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**DI OBSUD CREEK BAR SITE 2**  
 FRY STRAND LOCATION WITH AN A2/R3 TEST



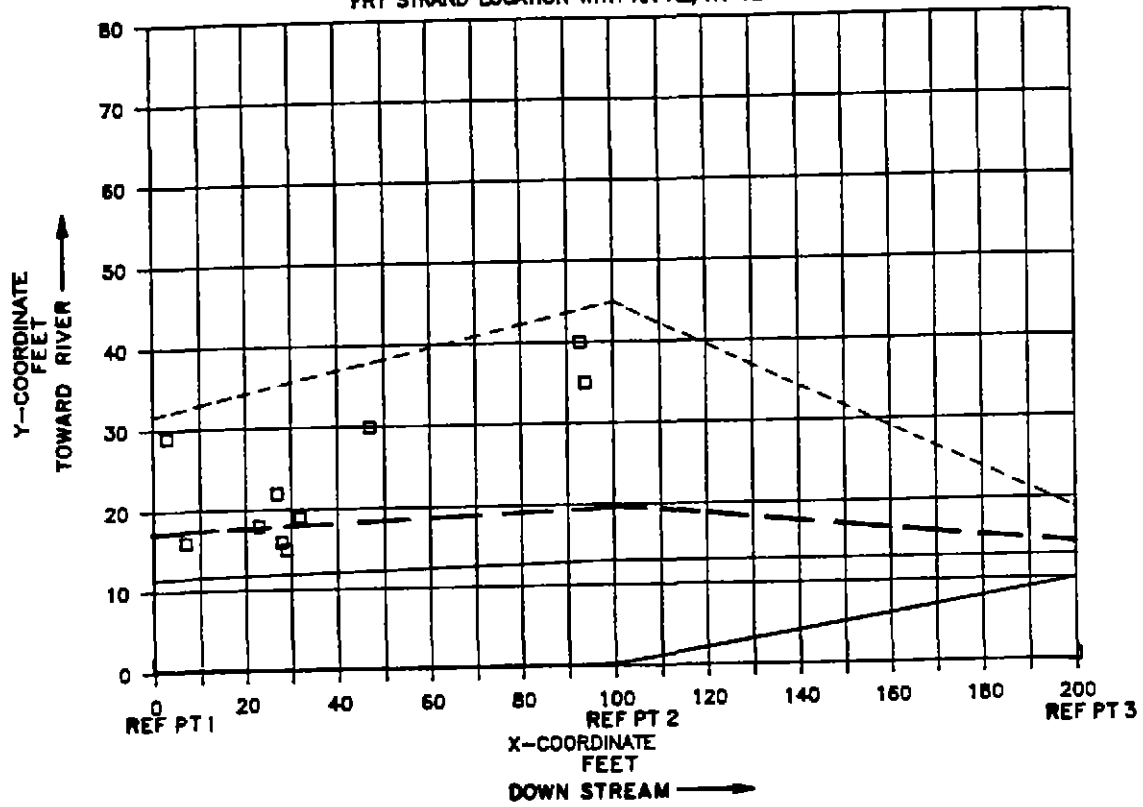
SUMMER 1985  
FACE BAR SITE 1  
FRY STRAND LOCATIONS FOR A2/R1 TESTS



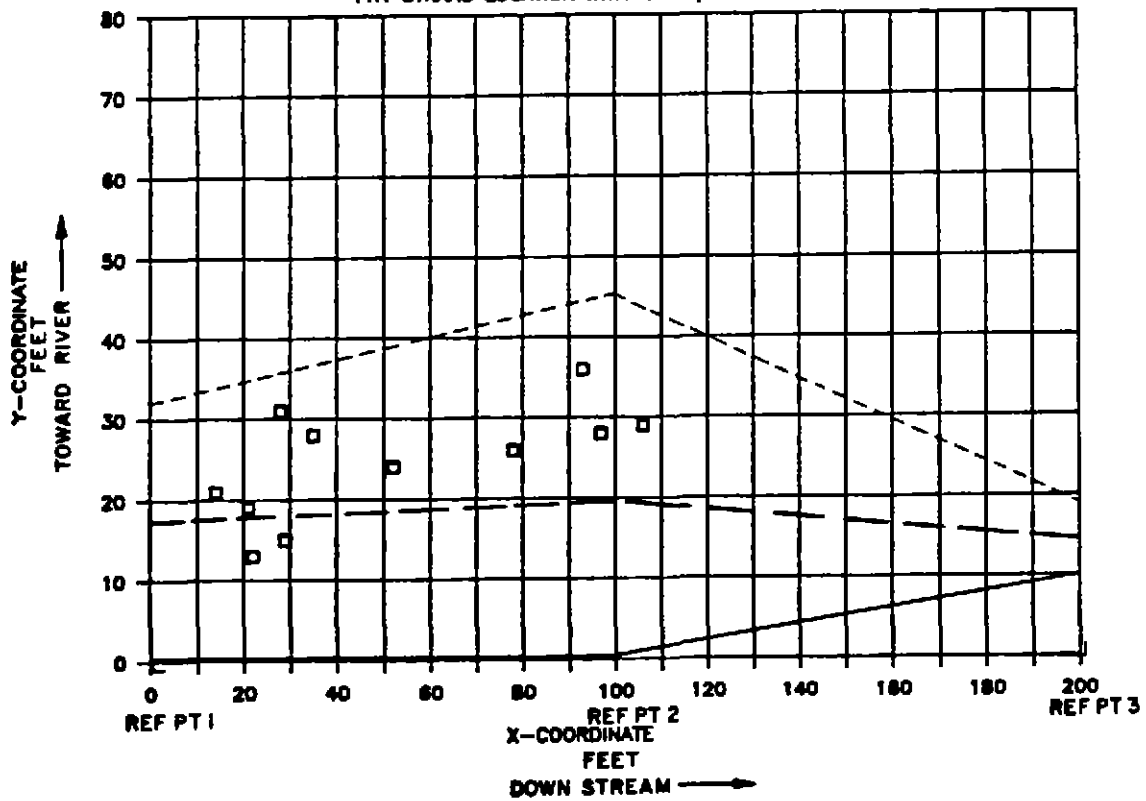
SUMMER 1985  
FACE BAR SITE 1  
FRY STRAND LOCATIONS FOR A2/R3 TESTS



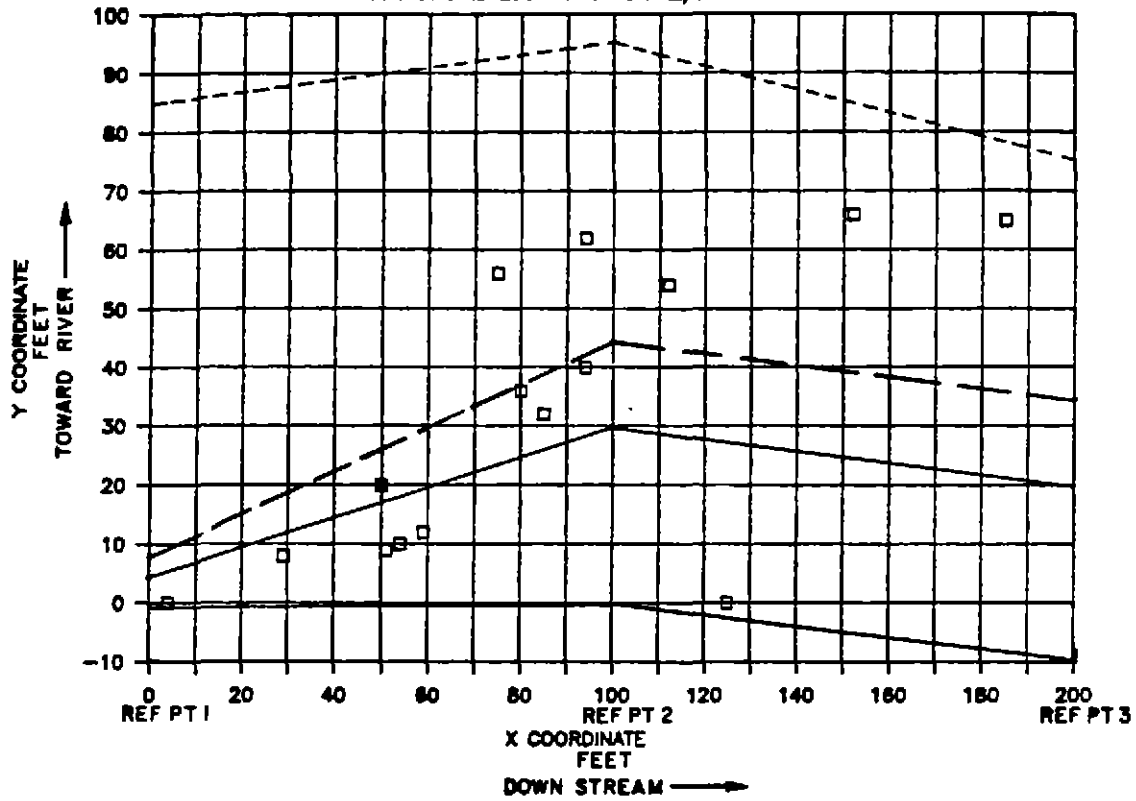
**SUMMER 1985**  
**FACE BAR SITE 2**  
 FRY STRAND LOCATION WITH AN A2/R1 TEST



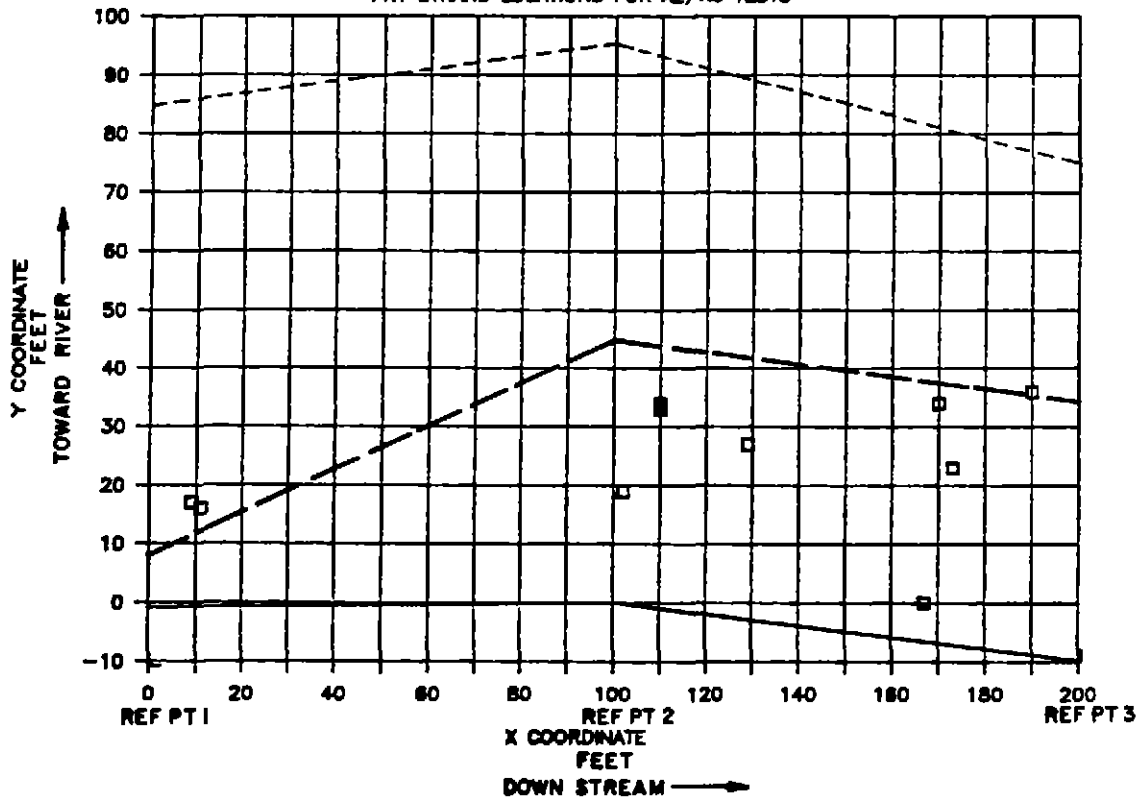
**SUMMER 1985**  
**FACE BAR SITE 2**  
 FRY STRAND LOCATION WITH AN A2/R3 TEST



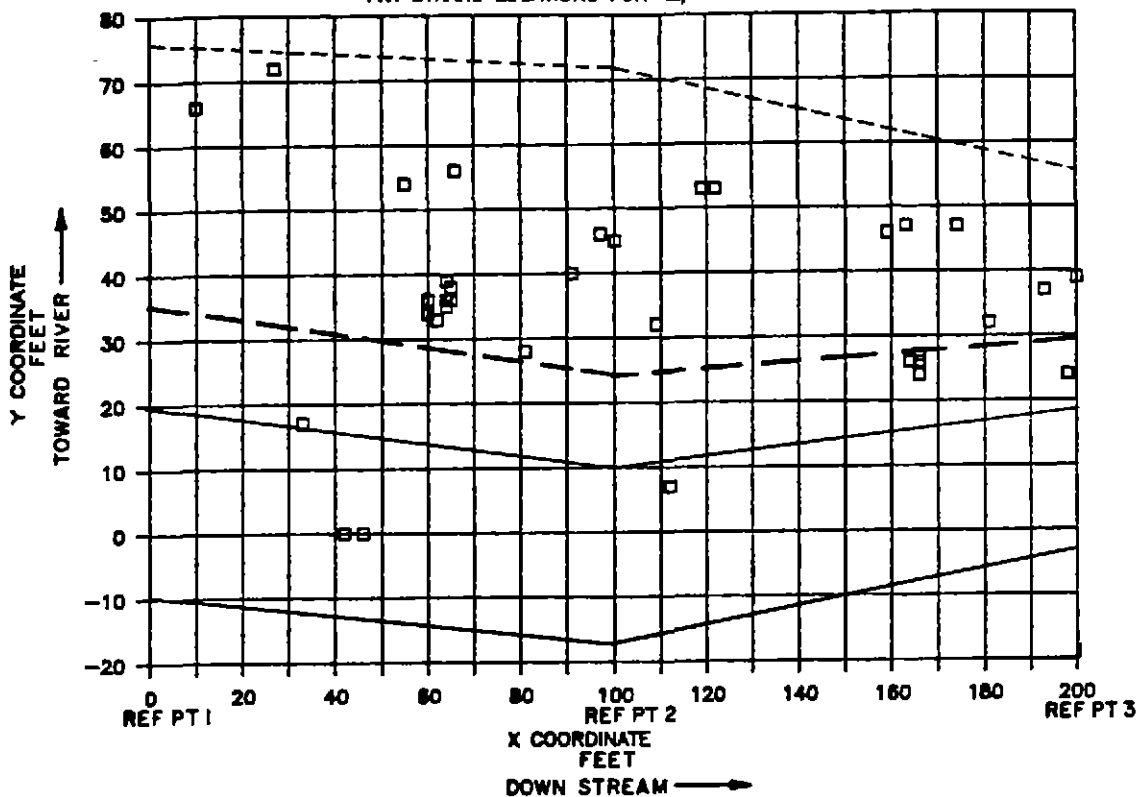
SUMMER 1985  
 FUNGUS BAR SITE 1  
 FRY STRAND LOCATIONS FOR A2/R1 TESTS



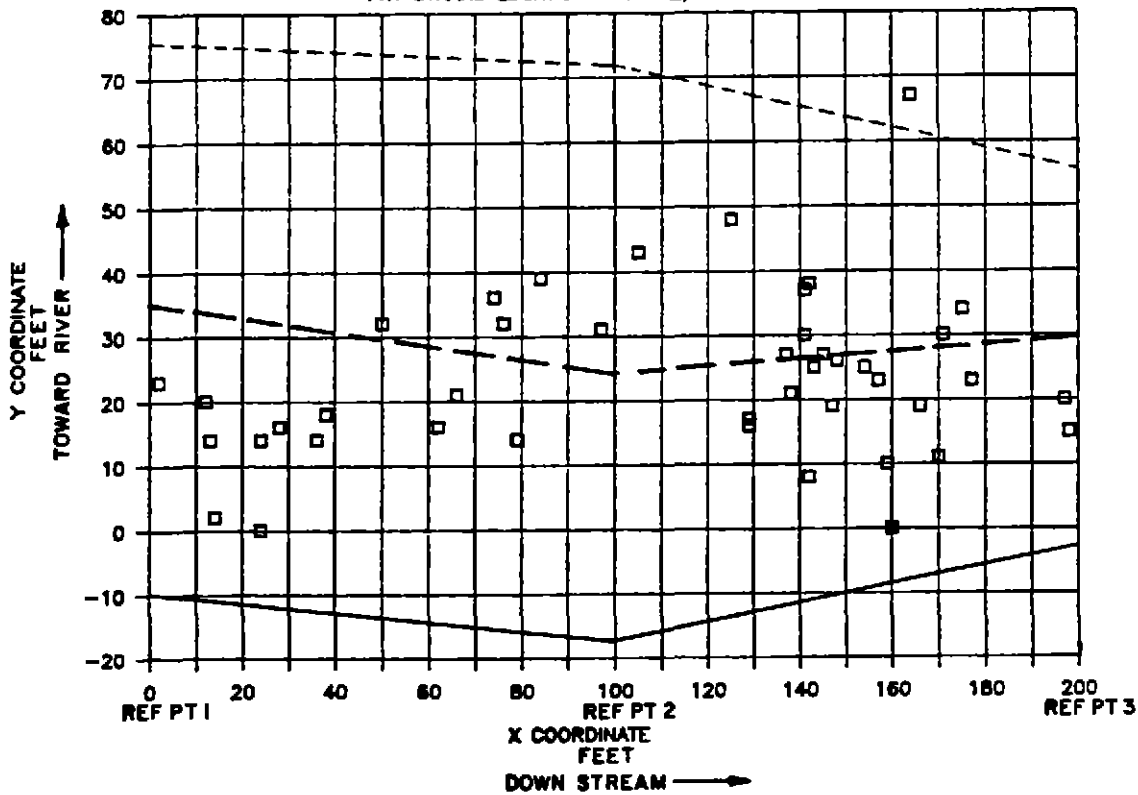
SUMMER 1985  
 FUNGUS BAR SITE 1  
 FRY STRAND LOCATIONS FOR A2/R3 TESTS



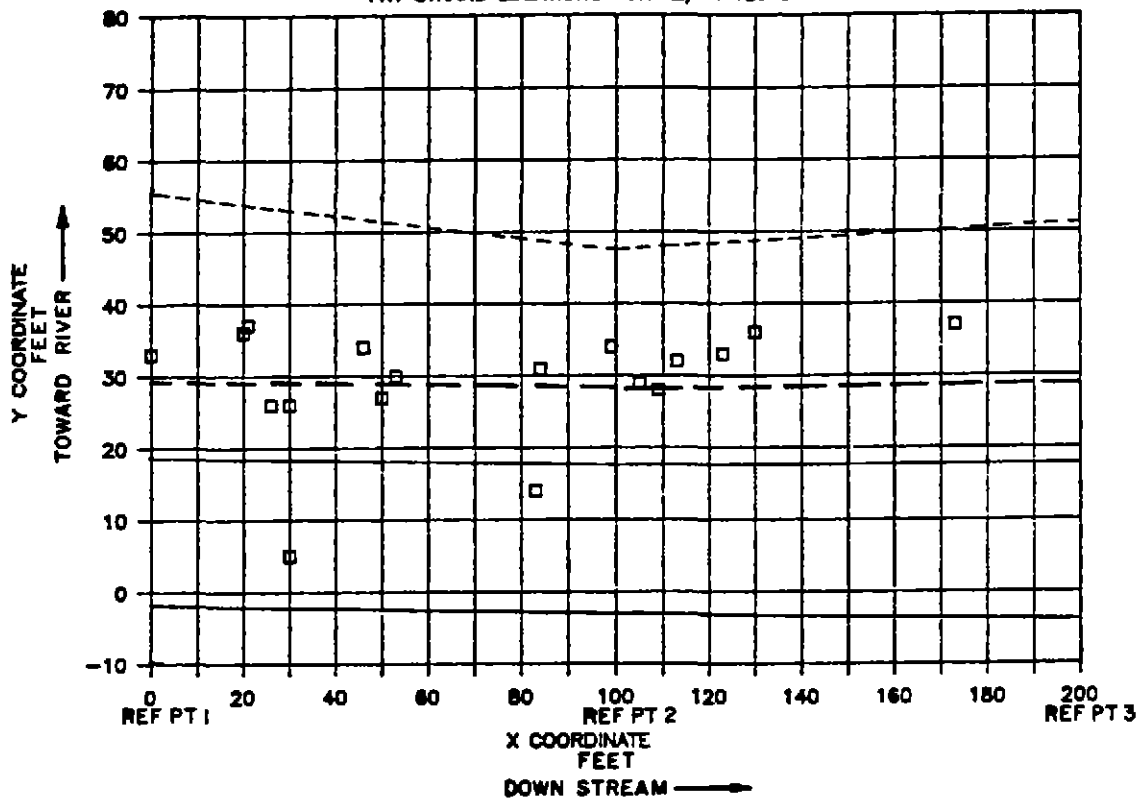
SUMMER 1985  
 FUNGUS BAR SITE 2  
 FRY STRAND LOCATIONS FOR A2/R1 TESTS



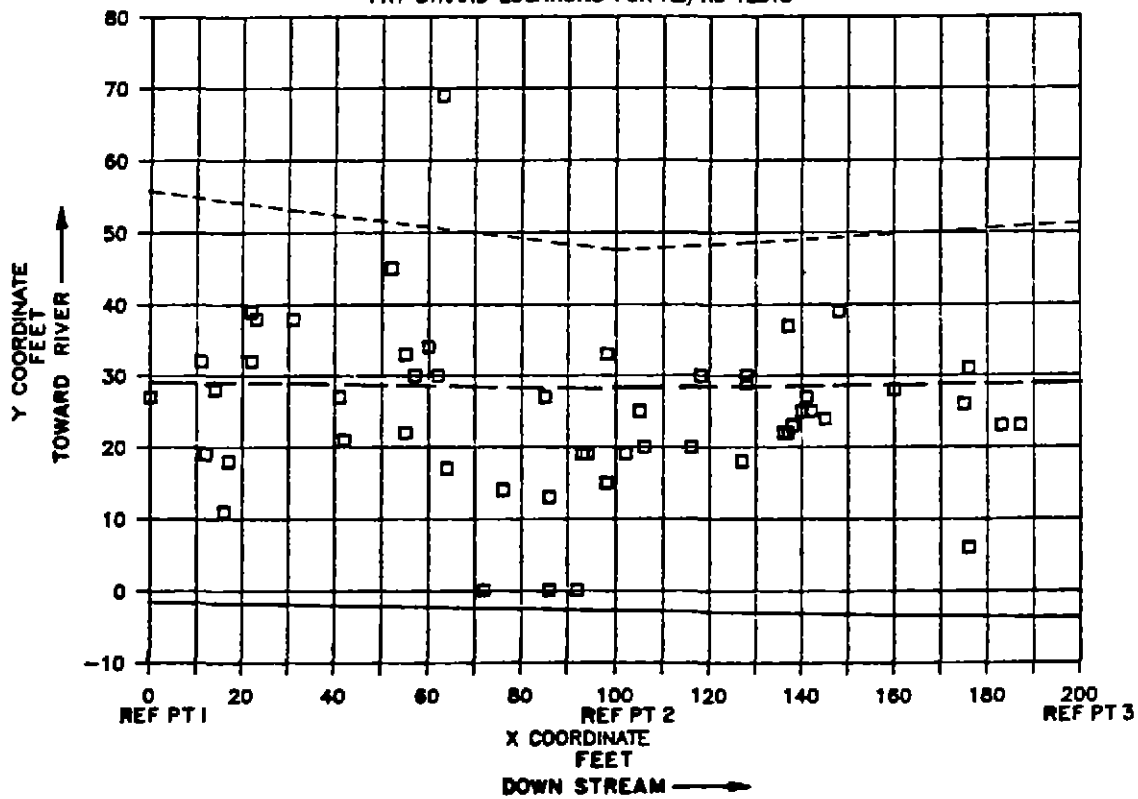
SUMMER 1985  
 FUNGUS BAR SITE 2  
 FRY STRAND LOCATIONS FOR A2/R3 TESTS



SUMMER 1985  
 FUNGUS BAR SITE 3  
 FRY STRAND LOCATIONS FOR A2/R1 TESTS



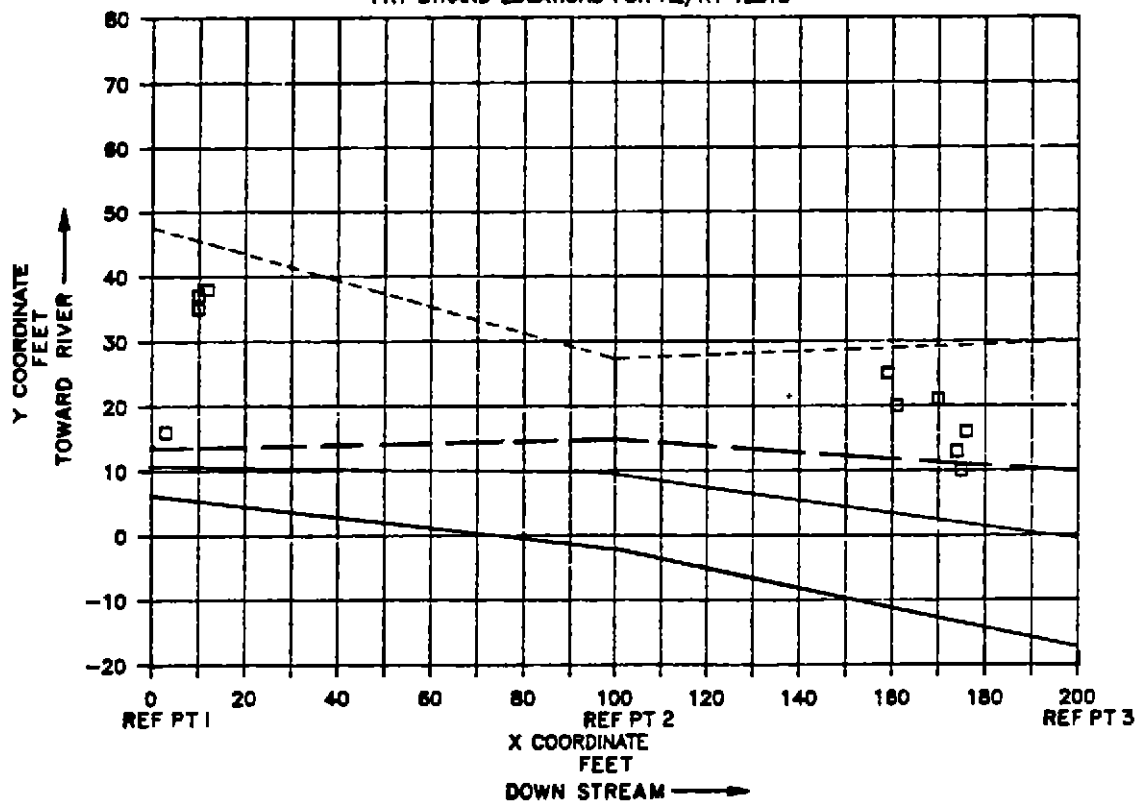
SUMMER 1985  
 FUNGUS BAR SITE 3  
 FRY STRAND LOCATIONS FOR A2/R3 TESTS





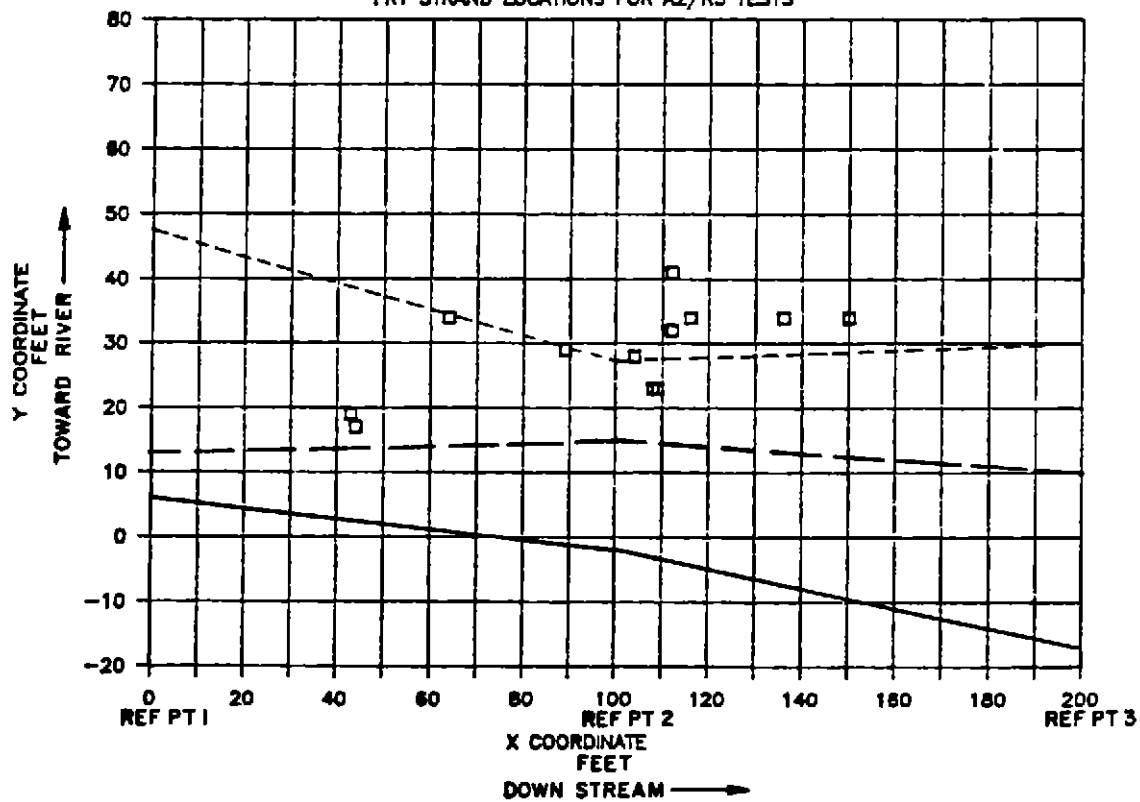
SUMMER 1985  
INACCESSIBLE ISLAND SITE 1

FRY STRAND LOCATIONS FOR A2/R1 TESTS

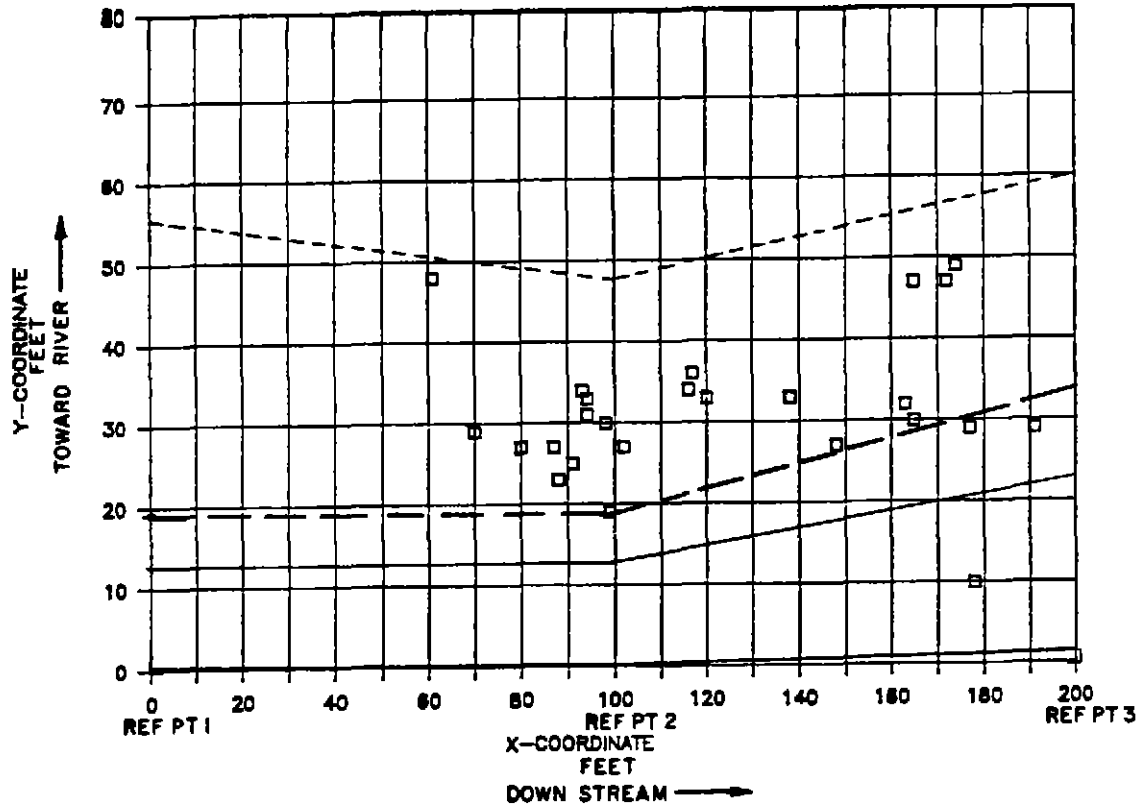


SUMMER 1985  
INACCESSIBLE ISLAND SITE 1

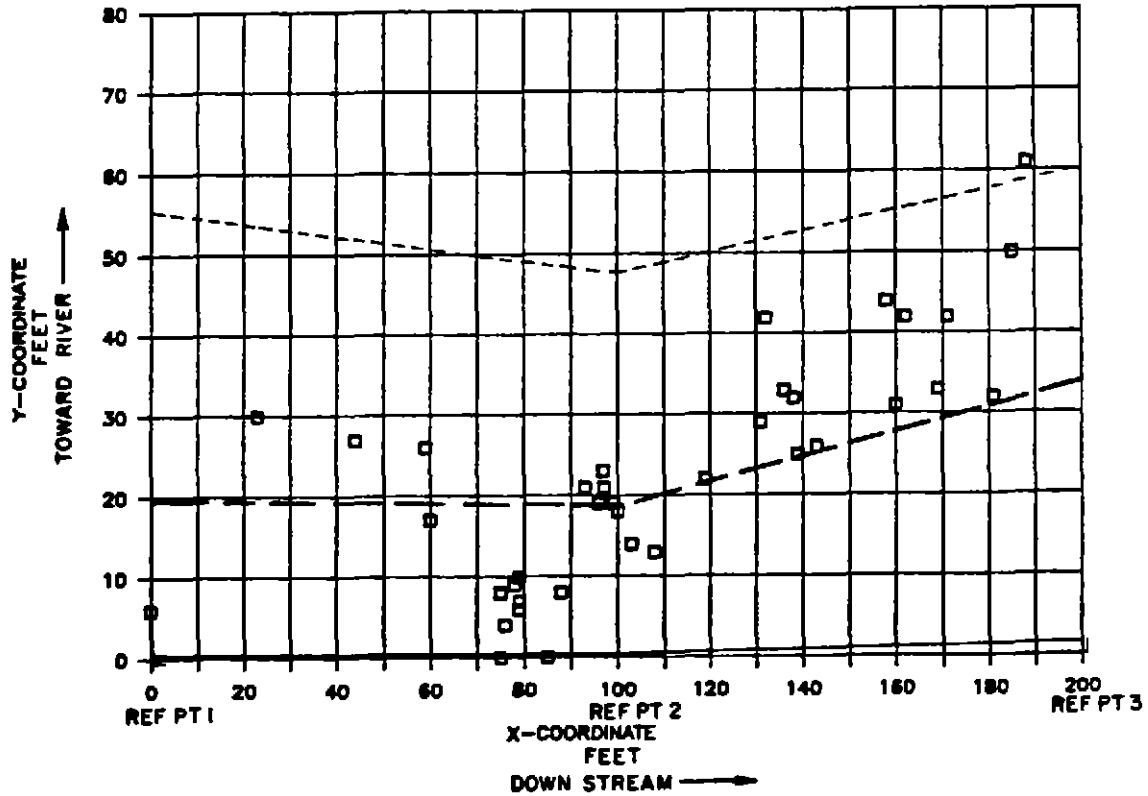
FRY STRAND LOCATIONS FOR A2/R3 TESTS



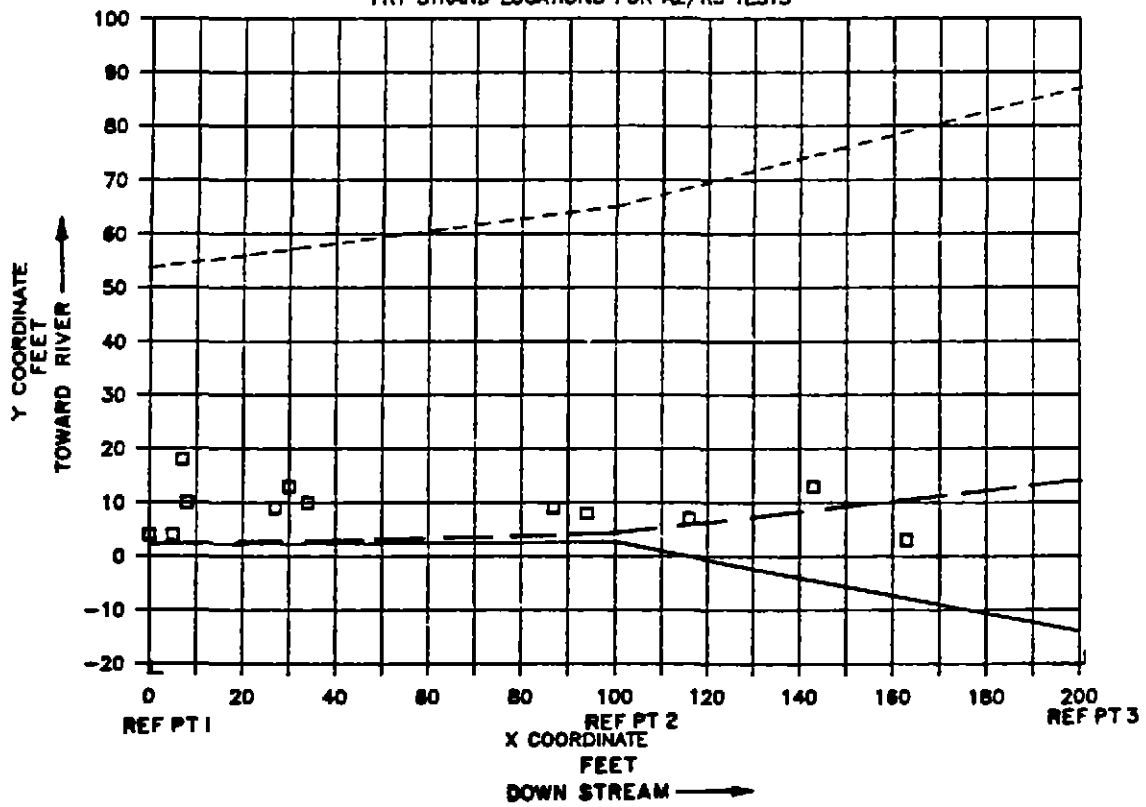
SUMMER 1985  
 MARBLEMOUNT BAR SITE 1  
 FRY STRAND LOCATION WITH AN A2/R1 TEST



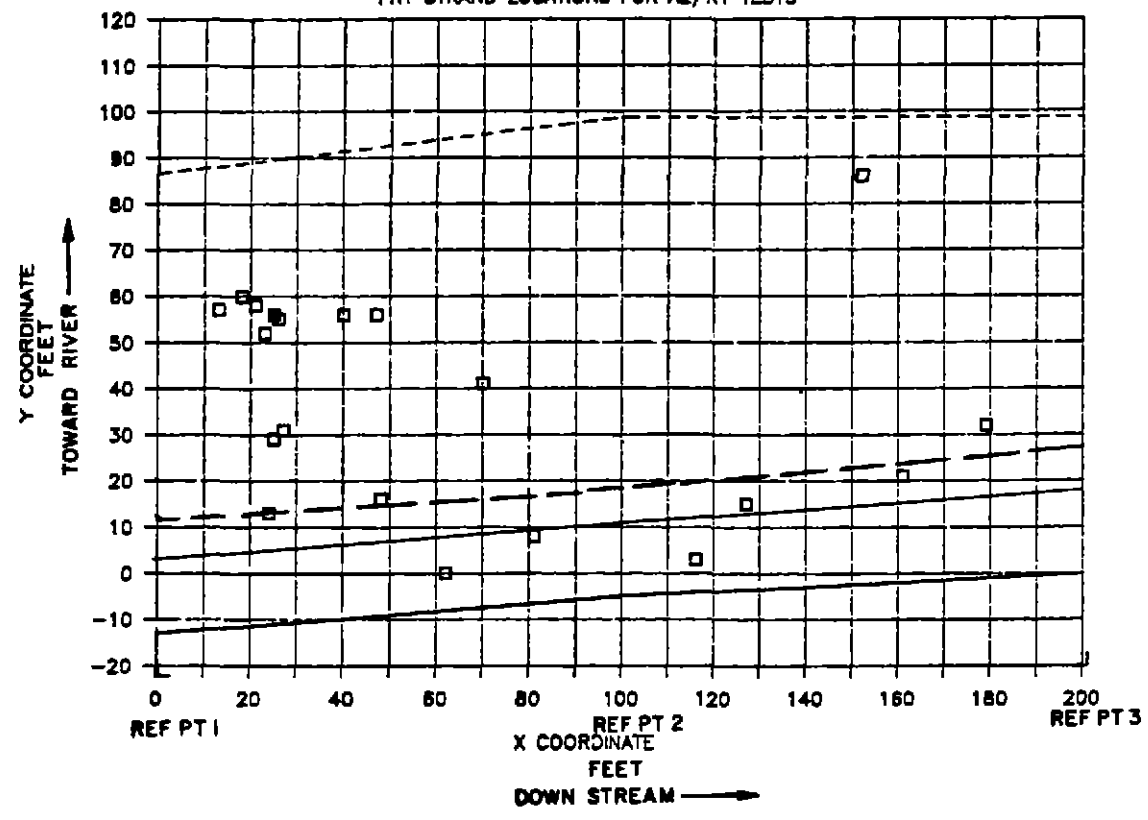
SUMMER 1985  
 MARBLEMOUNT BAR SITE 1  
 FRY STRAND LOCATION WITH AN A2/R3 TEST



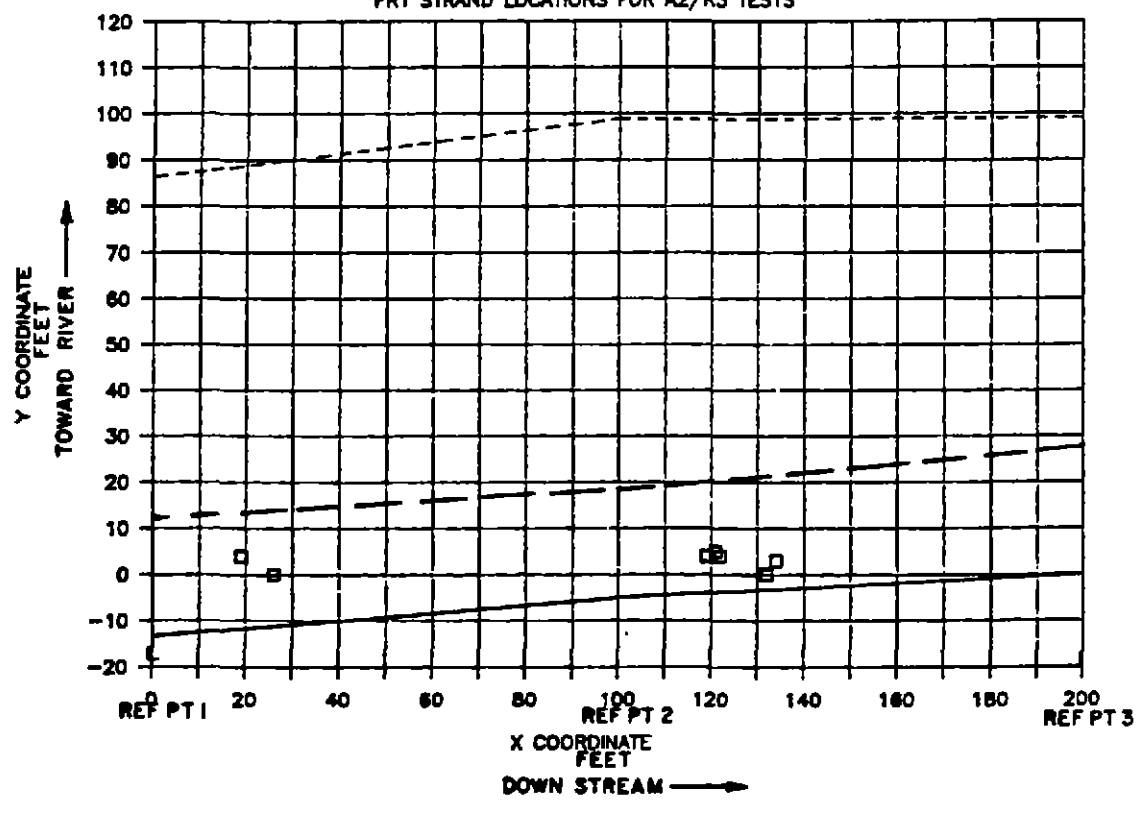
SUMMER 1985  
 MARBLEMOUNT BAR SITE 2  
 FRY STRAND LOCATIONS FOR A2/R3 TESTS



### SUMMER 1985 MARBLEMOUNT BAR SITE 3 FRY STRAND LOCATIONS FOR A2/R1 TESTS

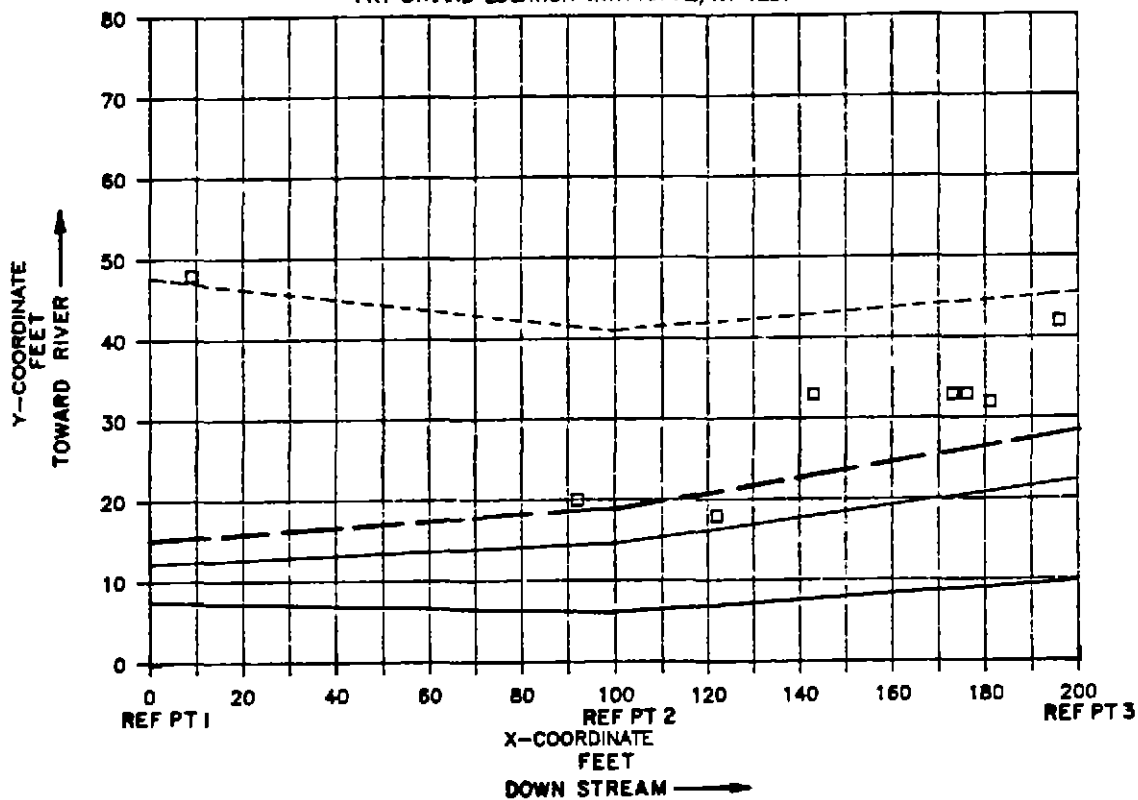


### SUMMER 1985 MARBLEMOUNT BAR SITE 3 FRY STRAND LOCATIONS FOR A2/R3 TESTS



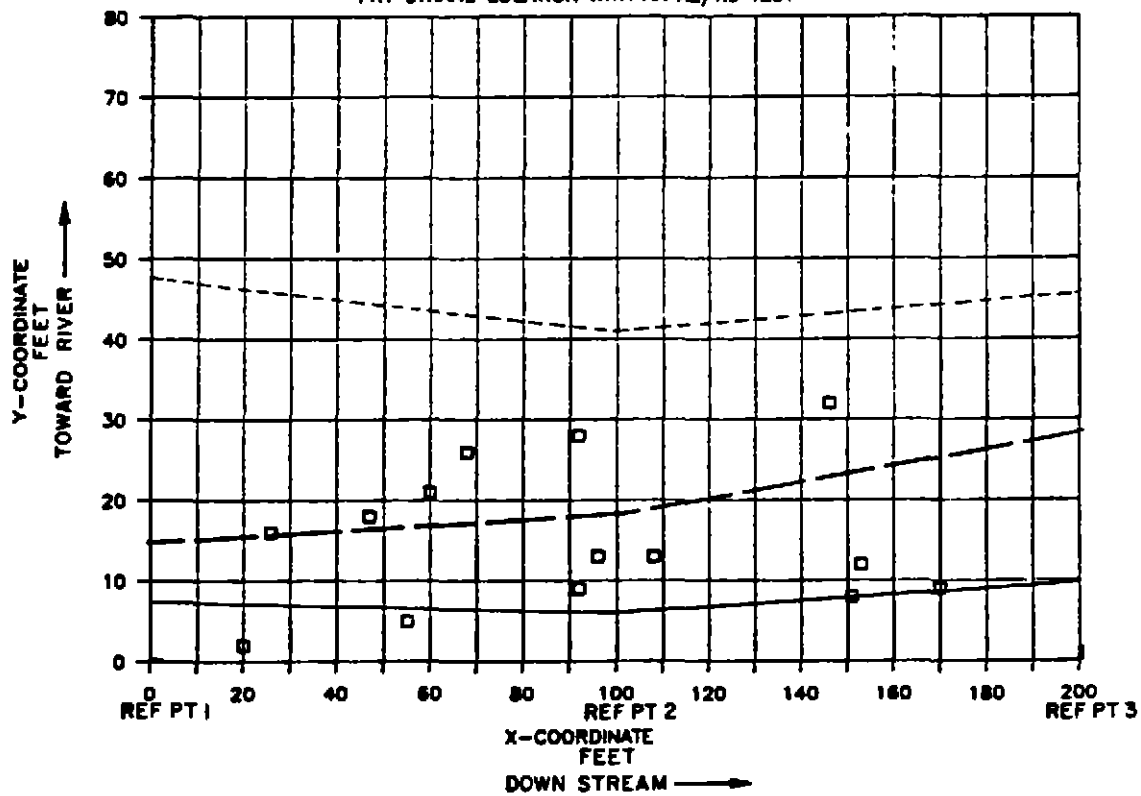
SUMMER 1985  
ROCKPORT BAR SITE 1

FRY STRAND LOCATION WITH AN A2/R1 TEST

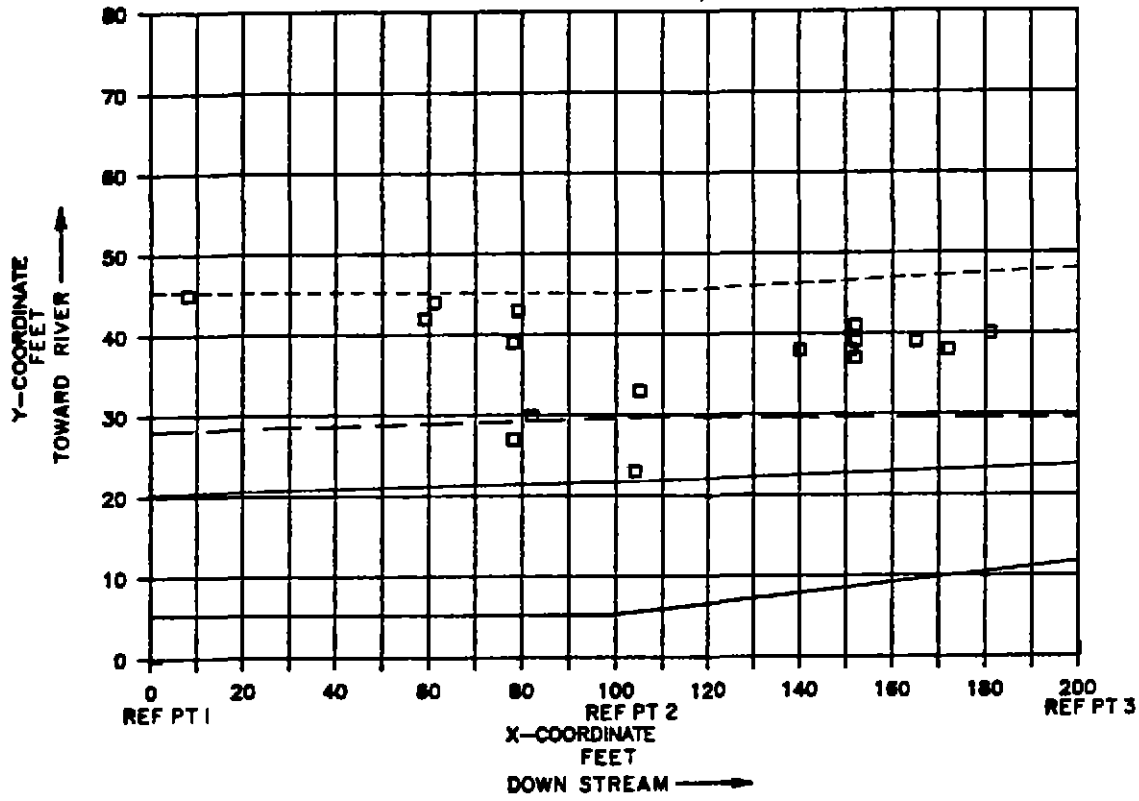


SUMMER 1985  
ROCKPORT BAR SITE 1

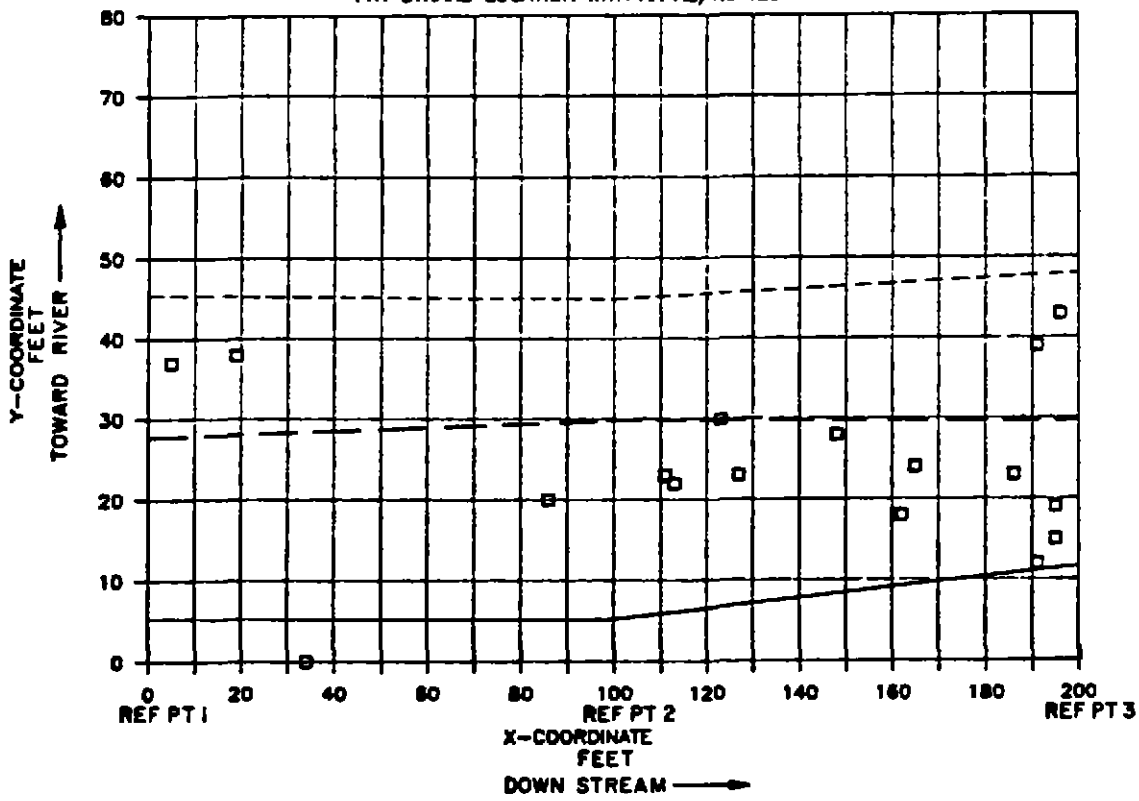
FRY STRAND LOCATION WITH AN A2/R3 TEST



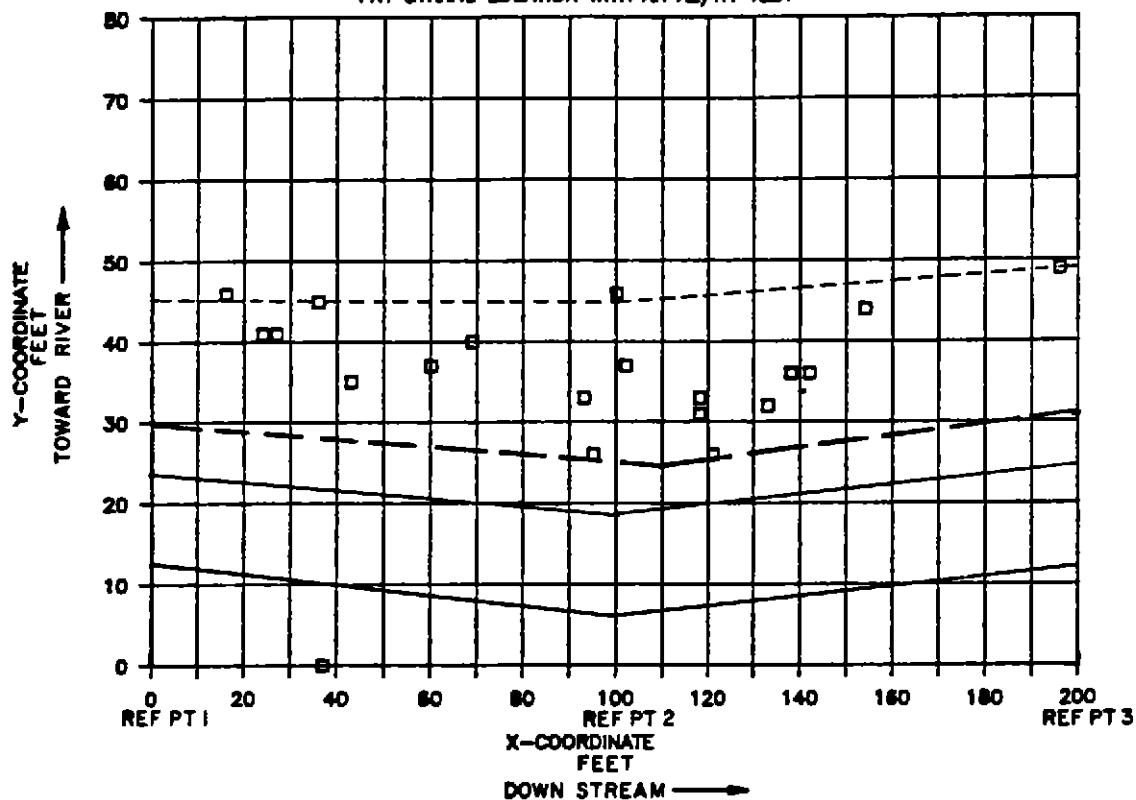
SUMMER 1985  
 ROCKPORT BAR SITE 2  
 FRY STRAND LOCATION WITH AN A2/R1 TEST



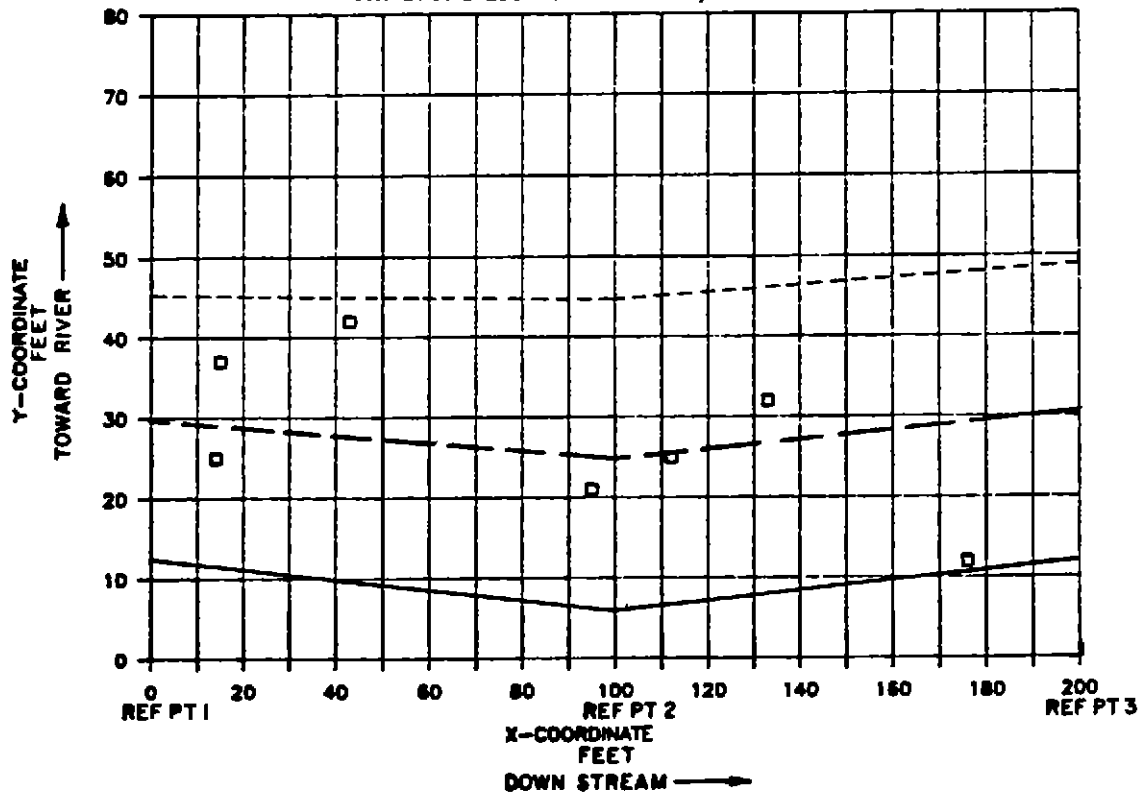
SUMMER 1985  
 ROCKPORT BAR SITE 2  
 FRY STRAND LOCATION WITH AN A2/R3 TEST



SUMMER 1985  
 ROCKPORT BAR SITE 3  
 FRY STRAND LOCATION WITH AN A2/R1 TEST



SUMMER 1985  
 ROCKPORT BAR SITE 3  
 FRY STRAND LOCATION WITH AN A2/R3 TEST



APPENDIX L

RESULTS OF PAIRED T-TESTS AND WILCOXON SIGNED-RANKS TESTS FOR PAIRED  
RAMPING DATA SHOWN IN FIGURES 31 AND 32 (SECTION V)



Paired differences t-tests for the subgroup: RIVLOC = 1 RR = 1

Variables	N	Means	S.D.'s	S.D.(Diff)	T-test	Correlation
HIFISH	50	1.660	3.101	3.227	T -3.354	R 0.442
LOWFISH		6.801	10.378		DF 49	DF 48
					F 0.0013	F 0.0013

Paired differences t-tests for the subgroup: RIVLOC = 1 RR = 2

Variables	N	Means	S.D.'s	S.D.(Diff)	T-test	Correlation
HIFISH	47	4.147	17.851	15.243	T 0.009	R 0.476
LOWFISH		4.128	7.524		DF 46	DF 46
					F 0.9931	F 0.0026

Paired differences t-tests for the subgroup: RIVLOC = 1 RR = 3

Variables	N	Means	S.D.'s	S.D.(Diff)	T-test	Correlation
HIFISH	51	4.867	8.104	7.302	T 1.059	R 0.476
LOWFISH		2.561	5.444		DF 49	DF 48
					F 0.014	F 0.0015

Paired differences t-tests for the subgroup: RIVLOC = 2 RR = 1

Variables	N	Means	S.D.'s	S.D.(Diff)	T-test	Correlation
HIFISH	54	1.259	0.678	2.057	T -0.407	R -0.050
LOWFISH		1.259	2.941		DF 52	DF 52
					F 0.0196	F 0.7001

Paired differences t-tests for the subgroup: RIVLOC = 2 RR = 2

Variables	N	Means	S.D.'s	S.D.(Diff)	T-test	Correlation
HIFISH	52	1.577	1.456	1.596	T -0.174	R 0.305
LOWFISH		1.615	1.191		DF 51	DF 51
					F 0.0007	F 0.0079

Paired differences t-tests for the subgroup: RIVLOC = 2 RR = 3

Variables	N	Means	S.D.'s	S.D.(Diff)	T-test	Correlation
HIFISH	54	1.177	2.221	2.635	T 0.920	R 0.029
LOWFISH		0.704	1.298		DF 52	DF 52
					F 0.0323	F 0.5371

Wilcoxon Signed-Ranks tests for the subgroup: RIVLCO = 1 RR = 1

Dependent variables	N	Mean	S.D.	T	Signed Ranks		Tie	Z
					+	-		
LOWP10H	5	4.114	0.777	0.68	Mean	05	05	0.00
HIGH10H	5	4.188	0.707	0.68	Rank	18.00	04.750	0.0000

Wilcoxon Signed-Ranks tests for the subgroup: RIVLCO = 1 RR = 2

Dependent variables	N	Mean	S.D.	T	Signed Ranks		Tie	Z
					+	-		
LOWP10H	17	4.128	0.746	0.61	Mean	13	01	0.04
HIGH10H	17	4.149	0.701	0.61	Rank	18.00	01.706	0.0000

Wilcoxon Signed-Ranks tests for the subgroup: RIVLCO = 1 RR = 3

Dependent variables	N	Mean	S.D.	T	Signed Ranks		Tie	Z
					+	-		
LOWP10H	51	4.151	0.732	0.28	Mean	11	24	0.01
HIGH10H	51	4.136	0.714	0.28	Rank	18.000	01.706	0.0000

Wilcoxon Signed-Ranks tests for the subgroup: RIVLCO = 1 RR = 4

Dependent variables	N	Mean	S.D.	T	Signed Ranks		Tie	Z
					+	-		
LOWP10H	54	4.059	0.687	0.41	Mean	5	4	0.01
HIGH10H	54	4.059	0.696	0.41	Rank	18.000	01.706	0.0000

Wilcoxon Signed-Ranks tests for the subgroup: RIVLCO = 1 RR = 5

Dependent variables	N	Mean	S.D.	T	Signed Ranks		Tie	Z
					+	-		
LOWP10H	51	4.015	0.656	0.17	Mean	5	0	0.04
HIGH10H	51	4.017	0.667	0.17	Rank	18.000	01.706	0.0000

Wilcoxon Signed-Ranks tests for the subgroup: RIVLCO = 1 RR = 6

Dependent variables	N	Mean	S.D.	T	Signed Ranks		Tie	Z
					+	-		
LOWP10H	54	4.014	0.678	0.17	Mean	11	07	0.01
HIGH10H	54	4.007	0.686	0.17	Rank	18.000	01.706	0.0000

Kruskal-Wallis tests for the subgroup: RIVLOC = 1 SL = 1

Group 1 is RR = 1  
 Group 2 is RR = 2  
 Group 3 is RR = 3

Dependent Variable	Group	N	Mean	Mean Rank		
LDWFISH	1	21	9.950	35.857	F= 0.793 2, 58 DF F=0.4812 H= 2.363 2 DF P<0.2950	
	2	20	7.450	25.625		
	3	21	6.250	30.275		
HIFISH	1	21	3.048	25.929	F= 0.644 2, 58 DF F=0.5027 H= 2.724 2 DF P=0.1554	
	2	20	8.250	27.075		
	3	20	6.500	37.100		

Kruskal-Wallis tests for the subgroup: RIVLOC = 1 SL = 2

Group 1 is RR = 1  
 Group 2 is RR = 2  
 Group 3 is RR = 3

Dependent Variable	Group	N	Mean	Mean Rank		
LDWFISH	1	21	6.200	34.475	F= 2.927 2, 58 DF F=0.0611 H= 1.869 2 DF F=0.3933	
	2	20	1.950	31.100		
	3	21	1.760	27.595		
HIFISH	1	20	0.550	24.400	F= 3.511 2, 58 DF F=0.0361 H= 9.181 2 DF F=0.0101	
	2	20	0.900	29.175		
	3	21	4.810	39.024		

Kruskal-Wallis tests for the subgroup: RIVLOC = 1 SL = 3

Group 1 is RR = 1  
 Group 2 is RR = 2  
 Group 3 is RR = 3

Dependent Variable	Group	N	Mean	Mean Rank		
LDWFISH	1	9	0.778	13.000	F= 0.341 2, 22 DF F=0.7169 H= 0.299 2 DF F=0.8554	
	2	7	3.286	13.929		
	3	9	1.778	12.278		
HIFISH	1	9	0.889	12.178	F= 0.122 2, 22 DF F=0.8966 H= 0.230 2 DF F=0.8973	
	2	7	0.571	12.214		
	3	9	1.111	13.556		

Kruskal-Wallis tests for the subgroup: RIVLCC = 2 SL = 1

Group 1 is RR = 1  
 Group 2 is RR = 2  
 Group 3 is RR = 3

Dependent Variable	Group	N	Mean	Mean Rank		
LDWFISH	1	15	3.937	27.033	F= 3.414 2, 40 DF P=0.0424 H= 5.311 2 DF P=0.0702	
	2	15	1.923	22.708		
	3	15	1.200	16.791		
HIFISH	1	15	0.333	18.567	F= 2.709 2, 40 DF P=0.1116 H= 2.925 2 DF P=0.2317	
	2	15	1.154	21.554		
	3	15	2.333	25.633		

Kruskal-Wallis tests for the subgroup: RIVLCC = 2 SL = 2

Group 1 is RR = 1  
 Group 2 is RR = 2  
 Group 3 is RR = 3

Dependent variable	Group	N	Mean	Mean Rank		
LDWFISH	1	24	0.292	35.042	F= 1.715 2, 49 DF P=0.2731 H= 1.019 2 DF P=0.5435	
	2	24	0.292	35.042		
	3	24	0.715	39.417		
HIFISH	1	24	0.375	33.504	F= 0.550 2, 49 DF P=0.5824 H= 2.472 2 DF P=0.2965	
	2	24	0.525	35.396		
	3	24	0.750	40.500		

Kruskal-Wallis tests for the subgroup: RIVLCC = 2 SL = 3

Group 1 is RR = 1  
 Group 2 is RR = 2  
 Group 3 is RR = 3

Dependent Variable	Group	N	Mean	Mean Rank		
LDWFISH	1	15	0.133	24.472	F= 0.645 2, 42 DF P=0.5304 H= 2.004 2 DF P=0.3671	
	2	15	0.000	21.500		
	3	15	0.200	27.167		
HIFISH	1	15	0.000	22.000	F= 1.909 2, 42 DF P=0.1557 H= 4.191 2 DF P=0.1297	
	2	15	0.000	22.000		
	3	15	0.200	25.000		

APPENDIX M

STATISTICAL RESULTS OF GRAVEL BAR STRANDING WITH AMPLITUDE  
FLUCTUATIONS OF 2,000 CFS AT THREE DOWNRAMPING RATES

Kruskal-Wallis tests for the subgroup: RIVLOC = 1

Group 1 is RR = 1  
 Group 2 is RR = 2  
 Group 3 is RR = 3

Dependent Variable	Group	N	Mean	Mean Rank	
NUMFISH	1	49	3.939	75.041	F= 1.656 2,147 DF P<0.1930
	2	50	1.040	70.390	H= 1.956 2 DF P<0.3761
	3	51	2.765	80.951	

Kruskal-Wallis tests for the subgroup: RIVLOC = 2

Group 1 is RR = 1  
 Group 2 is RR = 2  
 Group 3 is RR = 3

Dependent Variable	Group	N	Mean	Mean Rank	
NUMFISH	1	36	0.250	64.611	F= 0.448 2,136 DF P<0.6427
	2	53	0.415	76.151	H= 4.543 2 DF P<0.1032
	3	50	0.300	67.360	

Kruskal-Wallis tests

Group 1 is RR = 1  
 Group 2 is RR = 2  
 Group 3 is RR = 3

Dependent Variable	Group	N	Mean	Mean Rank	
NUMFISH	1	85	2.376	141.771	F= 1.855 2,286 DF P<0.1572
	2	103	0.718	145.277	H= 0.333 2 DF P<0.8464
	3	101	1.545	147.436	

APPENDIX N

SPRING 1986 SALMON FRY GRAVEL BAR STRANDING DATA SUMMARY

This appendix includes a summary of the stranded fry from each of the twelve (12) gravel bar locations studied for each of the twenty-four (24) tests completed (See Table 6-1) followed by summary data for each gravel bar observation completed during the study (See Table 6-2).

**TABLE N-1** NUMBER OF FRY STRANDED ON THE THIRTY-FIVE (35)  
GRAVEL BAR TEST-SITES BY DATE AND TEST TYPE DURING  
THE SPRING 1986 GRAVEL BAR SALMON STRANDING STUDY

DATE	TOTAL FRY STRANDED	-----EVENT DESCRIPTION-----		
		AMP (1)	RAMP (1)	END FLOW (2)
MARCH 13, 1986	18	A2	R1	E1
MARCH 14	11	A1	R1	E1
MARCH 15	4	A2	R1	E2
MARCH 16	6	A2	R2	E2
MARCH 17	14	A2	R2	E1
MARCH 18	34	A1	R2	E1
MARCH 19	20	A1	R1	E2
MARCH 20	16	A1	R2	E2
MARCH 26	40	A2	R1	E2
MARCH 27	44	A1	R2	E2
APRIL 1	11	A1	R1	E1
APRIL 2	16	A1	R1	E2
APRIL 3	51	A2	R2	E1
APRIL 4	13	A2	R1	E1
APRIL 5	29	A2	R2	E2
APRIL 6	18	A1	R2	E1
APRIL 7	6	A1	R2	E2
APRIL 8	6	A1	R1	E2
APRIL 9	19	A2	R2	E1
APRIL 10	15	A1	R1	E1
APRIL 11	20	A2	R1	E1
APRIL 12	9	A2	R1	E2
APRIL 13	92	A1	R2	E1
APRIL 14	19	A2	R2	E2

Amplitude A1 = 2000 cfs  
A2 = 4000 cfs

(1) Measured at the Newhalem USGS Gage

Ramp Rate: R1 = 1000 cfs/hr  
R2 = 5000 cfs/hr

(2) Measured at the Marblemount USGS Gage.

End Flow E1 = 3000 cfs  
E2 = 3500 cfs



**TABLE N-2** SUMMARY DATA OF 1986 SALMON FRY GRAVEL BAR  
STRANDING SPAGIT RIVER (SUMMER)

GRAVEL BAR NAME WHERE FRY STRANDED	STATION # ON GRAVEL BAR	TEST NUMBER	X COORDINATE OF FISH	Y COORDINATE OF FISH	NUMBER OF FISH STRANDED	FISH REFERENCE COORDINATE 1	FISH REFERENCE COORDINATE 2	FISH REFERENCE COORDINATE 3
Rockport	3	1	39.54	21.29	1	44.9000	64.100	-0-
Bad Spot	1	1	136.9	45.52	1	-0-	58.600	77.800
Forbidden	1	1	75.94	28.75	1	81.2000	37.500	-0-
Forbidden	1	1	62.79	24.77	1	67.5000	44.700	-0-
Hooper Slough	1	1	15.44	15.67	1	22.0000	86.000	-0-
Inaccessible Is	1	1	177.2	17.66	1	-0-	39.600	64.300
Big Eddy	1	1	96.75	27.91	1	100.700	28.100	-0-
Big Eddy	2	1	129.9	18.93	1	-0-	35.400	72.600
Marblemount	1	1	16.24	28.27	1	32.6000	89.400	-0-
Marblemount	3	1	142.3	38.53	1	-0-	57.200	69.400
Fungus Bar	2	1	54.45	33.43	1	63.9000	56.500	-0-
Fungus Bar	2	1	140.6	0.000	1	-0-	40.600	55.400
Fungus Bar	3	1	187.0	21.00	1	-0-	89.500	24.700
Fungus Bar	3	1	183.3	18.74	1	-0-	85.300	24.800
Fungus Bar	3	1	162.6	4.230	1	-0-	62.900	37.500
Fungus Bar	3	1	186.3	32.53	1	-0-	92.200	35.100
Face Bar	3	1	197.9	10.79	1	-0-	94.500	12.400
Rockport	1	2	75.40	5.470	1	75.6000	25.200	-0-
Rockport	1	2	95.18	13.94	1	96.2000	14.750	-0-
Rockport	1	2	59.81	6.340	1	51.2000	49.600	-0-
Rockport	2	2	179.7	8.780	1	-0-	80.200	22.100
Rockport	3	2	65.87	16.04	1	68.3000	38.600	-0-
Hooper Slough	1	2	27.74	10.61	1	26.0000	77.300	-0-
Marblemount	1	2	128.5	19.07	1	-0-	33.700	73.800
Marblemount	1	2	163.9	9.670	1	-0-	64.600	37.400
Fungus Bar	3	2	169.9	41.39	1	-0-	81.200	51.200
Face Bar	1	2	113.3	18.76	1	-0-	27.000	88.700
Face Bar	1	2	158.1	15.56	1	-0-	59.700	44.000
Dixsud Creek	1	2	157.2	40.65	1	-0-	70.200	59.000
Rockport	2	3	113.9	22.00	1	-0-	26.000	68.900
Inaccessible Is	2	3	19.40	6.040	1	21.0000	81.000	-0-
Dixsud Creek	2	3	171.2	25.40	1	-0-	75.600	38.400
Sink Bar	1	3	115.8	15.57	1	-0-	22.200	85.000
Rockport	2	4	163.4	17.61	1	-0-	65.600	40.400
Bad Spot	1	4	166.9	59.04	1	-0-	69.200	67.700
Hooper Slough	1	4	72.87	21.95	1	76.1000	34.900	-0-
Inaccessible Is	2	4	106.1	28.14	1	-0-	28.800	98.000
Big Eddy	3	4	128.3	25.91	1	-0-	38.400	76.200
Rockport	1	5	161.0	22.45	1	-0-	65.000	45.000

NOTE : PLEASE SEE TABLE FOR DESCRIPTION OF TEST SCHEDULE

GRAVEL BAR NAME WHERE FRY STRANDED	STATION # ON GRAVEL BAR	TEST NUMBER	X COORDINATE OF FISH	Y COORDINATE OF FISH	NUMBER OF FISH STRANDED	FISH REFERENCE COORDINATE 1	FISH REFERENCE COORDINATE 2	FISH REFERENCE COORDINATE 3
Inaccessible Is	1	5	74.64	30.15	1	80.5000	39.400	-0-
Inaccessible Is	1	5	163.2	15.00	1	-0-	65.000	39.700
Inaccessible Is	1	5	177.1	16.42	1	-0-	78.800	28.200
Inaccessible Is	1	5	132.5	23.63	1	-0-	40.200	71.500
Inaccessible Is	3	5	28.12	36.02	1	45.7000	80.400	-0-
Big Eddy	1	5	2.740	19.00	1	19.2000	99.100	-0-
Marblemount	1	5	103.4	29.71	1	-0-	39.900	101.10
Marblemount	2	5	176.6	11.71	1	-0-	38.400	64.500
Diobsd Creek	1	5	204.3	21.47	1	-0-	106.50	21.900
Diobsd Creek	1	5	69.26	44.64	1	82.4000	54.200	-0-
Diobsd Creek	2	5	151.1	0.000	1	-0-	51.100	46.90
Diobsd Creek	2	5	91.16	10.62	1	91.8000	13.800	-0-
Diobsd Creek	2	5	185.7	9.520	1	-0-	86.200	17.200
Rockport	1	6	195.5	33.40	1	-0-	101.20	33.700
Rockport	1	6	73.19	3.970	1	73.3000	27.100	-0-
Rockport	3	6	159.1	25.82	1	-0-	67.500	49.200
Inaccessible Is	1	6	192.7	15.67	1	-0-	84.400	24.100
Inaccessible Is	2	6	22.26	18.59	1	29.2000	80.000	-0-
Marblemount	1	6	86.70	11.06	1	87.4000	17.300	-0-
Marblemount	2	6	85.78	9.650	1	89.3000	14.800	-0-
Marblemount	3	6	42.19	60.67	1	73.9000	87.600	-0-
Marblemount	3	6	62.59	26.07	1	67.8000	45.600	-0-
Marblemount	3	6	63.07	10.88	2	64.0000	35.500	-0-
Marblemount	3	6	70.08	14.15	1	71.5000	33.100	-0-
Marblemount	3	6	57.73	59.64	1	83.0000	73.100	-0-
Marblemount	3	6	67.23	17.82	7	65.8000	40.800	-0-
Marblemount	3	6	64.82	18.83	2	67.5000	39.900	-0-
Marblemount	3	6	52.58	19.54	1	56.2000	51.400	-0-
Marblemount	3	6	54.44	19.11	1	57.7000	49.400	-0-
Fungus Bar	1	6	9.200	49.04	1	49.9000	103.20	-0-
Fungus Bar	1	6	24.91	57.21	1	62.4000	94.400	-0-
Fungus Bar	3	6	56.12	33.98	1	60.0000	59.800	-0-
Fungus Bar	3	6	85.65	13.37	1	86.7000	19.600	-0-
Face Bar	1	6	84.31	24.85	1	87.9000	29.400	-0-
Face Bar	1	6	16.25	2.870	1	16.5000	83.900	-0-
Face Bar	2	6	198.3	28.15	1	-0-	102.20	28.200
Face Bar	2	6	145.7	41.79	1	-0-	62.700	67.700
Dink Bar	3	6	6.630	25.55	1	26.4000	96.800	-0-
Dink Bar	3	6	37.15	34.50	1	50.7000	71.700	-0-
Rockport	2	7	97.67	26.50	2	101.200	26.600	-0-
Rockport	2	7	107.0	29.15	1	-0-	30.000	97.500
Bad Spot	1	7	176.4	66.97	1	-0-	101.80	71.000
Bad Spot	2	7	119.8	62.97	1	-0-	66.000	102.00
Forbidden	3	7	152.9	17.70	1	-0-	55.800	51.300
Inaccessible Is	1	7	77.81	10.39	2	78.5000	24.500	-0-
Inaccessible Is	2	7	2.320	14.82	1	15.0000	98.800	-0-
Marblemount	1	7	72.17	14.56	1	73.7000	31.600	-0-
Marblemount	3	7	182.1	51.39	1	-0-	95.500	54.400
Fungus Bar	1	7	61.57	15.13	1	63.4000	41.300	-0-
Fungus Bar	3	7	42.35	22.81	1	48.1000	62.000	-0-
Fungus Bar	3	7	52.40	0.000	1	52.4000	47.600	-0-

NOTE : PLEASE SEE TABLE

FOR DESCRIPTION OF TEST SCHEDULE

GRAVEL BAR NAME WEEPE FRY STRANDED	STATION # ON GRAVEL BAR	TEST NUMBER	X COORDINATE OF FISH	Y COORDINATE OF FISH	NUMBER OF FISH STRANDED	FISH REFERENCE COORDINATE 1	FISH REFERENCE COORDINATE 2	FISH REFERENCE COORDINATE 3
Fungus Bar	3	7	29.90	15.92	1	33.9000	71.900	-0-
Face Bar	1	7	26.20	12.20	1	28.9000	74.800	-0-
Face Bar	1	7	27.08	21.05	1	34.7000	75.900	-0-
Diobaud Creek	2	7	4.110	39.48	1	39.7000	107.70	-0-
Rockport	1	8	62.16	15.25	1	64.0000	40.800	-0-
Rockport	1	8	78.20	5.570	1	78.4000	22.500	-6-
Rockport	2	8	67.83	27.00	2	73.0000	42.000	-0-
Rockport	2	8	79.04	13.82	1	80.2000	25.000	-0-
Rockport	2	8	96.78	27.81	1	100.700	28.000	-0-
Inaccessible Is	1	8	165.0	15.54	1	-0-	70.700	34.700
Inaccessible Is	1	8	180.1	0.000	1	-0-	80.100	20.000
Inaccessible Is	1	8	191.0	4.140	2	-0-	91.100	5.9000
Inaccessible Is	1	8	111.3	15.49	1	-0-	19.200	90.000
Inaccessible Is	1	8	10.93	12.69	1	16.9000	90.000	-0-
Marblemount	3	8	59.96	15.39	1	61.9000	42.900	-0-
Fungus Bar	3	8	73.28	22.30	1	76.6000	34.600	-0-
Diobaud Creek	1	8	34.91	37.46	1	51.2000	75.100	-0-
Rockport	1	9	133.8	12.30	1	-0-	36.000	87.500
Rockport	1	9	61.88	10.02	1	62.7000	29.400	-0-
Rockport	1	9	146.8	15.81	1	-0-	49.400	55.500
Rockport	1	9	155.6	16.40	2	-0-	58.000	47.200
Rockport	2	9	127.4	7.24	1	-0-	28.700	73.000
Rockport	3	9	130.9	4.14	1	-0-	31.200	69.200
Bad Spot	2	9	98.92	67.88	1	-0-	60.900	118.00
Bad Spot	3	9	128.6	4.76	1	-0-	49.600	62.200
Inaccessible Is	1	9	11.05	15.58	1	19.1000	90.700	-0-
Inaccessible Is	1	9	54.29	12.91	1	55.8000	47.500	-0-
Inaccessible Is	1	9	47.71	32.37	1	54.7000	65.200	-0-
Inaccessible Is	1	9	69.69	20.74	1	72.6000	76.500	-0-
Inaccessible Is	1	9	4.840	19.3	1	19.9000	97.100	-0-
Inaccessible Is	1	9	77.61	16.30	1	79.3000	27.700	-0-
Inaccessible Is	1	9	73.41	15.25	1	75.0000	30.700	-0-
Inaccessible Is	2	9	0.470	12.39	1	12.4000	106.70	-0-
Inaccessible Is	2	9	79.98	12.12	1	80.9000	23.400	-0-
Inaccessible Is	2	9	50.40	27.68	1	57.5000	58.500	-0-
Inaccessible Is	2	9	4.590	13.76	1	14.5000	96.400	-0-
Inaccessible Is	2	9	37.71	22.33	1	39.8000	73.900	-0-
Inaccessible Is	2	9	15.14	15.15	1	21.4000	86.200	-0-
Marblemount	1	9	185.3	33.73	1	-0-	76.000	46.000
Fungus Bar	1	9	69.95	15.28	1	-71.5000	-35.200	-0-
Fungus Bar	1	9	60.21	22.34	1	66.1000	47.500	-0-
Fungus Bar	1	9	172.6	2.820	1	-0-	72.700	27.500
Fungus Bar	1	9	69.54	16.62	1	71.5000	74.700	-0-
Fungus Bar	1	9	67.25	23.28	1	67.4000	43.500	-0-
Fungus Bar	2	9	55.95	16.33	1	58.7000	47.000	-0-
Fungus Bar	2	9	82.90	0.600	1	82.9000	17.100	-0-
Fungus Bar	2	9	25.58	11.11	1	26.7000	18.200	-0-
Fungus Bar	2	9	100.0	4.600	1	107.100	4.6000	-0-
Fungus Bar	2	9	159.7	27.56	1	-0-	65.200	42.600
Fungus Bar	3	9	82.66	23.74	1	86.0000	25.400	-0-
Diobaud Creek	1	9	77.81	41.72	1	86.1000	46.900	-0-

NOTE : PLEASE SEE TABLE FOR DESCRIPTION OF TEST SCHEDULE

GRAVEL BAR NAME WHERE FRY STRANDED	STATION # ON GRAVEL BAR	TEST NUMBER	X COORDINATE OF FISH	Y COORDINATE OF FISH	NUMBER OF FISH STRANDED	FISH REFERENCE COORDINATE 1	FISH REFERENCE COORDINATE 2	FISH REFERENCE COORDINATE 3
Diobsud Creel	1	9	94.95	45.52	1	105.300	45.800	-0-
Diobsud Creel	1	9	182.3	42.15	1	-0-	92.500	45.700
Diobsud Creel	2	9	112.0	5.960	1	-0-	13.400	69.200
Diobsud Creel	2	9	129.2	13.05	1	-0-	32.000	72.000
Oink Bar	3	9	98.41	6.100	1	98.6000	6.3000	-0-
Rockport	1	10	117.5	0.000	1	-0-	17.500	62.500
Rockport	2	10	193.7	9.740	1	-0-	94.200	11.600
Rockport	2	10	142.4	11.12	1	-0-	43.800	58.700
Rockport	3	10	3.540	14.88	1	15.3000	97.600	-0-
Rockport	3	10	96.50	17.66	1	-0-	18.000	105.00
Rockport	3	10	194.3	25.57	1	-0-	97.700	26.200
Inaccessible Is	1	10	2.720	11.89	1	12.2000	58.000	-0-
Inaccessible Is	1	10	68.64	11.50	1	69.6000	33.400	-0-
Inaccessible Is	1	10	13.72	33.07	1	35.8000	92.400	-0-
Inaccessible Is	2	10	91.80	38.64	1	99.5000	39.500	-0-
Inaccessible Is	2	10	-0-	-0-	1	48.9000	37.600	-0-
Inaccessible Is	2	10	16.12	13.14	1	20.8000	64.900	-0-
Inaccessible Is	2	10	31.41	15.83	1	35.2000	78.400	-0-
Inaccessible Is	2	10	51.30	0.000	1	51.3000	48.500	-0-
Marblemount	1	10	50.30	5.490	1	-50.6000	-50.000	-0-
Marblemount	1	10	16.64	10.36	1	-19.6000	-64.000	-0-
Marblemount	2	10	92.93	3.730	1	93.0000	6.0000	-0-
Marblemount	2	10	196.5	3.720	1	-0-	96.500	4.000
Marblemount	3	10	85.42	5.550	1	85.6000	15.600	-0-
Marblemount	3	10	94.84	5.530	1	95.0000	7.6000	-0-
Marblemount	3	10	114.3	7.180	1	-0-	16.000	86.600
Marblemount	3	10	119.0	0.000	1	-0-	19.000	60.000
Marblemount	3	10	85.87	4.540	1	-87.0000	-14.000	-0-
Marblemount	3	10	65.79	5.210	1	66.0000	34.600	-0-
Marblemount	3	10	95.62	8.540	2	96.0000	9.6000	-0-
Marblemount	3	10	93.62	8.460	2	94.0000	10.600	-0-
Fungus Bar	1	10	63.13	3.050	1	63.2000	37.000	-0-
Fungus Bar	1	10	71.13	23.78	1	75.0000	37.400	-0-
Fungus Bar	1	10	71.21	23.55	1	75.0000	37.200	-0-
Fungus Bar	1	10	70.20	22.77	1	73.8000	37.500	-0-
Fungus Bar	1	10	139.1	34.90	1	-0-	52.400	70.200
Fungus Bar	2	10	64.18	6.450	1	-64.5000	-36.400	-0-
Fungus Bar	2	10	152.1	32.14	1	-0-	61.200	57.700
Fungus Bar	2	10	154.4	24.01	1	-0-	59.500	51.500
Fungus Bar	2	10	77.45	11.45	1	-78.2000	-25.200	-0-
Fungus Bar	3	10	9.070	17.49	1	19.7000	92.600	-0-
Bacon Creel	1	10	200.9	27.08	1	-0-	104.50	27.100
Bacon Creel	2	10	110.2	32.13	1	-0-	33.700	95.400
Face Bar	2	10	154.5	16.75	1	-0-	57.000	48.500
Diobsud Creel	1	10	128.8	42.68	1	-0-	51.500	67.000
Diobsud Creel	1	10	156.5	41.17	1	-0-	69.900	59.500
Diobsud Creel	2	10	12.50	18.34	1	22.2000	69.400	-0-
Diobsud Creel	2	10	84.05	25.05	1	87.7000	29.700	-0-
Oink Bar	3	10	95.80	15.45	1	100.000	15.500	-0-
Forbidden	2	11	145.2	0.000	1	-0-	45.200	54.800
Inaccessible Is	1	11	19.64	33.34	1	38.7000	67.000	-0-

NOTE : PLEASE SEE TABLE FOR DESCRIPTION OF TEST SCHEDULE

GRAVEL BAR NAME WHERE FRY STRANDED	STATION # ON GRAVEL BAR	TEST NUMBER	Y COORDINATE OF FISH	Y COORDINATE OF FISH	NUMBER OF FISH STRANDED	FISH REFERENCE COORDINATE 1	FISH REFERENCE COORDINATE 2	FISH REFERENCE COORDINATE 3
Inaccessible Is	2	11	29.21	20.52	1	35.7000	73.700	-0-
Marblemount	1	11	114.4	15.32	1	-0-	21.000	87.000
Marblemount	3	11	114.8	11.86	1	-0-	19.000	86.000
Marblemount	3	11	54.22	26.15	1	62.0000	51.000	-0-
Marblemount	3	11	74.80	17.39	1	72.0000	32.000	-0-
Fungus Bar	1	11	35.78	12.24	1	37.5000	65.200	-0-
Fungus Bar	2	11	65.02	5.610	1	85.2000	16.000	-0-
Fungus Bar	3	11	57.92	29.51	1	65.0000	51.400	-0-
Rockport	1	12	44.40	0.000	1	44.4000	55.600	-0-
Rockport	1	12	152.8	5.480	1	-0-	53.100	47.500
Rockport	2	12	138.4	14.28	1	-0-	41.000	67.200
Rockport	2	12	129.5	13.63	1	-0-	41.800	62.000
Hopper Slough	1	12	163.4	10.12	1	-0-	64.200	78.000
Pig Eddy	2	12	171.2	9.810	1	-0-	71.900	30.400
Pig Eddy	2	12	171.0	10.67	1	-0-	71.800	30.500
Marblemount	1	12	19.00	25.75	1	32.0000	85.000	-0-
Marblemount	1	12	132.6	28.04	1	-0-	43.000	73.000
Marblemount	3	12	5.760	40.65	1	41.0000	107.30	-0-
Marblemount	3	12	7.220	37.71	1	38.0000	100.00	-0-
Fungus Bar	2	12	65.76	5.630	1	66.0000	34.700	-0-
Fungus Bar	2	12	164.4	21.76	1	-0-	68.000	41.700
Dashed Creek	2	12	37.50	17.18	1	40.0000	44.800	-0-
Rockport	2	13	87.40	24.18	1	97.0000	27.000	-0-
Rockport	3	13	21.54	26.47	1	34.0000	83.000	-0-
Forbidden	1	13	121.6	20.26	1	-0-	29.600	61.000
Inaccessible Is	1	13	4.680	15.07	1	19.5000	97.800	-0-
Inaccessible Is	1	13	181.9	22.29	1	-0-	84.900	28.700
Inaccessible Is	1	13	194.2	5.550	1	-0-	-94.400	-3.0000
Inaccessible Is	1	13	196.5	9.140	1	-0-	-96.900	-9.5000
Inaccessible Is	1	13	74.62	13.35	1	76.0000	28.500	-0-
Marblemount	2	13	195.8	11.02	1	-0-	96.400	11.800
Marblemount	2	13	169.6	23.94	1	-0-	72.700	35.800
Marblemount	2	13	24.99	16.95	1	31.2000	76.900	-0-
Marblemount	3	13	115.4	24.94	1	-0-	36.200	91.500
Rockport	1	14	6.000	0.000	1	6.00000	94.000	-0-
Rockport	2	14	166.7	6.680	1	-0-	-67.000	-24.000
Rockport	2	14	26.53	11.02	1	29.0000	74.000	-0-
Hopper Slough	1	14	25.27	9.270	1	26.9000	75.700	-0-
Inaccessible Is	1	14	70.90	0.000	1	70.9000	29.100	-0-
Inaccessible Is	1	14	35.34	15.57	1	36.6000	65.500	-0-
Inaccessible Is	1	14	145.5	13.34	1	-0-	51.300	52.200
Marblemount	1	14	10.78	32.69	1	-34.3000	-95.400	-0-
Marblemount	1	14	98.24	16.41	1	99.6000	16.500	-0-
Marblemount	2	14	174.9	5.510	1	-0-	-75.100	-25.700
Marblemount	2	14	193.0	3.370	1	-0-	98.100	3.8000
Marblemount	2	14	183.9	7.310	1	-0-	-84.200	-17.700
Marblemount	2	14	169.9	0.000	1	-0-	69.900	30.100
Marblemount	3	14	-0-	-0-	1	-0-	39.700	55.500
Marblemount	3	14	178.9	6.370	1	-0-	79.200	22.000
Marblemount	3	14	150.4	0.000	1	-0-	50.400	49.600
Fungus Bar	3	14	161.5	0.000	1	-0-	61.500	38.500

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FOR DESCRIPTION OF TEST SCHEDULE

GRAVEL BAR NAME WHERE FRY STRANDED	STATION # ON GRAVEL BAR	TEST NUMBER	X COORDINATE OF FISH	Y COORDINATE OF FISH	NUMBER OF FISH STRANDED	FISH REFERENCE COORDINATE 1	FISH REFERENCE COORDINATE 2	FISH REFERENCE COORDINATE 3
Fungus Bar	3	14	152.4	13.33	1	-0-	54.100	49.000
Fungus Bar	3	14	159.0	0.000	1	-0-	59.000	41.000
Drobsud Creek	2	14	151.0	0.000	1	-0-	51.000	49.000
Drobsud Creek	2	14	120.5	0.000	1	-0-	20.500	75.500
Drobsud Creek	2	14	120.5	0.000	1	-0-	20.500	79.100
Drobsud Creek	2	14	132.6	4.700	1	-0-	32.900	67.800
Drobsud Creek	2	14	126.5	4.450	1	-0-	26.900	72.600
Drobsud Creek	2	14	117.6	0.000	1	-0-	17.600	82.400
Drobsud Creek	2	14	121.3	0.000	1	-0-	21.300	76.700
Drobsud Creek	2	14	119.7	0.000	1	-0-	19.700	81.300
Dink Bar	3	14	127.4	9.890	1	-0-	27.100	73.300
Dink Bar	3	14	133.5	12.08	1	-0-	33.600	67.600
Dink Bar	3	14	133.5	12.08	1	-0-	33.600	67.600
Rockport	1	15	116.9	12.43	1	-0-	21.000	84.000
Rockport	2	15	194.4	22.31	1	-0-	97.000	23.000
Inaccessible Is	1	15	176.3	22.68	1	-0-	79.600	32.900
Inaccessible Is	1	15	193.6	18.75	1	-0-	93.500	19.800
Inaccessible Is	1	15	38.19	40.14	1	55.4000	73.700	-0-
Inaccessible Is	1	15	142.6	24.10	1	-0-	42.900	62.300
Inaccessible Is	1	15	142.3	11.56	1	-0-	43.800	58.900
Inaccessible Is	1	15	31.85	37.11	1	48.9000	77.600	-0-
Inaccessible Is	1	15	176.1	10.45	1	-0-	76.800	26.100
Inaccessible Is	1	15	190.0	17.66	1	-0-	81.900	21.700
Inaccessible Is	1	15	170.5	14.42	1	-0-	72.000	32.600
Inaccessible Is	2	15	40.32	12.12	1	42.1000	60.900	-0-
Inaccessible Is	3	15	45.07	37.13	2	58.4000	69.300	-0-
Marblepoint	1	15	28.13	35.13	1	45.0000	60.000	-0-
Marblepoint	1	15	144.9	34.85	2	-0-	56.700	65.100
Marblepoint	1	15	13.55	40.81	1	-43.0000	-95.600	-0-
Marblepoint	1	15	92.95	20.52	1	-0-	21.700	109.000
Marblepoint	1	15	179.1	10.19	1	-0-	79.700	23.300
Marblepoint	1	15	10.91	32.41	2	-34.2000	-54.800	-0-
Marblepoint	1	15	11.94	27.31	3	-29.8000	-92.200	-0-
Marblepoint	2	15	199.9	8.300	1	-0-	-100.20	-8.300
Marblepoint	2	15	184.0	7.870	1	-0-	-84.400	-17.800
Marblepoint	3	15	170.8	11.55	9	-0-	-71.800	-31.500
Marblepoint	3	15	153.6	0.000	1	-0-	53.600	46.400
Marblepoint	3	15	151.4	0.000	1	-0-	51.400	48.600
Marblepoint	3	15	118.7	86.43	1	-0-	90.700	120.40
Marblepoint	3	15	156.3	0.000	1	-0-	56.300	43.700
Marblepoint	3	15	156.6	5.440	1	-0-	56.900	43.700
Fungus Bar	1	15	48.77	15.45	1	52.5000	54.800	-0-
Fungus Bar	1	15	60.40	13.99	1	62.0000	42.000	-0-
Fungus Bar	2	15	78.08	55.85	1	96.0000	60.000	-0-
Fungus Bar	2	15	147.9	17.56	1	-0-	51.000	55.000
Fungus Bar	3	15	156.7	0.000	2	-0-	56.700	43.000
Fungus Bar	3	15	168.0	0.000	1	-0-	68.000	32.000
Bacon Creel	1	15	120.0	34.18	1	-0-	39.600	87.000
Dink Bar	2	15	75.27	29.64	1	80.9000	38.600	-0-
Dink Bar	2	15	77.72	28.95	1	79.2000	39.100	-0-
Dink Bar	3	15	14.52	31.47	1	34.7000	91.000	-0-

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FOR DESCRIPTION OF TEST SCHEDULE

GRAVEL BAR NAME WHERE FRY STRANDED	STATION # ON GRAVEL BAR	TEST NUMBER	X COORDINATE OF FISH	Y COORDINATE OF FISH	NUMBER OF FISH STRANDED	FISH REFERENCE COORDINATE 1	FISH REFERENCE COORDINATE 2	FISH REFERENCE COORDINATE 3
Rockport	1	16	36.56	24.48	1	44.0000	68.900	-0-
Inaccessible Is	1	16	152.8	27.67	1	-0-	57.900	52.900
Inaccessible Is	1	16	35.40	29.22	1	45.9000	70.900	-0-
Inaccessible Is	1	16	45.55	10.74	1	46.8000	55.500	-0-
Marblemount	3	16	16.67	47.46	2	50.7000	95.900	-0-
Marblemount	3	16	116.2	35.16	1	-0-	38.700	90.900
Marblemount	3	16	69.55	13.23	2	70.6000	33.200	-0-
Marblemount	3	16	55.59	16.56	1	58.6000	47.400	-0-
Marblemount	3	16	45.76	55.07	1	71.6000	77.300	-0-
Marblemount	3	16	-1.050	35.72	3	35.9000	147.20	-0-
Marblemount	3	16	-0-	-0-	1	111.100	8.5000	-0-
Marblemount	3	16	62.92	56.40	1	84.5000	67.500	-0-
Marblemount	3	16	38.67	55.55	1	67.6000	82.600	-0-
Diabsud Creek	2	16	193.2	21.37	1	-0-	97.600	21.900
Hooper Slough	1	17	2.100	20.79	1	20.5000	100.90	-0-
Marblemount	1	17	142.1	8.590	1	-0-	43.600	58.500
Marblemount	1	17	-0-	-0-	1	42.0000	55.800	-0-
Marblemount	3	17	95.00	0.000	1	95.0000	10.000	-0-
Diabsud Creek	2	17	180.6	8.040	1	-0-	81.000	21.000
Diabsud Creek	2	17	105.1	14.72	1	-0-	15.600	96.000
Inaccessible Is	2	18	128.2	22.26	1	-0-	35.900	75.200
Marblemount	2	18	-0-	-0-	1	-0-	-65.000	-33.000
Marblemount	2	18	-0-	-0-	1	54.4000	42.500	-0-
Diabsud Creek	2	18	140.4	12.31	1	-0-	48.000	55.000
Diabsud Creek	2	18	135.8	18.69	1	-0-	44.000	63.000
Diabsud Creek	2	18	161.5	21.20	1	-0-	65.000	44.000
Rockport	1	19	179.6	16.25	1	-0-	81.200	26.100
Rockport	2	19	152.4	27.60	1	-0-	59.000	54.700
Rockport	2	19	118.0	12.05	1	-0-	21.900	22.600
Rockport	2	19	135.2	17.46	1	-0-	39.200	67.100
Rockport	3	19	191.9	17.46	1	-0-	92.900	15.700
Bad Spot	2	19	38.69	68.19	1	78.4000	91.700	-0-
Bad Spot	2	19	19.80	72.38	1	76.0000	108.70	-0-
Inaccessible Is	1	19	190.7	6.540	1	-0-	-90.900	-11.400
Inaccessible Is	1	19	176.0	14.43	1	-0-	77.400	25.000
Inaccessible Is	2	19	102.5	43.53	1	-0-	43.600	109.80
Big Eddy	1	19	6.270	24.20	1	25.0000	98.800	-0-
Marblemount	2	19	162.4	2.170	1	-0-	82.400	27.700
Marblemount	3	19	63.30	0.000	1	63.2000	36.700	-0-
Marblemount	3	19	71.79	19.46	2	74.0000	34.600	-0-
Marblemount	3	19	-0-	-0-	1	-0-	13.800	-94.400
Marblemount	3	19	42.40	0.000	1	42.4000	57.600	-0-
Face Bar	3	19	152.5	2.230	1	-0-	53.500	46.600
Diabsud Creek	2	19	125.8	10.89	1	-0-	28.000	75.000
Rockport	1	20	149.1	0.000	1	-0-	49.100	50.900
Rockport	1	20	187.1	34.12	1	-0-	93.500	36.500
Rockport	2	20	67.17	34.47	1	75.5000	47.600	-0-
Bad Spot	1	20	174.5	68.19	1	-0-	101.00	72.800
Forbidden	1	20	171.0	29.64	1	-0-	76.900	41.500
Forbidden	3	20	58.69	21.78	1	62.6000	46.700	-0-
Inaccessible Is	2	20	158.6	41.87	1	-0-	72.000	58.800

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GRAVEL BAR NAME WHERE FRY STRANDED	STATION # ON GRAVEL BAR	TEST NUMBER	X COORDINATE OF FISH	Y COORDINATE OF FISH	NUMBER OF FISH STRANDED	FISH REFERENCE COORDINATE 1	FISH REFERENCE COORDINATE 2	FISH REFERENCE COORDINATE 3
Big Eddy	1	20	11.44	29.03	1	31.2000	93.200	-0-
Big Eddy	1	20	84.45	15.71	1	85.9000	22.100	-0-
Big Eddy	1	20	114.2	27.09	1	-0-	39.700	93.500
Marblemount	1	20	89.52	27.21	1	88.7000	42.000	-0-
Marblemount	1	20	43.62	60.97	1	75.0000	83.000	-0-
Marblemount	2	20	0.670	24.89	1	24.9000	102.40	-0-
Marblemount	2	20	0.020	33.40	1	33.4000	105.40	-0-
Facon Creek	1	20	80.32	44.87	1	92.0000	49.000	-0-
Rockport	3	21	-2.120	24.01	1	24.1000	104.90	-0-
Inaccessible Is	2	21	64.68	43.59	2	78.0000	56.100	-0-
Inaccessible Is	3	21	155.5	29.16	1	-0-	62.700	57.200
Inaccessible Is	3	21	89.42	31.79	1	94.9000	33.500	-0-
Big Eddy	3	21	84.87	35.51	1	92.0000	38.500	-0-
Big Eddy	3	21	20.55	42.27	1	47.0000	90.000	-0-
Marblemount	1	21	30.02	14.65	1	-33.4000	-71.500	-0-
Marblemount	3	21	38.68	41.80	1	56.8000	74.100	-0-
Marblemount	3	21	50.91	56.93	1	80.5000	71.400	-0-
Marblemount	3	21	45.69	60.36	1	75.7000	81.200	-0-
Marblemount	3	21	36.06	51.17	1	62.6000	81.900	-0-
Marblemount	3	21	1.620	26.15	2	26.2000	101.80	-0-
Marblemount	3	21	47.06	56.91	1	75.4000	79.200	-0-
Marblemount	3	21	33.04	52.17	1	65.9000	88.700	-0-
Marblemount	3	21	32.60	41.79	1	53.0000	79.300	-0-
Fungus Bar	2	21	61.82	12.06	1	62.0000	41.000	-0-
Facon Creek	1	21	60.60	0.000	1	60.6000	39.400	-0-
Facon Creek	2	21	56.19	31.05	1	64.2000	53.700	-0-
Inaccessible Is	1	22	109.4	9.420	1	-0-	13.300	91.100
Inaccessible Is	1	22	100.8	8.780	1	-0-	8.8000	99.600
Marblemount	1	22	176.6	12.66	1	-0-	77.900	26.500
Marblemount	1	22	92.40	25.28	1	95.8000	26.400	-0-
Marblemount	1	22	49.80	0.000	1	49.8000	50.200	-0-
Marblemount	1	22	92.72	40.55	1	101.200	41.200	-0-
Drobsud Creek	2	22	93.19	6.190	1	93.4000	9.2000	-0-
Drobsud Creek	2	22	96.27	6.620	1	96.5000	7.6000	-0-
Dink Bar	3	22	150.3	3.150	1	-0-	53.400	46.800
Rockport	3	23	70.03	30.27	1	83.7000	37.400	-0-
Rockport	3	23	124.8	35.13	1	-0-	47.000	83.000
Rockport	3	23	124.8	35.13	9	-0-	47.000	83.000
Red Spot	2	23	9.360	76.33	1	76.9000	118.50	-0-
Inaccessible Is	1	23	181.0	15.01	1	-0-	82.400	24.200
Inaccessible Is	1	23	150.6	23.15	1	-0-	55.500	54.500
Inaccessible Is	1	23	134.6	11.37	1	-0-	36.400	65.400
Inaccessible Is	1	23	129.5	26.62	1	-0-	35.700	75.400
Inaccessible Is	2	23	64.27	40.75	1	76.1000	54.200	-0-
Inaccessible Is	2	23	32.80	24.43	1	40.9000	71.500	-0-
Inaccessible Is	2	23	32.80	24.43	1	40.9000	71.500	-0-
Inaccessible Is	2	23	26.31	22.72	1	34.5000	77.000	-0-
Big Eddy	3	23	62.40	25.92	1	72.0000	52.000	-0-
Marblemount	2	23	196.9	21.85	2	-0-	102.00	32.000
Marblemount	2	23	163.5	29.55	1	-0-	70.000	47.000
Marblemount	2	23	155.0	23.99	8	-0-	60.000	51.000

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GRAVEL BAR NAME WHERE FISH STRANDED	STATION # ON GRAVEL BAR	TEST NUMBER	X COORDINATE OF FISH	Y COORDINATE OF FISH	NUMBER OF FISH STRANDED	FISH REFERENCE COORDINATE 1	FISH REFERENCE COORDINATE 2	FISH REFERENCE COORDINATE 3
Marblemount	2	23	142.6	17.41	1	-0-	46.000	60.000
Marblemount	3	23	202.2	54.96	1	-0-	116.00	55.000
Marblemount	3	23	134.0	0.000	1	-0-	34.000	66.000
Marblemount	3	23	119.4	67.27	1	-0-	70.000	105.00
Marblemount	3	23	114.4	67.48	1	-0-	69.000	109.00
Marblemount	3	23	112.8	71.87	1	-0-	73.000	112.00
Marblemount	3	23	117.6	72.90	1	-0-	75.000	110.00
Marblemount	3	23	111.6	81.17	1	-0-	82.000	120.00
Marblemount	3	23	121.7	84.25	1	-0-	87.000	115.00
Marblemount	3	23	127.4	77.55	1	-0-	81.000	109.00
Marblemount	3	23	67.72	57.71	1	195.000	59.000	-0-
Marblemount	7	23	77.00	52.15	1	93.0000	57.000	-0-
Marblemount	3	23	74.20	20.58	1	77.0000	33.000	-0-
Marblemount	3	23	64.04	19.69	1	67.0000	41.000	-0-
Marblemount	3	23	62.48	13.87	1	64.0000	47.000	-0-
Marblemount	3	23	50.54	19.03	2	54.0000	52.000	-0-
Marblemount	3	23	26.02	27.70	1	38.0000	79.000	-0-
Marblemount	3	23	40.24	34.40	1	53.0000	69.000	-0-
Marblemount	3	23	28.58	36.64	1	46.0000	80.000	-0-
Marblemount	3	23	31.52	41.36	4	52.0000	67.000	-0-
Marblemount	3	23	33.92	43.29	1	55.0000	79.000	-0-
Marblemount	3	23	37.44	46.19	2	57.0000	81.000	-0-
Marblemount	7	23	36.25	41.27	2	55.0000	76.000	-0-
Marblemount	3	23	47.12	51.77	6	70.0000	74.000	-0-
Marblemount	3	23	52.18	52.48	7	74.0000	71.000	-0-
Marblemount	3	23	58.52	50.04	1	77.0000	65.000	-0-
Marblemount	3	23	65.84	50.54	6	83.0000	61.000	-0-
Marblemount	3	23	59.48	62.72	4	85.0000	73.000	-0-
Marblemount	3	23	55.78	65.46	4	86.0000	79.000	-0-
Marblemount	3	23	54.28	69.27	1	88.0000	83.000	-0-
Marblemount	3	23	50.00	59.87	1	78.0000	76.000	-0-
Marblemount	3	23	41.15	62.71	1	75.0000	85.000	-0-
Marblemount	3	23	38.08	61.11	1	72.0000	87.000	-0-
Marblemount	3	23	23.71	50.90	1	56.0000	92.000	-0-
Marblemount	3	23	1.180	45.98	1	46.0000	100.00	-0-
Marblemount	3	23	1.040	37.99	1	38.0000	105.00	-0-
Marblemount	3	23	1.370	32.97	3	33.0000	104.00	-0-
Fungus Bar	2	23	28.34	25.31	1	38.0000	76.000	-0-
Fungus Bar	3	23	189.4	14.56	1	-0-	90.600	18.000
Dyobsd Creek	2	23	152.7	21.78	1	-0-	57.000	52.100
Inaccessible Is	1	24	13.53	31.41	1	74.2000	92.000	-0-
Inaccessible Is	1	24	170.5	17.17	1	-0-	72.600	24.100
Inaccessible Is	1	24	130.9	25.69	1	-0-	40.200	73.700
Big Eddy	1	24	48.43	16.00	1	51.0000	54.000	-0-
Marblemount	1	24	20.06	30.61	1	36.6000	85.600	-0-
Marblemount	1	24	1.720	40.76	1	40.8000	106.40	-0-
Marblemount	3	24	142.7	49.03	1	-0-	79.600	61.600
Marblemount	3	24	156.6	0.000	2	-0-	56.600	43.40
Bacon Creek	1	24	73.21	5.260	1	75.4000	27.300	-0-
Bacon Creek	1	24	79.91	43.27	1	90.4000	46.800	-0-
Dyobsd Creek	2	24	122.9	0.000	1	-0-	22.900	77.100

NOTE : PLEASE SEE TABLE FOR DESCRIPTION OF TEST SCHEDULE

APPENDIX O

CELL MEAN AND STANDARD DEVIATION DATA FOR THE 1986 SALMON  
FRY GRAVEL BAR STRANDING ANALYSES

Appendix 86A  
 RIVLDC=1 (  
 AMP=1 (2000)

N's, means and standard deviations based on dependent variable: LOGNUM

† Indicates statistics are collapsed over this factor

Factors: S B W E R	N	Mean	S.D.
† † † † †	216	0.212	0.450
1 † † † †	48	0.569	0.674
2 † † † †	108	0.129	0.321
3 † † † †	60	0.076	0.235
† 1 † † †	108	0.222	0.470
† 2 † † †	108	0.201	0.451
† † 1 † †	72	0.230	0.487
† † 2 † †	72	0.199	0.451
† † 3 † †	72	0.238	0.488
† † † 1 †	108	0.225	0.454
† † † 2 †	108	0.197	0.449
† † † † 1	108	0.202	0.378
† † † † 2	108	0.221	0.514
1 1 † † †	24	0.493	0.695
1 2 † † †	24	0.648	0.658
2 1 † † †	48	0.201	0.411
2 2 † † †	60	0.069	0.210
3 1 † † †	36	0.069	0.239
3 2 † † †	24	0.087	0.204
1 † 1 † †	16	0.607	0.826
1 † 2 † †	16	0.584	0.848
1 † 3 † †	16	0.486	0.775
2 † 1 † †	36	0.157	0.374
2 † 2 † †	36	0.089	0.260
2 † 3 † †	36	0.132	0.323
3 † 1 † †	20	0.035	0.155
3 † 2 † †	20	0.090	0.287
3 † 3 † †	20	0.104	0.254
1 † † 1 †	24	0.555	0.666
1 † † 2 †	24	0.584	0.696
2 † † 1 †	54	0.164	0.367
2 † † 2 †	54	0.092	0.271
3 † † 1 †	30	0.069	0.211
3 † † 2 †	30	0.093	0.260
1 † † † 1	24	0.380	0.482
1 † † † 2	24	0.759	0.936
2 † † † 1	54	0.177	0.369
2 † † † 2	54	0.079	0.258
3 † † † 1	30	0.106	0.282
3 † † † 2	30	0.046	0.175
† 1 1 † †	36	0.260	0.488
† 1 2 † †	36	0.199	0.424
† 1 3 † †	36	0.207	0.506
† 2 1 † †	36	0.200	0.429
† 2 2 † †	36	0.199	0.445
† 2 3 † †	36	0.205	0.453
† 1 † 1 †	54	0.235	0.487
† 1 † 2 †	54	0.209	0.457
† 2 † 1 †	54	0.214	0.422
† 2 † 2 †	54	0.189	0.444
† 1 † † 1	54	0.217	0.429
† 1 † † 2	54	0.227	0.513
† 2 † † 1	54	0.187	0.324
† 2 † † 2	54	0.215	0.520

s = slope  
 g = substrate  
 w = week number  
 e = endflow  
 r = ramp rate

1 1 1 2 1	35	0.275	0.522
1 1 2 1 1	36	0.116	0.310
1 1 2 2 1	36	0.262	0.517
1 1 3 1 1	36	0.374	0.600
1 1 3 2 1	36	0.009	0.161
1 1 1 1 1	36	0.242	0.424
1 1 1 1 2	36	0.218	0.494
1 1 2 1 1	36	0.169	0.359
1 1 2 1 2	36	0.229	0.497
1 1 3 1 1	36	0.196	0.354
1 1 3 1 2	36	0.216	0.564
1 1 1 1 1	54	0.220	0.376
1 1 1 1 2	54	0.229	0.524
1 1 1 2 1	54	0.184	0.384
1 1 1 2 2	54	0.213	0.509
1 1 1 1 1	8	0.634	0.625
1 1 2 1 1	8	0.448	0.625
1 1 3 1 1	8	0.397	0.678
1 2 1 1 1	8	0.640	0.671
1 2 2 1 1	8	0.721	0.660
1 2 3 1 1	8	0.576	0.706
2 1 1 1 1	16	0.267	0.495
2 1 2 1 1	16	0.155	0.345
2 1 3 1 1	16	0.181	0.398
2 2 1 1 1	20	0.069	0.213
2 2 2 1 1	20	0.075	0.155
2 2 3 1 1	20	0.104	0.254
3 1 1 1 1	12	0.000	0.500
3 1 2 1 1	12	0.092	0.317
3 1 3 1 1	12	0.116	0.270
3 2 1 1 1	8	0.087	0.245
3 2 2 1 1	8	0.087	0.245
3 2 3 1 1	8	0.087	0.245
1 1 1 1 1	12	0.423	0.723
1 1 1 2 1	12	0.546	0.670
1 2 1 1 1	12	0.575	0.609
1 2 1 2 1	12	0.615	0.731
2 1 1 1 1	24	0.250	0.455
2 1 1 2 1	24	0.149	0.351
2 2 1 1 1	30	0.092	0.240
2 2 1 2 1	30	0.046	0.176
3 1 1 1 1	18	0.077	0.224
3 1 1 2 1	18	0.061	0.259
3 2 1 1 1	12	0.058	0.200
3 2 1 2 1	12	0.116	0.270
1 1 1 1 1	12	0.380	0.508
1 1 1 1 2	12	0.606	0.851
1 2 1 1 1	12	0.754	0.413
1 2 1 1 2	12	0.911	0.760
2 1 1 1 1	24	0.224	0.452
2 1 1 1 2	24	0.179	0.367
2 2 1 1 1	30	0.139	0.262
2 2 1 1 2	30	0.000	0.000
3 1 1 1 1	18	0.100	0.298
3 1 1 1 2	18	0.039	0.163
3 2 1 1 1	12	0.116	0.270
3 2 1 1 2	12	0.058	0.200
1 1 1 1 1	8	0.437	0.359
1 1 1 2 1	8	0.842	0.785
1 1 2 1 1	8	0.347	0.524
1 1 2 2 1	8	0.822	0.701
1 1 3 1 1	8	0.886	0.929
1 1 3 2 1	8	0.687	0.245
2 1 1 1 1	18	0.138	0.405
2 1 1 2 1	18	0.177	0.350

2 1 2 2	18	0.100	0.298
2 1 3 1	18	0.276	0.418
2 1 3 2	18	0.000	0.000
3 1 1 1	10	0.069	0.218
3 1 1 2	10	0.000	0.000
3 1 2 1	10	0.000	0.000
3 1 2 2	10	0.179	0.390
3 1 3 1	10	0.139	0.292
3 1 3 2	10	0.069	0.219
1 1 1 1	8	0.571	0.530
1 1 1 2	8	0.704	0.742
1 1 2 1	8	0.311	0.447
1 1 2 2	8	0.858	0.724
1 1 3 1	8	0.260	0.359
1 1 3 2	8	0.713	1.020
2 1 1 1	18	0.190	0.398
2 1 1 2	18	0.122	0.355
2 1 2 1	18	0.100	0.292
2 1 2 2	18	0.077	0.224
2 1 3 1	18	0.236	0.409
2 1 3 2	18	0.079	0.163
3 1 1 1	10	0.069	0.218
3 1 1 2	10	0.000	0.000
3 1 2 1	10	0.179	0.390
3 1 2 2	10	0.000	0.000
3 1 3 1	10	0.069	0.219
3 1 3 2	10	0.139	0.292
1 1 1 1	12	0.347	0.382
1 1 1 2	12	0.764	0.837
1 1 2 1	12	0.414	0.543
1 1 2 2	12	0.753	0.810
2 1 1 1	27	0.235	0.428
2 1 1 2	27	0.092	0.273
2 1 2 1	27	0.118	0.296
2 1 2 2	27	0.066	0.246
3 1 1 1	15	0.092	0.244
3 1 1 2	15	0.046	0.179
3 1 2 1	15	0.119	0.324
3 1 2 2	15	0.046	0.179
1 1 1 1	18	0.254	0.448
1 1 1 2	18	0.266	0.536
1 1 2 1	18	0.039	0.163
1 1 2 2	18	0.360	0.537
1 1 3 1	18	0.414	0.661
1 1 3 2	18	0.000	0.000
1 2 1 1	18	0.116	0.266
1 2 1 2	18	0.295	0.541
1 2 2 1	18	0.192	0.398
1 2 2 2	18	0.205	0.499
1 2 3 1	18	0.333	0.548
1 2 3 2	18	0.077	0.224
1 1 1 1	18	0.270	0.484
1 1 1 2	18	0.250	0.506
1 1 2 1	18	0.180	0.421
1 1 2 2	18	0.215	0.438
1 1 3 1	18	0.199	0.396
1 1 3 2	18	0.215	0.609
1 2 1 1	18	0.215	0.568
1 2 1 2	18	0.185	0.493
1 2 2 1	18	0.154	0.297
1 2 2 2	18	0.243	0.562
1 2 3 1	18	0.153	0.319
1 2 3 2	18	0.217	0.532
1 1 1 1	27	0.235	0.428
1 1 1 2	27	0.235	0.548

1 1 1 2 2	27	0.212	0.425
1 2 1 1 1	27	0.2 5	0.353
1 2 1 1 2	27	0.222	0.509
1 2 1 2 1	27	0.169	0.350
1 2 1 2 2	27	0.209	0.541
1 1 1 1 1	18	0.192	0.393
1 1 1 1 2	18	0.177	0.350
1 1 1 2 1	18	0.292	0.455
1 1 1 2 2	18	0.259	0.613
1 1 2 1 1	18	0.116	0.266
1 1 2 1 2	18	0.116	0.357
1 1 2 2 1	18	0.222	0.475
1 1 2 2 2	18	0.343	0.594
1 1 3 1 1	18	0.257	0.424
1 1 3 1 2	18	0.394	0.748
1 1 3 2 1	18	0.079	0.163
1 1 3 2 2	18	0.039	0.163
1 1 1 1 1	4	0.520	0.347
1 1 1 2 1	4	0.749	0.870
1 1 2 1 1	4	0.000	0.000
1 1 2 2 1	4	0.896	0.612
1 1 3 1 1	4	0.795	1.173
1 1 3 2 1	4	0.000	0.000
1 2 1 1 1	4	0.347	0.400
1 2 1 2 1	4	0.934	0.513
1 2 2 1 1	4	0.553	0.566
1 2 2 2 1	4	0.749	0.870
1 2 3 1 1	4	0.978	0.732
1 2 3 2 1	4	0.173	0.347
2 1 1 1 1	6	0.311	0.550
2 1 1 2 1	6	0.224	0.429
2 1 2 1 1	6	0.067	0.245
2 1 2 2 1	6	0.224	0.429
2 1 3 1 1	6	0.361	0.514
2 1 3 2 1	6	0.000	0.000
2 2 1 1 1	10	0.000	0.000
2 2 1 2 1	10	0.139	0.292
2 2 2 1 1	10	0.069	0.219
2 2 2 2 1	10	0.000	0.000
2 2 3 1 1	10	0.208	0.358
2 2 3 2 1	10	0.000	0.000
3 1 1 1 1	6	0.000	0.000
3 1 1 2 1	6	0.000	0.000
3 1 2 1 1	6	0.000	0.000
3 1 2 2 1	6	0.183	0.449
3 1 3 1 1	6	0.271	0.358
3 1 3 2 1	6	0.000	0.000
3 2 1 1 1	4	0.173	0.347
3 2 1 2 1	4	0.000	0.000
3 2 2 1 1	4	0.030	0.000
3 2 2 2 1	4	0.173	0.347
3 2 3 1 1	4	0.000	0.000
3 2 3 2 1	4	0.173	0.347
1 1 1 1 1	4	0.673	0.566
1 1 1 1 2	4	0.576	0.763
1 1 2 1 1	4	0.275	0.547
1 1 2 1 2	4	0.621	0.727
1 1 3 1 1	4	0.173	0.347
1 1 3 1 2	4	0.621	1.242
1 2 1 1 1	4	0.445	0.543
1 2 1 1 2	4	0.833	0.811
1 2 2 1 1	4	0.347	0.400
1 2 2 1 2	4	1.096	0.738
1 2 3 1 1	4	0.347	0.400
1 2 3 1 2	4	0.805	0.929
1 2 3 1 3	4	0.720	0.514

2 1 1 1 2	8	0.275	0.509
2 1 2 1 1	8	0.137	0.328
2 1 2 1 2	8	0.173	0.321
2 1 3 1 1	8	0.275	0.509
2 1 3 1 2	8	0.087	0.245
2 2 1 1 1	10	0.139	0.292
2 2 1 1 2	10	0.000	0.000
2 2 2 1 1	10	0.049	0.219
2 2 2 1 2	10	0.060	0.000
2 2 3 1 1	10	0.208	0.775
2 2 3 1 2	10	0.000	0.000
3 1 1 1 1	6	0.000	0.000
3 1 1 1 2	6	0.000	0.000
3 1 2 1 1	6	0.183	0.449
3 1 2 1 2	6	0.000	0.000
3 1 3 1 1	6	0.116	0.287
3 1 3 1 2	6	0.116	0.283
3 2 1 1 1	4	0.177	0.347
3 2 1 1 2	4	0.000	0.000
3 2 2 1 1	4	0.173	0.347
3 2 2 1 2	4	0.000	0.000
3 2 3 1 1	4	0.000	0.000
3 2 3 1 2	4	0.173	0.347
1 1 1 1 1	6	0.347	0.380
1 1 1 1 2	6	0.530	0.997
1 1 1 2 1	6	0.414	0.648
1 1 1 2 2	6	0.682	0.765
1 2 1 1 1	6	0.347	0.380
1 2 1 1 2	6	0.999	0.645
1 2 1 2 1	6	0.414	0.477
1 2 1 2 2	6	0.824	0.920
2 1 1 1 1	12	0.299	0.545
2 1 1 1 2	12	0.207	0.368
2 1 1 2 1	12	0.149	0.359
2 1 1 2 2	12	0.149	0.359
2 2 1 1 1	15	0.185	0.217
2 2 1 1 2	15	0.000	0.000
2 2 1 2 1	15	0.092	0.244
2 2 1 2 2	15	0.000	0.000
3 1 1 1 1	9	0.077	0.231
3 1 1 1 2	9	0.077	0.231
3 1 1 2 1	9	0.122	0.366
3 1 1 2 2	9	0.000	0.000
3 2 1 1 1	6	0.116	0.283
3 2 1 1 2	6	0.000	0.000
3 2 1 2 1	6	0.116	0.283
3 2 1 2 2	6	0.116	0.283
1 1 1 1 1	4	0.347	0.400
1 1 1 1 2	4	0.520	0.347
1 1 1 2 1	4	0.795	0.601
1 1 1 2 2	4	0.899	1.035
1 1 2 1 1	4	0.347	0.400
1 1 2 1 2	4	0.347	0.693
1 1 2 2 1	4	0.275	0.549
1 1 2 2 2	4	1.370	0.209
1 1 3 1 1	4	0.347	0.400
1 1 3 1 2	4	1.426	1.036
1 1 3 2 1	4	0.173	0.347
1 1 3 2 2	4	0.000	0.000
2 1 1 1 1	9	0.154	0.462
2 1 1 1 2	9	0.122	0.366
2 1 1 2 1	9	0.231	0.347
2 1 1 2 2	9	0.122	0.366
2 1 2 1 1	9	0.077	0.231
2 1 2 1 2	9	0.077	0.231

2 1 1 1 1	-	0.977	0.211
2 1 3 1 1	9	0.475	0.477
2 1 3 1 2	9	0.077	0.231
2 1 3 2 1	9	0.000	0.000
2 1 3 2 2	9	0.000	0.000
3 1 1 1 1	5	0.127	0.210
3 1 1 1 2	5	0.000	0.000
3 1 1 2 1	5	0.000	0.000
3 1 1 2 2	5	0.000	0.000
3 1 2 1 1	5	0.000	0.000
3 1 2 1 2	5	0.000	0.000
3 1 2 2 1	5	0.358	0.511
3 1 2 2 2	5	0.000	0.000
3 1 3 1 1	5	0.139	0.310
3 1 3 1 2	5	0.139	0.310
3 1 3 2 1	5	0.000	0.000
3 1 3 2 2	5	0.139	0.310
1 1 1 1 1	9	0.308	0.504
1 1 1 1 2	9	0.199	0.408
1 1 1 2 1	9	0.231	0.490
1 1 1 2 2	9	0.301	0.611
1 1 2 1 1	9	0.000	0.000
1 1 2 1 2	9	0.077	0.231
1 1 2 2 1	9	0.366	0.549
1 1 2 2 2	9	0.353	0.558
1 1 3 1 1	9	0.296	0.493
1 1 3 1 2	9	0.420	0.827
1 1 3 2 1	9	0.000	0.000
1 1 3 2 2	9	0.000	0.000
1 2 1 1 1	9	0.077	0.231
1 2 1 1 2	9	0.154	0.306
1 2 1 2 1	9	0.353	0.437
1 2 1 2 2	9	0.216	0.649
1 2 2 1 1	9	0.231	0.347
1 2 2 1 2	9	0.154	0.462
1 2 2 2 1	9	0.077	0.231
1 2 2 2 2	9	0.333	0.667
1 2 3 1 1	9	0.208	0.365
1 2 3 1 2	9	0.358	0.710
1 2 3 2 1	9	0.077	0.231
1 2 3 2 2	9	0.077	0.231
1 1 1 1 1	2	0.693	0.000
1 1 1 1 2	2	0.347	0.490
1 1 1 2 1	2	0.693	0.980
1 1 1 2 2	2	0.605	1.138
1 1 2 1 1	2	0.000	0.000
1 1 2 1 2	2	0.000	0.000
1 1 2 2 1	2	0.549	0.777
1 1 2 2 2	2	1.242	0.200
1 1 3 1 1	2	0.347	0.490
1 1 3 1 2	2	1.242	1.757
1 1 3 2 1	2	0.000	0.000
1 1 3 2 2	2	0.000	0.000
1 2 1 1 1	2	0.000	0.000
1 2 1 1 2	2	0.693	0.000
1 2 1 2 1	2	0.896	0.287
1 2 1 2 2	2	0.973	1.376
1 2 2 1 1	2	0.693	0.000
1 2 2 1 2	2	0.693	0.980
1 2 2 2 1	2	0.000	0.000
1 2 2 2 2	2	1.498	0.158
1 2 3 1 1	2	0.347	0.490
1 2 3 1 2	2	1.609	0.000
1 2 3 2 1	2	0.347	0.490
1 2 3 2 2	2	0.000	0.000
1 1 1 1 1	1	0.717	0.403



2 1 1 1 2	4	0.275	0.549
2 1 1 2 1	4	0.173	0.347
2 1 1 2 2	4	0.275	0.549
2 1 2 1 1	4	0.000	0.000
2 1 2 1 2	4	0.173	0.347
2 1 2 2 1	4	0.275	0.549
2 1 2 2 2	4	0.173	0.347
2 1 3 1 1	4	0.549	0.549
2 1 3 1 2	4	0.173	0.347
2 1 3 2 1	4	0.000	0.000
2 1 3 2 2	4	0.000	0.000
2 2 1 1 1	5	0.000	0.000
2 2 1 1 2	5	0.000	0.000
2 2 1 2 1	5	0.277	0.380
2 2 1 2 2	5	0.000	0.000
2 2 2 1 1	5	0.139	0.310
2 2 2 1 2	5	0.000	0.000
2 2 2 2 1	5	0.000	0.000
2 2 2 2 2	5	0.000	0.000
2 2 3 1 1	5	0.418	0.380
2 2 3 1 2	5	0.000	0.000
2 2 3 2 1	5	0.000	0.000
2 2 3 2 2	5	0.000	0.000
3 1 1 1 1	3	0.000	0.000
3 1 1 1 2	3	0.000	0.000
3 1 1 2 1	3	0.000	0.000
3 1 1 2 2	3	0.000	0.000
3 1 2 1 1	3	0.000	0.000
3 1 2 1 2	3	0.000	0.000
3 1 2 2 1	3	0.368	0.634
3 1 2 2 2	3	0.000	0.000
3 1 3 1 1	3	0.231	0.420
3 1 3 1 2	3	0.231	0.400
3 1 3 2 1	3	0.000	0.000
3 1 3 2 2	3	0.000	0.000
3 2 1 1 1	2	0.347	0.490
3 2 1 1 2	2	0.000	0.000
3 2 1 2 1	2	0.000	0.000
3 2 1 2 2	2	0.000	0.000
3 2 2 1 1	2	0.000	0.000
3 2 2 1 2	2	0.000	0.000
3 2 2 2 1	2	0.347	0.490
3 2 2 2 2	2	0.000	0.000
3 2 3 1 1	2	0.000	0.000
3 2 3 1 2	2	0.000	0.000
3 2 3 2 1	2	0.000	0.000
3 2 3 2 2	2	0.347	0.490

---

Fmax for testing homogeneity of between subjects variances=not defined

Appendix 26B

RIVLOC - 1

AMP: 2

N's, means and standard deviations based on dependent variable: LOGNUM

\* Indicates statistics are collapsed over this factor

Factors: S B W E R	N	Mean	S.D.
1 1 1 1 1	216	0.227	0.457
1 1 1 1 2	48	0.597	0.650
2 1 1 1 1	108	0.147	0.341
3 1 1 1 1	60	0.076	0.255
1 1 1 2 1	108	0.201	0.374
1 2 1 1 1	108	0.254	0.522
1 1 1 1 2	72	0.192	0.357
1 1 2 1 1	72	0.303	0.573
1 1 3 1 1	72	0.168	0.401
1 1 1 1 2	108	0.265	0.468
1 1 2 2 1	108	0.190	0.437
1 1 1 1 1	108	0.224	0.462
1 1 1 2 2	108	0.231	0.447
1 1 1 1 1	24	0.392	0.429
1 2 1 1 1	24	0.807	0.769
2 1 1 1 1	48	0.205	0.392
2 2 1 1 1	60	0.101	0.289
3 1 1 1 1	36	0.669	0.239
3 2 1 1 1	24	0.087	0.234
1 1 1 1 1	16	0.361	0.476
1 1 2 1 1	16	0.927	0.775
1 1 3 1 1	16	0.569	0.563
2 1 1 1 1	36	0.146	0.308
2 1 2 1 1	36	0.177	0.403
2 1 3 1 1	36	0.119	0.309
3 1 1 1 1	20	0.139	0.284
3 1 2 1 1	20	0.035	0.155
3 1 3 1 1	20	0.055	0.246
1 1 1 1 1	24	0.647	0.650
1 1 1 2 1	24	0.548	0.651
2 1 1 1 1	54	0.197	0.365
2 1 2 1 1	54	0.097	0.210
3 1 1 1 1	30	0.057	0.260
3 1 2 1 1	30	0.069	0.211
1 1 1 1 1	24	0.594	0.546
1 1 1 1 2	24	0.601	0.669
2 1 1 1 1	54	0.138	0.267
2 1 2 1 1	54	0.156	0.320
3 1 1 1 1	30	0.087	0.260
3 1 2 1 1	30	0.069	0.211
1 1 1 1 1	36	0.154	0.292
1 1 2 1 1	36	0.254	0.429
1 1 3 1 1	36	0.176	0.391
1 2 1 1 1	36	0.229	0.435
1 2 2 1 1	36	0.352	0.691
1 2 3 1 1	36	0.180	0.416
1 1 1 1 1	54	0.233	0.380
1 1 1 2 1	54	0.169	0.369
1 2 1 1 1	54	0.297	0.545
1 2 2 1 1	54	0.210	0.499
1 1 1 1 1	54	0.195	0.380
1 1 1 2 1	54	0.208	0.371
1 2 1 1 1	54	0.253	0.534
1 2 2 1 1	54	0.254	0.514

1 1 1 2 1	36	0.135	0.275
1 1 2 1 1	36	0.260	0.525
1 1 2 2 1	36	0.346	0.610
1 1 3 1 1	36	0.287	0.459
1 1 3 2 1	36	0.088	0.308
1 1 1 1 1	36	0.185	0.371
1 1 1 1 2	36	0.199	0.378
1 1 2 1 1	36	0.346	0.523
1 1 2 1 2	36	0.260	0.524
1 1 3 1 1	36	0.141	0.362
1 1 3 1 2	36	0.234	0.437
1 1 1 1 1	54	0.242	0.427
1 1 1 1 2	54	0.288	0.510
1 1 1 2 1	54	0.205	0.498
1 1 1 2 2	54	0.174	0.370
1 1 1 1 1	8	0.260	0.359
1 1 2 1 1	8	0.571	0.379
1 1 3 1 1	8	0.347	0.524
1 2 1 1 1	8	0.461	0.577
1 2 2 1 1	8	1.275	0.928
1 2 3 1 1	8	0.672	0.587
2 1 1 1 1	16	0.136	0.279
2 1 2 1 1	16	0.285	0.505
2 1 3 1 1	16	0.199	0.387
2 2 1 1 1	20	0.159	0.336
2 2 2 1 1	20	0.090	0.283
2 2 3 1 1	20	0.055	0.246
3 1 1 1 1	12	0.116	0.270
3 1 2 1 1	12	0.000	0.000
3 1 3 1 1	12	0.092	0.317
3 2 1 1 1	8	0.173	0.321
3 2 2 1 1	8	0.087	0.245
3 2 3 1 1	8	0.000	0.000
1 1 1 1 1	12	0.462	0.451
1 1 1 2 1	12	0.323	0.413
1 2 1 1 1	12	0.832	0.778
1 2 1 2 1	12	0.774	0.794
2 1 1 1 1	24	0.219	0.357
2 1 1 2 1	24	0.190	0.431
2 2 1 1 1	30	0.179	0.376
2 2 1 2 1	30	0.023	0.127
3 1 1 1 1	18	0.100	0.298
3 1 1 2 1	18	0.039	0.163
3 2 1 1 1	12	0.058	0.200
3 2 1 2 1	12	0.116	0.270
1 1 1 1 1	12	0.404	0.357
1 1 1 1 2	12	0.390	0.506
1 2 1 1 1	12	0.787	0.816
1 2 1 1 2	12	0.822	0.755
2 1 1 1 1	24	0.161	0.419
2 1 1 1 2	24	0.248	0.367
2 2 1 1 1	30	0.119	0.319
2 2 1 1 2	30	0.083	0.260
3 1 1 1 1	18	0.100	0.298
3 1 1 1 2	18	0.039	0.163
3 2 1 1 1	12	0.058	0.200
3 2 1 1 2	12	0.116	0.270
1 1 1 1 1	8	0.374	0.585
1 1 1 2 1	8	0.347	0.371
1 1 2 1 1	8	0.858	0.805
1 1 2 2 1	8	0.987	0.793
1 1 3 1 1	8	0.708	0.503
1 1 3 2 1	8	0.311	0.580
2 1 1 1 1	18	0.254	0.380
2 1 1 2 1	18	0.039	0.163

2 2 2 1	18	0.215	0.474
2 2 3 1 1	18	0.199	0.396
2 2 3 2 1	18	0.039	0.163
3 2 1 1 1	10	0.139	0.292
3 2 1 2 1	10	0.139	0.292
3 2 2 1 1	10	0.000	0.000
3 2 2 2 1	10	0.069	0.219
3 2 3 1 1	10	0.110	0.347
3 2 3 2 1	10	0.000	0.000
1 2 1 1 1	8	0.347	0.371
1 2 1 1 2	8	0.374	0.589
1 2 2 1 1	8	1.074	0.758
1 2 2 1 2	8	0.772	0.813
1 2 3 1 1	8	0.361	0.514
1 2 3 2 1	8	0.657	0.614
2 2 1 1 1	18	0.138	0.328
2 2 1 1 2	18	0.154	0.297
2 2 2 1 1	18	0.215	0.474
2 2 2 1 2	18	0.138	0.328
2 2 3 1 1	18	0.061	0.259
2 2 3 2 1	18	0.177	0.350
3 2 1 1 1	10	0.139	0.292
3 2 1 1 2	10	0.139	0.292
3 2 2 1 1	10	0.000	0.000
3 2 2 1 2	10	0.069	0.219
3 2 3 1 1	10	0.110	0.347
3 2 3 2 1	10	0.000	0.000
1 1 1 1 1	12	0.530	0.560
1 1 1 1 2	12	0.764	0.735
1 1 1 2 1	12	0.658	0.741
1 1 1 2 2	12	0.438	0.581
2 1 1 1 1	27	0.158	0.350
2 1 1 1 2	27	0.255	0.382
2 1 1 2 1	27	0.118	0.382
2 1 1 2 2	27	0.077	0.222
3 1 1 1 1	15	0.166	0.354
3 1 1 1 2	15	0.000	0.000
3 1 1 2 1	15	0.000	0.000
3 1 1 2 2	15	0.139	0.287
1 1 1 1 1 1	18	0.193	0.319
1 1 1 1 2 1	18	0.116	0.266
1 1 1 2 1 1	18	0.154	0.297
1 1 1 2 2 1	18	0.353	0.519
1 1 1 3 1 1	18	0.353	0.486
1 1 1 3 2 1	18	0.039	0.163
1 2 1 1 1 1	18	0.304	0.488
1 2 1 1 2 1	18	0.154	0.297
1 2 2 1 1 1	18	0.356	0.658
1 2 2 2 1 1	18	0.379	0.705
1 2 3 1 1 1	18	0.222	0.415
1 2 3 2 1 1	18	0.138	0.415
1 1 1 1 1 1	18	0.154	0.297
1 1 1 1 2 1	18	0.154	0.297
1 1 1 2 1 1	18	0.371	0.493
1 1 1 2 2 1	18	0.177	0.350
1 1 1 3 1 1	18	0.100	0.298
1 1 1 3 2 1	18	0.292	0.455
1 2 1 1 1 1	18	0.215	0.368
1 2 1 1 2 1	18	0.243	0.450
1 2 2 1 1 1	18	0.362	0.745
1 2 2 1 2 1	18	0.343	0.654
1 2 3 1 1 1	18	0.183	0.421
1 2 3 2 1 1	18	0.177	0.423
1 1 1 1 1 1	27	0.195	0.343
1 1 1 1 2 1	27	0.272	0.416

1 1 1 2	27	0.14	0.113
1 2 1 1 1	27	0.271	0.477
1 2 1 1 2	27	0.303	0.597
1 2 1 2 1	27	0.215	0.573
1 2 1 2 2	27	0.205	0.422
1 1 1 1 1	18	0.292	0.368
1 1 1 1 2	18	0.205	0.439
1 1 1 2 1	18	0.077	0.224
1 1 1 2 2	18	0.193	0.319
1 1 2 1 1	18	0.215	0.474
1 1 2 1 2	18	0.304	0.608
1 1 2 2 1	18	0.477	0.733
1 1 2 2 2	18	0.215	0.438
1 1 3 1 1	18	0.222	0.435
1 1 3 1 2	18	0.353	0.486
1 1 3 2 1	18	0.061	0.259
1 1 3 2 2	18	0.116	0.357
1 1 1 1 1	4	0.173	0.347
1 1 1 2 1	4	0.347	0.400
1 1 2 1 1	4	0.520	0.347
1 1 2 2 1	4	0.621	0.456
1 1 3 1 1	4	0.693	0.566
1 1 3 2 1	4	0.000	0.000
1 2 1 1 1	4	0.576	0.763
1 2 1 2 1	4	0.347	0.400
1 2 2 1 1	4	1.197	1.043
1 2 2 2 1	4	1.353	0.951
1 2 3 1 1	4	0.723	0.519
1 2 3 2 1	4	0.621	0.727
2 1 1 1 1	8	0.260	0.359
2 1 1 2 1	8	0.000	0.000
2 1 2 1 1	8	0.097	0.245
2 1 2 2 1	8	0.484	0.629
2 1 3 1 1	8	0.311	0.447
2 1 3 2 1	8	0.087	0.245
2 2 1 1 1	10	0.242	0.415
2 2 1 2 1	10	0.069	0.219
2 2 2 1 1	10	0.179	0.370
2 2 2 2 1	10	0.000	0.000
2 2 3 1 1	10	0.110	0.347
2 2 3 2 1	10	0.000	0.000
3 1 1 1 1	6	0.116	0.253
3 1 1 2 1	6	0.116	0.283
3 1 2 1 1	6	0.000	0.000
3 1 2 2 1	6	0.000	0.000
3 1 3 1 1	6	0.163	0.449
3 1 3 2 1	6	0.000	0.000
3 2 1 1 1	4	0.173	0.347
3 2 1 2 1	4	0.173	0.347
3 2 2 1 1	4	0.000	0.000
3 2 2 2 1	4	0.173	0.347
3 2 3 1 1	4	0.000	0.000
3 2 3 2 1	4	0.000	0.000
1 1 1 1 1	4	0.347	0.400
1 1 1 1 2	4	0.173	0.347
1 1 2 1 1	4	0.693	0.000
1 1 2 1 2	4	0.448	0.543
1 1 3 1 1	4	0.173	0.347
1 1 3 1 2	4	0.520	0.664
1 2 1 1 1	4	0.347	0.400
1 2 1 1 2	4	0.576	0.763
1 2 2 1 1	4	1.454	0.977
1 2 2 1 2	4	1.096	0.984
1 2 3 1 1	4	0.549	0.634
1 2 3 1 2	4	0.795	0.601

2 1 1 1 1	8	0.173	0.321
2 1 2 1 1	8	0.397	0.645
2 1 2 1 2	8	0.173	0.321
2 1 3 1 1	8	0.000	0.000
2 1 3 1 2	8	0.397	0.445
2 2 1 1 1	10	0.179	0.390
2 2 1 1 2	10	0.139	0.292
2 2 2 1 1	10	0.069	0.219
2 2 2 1 2	10	0.110	0.347
2 2 3 1 1	10	0.110	0.347
2 2 3 1 2	10	0.000	0.000
3 1 1 1 1	6	0.116	0.287
3 1 1 1 2	6	0.116	0.287
3 1 2 1 1	6	0.000	0.000
3 1 2 1 2	6	0.000	0.000
3 1 3 1 1	6	0.185	0.449
3 1 3 1 2	6	0.000	0.000
3 2 1 1 1	4	0.173	0.347
3 2 1 1 2	4	0.173	0.347
3 2 2 1 1	4	0.000	0.000
3 2 2 1 2	4	0.173	0.347
3 2 3 1 1	4	0.000	0.000
3 2 3 1 2	4	0.000	0.000
1 1 1 1 1	6	0.462	0.358
1 1 1 1 2	6	0.462	0.566
1 1 1 2 1	6	0.347	0.390
1 1 1 2 2	6	0.299	0.450
1 2 1 1 1	6	0.597	0.743
1 2 1 1 2	6	1.066	0.805
1 2 1 2 1	6	0.970	0.912
1 2 1 2 2	6	0.578	0.681
2 1 1 1 1	12	0.058	0.200
2 1 1 1 2	12	0.380	0.410
2 1 1 2 1	12	0.265	0.550
2 1 1 2 2	12	0.116	0.270
2 2 1 1 1	15	0.259	0.424
2 2 1 1 2	15	0.119	0.324
2 2 1 2 1	15	0.000	0.000
2 2 1 2 2	15	0.046	0.179
3 1 1 1 1	9	0.199	0.408
3 1 1 1 2	9	0.000	0.000
3 1 1 2 1	9	0.000	0.000
3 1 1 2 2	9	0.077	0.231
3 2 1 1 1	6	0.116	0.287
3 2 1 1 2	6	0.000	0.000
3 2 1 2 1	6	0.000	0.000
3 2 1 2 2	6	0.231	0.358
1 1 1 1 1	4	0.347	0.400
1 1 1 1 2	4	0.402	0.805
1 1 1 2 1	4	0.347	0.400
1 1 1 2 2	4	0.347	0.400
1 1 2 1 1	4	0.795	0.741
1 1 2 1 2	4	0.922	0.977
1 1 2 2 1	4	1.353	0.764
1 1 2 2 2	4	0.621	0.727
1 1 3 1 1	4	0.448	0.540
1 1 3 1 2	4	0.968	0.338
1 1 3 2 1	4	0.275	0.549
1 1 3 2 2	4	0.347	0.693
2 1 1 1 1	9	0.276	0.430
2 1 1 1 2	9	0.231	0.347
2 1 1 2 1	9	0.000	0.000
2 1 1 2 2	9	0.077	0.231
2 1 2 1 1	9	0.077	0.231
2 1 2 1 2	9	0.199	0.408

1 1 2 2 1	9	0.077	0.251
2 1 3 1 1	9	0.122	0.356
2 1 3 1 2	9	0.276	0.470
2 1 3 2 1	9	0.000	0.000
2 1 3 2 2	9	0.077	0.251
3 1 1 1 1	5	0.277	0.380
3 1 1 1 2	5	0.000	0.000
3 1 1 2 1	5	0.000	0.000
3 1 1 2 2	5	0.277	0.380
3 1 2 1 1	5	0.000	0.000
3 1 2 1 2	5	0.000	0.000
3 1 2 2 1	5	0.000	0.000
3 1 2 2 2	5	0.139	0.316
3 1 3 1 1	5	0.220	0.451
3 1 3 1 2	5	0.000	0.000
3 1 3 2 1	5	0.000	0.000
3 1 3 2 2	5	0.000	0.000
1 1 1 1 1	9	0.231	0.347
1 1 1 1 2	9	0.154	0.306
1 1 1 2 1	9	0.077	0.231
1 1 1 2 2	9	0.154	0.306
1 1 2 1 1	9	0.154	0.306
1 1 2 1 2	9	0.154	0.306
1 1 2 2 1	9	0.507	0.531
1 1 2 2 2	9	0.199	0.408
1 1 3 1 1	9	0.199	0.408
1 1 3 1 2	9	0.507	0.531
1 1 3 2 1	9	0.000	0.000
1 1 3 2 2	9	0.077	0.231
1 2 1 1 1	9	0.355	0.437
1 2 1 1 2	9	0.256	0.557
1 2 1 2 1	9	0.077	0.231
1 2 1 2 2	9	0.231	0.347
1 2 2 1 1	9	0.276	0.617
1 2 2 1 2	9	0.455	0.801
1 2 2 2 1	9	0.447	0.993
1 2 2 2 2	9	0.231	0.490
1 2 3 1 1	9	0.244	0.424
1 2 3 1 2	9	0.199	0.408
1 2 3 2 1	9	0.122	0.366
1 2 3 2 2	9	0.154	0.452
1 1 1 1 1	2	0.347	0.490
1 1 1 1 2	2	0.000	0.000
1 1 1 2 1	2	0.347	0.490
1 1 1 2 2	2	0.347	0.490
1 1 2 1 1	2	0.693	0.000
1 1 2 1 2	2	0.347	0.490
1 1 2 2 1	2	0.693	0.000
1 1 2 2 2	2	0.549	0.777
1 1 3 1 1	2	0.347	0.490
1 1 3 1 2	2	1.040	0.490
1 1 3 2 1	2	0.000	0.000
1 1 3 2 2	2	0.000	0.000
1 2 1 1 1	2	0.347	0.490
1 2 1 1 2	2	0.805	1.138
1 2 1 2 1	2	0.347	0.490
1 2 1 2 2	2	0.347	0.490
1 2 2 1 1	2	0.896	1.267
1 2 2 1 2	2	1.498	1.138
1 2 2 2 1	2	2.013	0.094
1 2 2 2 2	2	0.693	0.980
1 2 3 1 1	2	0.549	0.777
1 2 3 1 2	2	0.896	0.287
1 2 3 2 1	2	0.549	0.777
1 2 3 2 2	2	0.693	0.980

2 1 1 1 2	4	0.347	0.400
2 1 1 2 1	4	0.000	0.000
2 1 1 2 2	4	0.000	0.000
2 1 2 1 1	4	0.000	0.000
2 1 2 1 2	4	0.173	0.347
2 1 2 2 1	4	0.795	0.741
2 1 2 2 2	4	0.173	0.347
2 1 3 1 1	4	0.000	0.000
2 1 3 1 2	4	0.621	0.456
2 1 3 2 1	4	0.000	0.000
2 1 3 2 2	4	0.173	0.347
2 2 1 1 1	5	0.358	0.511
2 2 1 1 2	5	0.139	0.310
2 2 1 2 1	5	0.000	0.000
2 2 1 2 2	5	0.139	0.310
2 2 2 1 1	5	0.139	0.310
2 2 2 1 2	5	0.220	0.491
2 2 2 2 1	5	0.000	0.000
2 2 2 2 2	5	0.000	0.000
2 2 3 1 1	5	0.220	0.491
2 2 3 1 2	5	0.000	0.000
2 2 3 2 1	5	0.000	0.000
2 2 3 2 2	5	0.000	0.000
3 1 1 1 1	3	0.231	0.400
3 1 1 1 2	3	0.000	0.000
3 1 1 2 1	3	0.000	0.000
3 1 1 2 2	3	0.231	0.400
3 1 2 1 1	3	0.000	0.000
3 1 2 1 2	3	0.000	0.000
3 1 2 2 1	3	0.000	0.000
3 1 2 2 2	3	0.000	0.000
3 1 3 1 1	3	0.366	0.534
3 1 3 1 2	3	0.000	0.000
3 1 3 2 1	3	0.000	0.000
3 1 3 2 2	3	0.000	0.000
3 2 1 1 1	2	0.347	0.490
3 2 1 1 2	2	0.000	0.000
3 2 1 2 1	2	0.000	0.000
3 2 1 2 2	2	0.347	0.490
3 2 2 1 1	2	0.000	0.000
3 2 2 1 2	2	0.000	0.000
3 2 2 2 1	2	0.000	0.000
3 2 2 2 2	2	0.347	0.490
3 2 3 1 1	2	0.000	0.000
3 2 3 1 2	2	0.000	0.000
3 2 3 2 1	2	0.000	0.000
3 2 3 2 2	2	0.000	0.000

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Fmax for testing homogeneity of between subjects variances=Not defined



Appendix 86C  
 RIVLOC=2  
 AMP=1

N's, means and standard deviations based on dependent variable: LOGNUM

# indicates statistics are collapsed over this factor

Factors: S G W E R	N	Mean	S.D.
# # # # #	204	0.300	0.599
1 # # # #	96	0.552	0.760
2 # # # #	48	0.095	0.260
3 # # # #	60	0.060	0.231
# 1 # # #	120	0.346	0.687
# 2 # # #	84	0.234	0.441
# # 1 # #	68	0.304	0.531
# # 2 # #	68	0.369	0.605
# # 3 # #	68	0.227	0.654
# # # 1 #	102	0.317	0.665
# # # 2 #	102	0.283	0.500
# # # # 1	102	0.207	0.408
# # # # 2	102	0.393	0.733
1 1 # # #	48	0.738	0.908
1 2 # # #	48	0.367	0.522
2 1 # # #	24	0.104	0.288
2 2 # # #	24	0.087	0.234
3 1 # # #	48	0.075	0.257
3 2 # # #	12	0.000	0.000
1 # 1 # #	32	0.535	0.640
1 # 2 # #	32	0.662	0.732
1 # 3 # #	32	0.461	0.896
2 # 1 # #	16	0.087	0.237
2 # 2 # #	16	0.155	0.345
2 # 3 # #	16	0.043	0.173
3 # 1 # #	20	0.110	0.336
3 # 2 # #	20	0.069	0.213
3 # 3 # #	20	0.000	0.000
1 # # 1 #	48	0.599	0.859
1 # # 2 #	48	0.506	0.611
2 # # 1 #	24	0.058	0.196
2 # # 2 #	24	0.132	0.311
3 # # 1 #	30	0.073	0.279
3 # # 2 #	30	0.046	0.176
1 # # # 1	48	0.412	0.507
1 # # # 2	48	0.693	0.933
2 # # # 1	24	0.058	0.196
2 # # # 2	24	0.132	0.311
3 # # # 1	30	0.000	0.000
3 # # # 2	30	0.119	0.319
# 1 1 # #	40	0.293	0.563
# 1 2 # #	40	0.410	0.663
# 1 3 # #	40	0.334	0.821
# 2 1 # #	28	0.320	0.492
# 2 2 # #	28	0.309	0.517
# 2 3 # #	28	0.074	0.218
# 1 # 1 #	60	0.385	0.830
# 1 # 2 #	60	0.307	0.509
# 2 # 1 #	42	0.220	0.387
# 2 # 2 #	42	0.249	0.492
# 1 # # 1	60	0.205	0.416
# 1 # # 2	60	0.486	0.859
# 2 # # 1	42	0.211	0.400
# 2 # # 2	42	0.258	0.481

1 1 1 2 1	34	0.216	0.766
1 1 2 1 1	34	0.218	0.530
1 1 2 2 1	34	0.519	0.645
1 1 3 1 1	34	0.340	0.855
1 1 3 2 1	34	0.114	0.333
1 1 1 1 1	34	0.260	0.451
1 1 1 1 2	34	0.349	0.619
1 1 2 1 1	34	0.240	0.426
1 1 2 1 2	34	0.498	0.727
1 1 3 1 1	34	0.122	0.361
1 1 3 1 2	34	0.332	0.846
1 1 1 1 1	51	0.206	0.398
1 1 1 1 2	51	0.428	0.875
1 1 1 2 1	51	0.208	0.421
1 1 1 2 2	51	0.357	0.564
1 1 1 1 1	16	0.509	0.744
1 1 2 1 1	16	0.870	0.801
1 1 3 1 1	16	0.834	1.142
1 2 1 1 1	16	0.560	0.540
1 2 2 1 1	16	0.455	0.612
1 2 3 1 1	16	0.067	0.237
2 1 1 1 1	8	0.173	0.321
2 1 2 1 1	8	0.137	0.388
2 1 3 1 1	8	0.000	0.000
2 2 1 1 1	8	0.000	0.000
2 2 2 1 1	8	0.173	0.321
2 2 3 1 1	8	0.087	0.245
3 1 1 1 1	16	0.137	0.375
3 1 2 1 1	16	0.087	0.237
3 1 3 1 1	16	0.000	0.000
3 2 1 1 1	4	0.000	0.000
3 2 2 1 1	4	0.000	0.000
3 2 3 1 1	4	0.000	0.000
1 1 1 1 1	24	0.841	1.135
1 1 1 2 1	24	0.634	0.612
1 2 1 1 1	24	0.356	0.450
1 2 1 2 1	24	0.378	0.595
2 1 1 1 1	12	0.058	0.200
2 1 1 2 1	12	0.149	0.359
2 2 1 1 1	12	0.058	0.200
2 2 1 2 1	12	0.116	0.270
3 1 1 1 1	24	0.092	0.310
3 1 1 2 1	24	0.058	0.196
3 2 1 1 1	6	0.000	0.000
3 2 1 2 1	6	0.000	0.000
1 1 1 1 1	24	0.484	0.538
1 1 1 1 2	24	0.992	1.123
1 2 1 1 1	24	0.339	0.475
1 2 1 1 2	24	0.395	0.575
2 1 1 1 1	12	0.058	0.200
2 1 1 1 2	12	0.149	0.359
2 2 1 1 1	12	0.058	0.200
2 2 1 1 2	12	0.116	0.270
3 1 1 1 1	24	0.000	0.000
3 1 1 1 2	24	0.149	0.351
3 2 1 1 1	6	0.000	0.000
3 2 1 1 2	6	0.000	0.000
1 1 1 1 1	16	0.654	0.774
1 1 1 2 1	16	0.415	0.466
1 1 2 1 1	16	0.464	0.705
1 1 2 2 1	16	0.861	0.725
1 1 3 1 1	16	0.679	1.161
1 1 3 2 1	16	0.242	0.458
2 1 1 1 1	8	0.087	0.245
2 1 1 2 1	8	0.087	0.245
2 1 2 1 1	8	0.000	0.000

2 2 2 2	8	0.311	0.447
2 2 3 1	8	0.087	0.245
2 2 3 2	8	0.000	0.000
3 2 1 1	10	0.220	0.463
3 2 1 2	10	0.000	0.000
3 2 2 1	10	0.000	0.000
3 2 2 2	10	0.139	0.292
3 2 3 1	10	0.000	0.000
3 2 3 2	10	0.000	0.000
1 2 1 1	16	0.509	0.503
1 2 1 2	16	0.560	0.769
1 2 2 1	16	0.509	0.503
1 2 2 2	16	0.815	0.897
1 2 3 1	16	0.217	0.488
1 2 3 2	16	0.705	1.138
2 2 1 1	8	0.087	0.245
2 2 1 2	8	0.087	0.245
2 2 2 1	8	0.000	0.000
2 2 2 2	8	0.311	0.447
2 2 3 1	8	0.087	0.245
2 2 3 2	8	0.000	0.000
3 2 1 1	10	0.000	0.000
3 2 1 2	10	0.220	0.463
3 2 2 1	10	0.000	0.000
3 2 2 2	10	0.139	0.292
3 2 3 1	10	0.000	0.000
3 2 3 2	10	0.000	0.000
1 2 1 1	24	0.380	0.496
1 2 1 2	24	0.817	1.126
1 2 2 1	24	0.445	0.526
1 2 2 2	24	0.569	0.692
2 2 1 1	12	0.116	0.270
2 2 1 2	12	0.000	0.000
2 2 2 1	12	0.000	0.000
2 2 2 2	12	0.265	0.405
3 2 1 1	15	0.000	0.000
3 2 1 2	15	0.146	0.387
3 2 2 1	15	0.000	0.000
3 2 2 2	15	0.092	0.244
2 1 1 1	20	0.413	0.725
2 1 1 2	20	0.173	0.308
2 1 2 1	20	0.267	0.650
2 1 2 2	20	0.553	0.661
2 1 3 1	20	0.474	1.079
2 1 3 2	20	0.194	0.419
2 2 1 1	14	0.363	0.516
2 2 1 2	14	0.277	0.482
2 2 2 1	14	0.149	0.295
2 2 2 2	14	0.470	0.642
2 2 3 1	14	0.149	0.295
2 2 3 2	14	0.000	0.000
2 1 1 1	20	0.194	0.354
2 1 1 2	20	0.393	0.711
2 1 2 1	20	0.248	0.462
2 1 2 2	20	0.572	0.797
2 1 3 1	20	0.173	0.443
2 1 3 2	20	0.494	1.064
2 2 1 1	14	0.355	0.521
2 2 1 2	14	0.285	0.478
2 2 2 1	14	0.227	0.385
2 2 2 2	14	0.391	0.626
2 2 3 1	14	0.050	0.185
2 2 3 2	14	0.099	0.252
2 1 1 1	30	0.198	0.428
2 1 1 2	30	0.571	1.070

* 1 * 2 2	36	0.402	0.582
* 2 * 1 1	21	0.217	0.562
* 2 * 1 2	21	0.223	0.421
* 2 * 2 1	21	0.204	0.444
* 2 * 2 2	21	0.294	0.543
* * 1 1 1	17	0.211	0.405
* * 1 1 2	17	0.575	0.780
* * 1 2 1	17	0.309	0.463
* * 1 2 2	17	0.122	0.272
* * 2 1 1	17	0.245	0.420
* * 2 1 2	17	0.192	0.634
* * 2 2 1	17	0.235	0.445
* * 2 2 2	17	0.803	0.698
* * 3 1 1	17	0.163	0.390
* * 3 1 2	17	0.517	1.136
* * 3 2 1	17	0.082	0.336
* * 3 2 2	17	0.146	0.336
1 1 1 1 *	8	0.672	0.994
1 1 1 2 *	8	0.347	0.371
1 1 2 1 *	8	0.667	0.918
1 1 2 2 *	8	1.073	0.661
1 1 3 1 *	8	1.185	1.483
1 1 3 2 *	8	0.484	0.563
1 2 1 1 *	8	0.636	0.544
1 2 1 2 *	8	0.484	0.563
1 2 2 1 *	8	0.260	0.359
1 2 2 2 *	8	0.649	0.767
1 2 3 1 *	8	0.173	0.321
1 2 3 2 *	8	0.000	0.000
2 1 1 1 *	4	0.173	0.347
2 1 1 2 *	4	0.173	0.347
2 1 2 1 *	4	0.000	0.000
2 1 2 2 *	4	0.275	0.549
2 1 3 1 *	4	0.000	0.000
2 1 3 2 *	4	0.000	0.000
2 2 1 1 *	4	0.000	0.000
2 2 1 2 *	4	0.000	0.000
2 2 2 1 *	4	0.000	0.000
2 2 2 2 *	4	0.347	0.400
2 2 3 1 *	4	0.173	0.347
2 2 3 2 *	4	0.000	0.000
3 1 1 1 *	8	0.275	0.509
3 1 1 2 *	8	0.000	0.000
3 1 2 1 *	8	0.000	0.000
3 1 2 2 *	8	0.173	0.321
3 1 3 1 *	8	0.000	0.000
3 1 3 2 *	8	0.000	0.000
3 2 1 1 *	2	0.000	0.000
3 2 1 2 *	2	0.000	0.000
3 2 2 1 *	2	0.000	0.000
3 2 2 2 *	2	0.000	0.000
3 2 3 1 *	2	0.000	0.000
3 2 3 2 *	2	0.000	0.000
1 1 1 * 1	8	0.397	0.445
1 1 1 * 2	8	0.621	0.979
1 1 2 * 1	8	0.621	0.562
1 1 2 * 2	8	1.119	0.957
1 1 3 * 1	8	0.433	0.635
1 1 3 * 2	8	1.236	1.423
1 2 1 * 1	8	0.621	0.562
1 2 1 * 2	8	0.499	0.549
1 2 2 * 1	8	0.397	0.445
1 2 2 * 2	8	0.512	0.773
1 2 3 * 1	8	0.000	0.000
1 2 3 * 2	8	0.173	0.321

2 1 1 # 2	4	0.173	0.347
2 1 2 # 1	4	0.000	0.000
2 1 2 # 2	4	0.275	0.549
2 1 3 # 1	4	0.000	0.000
2 1 3 # 2	4	0.000	0.000
2 2 1 # 1	4	0.000	0.000
2 2 1 # 2	4	0.000	0.000
2 2 2 # 1	4	0.000	0.000
2 2 2 # 2	4	0.347	0.400
2 2 3 # 1	4	0.173	0.347
2 2 3 # 2	4	0.000	0.000
3 1 1 # 1	8	0.000	0.000
3 1 1 # 2	8	0.275	0.509
3 1 2 # 1	8	0.000	0.000
3 1 2 # 2	8	0.173	0.321
3 1 3 # 1	8	0.000	0.000
3 1 3 # 2	8	0.000	0.000
3 2 1 # 1	2	0.000	0.000
3 2 1 # 2	2	0.000	0.000
3 2 2 # 1	2	0.000	0.000
3 2 2 # 2	2	0.000	0.000
3 2 3 # 1	2	0.000	0.000
3 2 3 # 2	2	0.000	0.000
1 1 # 1 1	12	0.438	0.581
1 1 # 1 2	12	1.245	1.415
1 1 # 2 1	12	0.530	0.513
1 1 # 2 2	12	0.739	0.705
1 2 # 1 1	12	0.323	0.413
1 2 # 1 2	12	0.390	0.500
1 2 # 2 1	12	0.356	0.547
1 2 # 2 2	12	0.399	0.664
2 1 # 1 1	6	0.116	0.283
2 1 # 1 2	6	0.000	0.000
2 1 # 2 1	6	0.000	0.000
2 1 # 2 2	6	0.299	0.480
2 2 # 1 1	6	0.116	0.283
2 2 # 1 2	6	0.000	0.000
2 2 # 2 1	6	0.000	0.000
2 2 # 2 2	6	0.231	0.358
3 1 # 1 1	12	0.000	0.000
3 1 # 1 2	12	0.183	0.428
3 1 # 2 1	12	0.000	0.000
3 1 # 2 2	12	0.116	0.270
3 2 # 1 1	3	0.000	0.000
3 2 # 1 2	3	0.000	0.000
3 2 # 2 1	3	0.000	0.000
3 2 # 2 2	3	0.000	0.000
1 # 1 1 1	8	0.361	0.514
1 # 1 1 2	8	0.947	0.908
1 # 1 2 1	8	0.657	0.477
1 # 1 2 2	8	0.173	0.321
1 # 2 1 1	8	0.520	0.490
1 # 2 1 2	8	0.407	0.905
1 # 2 2 1	8	0.499	0.549
1 # 2 2 2	8	1.224	0.725
1 # 3 1 1	8	0.260	0.516
1 # 3 1 2	8	1.098	1.490
1 # 3 2 1	8	0.173	0.490
1 # 3 2 2	8	0.311	0.447
2 # 1 1 1	4	0.173	0.347
2 # 1 1 2	4	0.000	0.000
2 # 1 2 1	4	0.000	0.000
2 # 1 2 2	4	0.173	0.347
2 # 2 1 1	4	0.000	0.000
2 # 2 1 2	4	0.000	0.000
2 # 2 2 1	4	0.000	0.000
2 # 2 2 2	4	0.000	0.000

2 2 2 2	4	0.621	0.456
2 2 3 1 1	4	0.173	0.347
2 2 3 1 2	4	0.000	0.000
2 2 3 2 1	4	0.000	0.000
2 2 3 2 2	4	0.000	0.000
3 1 1 1 1	5	0.000	0.000
3 1 1 1 2	5	0.439	0.602
3 1 1 2 1	5	0.000	0.000
3 1 1 2 2	5	0.000	0.000
3 1 2 1 1	5	0.000	0.000
3 1 2 1 2	5	0.000	0.000
3 1 2 2 1	5	0.000	0.000
3 1 2 2 2	5	0.277	0.380
3 1 3 1 1	5	0.000	0.000
3 1 3 1 2	5	0.000	0.000
3 1 3 2 1	5	0.000	0.000
3 1 3 2 2	5	0.000	0.000
1 1 1 1 1 1	10	0.179	0.390
1 1 1 1 1 2	10	0.647	0.915
1 1 1 1 2 1	10	0.208	0.335
1 1 1 1 2 2	10	0.139	0.292
1 1 1 2 1 1	10	0.208	0.468
1 1 1 2 1 2	10	0.326	0.816
1 1 1 2 2 1	10	0.289	0.478
1 1 1 2 2 2	10	0.818	0.734
1 1 1 3 1 1	10	0.208	0.468
1 1 1 3 1 2	10	0.740	1.443
1 1 1 3 2 1	10	0.139	0.438
1 1 1 3 2 2	10	0.248	0.415
1 1 2 1 1 1	7	0.256	0.453
1 1 2 1 1 2	7	0.471	0.587
1 1 2 1 2 1	7	0.454	0.601
1 1 2 1 2 2	7	0.099	0.262
1 1 2 2 1 1	7	0.297	0.371
1 1 2 2 1 2	7	0.000	0.000
1 1 2 2 2 1	7	0.157	0.415
1 1 2 2 2 2	7	0.783	0.701
1 1 2 3 1 1	7	0.099	0.262
1 1 2 3 1 2	7	0.198	0.338
1 1 2 3 2 1	7	0.000	0.000
1 1 2 3 2 2	7	0.000	0.000
1 1 1 1 1 1 1	4	0.275	0.549
1 1 1 1 1 1 2	4	1.069	1.257
1 1 1 1 1 2 1	4	0.520	0.347
1 1 1 1 1 2 2	4	0.173	0.347
1 1 1 1 2 1 1	4	0.520	0.664
1 1 1 1 2 1 2	4	0.815	1.212
1 1 1 1 2 2 1	4	0.723	0.518
1 1 1 1 2 2 2	4	1.423	0.650
1 1 1 3 1 1 1	4	0.520	0.664
1 1 1 3 1 1 2	4	1.850	1.874
1 1 1 3 2 1 1	4	0.347	0.693
1 1 1 3 2 1 2	4	0.621	0.456
1 2 1 1 1 1 1	4	0.448	0.543
1 2 1 1 1 1 2	4	0.824	0.549
1 2 1 1 1 2 1	4	0.795	0.601
1 2 1 1 1 2 2	4	0.173	0.347
1 2 1 2 1 1 1	4	0.520	0.347
1 2 1 2 1 1 2	4	0.000	0.000
1 2 1 2 2 1 1	4	0.275	0.549
1 2 1 2 2 1 2	4	1.024	0.835
1 2 1 3 1 1 1	4	0.000	0.000
1 2 1 3 1 1 2	4	0.347	0.400
1 2 1 3 2 1 1	4	0.000	0.000
1 2 1 3 2 1 2	4	0.000	0.000

2 1 1 1 2	2	0.000	0.000
2 1 1 2 1	2	0.000	0.000
2 1 1 2 2	2	0.347	0.490
2 1 2 1 1	2	0.000	0.000
2 1 2 1 2	2	0.000	0.000
2 1 2 2 1	2	0.000	0.000
2 1 2 2 2	2	0.549	0.777
2 1 3 1 1	2	0.000	0.000
2 1 3 1 2	2	0.000	0.000
2 1 3 2 1	2	0.000	0.000
2 1 3 2 2	2	0.000	0.000
2 2 1 1 1	2	0.000	0.000
2 2 1 1 2	2	0.000	0.000
2 2 1 2 1	2	0.000	0.000
2 2 1 2 2	2	0.000	0.000
2 2 2 1 1	2	0.000	0.000
2 2 2 1 2	2	0.000	0.000
2 2 2 2 1	2	0.000	0.000
2 2 2 2 2	2	0.695	0.000
2 2 3 1 1	2	0.347	0.490
2 2 3 1 2	2	0.000	0.000
2 2 3 2 1	2	0.000	0.000
2 2 3 2 2	2	0.000	0.000
3 1 1 1 1	4	0.000	0.000
3 1 1 1 2	4	0.549	0.654
3 1 1 2 1	4	0.000	0.000
3 1 1 2 2	4	0.000	0.000
3 1 2 1 1	4	0.000	0.000
3 1 2 1 2	4	0.000	0.000
3 1 2 2 1	4	0.000	0.000
3 1 2 2 2	4	0.347	0.490
3 1 3 1 1	4	0.000	0.000
3 1 3 1 2	4	0.000	0.000
3 1 3 2 1	4	0.000	0.000
3 1 3 2 2	4	0.000	0.000
3 2 1 1 1	1	0.000	0.000
3 2 1 1 2	1	0.000	0.000
3 2 1 2 1	1	0.000	0.000
3 2 1 2 2	1	0.000	0.000
3 2 2 1 1	1	0.000	0.000
3 2 2 1 2	1	0.000	0.000
3 2 2 2 1	1	0.000	0.000
3 2 2 2 2	1	0.000	0.000
3 2 3 1 1	1	0.000	0.000
3 2 3 1 2	1	0.000	0.000
3 2 3 2 1	1	0.000	0.000
3 2 3 2 2	1	0.000	0.000

Fmax for testing homogeneity of between subjects variances=Not defined

Appendix 86 D  
 RIVZOL = 2  
 DMP = 2

N's, means and standard deviations based on dependent variable: LOGNUM

\* Indicates statistics are collapsed over this factor

Factors: S B W E R	N	Mean	S.D.
***	204	0.289	0.558
1***	96	0.486	0.694
2***	49	0.116	0.330
3***	60	0.111	0.299
*1***	120	0.350	0.616
*2***	84	0.201	0.452
**1**	68	0.148	0.363
**2**	68	0.457	0.706
**3**	68	0.262	0.512
*1*1*	102	0.310	0.578
*1*2*	102	0.268	0.539
*1*1*	102	0.249	0.494
*1*2*	102	0.330	0.615
11***	48	0.714	0.760
12***	48	0.257	0.537
21***	24	0.104	0.353
22***	24	0.132	0.311
31***	48	0.110	0.309
32***	12	0.116	0.270
1*1**	32	0.236	0.452
1*2**	32	0.786	0.830
1*3**	32	0.436	0.649
2*1**	16	0.069	0.275
2*2**	16	0.130	0.377
2*3**	16	0.155	0.345
3*1**	20	0.069	0.213
3*2**	20	0.194	0.419
3*3**	20	0.069	0.213
1**1*	48	0.526	0.729
1**2*	48	0.446	0.662
2**1*	24	0.132	0.311
2**2*	24	0.104	0.353
3**1*	30	0.106	0.282
3**2*	30	0.116	0.320
1**1*	48	0.413	0.618
1**2*	48	0.559	0.762
2**1*	24	0.116	0.334
2**2*	24	0.120	0.333
3**1*	30	0.092	0.240
3**2*	30	0.129	0.352
*11**	40	0.166	0.355
*12**	40	0.536	0.771
*13**	40	0.349	0.605
*21**	28	0.121	0.378
*22**	28	0.345	0.596
*23**	28	0.138	0.310
*11**	60	0.357	0.658
*12**	60	0.344	0.575
*21**	42	0.242	0.437
*22**	42	0.161	0.467
*11**	60	0.260	0.491
*12**	60	0.441	0.712
*21**	42	0.232	0.503
*22**	42	0.171	0.398



1 1 1 2 1	34	0.041	0.166
1 1 2 1 1	34	0.417	0.719
1 1 2 2 1	34	0.498	0.702
1 1 3 1 1	34	0.258	0.522
1 1 3 2 1	34	0.267	0.510
1 1 1 1 1	34	0.182	0.392
1 1 1 1 2	34	0.114	0.333
1 1 2 1 1	34	0.301	0.559
1 1 2 1 2	34	0.614	0.606
1 1 3 1 1	34	0.263	0.521
1 1 3 1 2	34	0.261	0.512
1 1 1 1 1	51	0.234	0.491
1 1 1 1 2	51	0.385	0.650
1 1 1 2 1	51	0.263	0.500
1 1 1 2 2	51	0.274	0.579
1 1 1 1 1	16	0.303	0.436
1 1 2 1 1	16	1.011	0.906
1 1 3 1 1	16	0.829	0.715
1 2 1 1 1	16	0.169	0.472
1 2 2 1 1	16	0.560	0.704
1 2 3 1 1	16	0.043	0.173
2 1 1 1 1	8	0.137	0.388
2 1 2 1 1	8	0.173	0.470
2 1 3 1 1	8	0.000	0.000
2 2 1 1 1	8	0.000	0.000
2 2 2 1 1	8	0.087	0.245
2 2 3 1 1	8	0.311	0.447
3 1 1 1 1	16	0.043	0.173
3 1 2 1 1	16	0.242	0.458
3 1 3 1 1	16	0.043	0.173
3 2 1 1 1	4	0.173	0.347
3 2 2 1 1	4	0.000	0.000
3 2 3 1 1	4	0.173	0.347
1 1 1 1 1	24	0.772	0.835
1 1 1 2 1	24	0.657	0.691
1 2 1 1 1	24	0.279	0.512
1 2 1 2 1	24	0.236	0.571
2 1 1 1 1	12	0.092	0.317
2 1 1 2 1	12	0.116	0.400
2 2 1 1 1	12	0.173	0.317
2 2 1 2 1	12	0.092	0.317
3 1 1 1 1	24	0.075	0.260
3 1 1 2 1	24	0.144	0.353
3 2 1 1 1	6	0.231	0.358
3 2 1 2 1	6	0.000	0.000
1 1 1 1 1	24	0.505	0.618
1 1 1 1 2	24	0.924	0.841
1 2 1 1 1	24	0.320	0.616
1 2 1 1 2	24	0.195	0.449
2 1 1 1 1	12	0.116	0.400
2 1 1 1 2	12	0.092	0.317
2 2 1 1 1	12	0.116	0.270
2 2 1 1 2	12	0.149	0.359
3 1 1 1 1	24	0.087	0.234
3 1 1 1 2	24	0.132	0.372
3 2 1 1 1	6	0.116	0.283
3 2 1 1 2	6	0.116	0.283
1 1 1 1 1	16	0.429	0.559
1 1 1 2 1	16	0.043	0.173
1 1 2 1 1	16	0.730	0.904
1 1 2 2 1	16	0.841	0.776
1 1 3 1 1	16	0.418	0.684
1 1 3 2 1	16	0.455	0.634
2 1 1 1 1	8	0.137	0.388
2 1 1 2 1	8	0.000	0.000
2 1 1 1 1	8	0.000	0.000

2 2 2 2 1	8	0.173	0.450
2 2 3 1 1	8	0.173	0.321
2 2 3 2 1	8	0.137	0.388
3 1 1 1 1	10	0.069	0.219
3 1 1 2 1	10	0.069	0.219
3 1 2 1 1	10	0.179	0.390
3 1 2 2 1	10	0.208	0.468
3 1 3 1 1	10	0.069	0.219
3 1 3 2 1	10	0.069	0.219
1 1 1 1 1	16	0.299	0.504
1 1 1 1 2	16	0.173	0.400
1 1 2 1 1	16	0.509	0.675
1 1 2 1 2	16	1.062	0.856
1 1 3 1 1	16	0.429	0.679
1 1 3 1 2	16	0.443	0.639
2 1 1 1 1	8	0.000	0.000
2 1 1 1 2	8	0.137	0.388
2 1 2 1 1	8	0.173	0.450
2 1 2 1 2	8	0.087	0.245
2 1 3 1 1	8	0.173	0.321
2 1 3 1 2	8	0.137	0.388
3 1 1 1 1	10	0.139	0.292
3 1 1 1 2	10	0.000	0.000
3 1 2 1 1	10	0.069	0.219
3 1 2 1 2	10	0.318	0.537
3 1 3 1 1	10	0.069	0.219
3 1 3 1 2	10	0.069	0.219
1 1 1 1 1	24	0.411	0.638
1 1 1 1 2	24	0.640	0.807
1 1 1 2 1	24	0.414	0.610
1 1 1 2 2	24	0.479	0.722
2 1 1 1 1	12	0.116	0.270
2 1 1 1 2	12	0.149	0.359
2 1 1 2 1	12	0.116	0.400
2 1 1 2 2	12	0.092	0.317
3 1 1 1 1	15	0.046	0.179
3 1 1 1 2	15	0.166	0.354
3 1 1 2 1	15	0.139	0.287
3 1 1 2 2	15	0.092	0.358
1 1 1 1 1	20	0.263	0.439
1 1 1 2 1	20	0.069	0.213
1 1 2 1 1	20	0.509	0.848
1 1 2 2 1	20	0.563	0.707
1 1 3 1 1	20	0.300	0.670
1 1 3 2 1	20	0.398	0.591
1 2 1 1 1	14	0.243	0.515
1 2 1 2 1	14	0.000	0.000
1 2 2 1 1	14	0.285	0.478
1 2 2 2 1	14	0.404	0.709
1 2 3 1 1	14	0.198	0.325
1 2 3 2 1	14	0.078	0.294
1 1 1 1 1	20	0.139	0.284
1 1 1 1 2	20	0.194	0.419
1 1 2 1 1	20	0.298	0.498
1 1 2 1 2	20	0.774	0.923
1 1 3 1 1	20	0.343	0.629
1 1 3 1 2	20	0.355	0.596
1 2 1 1 1	14	0.243	0.515
1 2 1 1 2	14	0.000	0.000
1 2 2 1 1	14	0.305	0.656
1 2 2 1 2	14	0.384	0.552
1 2 3 1 1	14	0.149	0.295
1 2 3 1 2	14	0.128	0.335
1 1 1 1 1	30	0.215	0.517
1 1 1 1 2	30	0.499	0.757

1 1 1 2 2	30	0.263	0.671
2 2 1 1 1	21	0.261	0.463
2 2 1 1 2	21	0.223	0.421
2 2 2 1 1	21	0.204	0.549
2 2 2 2 1	21	0.118	0.376
2 2 1 1 1 1	17	0.282	0.493
2 2 1 1 1 2	17	0.228	0.448
2 2 1 2 1 1	17	0.082	0.230
2 2 1 2 2 1	17	0.000	0.000
2 2 1 2 1 1 1	17	0.122	0.366
2 2 2 1 1 2	17	0.711	0.864
2 2 2 2 1 1	17	0.479	0.665
2 2 2 2 2 1	17	0.516	0.756
2 2 3 1 1 1	17	0.299	0.597
2 2 3 1 1 2	17	0.217	0.449
2 2 3 2 1 1	17	0.228	0.449
2 2 3 2 2 1	17	0.305	0.578
1 1 1 1 1 1	8	0.520	0.490
1 1 1 2 1 1	8	0.087	0.245
1 1 2 1 1 1	8	1.048	1.094
1 1 2 2 1 1	8	0.974	0.749
1 1 3 1 1 1	8	0.749	0.832
1 1 3 2 1 1	8	0.909	0.623
1 2 1 1 1 1	8	0.339	0.641
1 2 1 2 1 1	8	0.000	0.000
1 2 2 1 1 1	8	0.412	0.569
1 2 2 2 1 1	8	0.708	0.829
1 2 3 1 1 1	8	0.087	0.245
1 2 3 2 1 1	8	0.000	0.000
2 1 1 1 1 1	4	0.275	0.549
2 1 1 2 1 1	4	0.000	0.000
2 1 2 1 1 1	4	0.000	0.000
2 1 2 2 1 1	4	0.347	0.693
2 1 3 1 1 1	4	0.000	0.000
2 1 3 2 1 1	4	0.000	0.000
2 2 1 1 1 1	4	0.000	0.000
2 2 1 2 1 1	4	0.000	0.000
2 2 2 1 1 1	4	0.173	0.347
2 2 2 2 1 1	4	0.000	0.000
2 2 3 1 1 1	4	0.347	0.400
2 2 3 2 1 1	4	0.275	0.549
3 1 1 1 1 1	8	0.000	0.000
3 1 1 2 1 1	8	0.087	0.245
3 1 2 1 1 1	8	0.224	0.429
3 1 2 2 1 1	8	0.260	0.516
3 1 3 1 1 1	8	0.000	0.000
3 1 3 2 1 1	8	0.087	0.245
3 2 1 1 1 1	2	0.347	0.490
3 2 1 2 1 1	2	0.000	0.000
3 2 2 1 1 1	2	0.000	0.000
3 2 2 2 1 1	2	0.000	0.000
3 2 3 1 1 1	2	0.347	0.490
3 2 3 2 1 1	2	0.000	0.000
1 1 1 1 1 1	8	0.260	0.359
1 1 1 1 1 2	8	0.347	0.524
1 1 2 1 1 1	8	0.484	0.563
1 1 2 1 1 2	8	1.538	0.899
1 1 3 1 1 1	8	0.772	0.813
1 1 3 1 1 2	8	0.886	0.653
1 2 1 1 1 1	8	0.339	0.641
1 2 1 1 1 2	8	0.000	0.000
1 2 2 1 1 1	8	0.535	0.812
1 2 2 1 1 2	8	0.585	0.633
1 2 3 1 1 1	8	0.087	0.245
1 2 3 1 1 2	8	0.000	0.000

2 1 1 1 2	4	0.275	0.547
2 1 2 1 1	4	0.347	0.650
2 1 2 1 2	4	0.000	0.000
2 1 3 1 1	4	0.000	0.000
2 1 3 1 2	4	0.000	0.000
2 2 1 1 1	4	0.000	0.000
2 2 1 1 2	4	0.000	0.000
2 2 2 1 1	4	0.000	0.000
2 2 2 1 2	4	0.173	0.347
2 2 3 1 1	4	0.347	0.400
2 2 3 1 2	4	0.275	0.549
3 1 1 1 1	8	0.087	0.245
3 1 1 1 2	8	0.000	0.000
3 1 2 1 1	8	0.087	0.245
3 1 2 1 2	8	0.397	0.579
3 1 3 1 1	8	0.087	0.245
3 1 3 1 2	8	0.000	0.000
3 2 1 1 1	2	0.347	0.490
3 2 1 1 2	2	0.000	0.000
3 2 2 1 1	2	0.000	0.000
3 2 2 1 2	2	0.000	0.000
3 2 3 1 1	2	0.000	0.000
3 2 3 1 2	2	0.347	0.490
1 1 1 1 1	12	0.538	0.718
1 1 1 1 2	12	1.006	0.907
1 1 1 2 1	12	0.472	0.531
1 1 1 2 2	12	0.842	0.831
1 2 1 1 1	12	0.283	0.549
1 2 1 1 2	12	0.275	0.497
1 2 1 2 1	12	0.356	0.699
1 2 1 2 2	12	0.116	0.400
2 1 1 1 1	6	0.000	0.000
2 1 1 1 2	6	0.183	0.449
2 1 1 2 1	6	0.231	0.556
2 1 1 2 2	6	0.000	0.000
2 2 1 1 1	6	0.231	0.758
2 2 1 1 2	6	0.116	0.283
2 2 1 2 1	6	0.000	0.000
2 2 1 2 2	6	0.183	0.449
3 1 1 1 1	12	0.000	0.000
3 1 1 1 2	12	0.149	0.359
3 1 1 2 1	12	0.173	0.313
3 1 1 2 2	12	0.116	0.400
3 2 1 1 1	3	0.231	0.400
3 2 1 1 2	3	0.231	0.400
3 2 1 2 1	3	0.000	0.000
3 2 1 2 2	3	0.000	0.000
1 1 1 1 1	8	0.512	0.617
1 1 1 1 2	8	0.347	0.524
1 1 1 2 1	8	0.087	0.245
1 1 1 2 2	8	0.000	0.000
1 1 2 1 1	8	0.260	0.516
1 1 2 1 2	8	1.200	0.990
1 1 2 2 1	8	0.759	0.755
1 1 2 2 2	8	0.924	0.839
1 1 3 1 1	8	0.461	0.807
1 1 3 1 2	8	0.374	0.589
1 1 3 2 1	8	0.397	0.579
1 1 3 2 2	8	0.512	0.719
2 1 1 1 1	4	0.000	0.000
2 1 1 1 2	4	0.275	0.549
2 1 1 2 1	4	0.000	0.000
2 1 1 2 2	4	0.000	0.000
2 1 2 1 1	4	0.000	0.000
2 1 2 1 2	4	0.173	0.347

2 1 2 2 2	4	0.000	0.000
2 1 3 1 1	4	0.347	0.400
2 1 3 1 2	4	0.000	0.000
2 1 3 2 1	4	0.000	0.000
2 1 3 2 2	4	0.275	0.549
3 1 1 1 1	5	0.139	0.310
3 1 1 1 2	5	0.000	0.000
3 1 1 2 1	5	0.139	0.310
3 1 1 2 2	5	0.000	0.000
3 1 2 1 1	5	0.000	0.000
3 1 2 1 2	5	0.358	0.511
3 1 2 2 1	5	0.139	0.310
3 1 2 2 2	5	0.277	0.620
3 1 3 1 1	5	0.000	0.000
3 1 3 1 2	5	0.139	0.310
3 1 3 2 1	5	0.139	0.310
3 1 3 2 2	5	0.000	0.000
1 1 1 1 1	10	0.139	0.292
1 1 1 1 2	10	0.387	0.537
1 1 1 2 1	10	0.139	0.292
1 1 1 2 2	10	0.000	0.000
1 1 2 1 1	10	0.208	0.462
1 1 2 1 2	10	0.809	1.048
1 1 2 2 1	10	0.387	0.537
1 1 2 2 2	10	0.739	0.836
1 1 3 1 1	10	0.300	0.737
1 1 3 1 2	10	0.300	0.543
1 1 3 2 1	10	0.387	0.537
1 1 3 2 2	10	0.409	0.670
1 2 1 1 1	7	0.486	0.661
1 2 1 1 2	7	0.000	0.000
1 2 1 2 1	7	0.000	0.000
1 2 1 2 2	7	0.000	0.000
1 2 2 1 1	7	0.000	0.000
1 2 2 1 2	7	0.570	0.552
1 2 2 2 1	7	0.611	0.845
1 2 2 2 2	7	0.198	0.524
1 2 3 1 1	7	0.297	0.371
1 2 3 1 2	7	0.099	0.262
1 2 3 2 1	7	0.000	0.000
1 2 3 2 2	7	0.157	0.415
1 1 1 1 1	4	0.347	0.400
1 1 1 1 2	4	0.693	0.566
1 1 1 2 1	4	0.173	0.347
1 1 1 2 2	4	0.000	0.000
1 1 2 1 1	4	0.520	0.664
1 1 2 1 2	4	1.576	1.268
1 1 2 2 1	4	0.448	0.543
1 1 2 2 2	4	1.501	0.523
1 1 3 1 1	4	0.749	1.086
1 1 3 1 2	4	0.749	0.660
1 1 3 2 1	4	0.795	0.601
1 1 3 2 2	4	1.024	0.714
1 2 1 1 1	4	0.677	0.809
1 2 1 1 2	4	0.000	0.000
1 2 1 2 1	4	0.000	0.000
1 2 1 2 2	4	0.000	0.000
1 2 2 1 1	4	0.000	0.000
1 2 2 1 2	4	0.824	0.549
1 2 2 2 1	4	1.069	0.881
1 2 2 2 2	4	0.347	0.693
1 2 3 1 1	4	0.173	0.347
1 2 3 1 2	4	0.000	0.000
1 2 3 2 1	4	0.000	0.000
1 2 3 2 2	4	0.000	0.000

2 1 1 1 2	2	0.549	0.777
2 1 1 2 1	2	0.000	0.000
2 1 1 2 2	2	0.000	0.000
2 1 2 1 1	2	0.000	0.000
2 1 2 1 2	2	0.000	0.000
2 1 2 2 1	2	0.693	0.980
2 1 2 2 2	2	0.000	0.000
2 1 3 1 1	2	0.000	0.000
2 1 3 1 2	2	0.000	0.000
2 1 3 2 1	2	0.000	0.000
2 1 3 2 2	2	0.000	0.000
2 2 1 1 1	2	0.000	0.000
2 2 1 1 2	2	0.000	0.000
2 2 1 2 1	2	0.000	0.000
2 2 1 2 2	2	0.000	0.000
2 2 2 1 1	2	0.000	0.000
2 2 2 1 2	2	0.347	0.490
2 2 2 2 1	2	0.000	0.000
2 2 2 2 2	2	0.000	0.000
2 2 3 1 1	2	0.693	0.000
2 2 3 1 2	2	0.000	0.000
2 2 3 2 1	2	0.000	0.000
2 2 3 2 2	2	0.549	0.777
3 1 1 1 1	4	0.000	0.000
3 1 1 1 2	4	0.000	0.000
3 1 1 2 1	4	0.173	0.347
3 1 1 2 2	4	0.000	0.000
3 1 2 1 1	4	0.000	0.000
3 1 2 1 2	4	0.448	0.543
3 1 2 2 1	4	0.173	0.347
3 1 2 2 2	4	0.347	0.693
3 1 3 1 1	4	0.000	0.000
3 1 3 1 2	4	0.000	0.000
3 1 3 2 1	4	0.173	0.347
3 1 3 2 2	4	0.000	0.000
3 2 1 1 1	1	0.693	0.000
3 2 1 1 2	1	0.000	0.000
3 2 1 2 1	1	0.000	0.000
3 2 1 2 2	1	0.000	0.000
3 2 2 1 1	1	0.000	0.000
3 2 2 1 2	1	0.000	0.000
3 2 2 2 1	1	0.000	0.000
3 2 2 2 2	1	0.000	0.000
3 2 3 1 1	1	0.000	0.000
3 2 3 1 2	1	0.693	0.000
3 2 3 2 1	1	0.000	0.000
3 2 3 2 2	1	0.000	0.000

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Fmax for testing homogeneity of between subjects variances=Not defined

*Appendix 86E  
 pooled over  
 and flow and  
 week number*

N's, means and standard deviations based on dependent variable: LOGNUM

‡ Indicates statistics are collapsed over this factor

Factors: L A S E R	N	Mean	S.D.
‡ ‡ ‡ ‡ ‡	840	0.256	0.518
1 ‡ ‡ ‡ ‡	432	0.220	0.451
2 ‡ ‡ ‡ ‡	408	0.294	0.578
‡-1 ‡ ‡ ‡ ‡	420	0.255	0.529
‡ 2 ‡ ‡ ‡ ‡	420	0.257	0.507
‡ ‡ 1 ‡ ‡ ‡	288	0.541	0.704
‡ ‡ 2 ‡ ‡ ‡	312	0.128	0.320
‡ ‡ 3 ‡ ‡ ‡	240	0.081	0.251
‡ ‡ ‡ 1 ‡	456	0.283	0.559
‡ ‡ ‡ 2 ‡	384	0.223	0.463
‡ ‡ ‡ ‡ 1	420	0.220	0.436
‡ ‡ ‡ ‡ 2	420	0.292	0.557
1 1 ‡ ‡ ‡ ‡	216	0.212	0.450
1 2 ‡ ‡ ‡ ‡	216	0.227	0.453
2 1 ‡ ‡ ‡ ‡	204	0.300	0.599
2 2 ‡ ‡ ‡ ‡	204	0.289	0.558
1 ‡ 1 ‡ ‡ ‡	96	0.585	0.659
1 ‡ 2 ‡ ‡ ‡	216	0.138	0.320
1 ‡ 3 ‡ ‡ ‡	120	0.076	0.234
2 ‡ 1 ‡ ‡ ‡	192	0.519	0.726
2 ‡ 2 ‡ ‡ ‡	96	0.107	0.296
2 ‡ 3 ‡ ‡ ‡	120	0.085	0.267
1 ‡ ‡ 1 ‡ ‡	216	0.212	0.424
1 ‡ ‡ 2 ‡ ‡	216	0.228	0.478
2 ‡ ‡ 1 ‡ ‡	240	0.348	0.651
2 ‡ ‡ 2 ‡ ‡	168	0.218	0.445
1 ‡ ‡ ‡ 1	216	0.213	0.421
1 ‡ ‡ ‡ 2	216	0.226	0.481
2 ‡ ‡ ‡ 1	204	0.228	0.452
2 ‡ ‡ ‡ 2	204	0.361	0.676
‡ 1 1 ‡ ‡ ‡	144	0.558	0.730
‡ 1 2 ‡ ‡ ‡	156	0.118	0.303
‡ 1 3 ‡ ‡ ‡	120	0.068	0.232
‡ 2 1 ‡ ‡ ‡	144	0.523	0.679
‡ 2 2 ‡ ‡ ‡	156	0.138	0.337
‡ 2 3 ‡ ‡ ‡	120	0.093	0.269
‡ ‡ 1 1 ‡ ‡	228	0.287	0.596
‡ ‡ 1 2 ‡ ‡	192	0.216	0.435
‡ ‡ 2 1 ‡ ‡	228	0.280	0.520
‡ ‡ 2 2 ‡ ‡	192	0.231	0.492
‡ ‡ 3 1 ‡ ‡	210	0.205	0.392
‡ ‡ ‡ 1 2	210	0.304	0.634
‡ ‡ ‡ 2 1	210	0.236	0.477
‡ ‡ ‡ 2 2	210	0.279	0.536
‡ ‡ ‡ 1 1	144	0.632	0.766
‡ ‡ ‡ 1 2	144	0.450	0.626
‡ ‡ ‡ 2 1	144	0.170	0.376
‡ ‡ ‡ 2 2	168	0.092	0.258
‡ ‡ ‡ 3 1	168	0.082	0.264
‡ ‡ ‡ 3 2	72	0.077	0.219
‡ ‡ ‡ 1 1	144	0.437	0.561
‡ ‡ ‡ 1 2	144	0.644	0.812
‡ ‡ ‡ 2 1	156	0.136	0.340
‡ ‡ ‡ 2 2	156	0.120	0.299
‡ ‡ ‡ 3 1	120	0.070	0.227

1 1 3 1 2	120	0.091	0.273
1 1 1 1 1	228	0.220	0.430
1 1 1 1 2	228	0.347	0.658
1 1 1 2 1	192	0.221	0.444
1 1 1 2 2	192	0.226	0.483
1 1 1 1 1	48	0.569	0.674
1 1 2 1 1	108	0.128	0.321
1 1 3 1 1	60	0.076	0.235
1 2 1 1 1	48	0.597	0.650
1 2 2 1 1	108	0.147	0.341
1 2 3 1 1	60	0.076	0.275
2 1 1 1 1	96	0.552	0.760
2 1 2 1 1	48	0.095	0.260
2 1 3 1 1	60	0.060	0.231
2 2 1 1 1	96	0.486	0.694
2 2 2 1 1	48	0.118	0.350
2 2 3 1 1	60	0.111	0.299
1 1 1 1 1	108	0.222	0.470
1 1 1 2 1	108	0.201	0.431
1 2 1 1 1	108	0.201	0.374
1 2 1 2 1	108	0.254	0.522
2 1 1 1 1	120	0.346	0.687
2 1 1 2 1	84	0.234	0.441
2 2 1 1 1	120	0.350	0.616
2 2 1 2 1	84	0.201	0.452
1 1 1 1 1	108	0.202	0.378
1 1 1 1 2	108	0.221	0.514
1 2 1 1 1	108	0.224	0.462
1 2 1 2 1	108	0.231	0.447
2 1 1 1 1	102	0.207	0.408
2 1 1 2 1	102	0.393	0.733
2 2 1 1 1	102	0.249	0.494
2 2 1 2 1	102	0.330	0.615
1 1 1 1 1	48	0.443	0.574
1 1 1 2 1	48	0.724	0.715
1 1 2 1 1	96	0.203	0.399
1 1 2 2 1	120	0.085	0.252
1 1 3 1 1	72	0.069	0.237
1 1 3 2 1	48	0.087	0.232
2 1 1 1 1	96	0.726	0.833
2 1 1 2 1	96	0.312	0.530
2 1 2 1 1	48	0.104	0.319
2 1 2 2 1	48	0.110	0.273
2 1 3 1 1	96	0.092	0.283
2 1 3 2 1	24	0.058	0.196
1 1 1 1 1	48	0.487	0.562
1 1 1 1 2	48	0.680	0.737
1 1 2 1 1	108	0.157	0.365
1 1 2 2 1	108	0.118	0.292
1 1 3 1 1	60	0.094	0.269
1 1 3 2 1	60	0.058	0.193
2 1 1 1 1	96	0.412	0.562
2 1 1 2 1	96	0.626	0.850
2 1 2 1 1	48	0.087	0.272
2 1 2 2 1	48	0.126	0.319
2 1 3 1 1	60	0.046	0.174
2 1 3 2 1	60	0.124	0.333
1 1 1 1 1	108	0.206	0.403
1 1 1 1 2	108	0.217	0.446
1 1 1 2 1	108	0.220	0.441
1 1 1 2 2	108	0.235	0.515
2 1 1 1 1	120	0.232	0.454
2 1 1 2 1	120	0.464	0.786
2 1 1 2 1	84	0.221	0.452
2 1 1 2 2	84	0.215	0.441
1 1 1 1 1	72	0.454	0.844







1 1 1 1 2	34	0.957	1.044
1 1 1 2 1	36	0.753	0.449
1 1 1 2 2	36	0.567	0.679
1 1 2 1 1	36	0.149	0.396
1 1 2 1 2	36	0.169	0.359
1 1 2 2 1	42	0.115	0.261
1 1 2 2 2	42	0.032	0.149
1 1 3 1 1	42	0.045	0.199
1 1 3 1 2	42	0.102	0.289
1 1 3 2 1	18	0.077	0.224
1 1 3 2 2	18	0.059	0.162
1 2 1 1 1	36	0.472	0.542
1 2 1 1 2	36	0.745	0.762
1 2 1 2 1	36	0.474	0.713
1 2 1 2 2	36	0.404	0.624
1 2 2 1 1	36	0.145	0.407
1 2 2 1 2	36	0.196	0.354
1 2 2 2 1	42	0.118	0.302
1 2 2 2 2	42	0.102	0.289
1 2 3 1 1	42	0.092	0.260
1 2 3 1 2	42	0.092	0.302
1 2 3 2 1	18	0.077	0.224
1 2 3 2 2	18	0.116	0.256
1 1 1 1 1	12	0.380	0.508
1 1 1 1 2	12	0.404	0.651
1 1 1 2 1	12	0.380	0.413
1 1 1 2 2	12	0.911	0.747
1 1 2 1 1	24	0.224	0.459
1 1 2 1 2	24	0.176	0.357
1 1 2 2 1	30	0.139	0.282
1 1 2 2 2	30	0.000	0.000
1 1 3 1 1	18	0.100	0.296
1 1 3 1 2	18	0.039	0.162
1 1 3 2 1	12	0.115	0.270
1 1 3 2 2	12	0.059	0.201
1 2 1 1 1	12	0.404	0.757
1 2 1 1 2	12	0.380	0.566
1 2 1 2 1	12	0.753	0.816
1 2 1 2 2	12	0.622	0.755
1 2 2 1 1	24	0.161	0.418
1 2 2 1 2	24	0.248	0.367
1 2 2 2 1	30	0.119	0.219
1 2 2 2 2	30	0.087	0.260
1 2 3 1 1	18	0.100	0.296
1 2 3 1 2	18	0.029	0.162
1 2 3 2 1	12	0.058	0.250
1 2 3 2 2	12	0.116	0.270
2 1 1 1 1	24	0.464	0.559
2 1 1 1 2	24	0.992	1.123
2 1 1 2 1	24	0.379	0.475
2 1 1 2 2	24	0.595	0.678
2 1 2 1 1	12	0.058	0.260
2 1 2 1 2	12	0.149	0.259
2 1 2 2 1	12	0.058	0.260
2 1 2 2 2	12	0.115	0.270
2 1 3 1 1	24	0.600	0.600
2 1 3 1 2	24	0.149	0.351
2 1 3 2 1	6	0.600	0.300
2 1 3 2 2	6	0.000	0.000
2 2 1 1 1	24	0.505	0.618
2 2 1 1 2	24	0.924	0.841
2 2 1 2 1	24	0.320	0.616
2 2 1 2 2	24	0.195	0.449
2 2 2 1 1	12	0.116	0.400
2 2 2 1 2	12	0.092	0.317
2 2 2 2 1	12	0.116	0.270
2 2 2 2 2	12	0.149	0.259
2 2 3 1 1	24	0.087	0.274
2 2 3 1 2	24	0.132	0.372
2 2 3 2 1	6	0.116	0.263
2 2 3 2 2	6	0.116	0.263

N's, means and standard deviations based on dependent variable: NUMFISn

† Indicates statistics are collapsed over this factor

Factors: R A S B T	N	Mean	S.D.
† † † † †	840	0.620	2.614
1 † † † †	408	0.814	3.550
2 † † † †	432	0.472	1.154
† 1 † † †	420	0.683	3.393
† 2 † † †	420	0.557	1.470
† † 1 † †	288	1.469	4.280
† † 2 † †	312	0.215	0.591
† † 3 † †	240	0.129	0.424
† † † 1 †	456	0.760	3.387
† † † 2 †	384	0.451	1.105
† † † † 1	420	0.417	1.015
† † † † 2	420	0.824	3.545
1 1 † † †	204	0.956	4.711
1 2 † † †	204	0.672	1.740
2 1 † † †	216	0.426	1.159
2 2 † † †	216	0.440	1.152
1 † 1 † †	192	1.552	5.054
1 † 2 † †	96	0.177	0.520
1 † 3 † †	120	0.142	0.477
2 † 1 † †	96	1.302	2.016
2 † 2 † †	216	0.231	0.619
2 † 3 † †	120	0.117	0.371
1 † † 1 †	240	1.092	4.540
1 † † 2 †	168	0.417	0.975
2 † † 1 †	216	0.392	1.056
2 † † 2 †	216	0.477	1.245
1 † † † 1	204	0.441	1.174
1 † † † 2	204	1.155	4.662
2 † † † 1	216	0.394	0.959
2 † † † 2	216	0.481	1.322
† 1 1 † †	144	1.694	5.634
† 1 2 † †	156	0.192	0.522
† 1 3 † †	120	0.108	0.384
† 2 1 † †	144	1.240	2.232
† 2 2 † †	156	0.237	0.654
† 2 3 † †	120	0.150	0.461
† 1 † 1 †	228	0.917	4.511
† 1 † 2 †	192	0.406	0.961
† 2 † 1 †	228	0.610	1.610
† 2 † 2 †	192	0.495	1.286
† 1 † † 1	210	0.348	0.718
† 1 † † 2	210	1.019	4.726
† 2 † † 1	210	0.456	1.242
† 2 † † 2	210	0.629	1.670
† † 1 1 †	144	1.958	5.796
† † 1 2 †	144	0.979	1.658
† † 2 1 †	144	0.299	0.739
† † 2 2 †	168	0.143	0.414
† † 3 1 †	168	0.137	0.450
† † 3 2 †	72	0.111	0.316
† † 1 † †	144	0.868	1.450
† † 1 † 2	144	2.069	5.831
† † 2 † †	156	0.237	0.673
† † 2 † 2	156	0.192	0.497
† † † † †	120	0.105	0.340

1 1 1 1 2	120	0.150	0.477
1 1 1 1 1	228	0.408	0.578
1 1 1 1 2	228	1.118	4.668
1 1 1 2 1	192	0.427	1.061
1 1 1 2 2	192	0.474	1.206
1 1 1 1 1	96	1.896	6.749
1 1 2 1 1	48	0.146	0.412
1 1 3 1 1	60	0.100	0.299
1 2 1 1 1	96	1.208	2.362
1 2 2 1 1	48	0.208	0.617
1 2 3 1 1	60	0.183	0.507
2 1 1 1 1	48	1.292	2.062
2 1 2 1 1	108	0.213	0.565
2 1 3 1 1	60	0.117	0.372
2 2 1 1 1	48	1.313	1.970
2 2 2 1 1	108	0.250	0.672
2 2 3 1 1	60	0.117	0.372
1 1 1 1 1	120	1.325	6.077
1 1 1 2 1	84	0.429	0.922
1 2 1 1 1	120	0.858	2.088
1 2 1 2 1	84	0.405	1.031
2 1 1 1 1	108	0.463	1.307
2 1 1 2 1	108	0.387	0.994
2 2 1 1 1	108	0.330	0.723
2 2 1 2 1	108	0.565	1.455
1 1 1 1 1	102	0.363	0.768
1 1 1 1 2	102	1.549	6.580
1 2 1 1 1	102	0.520	1.311
1 2 1 1 2	102	0.824	2.084
2 1 1 1 1	108	0.330	0.670
2 1 1 1 2	108	0.519	1.494
2 2 1 1 1	108	0.454	1.175
2 2 1 1 2	108	0.444	1.130
1 1 1 1 1	96	2.479	6.941
1 1 1 2 1	96	0.625	1.207
1 1 2 1 1	48	0.188	0.607
1 1 2 2 1	48	0.167	0.429
1 1 3 1 1	96	0.154	0.509
1 1 3 2 1	24	0.083	0.282
2 1 1 1 1	48	0.917	1.784
2 1 1 2 1	48	1.685	2.155
2 1 2 1 1	96	0.354	0.794
2 1 2 2 1	120	0.153	0.409
2 1 3 1 1	72	0.111	0.396
2 1 3 2 1	48	0.125	0.354
1 1 1 1 1	96	0.623	1.422
1 1 1 1 2	96	2.281	6.947
1 1 2 1 1	48	0.146	0.505
1 1 2 1 2	48	0.208	0.544
1 1 3 1 1	60	0.087	0.252
1 1 3 1 2	60	0.217	0.613
2 1 1 1 1	48	0.952	1.515
2 1 1 1 2	48	1.646	2.365
2 1 2 1 1	108	0.278	0.734
2 1 2 1 2	108	0.185	0.477
2 1 3 1 1	60	0.150	0.444
2 1 3 1 2	60	0.083	0.279
1 1 1 1 1	120	0.450	1.114
1 1 1 1 2	120	1.735	6.271
1 1 1 2 1	84	0.429	1.021
1 1 1 2 2	84	0.405	0.933
2 1 1 1 1	108	0.761	0.803
2 1 1 1 2	108	0.435	1.262
2 1 1 2 1	108	0.426	1.095
2 1 1 2 2	108	0.528	1.384
1 1 1 1 1	72	2.472	7.797

1 1 1 2 1	72	0.917	1.761
1 1 2 1 1	72	0.292	0.680
1 1 2 2 1	84	0.107	0.311
1 1 3 1 1	84	0.119	0.422
1 1 3 2 1	36	0.083	0.290
1 2 1 1 1	72	1.444	2.517
1 2 1 2 1	72	1.042	1.902
1 2 2 1 1	72	0.306	0.759
1 2 2 2 1	84	0.179	0.495
1 2 3 1 1	84	0.155	0.503
1 2 3 2 1	36	0.139	0.351
1 1 1 1 1	72	0.694	0.929
1 1 1 1 2	72	2.654	7.612
1 1 2 1 1	78	0.231	0.579
1 1 2 1 2	78	0.154	0.458
1 1 3 1 1	60	0.083	0.334
1 1 3 1 2	60	0.133	0.430
1 2 1 1 1	72	1.042	1.819
1 2 1 1 2	72	1.444	2.578
1 2 2 1 1	78	0.244	0.759
1 2 2 1 2	78	0.231	0.533
1 2 3 1 1	60	0.133	0.339
1 2 3 1 2	60	0.167	0.526
1 1 1 1 1	114	0.377	0.863
1 1 1 1 2	114	1.456	6.277
1 1 1 2 1	96	0.313	0.684
1 1 1 2 2	96	0.500	1.214
1 2 1 1 1	114	0.439	1.129
1 2 1 1 2	114	0.781	1.972
1 2 1 2 1	96	0.542	1.369
1 2 1 2 2	96	0.448	1.204
1 1 1 1 1	72	0.861	1.746
1 1 1 1 2	72	3.054	7.347
1 1 1 2 1	72	0.875	1.556
1 1 1 2 2	72	1.093	1.758
1 1 2 1 1	72	0.306	0.866
1 1 2 1 2	72	0.292	0.592
1 1 2 2 1	84	0.179	0.447
1 1 2 2 2	84	0.107	0.331
1 1 3 1 1	84	0.107	0.381
1 1 3 1 2	84	0.167	0.534
1 1 3 2 1	36	0.111	0.319
1 1 3 2 2	36	0.111	0.319
1 1 1 1 1	48	3.104	5.770
1 1 1 2 1	48	0.688	1.133
1 1 2 1 1	24	0.167	0.482
1 1 2 2 1	24	0.125	0.339
1 1 3 1 1	48	0.125	0.444
1 1 3 2 1	12	0.000	0.000
1 2 1 1 1	48	1.854	2.961
1 2 1 2 1	48	0.563	1.287
1 2 2 1 1	24	0.208	0.721
1 2 2 2 1	24	0.208	0.569
1 2 3 1 1	48	0.166	0.571
1 2 3 2 1	12	0.167	0.359
2 1 1 1 1	24	1.208	2.395
2 1 1 2 1	24	1.375	1.715
2 1 2 1 1	48	0.354	0.758
2 1 2 2 1	60	0.100	0.303
2 1 3 1 1	36	0.111	0.398
2 1 3 2 1	24	0.125	0.338
2 2 1 1 1	24	0.625	0.770
2 2 1 2 1	24	2.000	2.519
2 2 2 1 1	48	0.354	0.838
2 2 2 2 1	60	0.167	0.493
2 2 3 1 1	36	0.111	0.392

2 1 1 2 1	24	0.125	0.338
1 1 1 1 1	48	0.729	0.924
1 1 1 1 2	48	3.083	9.598
1 1 2 1 1	24	0.683	0.282
1 1 2 1 2	24	0.208	0.509
1 1 3 1 1	30	0.000	0.000
1 1 3 1 2	30	0.200	0.551
1 2 1 1 1	48	0.917	1.740
1 2 1 1 2	48	1.500	2.828
1 2 2 1 1	24	0.208	0.658
1 2 2 1 2	24	0.208	0.588
1 2 3 1 1	30	0.133	0.346
1 2 3 1 2	30	0.233	0.679
2 1 1 1 1	24	0.625	0.824
2 1 1 1 2	24	1.958	2.662
2 1 2 1 1	54	0.256	0.662
2 1 2 1 2	54	0.130	0.436
2 1 3 1 1	30	0.167	0.461
2 1 3 1 2	30	0.067	0.254
2 2 1 1 1	24	1.292	1.944
2 2 1 1 2	24	1.333	2.036
2 2 2 1 1	54	0.259	0.605
2 2 2 1 2	54	0.241	0.512
2 2 3 1 1	30	0.170	0.474
2 2 3 1 2	30	0.100	0.205
1 1 1 1 1	60	0.367	0.802
1 1 1 1 2	60	2.287	8.483
1 1 1 2 1	42	0.357	0.727
1 1 1 2 2	42	0.500	1.088
1 2 1 1 1	60	0.533	1.359
1 2 1 1 2	60	1.183	2.594
1 2 1 2 1	42	0.500	1.254
1 2 1 2 2	42	0.310	0.749
2 1 1 1 1	54	0.388	0.811
2 1 1 1 2	54	0.537	1.668
2 1 1 2 1	54	0.278	0.452
2 1 1 2 2	54	0.500	1.314
2 2 1 1 1	54	0.330	0.801
2 2 1 1 2	54	0.333	0.644
2 2 1 2 1	54	0.574	1.461
2 2 1 2 2	54	0.556	1.462
1 1 1 1 1	48	0.979	1.551
1 1 1 1 2	48	3.979	9.506
1 1 1 2 1	48	0.567	1.277
1 1 1 2 2	48	0.580	1.145
1 1 2 1 1	24	0.167	0.607
1 1 2 1 2	24	0.208	0.588
1 1 2 2 1	24	0.125	0.308
1 1 2 2 2	24	0.208	0.509
1 1 3 1 1	48	0.067	0.245
1 1 3 1 2	48	0.250	0.668
1 1 3 2 1	12	0.053	0.259
1 1 3 2 2	12	0.060	0.289
2 1 1 1 1	24	0.625	0.770
2 1 1 1 2	24	1.208	2.395
2 1 1 2 1	24	1.292	1.967
2 1 1 2 2	24	2.083	2.302
2 1 2 1 1	48	0.375	0.959
2 1 2 1 2	48	0.333	0.595
2 1 2 2 1	60	0.200	0.480
2 1 2 2 2	60	0.067	0.312
2 1 3 1 1	36	0.167	0.507
2 1 3 1 2	36	0.056	0.232
2 1 3 2 1	24	0.125	0.338
2 1 3 2 2	24	0.125	0.338

1 1 1 1 2	36	4.154	10.773
1 1 1 2 1	36	0.583	0.806
1 1 1 2 2	36	1.230	1.730
1 1 2 1 1	36	0.306	0.749
1 1 2 1 2	36	0.278	0.615
1 1 2 2 1	42	0.167	0.377
1 1 2 2 2	42	0.048	0.216
1 1 3 1 1	42	0.071	0.342
1 1 3 1 2	42	0.167	0.490
1 1 3 2 1	18	0.111	0.323
1 1 3 2 2	18	0.056	0.236
1 2 1 1 1	36	0.517	1.616
1 2 1 1 2	36	1.972	3.112
1 2 1 2 1	36	1.167	2.021
1 2 1 2 2	36	0.917	1.795
1 2 2 1 1	36	0.306	0.920
1 2 2 1 2	36	0.306	0.577
1 2 2 2 1	42	0.170	0.505
1 2 2 2 2	42	0.167	0.490
1 2 3 1 1	42	0.147	0.417
1 2 3 1 2	42	0.167	0.531
1 2 3 2 1	18	0.111	0.323
1 2 3 2 2	18	0.167	0.380
1 1 1 1 1	24	0.875	1.075
1 1 1 1 2	24	5.333	12.957
1 1 1 2 1	24	0.583	0.881
1 1 1 2 2	24	0.792	1.351
1 1 2 1 1	12	0.083	0.289
1 1 2 1 2	12	0.250	0.622
1 1 2 2 1	12	0.083	0.289
1 1 2 2 2	12	0.167	0.389
1 1 3 1 1	24	0.000	0.000
1 1 3 1 2	24	0.250	0.605
1 1 3 2 1	6	0.000	0.000
1 1 3 2 2	6	0.000	0.000
1 2 1 1 1	24	1.083	1.922
1 2 1 1 2	24	2.625	3.597
1 2 1 2 1	24	0.750	1.595
1 2 1 2 2	24	0.375	0.875
1 2 2 1 1	12	0.250	0.564
1 2 2 1 2	12	0.167	0.577
1 2 2 2 1	12	0.167	0.389
1 2 2 2 2	12	0.250	0.622
1 2 3 1 1	24	0.125	0.379
1 2 3 1 2	24	0.250	0.737
1 2 3 2 1	6	0.157	0.433
1 2 3 2 2	6	0.167	0.402
2 1 1 1 1	12	0.667	0.985
2 1 1 1 2	12	1.750	3.220
2 1 1 2 1	12	0.583	0.669
2 1 1 2 2	12	2.167	2.082
2 1 2 1 1	24	0.417	0.851
2 1 2 1 2	24	0.292	0.574
2 1 2 2 1	30	0.200	0.407
2 1 2 2 2	30	0.000	0.000
2 1 3 1 1	18	0.167	0.514
2 1 3 1 2	18	0.056	0.236
2 1 3 2 1	12	0.167	0.389
2 1 3 2 2	12	0.083	0.289
2 2 1 1 1	12	0.583	0.515
2 2 1 1 2	12	0.667	0.925
2 2 1 2 1	12	2.000	2.558
2 2 1 2 2	12	2.000	2.594
2 2 2 1 1	24	0.333	1.049
2 2 2 1 2	24	0.375	0.575
2 2 2 2 1	30	0.200	0.551



**APPENDIX P**

**CROSS-TABULATION TABLES OF STRANDED SALMON FRY (NSTRAND)  
VERSUS EACH TESTING VARIABLE (RIVER LOCATION, SLOPE, AMPLITUDE,  
ENDFLOW, RAMPRATE, AND SUBSTRATE)**

Table P-1 Cross-Tabulations Of Fry Stranding Versus Two Levels Of River Location For The 1986 Salmon Fry Stranding Study

Tabulation of NSTRAND (rows) by RIVLOC (columns)  
 (Frequency/Row percent/Column percent)

	1	2	
0	300 47.32 73.53	334 52.68 77.31	634 75.48
1	51 45.95 12.50	60 54.05 13.89	111 13.21
2	29 61.70 7.11	18 38.30 4.17	47 5.60
3	11 57.89 2.70	8 42.11 1.85	19 2.26
4	5 50.00 1.23	5 50.00 1.16	10 1.19
5	3 60.00 0.74	2 40.00 0.46	5 0.60
6	9 64.29 2.21	5 35.71 1.16	14 1.67
	408 48.57	432 51.43	840

Statistics for table of NSTRAND by RIVLOC

Chi-square ( 6 df)

= 6.2635 (P<0.3941)

Table P-2 Cross-Tabulations Of Fry Stranding Versus Three Levels Of Gravel Bar Slope For The 1986 Salmon Fry Stranding Study

Tabulation of NSTRAND (rows) by SLOPE (columns)  
(Frequency/Row percent/Column percent)

	1	2	3	
0	153 24.13 53.13	265 41.80 84.94	216 34.07 90.00	634 75.48
1	61 54.95 21.18	32 28.83 10.26	18 16.22 7.50	111 13.21
2	30 63.83 10.42	12 25.53 3.85	5 10.64 2.08	47 5.60
3	16 84.21 5.56	2 10.53 0.64	1 5.26 0.42	19 2.26
4	10 100.00 3.47	0 0.00 0.00	0 0.00 0.00	10 1.19
5	4 80.00 1.39	1 20.00 0.32	0 0.00 0.00	5 0.60
6	14 100.00 4.86	0 0.00 0.00	0 0.00 0.00	14 1.67
	288 34.29	312 37.14	240 28.57	840

Statistics for table of NSTRAND by SLOPE

Chi-square ( 12 df)

= 142.1793 (P<0.0000)

Table P-3 Cross-Tabulations Of Fry Stranding Versus Two Levels Of Amplitude Fluctuation For The 1986 Salmon Fry Stranding Study

Tabulation of NSTRAND (rows) by AMP (columns)  
(Frequency/Row percent/Column percent)

	1	2	
0	318 50.16 75.71	316 49.84 75.24	634 75.48
1	55 49.55 13.10	56 50.45 13.33	111 13.21
2	25 53.19 5.95	22 46.81 5.24	47 5.60
3	9 47.37 2.14	10 52.63 2.38	19 2.26
4	5 50.00 1.19	5 50.00 1.19	10 1.19
5	1 20.00 0.24	4 80.00 0.95	5 0.60
6	7 50.00 1.67	7 50.00 1.67	14 1.67
	420 50.00	420 50.00	840

Statistics for table of NSTRAND by AMP

Chi-square ( 6 df)

= 2.0594 (P<0.9868)

Table P-4 Cross-Tabulations Of Fry Stranding Versus Two Levels Of Endflow For The 1986 Salmon Fry Stranding Study

Tabulation of NSTRAND (rows) by ENDFLO (columns)  
(Frequency/Row percent/Column percent)

	1	2	
0	307 48.42 73.10	327 51.58 77.86	634 75.48
1	67 60.36 15.95	44 39.64 10.48	111 13.21
2	24 51.06 5.71	23 48.94 5.48	47 5.60
3	7 36.84 1.67	12 63.16 2.86	19 2.26
4	5 50.00 1.19	5 50.00 1.19	10 1.19
5	1 20.00 0.24	4 80.00 0.95	5 0.60
6	9 64.29 2.14	5 35.71 1.19	14 1.67
	420 50.00	420 50.00	840

Statistics for table of NSTRAND by ENDFLO

Chi-square ( 6 df)

= 9.6766 (P<0.1388)

Table P-5 Cross-Tabulations Of Fry Stranding Versus Two Levels Of Ramping Rate For The 1986 Salmon Fry Stranding Study

Tabulation of NSTRAND (rows) by RRATE (columns)  
 (Frequency/Row percent/Column percent)

	1	2	
0	321 50.63 76.43	313 49.37 74.52	634 75.48
1	62 55.86 14.76	49 44.14 11.67	111 13.21
2	20 42.55 4.76	27 57.45 6.43	47 5.60
3	9 47.37 2.14	10 52.63 2.38	19 2.26
4	1 10.00 0.24	9 90.00 2.14	10 1.19
5	4 80.00 0.95	1 20.00 0.24	5 0.60
6	3 21.43 0.71	11 78.57 2.62	14 1.67
	420 50.00	420 50.00	840

Statistics for table of NSTRAND by RRATE

Chi-square ( 6 df)

= 15.4901 (P<0.0167)

Table P-6 Cross-Tabulations Of Fry Stranding Versus Two Levels Of Substrate For The 1986 Salmon Fry Stranding Study

Tabulation of NSTRAND (rows) by SUBSTR (columns)  
(Frequency/Row percent/Column percent)

	1	2	
0	335 52.84 73.46	299 47.16 77.86	634 75.48
1	64 57.66 14.04	47 42.34 12.24	111 13.21
2	29 61.70 6.36	18 38.30 4.69	47 5.60
3	13 68.42 2.85	6 31.58 1.56	19 2.26
4	4 40.00 0.88	6 60.00 1.56	10 1.19
5	1 20.00 0.22	4 80.00 1.04	5 0.60
6	10 71.43 2.19	4 28.57 1.04	14 1.67
	456 54.29	384 45.71	840

Statistics for table of NSTRAND by SUBSTR

Chi-square ( 6 df)

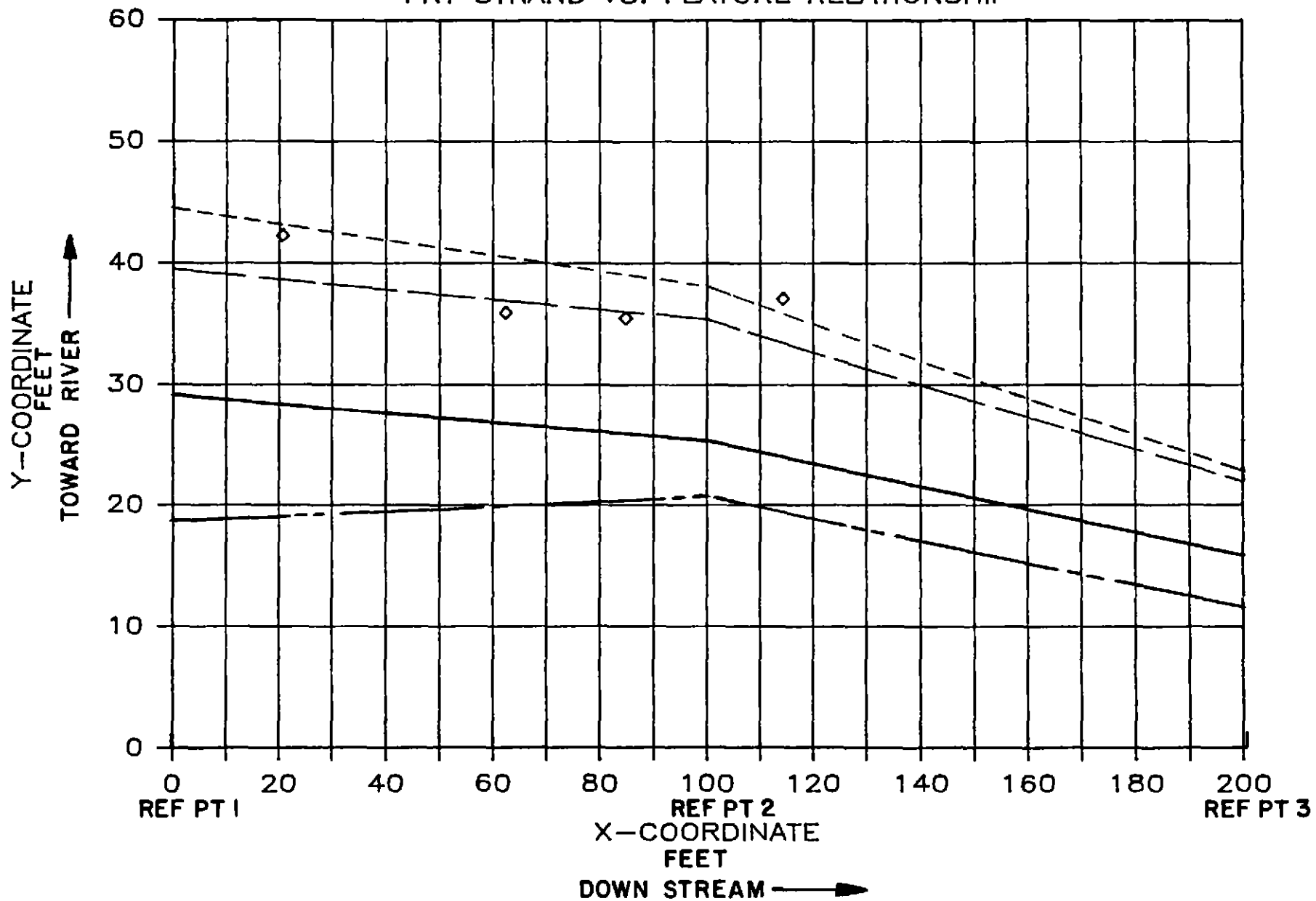
= 8.4634 (P<0.2059)

APPENDIX Q

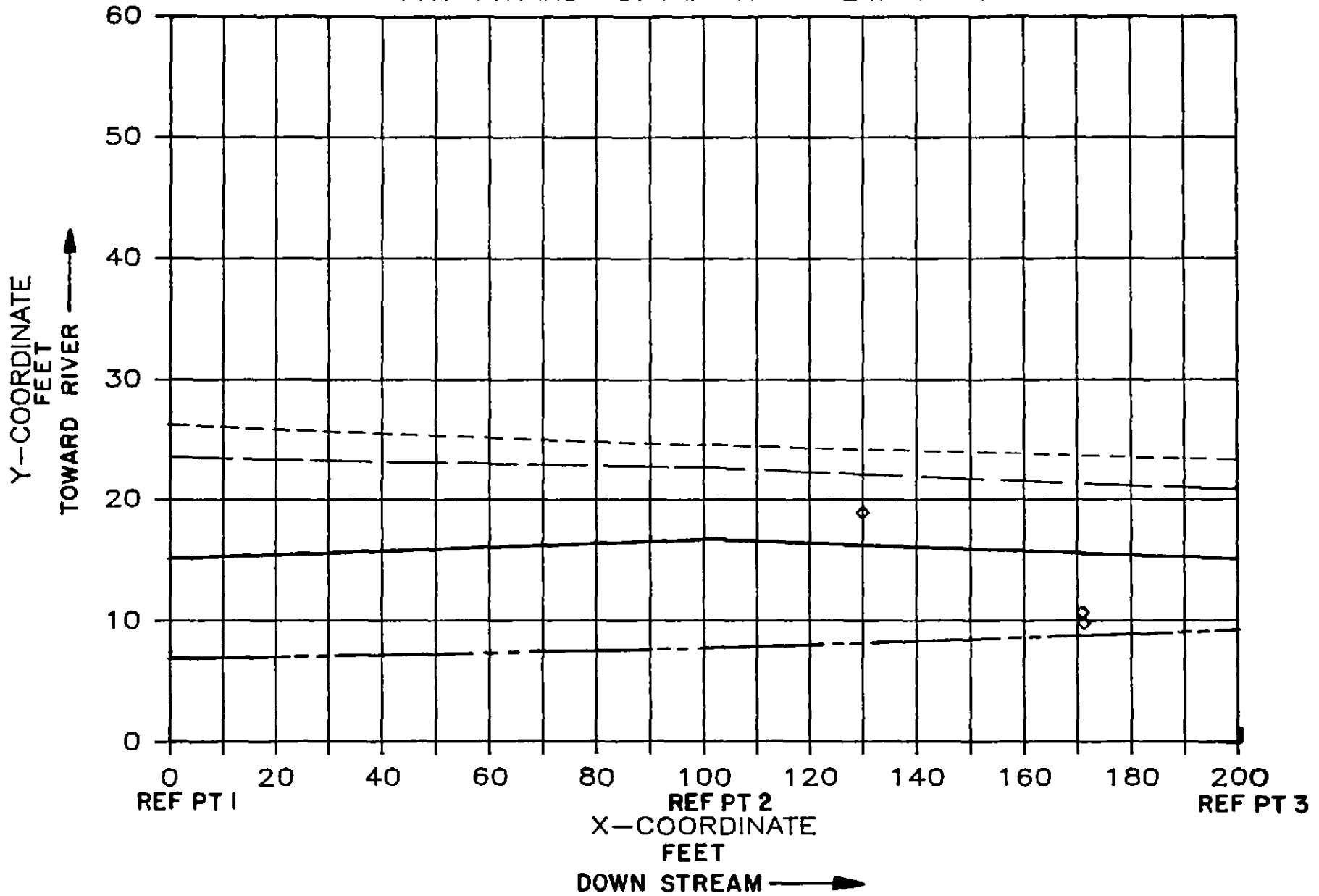
FRY STRANDING LOCATION VERSUS GRAVEL BAR FEATURES FOR STEELHEAD FRY GRAVEL  
BAR STRANDING (1986)



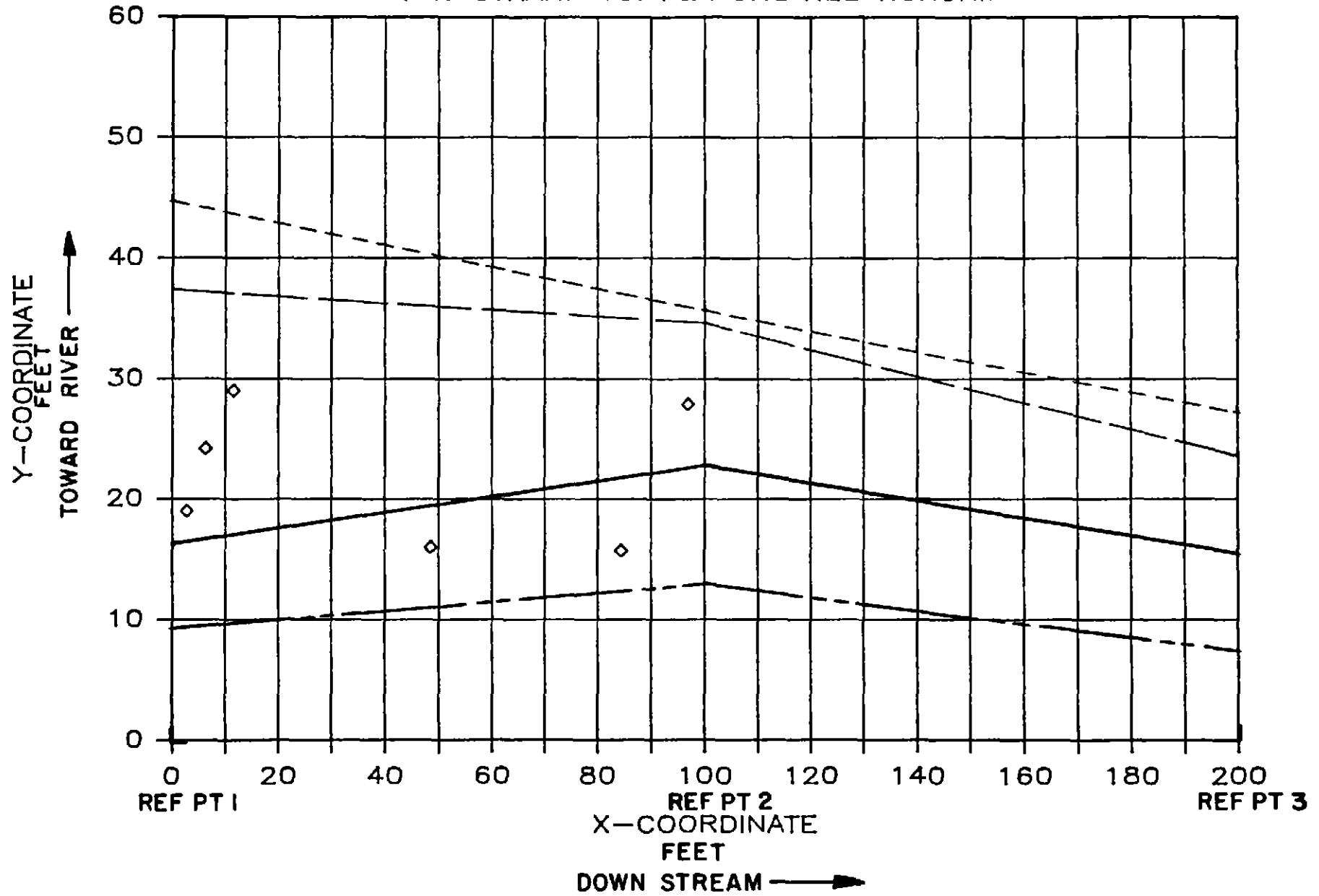
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BIG EDDY BAR SITE 3  
FRY STRAND VS. FEATURE RELATIONSHIP



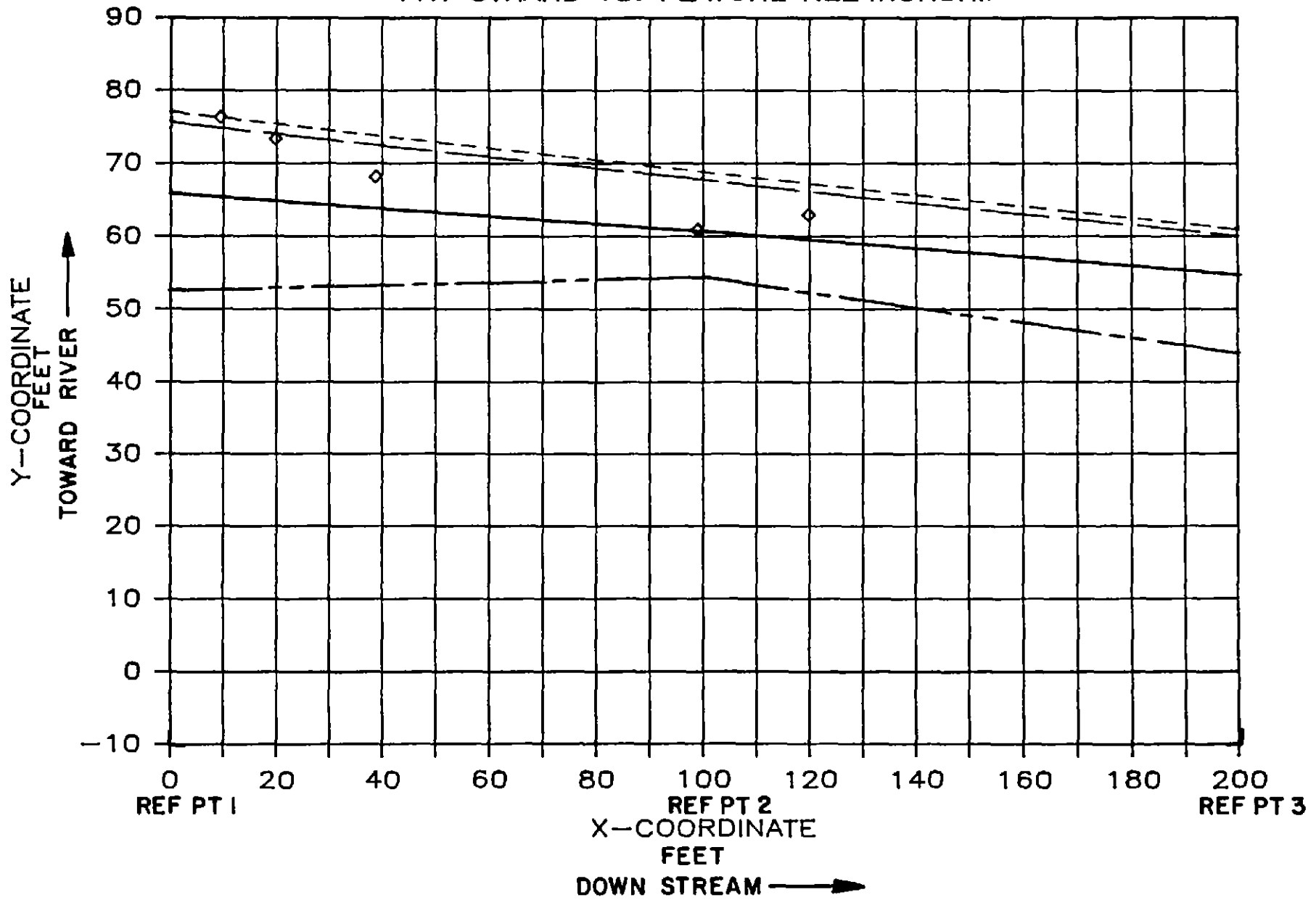
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FRY STRAND VS. FEATURE RELATIONSHIP



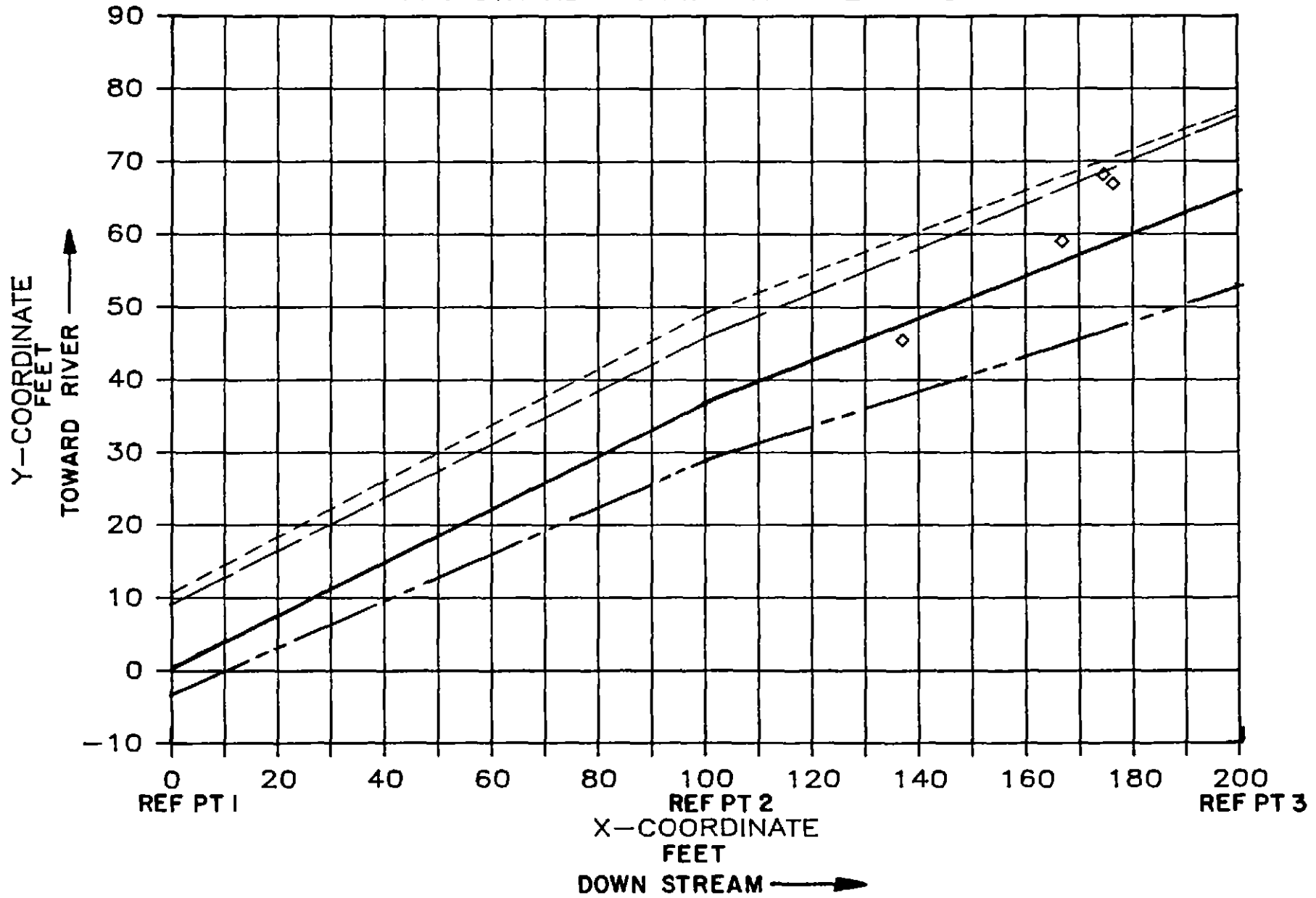
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**FRY STRAND VS. FEATURE RELATIONSHIP**



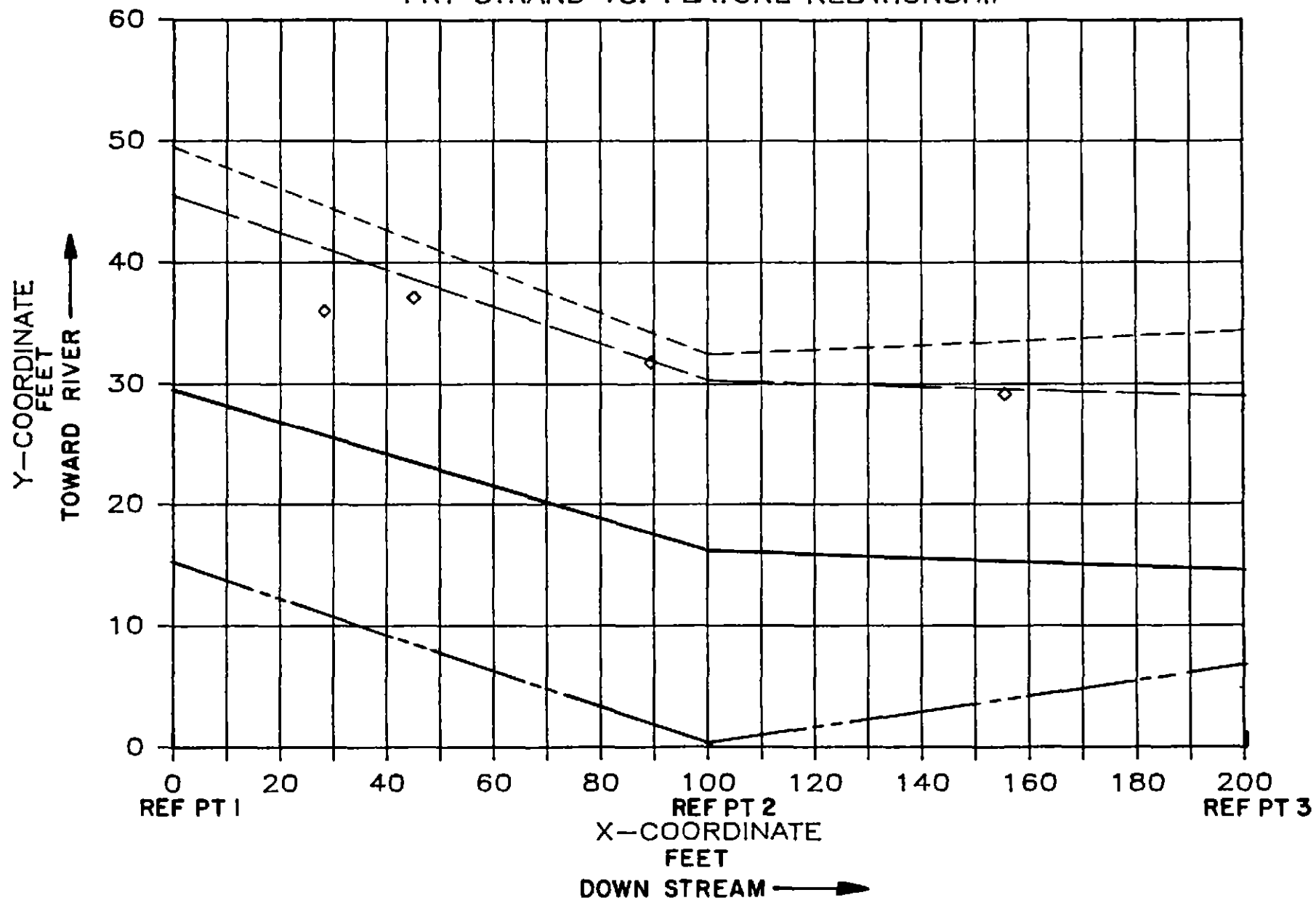
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BAD SPOT BAR SITE 2  
FRY STRAND VS. FEATURE RELATIONSHIP



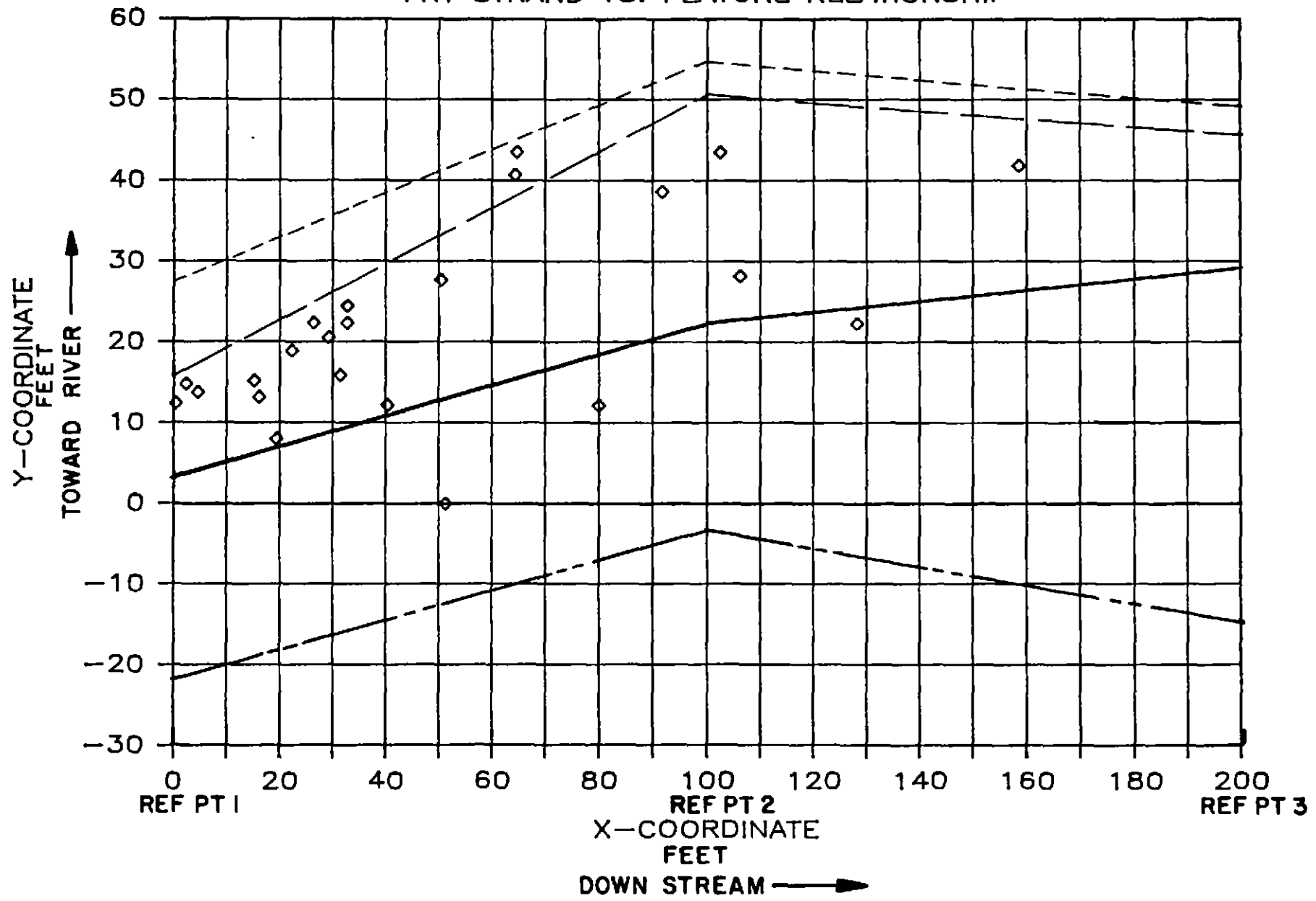
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BAD SPOT BAR SITE 1  
FRY STRAND VS. FEATURE RELATIONSHIP



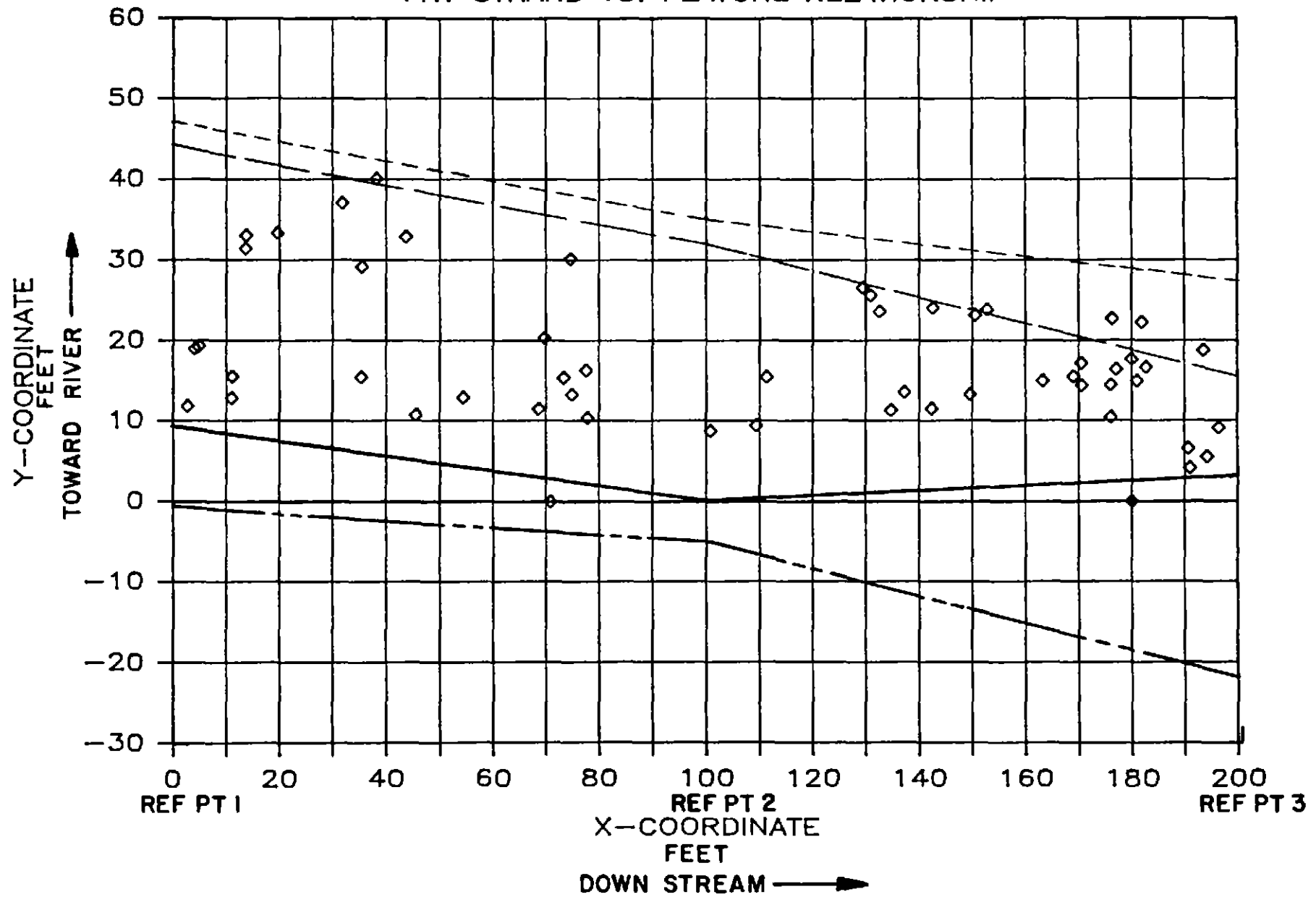
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INACCESSIBLE ISLAND BAR SITE 3  
FRY STRAND VS. FEATURE RELATIONSHIP



**SPRING 1986**  
**INACCESSIBLE ISLAND BAR SITE 2**  
**FRY STRAND VS. FEATURE RELATIONSHIP**

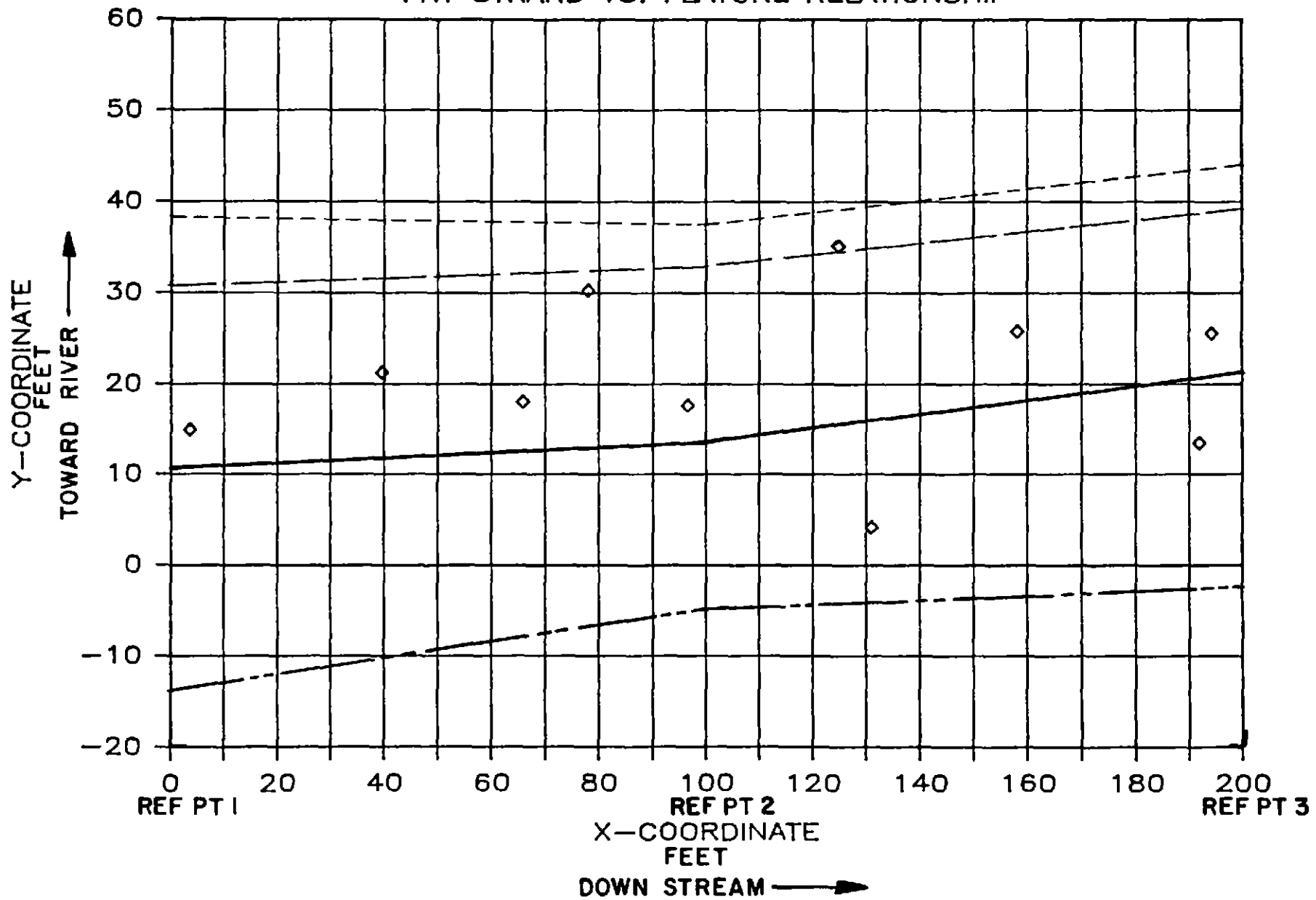


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FRY STRAND VS. FEATURE RELATIONSHIP





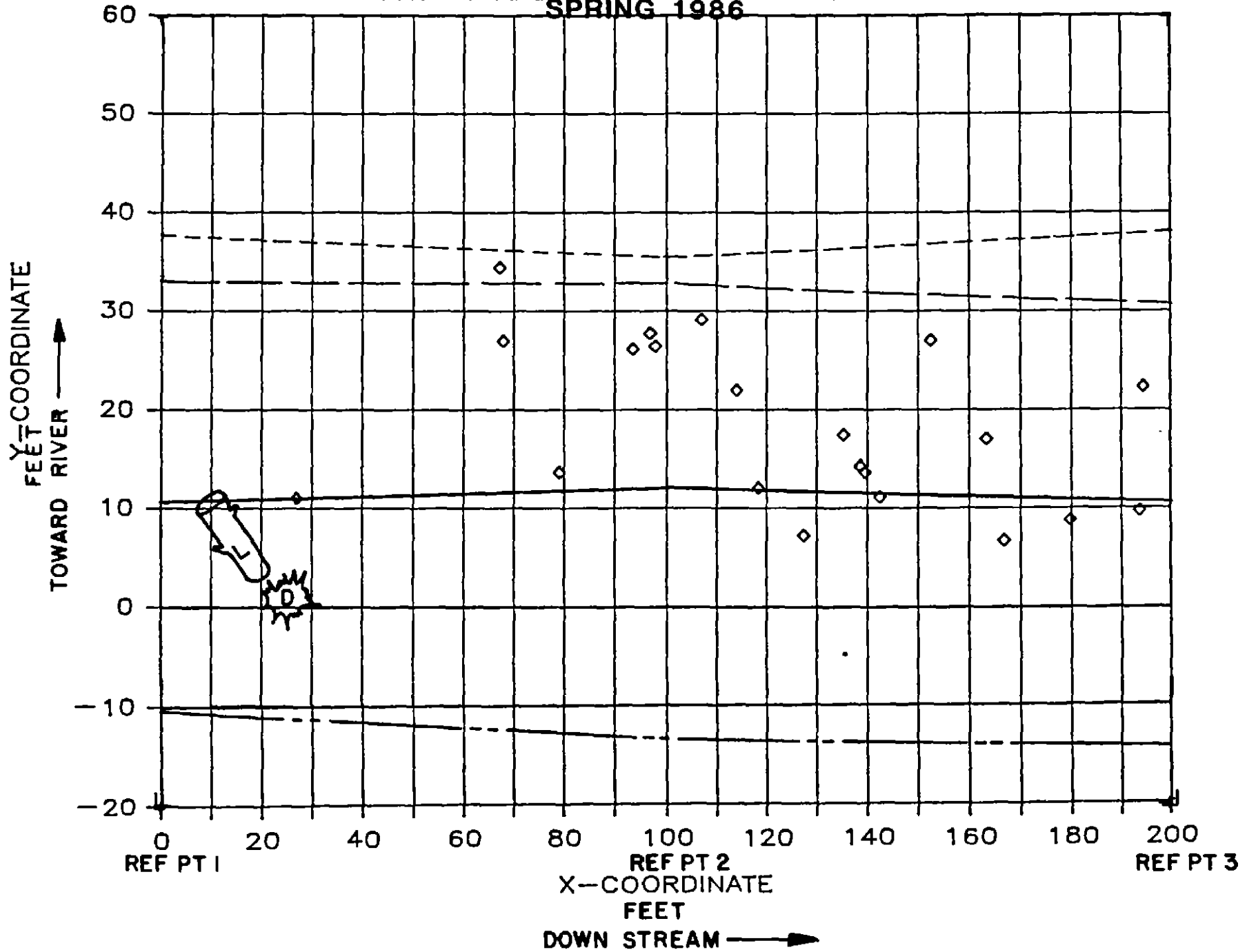
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ROCKPORT BAR SITE 3  
FRY STRAND VS. FEATURE RELATIONSHIP



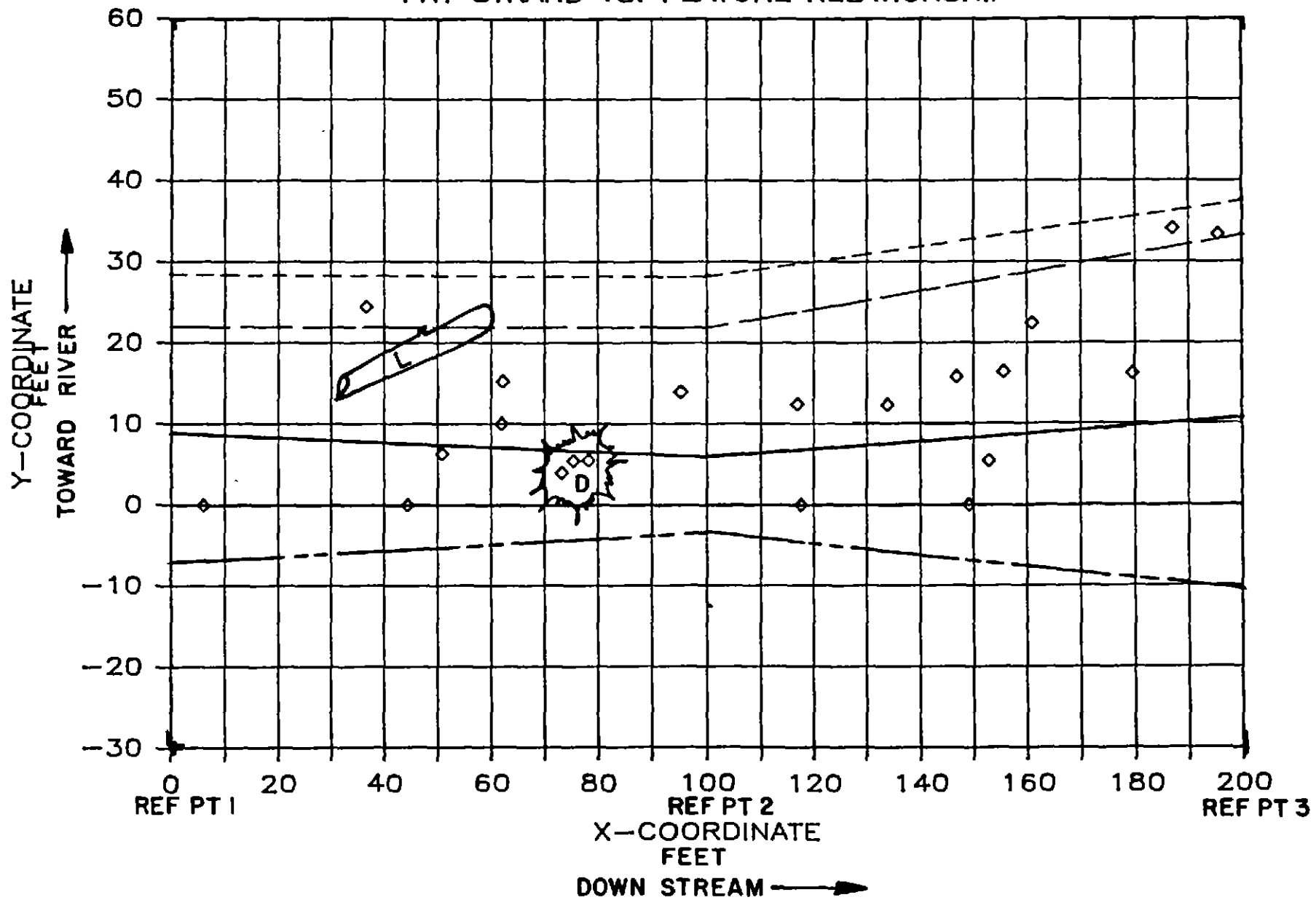
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FRY STRAND VS. FEATURE RELATIONSHIP

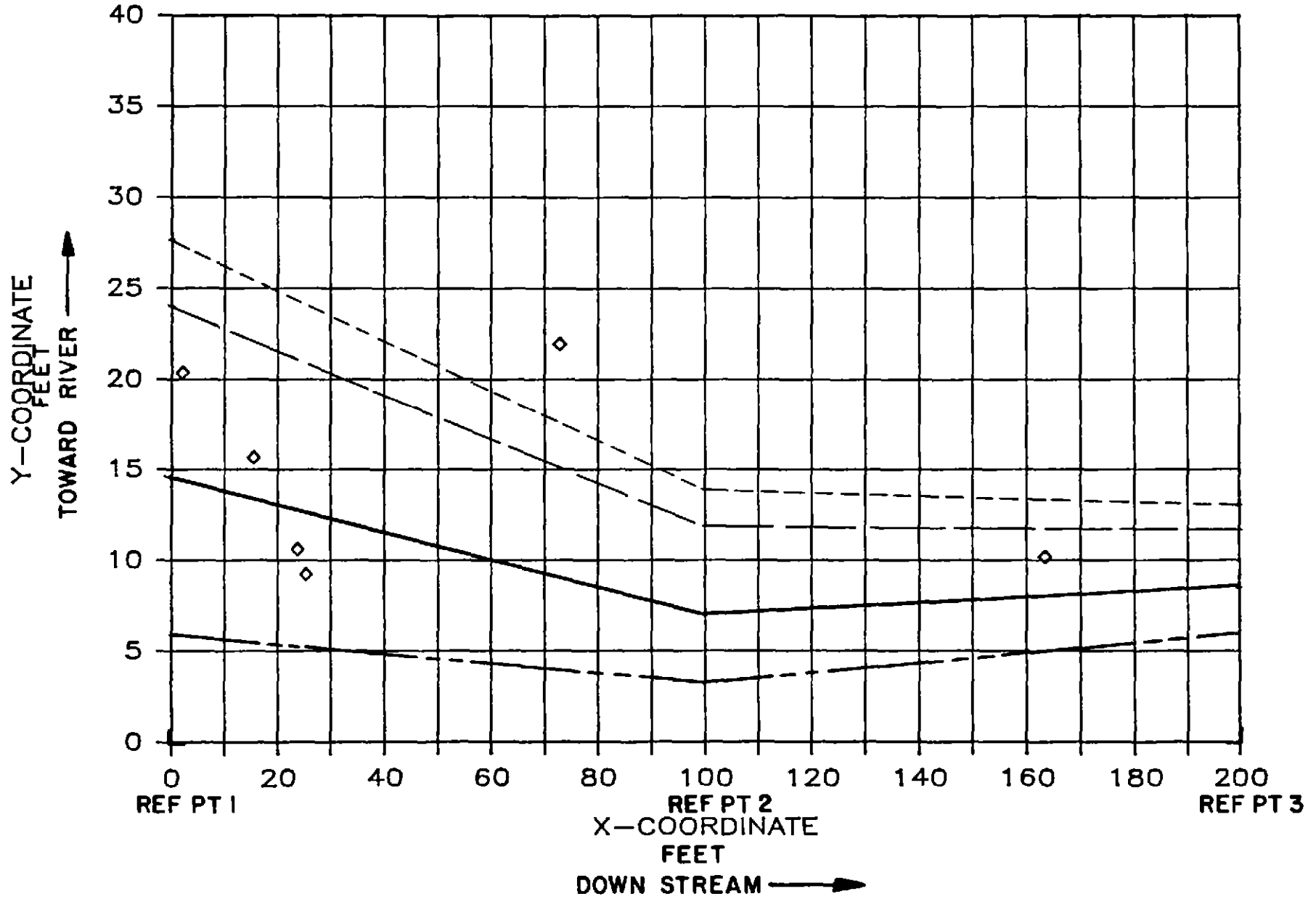
SPRING 1986



SPRING 1986  
ROCKPORT BAR SITE 1  
FRY STRAND VS. FEATURE RELATIONSHIP

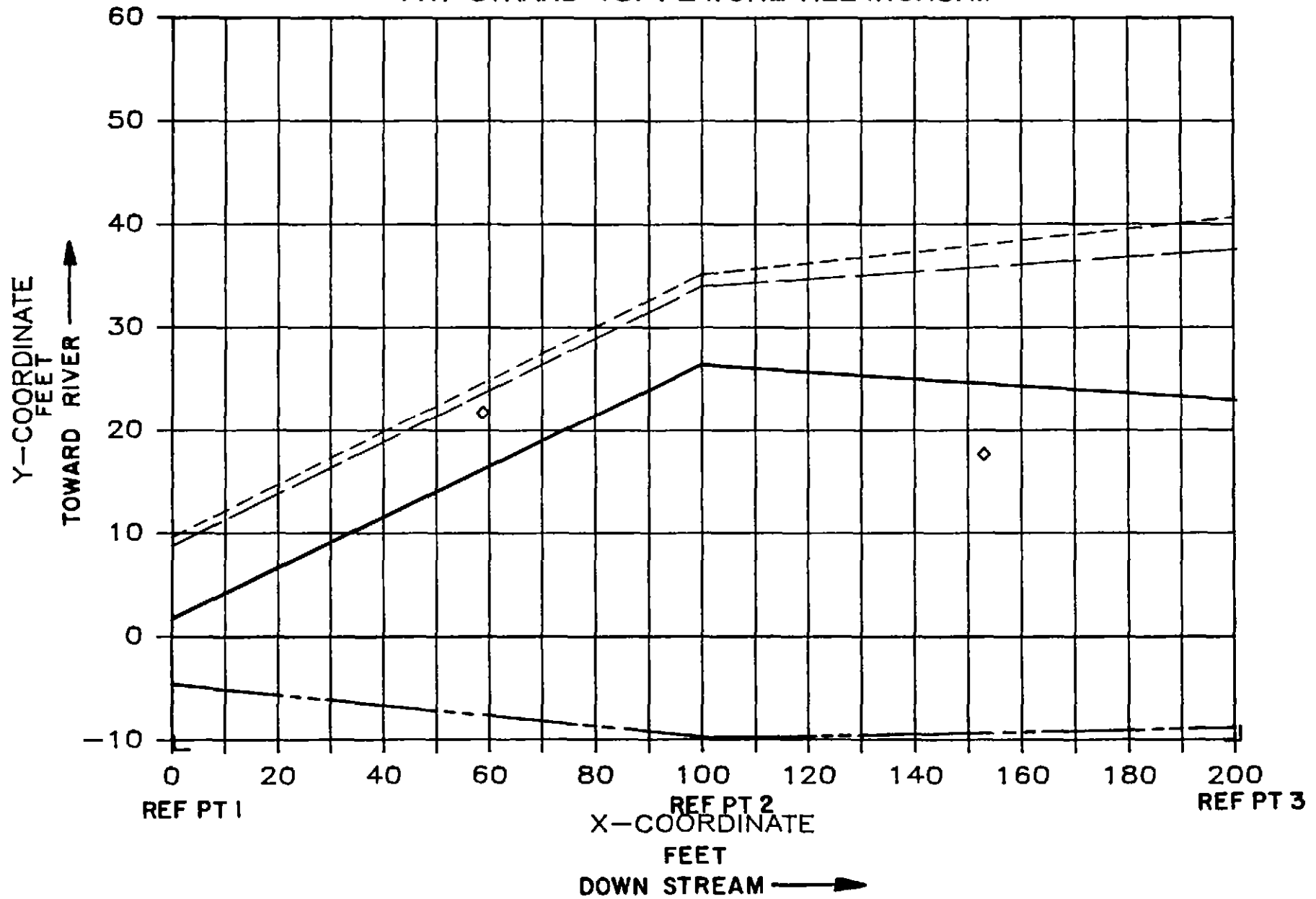


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FRY STRAND VS. FEATURE RELATIONSHIP

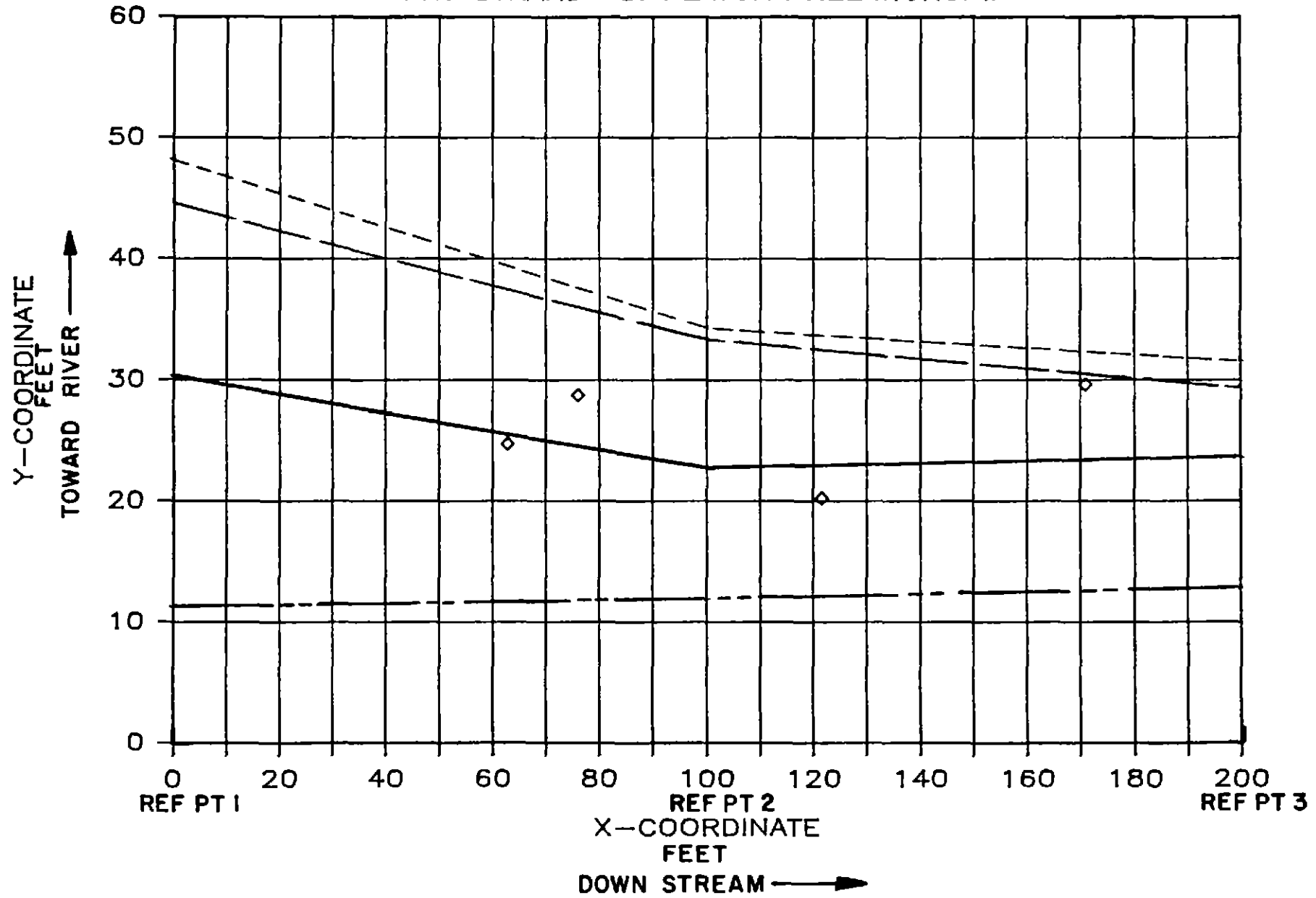


SPRING 1986  
FORBIDDEN BAR SITE 3

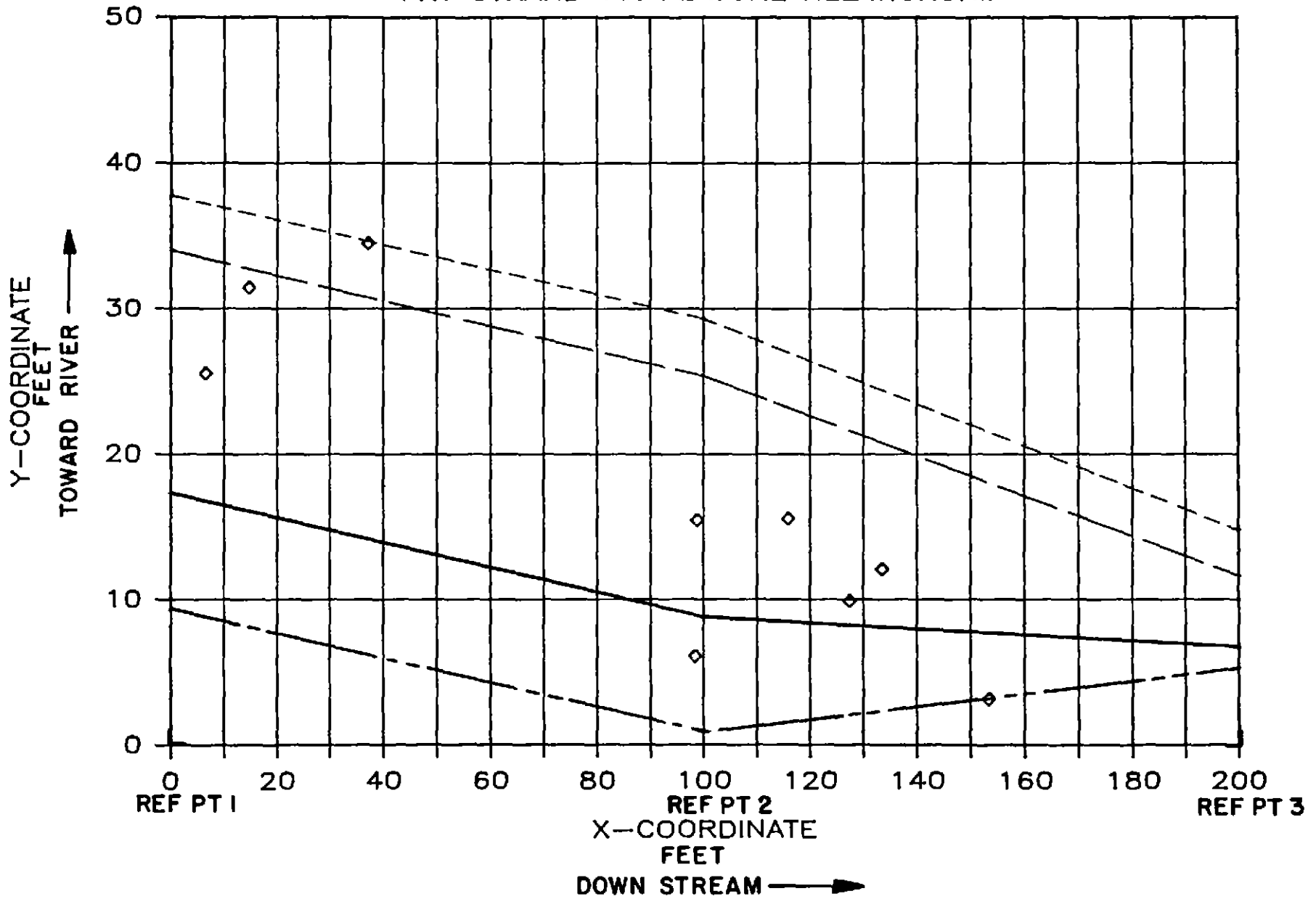
FRY STRAND VS. FEATURE RELATIONSHIP



SPRING 1986  
FORBIDDEN BAR SITE 1  
FRY STRAND VS. FEATURE RELATIONSHIP

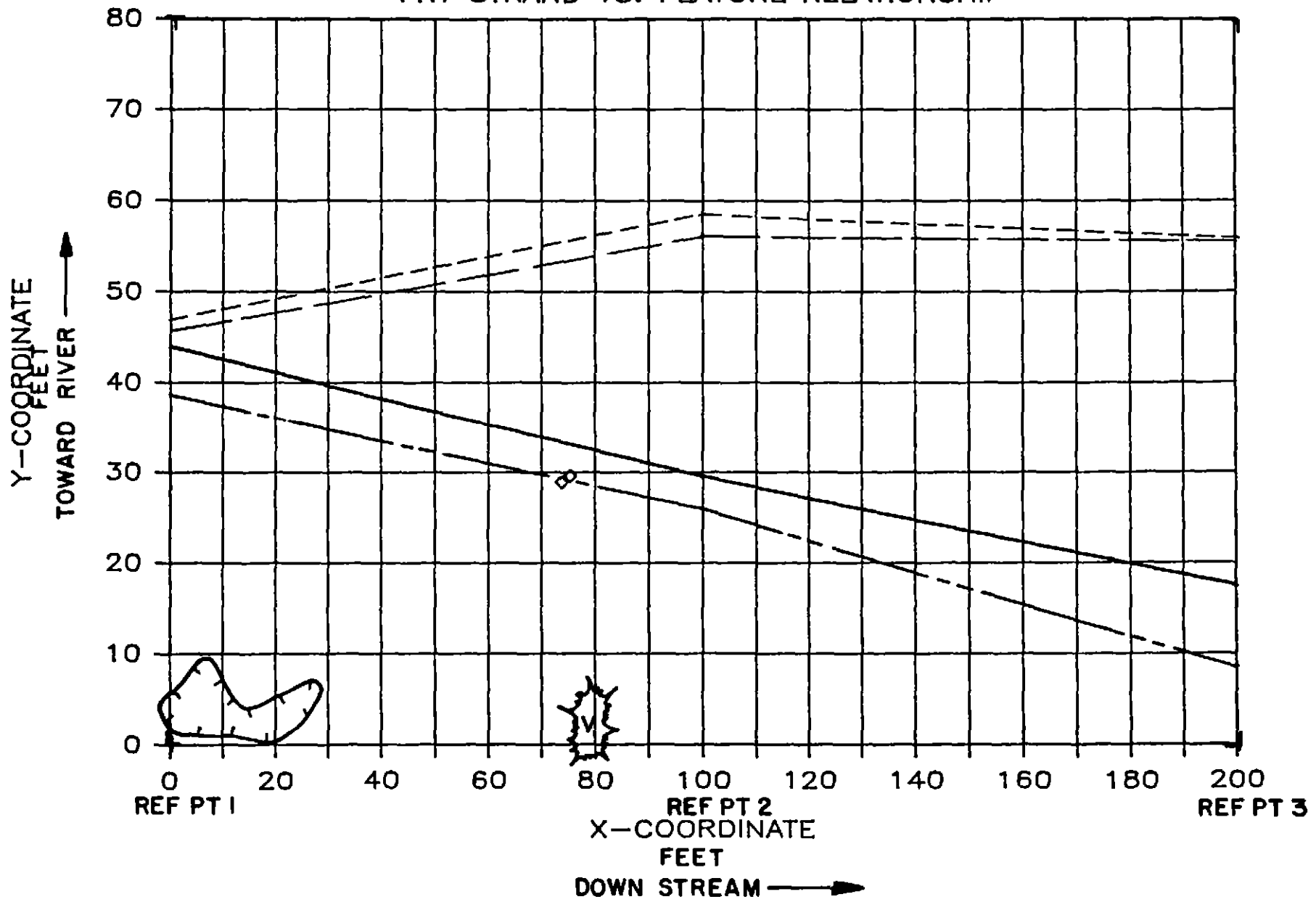


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DIOBSUD CREEK BAR SITE 3  
FRY STRAND VS. FEATURE RELATIONSHIP



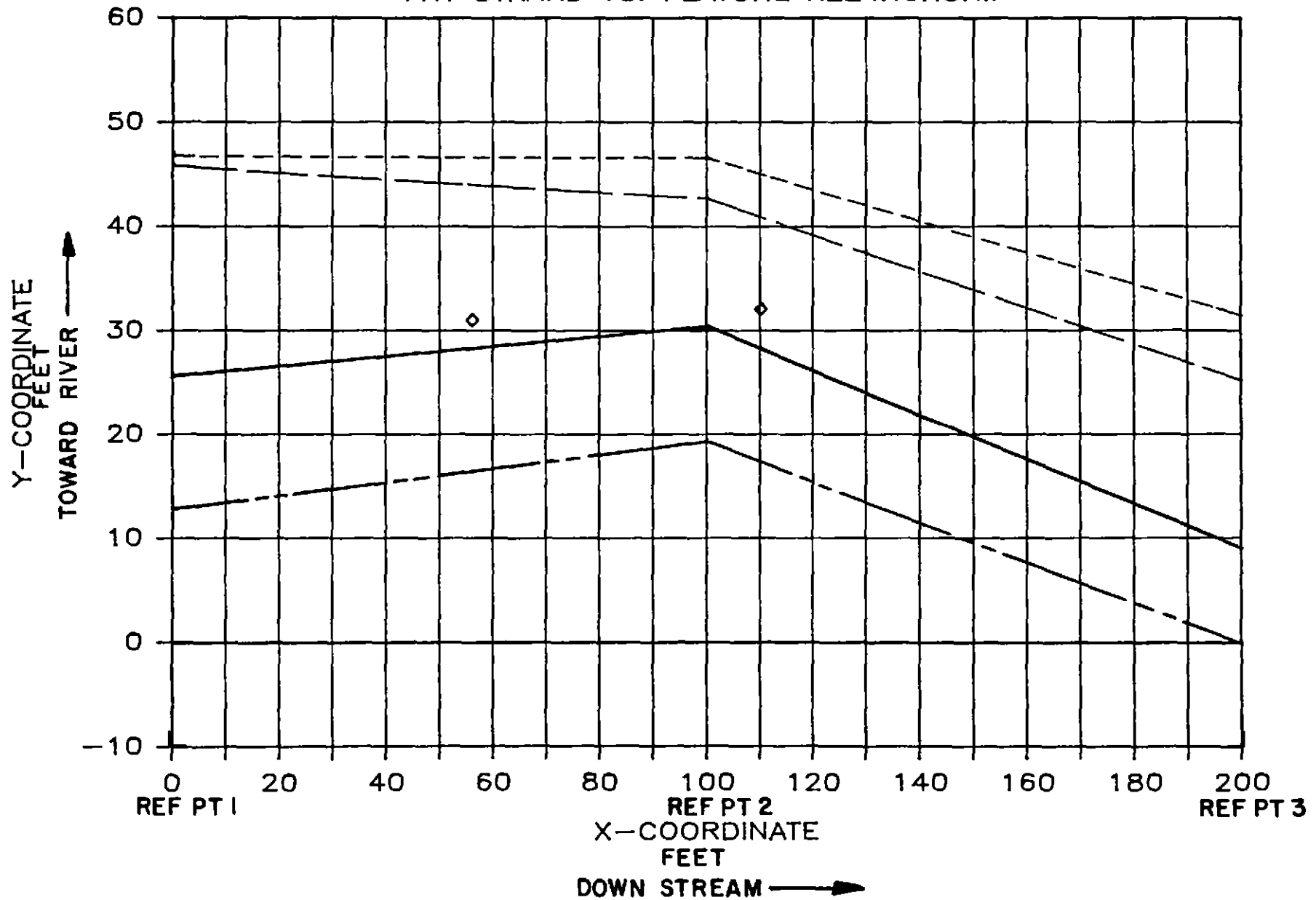
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DIOBSUD CREEK BAR SITE 2

FRY STRAND VS. FEATURE RELATIONSHIP



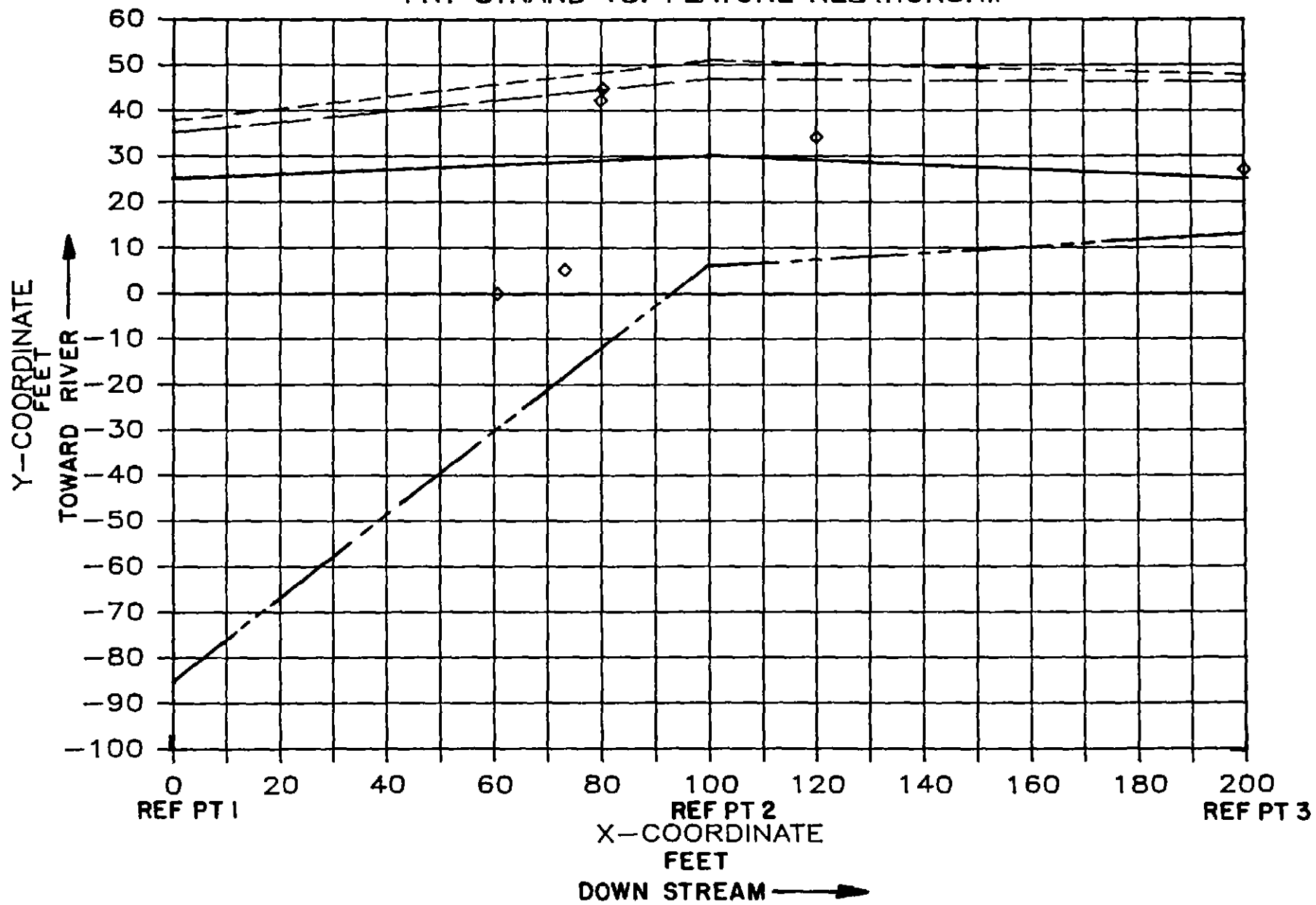


SPRING 1986  
BACON CREEK BAR SITE 2  
FRY STRAND VS. FEATURE RELATIONSHIP

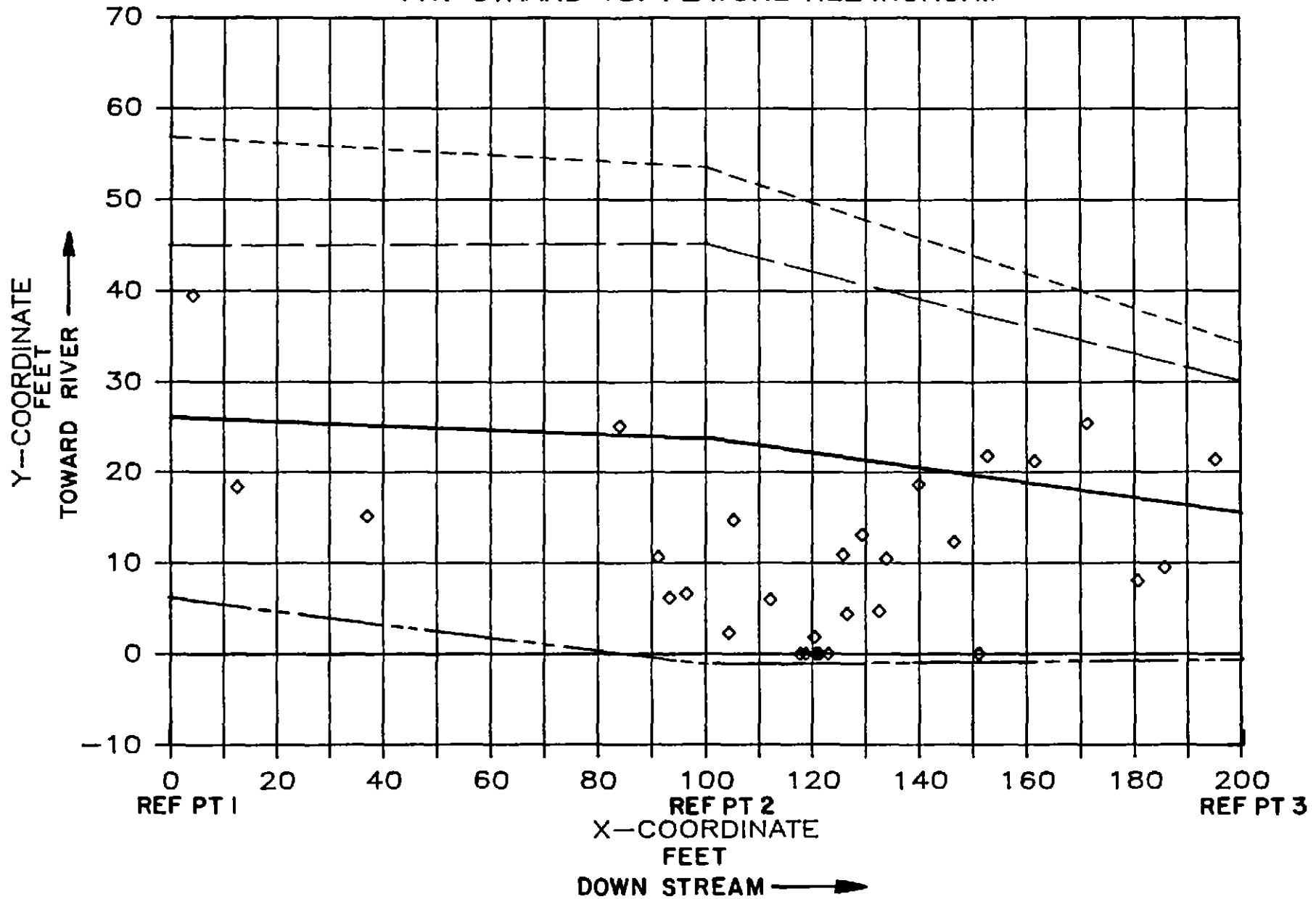


SPRING 1986  
BACON CREEK BAR SITE 1

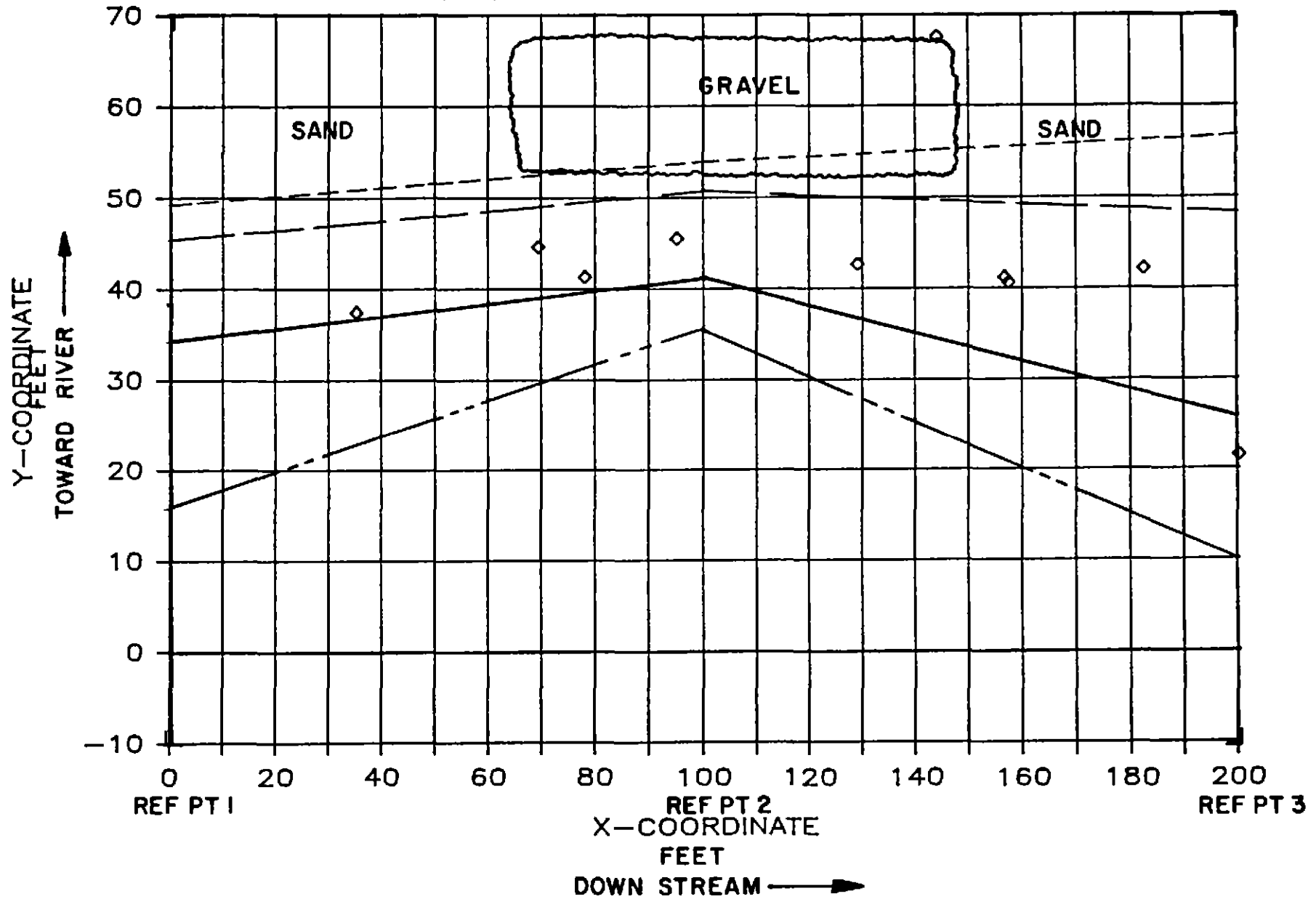
FRY STRAND VS. FEATURE RELATIONSHIP



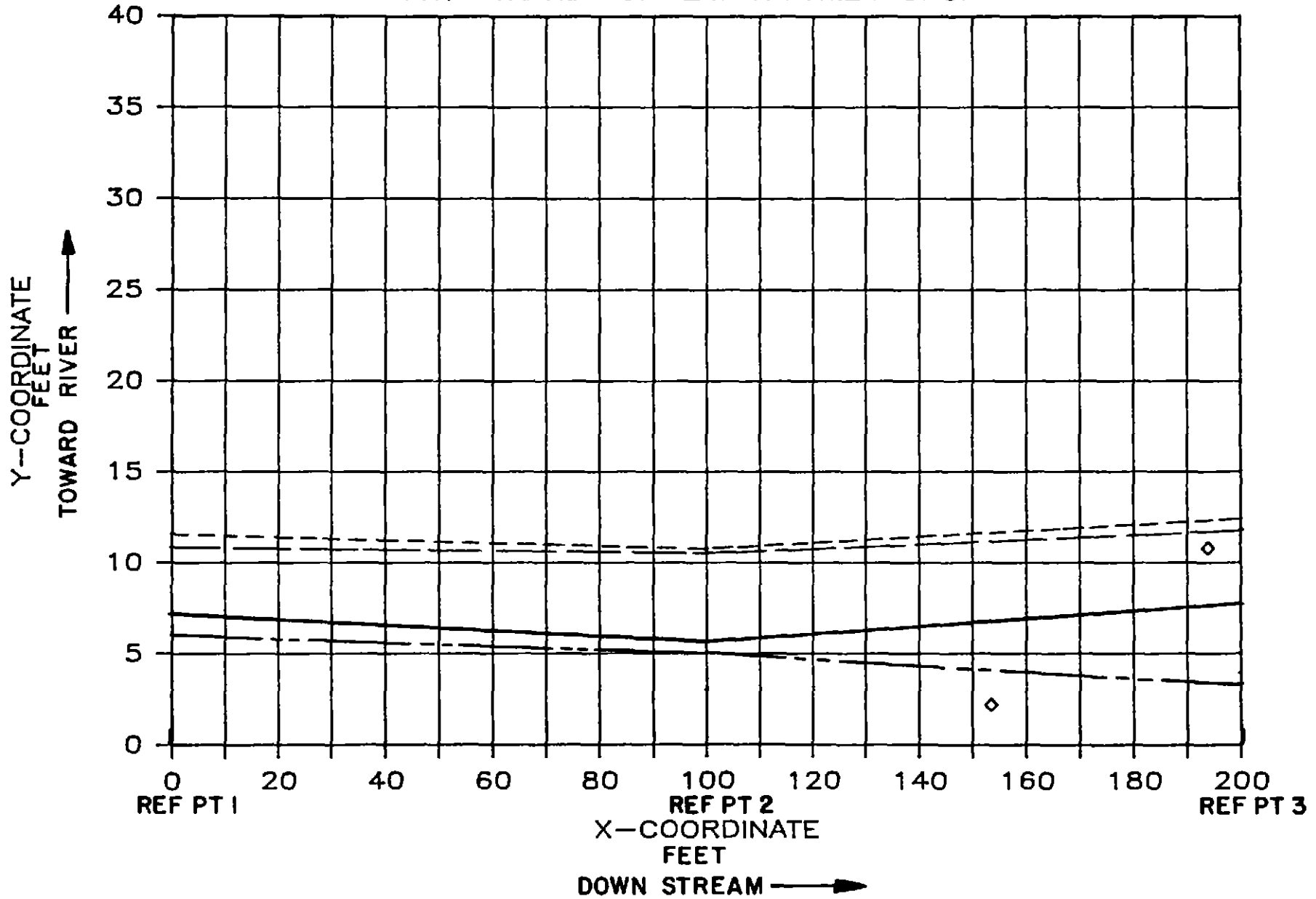
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OINK BAR SITE 2  
FRY STRAND VS. FEATURE RELATIONSHIP



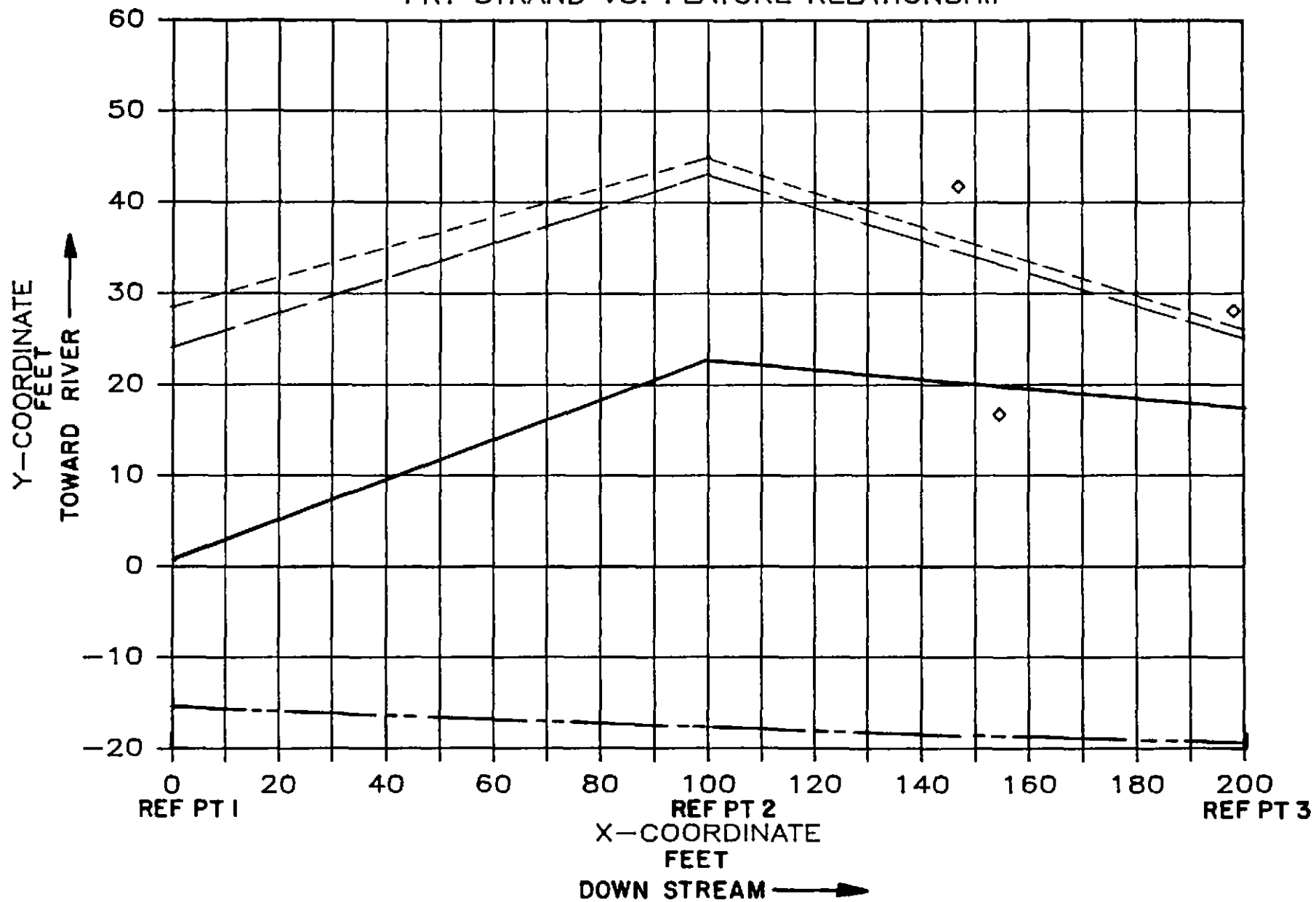
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POINT BAR SITE 1  
FRY STRAND VS. FEATURE RELATIONSHIP



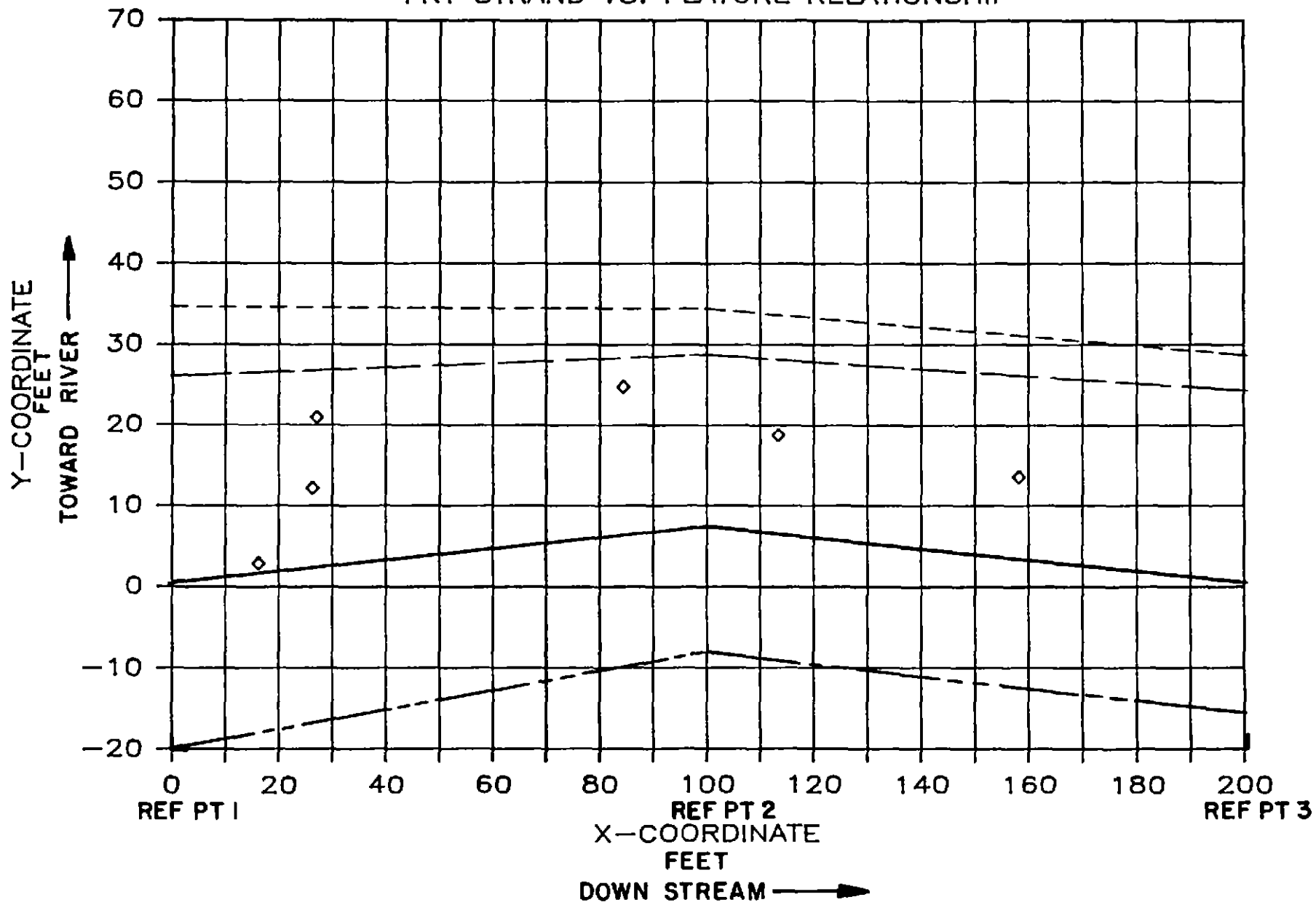
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FRY STRAND VS. FEATURE RELATIONSHIP



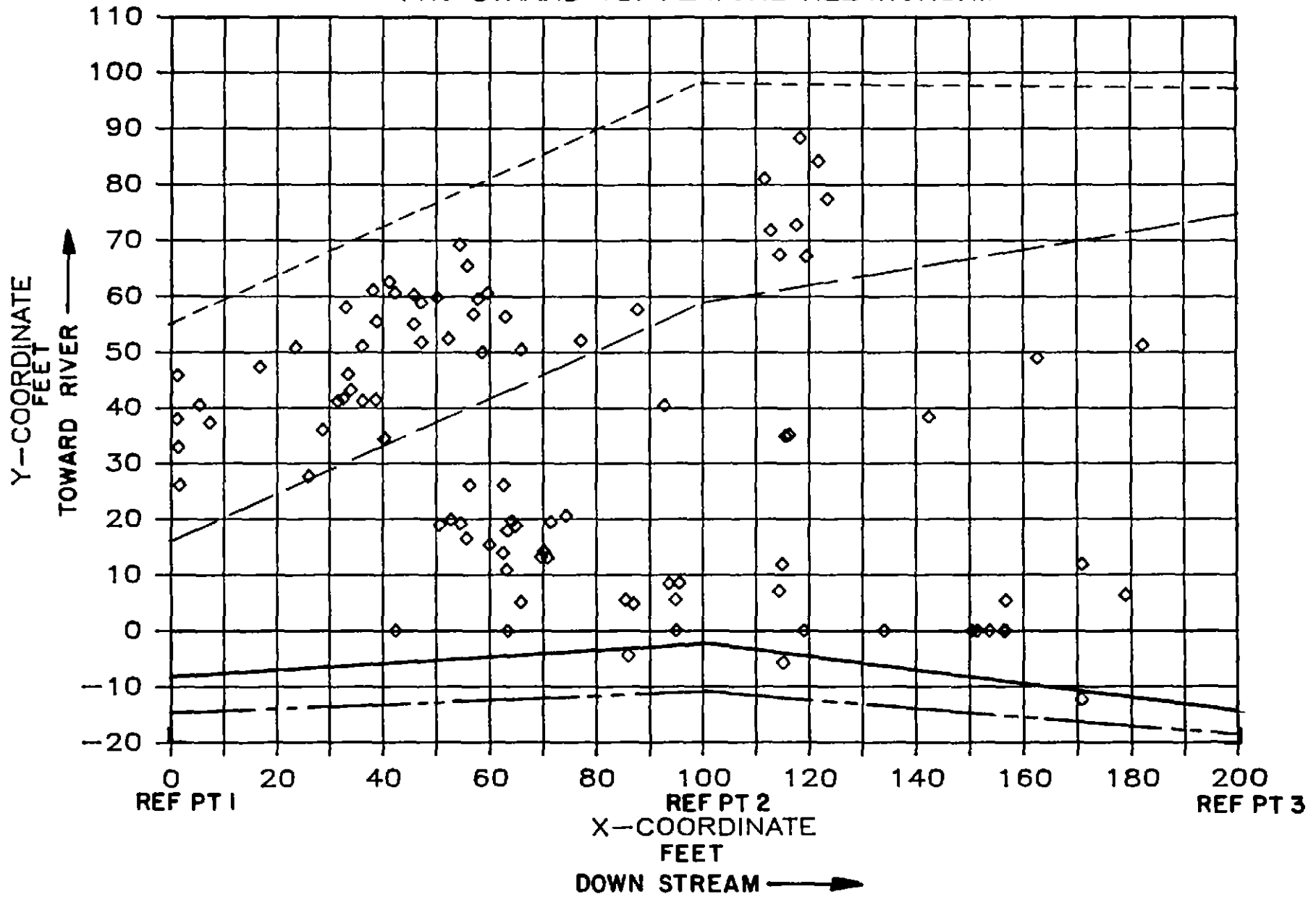
SPRING 1986  
FACE BAR SITE 2  
FRY STRAND VS. FEATURE RELATIONSHIP



SPRING 1986  
FACE BAR SITE 1  
FRY STRAND VS. FEATURE RELATIONSHIP



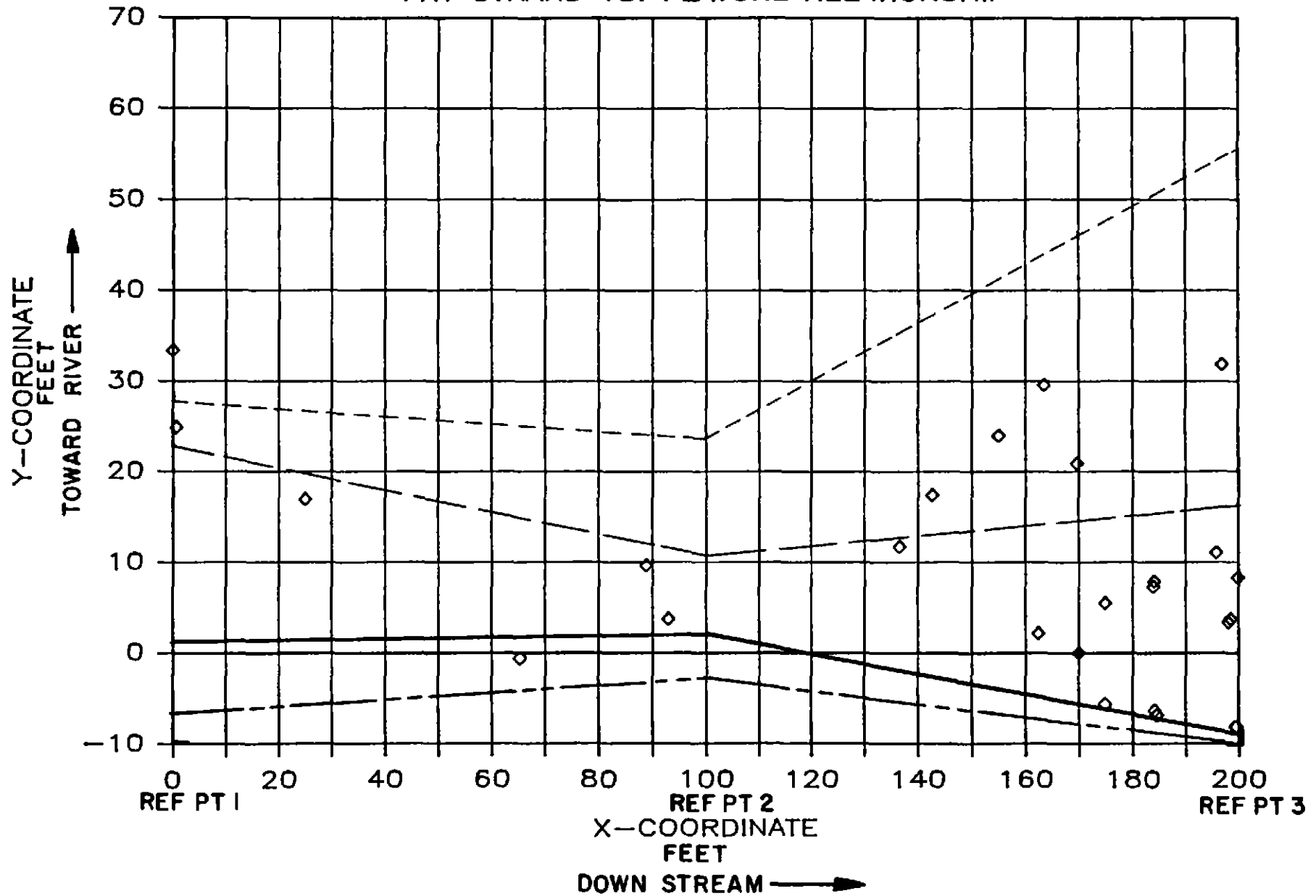
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**MARBLEMOUNT BAR SITE 3**  
**FRY STRAND VS. FEATURE RELATIONSHIP**



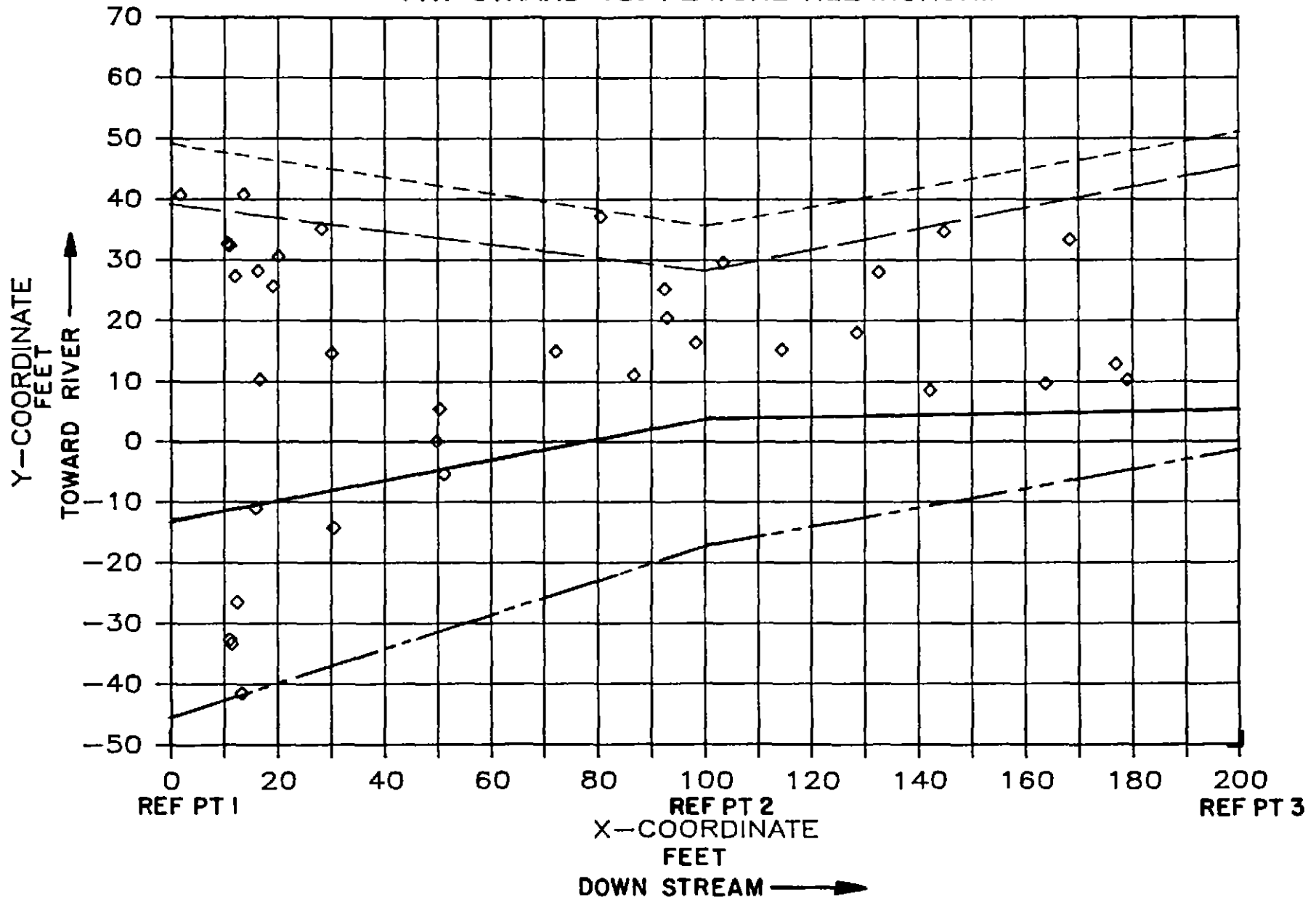


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MARBLEMOUNT BAR SITE 2

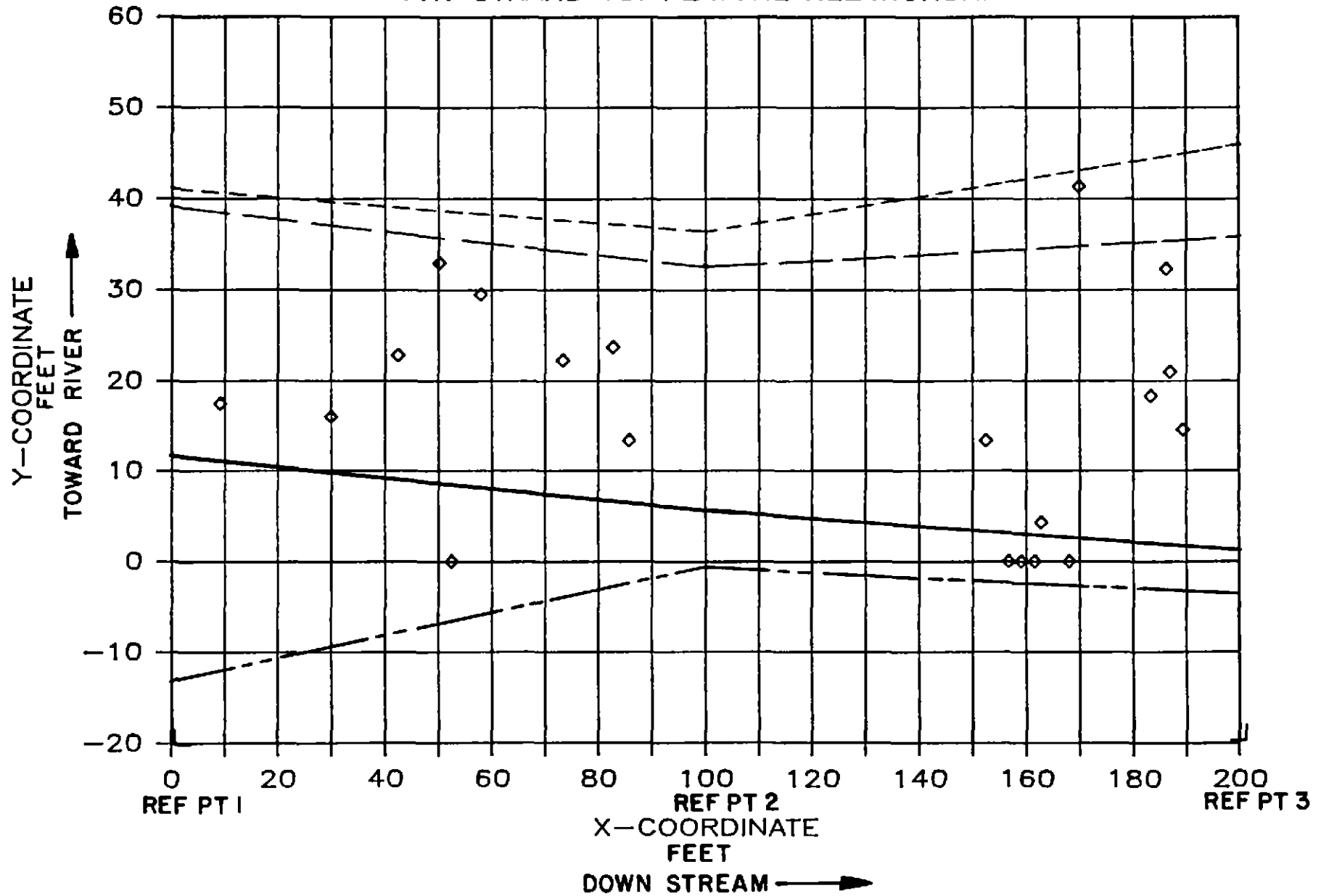
FRY STRAND VS. FEATURE RELATIONSHIP



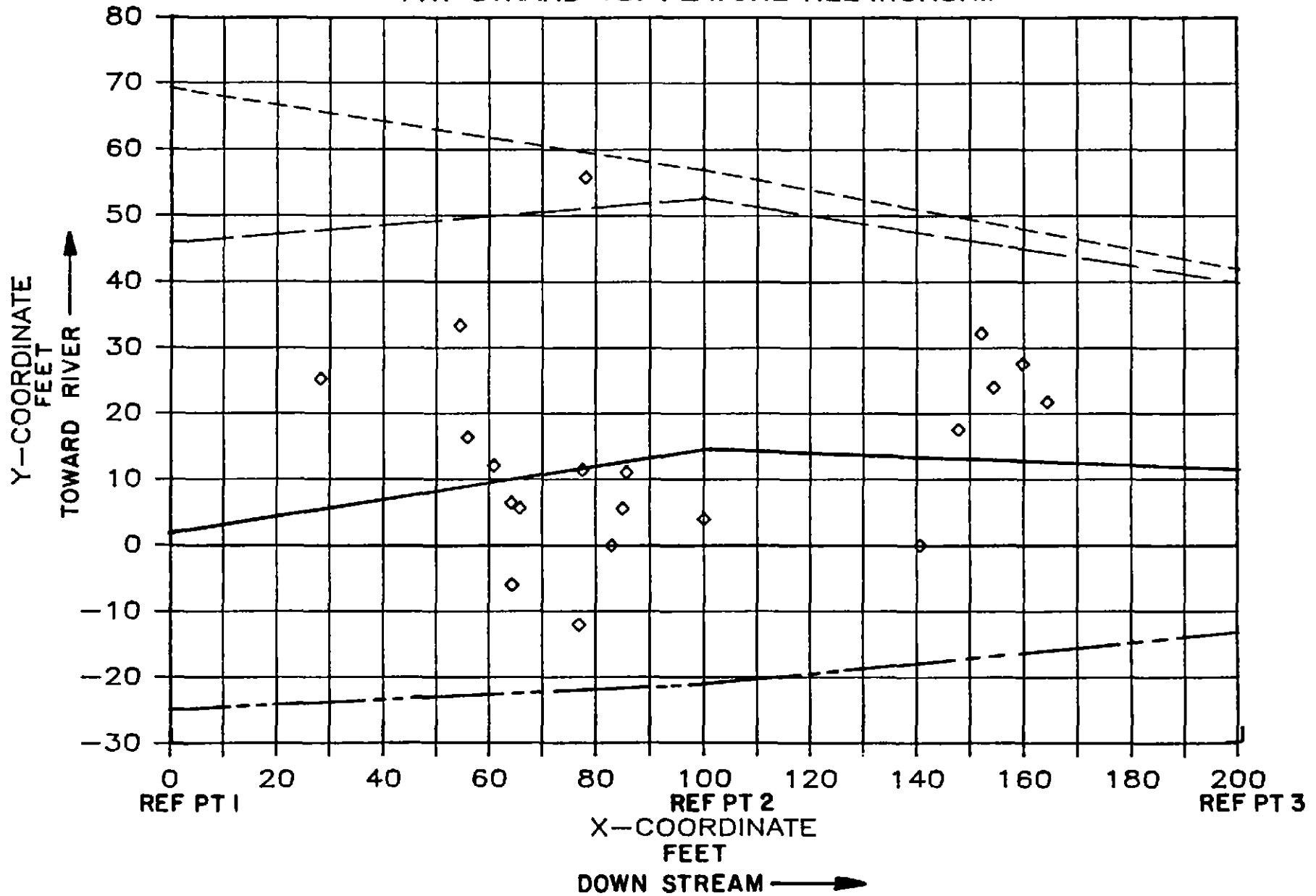
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FRY STRAND VS. FEATURE RELATIONSHIP



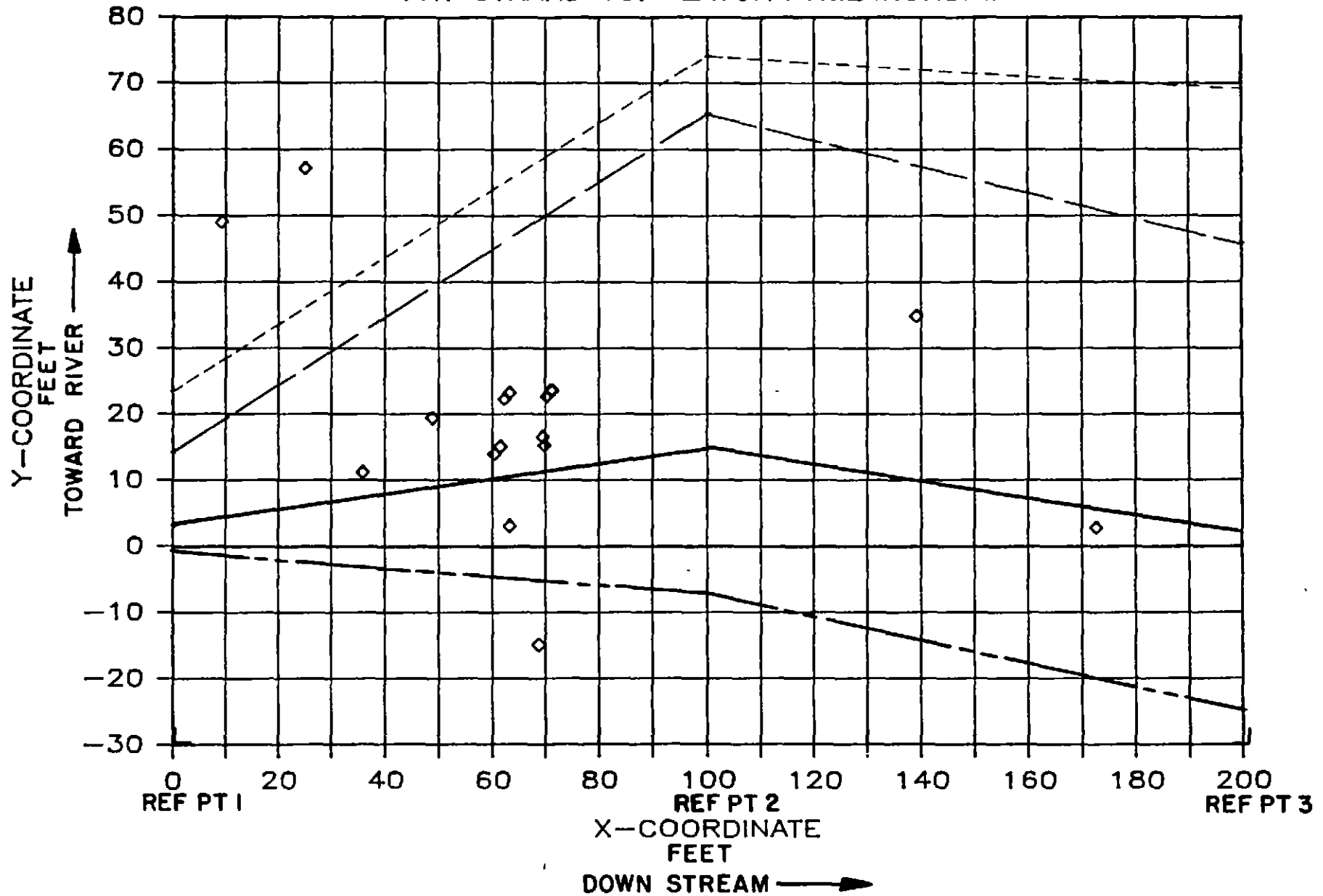
**SPRING 1986**  
**FUNGUS BAR SITE 3**  
**FRY STRAND VS. FEATURE RELATIONSHIP**



SPRING 1986  
FUNGUS BAR SITE 2  
FRY STRAND VS. FEATURE RELATIONSHIP



SPRING 1986  
FUNGUS BAR SITE 1  
FRY STRAND VS. FEATURE RELATIONSHIP



APPENDIX R

FRY RECRUITMENT INTO POTHLES

This study was conducted by Russell K. Ladley, fisheries biologist on the staff of R.W. Beck and Associates. The report that follows is a more detailed version of the condensed form that appears in Section VI.

PRELIMINARY

## ABSTRACT

Tests were designed to quantify the timing and level of fry recruitment into potholes that interface regularly with the main channel river flow. Flow levels on the Skagit River were regulated according to a prescribed combination of amplitudes, ramping rates and endflows. Fry recruitment into potholes was studied using time periods of one to five days. Following a pre-determined test interval, fry were removed from potholes with an electroshocker and counted. New fry moved into potholes immediately during the first high water event. High beginning flows resulted in a significant decline in recruitment. Potholes providing cover and large substrate were observed to recruit higher numbers of fry.

## ACKNOWLEDGMENTS

This study was funded by the City of Seattle, Environmental Affairs Division. Assistance in the design, completion and analysis of this study was given by:

R. W. Beck and Associates  
Mr. Dave Pflug; Mr. Jay Kidder; Mr. Paul Tappel

Seattle City Light  
Mr. Keith Kurko

Skagit System Cooperative  
Mr. Jim Gibson

Consulting:  
Dr. Lars Mobernd



## INTRODUCTION

Concern over the effects of dam regulated flow fluctuations on salmon and steelhead production in the Skagit River has prompted cooperative studies between Seattle City Light, Washington Department of Fisheries and other agencies since 1969. Studies by Thompson (1970) and Phinney (1974) attempted to define operational regimes least detrimental to downstream fish populations. In 1979, relicensing of the three existing hydroelectric facilities prompted further investigations relating discharge to fish survival. Representatives of City Light, Washington State Department of Fisheries and Game, Skagit System Indian Tribes, U.S. Fish and Wildlife Service, and National Marine Fisheries Service agreed on a two-year interim agreement regulating ramping rate and flow magnitude in the Skagit River.

As part of this agreement, Stober (1982) studied the effects of flow fluctuations on spawning behavior, egg deposition efficiency, incubation, fry survival to emergence and stranding of salmon and steelhead fry. In continuation of these studies, R. W. Beck and Associates was retained to investigate the relationship between flow fluctuations and stranding from spring of 1985 to spring of 1986. As an extension to this work, Troutt (1986) examined fry residency time in potholes exposed to dewatering by downramping events. His findings show chinook fry (*O. tshawytscha*) remain an average of 2.5 days in potholes and, therefore, are susceptible to multiple downramping events. Furthermore, this work demonstrated that the daily sample of fry trapped in potholes does not undergo a complete exchange of fry between downramping events since many fry occupy a pothole for more than one flow fluctuation cycle. These latter findings raised questions concerning numbers of fry at fish to pothole stranding.

The objective of the present study is to determine how quickly a pothole recruits fry following a high water event. Recruitment in this context is defined as fry that move into and remain in a pothole.

## APPROACH

Salmon fry were removed from selected potholes, placed in a bucket, counted and released into the main river or side channel at a point downstream of the test pothole. This practice would in theory eliminate the chance of these fry being recruited back into the same pothole during subsequent high water events. An electroshocker, Smith Root Type XI, was used to remove all fry from each pothole tested following a designated test interval. Test lengths varied from one to five days. Electrofishing began at daybreak to minimize the loss of fry to scavenging birds (Stober et al., 1982). Study potholes were cleared of fry beginning at the furthest upstream pothole and working downstream. The number of fry removed from each pothole after a pre-determined test period was used to estimate the recruitment rate of each pothole.

The sampling routine used during this study was designed to maximize the number of tests performed while City Light authorized the test flow pattern. Tests took place from March 13 to April 14, 1986. A rotation schedule for emptying potholes was made by dividing the river into five areas (Table 1). Area One, for example, includes 7 potholes located from Bacon Creek to Marblemount. If this area was scheduled for a one-day test, the potholes would be emptied of fry on this day and again the following morning, allowing potholes to connect with the main river once. Generally, three areas per day could be sampled before upramping flows covered the pothole areas. Area One would then be allowed to recruit for 2-5 days depending on the schedule. Similarly, potholes in other areas are all connecting and disconnecting with the test flow cycle. Each pothole's recruitment performance was monitored with respect to beginning flows prior to and including the sampling date.

The data resulting from this field study were clustered into two separate categories that relate to the two levels of beginning flows used during the gage at the start of the downramp event and the ending flow represents the flow levels used during the 23 testing days; 7,500, 7,000, 5,500, and 5,000 cfs. The data associated with these four flows were clustered into two levels of beginning flow; high beginning flow (7,500 and 7,000 cfs) and low beginning flow (5,500 and 5,000 cfs).

Within each of these two beginning flow data-sets another descriptive factor, called "N-days," was created to describe the flow history preceding a downramping test in terms of the number low beginning flow downramps that occurred prior to test day. N-days was defined as the number of successive low beginning flow downramps that occurred prior to pothole sampling date example, if on March 15, a pothole was sampled and the beginning flow of the downramp prior to this pothole sampling date was a low beginning flow (5,000 or 5,500 cfs); the N-days would be the number of successive beginning flow downramps with a low beginning flow. Therefore, if March 13-14 were low beginning flows and March 12 was a high beginning flow the N-days would be two (2).

The number of fry electroshocked from individual potholes in conjunction with their N-day values will provide a means for comparison between the average number of fry trapped with high versus low beginning flows. Secondly, within each beginning flow category a comparison of the average stranded versus N-days can be made to determine if beginning - flow history patterns affect the number of fry trapped in potholes.

#### STREAMFLOW

Seattle City Light regulated test flows according to a requested test pattern designed by R. W. Beck and Associates. Test flows involved a combination of amplitudes, ramping rates and endflows. Endflows were measured at the Marblemount gauge. Minimum endflows were set at 3,000 and 3,500 cfs depending on the test. Endflows greater than 3,500 cfs resulted in some of this studies potholes being connected with the main river eliminating them from a study rotation. Amplitudes were set at 2,000 and 4,000 cfs and varied according to test. Thus, beginning flows varied from 5,000 to 7,500 cfs. For example, if a particular test required a 3,000 cfs endflow and a 4,000 cfs amplitude, the beginning flow was 7,000 cfs at Marblemount.

To minimize fry mortality, downramping was conducted during the night (Woodin, 1984). Upramping began at 0700 requiring the electrofishing be completed without delay to avoid pothole inundation.

#### SITE SELECTION

During the spring of 1985, R. W. Beck and Associates gathered detailed measurements concerning connection flows for potholes located on the upper Skagit River between Bacon Creek and Rockport. Potholes used for the recruitment study were selected using this flow connection data on the basis of meeting three criteria: (1) a pothole must be actively connecting and disconnecting within the prescribed test flow parameters; (2) a pothole must be a manageable proportion affording the removal of all fry within a reasonable period of time; (3) a pothole must retain enough water to support fry for the duration of the low flow period. Thirty-six potholes were selected and used to evaluate fry recruitment. These potholes varied in size, cover, depth and substrate, it is felt they represent the balance of potholes along this section of the Skagit and that a reliable measure of recruitment was achieved.

#### DATA ANALYSIS

Analysis of variance by ranks (Kruskal-Wallis test) was applied to the data for number of fry recruited. Recruitment was compared using the number of consecutive day tests conducted with the same amplitude prior to the sampling date. Tests involved two different beginning flows which were placed into separate subgroups where: AMP=1 is the low beginning flow test and AMP=2 is the high beginning flow test. Under each subgroup the number of consecutive tests of similar amplitude were combined so that Group 1 is NLOW=0, Group 2 is NLOW=1, and Group 3 is NLOW=2.

#### RESULTS

During this study, pothole recruitment by fry consisted mostly of chinook salmon (*O. tshawytscha*) (Table 1). Tests involving low beginning flows (AMP=1) showed a significant increase (P less than .05) in mean numbers of fry recruited over time for consecutive low flow tests (Table 2 and Figure 1). The initial recruitment level of 5.83 fry/pothole occurred during the first 24-hour period (NLOW=0), in which test potholes were connected to the main river once as a result of the daily upramping event. During the next 24-hour period (NLOW=1), recruitment increased to 12.79 fry/pothole. After three days of low beginning flows (NLOW=2), pothole recruitment again rose to a level of 18.57 fry/pothole. Tests conducted using high beginning flows (AMP=2) showed no significant trends in recruitment (P greater than .05) (Table 2, Figure 1). During this study, it was apparent that potholes having silt and sand bottom substrate recruited fewer fry than those having gravel and/or cobble substrate (Figure 2).

Results from the pothole residency study by Troutt (1986) indicated fry may choose pothole areas as short-term rearing habitat. If we assume pothole residency to be a natural part in the life history of the fry, it follows that the fish will seek out these areas as rearing sites. Results from this study may reflect the propensity of fry to find areas of reduced velocity for rearing purposes.

TABLE 1

SPECIES COMPOSITION OF FRY FOUND  
IN POTHOLES BETWEEN MARCH 13 AND APRIL 12  
ON THE SKAGIT RIVER IN 1986

<u>Fry Species</u>	<u>Number Sampled</u>	<u>Percent of Total Fry</u>
Chinook	3,006	97.8
Steelhead	37	1.2
Pink	21	0.7
Coho	10	0.3

TABLE 2

RESULTS OF AVERAGE FRY RECRUITMENT  
VERSUS TWO BEGINNING FLOW HISTORY LEVELS

<u>Beginning Flow Classification(1)</u>	<u>N-Days(2)</u>	<u>Number of Observations</u>	<u>Average Pothole Recruitment</u>
1	1		5.83
1	2		12.79
1	3		18.57
2	1		
2	2		
2	3	0	No Data

1 - Beginning Flow Classification at Marblemount

1 = Beginning Flow 5,000 - 5,500 cfs

2 = Beginning Flow 7,000 - 7,500 cfs

2 - N-Days is the number of downramps prior to test date having the same beginning flow classification.

**FIGURE 1 AVERAGE FRY RECRUITMENT IN POTHOLES VS. BEGINNING FLOW HISTORY AT TWO LEVELS OF BEGINNING FLOW**

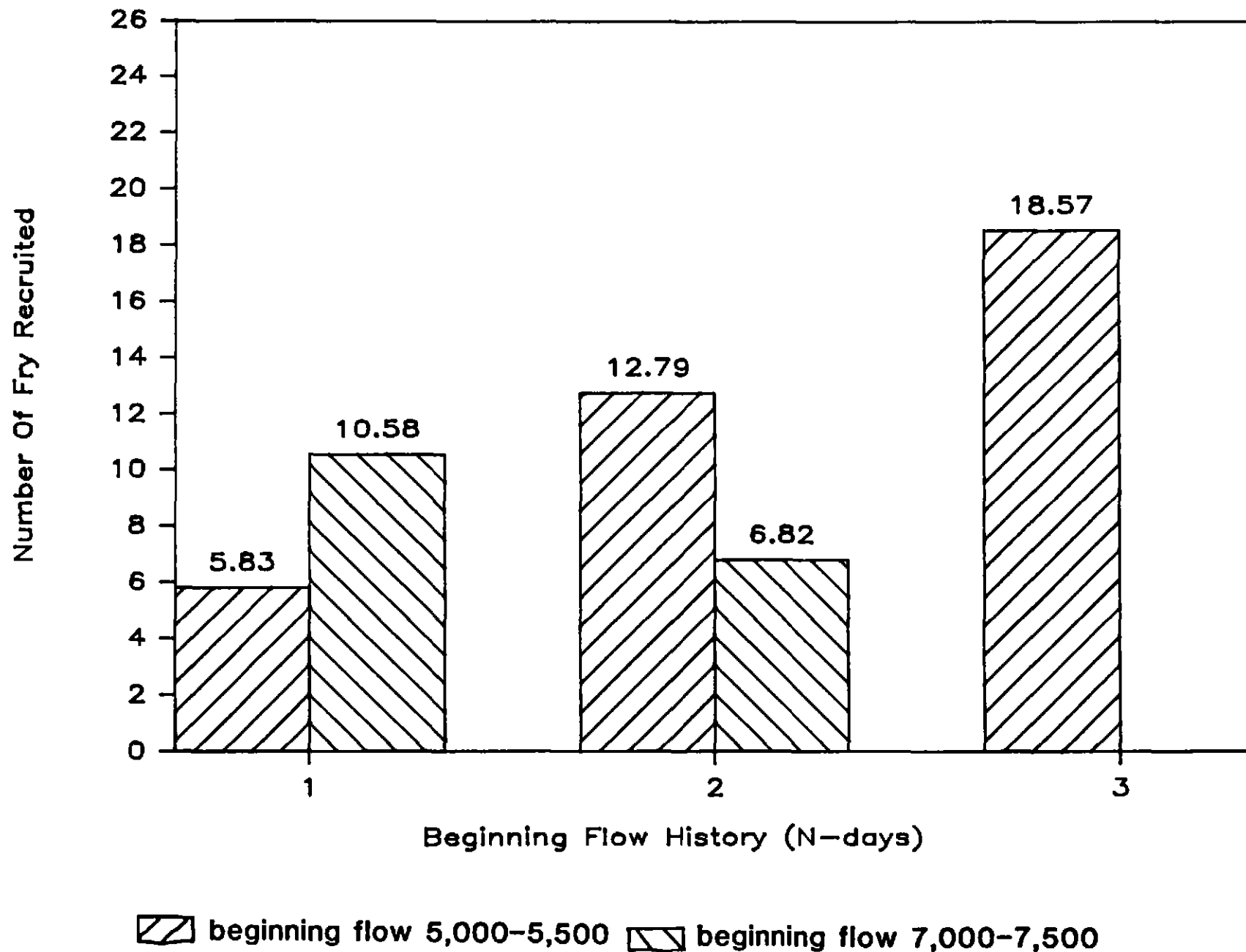
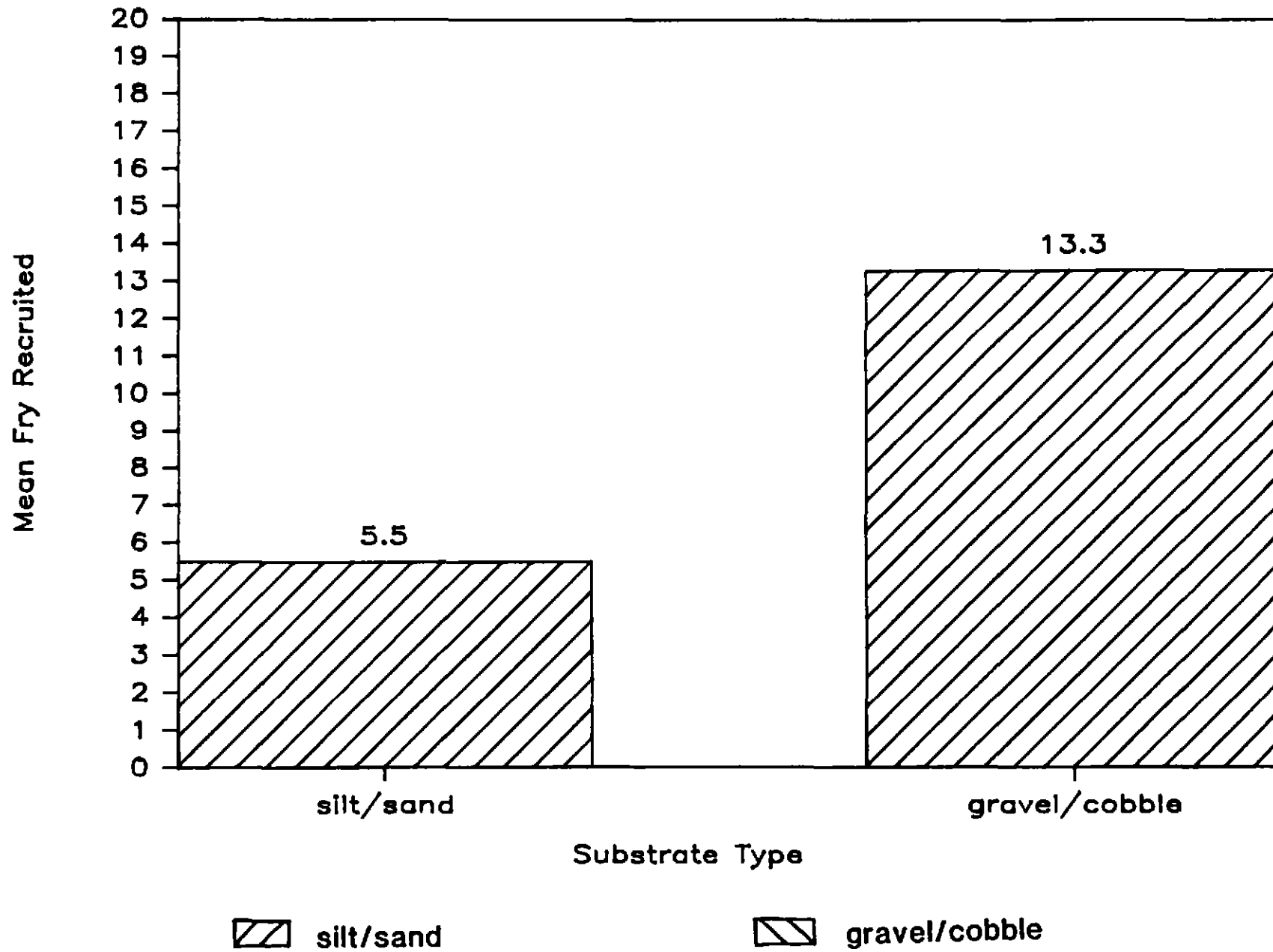


FIGURE 2 AVERAGE FRY RECRUITMENT IN POTHOLES WITH SAND AND SILT VS. GRAVEL AND COBBLE SUBSRATE



Data from this study, however, demonstrates that a high beginning flow "erases" the recruitment which had taken place prior to such an event. Presumably a pothole is less likely to be occupied repeatedly when deeply submerged. It appears a high flow test flushes all the fry out of a pothole and any recruitment after such a test probably results from fry randomly entering pothole areas as the flow level drops during the downramp. The absence of any significant trends in recruitment following a 4,000 cfs amplitude test supports this speculation. That is, trapping will be independent of the duration of low beginning flow tests (NLOW) prior to the AMP=2 test. It does appear, however, that the number of fry trapped in potholes that repeatedly connect and disconnect with main-channel flow is dependent on the number of successive beginning flow tests that take place in between 5,000-5,500 cfs. This study shows that fry trapped numbers continue to increase until the string of low beginning flows is interrupted by a high beginning flow which starts the recruitment process over again. Furthermore, the apparent relationship between beginning flow and recruitment (or fry trapped) was also found to agree with a separate study concerning pothole trapping conducted during the spring of 1985. (See Figure 13 in Beck Report.)

A variety of substrate and cover characteristics were observed among potholes found along the Skagit River between Rockport and Bacon Creek. Sand and silt bottom potholes without cover consistently recruited fewer fry than other potholes (Figure 2). Troutt (1986) found that chinook fry reside longer in potholes with some degree of cover over potholes without cover. (Note Figure 2 compares recruitment to substrate but a comparison of cover is identical.) Since substrate size is partially a function of water velocity, recruitment may be dependent on both hydraulic and behavioral components. The hydraulic component regulates the likelihood of a fry moving through a pothole area during a high water event; the behavioral component affects the propensity of fry to remain in the pothole area during a downramping event.

Pothole residency appears to be a natural part in the life history of chinook fry on the Skagit River. The immediate recruitment observed during this study appears to reflect the tendency for fry to utilize preferred habitat. However, high beginning flows apparently inundate potholes and perhaps create current velocities unsuitable for fry. Accordingly, suitability seems to relate to other physical characteristics of the pothole site such as cover type and streambed gradient. Moreover, as discharge fluctuations at Gorge powerhouse causes potholes to connect and disconnect, this study shows that fry choose and sometimes remain in potholes for extended time periods and, as long as minimum flows do not dewater potholes, the threat of pothole stranding mortality is minimal.

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Thompson, J. S. 1970. The Effect of Water Regulation at Gorge Dam on Stranding of Salmon Fry in the Skagit River, 1969-1970. Unpubl. M.S. Wash. Dept. of Fish. 46 pp.

Stober, Q. J. and S. C. Crumley, D. E. Fast, E. S. Killegrew, R. M. Woodin, G. Engman, and G. Tutmark. 1982. Effects of Hydroelectric Discharge Fluctuations on Salmon and Steelhead in the Skagit River, Washington. Final Rpt to S.C.L., FRI-UW.-8218. 302pp.

Woodin, R. M. and S. C. Crumley, Q. J. Stober and G. Engman 1982. Skagit River Interim Agreement Studies. Vol. II. Final Rpt. to S.C.L. 61 pp.

Troutt, D. A. 1986 Pothole Stranding of Juvenile Salmonids in the Skagit River. R. W. Beck and Associates' Fry Stranding Report to Seattle City Light. 42 pp.



APPENDIX A  
FRY RECRUITMENT INTO POTHoles  
FIELD DATA SUMMARY

Obs.	PHOLE	DATE	WFSH	FRY	WLDW	SEEA	SUBST
1	100	318	0	5.0	0	1	1
2	1075	327	0	4.5	0	1	1
3	1074	318	2	3.5	0	1	1
4	1015	327	0	2.0	0	1	0
5	1075	318	0	4.5	0	1	1
6	1011	327	1	6.0	0	1	1
7	1010	318	4	7.0	0	1	1
8	1004	327	0	5.0	0	1	1
9	1007	327	48	5.0	0	1	1
10	1016	327	0	2.0	0	1	1
11	1005	318	1	6.0	0	1	1
12	1005	327	0	4.5	0	1	1
13	1011	318	5	7.0	0	1	1
14	1006	318	12	5.0	0	1	1
15	201	318	0	2.0	0	1	1
16	1010	327	1	3.0	0	1	1
17	1007	318	10	6.0	0	1	1
18	1102	318	1	1.0	0	1	1
19	1002	318	1	5.0	0	1	1
20	1003	327	21	1.5	0	1	0
21	1005	327	2	3.5	0	1	1
22	1004	327	0	5.0	0	1	1
23	1004	327	1	3.5	0	1	1
24	1020	327	0	3.0	0	1	1
25	1001	327	0	5.0	0	1	1
26	1007	327	21	5.0	0	1	1
27	1001	318	17	7.0	0	1	1
28	1002	327	1	5.0	0	1	1
29	1000	327	1	6.0	0	1	1
30	1001	318	39	2.0	0	1	0
31	1002	327	0	2.5	0	1	1
32	1001	327	0	5.0	0	1	2
33	1001	318	0	5.0	0	1	1
34	1011	318	1	6.0	0	1	1
35	1007	318	21	1.5	0	1	0
36	1017	327	11	5.0	0	1	4
37	1011	327	2	1.0	0	1	1
38	1005	318	1	6.0	0	1	0
39	1008	327	0	2.5	0	1	1
40	1010	327	0	3.0	0	1	1
41	1002	318	0	2.5	0	1	0
42	1017	327	5	2.0	0	1	2
43	1006	327	3	1.0	0	1	1
44	1011	327	8	4.0	0	1	1
45	1004	318	0	5.0	0	1	1
46	1103	318	2	3.5	0	1	2
47	1020	327	0	3.0	0	1	1
48	1009	327	1	6.0	1	1	0
49	1002	341	0	3.0	1	2	1
50	1401	327	39	4.0	1	1	1
51	2102	341	9	6.0	1	1	3
52	510	341	17	2.0	1	1	1
53	1200	327	12	5.0	1	1	1
54	114	341	7	1.5	1	1	1
55	2101	341	0	4.5	1	2	0
56	1601	341	1	8.5	1	1	1
57	1102	327	2	2.0	1	0	1

59	18.1	332	1	4.0	1	1	1
60	20	332	1	4.0	1	1	1
61	1274	332	27	7.0	1	1	3
62	1277	332	1	7.0	1	2	1
63	610	337	24	4.0	1	2	1
64	1401	332	0	4.0	1	1	1
65	1201	341	0	3.5	1	1	1
66	1202	337	0	3.0	1	2	1
67	2707	337	5	1.0	1	1	1
68	1102	337	4	5.0	1	2	1
69	1101	337	135	6.0	1	1	2
70	114	337	7	1.5	1	2	1
71	2331	341	35	3.0	1	1	1
72	1401	337	24	3.0	1	2	1
73	127	337	6	3.5	1	1	1
74	2102	337	2	3.0	1	1	1
75	2502	341	5	5.0	1	1	1
76	2301	337	41	4.0	1	1	1
77	2302	337	2	3.5	1	1	3
78	1103	337	4	5.5	1	1	2
79	1201	337	0	3.5	1	1	1
80	1200	337	0	3.5	1	2	1
81	2401	337	0	2.5	1	1	1
82	201	337	0	2.0	1	1	1
83	2101	337	0	4.5	1	1	1
84	1200	341	1	3.5	1	1	1
85	1402	337	0	5.	1	1	1
86	1416	332	1	5.0	1	2	3
87	1100	341	2	3.5	1	1	1
88	1003	332	40	4.0	1	1	1
89	2402	337	15	5.0	1	1	1
90	1020	332	1	5.0	1	2	1
91	1401	341	64	5.0	1	1	1
92	1101	332	20	2.0	1	2	1
93	1202	332	11	7.0	1	1	1
94	127	332	12	3.0	1	1	1
95	201	341	2	7.5	1	1	1
96	1110	332	1	7.5	1	1	1
97	1205	332	1	5.	1	1	1
98	114	332	12	4.5	1	1	1
99	1101	341	61	5.0	1	1	1
100	1107	332	4	5.5	1	1	2
101	1710	332	2	4.5	1	1	1
102	1706	332	5	3.0	1	1	1
103	2702	341	1	2.0	1	1	1
104	1311	332	0	2.5	1	1	1
105	610	332	47	5.0	1	2	1
106	1005	332	0	3.5	1	1	1
107	1402	341	0	5.0	1	1	1
108	1404	332	1	5.0	1	1	1
109	1002	332	2	5.0	1	2	1
110	1017	332	56	5.0	1	2	4
111	1207	341	0	2.0	1	1	1
112	1001	332	0	5.0	1	1	2
113	1201	332	1	7.5	1	1	1
114	1602	332	0	5.	1	1	1
115	2302	341	30	3.0	1	2	1
116	1102	341	32	7.0	1	2	1
117	2401	341	1	6.0	1	1	1
118	2102	333	27	5.0	2	2	1
119	2401	333	2	8.5	2	1	3
120	2303	333	63	5.0	2	2	3
121	2301	337	32	1.0	2	2	1
122	2101	333	0	4.5	2	2	3
123	2302	337	4	5.0	2	1	3

123	1000	342	1	5.1			
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127	2001	342	1	5.1	0		
128	1016	342	1	5.1			
129	1002	342	0	2.5			
130	1001	335	0	4.0			
131	1011	335	0	5.1			
132	2001	334	1	6.0	0		
133	1015	335	0	2.1			
134	1002	336	0	7.0	0		
135	1010	335	1	7.5			
136	1001	316	0	4.1			
137	1000	342	1	1.5			
138	1010	342	0	7.1			
139	1001	341	2	7.0			
140	2001	334	50	5.1			
141	1004	341	4	5.1	0		
142	1306	340	4	2.0			
143	1004	340		5.1			
144	1005	335		4.5	0		
145	1007	335	0	1.5	0		
146	1007	342	38	3.0	0		
147	1011	340	0	5.5			
148	1009	316	0	2.5	0		
149	2101	316	0	4.5			
150	2002	334	2	3.5			
151	2102	335	5	4.0			
152	2102	334	11	7.1			
153	1001	310	0	5.1			
154	1000	342	11	2.0			
155	1000	335		3.0			
156	2002	334	0	3.0	0		
157	1200	316	0	1.5	0		
158	1300	335	0	5.5			
159	1202	342		3.1			
160	1310	335	8	5.0			
161	1310	315	0	1.5			
162	1207	335	0	2.0			
163	1309	335	1	5.1			
164	2101	334	0	4.5			
165	1000	315	0	3.1			
166	1017	335	42	4.1			
167	1002	315	0	3.0			
168	1002	335	0	5.1			
169	1002	315	0	5.0	0		
170	1201	335	1	7.5	0		
171	1308	335	1	5.0			
172	1311	335	0	2.5			
173	1002	311	0	5.0	0		
174	1001	334	13	7.0			
175	1306	335	20	5.0			
176	1304	335	11	6.0			
177	1401	316	17	2.1			
178	1304	335	0	1.1			
179	1000	335	50	6.0			
180	1305	335	23	7.0			
181	1004	315	0	5.1			
182	1309	335	0	2.5	0		
183	1004	335	0	5.0	0		
184	1200	335	14	7.0	0		
185	1010	313	1	7.5	0		
186	1307	335	34	7.0	0		
187	1311	335	0	2.5	0		
188	1020	340	0	3.0	0		
189	1201	310	0	3.5	0		

191	1007	341	17	4.0	0	1	1
192	1017	342	118	7.0	0	1	1
193	2001	343	5	4.0	0	1	1
194	1102	342	4	3.0	0	1	1
195	61	342	7	7.0	0	1	1
196	2502	345	0	1.0	0	2	2
197	1016	345	1	5.0	0	2	2
198	2501	343	40	3.0	0	2	3
199	2602	345	0	0.0	0	1	1
200	2102	343	5	5.0	0	2	2
201	1601	345	1	2.5	0	1	1
202	1401	342	46	5.0	0	2	1
203	2101	347	0	4.5	0	0	1
204	1201	342	1	3.5	0	2	1
205	1017	345	1	1.0	0	1	1
206	1310	342	1	7.0	0	1	1
207	2601	347	0	2.5	0	1	1
208	1005	348	0	4.5	0	1	1
209	2611	342	2	6.5	0	1	1
210	1011	340	72	3.0	0	1	1
211	1011	340	5	5.0	0	1	1
212	1309	347	0	2.5	0	1	1
213	2102	347	0	1.5	0	1	1
214	1307	340	2	1.5	0	2	1
215	1304	340	1	2.0	0	1	1
216	1607	340	61	7.0	0	1	1
217	2602	345	0	3.0	0	1	1
218	1311	340	4	5.0	0	1	1
219	1010	340	3	3.0	0	1	1
220	1310	340	2	4.5	0	1	1
221	1614	347	1	10.0	0	1	1
222	1002	340	0	2.5	0	2	2
223	1001	343	0	5.0	0	1	2
224	1309	342	0	2.5	0	1	1
225	201	347	1	7.5	0	4	4
226	1101	342	51	6.0	0	2	2
227	1017	340	92	6.0	0	1	4
228	1306	342	6	4.0	0	1	1
229	2601	343	1	6.5	0	1	1
230	1016	340	2	7.0	0	1	1
231	1207	340	0	2.0	0	1	1
232	1308	340	0	2.5	0	2	3
233	610	345	22	7.0	0	1	1
234	1602	342	0	5.0	0	1	1
235	1311	342	1	5.0	0	1	1
236	1004	340	0	5.0	0	1	1
237	2601	345	0	2.5	0	1	1
238	1201	342	0	2.5	0	1	1
239	1005	342	0	4.5	0	1	1
240	1601	342	0	4.0	0	1	1
241	1311	345	0	2.5	0	1	1
242	2302	324	44	4.0	0	2	2
243	2303	326	72	6.0	0	2	3
244	2302	326	5	7.0	0	2	3
245	1202	326	2	6.0	0	2	1
246	1103	326	1	1.5	0	2	2
247	1602	326	0	5.0	0	1	1
248	610	326	14	1.0	0	2	3
249	1601	326	0	4.0	0	1	1
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251	1201	326	0	3.5	0	1	1
252	2101	326	2	4.5	0	2	3
253	1207	326	0	2.0	0	2	1
254	1102	326	8	5.0	0	2	3
255	2102	326	13	8.0	0	2	3

257	1207	328	10	5.0	0	2	1
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259	114	328	9	3.0	0	2	3
260	2801	328	0	2.5	0	1	3
261	281	328	1	5.0	0	2	2
262	201	334	0	2.0	1	2	2
263	1010	315	1	7.5	1	1	1
264	810	334	64	6.0	1	2	3
265	1309	315	0	2.5	1	2	2
266	1101	334	7	1.0	1	1	2
267	1004	315	0	5.0	1	1	1
268	1103	334	7	7.0	1	2	2
269	2802	315	0	2.0	1	1	2
270	1207	315	0	2.0	1	1	1
271	1401	334	2	1.0	1	2	1
272	2102	315	0	1.5	1	2	2
273	1011	315	4	2.0	1	2	1
274	1001	315	0	5.0	1	1	2
275	1102	334	5	4.0	1	1	2
276	1601	315	0	4.0	1	1	1
277	201	315	1	5.0	1	2	2
278	2101	315	0	4.5	1	2	2
279	114	334	19	6.0	1	1	3
280	1602	315	0	5.0	1	1	1
281	1310	315	0	1.5	1	2	3
282	1201	315	0	3.5	1	1	1
283	1005	315	0	4.5	1	1	1
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