CANADA-NEWFOUNDLAND
AGREEMENT RESPECTING
WATER RESOURCE MANAGEMENT

Flood Risk Mapping Study

Goulds, Petty Harbour and Ferryland

Volume II - Technical Appendices

GOVERNMENT OF
NEWFOUNDLAND
AND LABRADOR

Department of Environment

Environment Canada
Environnement Canada

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010125

29 March 1996

Government of Newfoundland and Labrador
Department of Environment
Water Resources Management Division
P.O. Box 8700
St. John's, Newfoundland
A1B 4J6

Attention: Dr. W. Ullah, P.Eng.
Director, Water Resources Management Division

Re: Flood Risk Mapping Study:
Goulds, Petty Harbour and Ferryland

Dear Dr. Ullah:

We are pleased to submit the attached Report and Technical Appendices for this interesting and challenging study. The main report provides details about the watersheds, hydrologic modelling of flood flows, and flood levels for the 1:20 year and 1:100 year flood conditions at Petty Harbour and Goulds. At Ferryland, we have provided the surge and wave uprush levels associated with the 1:20 and 1:100 year sea levels. The Technical Appendices provide background analysis and details about the modelling.

It has been a distinct pleasure working with your staff and we particularly wish to thank Mr. Bob Picco for his assistance and constructive comments throughout the course of this study.

Yours very truly,

BAE NEWPLAN GROUP LTD.

for R. Noseworthy, P.Eng.
Project Director

encl.

c.c. D.B. Hodgins

Flood Risk Mapping Study

Goulds, Petty Harbour and Ferryland

Volume II - Technical Appendices

FLOOD RISK MAPPING STUDY OF THE GOULDS, PETTY HARBOUR AND FERRYLAND

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APPENDIX A

Site Photographs (under separate cover)

APPENDIX B

Regional Flood Analysis

DESIGN BRIEF

PROJECT TITLE Goulds

Project No. 01 01 25 Act Sub. 1 Sub. 2 Sub. 3 Design No.

SUBJECT Regional Regression

Page 1 of 3

DESIGNED BY: Sam Tang 95 04 20 CHECKED BY:

Cochrane Pond Brook

From "Users' Guide - Regional Flood Frequency Analysis for the Island of Newfoundland"

$$\log_{10} QP_T = C + a1 \log_{10} DA + a2 \log_{10} LSF$$

	20 Yr	100 Yr
where : C =	1.22701	1.41701
a1 =	0.688	0.684
a2 =	-2.723	-3.057

* Limitation *

DA 2.9 - 285 km^2

FLSAR 0.09 - 0.30

FACLS 0.55 - 1.00

out of range.

$Area = 29.9\ km^2$

$$FACLS = \frac{11.4}{29.9} = 0.38$$

FLSAR = 0.047 LSF = 1.34

$Q_{20} = 79\ m^3/s.$

$Q_{100} = 109\ m^3/s.$

LEI ENG-001-E-90/06

Raymond Brook

FACLS = 0.612

FLSAR = 0.09

LSF = (1+FACLS) - (FLSAR)/(1+FACLS)

LSF = 1.56.

Q_{20} = 86 m³/s

Q_{100} = 113 m³/s

Doyles River

out of range.

FACLS = 0.187

FLSAR = 0.024.

LSF = 1.17

Q_{20} = 62

Q_{100} = 90

Lavalin Engineers

DESIGN BRIEF

PROJECT TITLE Goulds

Project No. 01025 Act Sub. 1 Sub. 2 Sub. 3 Design No.

SUBJECT Rational Regression

Page 3 of 3

DESIGNED BY: SAM TANG 95 04 20 CHECKED BY:

Third Pond:

FACLS = 0.45

FLSAR = 0.0625

LSF = 1.4

Q_{20} = 173

Q_{100} = 235

LEI ENG-001-E-90/06

APPENDIX C

Flood Frequency Analysis

SC STATION NO=010125ADJU

SC STATION NAME=COCHRANE POND BROOK - ADJUSTED

TH	YEAR	DATA	ORDERED	RANK	PROB.	RET. PERIOD
)	(2)	(3) (CMS)	(4) (CMS)	(5)	(6) (%)	(7) (YEARS)
	1961	20.830	81.590	1	1.86	53.667
	1962	28.890	69.500	2	4.97	20.125
	1963	55.240	65.420	3	8.07	12.385
	1964	42.760	62.430	4	11.18	8.944
	1965	29.320	61.720	5	14.29	7.000
	1966	41.060	60.350	6	17.39	5.750
	1967	43.420	56.560	7	20.50	4.879
	1968	51.320	55.240	8	23.60	4.237
	1969	25.100	53.220	9	26.71	3.744
	1970	50.130	51.820	10	29.81	3.354
	1971	37.190	51.320	11	32.92	3.038
	1972	65.420	50.130	12	36.02	2.776
	1973	61.720	47.260	13	39.13	2.556
	1974	53.220	45.900	14	42.24	2.368
	1975	45.400	45.400	15	45.34	2.205
	1976	29.350	45.080	16	48.45	2.064
	1977	56.560	43.420	17	51.55	1.940
	1978	47.260	43.030	18	54.66	1.830
	1979	24.940	42.760	19	57.76	1.731
	1980	45.900	42.220	20	60.87	1.643
	1981	69.500	41.680	21	63.98	1.563
	1982	42.220	41.060	22	67.08	1.491
	1983	30.210	37.190	23	70.19	1.425
	1984	81.590	32.580	24	73.29	1.364
	1985	41.680	30.660	25	76.40	1.309
	1986	45.080	30.210	26	79.50	1.258
	1987	51.820	29.350	27	82.61	1.211
	1988	43.030	29.320	28	85.71	1.167
	1989	62.430	28.890	29	88.82	1.126
	1990	32.580	25.100	30	91.93	1.088
	1991	60.350	24.940	31	95.03	1.052
	1992	30.660	20.830	32	98.14	1.019

EQUENCY ANALYSIS - WAKEBY DISTRIBUTION
0125ADJU COCHRANE POND BROOK - ADJUSTED

SAMPLE STATISTICS

	MEAN	S.D.	C.V.	C.S.	C.K.
IES	45.193	14.387	0.318	0.408	3.224
IES	3.760	0.331	0.088	-0.301	2.824

20.830 TOTAL SAMPLE SIZE= 32
81.590 NO. OF LOW OUTLIERS= 0
TLIER LIMIT OF X= 18.214 NO. OF ZERO FLOWS= 0

WING WAKEBY PARAMETERS WERE OBTAINED BY ASSUMING M TO BE
. THE ITERATION ALGORITHM WAS NOT REQUIRED.

08 A= 20.960 B= 3.39 C= 289.158 D= 0.035

FLOOD FREQUENCY REGIME

RETURN PERIOD	EXCEEDANCE PROBABILITY	FLOOD
1.003	0.997	18.70
1.050	0.952	22.10
1.250	0.800	31.80
2.000	0.500	44.50
5.000	0.200	56.20
10.000	0.100	63.90
20.000	0.050	71.70
50.000	0.020	82.30
100.000	0.010	90.50
200.000	0.005	99.00
500.000	0.002	110.00

JSC STATION NO=010125DOYL
JSC STATION NAME=DOYLES RIVER - ADJUSTED

NTH	YEAR	DATA	ORDERED	RANK	PROB.	RET. PERIOD
1)	(2)	(3) (CMS)	(4) (CMS)	(5)	(6) (%)	(7) (YEARS)
*	1961	16.790	71.700	1	1.86	53.667
*	1962	24.420	62.930	2	4.97	20.125
*	1963	49.360	61.950	3	8.07	12.385
*	1964	38.050	61.310	4	11.18	8.944
*	1965	24.620	61.210	5	14.29	7.000
*	1966	36.380	56.340	6	17.39	5.750
*	1967	35.930	55.610	7	20.50	4.879
*	1968	45.550	54.070	8	23.60	4.237
*	1969	19.500	49.360	9	26.71	3.744
*	1970	43.520	48.380	10	29.81	3.354
*	1971	32.510	45.550	11	32.92	3.038
*	1972	61.310	44.220	12	36.02	2.776
*	1973	61.210	43.520	13	39.13	2.556
*	1974	62.930	40.240	14	42.24	2.368
*	1975	37.330	39.450	15	45.34	2.205
*	1976	25.450	38.050	16	48.45	2.064
*	1977	55.610	37.330	17	51.55	1.940
*	1978	44.220	36.960	18	54.66	1.830
*	1979	20.490	36.380	19	57.76	1.731
*	1980	39.450	36.320	20	60.87	1.643
*	1981	61.950	35.930	21	63.98	1.563
*	1982	40.240	35.440	22	67.08	1.491
*	1983	26.540	32.510	23	70.19	1.425
*	1984	71.700	26.680	24	73.29	1.364
*	1985	36.320	26.540	25	76.40	1.309
*	1986	35.440	25.450	26	79.50	1.258
*	1987	48.380	24.620	27	82.61	1.211
*	1988	36.960	24.420	28	85.71	1.167
*	1989	54.070	23.740	29	88.82	1.126
*	1990	26.680	20.490	30	91.93	1.088
*	1991	56.340	19.500	31	95.03	1.052
*	1992	23.740	16.790	32	98.14	1.019

FREQUENCY ANALYSIS - THREE-PARAMETER LOGNORMAL DISTRIBUTION
010125DOYL DOYLES RIVER - ADJUSTED

SAMPLE STATISTICS

	MEAN	S.D.	C.V.	C.S.	C.K.
X SERIES	40.406	14.627	0.362	0.323	2.537
LN X SERIES	3.631	0.382	0.105	-0.308	2.593
LN(X-A) SERIES	4.064	0.247	0.061	-0.080	2.437

X(MIN)= 16.790
X(MAX)= 71.700
LOWER OUTLIER LIMIT OF X= 14.022

TOTAL SAMPLE SIZE= 32
NO. OF LOW OUTLIERS= 0
NO. OF ZERO FLOWS= 0

SOLUTION OBTAINED VIA MAXIMUM LIKELIHOOD

3LN PARAMETERS: A= -19.519 M= 4.064 S= 0.247

FLOOD FREQUENCY REGIME

RETURN PERIOD	EXCEEDANCE PROBABILITY	FLOOD
1.003	0.997	10.00
1.050	0.952	19.00
1.250	0.800	27.80
2.000	0.500	38.70
5.000	0.200	52.10
10.000	0.100	60.30
20.000	0.050	67.80
50.000	0.020	77.10
100.000	0.010	83.80
200.000	0.005	90.40
500.000	0.002	98.90

WSC STATION NO.=3

WSC STATION NAME=RAYMOND BROOK

SEQ.NO.	YEAR	MON	FLOW
1	61	****	22.670
2	62	****	29.340
3	63	****	50.680
4	64	****	43.170
5	65	****	30.250
6	66	****	38.550
7	67	****	43.750
8	68	****	48.840
9	69	****	29.210
10	70	****	46.210
11	71	****	35.420
12	72	****	55.900
13	73	****	47.860
14	74	****	42.820
15	75	****	46.720
16	76	****	30.530
17	77	****	44.930
18	78	****	46.570
19	79	****	26.810
20	80	****	46.840
21	81	****	61.920
22	82	****	41.670
23	83	****	30.490
24	84	****	75.940
25	85	****	41.610
26	86	****	48.990
27	87	****	48.560
28	88	****	41.190
29	89	****	60.710
30	90	****	34.230
31	91	****	52.120
32	92	****	31.300

FREQUENCY ANALYSIS - WAKEBY DISTRIBUTION

3 RAYMOND BROOK

SAMPLE STATISTICS

	MEAN	S.D.	C.V.	C.S.	C.K.
X SERIES	42.994	11.459	0.267	0.590	4.227
LN X SERIES	3.726	0.269	0.072	-0.194	3.205

X(MIN)= 22.670

X(MAX)= 75.940

LOWER OUTLIER LIMIT OF X= 20.661

TOTAL SAMPLE SIZE= 32

NO. OF LOW OUTLIERS= 0

NO. OF ZERO FLOWS= 0

THE FOLLOWING WAKEBY PARAMETERS WERE OBTAINED BY ASSUMING M TO BE NON-ZERO. THE ITERATION ALGORITHM WAS NOT REQUIRED.

M= 20.954 A= 23.541 B= 2.79 C= 6.543 D= 0.419

FLOOD FREQUENCY REGIME

RETURN PERIOD	EXCEEDANCE PROBABILITY	FLOOD
1.003	0.997	21.20
1.050	0.952	24.10
1.250	0.800	32.50
2.000	0.500	43.30
5.000	0.200	50.50
10.000	0.100	55.10
20.000	0.050	60.90
50.000	0.020	71.60
100.000	0.010	82.90
200.000	0.005	98.10
500.000	0.002	126.00

max Daily peak

WSC STATION NO=02ZM001

WSC STATION NAME=PETTY HARBOUR RIVER AT SECOND POND

MONTH	YEAR	DATA	ORDERED	RANK	PROB.	RET. PERIOD
(1)	(2)	(3) (CMS)	(4) (CMS)	(5)	(6) (%)	(7) (YEARS)
**	1963	46.200	115.000	1	1.92	52.000
**	1964	46.200	74.800	2	5.13	19.500
**	1965	25.700	62.900	3	8.33	12.000
**	1966	43.600	62.900	4	11.54	8.667
**	1967	25.800	56.400	5	14.74	6.783
**	1968	25.700	54.900	6	17.95	5.571
**	1969	62.900	48.100	7	21.15	4.727
**	1970	62.900	46.700	8	24.36	4.105
**	1971	34.000	46.200	9	27.56	3.628
**	1972	23.600	46.200	10	30.77	3.250
**	1973	36.000	44.500	11	33.97	2.943
**	1974	33.700	43.600	12	37.18	2.690
**	1975	36.000	39.600	13	40.38	2.476
**	1976	36.200	39.100	14	43.59	2.294
**	1977	48.100	36.200	15	46.79	2.137
**	1978	27.300	36.200	16	50.00	2.000
**	1979	56.400	36.000	17	53.21	1.880
**	1980	31.100	36.000	18	56.41	1.773
**	1981	39.600	34.000	19	59.62	1.677
**	1982	44.500	33.700	20	62.82	1.592
**	1983	115.000	33.100	21	66.03	1.515
**	1984	33.100	31.100	22	69.23	1.444
**	1985	12.200	30.000	23	72.44	1.381
**	1986	74.800	27.300	24	75.64	1.322
**	1987	36.200	25.800	25	78.85	1.268
**	1988	39.100	25.700	26	82.05	1.219
**	1989	30.000	25.700	27	85.26	1.173
**	1990	46.700	23.600	28	88.46	1.130
**	1991	22.400	22.400	29	91.67	1.091
**	1992	54.900	13.500	30	94.87	1.054
**	1993	13.500	12.200	31	98.08	1.020

FREQUENCY ANALYSIS - THREE-PARAMETER LOGNORMAL DISTRIBUTION
02ZM001 PETTY HARBOUR RIVER AT SECOND POND

SAMPLE STATISTICS

	MEAN	S.D.	C.V.	C.S.	C.K.
X SERIES	40.755	19.806	0.486	1.867	8.984
LN X SERIES	3.607	0.457	0.127	-0.159	4.522
LN(X-A) SERIES	3.748	0.396	0.106	0.093	4.463

X(MIN)= 12.200
X(MAX)= 115.000
LOWER OUTLIER LIMIT OF X= 11.359

TOTAL SAMPLE SIZE= 31
NO. OF LOW OUTLIERS= 0
NO. OF ZERO FLOWS= 0

SOLUTION OBTAINED VIA MAXIMUM LIKELIHOOD

3LN PARAMETERS: A= -5.093 M= 3.748 S= 0.396

FLOOD FREQUENCY REGIME

RETURN PERIOD	EXCEEDANCE PROBABILITY	FLOOD
1.003	0.997	9.21
1.050	0.952	16.80
1.250	0.800	25.30
2.000	0.500	37.30
5.000	0.200	54.10
10.000	0.100	65.40
20.000	0.050	76.30
50.000	0.020	90.50
100.000	0.010	101.00
200.000	0.005	112.00
500.000	0.002	127.00

APPENDIX D

HEC-2 Backwater Input Data

```
C
C       1
C  100.0 START OF EXISTING X-SECTIONS
T1  GOULDS FLOOD LINE STUDY
T2  FEBRUARY 1996 010125
T3        DOYLES RIVER 1:100 YEAR EVENT
J1      0       2       0       0       0       1       0       0   69.08       0
J2      1       0      -1       0       0       0       0       0       0       0
NC   .060    .060    .030      .1      .3
QT      2  258.00   201.0
X1   4000      25     200    1000       0       0       0
GR   71.3       0      70      12    67.8      74      70     200      68     297
GR  68.15     487   68.05     497    67.9   506.9      67     507   66.95     514
GR  67.65     517   68.23     522   67.95     542   68.25     576    69.1     854
GR   69.3     934   67.55     979    67.3     984   66.69     986   66.65     992
GR  66.91    1000    67.6    1003    67.7    1006    68.8    1031      70    1073
NC   .060    .060    .035
QT      2  175.00   140.0
X1    100      18     200     576       1     100       1       0       0       0
GR   71.3       0      70      12    67.8      74      70     200      68     297
GR  68.15     487   68.05     497    67.9   506.9      67     507   66.95     514
GR  67.65     517   68.23     522   67.95     542   68.25     576    68.7     637
GR     69     767      70     854      72     866
QT      2    96.6    77.6
X1    300      13     200   545.5       2     400     250       0       0       0
GR   71.3       0      70      12    67.8      74      70     200      69     250
GR     68     440      68   485.5   67.25     486   67.25     490      68   490.5
GR     70   545.5    71.2   555.5    71.2   695.5
QT      2    84.0    68.0
NC   .060    .060    .035
X1    400      15  398.75  423.75     255     240     250       0       0       0
GR     74       0      72      26      71      97    71.9     200      72     255
GR     72     275      72  323.80      72  398.75      70  420.25    69.4  420.35
GR   69.4  423.65      70  423.75      71  428.75      72  443.75    74.5  493.75
X1    410      14  366.15  369.85      30      70      70       0       0       0
GR     74       0      72      26      71      95    71.5     138      72     243
GR   72.1  282.85      72  347.85    71.8  366.15    71.2  366.25    71.2  369.75
GR   71.8  369.85      72  372.85      74  402.85      76  492.85
X1    420      13     379     415      60     100     100       0       0       0
X3   10.0                     125      86
GR   74.1     100      74     109      72     147      71     180      72     225
GR     74     355      74     379    73.2     386    72.6   386.1    72.6     390
GR   73.2   390.1      74     415      76     477
X1    430      15   305.7   310.7      84      80      80       0       0       0
X3   10.0                      66      86
GR     76       0      74      46      73      75      73     123      74     170
GR     74     212      74   250.7      74   300.7      74   305.7   73.34   307.4
GR  73.34   310.6      74   310.7      74   315.7      76   355.7      78   375.7
NC                   .024      .3      .5
NH      3    0.06     326   0.024   330.1    0.06     544
X1    500      17     326   330.1      60      55      60       0       0       0
X3   10.0                     110      86                  76.35   76.35
GR     78       0      76      40      74      71      73     100      74     210
GR     75     254    74.5     326   74.25  326.05   74.25   326.1   74.25     330
GR  74.25  330.05    74.5   330.1  76.446   330.5    78.6     366      80     410
GR   81.3     485    82.7     544
SB    0.9    1.56   1.665       0     1.5    0.01    4.91       0       0       0
NH      3    0.06     326   0.035   330.1    0.06     544
X1    600       0       0       0   18.35   18.35   18.35       0       0       0
X2                      1   76.20   76.50
X3   10.0                     110      86                  76.50   76.50
BT    -17       0      78      78      40      76      76      71      74      74
BT            100      73      73     210      74      74     254      75      75
BT            326    76.2    74.5  326.05  76.203   74.25   326.1  76.206    76.2
BT            330   76.44    76.2  330.05  76.443   74.25   330.1  76.446    74.5
BT          330.5   76.47   76.47     366    78.6    78.6     410      80      80
BT            485    81.3    81.3     544    82.7    82.7
NC    .04     .04    .035      .1      .3
X1    700      18     315     334      10      10      10       0       0       0
X3   10.0                     117      86
GR     80       0      78      13      76      51      74      81    73.3     118
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GR     74      191       76      256     76.5      280     76.5      290    76.34      297
GR     76      315     74.5      321    74.55    326.7    74.71    331.1       76      334
GR     78      346       80      396     81.8    510.5
X1    705       12       68      101       70        1        1        0        0        0
GR     80        0       78       22       77       53     76.5       68       76       82
GR   74.5       88    74.55     93.7    74.71     98.1       76      101       78      113
GR     80      163     81.8    277.5
NC    .04      .04     .035
X1    710       12      157      188       60        6       12
GR     80      109       78      134     76.5      157       76      166     74.8      171
GR   74.6    171.1     74.6      176     74.8    176.1       76      186       77      188
GR     78      190       80      240
X1    733        8      141      152       44       40       46
GR     80      100       78      128       76      141     75.5      145     75.5      150
GR     76      152       78      158       80      176
NC                     .035       .1       .3
X1 800.0    8.000   92.000  102.000       90      110      108     .000     .000     .000
GR 82.00     .000   80.000   36.000       78   92.000   77.000   94.000   77.000  100.000
GR 80.00  102.000   82.000  107.000   84.000  142.000
X1 810.0   11.000   89.400   97.000  100.000   70.000  105.000     .000     .000     .000
GR 86.00     .000   84.000   30.000   82.000   75.000   80.000   85.000   79.800   89.400
GR 79.00   91.400   79.000   94.900   79.800   97.000   80.000  110.000   82.000  137.000
GR 84.00  150.000
X1 900.0   13.000   54.100   58.100   95.000   90.000   60.000     .000     .000     .000
GR 86.00     .000   84.300   40.000   83.490   45.600   81.290   52.500   80.830   54.100
GR 80.83   55.100   80.830   56.100    80.83   57.100   80.830   58.100   82.080   60.000
GR 83.32   67.200   84.350   77.400    85.50   90.000
NC                       .3       .5
X11000.0     .000     .000     .000   10.000   10.000   10.000     .000     .000     .000
X3   10.0                                                         83.200   83.200
NC                     .024
X11000.1     .000     .000     .000     .300     .300     .300     .000     .000     .000
BT  -13.0    .000   86.000   86.000   40.000   84.300   84.300   45.600   84.300   83.490
BT         52.500   83.850   81.290   54.100   83.810   80.830   55.100   83.810   82.440
BT         56.100   83.790   82.730   57.100   83.790   82.440   58.100   83.790   80.830
BT         60.000   83.790   82.080   67.200   83.990   83.320   77.400   84.350   84.350
BT         90.000   85.500   85.500
X11000.2     .000     .000     .000     5.600     5.600     5.600     .000     .000     .000
X2                                                             1
NC                     .035
X11000.3     .000     .000     .000     .300     .300     .300     .000     .000     .000
X3   10.0                                                         83.790   83.790
X11100.0   16.000  101.000  122.600   10.000   10.000   10.000     .000     0.75     .000
GR 90.00     .000   88.000   35.000   86.000   70.000   85.350   91.000   84.720  101.000
GR 83.04  107.000   82.790  110.000   81.900  113.200   81.850  116.000   82.100  117.500
GR 84.00  122.600   84.450  129.600   85.000  140.000   86.000  145.000   88.000  158.000
GR 90.00  189.000
NC                     .035       .1       .3
X11110.0   11.000   33.000   40.000   90.000   80.000   85.000     .000     0.75     .000
GR 90.00     .000   88.000   21.000   86.000   28.000   84.000   33.000   83.200   34.650
GR 83.20   38.350   84.000   40.000   84.000   43.000   86.000   61.000   88.000   73.000
GR 90.00   83.000
X11200.0   11.000   27.000   34.000   65.000   70.000   72.000     .000     0.75     .000
GR 92.00     .000   90.000   11.000   88.000   17.000   86.000   21.000   85.500   27.000
GR 84.70   28.700   84.700   32.400   85.500   34.000   85.800   35.500   92.400   48.000
GR 92.40   69.000
X11210.0   10.000   18.000   25.000   55.000   50.000   55.000     .000     0.75     .000
GR 92.00     .000   90.000   10.000   88.000   15.000   86.500   18.000   85.700   19.650
GR 85.70   23.350   86.500   25.000   88.000   35.000   90.000   45.000   92.000   65.000
X11300.0   11.000   59.000   66.000   45.000   50.000   45.000     .000     0.75     .000
GR 94.00     .000   92.000   20.000   90.000   53.000   88.000   57.000   87.000   59.000
GR 86.20   60.700   86.200   64.400   87.000   66.000   88.000   78.000   90.000   92.000
GR 92.00  105.000
NC   .060    .060     .035       .1       .3
QT     2     43.8     35.6
X11310.0    8.000  118.000  125.000  120.000   50.000   75.000     .000     0.75     .000
GR 92.00     .000   90.000   95.000   89.000  118.000   88.200  119.650   88.200  123.350
GR 89.00  125.000   90.000  127.000   92.000  140.000
X11400.0   17.000  129.570  136.420   60.000   55.000   75.000     .000     0.52     .000
GR 94.00     .000   92.000   90.000   90.430  110.000   90.330  120.000   89.670  125.300
GR 89.41  129.400   89.210  129.569   89.210  129.570   88.730  131.170   88.690  133.000
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GR 88.73 134.500  89.210 136.420  89.210 136.421  90.530 137.400   90.93 150.000
GR92.000 165.000  94.000 250.000
NC                          .3      .5
X11500.0    .000    .000    .000  10.000  10.000  10.000    .000    .000    .000
X3  10.0                                                  90.520  90.520
NC                   .024
X11500.1      17 107.543 113.229    .300    .300    .300
BT   -17       0   94.52   94.52    74.7   92.52   92.52    91.3   91.73   90.95
BT          99.6   91.66   90.85 103.999   91.63   90.19 107.402    91.6   89.93
BT       107.542    91.6   89.21 107.543    91.6   91.05 108.871    91.6   91.05
BT        110.39    91.6   91.05 111.635   91.63   91.08 113.228   91.63   91.08
BT       113.229   91.63   89.21 114.042   91.63   91.05   124.5   91.73   91.45
BT        136.95   92.52   92.52   207.5   94.52   94.52
GR    94       0      92    74.7   90.43    91.3   90.33    99.6   89.67 103.999
GR 89.41 107.402   89.21 107.542   89.21 107.543   88.73 108.871   88.69  110.39
GR 88.73 111.635   89.21 113.228   89.21 113.229   90.53 114.042   90.93   124.5
GR    92  136.95      94   207.5
X11500.2    .000    .000    .000  17.400  17.400  17.400    .000    .000    .000
X2                                                     1
NC                   .035
X11500.3    .000    .000    .000    .300    .300    .300    .000    .000    .000
X3  10.0                                                  91.900  91.900
X11600.0  13.000  95.000 105.200  10.000  10.000  10.000    .000   -0.39    .000
GR 94.00    .000  92.000  60.000  91.230  92.400  91.130  95.000  89.430  96.000
GR 89.61  99.700  88.960 104.400  90.370 105.200  91.430 125.000  92.000 130.000
GR 92.00 150.000  94.000 175.000  96.000 190.000
QT     2    18.7    15.8
X11610.0   8.000  43.000  48.000 150.000 220.000 190.000    .000   -0.39    .000
GR 96.00    .000  94.000  30.000  93.100  43.000  92.430  44.500  92.430  46.700
GR 93.10  48.000  94.000  65.000  96.000 100.000
X11700.0  14.000  28.450  31.550  60.000  45.000  65.000    .000   -0.39    .000
X4  2.00  93.360  28.450  93.360  31.550
GR 97.39    .000  96.170   4.900  94.770   9.000  94.370  16.700  94.020  27.500
GR 93.62  28.500  93.750  30.000  94.520  32.700  96.220  36.500  97.120  46.200
GR 97.57  48.850  97.570  51.700  97.670  53.300  97.690  60.000
X11800.0    .000    .000    .000  10.000  10.000  10.000    .000    .000    .000
X3  10.0                                                  94.510  94.710
NC                   .024
X11800.1    .000    .000    .000    .300    .300    .300    .000    .000    .000
BT   -16       0   97.00   97.00     4.9   95.78   95.78       9   95.62   94.38
BT     0    16.7   95.63   93.98     27.5   95.71   93.63   28.45   95.71   93.36
BT     0   28.45   95.71   95.51   31.55   95.71   95.51   31.55   95.71   93.36
BT     0    32.7   95.83   94.13     36.5   95.83   95.83    46.2   96.73   96.73
BT     0   48.85   97.18   97.18     51.7   97.18   97.18    53.3   97.28   97.28
BT     0      60    97.3    97.3
X11800.2    .000    .000    .000   3.300   3.300   3.300    .000    .000    .000
X2                                                     1
NC                   .035
X11800.3    .000    .000    .000    .300    .300    .300    .000    .000    .000
X3  10.0                                                  94.620  94.830
X11900.0  10.000  27.600  40.600  10.000  10.000  10.000    .000   -0.39    .000
GR 97.00    .000  95.920  16.400  95.060  27.600  94.360  36.000  93.920  37.400
GR 94.07  38.700  94.820  40.600  95.120  46.300  97.070  54.000  97.670  66.000
X12000.0  19.000  27.700  33.800  20.000  20.000  20.000    .000   -0.39    .000
GR 98.00    .000  96.200   4.300  96.140   7.000  96.120  13.900  95.500  16.400
GR 94.45  25.000  94.410  27.700  94.410  28.900  94.410  29.400  94.410  30.700
GR 94.51  31.500  94.790  31.600  95.240  33.800  95.290  39.600  95.380  44.400
GR 96.40  49.300  96.410  55.000  98.000  60.000 100.000 115.000
X12100.0    .000    .000    .000  10.000  10.000  10.000    .000    .000    .000
X3  10.0                                                  95.510  95.610
NC                   .024
X12100.1    .000    .000    .000    .300    .300    .300    .000    .000    .000
BT   -21       0   97.61   97.61     4.3   95.81   95.81       7   95.75   95.75
BT     0    13.9   95.73   95.73    16.4   95.67   95.11      25    95.7   94.06
BT     0    27.7    95.7   94.02    27.7    95.7    95.5    28.9   95.66   95.46
BT     0    29.4   95.66   95.46    30.7   95.66   95.46    31.5   95.66   95.46
BT     0    31.6   95.66   95.46    33.8   95.58   95.38    33.8   95.58   94.85
BT     0    39.6   95.67    94.9    44.4   95.72   94.99    49.3   96.01   96.01
BT     0      55   96.02   96.02      60   97.61   97.61     115   99.61   99.61
X12100.2    .000    .000    .000   5.400   5.400   5.400    .000    .000    .000
X2                                                     1
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NC                    .035
X12100.3    .000     .000     .000     .300     .300     .300     .000     .000     .000
X3  10.0                                                          95.670   95.710
NC                    .035
X12200.0  12.000   50.300   53.600   10.000   10.000   10.000     .000    -0.39     .000
GR 98.00    .000   96.000   35.000   95.800   45.000   95.580   50.300   95.060   50.700
GR 94.95  51.400   94.990   53.300   95.550   53.600   96.150   63.500   96.610   75.000
GR 98.00  95.000  100.000  130.000
NC                                .1       .3
X1  2300      11    182.5    188.8       65       65       65        0    -0.39        0
X4     2   95.65    182.5    95.65    188.8
GR   100       0    97.44   172.15    97.44   175.75    97.56   182.05    96.04   184.35
GR 96.04   185.65    95.72   187.65    97.96   189.15    97.70   195.15    97.70   198.15
GR   100      266
NC                                .3       .1
X12400.0    .000     .000     .000   10.000   10.000   10.000     .000     .000     .000
X3  10.0                                                          97.310   97.310
NC                    .015
X12400.1    .000     .000     .000     .300     .300     .300     .000     .000     .000
BT   -15       0    99.61    99.61   172.15    97.05    97.05   175.75    97.05    97.05
BT     0  182.05    97.17    97.17    182.5    97.17    95.65    182.5    97.17    96.97
BT     0  184.35    97.17    96.97   185.65    97.17    96.97   187.65     97.2       97
BT     0   188.8     97.2       97    188.8     97.2    95.65   189.15    97.57    97.57
BT     0  195.15    97.31    97.31   198.15    97.31    97.31      266    99.61    99.61
X12400.2    .000     .000     .000    2.500    2.500    2.500     .000     .000     .000
X2                                                            1
NC                    .035
X12400.3    .000     .000     .000     .300     .300     .300     .000     .000     .000
X3  10.0                                                          97.410   97.410
X1  2500      11     21.1     33.3       10       10       10        0    -0.39        0
GR 98.81       0     98.5     11.6     98.1     21.1    96.41     25.6    96.34       27
GR 96.54      28    96.99       30    97.96     33.3    97.88     48.5    98.04       60
GR   100     117
NC                                .1       .3
X12510.0   8.000   33.000   38.000  120.000   83.000   60.000     .000    -0.39     .000
GR101.00    .000  100.000   20.000   99.500   33.000   98.690   34.500   98.690   36.500
GR 99.50  38.000  100.000   60.000  102.000  160.000
X12600.0  24.000  161.000  163.000   65.000   55.000   65.000     .000    -0.32     .000
GR110.00    .000  108.000   56.000  106.000  107.000  104.000  119.000  102.000  127.000
GR101.75 131.000  101.750  133.100  101.390  143.700  101.250  155.800  101.250  160.000
GR101.20 161.000   99.000  161.001   99.000  161.500   99.000  162.000   99.000  162.500
GR99.000 162.999  101.200  163.000   101.20  163.400  101.160  166.000   101.12  170.000
GR101.00 180.700  100.980  192.000   102.00  217.000  104.000  257.000
NC                   .024       .3       .5
NH     3     0.1      161    0.024      163      0.1      257
X12700.0    .000     .000     .000   10.000   10.000   10.000     .000     .000     .000
X3  10.0                                                         100.580  100.580
SB   0.9    1.56    1.665        0      1.5     0.01     3.14        0    98.68    98.68
NH     3     0.1      161     0.04      163      0.1      257
X12700.1    .000     .000     .000     9.25     9.25     9.25     .000     .000     .000
X2                       1   100.68   100.88
X3  10.0                                                         100.880  100.880
BT   -20     127   101.68   101.68      131   101.43   101.43    133.1   101.43   101.43
BT     0   143.7   101.07   101.07    155.8   100.93   100.93      160   100.93   100.93
BT     0     161   100.88   100.88  161.001   100.88    98.68    161.5   100.88    98.68
BT     0     162   100.88    98.68    162.5   100.88    98.68  162.999   100.88    98.68
BT     0     163   100.88   100.88    163.4   100.88   100.88      166   100.84   100.84
BT     0     170    100.8    100.8    180.7   100.68   100.68      192   100.66   100.66
BT     0     217   101.68   101.68      257   103.68   103.68
NC   .04     .04     .035       .1       .3
X12800.0  16.000  112.400  115.500   10.000   10.000   10.000     .000    -0.32     .000
GR110.00    .000  108.000   20.000  104.000   70.000  102.000   85.000  100.900   89.800
GR101.50  95.000  101.000  101.500  100.540  111.000   99.600  112.400   99.000  114.000
GR 99.54 115.500  100.510  119.800  100.750  131.400  100.890  145.000  104.000  195.000
GR106.00 245.000
NC                                .1       .3
X12810.0   9.000   65.000   70.000  105.000   69.000   80.000     .000    -0.32     .000
GR106.00    .000  104.000   35.000  102.000   60.000  102.000   65.000  101.310   66.500
GR101.31  68.500  102.000   70.000  104.000   79.000  106.000  115.000
X12820.0   9.000   70.000   78.000   70.000   90.000   85.000     .000    -0.32     .000
GR108.00    .000  106.000   20.000  104.600   70.000  103.500   72.200  103.500   75.900
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GR104.60  78.000 106.000  95.000 108.000 121.000 110.000 160.000
X12900.0   7.000  79.000  87.000  55.000  50.000  70.000    .000   -0.32    .000
GR108.00    .000 106.000  79.000 104.950  81.150 104.950  84.850 106.000  87.000
GR108.00 105.000 110.000 130.000
X12910.0   8.000 103.000 108.000 100.000 120.000  97.000    .000   -0.32    .000
GR112.00    .000 110.000  45.000 108.200 103.000 107.380 104.500 107.380 106.500
GR108.20 108.000 110.000 140.000 112.000 190.000
X12920.0   9.000  73.000  75.000  95.000 105.000 100.000    .000   -0.32    .000
GR114.00    .000 112.000  35.000 110.000  61.000 110.000  73.000 109.300  73.300
GR109.30  74.800 110.000  75.000 112.000  95.000 114.000 130.000
X13000.0  10.000  36.700  38.700  50.000  45.000  65.000    .000   -0.32    .000
GR114.00    .000 112.000  24.000 111.700  36.700 111.000  36.950 111.000  38.450
GR111.70  38.700 111.700  43.800 112.000  44.000 114.000  54.000 116.000  94.000
X13010.0  10.000  75.000  80.000  70.000  80.000  80.000    .000   -0.32    .000
GR118.00    .000 116.000  25.000 114.000  50.000 113.700  75.000 113.000  76.500
GR113.00  78.500 113.700  80.000 114.000  85.000 116.000 105.000 118.000 140.000
X13020.0  10.000  45.000  50.000  65.000  70.000  80.000    .000   -0.32    .000
GR120.00    .000 118.000  22.000 116.000  35.000 115.700  45.000 115.000  46.500
GR115.00  48.500 115.700  50.000 116.000  65.000 118.000  90.000 120.000 145.000
X13100.0  14.000  33.300  43.300  35.000  50.000  55.000    .000   -0.32    .000
GR120.85    .000 120.390   5.000 120.010  11.500 119.650  16.200 119.250  26.200
GR118.85  32.100 116.920  33.300 117.750  34.800 117.550  37.900 116.920  38.300
GR117.74  40.900  116.92  43.300 119.550  52.000 120.280  64.300
NC                            .3      .5
X13200.0    .000    .000    .000  10.000  10.000  10.000    .000    .000    .000
X3  10.0                                                  118.980 119.030
NC                   .015
X13200.1    .000    .000    .000    .300    .300    .300    .000    .000    .000
X3  10.0                                                  118.980 119.030
BT   -14    11.5  119.69  119.69    16.2  119.41  119.33    26.2  119.33  118.93
BT          32.1  119.13  118.53    33.3  119.19   116.6    33.3  119.19  118.89
BT          34.8  119.19  118.89    37.9  118.93  118.63    38.3  118.93  118.63
BT          40.9  118.93  118.63    43.3  119.03  118.73    43.3  119.03   116.6
BT            52  120.49  119.23    64.3  120.03  119.96
X13200.2    .000    .000    .000   4.400   4.400   4.400    .000    .000    .000
X2                                                      1
NC                   .035
X13200.3    .000    .000    .000    .300    .300    .300    .000    .000    .000
X3  10.0                                                  119.180 119.230
X13300.0  10.000  29.000  31.000  10.000  10.000  10.000    .000   -0.32    .000
GR120.38    .000 119.330   8.300 119.250  13.500 118.850  23.400 117.850  29.000
GR117.40  30.000 117.850  31.000 119.150  40.000 120.330  52.000 120.750  60.000
NC                            .1      .3
X13400.0  16.000  91.100  92.900  70.000  55.000  90.000    .000   -0.32    .000
GR120.52       0  120.00  52.000 119.780  62.000 119.510  75.100 119.300  85.200
GR119.19  91.000  119.19  91.100 117.090  91.101 117.090  92.000 117.090  92.899
GR119.19  92.900  119.15  94.000 119.130 107.000 119.360 122.000 120.000 137.000
GR120.52 194.000
NC                   .015      .3      .5
NH     3     0.1    91.1   0.015    92.9     0.1     194
X13500.0    .000    .000    .000  10.000  10.000  10.000    .000    .000    .000
X3  10.0                                                  118.780 118.780
SB   0.9    1.56   1.665       0     1.4    0.01    2.54       0       0       0
NH     3     0.1    91.1    0.04    92.9     0.1     194
X13500.3    .000    .000    .000     8.7     8.7     8.7    .000    .000    .000
X2                     1  118.57  118.87
X3  10.0                                                  118.980 118.980
BT   -16       0  120.20  120.20      52  119.68  119.68      62  119.46  119.46
BT          75.1  119.19  119.19    85.2  118.98  118.98      91  118.87  118.87
BT          91.1  118.87  118.87  91.101  118.87  116.77      92  118.87  116.77
BT        92.899  118.87  116.77    92.9  118.87  118.87      94  118.83  118.83
BT           107  118.81  118.81     122  119.04  119.04     137  119.68  119.68
BT           194  120.20  120.20
NC                   .035
X13600.0  16.000  92.000 101.000  10.000  10.000  10.000    .000   -0.25    .000
GR122.00    .000 120.000  60.000 119.590  70.000 119.490  78.300 119.340  85.000
GR118.68  92.000 118.310  99.000 117.900 100.000 118.840 101.000 118.940 115.000
GR119.14 120.000 119.170 125.000 119.140 130.000 120.000 140.000 122.000 195.000
GR124.00 260.000
NC   .06     .06    .035      .1      .3
QT     2     175   140.0
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X1  -100      18     200     576       0       0       0       0       0       0
GR  71.3       0      70      12    67.8      74      70     200      68     297
GR 68.15     487   68.05     497    67.9   506.9      67     507   66.95     514
GR 67.65     517   68.23     522   67.95     542   68.25     576    68.7     637
GR    69     767      70     854      72     866
QT     2    91.0   72.00
X1    10      12     185     205     300     100     160       0       0       0
GR    70       0      68     140   67.56     180   67.76     185   67.76     190
GR 66.99     196   66.46     203   67.36     205   67.11     215   67.56     245
GR 67.86     275      70     415
X1    20       9   108.5     122     270     210     320       0       0       0
GR  70.6       0      70      45      70      95    69.7   108.5    68.9  111.95
GR  68.9  118.55    69.7     122      70     155      72     190
X1    30      31  245.27  260.72     205     200     220       0       0       0
GR 71.73   0.000  70.853  19.720  70.819  39.060  70.230  59.150  70.272  78.820
GR 70.32  98.550  70.483 117.740  70.511 136.560  70.158 155.830  69.931 175.590
GR 70.25 194.520  70.456 213.760  70.512 232.760  70.325 240.720  69.616 245.269
GR 69.62 245.270  69.511 245.820  68.580 250.720  69.001 255.620  69.049 256.170
GR 69.05 256.171  69.717 260.720  69.800 270.450  69.862 273.330  69.953 292.140
GR 70.64 312.300  71.135 322.230  71.652 332.000  72.390 341.900  73.110 351.450
GR 74.58 361.658
NC                  .020      .3      .5
X1  40.0      31  245.27  256.17    10.0    10.0    10.0       0       0       0
X3  10.0                                                   72.55   72.55
GR 71.73   0.000  70.853  19.720  70.819  39.060  70.230  59.150  70.272  78.820
GR 70.32  98.550  70.483 117.740  70.511 136.560  70.158 155.830  69.931 175.590
GR 70.25 194.520  70.456 213.760  70.512 232.760  70.325 240.720  69.632 245.269
GR 69.63 245.270  68.850 245.820  68.850 250.720  68.850 255.620  69.630 256.170
GR 69.63 256.171  69.800 260.720  69.800 270.450  69.862 273.330  69.953 292.140
GR 70.64 312.300  71.135 322.230  71.652 332.000  72.390 341.900  73.110 351.450
GR 74.58 361.658
NC                   .02
X1  40.1                              .3      .3      .3
X3  10.0                                                   71.00   71.00
BT  -31    0.000  71.730  71.730  19.720  71.560  70.853  39.060  71.450  70.8209
BT        59.150  71.310  70.230  78.820  71.320  70.272  98.550  71.320  70.3211
BT       117.740  71.340  70.483 136.560  71.300  70.511 155.830  71.260  70.1598
BT       175.590  71.240  69.931 194.520  71.190  70.253 213.760  71.250  70.4576
BT       232.760  71.400  70.512 240.720  71.423  70.325 245.269  71.436  69.6322
BT       245.270  71.436  70.750 245.820  71.437  70.750 250.720  71.451  70.7500
BT       255.620  71.465  70.750 256.170  71.467  70.750 256.171  71.467  69.6322
BT       260.720  71.480  69.800 270.450  71.560  69.800 273.330  71.630  69.8622
BT       292.140  71.930  69.953 312.300  72.480  70.643 322.230  72.840  71.1365
BT       332.000  73.270  71.652 341.900  73.690  72.390 351.450  74.100  73.1100
BT       361.658  74.580  74.580
X1  40.2       0       0       0    7.15    7.15    7.15
X2                                                    1.0
X3  10.0                                                   71.19   71.19
NC                  .035
X1  40.3       0       0       0      .3      .3      .3
X3  10.0                                                   71.19   71.19
X1  15.0   13.00  309.56  318.96      14      21      18    0.00       0    0.00
GR 73.90    0.00   72.80  222.00   72.00  260.43   69.80  293.70   69.37  309.56
GR 69.07  310.34   69.00  317.66   69.35  318.96   69.61  331.78   69.71  340.63
GR 71.04  345.96   75.68  428.37   76.06  449.74
X1  90.0   13.00  267.44  284.34      61      79      71    0.00       0    0.00
GR 73.90    0.00   72.80  223.00   70.32  226.14   70.51  241.19   70.65  257.16
GR 70.86  267.44   69.70  270.20   69.63  277.81   70.48  284.34   70.45  300.48
GR 72.98  314.97   73.82  340.33   74.64  355.24
X1 140.0      13 250.645 257.355      54      52      52       0       0       0
GR  73.9       0   73.17 157.915      72 245.915   70.37 250.645   69.68 251.855
GR 69.67 255.985   70.36 257.355   70.56 262.895   70.91 315.855   70.93 320.025
GR 72.13 324.095   72.82 329.335      76 338.915
X1 210.0    9.00  152.71  155.61   75.00   64.00   70.00    0.00       0    0.00
GR 74.00    0.00   71.54  100.43   71.54  110.93   71.41  152.71   70.75  152.89
GR 70.75  154.26   71.36  155.61   74.00  196.43   76.00  217.86
X1 310.0   17.00   81.52   98.84   96.00   93.00   95.00    0.00       0    0.00
GR 76.68    0.00   76.52   25.45   76.37   35.14   76.33   44.74   75.78   53.89
GR 75.27   62.11   74.91   71.48   74.99   81.52   74.19   83.16   72.79   83.96
GR 72.29   86.16   72.17   96.21   74.15   96.86   74.88   98.84   75.69  104.66
GR 75.83  110.26   76.01  117.96
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X1	410.0	12.00	86.30	98.12	105.00	102.00	104.00	0.00	0	0.00
GR	80.58	0.00	80.47	14.13	79.54	29.36	78.63	45.86	77.90	60.22
GR	77.97	78.66	77.44	86.30	76.32	88.74	76.30	94.81	77.29	98.12
GR	79.11	104.32	80.28	110.80						
X1	510.0	13.00	51.76	101.58	114.00	113.00	114.00	0.00	0	0.00
GR	82.95	0.00	81.66	10.06	80.78	20.09	80.70	35.49	80.48	47.98
GR	80.43	51.76	78.42	91.43	78.42	98.02	79.52	101.58	79.47	108.00
GR	79.40	111.57	82.00	141.15	84.00	153.65				
X1	585.0	10.00	109.53	118.23	75.00	73.00	73.00	0.00	0	0.00
GR	82.69	0.00	82.08	4.81	81.43	101.30	81.17	104.82	79.87	109.53
GR	79.15	111.30	79.15	117.25	79.68	118.23	82.00	139.28	84.00	153.56
NC	.06	.06	.035	.1	.3					
QT	2	96.6	77.6							
X1	-300	12	370.5	375.5						
GR	70.3	0	70	90.5	68	325.5	68	370.5	67.25	371
GR	67.25	375	68	375.5	70	430.5	71.2	440.5	71.2	510.5
GR	71.2	525.5	71.2	580.5						
QT	2	12.6	9.6							
X1	60	8	77	100	320	255	325	0	0	0
GR	72	0	70	77	69.7	85	68.7	86.5	68.7	88.5
GR	69.7	90	70	100	72	175				
X1	65	16	84.5	90	230	150	180	0	0	0
X3	10							72.1	72.1	
GR	73.26	0	71.26	28	72.39	70	72.41	76.7	72.44	84.5
GR	70.56	84.501	70.56	85.6	70.56	86.95	70.56	87.4	70.56	87.85
GR	70.56	88.475	70.56	89.1	70.56	89.725	70.56	89.999	72.44	90
GR	73.24	100								
NC			.024	.3	.5					
NH	3	0.1	84.5	0.024	90	0.1	100			
X1	70.0	0	0	0	10	10	10			
X3	10							72.1	72.1	
SB	0.9	1.56	1.665	0	1.4	0.01	1.863	0	0	0
NH	3	0.1	84.5	0.04	90	0.1	100			
X1	70.3				21	21	21			
X2			1	71.81	72.44					
X3	10							72.44	72.44	
BT	-16	0	73.26	73.26	28	71.26	71.26	70	72.39	72.39
BT		76.7	72.41	72.41	84.5	72.44	72.44	84.501	72.44	70.56
BT		85.6	72.44	70.56	86.95	72.44	70.56	87.4	72.44	70.56
BT		87.85	72.44	70.56	88.475	72.44	70.56	89.1	72.44	70.56
BT		89.725	72.44	70.56	89.999	72.44	70.56	90	72.44	72.44
BT		100	73.24	73.24						
NC	.1	.1	.035	.1	.3					
X1	75	10	25.8	34.1	34.2	25.9	10	0	0	0
GR	74.03	0	74.09	19.4	73.58	21.1	73.38	25.8	71.81	27
GR	71.77	30	71.78	31.4	73.05	34.1	73.28	44.3	73.4	60
X1	5.00	6	29.56	30.58	112	108	110	0	0	0
GR	76.63	0	76.08	19	74.37	29.56	74.42	30.58	76.06	32.15
GR	76.13	41.98								
X1	6.00	6	16.58	22.79	92	100	97	0	0	0
GR	78.77	0	78.13	16.58	76.49	20.49	77.45	22.79	77.87	44.57
GR	78.22	64.51								
X1	7.00	7	57.83	58.6	102	102	102	0	0	0
GR	82.55	0	82.35	19.61	82.02	57.83	79.87	58.05	81.08	58.6
GR	81.77	70.3	82.87	88.62						
X1	8.00	8	52.76	61.95	83	86	84	0	0	0
GR	84.23	0	85.23	24.4	83.99	52.76	81.46	57.36	84.02	61.95
GR	83.55	78	85.19	92.14	85	124.35				
X1	9.00	8	63.59	85.37	90	90	90	0	0	0
GR	83.89	0	83.88	30.54	83.59	55.49	83.1	63.59	81.51	81.04
GR	83.04	85.37	83.6	105.58	84.16	135.83				
X1	10.1	8	56.84	58.97	106	106	106	0	0	0
GR	84.91	0	84.14	20.51	84.62	56.84	82.28	58.43	84.33	58.97
GR	84.58	68.22	84.6	80.41	85.2	228				
X1	11.0	9	118.64	120.53	10	95	58	0	0	0
GR	86.0	0	84.79	103	84.92	113.39	84.74	118.64	83.06	119.88
GR	83.02	120.41	84.98	120.53	86.09	169.03	86.39	180.16		
NC			.024	.3	.5					
NH	3	0.1	124.445	0.024	125.695	0.1	213.6			
X1	12.1	11	124.445	125.695	20	20	20	0	0	0
X3	10							85.12	85.12	

GR	86	0	84.72	42	84.68	66.85	85.01	96.11	85.42	124.445
GR	83.87	124.446	83.87	125.694	85.42	125.695	85.84	154.84	86.12	184.56
GR	86.55	213.6								
SB	0.9	1.56	1.665	0	1.4	0.01	1.863	0	0	0
NH	3	0.1	124.445	0.04	125.695	0.1	213.6			
X1	12.3	0	0	0	5	5	5	0	0	0
X2			1	85.12	85.42					
X3	10							85.42	85.42	
BT	-11	0	86	86	42	84.72	84.72	66.85	84.68	84.68
BT		96.11	85.01	85.01	124.445	85.42	85.42	124.446	85.42	83.87
BT		125.694	85.42	83.87	125.695	85.42	85.42	154.84	85.84	85.84
BT		184.56	86.12	86.12	213.6	86.55	86.55			
NC	.1	.1	.035	.1	.3					
X1	13.0	9	88.9	92.4	3	3	3	0	0	0
GR	86.0	0	85.02	81	85.09	88.9	84.13	91.27	83.83	92.02
GR	83.83	92.09	85.2	92.4	85.71	161.83	86.96	175.22		
X1	14.0	8	64.78	69.74	50	16	30	0	0	0
GR	87.71	0	87.28	32.83	86.32	45.45	85.57	64.78	84.29	66.61
GR	84.29	68.27	85.76	69.74	86.24	73.73				
X1	15.1	8	80.77	83.04	114	90	96	0	0	0
GR	87.95	0	87.78	26.77	87.19	47.36	86.21	80.77	85.26	80.85
GR	85.54	81.53	87.28	83.04	87.52	94.86				
X1	16.0	8	97.79	107.31	98	126	112	0	0	0
GR	90.67	0	89.06	41	89.2	63.06	88.89	97.79	87.6	101.1
GR	87.6	104.3	88.68	107.31	89.75	123.89				
NC			.024	.3	.5					
NH	3	0.1	102.245	0.024	103.495	0.1	182.89			
X1	17.1	10	102.245	103.495	50	1	36	0	0	0
X3	10							89.24	89.24	
GR	93.11	0	90.74	43.37	89.95	75.91	89.54	102.245	87.99	102.246
GR	87.99	103.494	89.54	103.495	89.42	126.32	89.61	154.25	89.87	182.89
SB	0.9	1.56	1.665	0	1.4	0.01	1.863	0	0	0
NH	3	0.1	102.245	0.04	103.495	0.1	182.89			
X1	17.3	0	0	0	7	7	7	0	0	0
X2			1	89.24	89.54					
X3	10							89.54	89.54	
BT	-10	0	93.11	93.11	43.37	90.74	90.74	75.91	89.95	89.95
BT		102.245	89.54	89.54	102.246	89.54	87.99	103.494	89.54	87.99
BT		103.495	89.54	89.54	126.32	89.42	89.42	154.25	89.61	89.61
BT		182.89	89.87	89.87						
NC	.1	.1	.035	.1	.3					
X1	18.0	8	87.34	130.98	12	10	11	0	0	0
GR	92.45	0	89.73	28.46	88.74	87.34	88.31	104.32	88.77	130.98
GR	89.15	154.07	89.44	185.31	90.10	380				
NC	.06	.06	.035	.1	.3					
QT	2	84	68							
X1	-1300	11.000	59.000	66.000	.000	.000	.000	.000	.000	.000
GR	94.00	.000	92.000	20.000	90.000	53.000	88.000	57.000	88.000	59.000
GR	85.78	60.700	85.780	64.400	88.000	66.000	88.000	78.000	90.000	92.000
GR	92.00	105.000								
QT	2	16.7	13.8							
X1	80.0	13.000	47.500	50.400	120.000	140.000	145.000	.000	.170	.000
X4	4.00	89.540	48.900	89.290	49.150	89.290	49.650	89.540	49.900	
GR	92.00	.000	90.750	15.200	90.320	28.700	90.010	34.400	89.740	40.000
GR	89.50	47.500	89.100	48.300	89.040	49.400	89.110	50.000	89.620	50.400
GR	89.62	59.600	89.760	70.000	92.000	170.000				
NC				.3	.5					
X1	85.0	.000	.000	.000	10.000	10.000	10.000	.000	.000	.000
X3	10.0							91.190	91.190	
NC			.024							
X1	85.1	.000	.000	.000	.300	.300	.300	.000	.000	.000
BT	-17	0	92.34	92.17	15.2	91.65	90.92	28.7	91.46	90.490
BT	0	34.4	91.46	90.18	40	91.42	89.91	47.5	91.42	89.670
BT	0	48.3	91.39	89.27	48.9	91.39	89.71	49.15	91.39	89.960
BT	0	49.4	91.39	90.21	49.65	91.39	89.96	49.9	91.39	89.710
BT	0	50	91.39	89.28	50.4	91.39	89.79	59.6	91.36	89.790
BT		70.000	91.360	89.930	170.000	92.340	92.170			
X1	85.2	.000	.000	.000	11.100	11.100	11.100	.000	.000	.000
X2							1			
NC			.035							
X1	85.3	.000	.000	.000	.300	.300	.300	.000	.000	.000

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X3  10.0                                                          91.190  91.190
X1  90.0    9.000  49.400  52.000  10.000  10.000  10.000    .000    .170    .000
GR 92.00     .000  90.590  40.400  90.480  49.400  89.860  51.200  90.410  52.000
GR 90.32   55.000  90.380  67.200  90.440  85.000  92.000 160.000
X1    23       0       0       0      33      44      38       0    0.52
X1   231       8      80      90     114      60      84
GR  94.2       0      94       5      92      80    91.4      87      92      90
GR    93     135      94     164    94.2     170
EJ
T1  GOULDS FLOOD LINE STUDY
T2  JANUARY 1995 010125
T3       DOYLES RIVER 1:20 YEAR EVENT
J1   -10       3       0       0       0       1       0       0   69.08       0
J2     2       0      -1       0       0       0       0       0       0       0
ER
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C
C      2
C  100.0 START OF EXISTING X-SECTIONS
C  100.0 DYKE AT RACEWAY
T1  GOULDS FLOOD LINE STUDY - DYKES
T2  FEBRUARY 1996 010125
T3  DOYLES RIVER 1:100 YEAR EVENT
J1      0       2       0       0       0       1       0       0   69.08       0
J2      1       0      -1       0       0       0       0       0       0       0
NC   .060    .060    .035      .1      .3
QT      2  175.00   140.0
X1    100      15   506.9     522       0       0       0       0       0       0
GR   71.3       0      70      12    67.8      74      70     200      68     297
GR  68.15     487   68.05     497    67.9   506.9      67     507   66.95     514
GR  67.65     517   68.23     522   67.95     542   68.25     559      80     560
QT      2    96.6    77.6
X1    300      13     200   545.5       2     400     250       0       0       0
GR   71.3       0      70      12    67.8      74      70     200      69     250
GR     68     440      68   485.5   67.25     486   67.25     490      68   490.5
GR     70   545.5    71.2   555.5    71.2   695.5
QT      2    84.0    68.0
NC   .060    .060    .035
X1    400      15  398.75  423.75     255     240     250       0       0       0
GR     74       0      72      26      71      97    71.9     200      72     255
GR     72     275      72  323.80      72  398.75      70  420.25    69.4  420.35
GR   69.4  423.65      70  423.75      71  428.75      72  443.75    74.5  493.75
X1    410      14  366.15  369.85      30      70      70       0       0       0
GR     74       0      72      26      71      95    71.5     138      72     243
GR   72.1  282.85      72  347.85    71.8  366.15    71.2  366.25    71.2  369.75
GR   71.8  369.85      72  372.85      74  402.85      76  492.85
X1    420      13     379     415      60     100     100       0       0       0
X3   10.0                     125      86
GR   74.1     100      74     109      72     147      71     180      72     225
GR     74     355      74     379    73.2     386    72.6   386.1    72.6     390
GR   73.2   390.1      74     415      76     477
X1    430      15   305.7   310.7      84      80      80       0       0       0
X3   10.0                      66      86
GR     76       0      74      46      73      75      73     123      74     170
GR     74     212      74   250.7      74   300.7      74   305.7   73.34   307.4
GR  73.34   310.6      74   310.7      74   315.7      76   355.7      78   375.7
NC                   .024      .3      .5
NH      3    0.06     326   0.024   330.1    0.06     544
X1    500      17     326   330.1      60      55      60       0       0       0
X3   10.0                     110      86                   76.35   76.35
GR     78       0      76      40      74      71      73     100      74     210
GR     75     254    74.5     326   74.25  326.05   74.25   326.1   74.25     330
GR  74.25  330.05    74.5   330.1  76.446   330.5    78.6     366      80     410
GR   81.3     485    82.7     544
SB    0.9    1.56   1.665       0     1.5    0.01    4.91       0       0       0
NH      3    0.06     326   0.035   330.1    0.06     544
X1    600       0       0       0   18.35   18.35   18.35       0       0       0
X2                      1   76.20   76.50
X3   10.0                     110      86                   76.50   76.50
BT    -17       0      78      78      40      76      76      71      74      74
BT            100      73      73     210      74      74     254      75      75
BT            326    76.2    74.5  326.05  76.203   74.25   326.1  76.206    76.2
BT            330   76.44    76.2  330.05  76.443   74.25   330.1  76.446    74.5
BT          330.5   76.47   76.47     366    78.6    78.6     410      80      80
BT            485    81.3    81.3     544    82.7    82.7
NC    .04     .04    .035      .1      .3
X1    700      18     315     334      10      10      10       0       0       0
X3   10.0                     117      86
GR     80       0      78      13      76      51      74      81    73.3     118
GR     74     191      76     256    76.5     280    76.5     290   76.34     297
GR     76     315    74.5     321   74.55   326.7   74.71   331.1      76     334
GR     78     346      80     396    81.8   510.5
X1    705      12      68     101      70       1       1       0       0       0
GR     80       0      78      22      77      53    76.5      68      76      82
GR   74.5      88   74.55    93.7   74.71    98.1      76     101      78     113
GR     80     163    81.8   277.5
NC    .04     .04    .035
```

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T1   GOULDS FLOOD LINE STUDY
T2   JANUARY 1995 010125
T3   RAYMOND BROOK 1:100 YEAR EVENT
J1       0       2       0       0       0       1       0       0   69.08       0
J2       1       0      -1       0       0       0       0       0       0       0
NC    .060    .060    .030      .1      .3
QT       2  258.00   201.0
X1    4000      25     200    1000       0       0       0
GR    71.3       0      70      12    67.8      74      70     200      68     297
GR   68.15     487   68.05     497    67.9   506.9      67     507   66.95     514
GR   67.65     517   68.23     522   67.95     542   68.25     576    69.1     854
GR    69.3     934   67.55     979    67.3     984   66.69     986   66.65     992
GR   66.91    1000    67.6    1003    67.7    1006    68.8    1031      70    1073
NC    .060    .060    .035
QT       2    83.0    61.0
X1    4100      14     319     339     110      94      97       0       0       0
GR    70.8     165      70     188   69.17     270   68.25     310   68.05     315
GR   68.28     319   66.93     325   67.25     329   68.05     330   68.20     335
GR   67.85     339      70     352      74     384      74     488
X1   4200      14     115     138      90      60      75       0   -0.98       0
GR      74       0      72      20      70      95   69.48     105   69.08     110
GR    69.2     115   68.67     117   68.48     125   68.62     138   69.38     140
GR69.48        145      70     160      72     165      74     215
X1   4300      14      50      70     180      55     170       0   -0.98       0
GR      74       0      72      10   69.83      30   70.13      35   69.28      40
GR    68.8      50   68.66      56   68.58      60   68.78      70   69.68      74
GR    69.7      80   69.48      85      72      95      74     100
X1   4310      12    54.9      71      95     110      95       0   -0.98       0
GR      78       0      76      10      74      20      72      25    70.4    54.9
GR    69.8      55    69.8    70.9    70.4      71      72     105      74     139
GR      76     150      78     165
X1   4320      10    28.9      40     120     110     120       0   -0.98       0
GR      78       0      76      19      74    28.9    73.4      29    73.4    39.9
GR      74      40      76      75      78      80      80      85      82      95
X1   4330      11    64.9      85     115     115     120       0   -0.98       0
GR      82       0      80      21      78      60    77.2    64.9    76.6      65
GR    76.6    84.9    77.2      85      78      90      80     100      82     110
GR      84     130
X1    4340       9   22.11   89.34     110      93     104       0       0       0
GR   83.96       0   81.91    7.61   80.74   22.11   79.09    26.7   77.92   36.87
GR   78.44   59.36    79.9   89.34   81.57  101.09   84.34  114.33
X1   4400      14    57.6    64.4      60      80      90       0   -1.38       0
GR      84       0      82      20   81.67      40    81.4      51    80.5    54.2
GR79.62        57.6   79.62   58.45   79.62      61   79.62   63.55   79.62    64.4
GR80.17        69     81.58    71.5   82.17    77.6      83      90
X14500.0       30     61.55   69.35      10      10      10
X3      10                                                     81.96   81.96
GR   83.33    0.00    82.90   19.68   82.65   30.30   82.42   40.48   82.42   40.97
GR   82.45   56.28    82.02   57.05   81.75   57.52   80.59   59.06   80.09   59.71
GR   79.01   61.11    79.03   61.55   79.03  61.551   79.06   62.41   79.06   63.09
GR   78.99   65.45    78.91   68.37   78.93   69.10   78.97   69.35   78.97  69.351
GR   79.03   69.79    80.13   71.32   81.80   73.85   82.16   74.40   82.26   80.76
GR   82.38   88.76    82.46   98.75   82.57  112.39   83.37  120.20   83.77  131.02
NC                     .015
X14500.1                                  .3      .3      .3
X3      10                                                     81.96   81.96
BT     -30       0    83.33   83.33   19.68    82.9    82.9   30.30  82.655  82.655
BT           40.48    82.42   82.42   40.97   82.42   82.42   56.28   82.45   82.45
BT           57.05    82.46   82.02   57.52   82.46   81.75   59.06   82.46   80.59
BT           59.71    82.46   80.09   61.11   82.46   79.01   61.55   82.46   79.03
BT          61.551    82.46   81.46   62.41   82.46   81.46   63.09   82.47   81.47
BT           65.45    82.47   81.47   68.37   82.47   81.47   69.10   82.47   81.47
BT           69.35    82.47   81.47  69.351   82.47   78.97   69.79   82.47   79.03
BT           71.32    82.48   80.13   73.85   82.48   81.80   74.40   82.48   82.48
BT           80.76    82.49   82.49   88.76   82.62   82.62   98.75   82.78   82.78
BT          112.39    83.16   83.16  120.20   83.37   83.37  131.02   83.77   83.77
X14500.2                                 7.15    7.15    7.15
X2                                                        1
X3      10                                                     82.42   82.42
X14500.3                                  .3      .3      .3
X3      10                                                     82.42   82.42
```

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NC                  .035
X1  10.0       13   52.77   85.89      10      11      10       0       0       0
GR 84.05        0   82.94   26.22   82.16  31.765    82.4   43.11   82.42   52.77
GR 80.65    57.54   79.23   63.62   79.27   74.07   80.11   81.61   81.19   83.09
GR 82.13    85.89   82.29   94.59      86 174.845
X1  60.0       15   91.82  135.75      50      52      51       0       0       0
GR    86        0      84      67   82.81      77   82.42     85.3   82.02   91.82
GR 80.71     95.9   80.51   98.71   80.52  109.29   80.85  114.16   81.05  121.11
GR  81.6   135.75   81.56  152.57   82.03  162.75      84     212      86     233
X1  140.       13   81.13  105.19      78      78      78       0       0       0
GR 86.85        0   86.04   18.25   86.02   44.47   84.56      59   84.56   74.34
GR 84.56    81.13    80.9   87.68   80.91   98.46   82.12  105.19   81.99  120.52
GR 82.35   131.38      84  157.07      86  216.07
X1  210.       10    5.65   28.62      78      73      74       0       0       0
GR 86.67        0   83.87    5.65   81.31   10.06    81.3   19.88   81.46   23.55
GR 82.52    28.62   82.67   33.07      84   72.97      86  120.97      88  142.97
X1  320.       13  159.66  184.58     118     115     116       0       0       0
GR    90        0      88      66      86     139   83.43  150.91   82.97  159.66
GR 82.33   166.89   82.03  171.17   82.06  180.83   83.95  184.58    83.6  188.76
GR    86      211      88     231      90     255
X1  440.       10    7.33   41.24     126     121     123       0       0       0
GR 86.51        0   84.88    7.33    83.1   13.68   82.93   31.25    83.2   35.92
GR 84.42    41.24   83.72   46.32      86   63.25      88   69.25      90   89.25
EJ
T1  GOULDS FLOOD LINE STUDY
T2  JANUARY 1995 010125
T3  RAYMOND BROOK 1:20 YEAR EVENT
J1   -10        3       0       0       0       1     .35       0   69.08       0
J2     2        0      -1       0       0       0       0       0       0       0
ER
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C
C       2
C  4000 DYKE AT RACEWAY
C  4100 DYKE AT RACEWAY
T1  GOULDS FLOOD LINE STUDY - DYKES
T2  FEBRUARY 1996 010125
T3  RAYMOND BROOK 1:100 YEAR EVENT
J1      0       2       0       0       0       1       0       0   69.08       0
J2      1       0      -1       0       0       0       0       0       0       0
NC   .060    .060    .030      .1      .3
QT      2  258.00   201.0
X1   4000      11     979    1006       0       0       0
GR     80     923    69.3     924   67.55     979    67.3     984   66.69     986
GR  66.65     992   66.91    1000    67.6    1003    67.7    1006    68.8    1031
GR     70    1073
NC   .060    .060    .035
QT      2    83.0    61.0
X1   4100      14     319     339     110      94      97       0       0       0
GR     80     265    69.7     266   69.17     270   68.25     310   68.05     315
GR  68.28     319   66.93     325   67.25     329   68.05     330   68.20     335
GR  67.85     339      70     352      74     384      74     488
X1  4200      14     115     138      90      60      75       0   -0.98       0
GR     74      0      72      20      70      95   69.48     105   69.08     110
GR  69.2     115   68.67     117   68.48     125   68.62     138   69.38     140
GR69.48      145      70     160      72     165      74     215
X1  4300      14      50      70     180      55     170       0   -0.98       0
GR     74      0      72      10   69.83      30   70.13      35   69.28      40
GR  68.8      50   68.66      56   68.58      60   68.78      70   69.68      74
GR  69.7      80   69.48      85      72      95      74     100
X1  4310      12    54.9      71      95     110      95       0   -0.98       0
GR     78      0      76      10      74      20      72      25    70.4    54.9
GR  69.8      55    69.8    70.9    70.4      71      72     105      74     139
GR     76     150      78     165
X1  4320      10    28.9      40     120     110     120       0   -0.98       0
GR     78      0      76      19      74    28.9    73.4      29    73.4    39.9
GR     74      40     76      75      78      80      80      85      82      95
X1  4330      11    64.9      85     115     115     120       0   -0.98       0
GR     82      0      80      21      78      60    77.2    64.9    76.6      65
GR  76.6    84.9    77.2      85      78      90      80     100      82     110
GR     84     130
X1   4340      9   22.11   89.34     110      93     104       0       0       0
GR  83.96      0   81.91    7.61   80.74   22.11   79.09    26.7   77.92   36.87
GR  78.44  59.36    79.9   89.34   81.57  101.09   84.34  114.33
X1  4400      14    57.6    64.4      60      80      90       0   -1.38       0
GR     84      0      82      20   81.67      40    81.4      51    80.5    54.2
GR79.62    57.6   79.62   58.45   79.62      61   79.62   63.55   79.62    64.4
GR80.17      69   81.58    71.5   82.17    77.6      83      90
X14500.0     30   61.55   69.35      10      10      10
X3     10                                                   81.96   81.96
GR  83.33   0.00   82.90   19.68   82.65   30.30   82.42   40.48   82.42   40.97
GR  82.45  56.28   82.02   57.05   81.75   57.52   80.59   59.06   80.09   59.71
GR  79.01  61.11   79.03   61.55   79.03  61.551   79.06   62.41   79.06   63.09
GR  78.99  65.45   78.91   68.37   78.93   69.10   78.97   69.35   78.97  69.351
GR  79.03  69.79   80.13   71.32   81.80   73.85   82.16   74.40   82.26   80.76
GR  82.38  88.76   82.46   98.75   82.57  112.39   83.37  120.20   83.77  131.02
NC                  .015
X14500.1                                      .3      .3      .3
X3     10                                                   81.96   81.96
BT    -30      0   83.33   83.33   19.68    82.9    82.9   30.30  82.655  82.655
BT          40.48   82.42   82.42   40.97   82.42   82.42   56.28   82.45   82.45
BT          57.05   82.46   82.02   57.52   82.46   81.75   59.06   82.46   80.59
BT          59.71   82.46   80.09   61.11   82.46   79.01   61.55   82.46   79.03
BT         61.551   82.46   81.46   62.41   82.46   81.46   63.09   82.47   81.47
BT          65.45   82.47   81.47   68.37   82.47   81.47   69.10   82.47   81.47
BT          69.35   82.47   81.47  69.351   82.47   78.97   69.79   82.47   79.03
BT          71.32   82.48   80.13   73.85   82.48   81.80   74.40   82.48   82.48
BT          80.76   82.49   82.49   88.76   82.62   82.62   98.75   82.78   82.78
BT         112.39   83.16   83.16  120.20   83.37   83.37  131.02   83.77   83.77
X14500.2                                     7.15    7.15    7.15
X2                                                       1
X3     10                                                   82.42   82.42
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X14500.3                                .3      .3      .3
X3    10
NC                    .035                                      82.42   82.42
X1   10.0       13   52.77   85.89      10      11      10       0       0       0
GR  84.05        0   82.94   26.22   82.16  31.765    82.4   43.11   82.42   52.77
GR  80.65    57.54   79.23   63.62   79.27   74.07   80.11   81.61   81.19   83.09
GR  82.13    85.89   82.29   94.59      86 174.845
X1   60.0       15   91.82  135.75      50      52      51       0       0       0
GR     86        0      84      67   82.81      77   82.42     85.3   82.02   91.82
GR  80.71     95.9   80.51   98.71   80.52  109.29   80.85  114.16   81.05  121.11
GR   81.6   135.75   81.56  152.57   82.03  162.75      84     212      86     233
X1   140.       13   81.13  105.19      78      78      78       0       0       0
GR  86.85        0   86.04   18.25   86.02   44.47   84.56      59   84.56   74.34
GR  84.56    81.13    80.9   87.68   80.91   98.46   82.12  105.19   81.99  120.52
GR  82.35   131.38      84  157.07      86  216.07
X1   210.       10    5.65   28.62      78      73      74       0       0       0
GR  86.67        0   83.87    5.65   81.31   10.06    81.3   19.88   81.46   23.55
GR  82.52    28.62   82.67   33.07      84   72.97      86  120.97      88  142.97
X1   320.       13  159.66  184.58     118     115     116       0       0       0
GR     90        0      88      66      86     139   83.43  150.91   82.97  159.66
GR  82.33   166.89   82.03  171.17   82.06  180.83   83.95  184.58    83.6  188.76
GR     86      211      88     231      90     255
X1   440.       10    7.33   41.24     126     121     123       0       0       0
GR  86.51        0   84.88    7.33    83.1   13.68   82.93   31.25    83.2   35.92
GR  84.42    41.24   83.72   46.32      86   63.25      88   69.25      90   89.25
EJ
T1   GOULDS FLOOD LINE STUDY
T2   JANUARY 1995 010125
T3   RAYMOND BROOK 1:20 YEAR EVENT
J1    -10        3       0       0       0       1     .35       0   69.08       0
J2      2        0      -1       0       0       0       0       0       0       0
ER
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C
C       1
C    0.00 Minor culverts assumed non-effective at mouth
T1   PETTY HARBOUR FLOOD LINE STUDY
T2   MARCH 1996 SNC◊LAVALIN
T3   1 IN 100 YR EVENT
J1      0       2       0       0       0       1       0       0    0.62       0
J2      1       0      -1       0       0       0       0       0       0       0
J3     38      43       1       2       3      26       4       8      42     39.
J3     40      41       0      38       1      13      14      15      55     26.
J3     56      39      16      17      18      25
NC   .070    .070    .070      .1      .3
QT      2  101.00    76.0
X1   0.00      25  104.27  130.47       0       0       0       0       0       0
GR   2.38    0.00    2.83    6.37    3.17   11.55    3.35   22.13    3.37   32.49
GR   3.27   49.68    2.61   57.63    2.23   79.20    1.95  103.43    1.95 103.431
GR   0.84  103.44    0.53  104.27   -0.22  106.05   -0.92  107.08   -1.37  108.31
GR  -1.32  115.15   -0.83  124.84   -0.66  126.73    1.06  130.47    1.63  134.94
GR   1.90  137.09    1.90  154.91    4.49  183.25    6.04  194.65   11.16  201.91
NC                   .025
X1   0002                            0.1     0.1     0.1
X3     10                                                   1.71    1.71
BT    -25    0.00    2.38    2.38    6.37    2.83    2.83   11.55    3.17    3.17
BT          22.13    3.35    3.35   32.49    3.37    3.37   49.68    3.27    3.27
BT          57.63    2.61    2.61   79.20    2.23    2.23  103.43    1.95    1.95
BT        103.431    1.95    1.63  103.44    1.95    1.63  104.27    1.94    1.63
BT         106.05    1.92    1.63  107.08    1.90    1.63  108.31    1.89    1.63
BT         115.15    1.89    1.63  124.84    1.89    1.63  126.73    1.89    1.63
BT         130.47    1.89    1.63  134.94    1.89    1.63  137.09    1.90    1.90
BT         154.91    1.90    1.90  183.25    4.49    4.49  194.65    6.04    6.04
BT         201.91   11.16   11.16
X1   0003                           10.0    10.0    10.0
X2                                                     1
X3     10                                                   1.89    1.89
X1   0004                            0.1     0.1     0.1
X3     10                                                   1.89    1.89
NC   .070    .070    .070      .1      .3
X1     40      17     152     189      60       1      36       0       0       0
X3                            146      10
GR      7     100       6     108       4     123     2.2     136     0.4     137
GR    0.4     145     2.1     146     2.2     152     2.0     155     1.6     159
GR    1.8     175     2.0     189     2.5     208     3.2     209     3.2     230
GR    3.0     290     4.0     315
X1   100.      20   48.41  140.71      34      70      48       0       0       0
X3                           48.41      10
GR   7.03       0    3.91   13.34    3.35   25.02    2.47   30.69    1.47   32.32
GR   0.48   32.81    0.48   40.77    1.82   41.92    2.73   44.26     4.9   48.41
GR   3.21   58.07    2.68   63.17    2.39   67.23    3.22   81.26    2.29  102.92
GR   3.35  118.72    3.44  127.79    2.52  140.71    2.64  143.63    4.04  161.94
X1    148      19     140     240      45      54      50       0       0       0
X3                            140      10
GR      6     100       4     115       3     120     0.8     121     0.8     129
GR      3     130       6     132     6.8     140       6     143     3.5     155
GR    4.5     170     4.2     188     4.4     197     4.3     204     4.4     215
GR    4.3     221       5     240       6     261      12     284
X1   190.      15   37.22  103.14      68      64      68       0       0       0
GR   8.84       0    8.86   29.17    8.96   37.22    7.14   42.79     6.5   49.96
GR    6.4   52.57    6.74   65.32    6.56   79.63    8.69   86.45    8.88   93.66
GR   8.98  103.14   11.16  118.13   12.54  137.47   13.92  144.67   13.98   150.2
X1   225.      10   14.58      59      35      35      35       0       0       0
GR  10.11       0    9.34    8.23    9.02   14.58    7.11    26.8     6.6   34.33
GR   6.81   53.78     9.4      59    9.67   70.76   11.02    84.7    12.3   91.16
X1   265.      14    14.2   40.73      38      37      38       0       0       0
GR  12.77       0   12.03    9.55   11.74    14.2   10.49    17.1    9.69   18.87
GR   6.67   20.89    8.38   27.45    9.49   36.54    11.6   40.73    12.1   46.92
GR  12.76   57.15   16.05   79.36    17.8   79.57   18.04   87.66
X1   315.      12   11.82   58.77      47      45      47       0       0       0
GR  16.21       0      16    7.44   15.61   11.82   13.63   17.97      12   26.66
GR     12   31.76   13.56   42.77   14.63   54.59   15.86   58.77   18.05    64.2
GR   19.6   71.14  20.865    76.8
X1   345.      23    2.53   40.72      48      76      56    0.67       0       0
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X3     10                                                          17.51    17.51
GR 18.22    0.00    17.79     2.53    16.67     9.10    17.94    12.73    18.51    14.35
GR 15.16   18.62    15.34    21.86    16.83    22.00    16.93    26.14    16.95    27.22
GR 16.38   28.14    16.34    38.51    16.33    40.29    17.82    40.72    18.26    41.54
GR 18.52   42.37    18.92    46.74    19.62    50.78    19.85    52.13    21.90    60.42
GR 22.67   63.56    22.86    64.38    23.92    74.69
NC                   .025
X1  347.                              0.1      0.1      0.1
X2                                                                      0.67
BT  -23     0.00    18.22    18.22     2.53    18.29    17.79     9.10    18.74    18.24
BT         12.73    18.99    18.49    14.35    19.10    18.60    18.62    19.39    18.89
BT         21.86    19.62    19.12    22.00    19.63    19.13    26.14    19.91    19.41
BT         27.22    19.97    19.47    28.14    20.01    19.51    38.51    20.55    20.05
BT         40.29    20.66    20.16    40.72    20.68    20.18    41.54    20.73    20.23
BT         42.37    20.79    20.29    46.74    21.05    20.55    50.78    21.30    20.80
BT         52.13    21.38    20.88    60.42    22.40    21.90    63.56    22.78    22.67
BT         64.38    22.86    22.86    74.69    23.92    23.92
X1  348.                              10.0     10.0     10.0
X2                                                                      0.67
BT  -23     0.00    18.22    18.22     2.53    18.29    17.79     9.10    18.74    18.24
BT         12.73    18.99    18.49    14.35    19.10    18.60    18.62    19.39    18.89
BT         21.86    19.62    19.12    22.00    19.63    19.13    26.14    19.91    19.41
BT         27.22    19.97    19.47    28.14    20.01    19.51    38.51    20.55    20.05
BT         40.29    20.66    20.16    40.72    20.68    20.18    41.54    20.73    20.23
BT         42.37    20.79    20.29    46.74    21.05    20.55    50.78    21.30    20.80
BT         52.13    21.38    20.88    60.42    22.40    21.90    63.56    22.78    22.67
BT         64.38    22.86    22.86    74.69    23.92    23.92
NC  .070    .070     .070      .1      .3
X1  349.                              0.1      0.1      0.1
X3     10                                                          17.71    17.71
X1  375.       8      4.4     22.6       32       12       28        0        0        0
GR 21.68       0    20.48      4.4    18.35     9.16    18.32    12.82     18.9    14.72
GR 19.27   19.25    22.82     22.6    23.76    32.35
X1  410.       8     2.45    23.12       22       23       22        0        0        0
GR  22.4       0    22.64     2.45    20.33     4.96    18.69     7.12    18.64    11.58
GR 20.09   16.08     24.3    23.12    24.57    29.55
EJ
T1  PETTY HARBOUR FLOOD LINE STUDY
T2  MARCH 1996 SNC◊LAVALIN
T3  1 IN 20 YR EVENT
J1   -10       3        0        0        0        1      .35        0     0.62        0
J2    15       0       -1        0        0        0        0        0        0        0


ER
→
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APPENDIX E

HEC-2 Backwater Output

THIS RUN EXECUTED 18FEB96 21:10:58

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.0; February 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

DOYLES RIVER 1:100 YEAR

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	4000.000	.00	.00	.00	66.65	258.00	69.08	.00	69.09	2.76	.46	608.98	155.21
	4000.000	.00	.00	.00	66.65	201.00	69.08	.00	69.09	1.68	.36	608.98	155.21
*	100.000	1.00	.00	.00	66.95	175.00	69.08	.00	69.09	2.76	.46	462.13	105.43
*	100.000	1.00	.00	.00	66.95	140.00	69.08	.00	69.09	1.79	.37	459.77	104.72
*	300.000	250.00	.00	.00	67.25	96.60	69.15	.00	69.16	2.97	.40	278.47	56.08
*	300.000	250.00	.00	.00	67.25	77.60	69.12	.00	69.13	2.12	.33	269.24	53.34
*	400.000	250.00	.00	.00	69.40	84.00	71.58	71.58	71.80	81.29	2.53	60.33	9.32
*	400.000	250.00	.00	.00	69.40	68.00	71.48	71.48	71.71	83.32	2.48	47.06	7.45
	410.000	70.00	.00	.00	71.00	84.00	72.06	.00	72.09	43.68	1.43	113.97	12.71
	410.000	70.00	.00	.00	71.00	68.00	71.99	.00	72.02	46.10	1.38	94.47	10.01
*	420.000	100.00	.00	.00	72.60	84.00	74.01	74.01	74.01	.83	.17	377.64	92.20
*	420.000	100.00	.00	.00	72.60	68.00	74.00	74.00	74.00	.55	.13	375.51	91.50
*	430.000	80.00	.00	.00	73.34	84.00	74.00	.00	74.05	48.29	1.21	82.52	12.09
*	430.000	80.00	.00	.00	73.00	68.00	73.99	.00	74.03	31.90	.98	82.05	12.04
*	500.000	60.00	.00	.00	74.25	84.00	76.39	76.39	76.39	.33	.37	494.07	147.04
*	500.000	60.00	.00	.00	74.25	68.00	76.35	76.35	76.35	.22	.30	486.74	143.57
*	600.000	18.35	76.50	76.20	74.25	84.00	76.88	.00	76.89	.18	.21	605.41	200.58
*	600.000	18.35	76.50	76.20	74.25	68.00	77.08	.00	77.08	.09	.16	649.75	224.13
	700.000	10.00	.00	.00	73.30	84.00	76.88	.00	76.89	.18	.19	437.34	199.96
	700.000	10.00	.00	.00	73.30	68.00	77.08	.00	77.08	.09	.14	480.41	228.11
*	705.000	1.00	.00	.00	74.50	84.00	76.75	.00	76.94	34.05	1.95	44.97	14.39
*	705.000	1.00	.00	.00	74.50	68.00	77.02	.00	77.10	11.23	1.27	58.37	20.29

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	710.000	12.00	.00	.00	74.60	84.00	76.75	.00	77.02	54.53	2.33	36.50	11.37
	710.000	12.00	.00	.00	74.60	68.00	77.02	.00	77.13	17.99	1.51	46.36	16.03
*	733.000	46.00	.00	.00	75.50	84.00	77.33	77.33	77.94	85.61	3.73	26.99	9.08
*	733.000	46.00	.00	.00	75.50	68.00	77.14	77.14	77.70	88.96	3.52	22.71	7.21
*	800.000	108.00	.00	.00	77.00	84.00	79.12	79.12	79.55	72.09	3.35	35.13	9.89
*	800.000	108.00	.00	.00	77.00	68.00	78.95	78.95	79.37	74.32	3.23	28.59	7.89
*	810.000	105.00	.00	.00	79.00	84.00	80.80	80.80	81.21	87.33	3.53	33.58	8.99
*	810.000	105.00	.00	.00	79.00	68.00	80.68	80.68	81.05	86.00	3.32	28.81	7.33
*	900.000	60.00	.00	.00	80.83	84.00	83.25	83.25	83.92	75.96	4.48	26.53	9.64
*	900.000	60.00	.00	.00	80.83	68.00	83.01	83.01	83.65	79.20	4.27	21.94	7.64
*	1000.000	10.00	.00	.00	80.83	84.00	83.76	.00	84.08	29.65	3.18	38.60	15.43
*	1000.000	10.00	.00	.00	80.83	68.00	83.49	.00	83.79	31.65	3.09	31.81	12.09
*	1000.100	.30	83.79	82.73	80.83	84.00	84.73	84.73	85.12	132.43	3.56	33.85	7.30
*	1000.100	.30	83.79	82.73	80.83	68.00	84.64	84.64	84.99	124.69	3.36	29.31	6.09
*	1000.200	5.60	83.79	82.73	80.83	84.00	85.10	84.73	85.23	36.42	2.07	55.61	13.92
*	1000.200	5.60	83.79	82.73	80.83	68.00	84.98	.00	85.09	35.34	1.97	47.90	11.44
*	1000.300	.30	.00	.00	80.83	84.00	85.21	.00	85.26	3.11	1.35	104.12	47.65
*	1000.300	.30	.00	.00	80.83	68.00	85.09	.00	85.12	2.43	1.17	95.82	43.59
*	1100.000	10.00	.00	.00	82.60	84.00	85.04	.00	85.44	59.49	2.81	30.49	10.89
*	1100.000	10.00	.00	.00	82.60	68.00	84.96	.00	85.26	46.34	2.41	28.53	9.99
*	1110.000	85.00	.00	.00	83.95	84.00	86.11	86.11	86.69	81.24	3.92	28.63	9.32
*	1110.000	85.00	.00	.00	83.95	68.00	85.93	85.93	86.46	82.67	3.70	24.07	7.48
*	1200.000	72.00	.00	.00	85.45	84.00	87.67	87.67	88.35	85.76	4.10	25.13	9.07
*	1200.000	72.00	.00	.00	85.45	68.00	87.47	87.47	88.08	86.05	3.84	21.61	7.33
*	1210.000	55.00	.00	.00	86.45	84.00	88.89	88.89	89.52	69.55	3.95	27.36	10.07
*	1210.000	55.00	.00	.00	86.45	68.00	88.62	88.62	89.27	79.62	3.89	22.08	7.62
	1300.000	45.00	.00	.00	86.95	84.00	89.41	.00	89.81	46.80	3.27	34.17	12.28
	1300.000	45.00	.00	.00	86.95	68.00	89.20	.00	89.58	48.94	3.13	28.66	9.72
*	1310.000	75.00	.00	.00	88.95	43.80	90.63	90.63	91.10	86.30	3.35	20.22	4.71
*	1310.000	75.00	.00	.00	88.95	35.60	90.53	90.53	90.93	78.39	3.05	17.33	4.02
*	1400.000	75.00	.00	.00	89.21	43.80	91.24	.00	91.50	35.13	2.55	27.16	7.39
*	1400.000	75.00	.00	.00	89.21	35.60	91.07	.00	91.31	36.33	2.43	21.42	5.91
	1500.000	10.00	.00	.00	89.21	43.80	91.32	.00	91.54	29.69	2.40	29.72	8.04
	1500.000	10.00	.00	.00	89.21	35.60	91.16	.00	91.36	28.63	2.23	24.28	6.65

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	1500.100	.30	91.60	91.08	88.69	43.80	91.26	90.78	91.60	41.81	2.86	29.93	6.77
	1500.100	.30	91.60	91.08	88.69	35.60	91.14	.00	91.38	28.47	2.36	28.32	6.67
	1500.200	17.40	91.60	91.08	88.69	43.80	91.34	90.78	91.68	41.01	2.83	31.09	6.84
	1500.200	17.40	91.60	91.08	88.69	35.60	91.20	.00	91.43	28.12	2.35	28.95	6.71
	1500.300	.30	.00	.00	88.69	43.80	91.25	.00	91.77	40.32	3.20	13.69	6.90
	1500.300	.30	.00	.00	88.69	35.60	91.12	.00	91.51	31.97	2.75	12.96	6.30
*	1600.000	10.00	.00	.00	88.57	43.80	91.90	.00	91.93	3.25	.91	91.17	24.30
*	1600.000	10.00	.00	.00	88.57	35.60	91.58	.00	91.62	4.43	.98	61.51	16.92
*	1610.000	190.00	.00	.00	92.04	18.70	93.32	93.32	93.60	81.26	2.63	11.75	2.07
*	1610.000	190.00	.00	.00	92.04	15.80	93.24	93.24	93.51	83.68	2.53	9.77	1.73
*	1700.000	65.00	.00	.00	92.97	18.70	94.30	94.30	94.57	111.45	2.99	11.45	1.77
*	1700.000	65.00	.00	.00	92.97	15.80	94.24	94.24	94.48	106.46	2.81	10.14	1.53
*	1800.000	10.00	.00	.00	92.97	18.70	94.55	.00	94.67	40.40	2.08	16.47	2.94
*	1800.000	10.00	.00	.00	92.97	15.80	94.52	94.52	94.62	33.59	1.86	15.56	2.73
*	1800.100	.30	95.62	95.51	92.97	18.70	94.75	94.75	95.53	126.07	3.92	5.14	1.67
*	1800.100	.30	95.62	95.51	92.97	15.80	94.58	94.58	95.28	122.94	3.72	4.62	1.42
	1800.200	3.30	95.62	95.51	92.97	18.70	95.17	94.75	95.65	66.88	3.09	6.43	2.29
*	1800.200	3.30	95.62	95.51	92.97	15.80	94.97	94.58	95.39	62.29	2.89	5.85	2.00
*	1800.300	.30	.00	.00	92.97	18.70	95.78	.00	95.79	1.67	.65	52.64	14.49
*	1800.300	.30	.00	.00	92.97	15.80	95.51	.00	95.52	1.97	.66	44.24	11.27
	1900.000	10.00	.00	.00	93.53	18.70	95.78	.00	95.80	3.00	.68	38.28	10.80
*	1900.000	10.00	.00	.00	93.53	15.80	95.50	.00	95.53	4.50	.73	28.62	7.45
	2000.000	20.00	.00	.00	94.02	18.70	95.79	.00	95.81	5.24	.85	36.42	8.17
	2000.000	20.00	.00	.00	94.02	15.80	95.51	.00	95.54	8.44	.94	27.02	5.44
	2100.000	10.00	.00	.00	94.02	18.70	95.79	.00	95.81	5.15	.84	36.69	8.24
	2100.000	10.00	.00	.00	94.02	15.80	95.52	.00	95.56	11.30	1.10	20.15	4.70
*	2100.100	.30	95.58	95.50	94.02	18.70	95.64	95.23	95.96	105.57	2.53	7.52	1.82
*	2100.100	.30	95.58	95.50	94.02	15.80	95.41	95.12	95.66	40.84	2.22	7.12	2.47
*	2100.200	5.40	95.58	95.50	94.02	18.70	95.97	.00	96.07	41.09	1.57	18.85	2.92
	2100.200	5.40	95.58	95.50	94.02	15.80	95.44	95.12	95.69	41.83	2.20	7.19	2.44
*	2100.300	.30	.00	.00	94.02	18.70	96.08	.00	96.09	2.41	.65	50.18	12.04
	2100.300	.30	.00	.00	94.02	15.80	95.45	.00	95.69	48.01	2.17	7.28	2.28
*	2200.000	10.00	.00	.00	94.56	18.70	96.06	.00	96.13	28.60	1.71	22.85	3.50
*	2200.000	10.00	.00	.00	94.56	15.80	95.79	95.79	95.98	79.60	2.48	12.66	1.77

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	2300.000	65.00	.00	.00	95.26	18.70	96.43	96.43	96.91	127.01	3.10	6.27	1.6
*	2300.000	65.00	.00	.00	95.26	15.80	96.34	96.34	96.76	129.17	2.91	5.63	1.3
*	2400.000	10.00	.00	.00	95.26	18.70	96.79	.00	97.05	44.01	2.26	8.28	2.82
*	2400.000	10.00	.00	.00	95.26	15.80	96.67	.00	96.90	44.51	2.12	7.46	2.37
*	2400.100	.30	97.05	97.00	95.26	18.70	96.79	.00	97.05	12.07	2.25	8.45	5.3
*	2400.100	.30	97.05	97.00	95.26	15.80	96.67	.00	96.90	11.55	2.10	7.65	4.6
	2400.200	2.50	97.05	97.00	95.26	18.70	96.80	.00	97.06	11.89	2.24	8.49	5.42
	2400.200	2.50	97.05	97.00	95.26	15.80	96.68	.00	96.90	11.29	2.09	7.71	4.7
*	2400.300	.30	.00	.00	95.26	18.70	96.80	.00	97.06	42.89	2.24	8.35	2.8
*	2400.300	.30	.00	.00	95.26	15.80	96.68	.00	96.90	42.21	2.08	7.58	2.43
*	2500.000	10.00	.00	.00	95.95	18.70	97.20	97.20	97.57	143.91	2.70	6.93	1.5
*	2500.000	10.00	.00	.00	95.95	15.80	97.10	97.10	97.45	147.42	2.60	6.07	1.3
*	2510.000	60.00	.00	.00	98.30	18.70	99.67	99.67	99.84	57.18	2.22	16.55	2.47
*	2510.000	60.00	.00	.00	98.30	15.80	99.59	99.59	99.78	65.15	2.25	13.12	1.96
*	2600.000	65.00	.00	.00	98.68	18.70	101.05	101.05	101.20	92.79	2.25	16.70	1.9
*	2600.000	65.00	.00	.00	98.68	15.80	100.49	100.49	101.46	420.60	4.37	3.62	.7
*	2700.000	10.00	.00	.00	98.68	18.70	101.12	101.12	101.37	57.25	2.63	21.28	2.47
*	2700.000	10.00	.00	.00	98.68	15.80	101.75	100.53	101.76	3.97	.81	69.79	7.9
*	2700.100	9.25	100.88	100.68	98.68	18.70	101.32	.00	101.37	42.42	1.43	33.86	2.87
	2700.100	9.25	100.88	100.68	98.68	15.80	101.76	.00	101.76	5.06	.55	70.44	7.02
*	2800.000	10.00	.00	.00	98.68	18.70	101.37	.00	101.38	1.29	.56	61.74	16.5
*	2800.000	10.00	.00	.00	98.68	15.80	101.76	.00	101.76	.31	.30	91.27	28.1
*	2810.000	80.00	.00	.00	100.99	18.70	102.18	102.18	102.45	92.97	2.62	9.54	1.94
*	2810.000	80.00	.00	.00	100.99	15.80	102.11	102.11	102.36	93.03	2.50	8.33	1.6
*	2820.000	85.00	.00	.00	103.18	18.70	104.28	104.28	104.71	149.37	2.90	6.45	1.5
*	2820.000	85.00	.00	.00	103.18	15.80	104.19	104.19	104.58	146.00	2.74	5.77	1.31
*	2900.000	70.00	.00	.00	104.63	18.70	105.74	105.74	106.15	135.91	2.82	6.71	1.6
*	2900.000	70.00	.00	.00	104.63	15.80	105.64	105.64	106.01	144.74	2.71	5.82	1.3
*	2910.000	97.00	.00	.00	107.06	18.70	108.39	108.39	108.61	70.24	2.40	12.08	2.23
*	2910.000	97.00	.00	.00	107.06	15.80	108.33	108.33	108.54	70.24	2.31	10.23	1.89
*	2920.000	100.00	.00	.00	108.98	18.70	110.17	110.17	110.36	121.50	2.57	10.84	1.7
*	2920.000	100.00	.00	.00	108.98	15.80	110.12	110.12	110.29	118.64	2.47	9.65	1.45
*	3000.000	65.00	.00	.00	110.68	18.70	111.91	111.91	112.12	130.13	2.72	10.30	1.64
*	3000.000	65.00	.00	.00	110.68	15.80	111.86	111.86	112.06	125.74	2.61	9.25	1.4

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	3010.000	80.00	.00	.00	112.68	18.70	113.83	113.83	113.98	67.07	2.16	14.08	2.28
*	3010.000	80.00	.00	.00	112.68	15.80	113.80	113.80	113.93	62.51	2.03	12.71	2.00
*	3020.000	80.00	.00	.00	114.68	18.70	115.85	115.85	116.02	71.06	2.25	13.04	2.22
*	3020.000	80.00	.00	.00	114.68	15.80	115.80	115.80	115.96	68.79	2.14	11.57	1.90
*	3100.000	55.00	.00	.00	116.60	18.70	117.67	117.67	117.96	183.76	2.50	7.87	1.38
*	3100.000	55.00	.00	.00	116.60	15.80	117.61	117.61	117.87	192.33	2.36	6.97	1.14
*	3200.000	10.00	.00	.00	116.60	18.70	117.81	117.81	118.17	150.77	2.64	7.08	1.52
	3200.000	10.00	.00	.00	116.60	15.80	117.75	117.74	118.06	145.74	2.44	6.46	1.31
*	3200.100	.30	118.93	118.89	116.60	18.70	117.82	117.81	118.17	35.54	2.63	7.12	3.14
*	3200.100	.30	118.93	118.89	116.60	15.80	117.76	.00	118.06	33.64	2.42	6.52	2.72
*	3200.200	4.40	118.93	118.89	116.60	18.70	118.01	117.81	118.22	16.45	2.06	9.08	4.61
	3200.200	4.40	118.93	118.89	116.60	15.80	117.89	.00	118.10	19.40	2.04	7.75	3.59
*	3200.300	.30	.00	.00	116.60	18.70	118.01	.00	118.23	67.20	2.07	9.02	2.28
*	3200.300	.30	.00	.00	116.60	15.80	117.89	.00	118.10	77.49	2.02	7.81	1.79
*	3300.000	10.00	.00	.00	117.08	18.70	118.57	118.57	118.85	98.31	3.11	9.29	1.89
*	3300.000	10.00	.00	.00	117.08	15.80	118.47	118.47	118.76	107.31	3.08	7.87	1.53
*	3400.000	90.00	.00	.00	116.77	18.70	119.25	.00	119.32	42.31	1.53	19.67	2.87
*	3400.000	90.00	.00	.00	116.77	15.80	119.19	.00	119.26	44.88	1.55	16.70	2.36
*	3500.000	10.00	.00	.00	116.77	18.70	119.34	119.34	119.63	25.39	2.83	25.03	3.71
*	3500.000	10.00	.00	.00	116.77	15.80	119.26	119.26	119.54	24.10	2.69	20.09	3.22
*	3500.300	8.70	118.87	118.57	116.77	18.70	119.61	.00	119.63	23.71	1.09	43.48	3.84
*	3500.300	8.70	118.87	118.57	116.77	15.80	119.52	.00	119.54	25.62	1.11	36.36	3.12
*	3600.000	10.00	.00	.00	117.65	18.70	119.63	.00	119.64	2.02	.50	54.71	13.15
*	3600.000	10.00	.00	.00	117.65	15.80	119.55	.00	119.55	2.05	.48	48.01	11.04
	-100.000	.00	.00	.00	66.95	175.00	69.08	.00	69.09	2.83	.47	457.53	104.06
	-100.000	.00	.00	.00	66.95	140.00	69.08	.00	69.09	1.82	.38	456.73	103.83
*	10.000	160.00	.00	.00	66.46	91.00	69.13	.00	69.13	1.76	.58	314.34	68.62
*	10.000	160.00	.00	.00	66.46	72.00	69.11	.00	69.11	1.16	.47	308.38	66.97
*	20.000	320.00	.00	.00	68.90	91.00	70.41	70.41	70.63	64.90	2.73	72.21	11.30
*	20.000	320.00	.00	.00	68.90	72.00	70.32	70.32	70.53	63.93	2.58	59.18	9.01
*	30.000	220.00	.00	.00	68.58	91.00	70.94	.00	70.96	6.45	1.09	205.31	35.83
*	30.000	220.00	.00	.00	68.58	72.00	70.83	.00	70.85	6.12	1.02	173.66	29.09
*	40.000	10.00	.00	.00	68.85	91.00	70.80	70.80	71.77	35.21	4.36	20.87	15.33
*	40.000	10.00	.00	.00	68.85	72.00	70.53	70.53	71.36	37.02	4.03	17.86	11.83

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	40.100	.30	71.19	70.75	68.85	91.00	70.78	70.75	71.80	93.08	4.49	20.28	9.4
	40.100	.30	71.19	70.75	68.85	72.00	70.53	70.52	71.36	36.93	4.03	17.87	11.8
	40.200	7.15	71.19	70.75	68.85	91.00	70.84	70.75	71.87	93.08	4.49	20.28	9.43
	40.200	7.15	71.19	70.75	68.85	72.00	70.80	.00	71.44	58.27	3.55	20.28	9.43
*	40.300	.30	.00	.00	68.85	91.00	72.17	70.80	72.18	.31	.34	604.45	163.4
	40.300	.30	.00	.00	68.85	72.00	70.97	.00	71.48	52.00	3.19	22.56	9.9
*	15.000	18.00	.00	.00	69.00	91.00	72.17	.00	72.18	2.29	.91	190.34	60.12
*	15.000	18.00	.00	.00	69.00	72.00	71.63	.00	71.65	3.37	.98	136.71	39.2
*	90.000	71.00	.00	.00	69.63	91.00	72.18	.00	72.21	4.68	1.05	143.12	42.0
*	90.000	71.00	.00	.00	69.63	72.00	71.65	.00	71.69	8.91	1.22	98.62	24.12
*	140.000	52.00	.00	.00	69.67	91.00	72.21	.00	72.26	9.73	1.54	117.72	29.1
*	140.000	52.00	.00	.00	69.67	72.00	71.70	.00	71.78	21.13	1.94	76.82	15.6
*	210.000	70.00	.00	.00	70.75	91.00	72.32	.00	72.45	90.42	2.99	67.32	9.57
*	210.000	70.00	.00	.00	70.75	72.00	72.09	72.09	72.30	170.45	3.65	45.37	5.5
*	310.000	95.00	.00	.00	72.17	91.00	74.03	74.03	74.87	125.63	4.06	22.41	8.1
*	310.000	95.00	.00	.00	72.17	72.00	73.79	73.79	74.51	128.09	3.77	19.09	6.36
*	410.000	104.00	.00	.00	76.30	91.00	78.45	78.45	78.90	60.14	3.31	42.59	11.7
*	410.000	104.00	.00	.00	76.30	72.00	78.26	78.26	78.70	62.06	3.13	33.11	9.1
*	510.000	114.00	.00	.00	78.42	91.00	79.83	79.83	80.19	117.25	2.74	36.32	8.40
*	510.000	114.00	.00	.00	78.42	72.00	79.69	79.69	80.03	119.87	2.61	29.66	6.58
*	585.000	73.00	.00	.00	79.15	91.00	81.29	81.29	81.96	79.95	4.02	33.26	10.1
*	585.000	73.00	.00	.00	79.15	72.00	81.04	81.04	81.67	85.24	3.81	26.51	7.8
	-300.000	.00	.00	.00	67.25	96.60	69.15	.00	69.18	16.26	1.56	156.33	23.96
	-300.000	.00	.00	.00	67.25	77.60	69.12	.00	69.15	11.41	1.29	151.31	22.9
*	60.000	325.00	.00	.00	68.70	12.60	69.96	69.96	70.13	187.19	1.84	6.86	.9
*	60.000	325.00	.00	.00	68.70	9.60	69.87	69.87	70.04	183.93	1.85	5.18	.71
*	65.000	180.00	.00	.00	70.56	12.60	71.73	.00	71.93	61.28	1.96	6.43	1.6
*	65.000	180.00	.00	.00	70.56	9.60	71.56	.00	71.72	55.96	1.74	5.51	1.2
*	70.000	10.00	.00	.00	70.56	12.60	71.79	.00	71.97	24.63	1.86	6.78	2.54
*	70.000	10.00	.00	.00	70.56	9.60	71.62	.00	71.76	22.40	1.65	5.82	2.0
*	70.300	21.00	72.44	71.81	70.56	12.60	71.79	.00	71.97	68.06	1.85	6.79	1.5
*	70.300	21.00	72.44	71.81	70.56	9.60	71.62	.00	71.76	61.88	1.65	5.83	1.22
*	75.000	10.00	.00	.00	71.77	12.60	72.64	72.64	72.99	153.82	2.64	4.78	1.0
*	75.000	10.00	.00	.00	71.77	9.60	72.51	72.51	72.81	159.46	2.45	3.91	.7

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	5.000	110.00	.00	.00	74.37	12.60	75.83	75.83	76.25	125.15	4.07	9.04	1.13
*	5.000	110.00	.00	.00	74.37	9.60	75.66	75.66	76.04	125.97	3.75	7.18	.86
*	6.000	97.00	.00	.00	76.49	12.60	77.94	77.94	78.13	83.02	2.16	10.92	1.38
*	6.000	97.00	.00	.00	76.49	9.60	77.78	77.78	78.02	107.45	2.25	6.74	.93
*	7.000	102.00	.00	.00	79.87	12.60	81.95	81.95	82.15	564.13	3.05	7.37	.53
*	7.000	102.00	.00	.00	79.87	9.60	81.88	81.88	82.05	490.37	2.78	6.35	.43
*	8.000	84.00	.00	.00	81.46	12.60	83.27	.00	83.50	73.48	2.10	5.99	1.47
*	8.000	84.00	.00	.00	81.46	9.60	83.11	.00	83.30	69.85	1.93	4.98	1.15
*	9.000	90.00	.00	.00	81.51	12.60	83.56	.00	83.57	1.81	.44	34.25	9.37
*	9.000	90.00	.00	.00	81.51	9.60	83.36	.00	83.37	1.92	.41	25.72	6.93
*	10.100	106.00	.00	.00	82.28	12.60	84.64	84.64	84.76	143.40	2.23	17.59	1.05
*	10.100	106.00	.00	.00	82.28	9.60	84.57	84.57	84.70	141.90	2.15	12.89	.81
*	11.000	58.00	.00	.00	83.02	12.60	85.21	85.21	85.34	113.18	2.25	17.02	1.18
*	11.000	58.00	.00	.00	83.02	9.60	85.14	85.14	85.28	101.76	2.07	13.21	.95
*	12.100	20.00	.00	.00	83.87	12.60	85.43	.00	85.43	10.98	.81	51.84	3.80
*	12.100	20.00	.00	.00	83.87	9.60	85.35	.00	85.36	10.13	.77	43.27	3.02
	12.300	5.00	85.42	85.12	83.87	12.60	85.43	.00	85.43	12.33	.51	51.59	3.59
*	12.300	5.00	85.42	85.12	83.87	9.60	85.44	.00	85.44	6.68	.38	52.89	3.71
*	13.000	3.00	.00	.00	83.83	12.60	85.43	85.43	85.59	97.02	2.24	17.28	1.28
*	13.000	3.00	.00	.00	83.83	9.60	85.39	85.39	85.52	77.47	1.94	14.09	1.09
	14.000	30.00	.00	.00	84.29	12.60	85.64	85.59	86.05	139.65	2.83	4.52	1.07
	14.000	30.00	.00	.00	84.29	9.60	85.58	.00	85.85	100.48	2.31	4.15	.96
	15.100	96.00	.00	.00	85.26	12.60	87.12	.00	87.21	90.67	1.99	16.42	1.32
	15.100	96.00	.00	.00	85.26	9.60	86.92	86.86	87.06	141.41	2.30	10.53	.81
*	16.000	112.00	.00	.00	87.60	12.60	88.50	88.50	88.82	148.40	2.49	5.06	1.03
	16.000	112.00	.00	.00	87.60	9.60	88.39	88.37	88.66	146.74	2.30	4.17	.79
*	17.100	36.00	.00	.00	87.99	12.60	89.83	89.83	89.93	63.61	2.17	24.67	1.58
*	17.100	36.00	.00	.00	87.99	9.60	89.77	89.77	89.88	60.67	2.07	19.03	1.23
	17.300	7.00	89.54	89.24	87.99	12.60	89.91	.00	89.93	42.49	1.10	33.67	1.93
*	17.300	7.00	89.54	89.24	87.99	9.60	89.86	.00	89.88	41.90	1.07	27.14	1.48
*	18.000	11.00	.00	.00	88.31	12.60	89.93	.00	89.93	.17	.15	180.62	30.15
*	18.000	11.00	.00	.00	88.31	9.60	89.88	.00	89.88	.12	.12	164.58	27.57
	-1300.000	.00	.00	.00	85.78	84.00	89.41	.00	89.66	26.43	2.60	50.56	16.34
	-1300.000	.00	.00	.00	85.78	68.00	89.20	.00	89.42	24.50	2.39	43.65	13.74

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	80.000	145.00	.00	.00	89.21	16.70	90.15	90.15	90.29	216.74	2.54	12.71	1.1
*	80.000	145.00	.00	.00	89.21	13.80	90.12	90.12	90.24	208.21	2.40	11.15	.9
*	85.000	10.00	.00	.00	89.21	16.70	90.97	90.97	91.73	171.90	3.86	4.33	1.27
*	85.000	10.00	.00	.00	89.21	13.80	90.80	90.80	91.46	177.66	3.61	3.82	1.04
*	85.100	.30	91.36	90.21	89.21	16.70	91.66	91.66	91.75	260.24	2.46	17.12	1.0
*	85.100	.30	91.36	90.21	89.21	13.80	91.64	91.64	91.72	247.57	2.31	15.13	.8
*	85.200	11.10	91.36	90.21	89.21	16.70	91.84	.00	91.86	37.23	1.17	34.42	2.74
*	85.200	11.10	91.36	90.21	89.21	13.80	91.81	.00	91.82	35.36	1.09	30.60	2.3
*	85.300	.30	.00	.00	89.21	16.70	91.87	.00	91.87	.18	.17	184.63	38.8
*	85.300	.30	.00	.00	89.21	13.80	91.83	.00	91.83	.14	.15	179.00	37.25
*	90.000	10.00	.00	.00	90.03	16.70	91.87	.00	91.87	.78	.32	114.37	18.8
*	90.000	10.00	.00	.00	90.03	13.80	91.83	.00	91.83	.61	.27	109.10	17.7
*	23.000	38.00	.00	.00	90.55	16.70	91.87	.00	91.88	6.30	.68	52.60	6.66
*	23.000	38.00	.00	.00	90.55	13.80	91.83	.00	91.84	5.24	.60	48.90	6.0
*	231.000	84.00	.00	.00	91.40	16.70	92.36	92.36	92.55	96.52	2.11	11.91	1.7
*	231.000	84.00	.00	.00	91.40	13.80	92.30	92.30	92.48	101.17	2.03	9.60	1.37

THIS RUN EXECUTED 18FEB96 21:06:58

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HEC-2 WATER SURFACE PROFILES

Version 4.6.0; February 1991
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

ES RIVER 1:100 YEAR EVEN

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	100.000	.00	.00	.00	66.95	175.00	69.08	.00	69.10	7.61	1.09	372.41	63.43
	100.000	.00	.00	.00	66.95	140.00	69.08	.00	69.09	4.87	.87	372.41	63.43
	300.000	250.00	.00	.00	67.25	96.60	69.16	.00	69.17	2.73	.38	286.50	58.50
	300.000	250.00	.00	.00	67.25	77.60	69.14	.00	69.14	1.97	.32	275.70	55.25
*	400.000	250.00	.00	.00	69.40	84.00	71.58	71.58	71.80	82.01	2.54	60.05	9.28
*	400.000	250.00	.00	.00	69.40	68.00	71.48	71.48	71.71	83.82	2.49	46.90	7.43
	410.000	70.00	.00	.00	71.00	84.00	72.06	.00	72.09	43.45	1.43	114.23	12.74
	410.000	70.00	.00	.00	71.00	68.00	71.99	.00	72.02	45.92	1.38	94.62	10.03
*	420.000	100.00	.00	.00	72.60	84.00	74.01	74.01	74.01	.83	.17	377.86	92.27
*	420.000	100.00	.00	.00	72.60	68.00	74.00	74.00	74.01	.55	.13	375.67	91.56
*	430.000	80.00	.00	.00	73.34	84.00	74.00	.00	74.05	48.11	1.21	82.73	12.11
*	430.000	80.00	.00	.00	73.00	68.00	73.99	.00	74.03	31.82	.98	82.20	12.06
*	500.000	60.00	.00	.00	74.25	84.00	76.39	76.39	76.39	.33	.37	494.63	147.31
*	500.000	60.00	.00	.00	74.25	68.00	76.35	76.35	76.36	.22	.30	486.97	143.68
*	600.000	18.35	76.50	76.20	74.25	84.00	76.89	.00	76.89	.17	.21	606.45	201.12
*	600.000	18.35	76.50	76.20	74.25	68.00	77.09	.00	77.09	.09	.16	651.78	225.23
	700.000	10.00	.00	.00	73.30	84.00	76.89	.00	76.89	.18	.19	438.35	200.60
	700.000	10.00	.00	.00	73.30	68.00	77.09	.00	77.09	.09	.14	482.38	229.44
*	705.000	1.00	.00	.00	74.50	84.00	76.76	.00	76.95	33.51	1.94	45.23	14.51
*	705.000	1.00	.00	.00	74.50	68.00	77.03	.00	77.11	10.97	1.26	58.90	20.53
	710.000	12.00	.00	.00	74.60	84.00	76.75	.00	77.02	53.69	2.31	36.69	11.46
	710.000	12.00	.00	.00	74.60	68.00	77.03	.00	77.14	17.57	1.50	46.73	16.22

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	733.000	46.00	.00	.00	75.50	84.00	77.33	77.33	77.94	85.62	3.73	26.99	9.08
*	733.000	46.00	.00	.00	75.50	68.00	77.14	77.14	77.70	89.00	3.52	22.70	7.21
*	800.000	108.00	.00	.00	77.00	84.00	79.12	79.12	79.55	72.09	3.35	35.13	9.89
*	800.000	108.00	.00	.00	77.00	68.00	78.95	78.95	79.37	74.33	3.23	28.59	7.89
*	810.000	105.00	.00	.00	79.00	84.00	80.80	80.80	81.21	87.33	3.53	33.58	8.99
*	810.000	105.00	.00	.00	79.00	68.00	80.68	80.68	81.05	86.00	3.32	28.81	7.33
*	900.000	60.00	.00	.00	80.83	84.00	83.25	83.25	83.92	75.96	4.48	26.53	9.64
*	900.000	60.00	.00	.00	80.83	68.00	83.01	83.01	83.65	79.20	4.27	21.94	7.6[illegible]
*	1000.000	10.00	.00	.00	80.83	84.00	83.76	.00	84.08	29.65	3.18	38.60	15.41
*	1000.000	10.00	.00	.00	80.83	68.00	83.49	.00	83.79	31.65	3.09	31.80	12.09
*	1000.100	.30	83.79	82.73	80.83	84.00	84.73	84.73	85.12	132.43	3.56	33.85	7.30
*	1000.100	.30	83.79	82.73	80.83	68.00	84.64	84.64	84.99	124.69	3.36	29.31	6.09
*	1000.200	5.60	83.79	82.73	80.83	84.00	85.10	84.73	85.23	36.42	2.07	55.61	13.92
*	1000.200	5.60	83.79	82.73	80.83	68.00	84.98	.00	85.09	35.34	1.97	47.90	11.44
*	1000.300	.30	.00	.00	80.83	84.00	85.21	.00	85.26	3.11	1.35	104.12	47.69
*	1000.300	.30	.00	.00	80.83	68.00	85.09	.00	85.12	2.43	1.17	95.82	43.59
*	1100.000	10.00	.00	.00	82.60	84.00	85.04	.00	85.44	59.49	2.81	30.49	10.89
*	1100.000	10.00	.00	.00	82.60	68.00	84.96	.00	85.26	46.34	2.41	28.53	9.99
*	1110.000	85.00	.00	.00	83.95	84.00	86.11	86.11	86.69	81.24	3.92	28.63	9.32
*	1110.000	85.00	.00	.00	83.95	68.00	85.93	85.93	86.46	82.67	3.70	24.07	7.48
*	1200.000	72.00	.00	.00	85.45	84.00	87.67	87.67	88.35	85.76	4.10	25.13	9.0[illegible]
*	1200.000	72.00	.00	.00	85.45	68.00	87.47	87.47	88.08	86.05	3.84	21.61	7.33
*	1210.000	55.00	.00	.00	86.45	84.00	88.89	88.89	89.52	69.55	3.95	27.36	10.07
*	1210.000	55.00	.00	.00	86.45	68.00	88.62	88.62	89.27	79.62	3.89	22.08	7.62
	1300.000	45.00	.00	.00	86.95	84.00	89.41	.00	89.81	46.80	3.27	34.17	12.28
	1300.000	45.00	.00	.00	86.95	68.00	89.20	.00	89.58	48.94	3.13	28.66	9.72
*	1310.000	75.00	.00	.00	88.95	43.80	90.63	90.63	91.10	86.30	3.35	20.22	4.71
*	1310.000	75.00	.00	.00	88.95	35.60	90.53	90.53	90.93	78.39	3.05	17.33	4.02
*	1400.000	75.00	.00	.00	89.21	43.80	91.24	.00	91.50	35.13	2.55	27.16	7.39
*	1400.000	75.00	.00	.00	89.21	35.60	91.07	.00	91.31	36.33	2.43	21.42	5.91
	1500.000	10.00	.00	.00	89.21	43.80	91.32	.00	91.54	29.69	2.40	29.72	8.04
	1500.000	10.00	.00	.00	89.21	35.60	91.16	.00	91.36	28.63	2.23	24.28	6.65
	1500.100	.30	91.60	91.08	88.69	43.80	91.26	90.78	91.60	41.81	2.86	29.93	6.77
	1500.100	.30	91.60	91.08	88.69	35.60	91.14	.00	91.38	28.47	2.36	28.32	6.67

THIS RUN EXECUTED 8FEB96 11:22:21

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.0; February 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

OND BROOK 1:100 YEAR EVE

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	4000.000	.00	.00	.00	66.65	258.00	69.08	.00	69.09	2.76	.46	608.98	155.21
	4000.000	.00	.00	.00	66.65	201.00	69.08	.00	69.09	1.68	.36	608.98	155.21
*	4100.000	97.00	.00	.00	66.93	83.00	68.92	.00	69.22	71.96	2.70	44.21	9.78
*	4100.000	97.00	.00	.00	66.93	61.00	69.02	.00	69.15	26.89	1.75	51.74	11.76
*	4200.000	75.00	.00	.00	67.50	83.00	69.35	.00	69.45	14.84	1.59	75.29	21.55
*	4200.000	75.00	.00	.00	67.50	61.00	69.21	.00	69.28	11.60	1.32	64.40	17.91
	4300.000	170.00	.00	.00	67.60	83.00	69.58	.00	69.67	12.24	1.52	80.05	23.73
	4300.000	170.00	.00	.00	67.60	61.00	69.39	.00	69.45	10.27	1.30	67.69	19.04
*	4310.000	95.00	.00	.00	68.82	83.00	70.23	70.23	70.68	85.99	3.19	35.60	8.95
*	4310.000	95.00	.00	.00	68.82	61.00	70.00	70.00	70.42	94.74	2.97	25.61	6.27
*	4320.000	120.00	.00	.00	72.42	83.00	74.15	74.15	74.69	84.72	3.56	33.38	9.02
*	4320.000	120.00	.00	.00	72.42	61.00	73.88	73.88	74.37	90.55	3.30	24.58	6.41
*	4330.000	120.00	.00	.00	75.62	83.00	76.84	76.84	77.39	110.27	3.31	26.88	7.90
*	4330.000	120.00	.00	.00	75.62	61.00	76.61	76.61	77.08	121.60	3.03	20.89	5.53
*	4340.000	104.00	.00	.00	77.92	83.00	79.11	79.11	79.46	137.76	2.60	31.90	7.07
*	4340.000	104.00	.00	.00	77.92	61.00	78.96	78.96	79.26	147.29	2.44	24.98	5.03
*	4400.000	90.00	.00	.00	78.24	83.00	80.08	80.08	80.76	100.75	4.30	27.61	8.27
	4400.000	90.00	.00	.00	78.24	61.00	79.82	.00	80.37	96.95	3.81	22.41	6.20
*	4500.000	10.00	.00	.00	78.91	83.00	81.24	81.24	82.38	93.00	4.73	17.55	8.61
*	4500.000	10.00	.00	.00	78.91	61.00	80.82	80.82	81.75	99.58	4.27	14.29	6.11
*	4500.100	.30	82.42	81.47	78.91	83.00	81.25	81.25	82.38	16.84	4.71	17.63	20.23
*	4500.100	.30	82.42	81.47	78.91	61.00	80.82	80.82	81.75	18.29	4.27	14.29	14.26

Run Date: 8FEB96 Run Time: 11:22:20 HMVersion: 6.20 Data File: RAYMOND6.HC2

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	4500.200	7.15	82.42	81.47	78.91	83.00	81.45	81.25	82.41	12.81	4.34	19.13	23.19
	4500.200	7.15	82.42	81.47	78.91	61.00	81.04	.00	81.78	12.45	3.80	16.04	17.29
	4500.300	.30	.00	.00	78.91	83.00	81.46	.00	82.41	12.68	4.32	19.19	23.31
	4500.300	.30	.00	.00	78.91	61.00	81.04	.00	81.78	12.50	3.81	16.02	17.26
*	10.000	10.00	.00	.00	79.23	83.00	82.45	.00	82.51	4.41	1.05	83.72	39.53
*	10.000	10.00	.00	.00	79.23	61.00	81.80	.00	81.86	5.91	1.05	58.18	25.08
	60.000	51.00	.00	.00	80.51	83.00	82.48	.00	82.54	8.17	1.08	94.03	29.03
*	60.000	51.00	.00	.00	80.51	61.00	81.82	.00	81.94	35.76	1.56	42.76	10.20
*	140.000	78.00	.00	.00	80.90	83.00	82.46	82.46	82.88	84.26	2.99	34.80	9.04
*	140.000	78.00	.00	.00	80.90	61.00	82.25	82.25	82.64	93.16	2.81	24.90	6.32
	210.000	74.00	.00	.00	81.30	83.00	83.04	.00	83.37	53.26	2.61	34.95	11.37
*	210.000	74.00	.00	.00	81.30	61.00	82.86	.00	83.11	44.41	2.21	29.02	9.15
	320.000	116.00	.00	.00	82.03	83.00	83.69	.00	83.99	51.32	2.45	37.09	11.59
	320.000	116.00	.00	.00	82.03	61.00	83.44	.00	83.70	57.52	2.29	28.30	8.04
	440.000	123.00	.00	.00	82.93	83.00	84.38	.00	84.63	53.20	2.25	39.34	11.38
	440.000	123.00	.00	.00	82.93	61.00	84.17	.00	84.38	52.99	2.04	31.13	8.38

Replace
by values
in Appendix F

THIS RUN EXECUTED 8FEB96 11:33:39

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.0; February 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

OND BROOK 1:100 YEAR EVE

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	4000.000	.00	.00	.00	66.65	258.00	69.08	69.03	69.62	47.00	3.66	113.98	37.63
	4000.000	.00	.00	.00	66.65	201.00	69.08	.00	69.41	28.53	2.85	113.98	37.63
	4100.000	97.00	.00	.00	66.93	83.00	69.86	.00	69.90	5.92	1.14	117.74	34.12
*	4100.000	97.00	.00	.00	66.93	61.00	69.58	.00	69.61	5.89	1.03	94.26	25.14
	4200.000	75.00	.00	.00	67.50	83.00	69.90	.00	69.94	4.52	1.05	124.22	39.06
	4200.000	75.00	.00	.00	67.50	61.00	69.62	.00	69.65	4.31	.94	97.81	29.39
	4300.000	170.00	.00	.00	67.60	83.00	69.97	.00	70.02	5.66	1.17	106.75	34.90
	4300.000	170.00	.00	.00	67.60	61.00	69.69	.00	69.73	5.25	1.03	87.28	26.62
*	4310.000	95.00	.00	.00	68.82	83.00	70.23	70.23	70.68	85.91	3.19	35.62	8.96
*	4310.000	95.00	.00	.00	68.82	61.00	70.00	70.00	70.42	93.41	2.96	25.78	6.31
*	4320.000	120.00	.00	.00	72.42	83.00	74.15	74.15	74.69	84.73	3.56	33.38	9.02
*	4320.000	120.00	.00	.00	72.42	61.00	73.88	73.88	74.37	90.55	3.30	24.58	6.41
*	4330.000	120.00	.00	.00	75.62	83.00	76.84	76.84	77.39	110.27	3.31	26.88	7.90
*	4330.000	120.00	.00	.00	75.62	61.00	76.61	76.61	77.08	121.60	3.03	20.89	5.53
*	4340.000	104.00	.00	.00	77.92	83.00	79.11	79.11	79.46	137.76	2.60	31.90	7.07
*	4340.000	104.00	.00	.00	77.92	61.00	78.96	78.96	79.26	147.29	2.44	24.98	5.03
*	4400.000	90.00	.00	.00	78.24	83.00	80.08	80.08	80.76	100.75	4.30	27.61	8.27
	4400.000	90.00	.00	.00	78.24	61.00	79.82	.00	80.37	96.95	3.81	22.41	6.20
*	4500.000	10.00	.00	.00	78.91	83.00	81.24	81.24	82.38	93.00	4.73	17.55	8.61
*	4500.000	10.00	.00	.00	78.91	61.00	80.82	80.82	81.75	99.58	4.27	14.29	6.11
*	4500.100	.30	82.42	81.47	78.91	83.00	81.25	81.25	82.38	16.84	4.71	17.63	20.23
*	4500.100	.30	82.42	81.47	78.91	61.00	80.82	80.82	81.75	18.29	4.27	14.29	14.26

Run Date: 8FEB96 Run Time: 11:33:38 HMVersion: 6.20 Data File: RAYMDYKE.HC2

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	4500.200	7.15	82.42	81.47	78.91	83.00	81.45	81.25	82.41	12.81	4.34	19.13	23.19
	4500.200	7.15	82.42	81.47	78.91	61.00	81.04	.00	81.78	12.45	3.80	16.04	17.2[illegible]
	4500.300	.30	.00	.00	78.91	83.00	81.46	.00	82.41	12.68	4.32	19.19	23.31
	4500.300	.30	.00	.00	78.91	61.00	81.04	.00	81.78	12.50	3.81	16.02	17.26
*	10.000	10.00	.00	.00	79.23	83.00	82.45	.00	82.51	4.41	1.05	83.72	39.5[illegible]
*	10.000	10.00	.00	.00	79.23	61.00	81.80	.00	81.86	5.91	1.05	58.18	25.0[illegible]
	60.000	51.00	.00	.00	80.51	83.00	82.48	.00	82.54	8.17	1.08	94.03	29.03
*	60.000	51.00	.00	.00	80.51	61.00	81.82	.00	81.94	35.76	1.56	42.76	10.2[illegible]
*	140.000	78.00	.00	.00	80.90	83.00	82.46	82.46	82.88	84.26	2.99	34.80	9.0[illegible]
*	140.000	78.00	.00	.00	80.90	61.00	82.25	82.25	82.64	93.16	2.81	24.90	6.32
	210.000	74.00	.00	.00	81.30	83.00	83.04	.00	83.37	53.26	2.61	34.95	11.3[illegible]
*	210.000	74.00	.00	.00	81.30	61.00	82.86	.00	83.11	44.41	2.21	29.02	9.1[illegible]
	320.000	116.00	.00	.00	82.03	83.00	83.69	.00	83.99	51.32	2.45	37.09	11.59
	320.000	116.00	.00	.00	82.03	61.00	83.44	.00	83.70	57.52	2.29	28.30	8.04
	440.000	123.00	.00	.00	82.93	83.00	84.38	.00	84.63	53.20	2.25	39.34	11.3[illegible]
	440.000	123.00	.00	.00	82.93	61.00	84.17	.00	84.38	52.99	2.04	31.13	8.3[illegible]

THIS RUN EXECUTED 4MAR96 9:16:17

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.0; February 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

100 YR EVENT

SUMMARY PRINTOUT

	SECNO	Q	CWSEL	CRIWS	EG	VCH	TOPWID	DEPTH	ELMIN	XLCH	ELTRD	ELLC
	.000	101.00	.62	.00	.97	2.63	25.48	1.99	-1.37	.00	.00	.00
	.000	76.00	.62	.00	.82	1.98	25.48	1.99	-1.37	.00	.00	.00
*	2.000	101.00	.62	.00	.97	2.62	25.25	1.99	-1.37	.10	1.89	1.63
*	2.000	76.00	.62	.00	.82	1.98	25.24	1.99	-1.37	.10	1.89	1.63
	3.000	101.00	.67	.00	1.00	2.54	25.35	2.04	-1.37	10.00	1.89	1.63
	3.000	76.00	.64	.00	.83	1.97	25.26	2.01	-1.37	10.00	1.89	1.63
	4.000	101.00	.67	.00	1.00	2.54	25.35	2.04	-1.37	.10	.00	.00
	4.000	76.00	.64	.00	.83	1.95	25.28	2.01	-1.37	.10	.00	.00
*	40.000	101.00	2.65	2.65	2.98	2.71	62.21	2.25	.40	36.00	.00	.00
*	40.000	76.00	2.51	2.51	2.82	2.56	62.02	2.11	.40	36.00	.00	.00
*	100.000	101.00	3.77	.00	3.84	1.19	103.54	3.29	.48	48.00	.00	.00
*	100.000	76.00	3.63	3.23	3.69	1.06	101.01	3.15	.48	48.00	.00	.00
*	148.000	101.00	4.81	4.81	5.08	2.31	86.17	4.01	.80	50.00	.00	.00
*	148.000	76.00	4.69	4.69	4.95	2.29	82.16	3.89	.80	50.00	.00	.00
*	190.000	101.00	7.69	.00	8.00	2.45	42.16	1.29	6.40	68.00	.00	.00
*	190.000	76.00	7.58	.00	7.80	2.06	41.50	1.18	6.40	68.00	.00	.00
*	225.000	101.00	8.44	.00	8.62	1.87	38.79	1.84	6.60	35.00	.00	.00
*	225.000	76.00	8.21	.00	8.35	1.68	36.81	1.61	6.60	35.00	.00	.00
*	265.000	101.00	9.84	9.84	10.56	3.76	18.69	3.17	6.67	38.00	.00	.00
*	265.000	76.00	9.54	9.54	10.18	3.55	17.66	2.87	6.67	38.00	.00	.00
*	315.000	101.00	13.86	13.86	14.40	3.25	28.85	1.86	12.00	47.00	.00	.00
*	315.000	76.00	13.62	13.62	14.11	3.09	25.46	1.62	12.00	47.00	.00	.00

	SECNO	Q	CWSEL	CRIWS	EG	VCH	TOPWID	DEPTH	ELMIN	XLCH	ELTRD	ELLC
*	345.000	101.00	17.81	17.81	18.45	3.55	23.73	2.65	15.16	56.00	.00	.00
*	345.000	76.00	17.58	17.58	18.13	3.28	22.13	2.42	15.16	56.00	.00	.00
*	347.000	101.00	17.82	17.80	18.45	3.53	23.77	2.66	15.16	.10	18.22	20.18
*	347.000	76.00	17.59	17.58	18.13	3.26	22.17	2.43	15.16	.10	18.22	20.18
	348.000	101.00	18.12	.00	18.53	2.85	26.18	2.96	15.16	10.00	18.22	20.18
*	348.000	76.00	17.89	.00	18.20	2.50	24.40	2.73	15.16	10.00	18.22	20.18
*	349.000	101.00	18.16	.00	18.54	2.73	26.50	3.00	15.16	.10	.00	.00
*	349.000	76.00	17.88	.00	18.21	2.51	24.33	2.72	15.16	.10	.00	.00
*	375.000	101.00	20.61	20.61	21.40	3.95	16.58	2.29	18.32	28.00	.00	.00
*	375.000	76.00	20.30	20.30	20.99	3.67	15.43	1.98	18.32	28.00	.00	.00
	410.000	101.00	21.58	.00	22.15	3.35	14.97	2.94	18.64	22.00	.00	.00
*	410.000	76.00	21.26	.00	21.71	2.98	14.09	2.62	18.64	22.00	.00	.00

APPENDIX F

Raymond Brook Flood Flow Sensitivity Analysis

APPENDIX F

Raymond Brook Flood Flow Sensitivity Analysis

Note: Flood levels on Raymond Brook upstream of the Southern Shore Highway are relatively sensitive to modest increases (i.e., +15%) in flood flow. For this reason, the appended values of water level (column titled CWSEL) are recommended for use in this area (section 10 to section 410) and have been plotted on the flood risk mapping sheets prepared in this study.

THIS RUN EXECUTED 10MAR96 9:45:03

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HEC-2 WATER SURFACE PROFILES

Version 4.6.0; February 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

OND BROOK 1:100 YEAR EVE

SUMMARY PRINTOUT TABLE 150

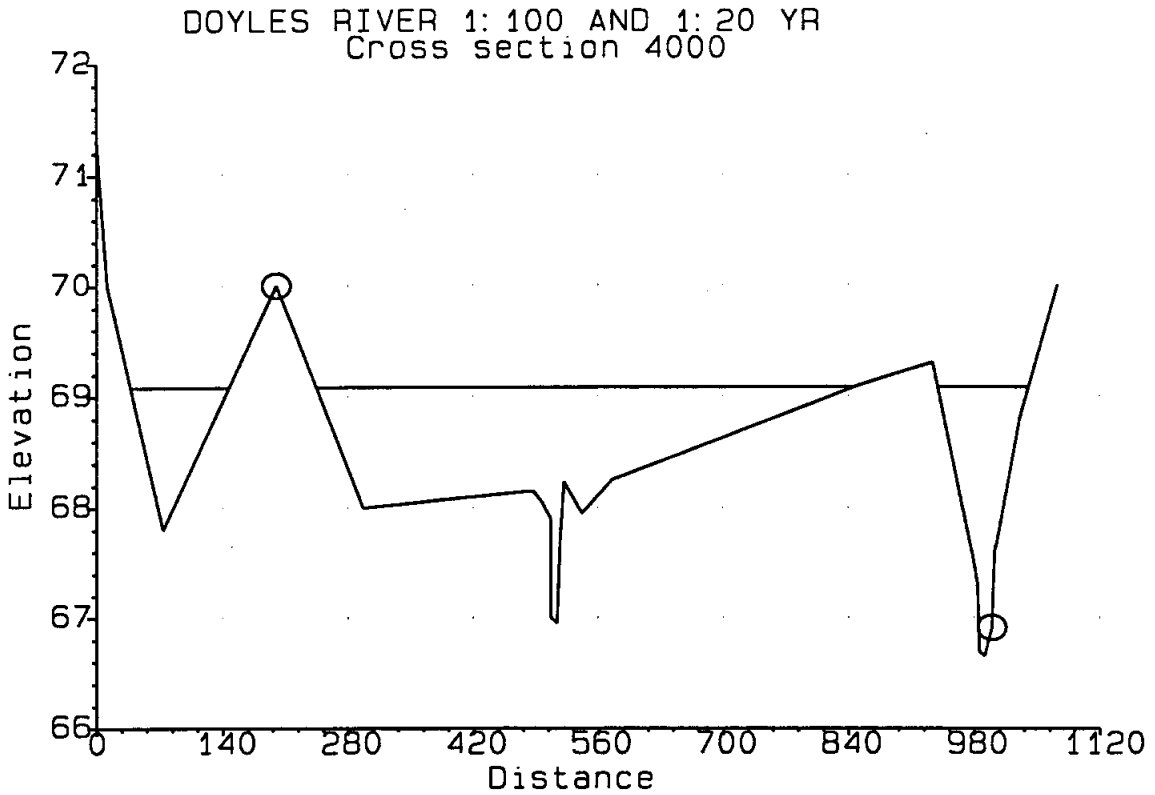
	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	4000.000	.00	.00	.00	66.65	296.70	69.08	.00	69.09	3.65	.53	608.98	155.21
	4000.000	.00	.00	.00	66.65	231.15	69.08	.00	69.09	2.22	.41	608.98	155.21
*	4100.000	97.00	.00	.00	66.93	95.45	68.96	68.96	69.32	84.16	2.98	46.59	10.40
*	4100.000	97.00	.00	.00	66.93	70.15	68.99	.00	69.17	40.11	2.10	49.14	11.08
*	4200.000	75.00	.00	.00	67.50	95.45	69.46	.00	69.57	15.08	1.67	84.14	24.58
*	4200.000	75.00	.00	.00	67.50	70.15	69.26	.00	69.34	13.44	1.46	68.11	19.14
	4300.000	170.00	.00	.00	67.60	95.45	69.69	.00	69.79	12.72	1.61	87.64	26.76
	4300.000	170.00	.00	.00	67.60	70.15	69.47	.00	69.54	11.30	1.40	72.64	20.87
*	4310.000	95.00	.00	.00	68.82	95.45	70.34	70.34	70.81	83.26	3.30	41.12	10.46
*	4310.000	95.00	.00	.00	68.82	70.15	70.10	70.10	70.53	90.23	3.07	29.80	7.39
*	4320.000	120.00	.00	.00	72.42	95.45	74.27	74.27	74.84	82.82	3.70	38.21	10.49
*	4320.000	120.00	.00	.00	72.42	70.15	74.00	74.00	74.51	87.60	3.42	28.28	7.50
*	4330.000	120.00	.00	.00	75.62	95.45	76.95	76.95	77.55	108.94	3.48	29.88	9.15
*	4330.000	120.00	.00	.00	75.62	70.15	76.71	76.71	77.21	116.91	3.16	23.35	6.49
*	4340.000	104.00	.00	.00	77.92	95.45	79.18	79.18	79.56	137.25	2.71	35.21	8.15
*	4340.000	104.00	.00	.00	77.92	70.15	79.03	79.03	79.35	140.09	2.49	28.12	5.93
*	4400.000	90.00	.00	.00	78.24	95.45	80.31	80.31	80.94	83.32	4.23	34.00	10.46
*	4400.000	90.00	.00	.00	78.24	70.15	79.89	79.89	80.53	108.91	4.16	23.75	6.72
*	4500.000	10.00	.00	.00	78.91	95.45	81.46	81.46	82.71	90.15	4.95	19.27	10.05
*	4500.000	10.00	.00	.00	78.91	70.15	81.00	81.00	82.02	96.55	4.47	15.69	7.14
*	4500.100	.30	82.42	81.47	78.91	95.45	81.47	81.47	82.71	41.22	4.94	19.33	14.87
*	4500.100	.30	82.42	81.47	78.91	70.15	81.00	81.00	82.02	17.73	4.47	15.69	16.66

Run Date: 10MAR96 Run Time: 9:45:02 HMVersion: 6.20 Data File: RAYMOND6.Q15

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	4500.200	7.15	82.42	81.47	78.91	95.45	81.50	81.47	82.74	41.22	4.94	19.33	14.87
	4500.200	7.15	82.42	81.47	78.91	70.15	81.22	.00	82.05	12.68	4.04	17.35	19.7
*	4500.300	.30	.00	.00	78.91	95.45	81.84	81.45	82.77	10.12	4.27	22.33	30.0u
	4500.300	.30	.00	.00	78.91	70.15	81.22	.00	82.05	12.62	4.04	17.37	19.74
*	10.000	10.00	.00	.00	79.23	95.45	82.82	.00	82.87	3.39	1.01	110.71	51.8
*	10.000	10.00	.00	.00	79.23	70.15	82.08	.00	82.14	5.25	1.05	66.94	30.6
	60.000	51.00	.00	.00	80.51	95.45	82.85	.00	82.89	4.77	.95	129.84	43.70
*	60.000	51.00	.00	.00	80.51	70.15	82.11	.00	82.19	17.02	1.29	62.74	17.0'
*	140.000	78.00	.00	.00	80.90	95.45	82.77	.00	83.04	45.76	2.51	50.70	14.1
*	140.000	78.00	.00	.00	80.90	70.15	82.35	82.35	82.74	85.48	2.85	29.68	7.5J
	210.000	74.00	.00	.00	81.30	95.45	83.07	.00	83.49	65.42	2.93	36.11	11.8
	210.000	74.00	.00	.00	81.30	70.15	82.94	.00	83.22	48.76	2.39	31.39	10.0
	320.000	116.00	.00	.00	82.03	95.45	83.84	.00	84.14	47.05	2.50	42.79	13.92
	320.000	116.00	.00	.00	82.03	70.15	83.55	.00	83.82	54.30	2.36	32.06	9.52
	440.000	123.00	.00	.00	82.93	95.45	84.48	.00	84.76	52.87	2.35	43.74	13.1
	440.000	123.00	.00	.00	82.93	70.15	84.26	.00	84.49	53.70	2.14	34.43	9.5.

APPENDIX G

Cross-Section Plots


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 4000
Elevation
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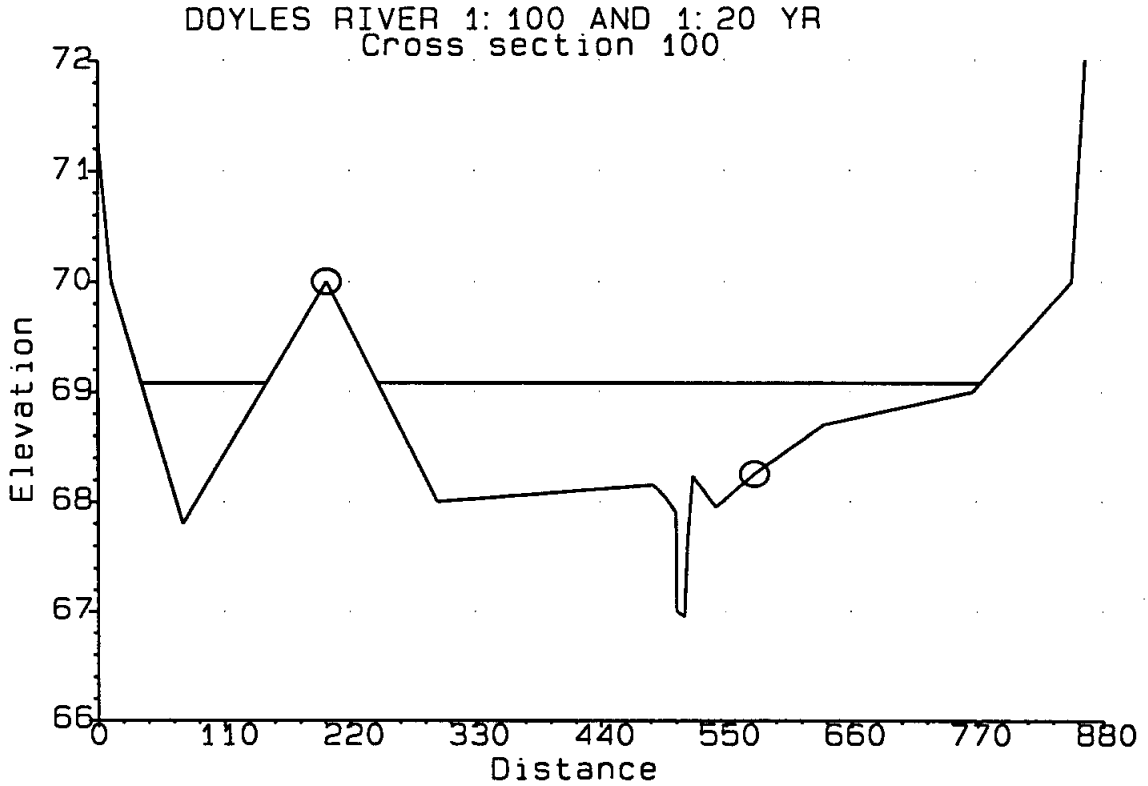
71
70
69
68
67
66
0
140
280
420
560
700
840
980
1120
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 100
Elevation
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71
70
69
68
67
66
0
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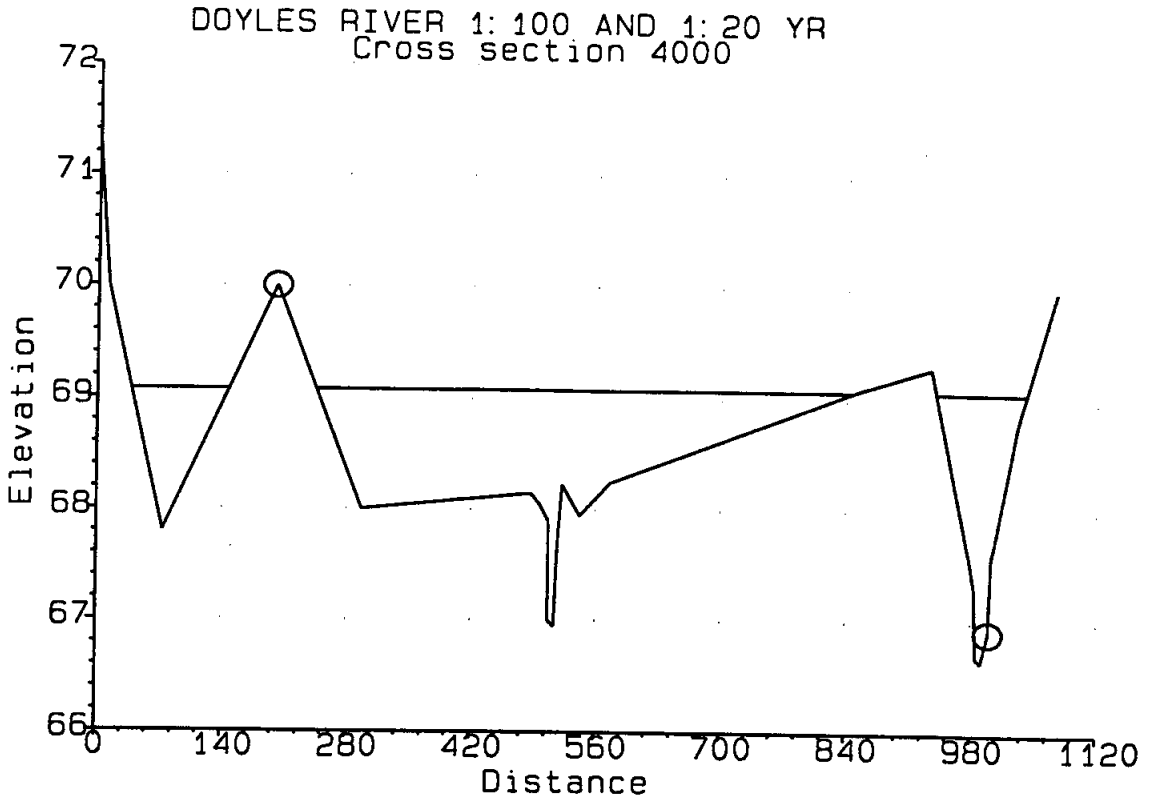
220
330
440
550
660
770
880
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 4000
Elevation
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71
70
69
68
67
66
0
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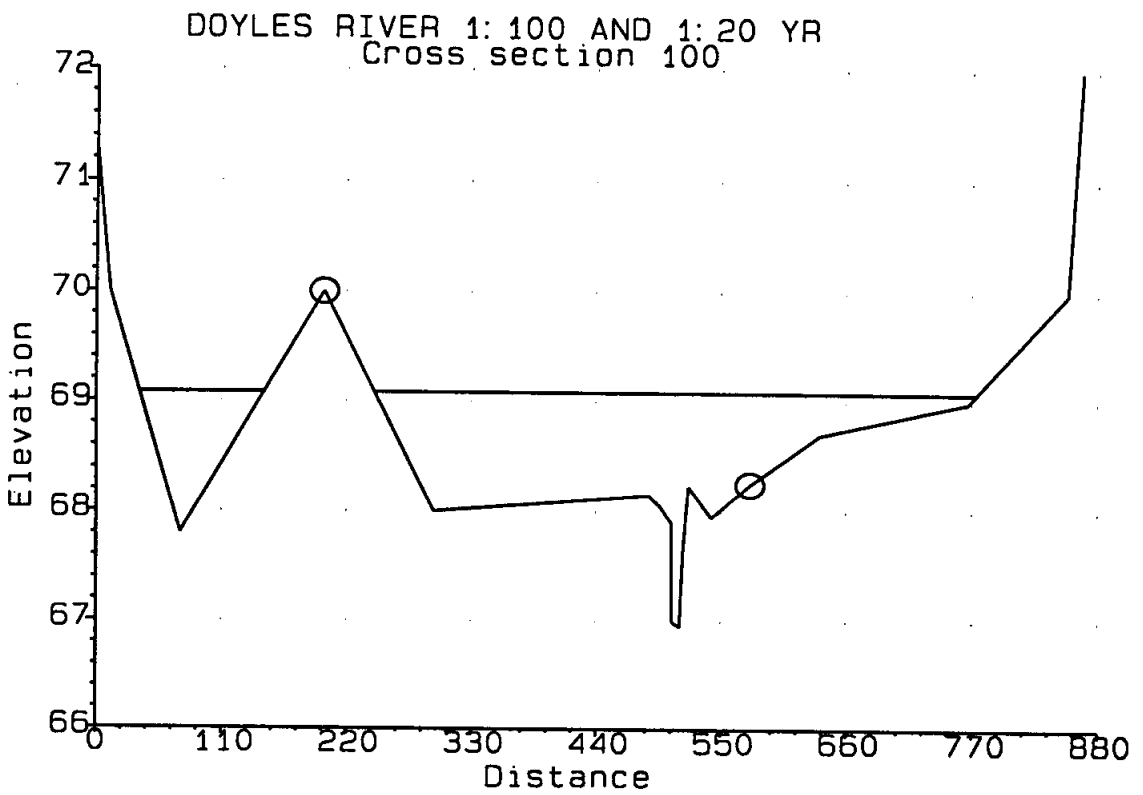
280
420
560
700
840
980
1120
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 100
Elevation
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71
70
69
68
67
66
0
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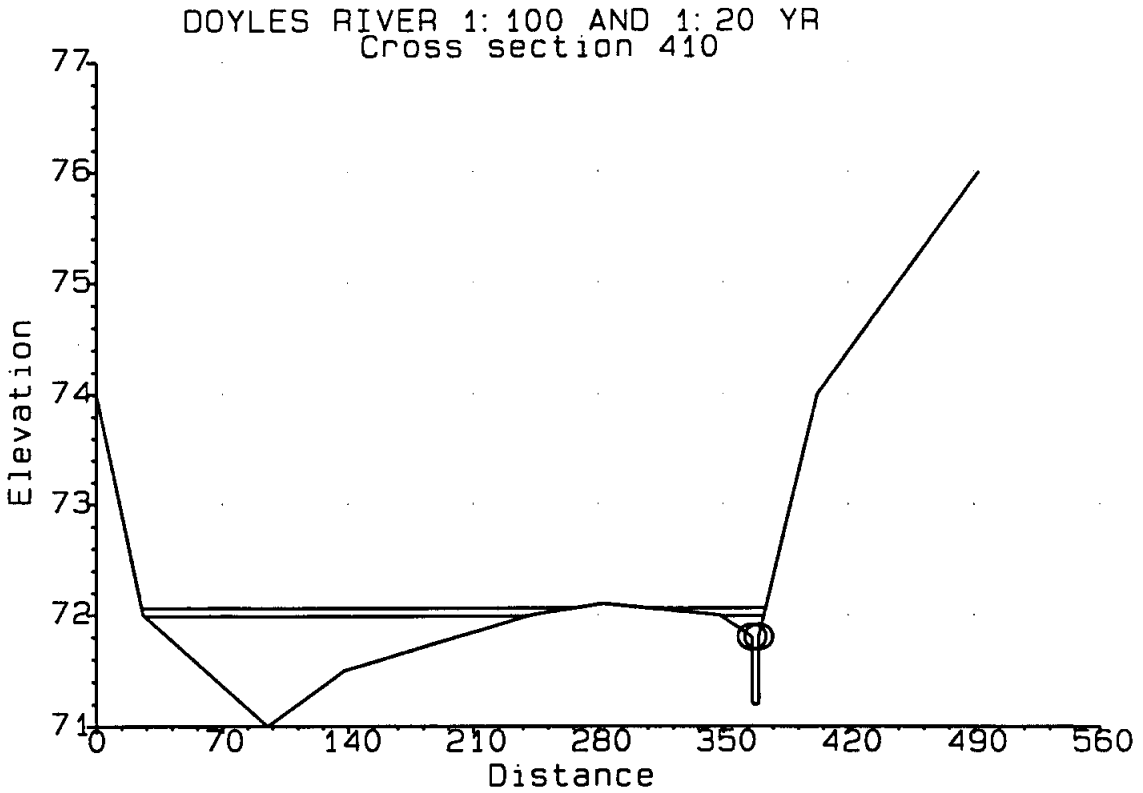
220
330
440
550
660
770
880
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 410
Elevation
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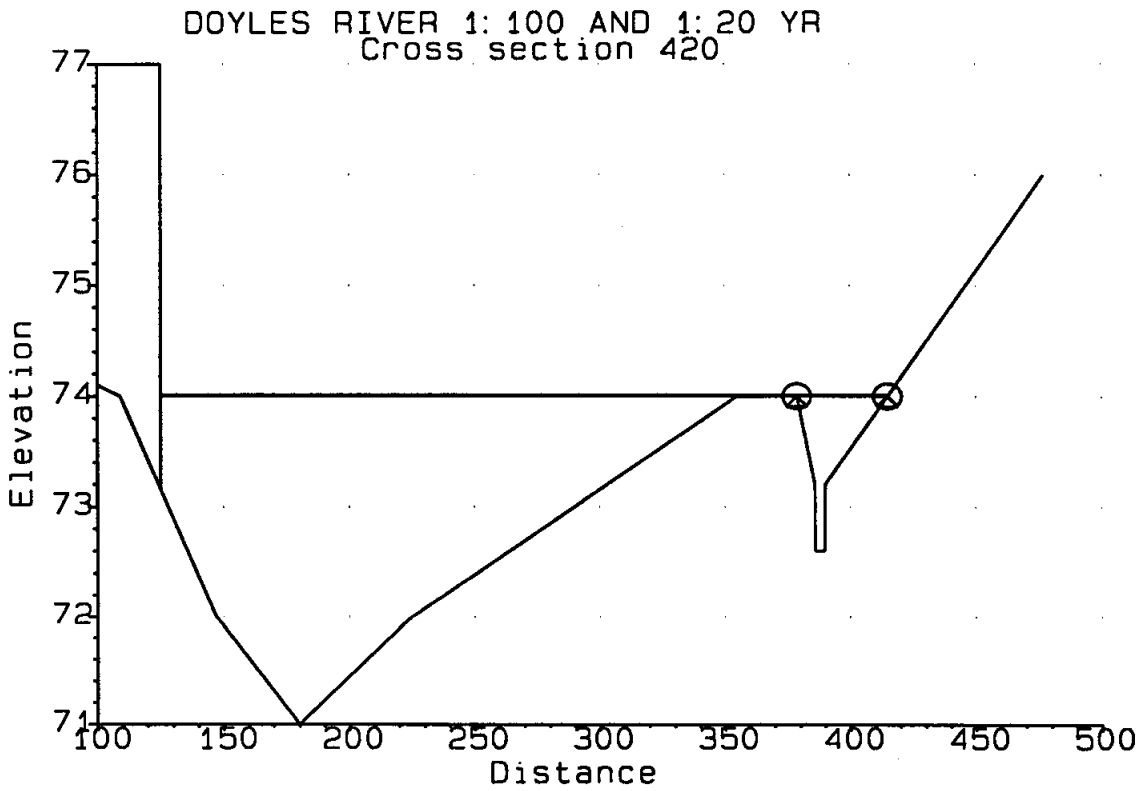
76
75
74
73
72
71
0
70
140
210
280
350
420
490
560
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 420
Elevation
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75
74
73
72
71
100
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200
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400
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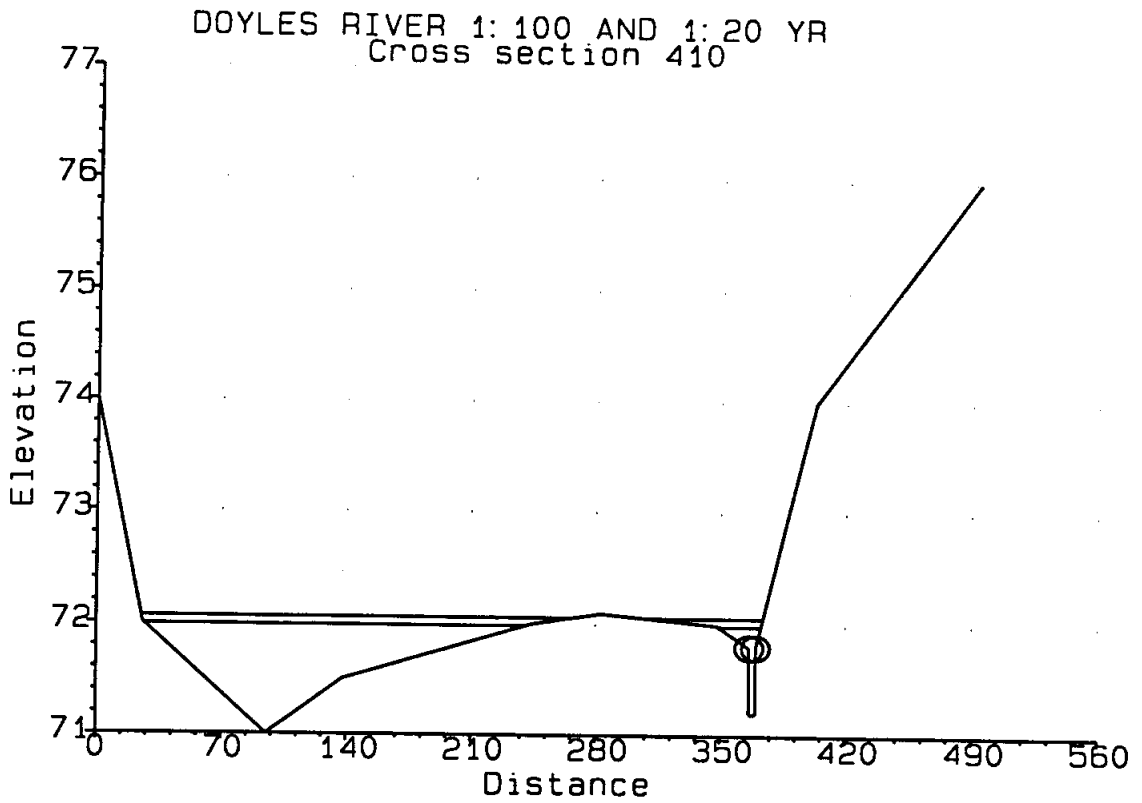
500
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 410
Elevation
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75
74
73
72
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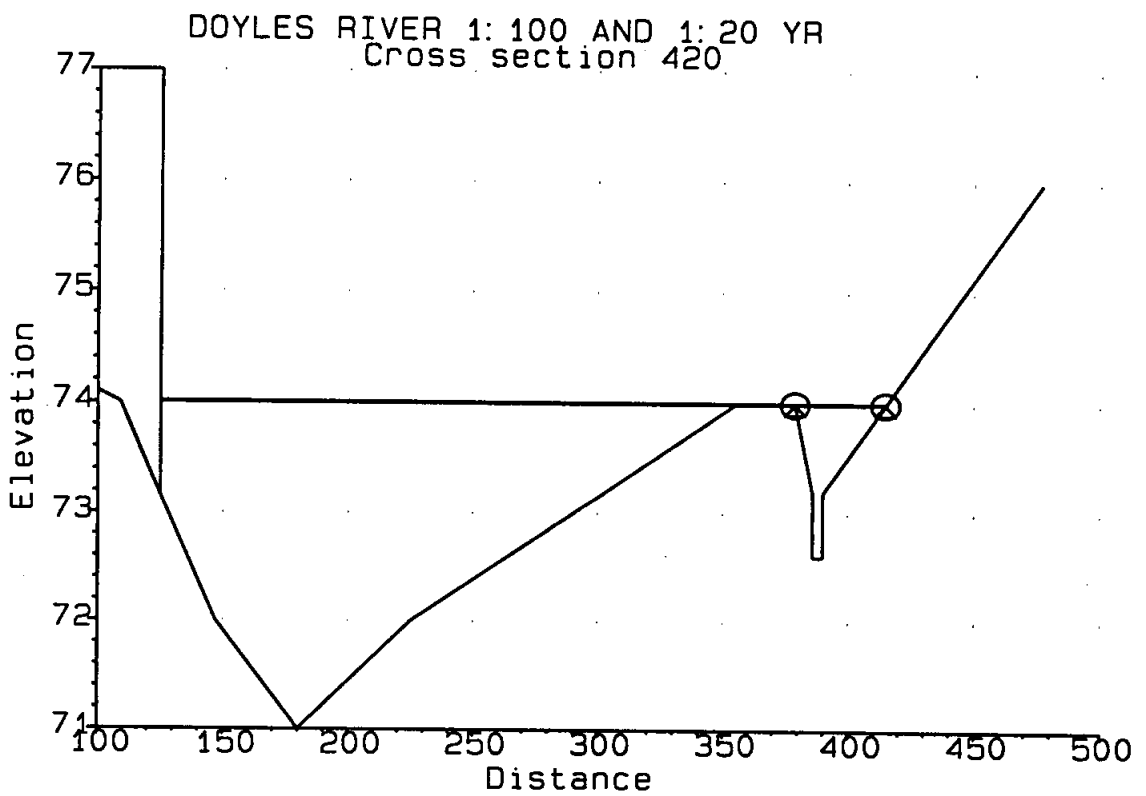
490
560
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 420
Elevation
77
76
75
74
73
72
71
100
150
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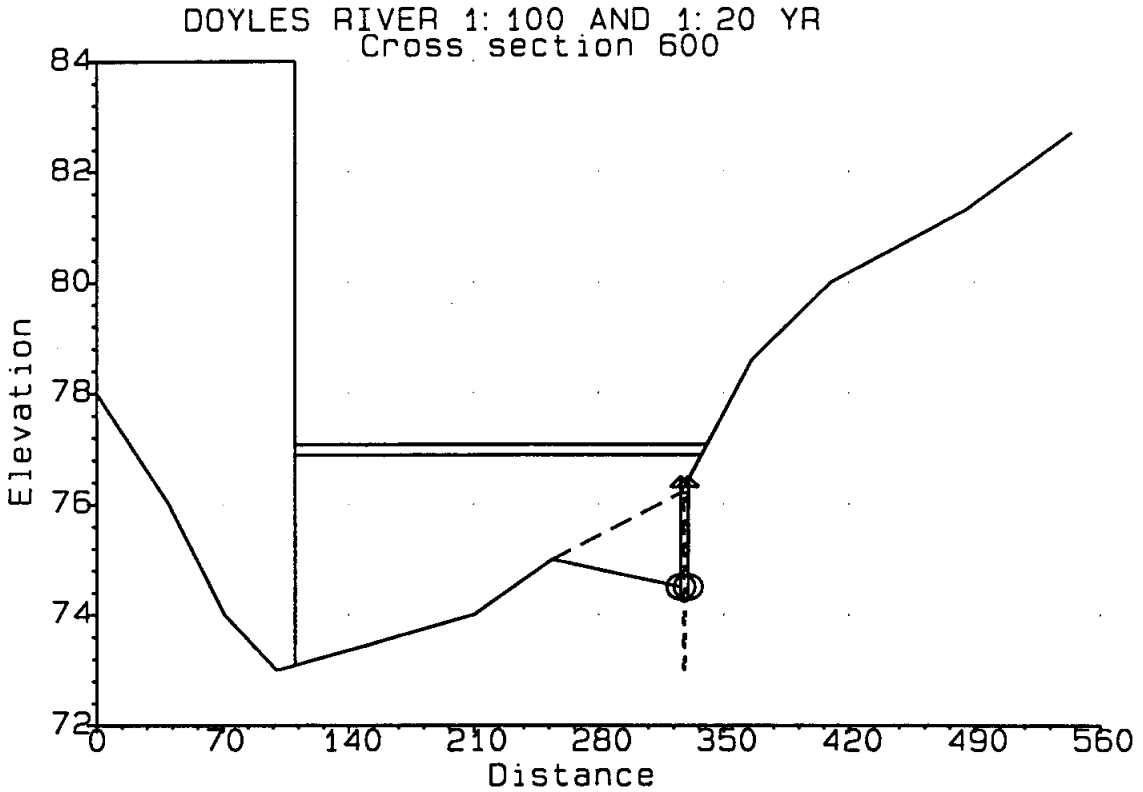
400
450
500
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 600
Elevation
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74
72
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140
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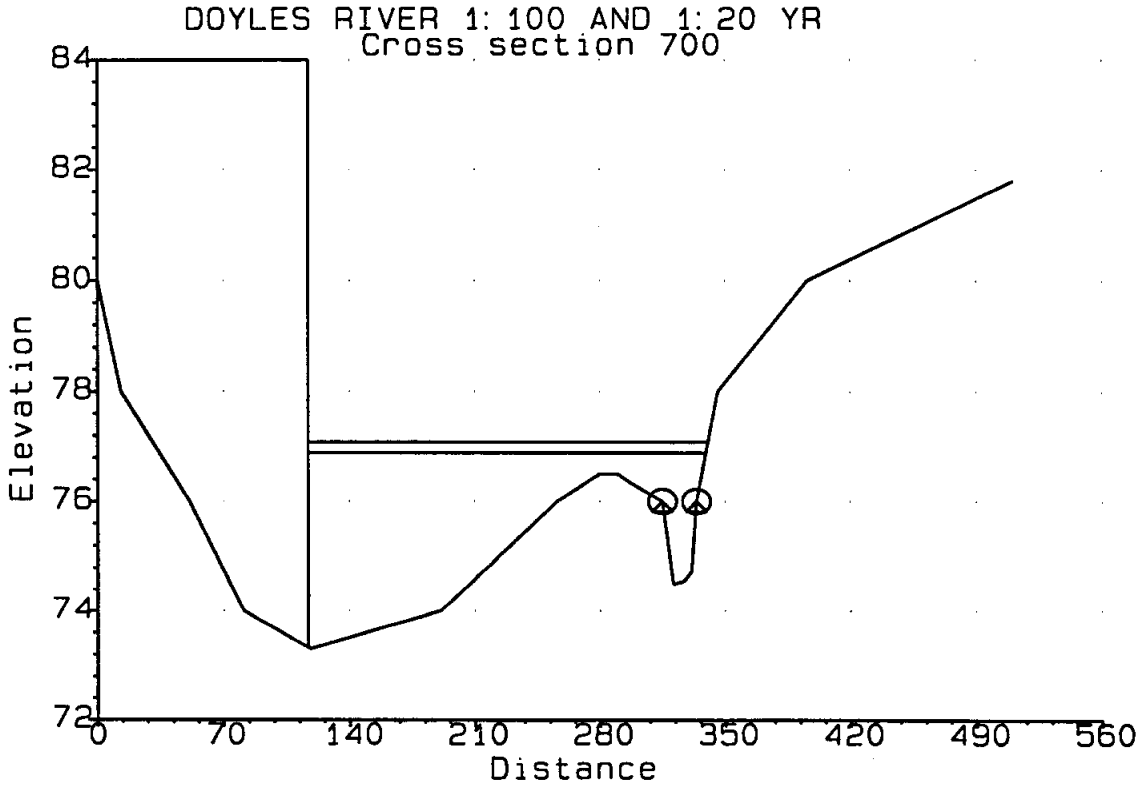
420
490
560
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 700
Elevation
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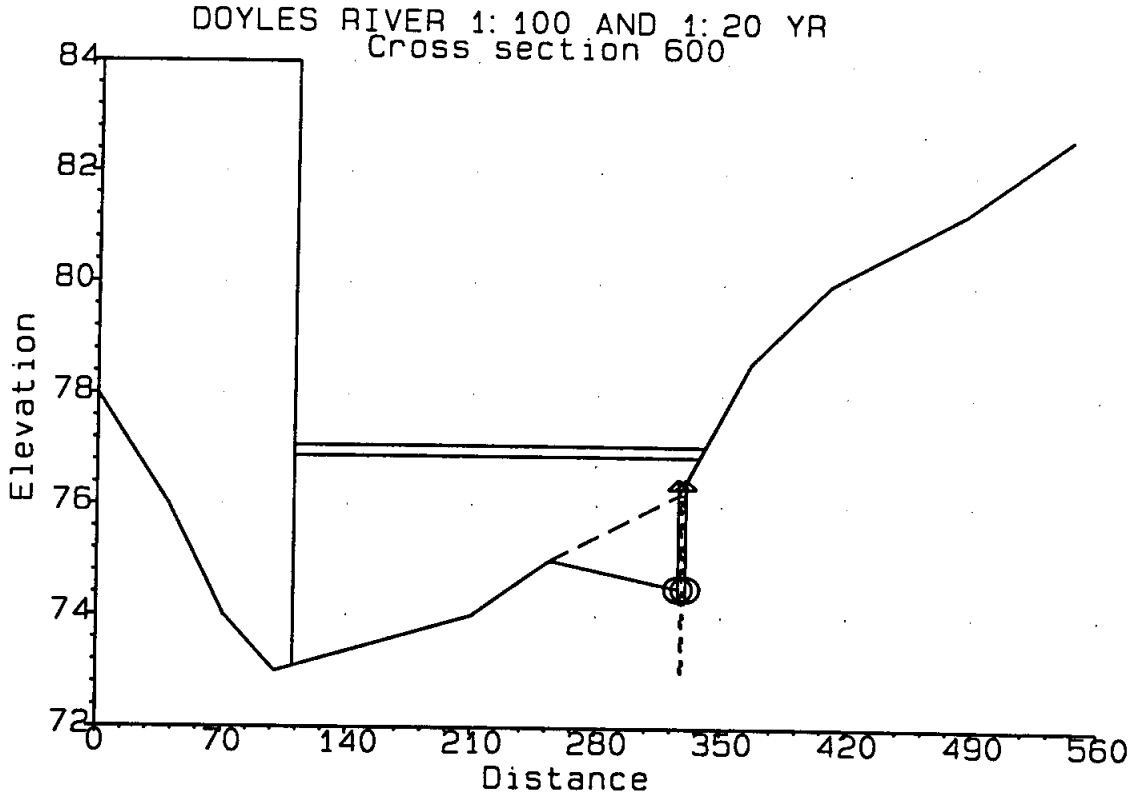
82
80
78
76
74
72
0
70
140
210
280
350
420
490
560
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 600
Elevation
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82
80
78
76
74
72
0
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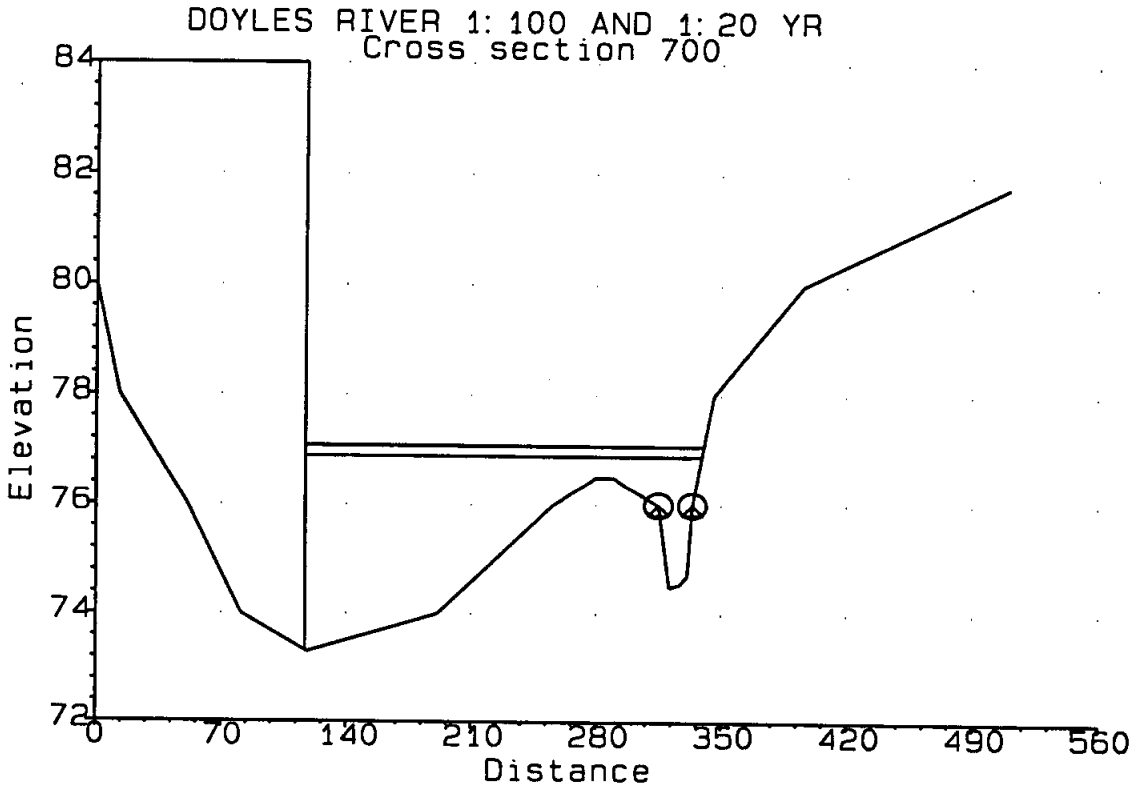
140
210
280
350
420
490
560
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 700
Elevation
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82
80
78
76
74
72
0
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140
210
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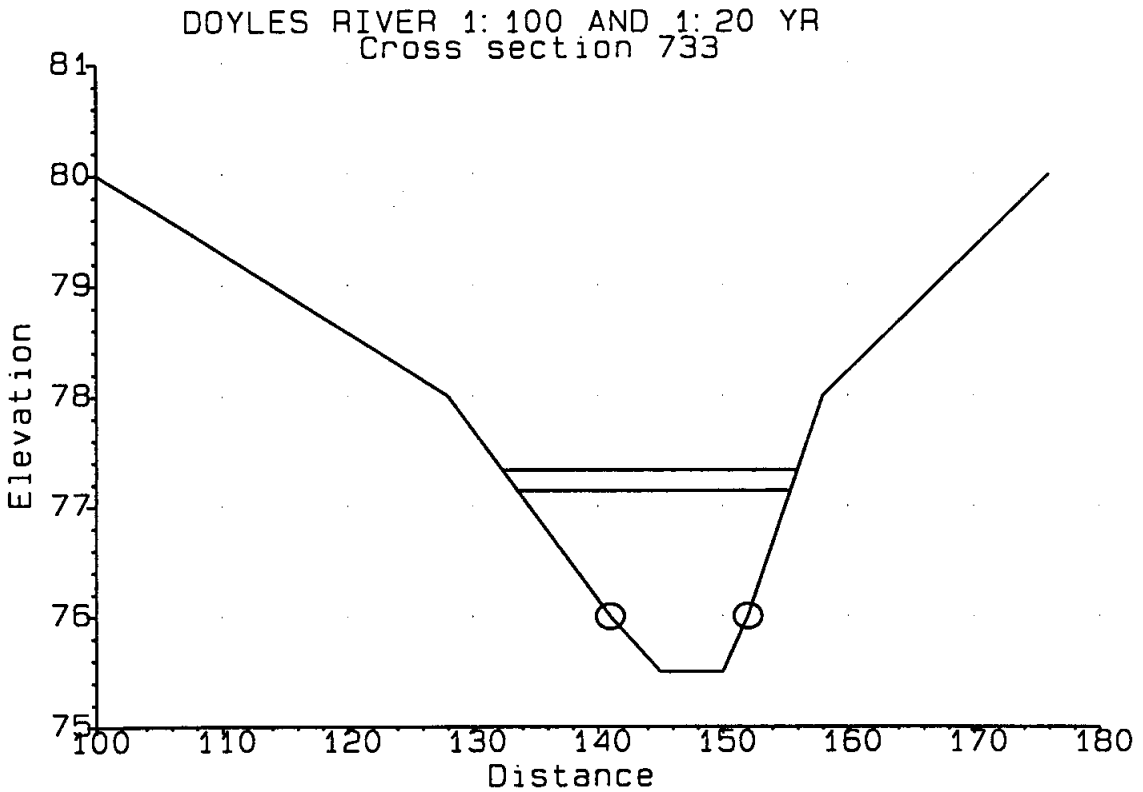
420
490
560
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 733
Elevation
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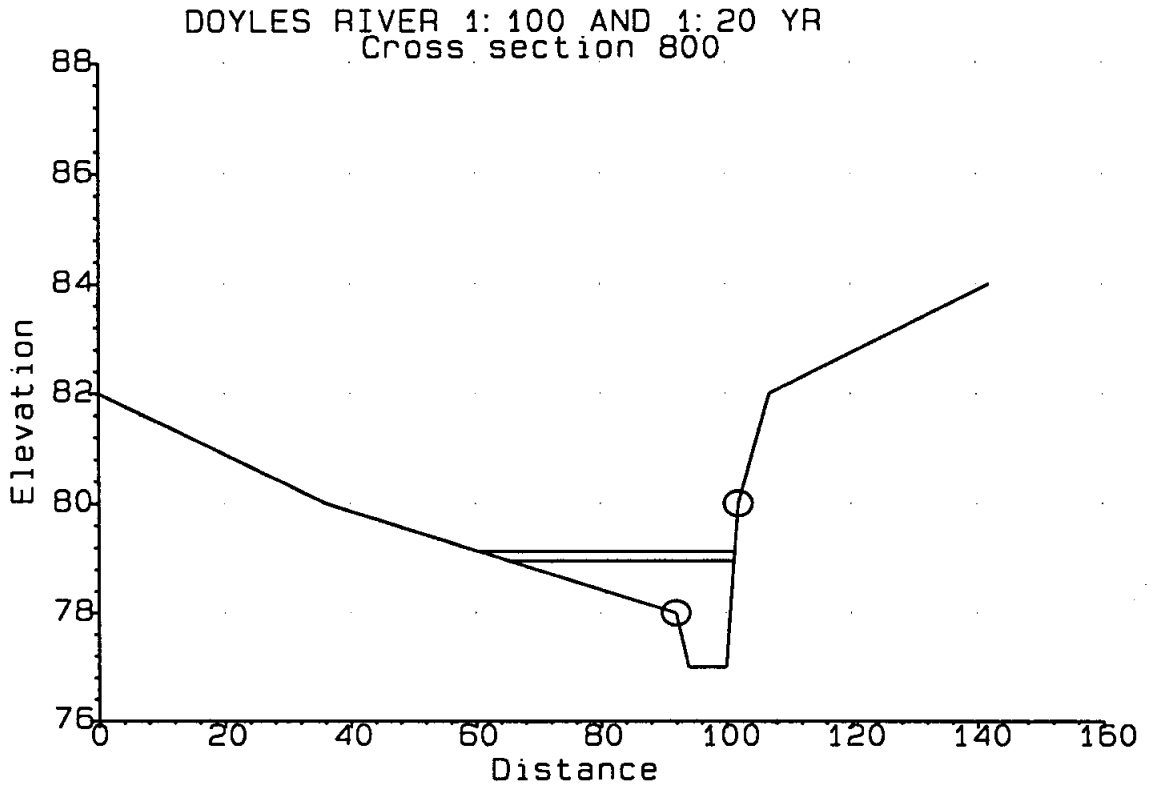
80
79
78
77
76
75
100
110
120
130
140
150
160
170
180
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 800
Elevation
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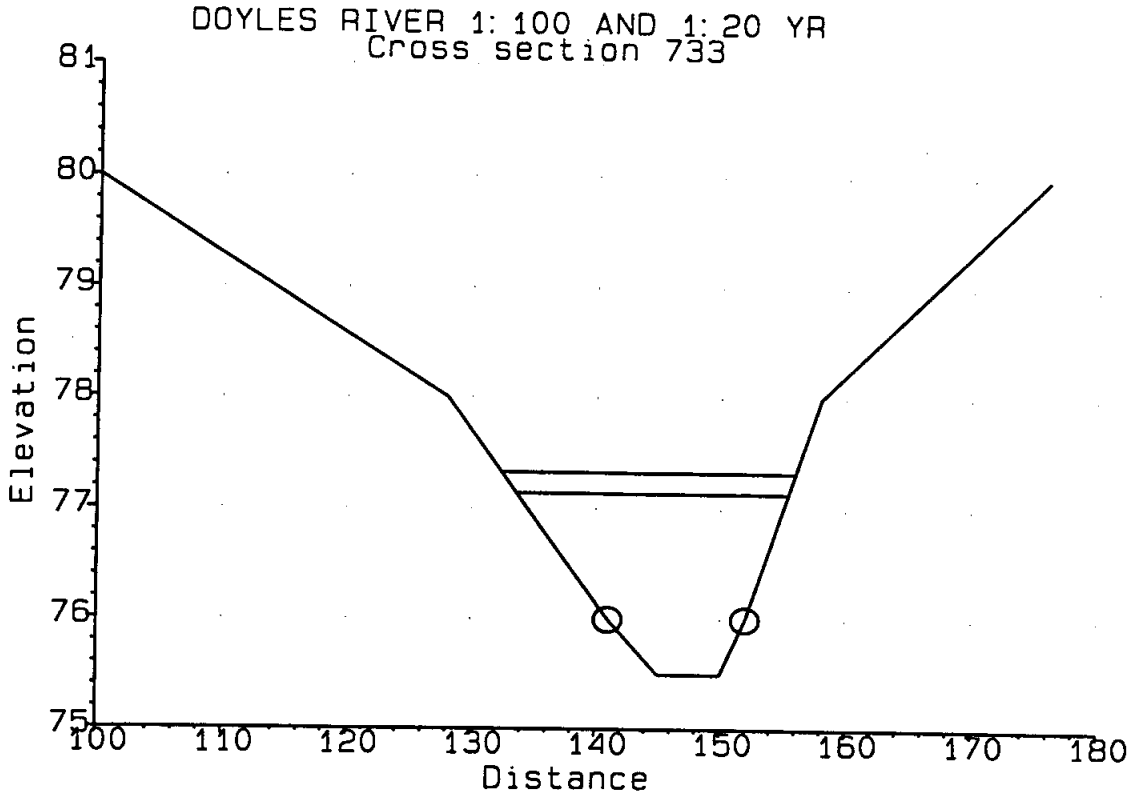
86
84
82
80
78
76
0
20
40
60
80
100
120
140
160
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 733
Elevation
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79
78
77
76
75
100
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130
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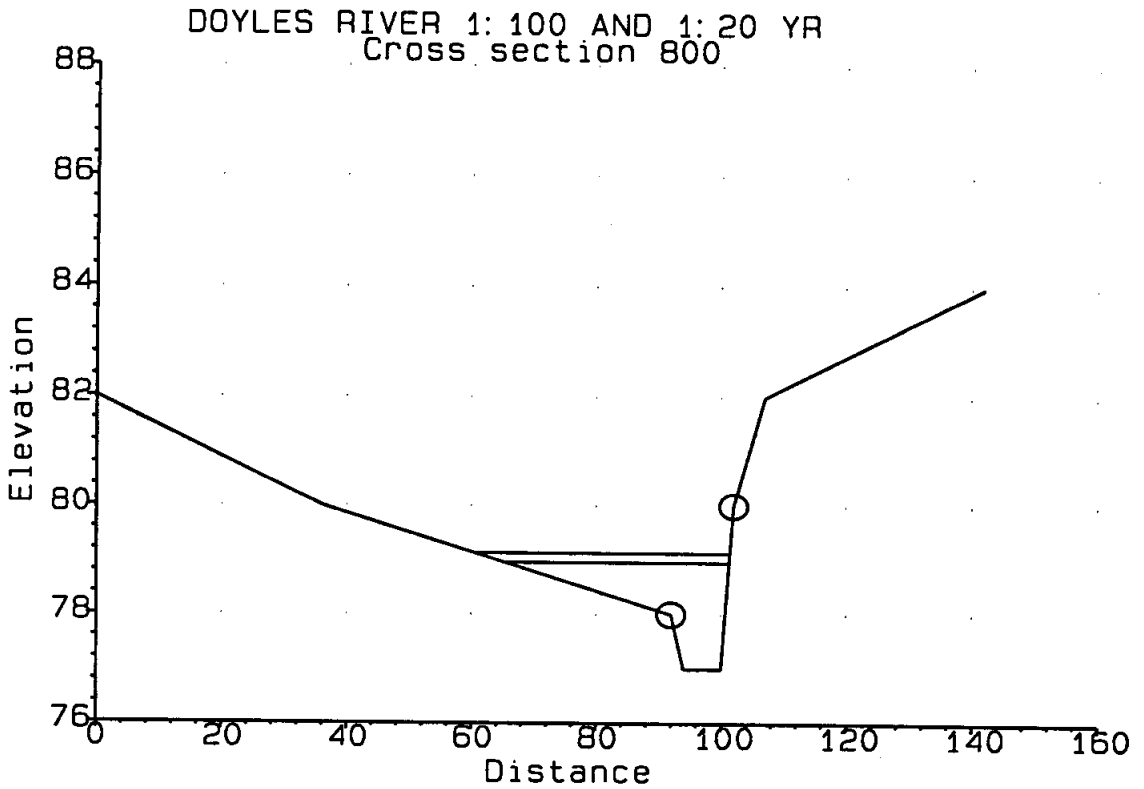
160
170
180
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 800
Elevation
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84
82
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78
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120
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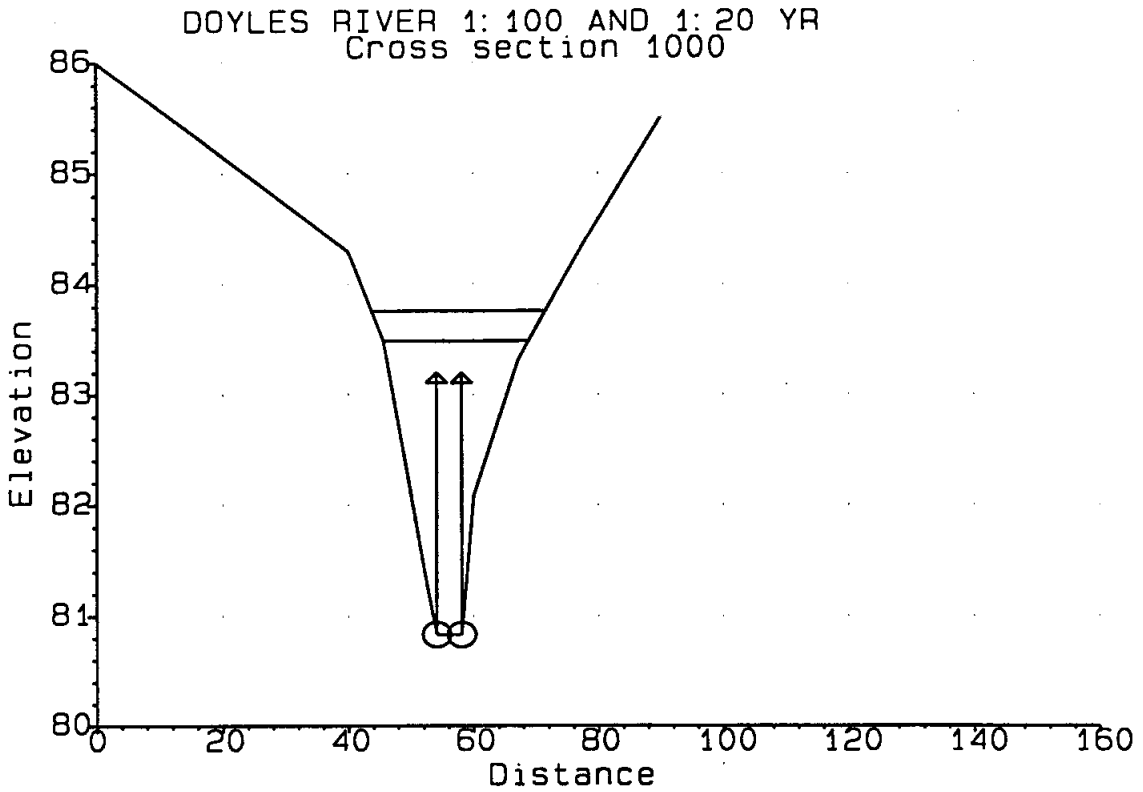
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 1000
Elevation
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84
83
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81
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120
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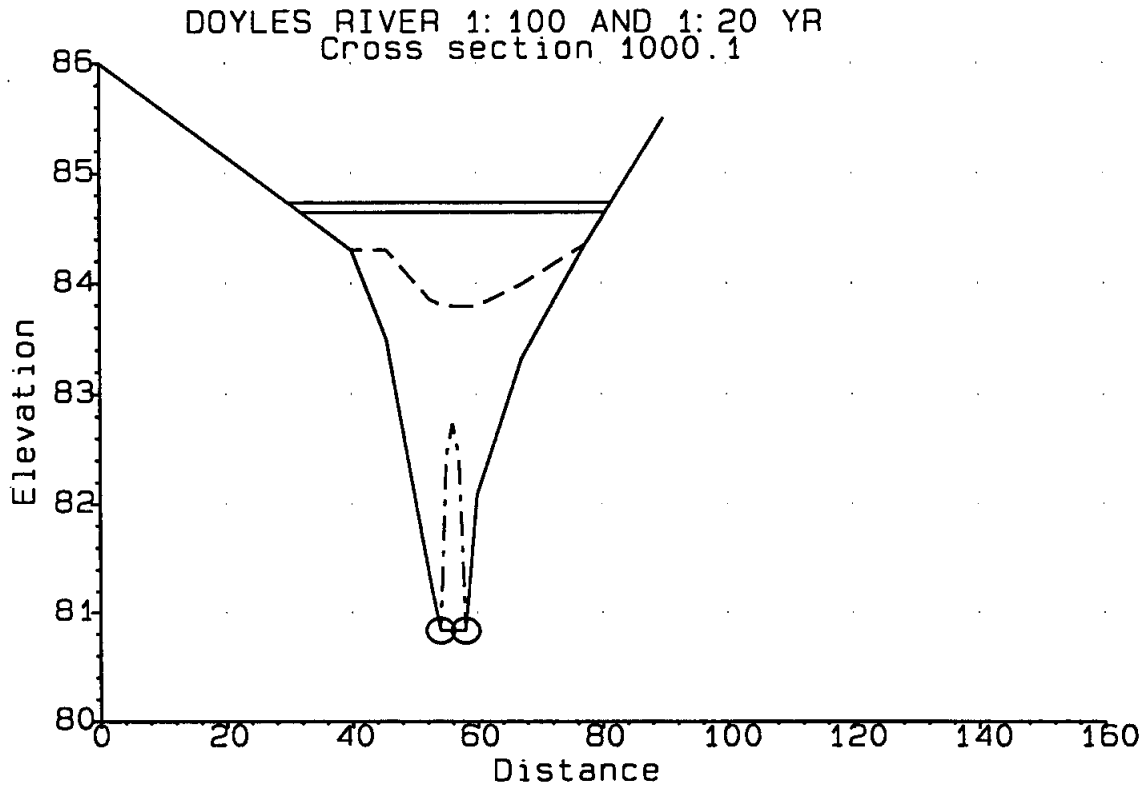
160
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 1000.1
Elevation
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120
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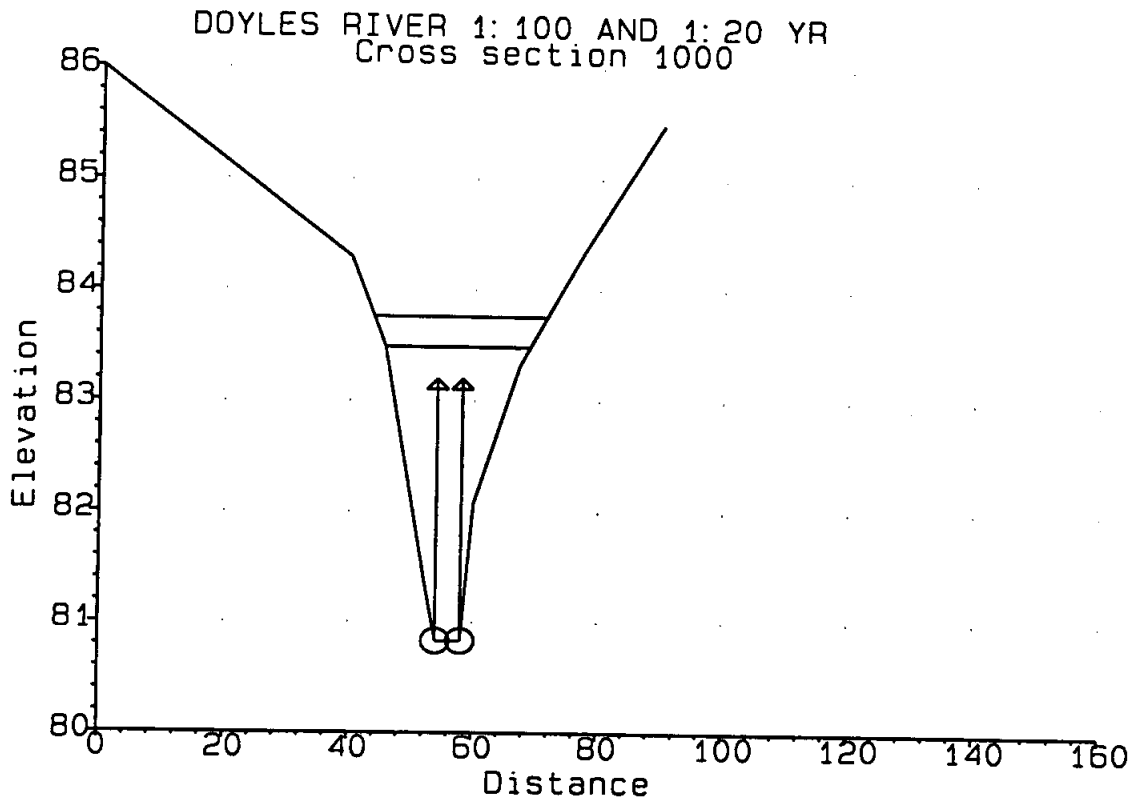
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 1000
Elevation
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120
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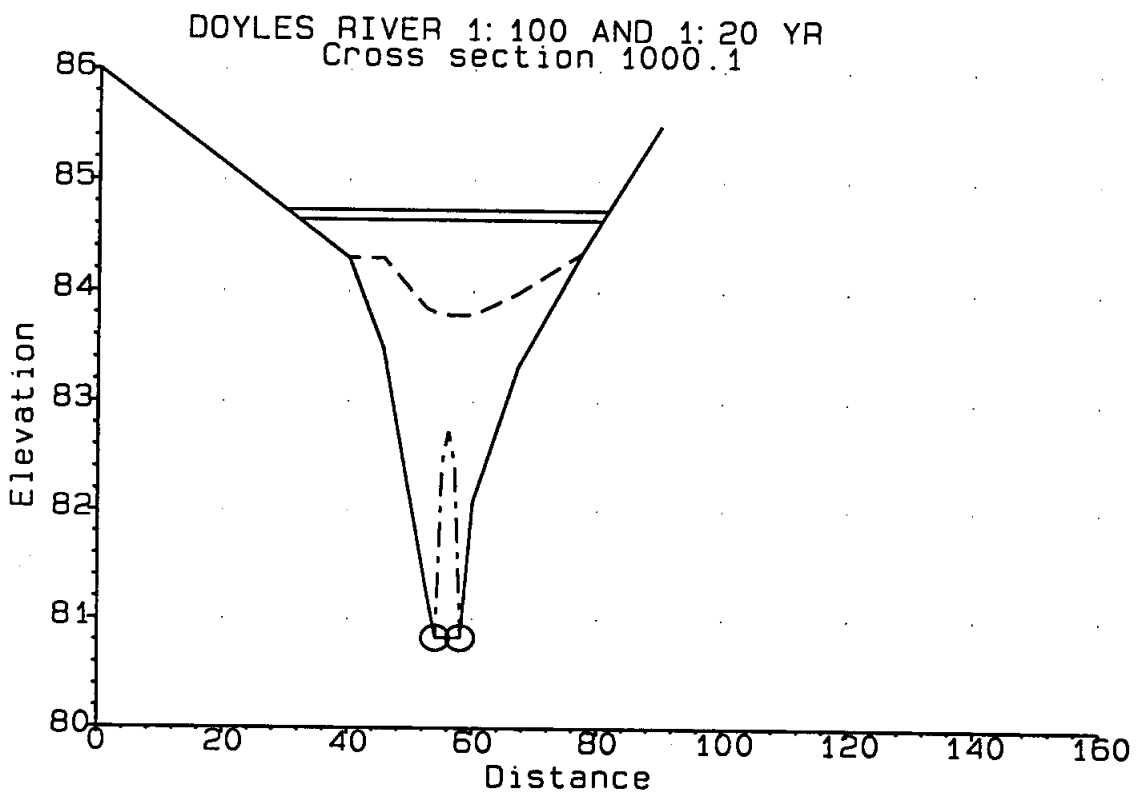
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 1000.1
Elevation
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84
83
82
81
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120
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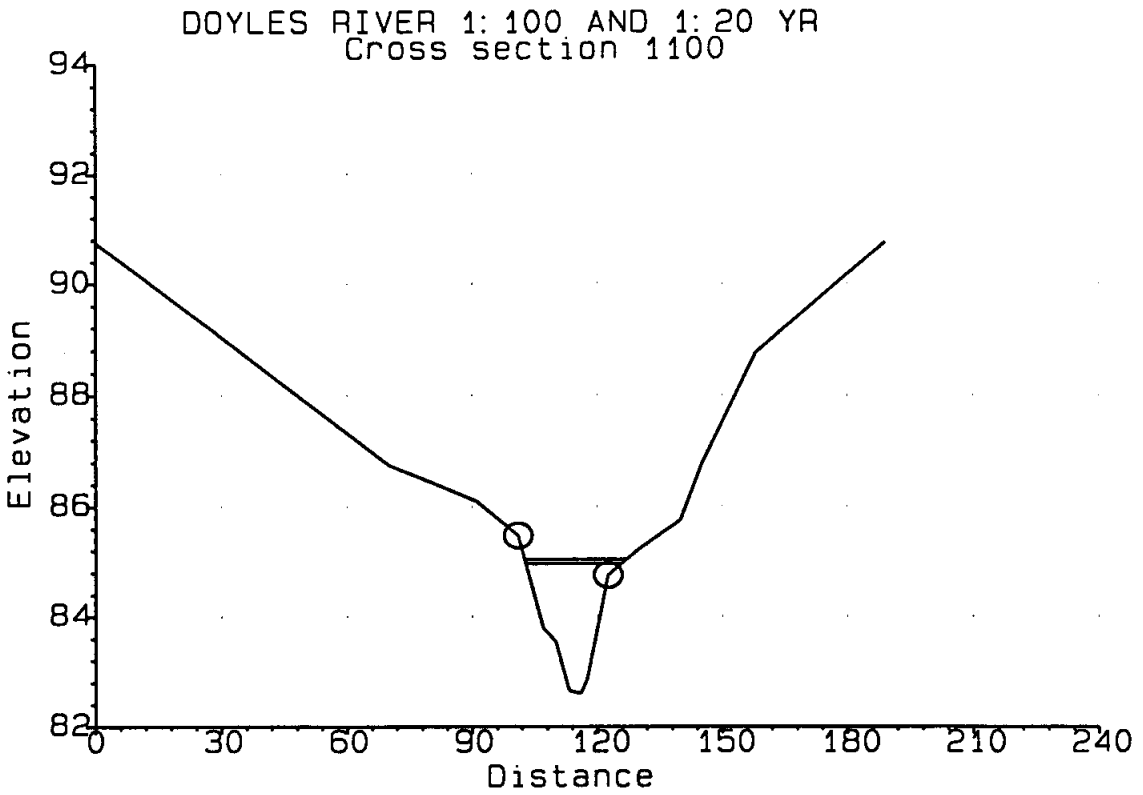
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 1100
Elevation
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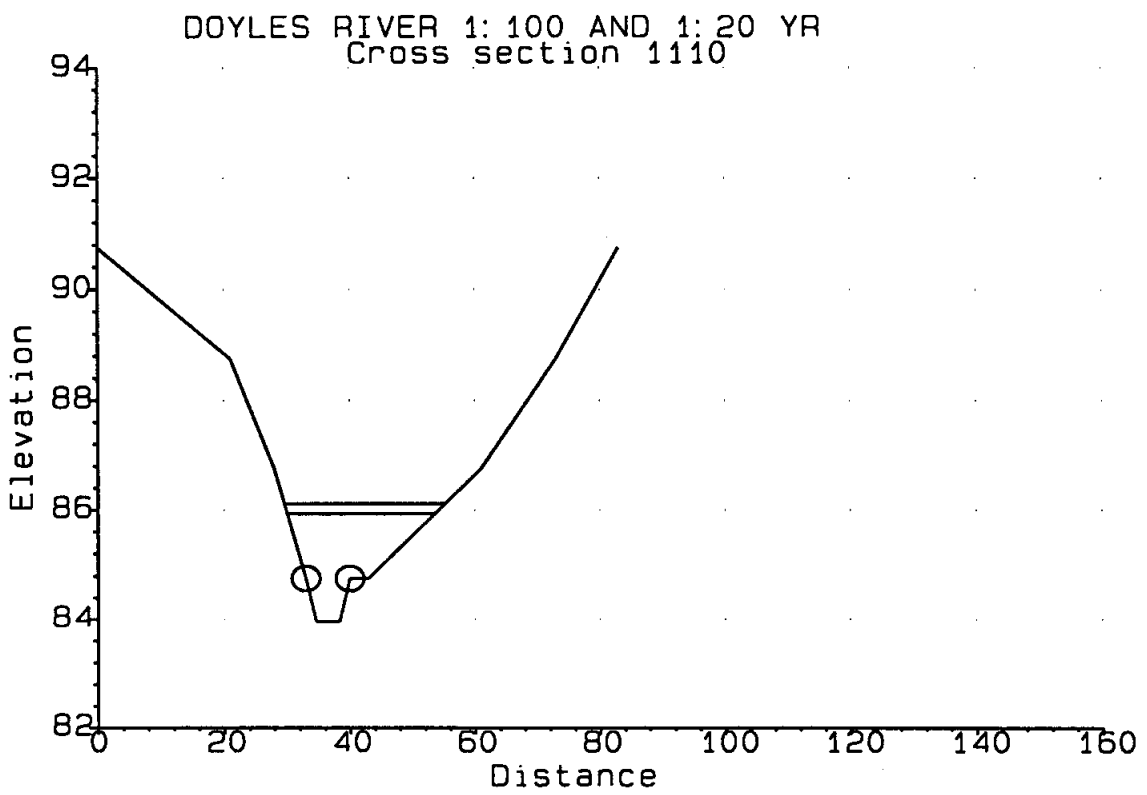
90
88
86
84
82
0
30
60
90
120
150
180
210
240
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 1110
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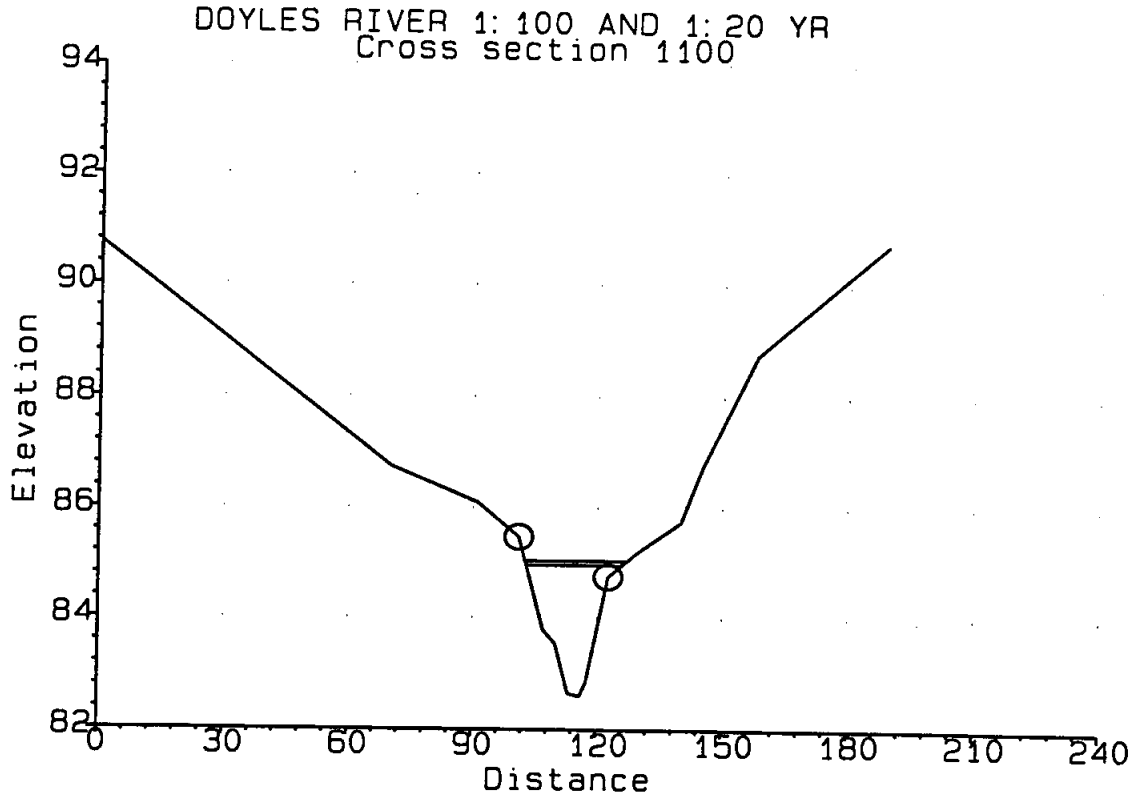
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 1100
Elevation
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90
88
86
84
82
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60
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180
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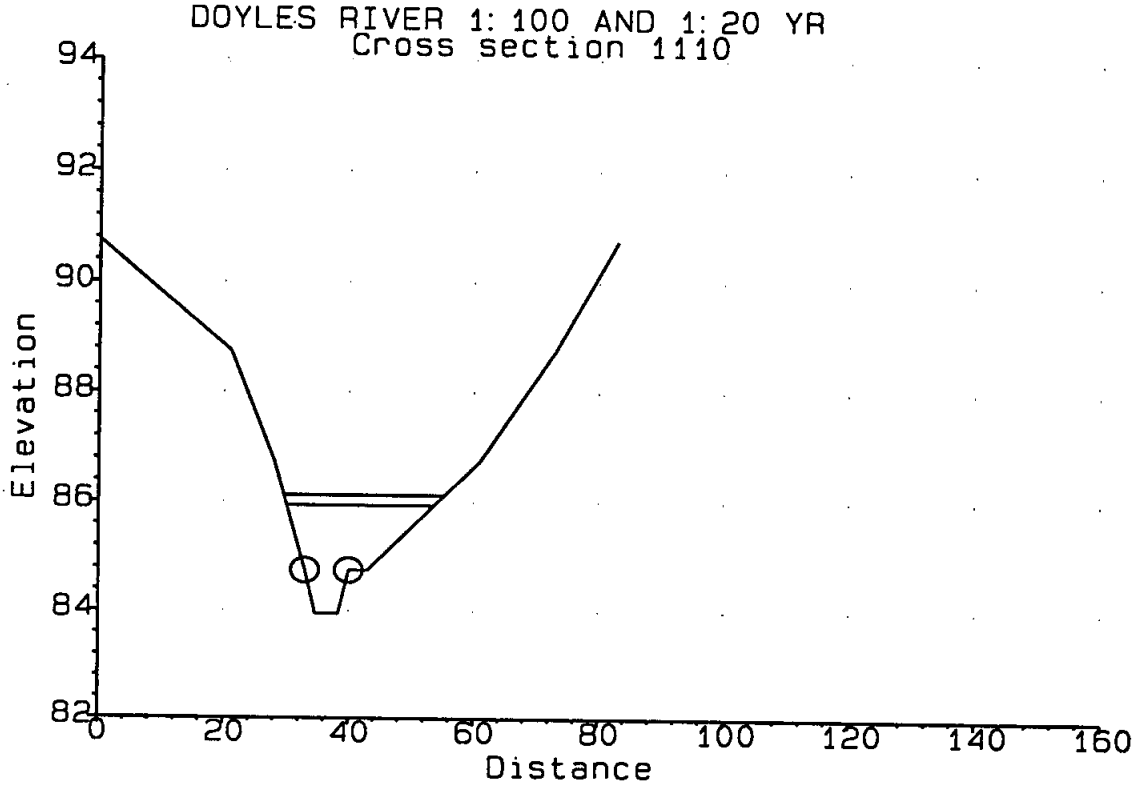
240
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 1110
Elevation
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90
88
86
84
82
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20
40
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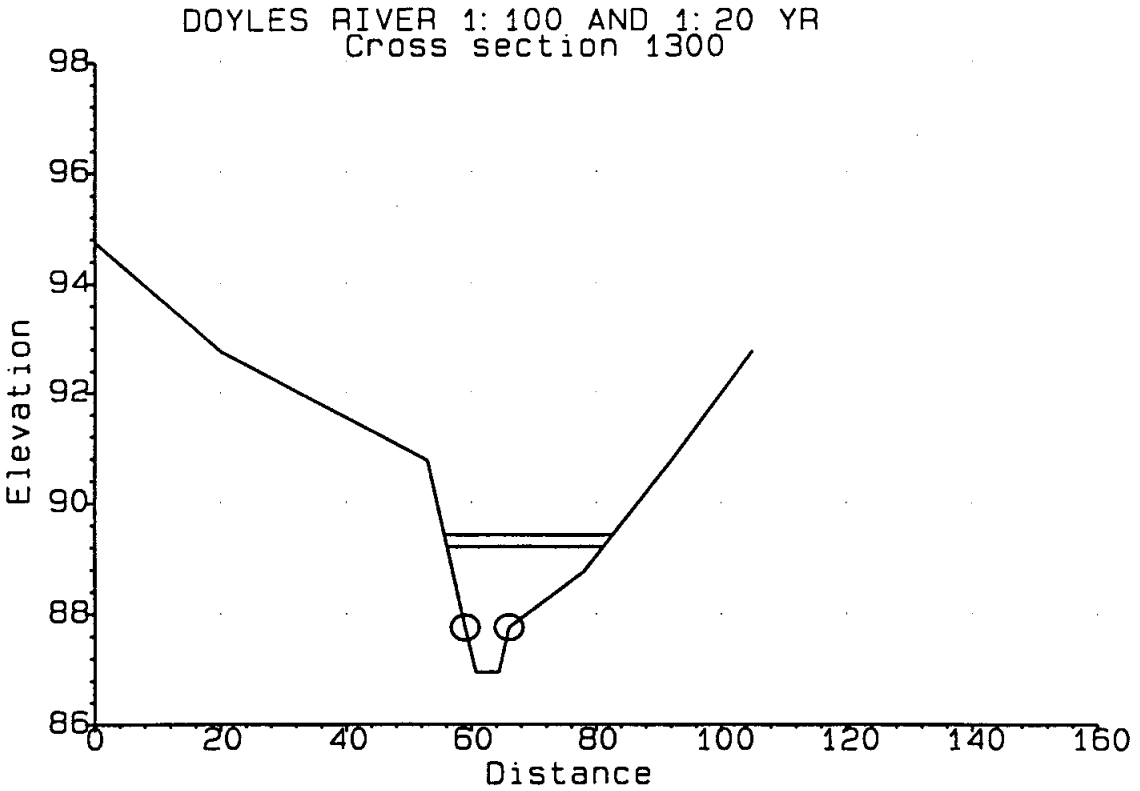
120
140
160
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 1300
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80
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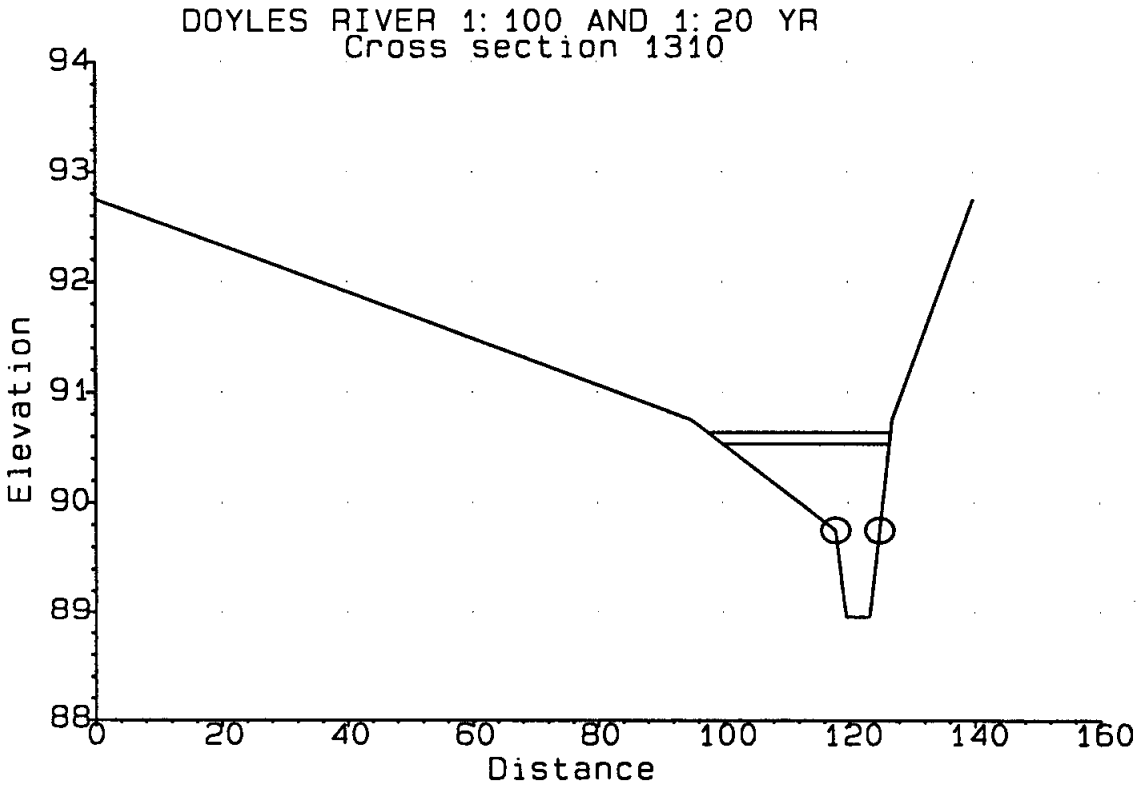
120
140
160
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 1310
Elevation
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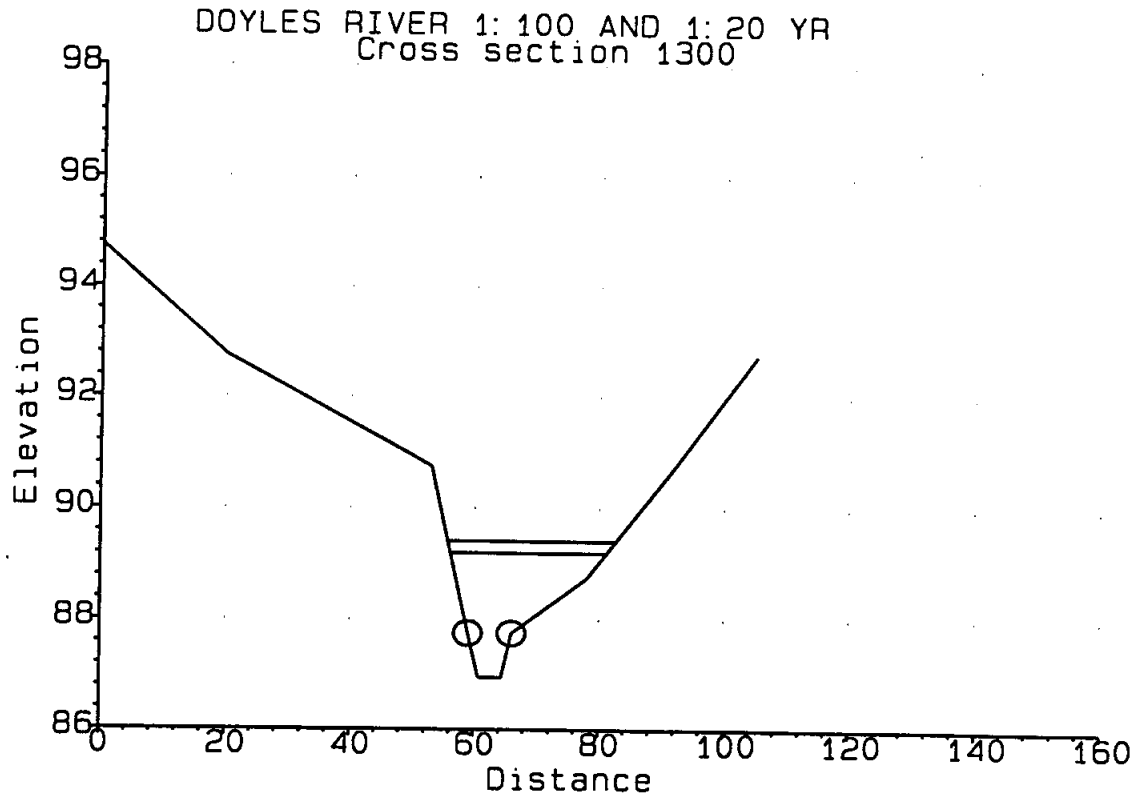
93
92
91
90
89
88
0
20
40
60
80
100
120
140
160
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 1300
Elevation
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94
92
90
88
86
0
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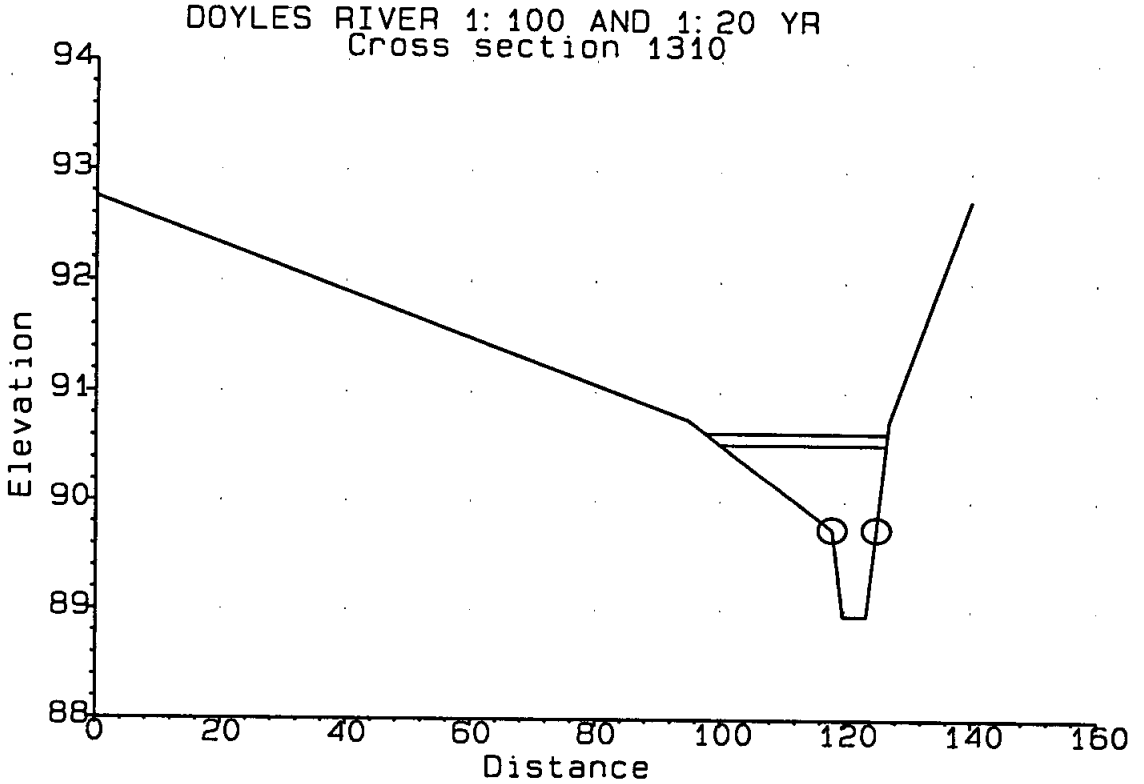
40
60
80
100
120
140
160
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 1310
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89
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120
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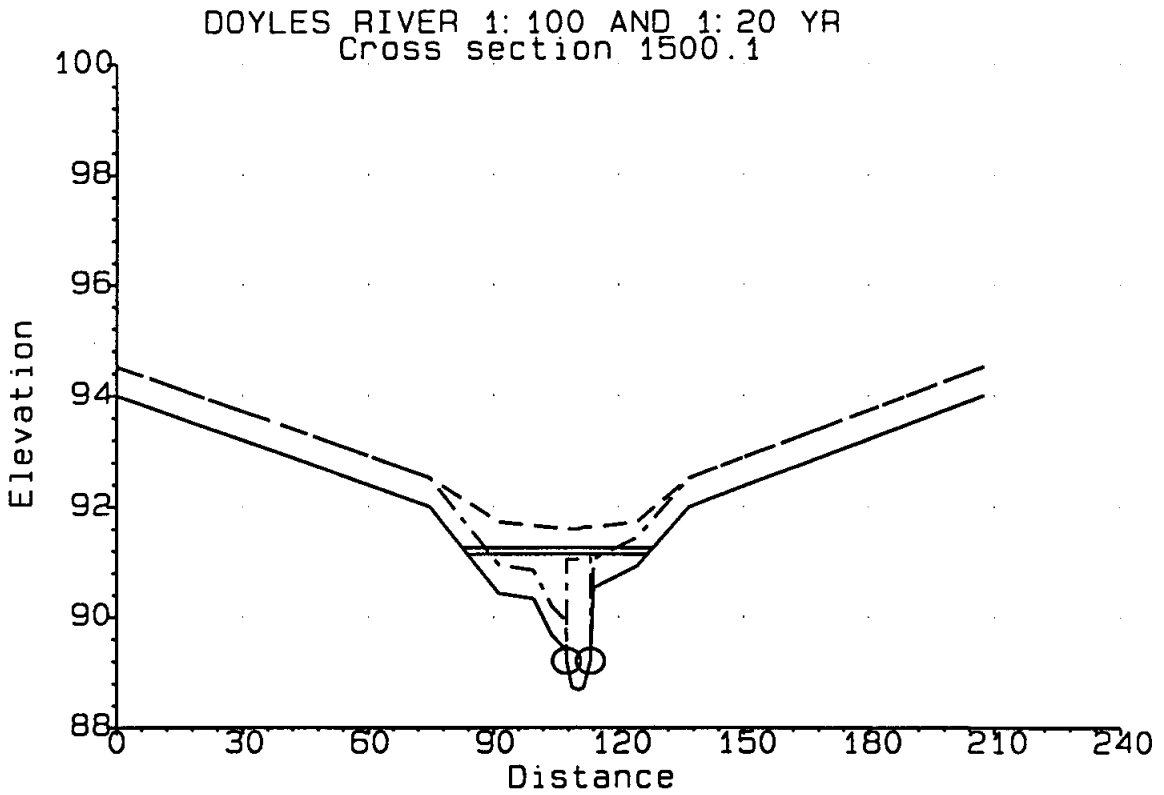
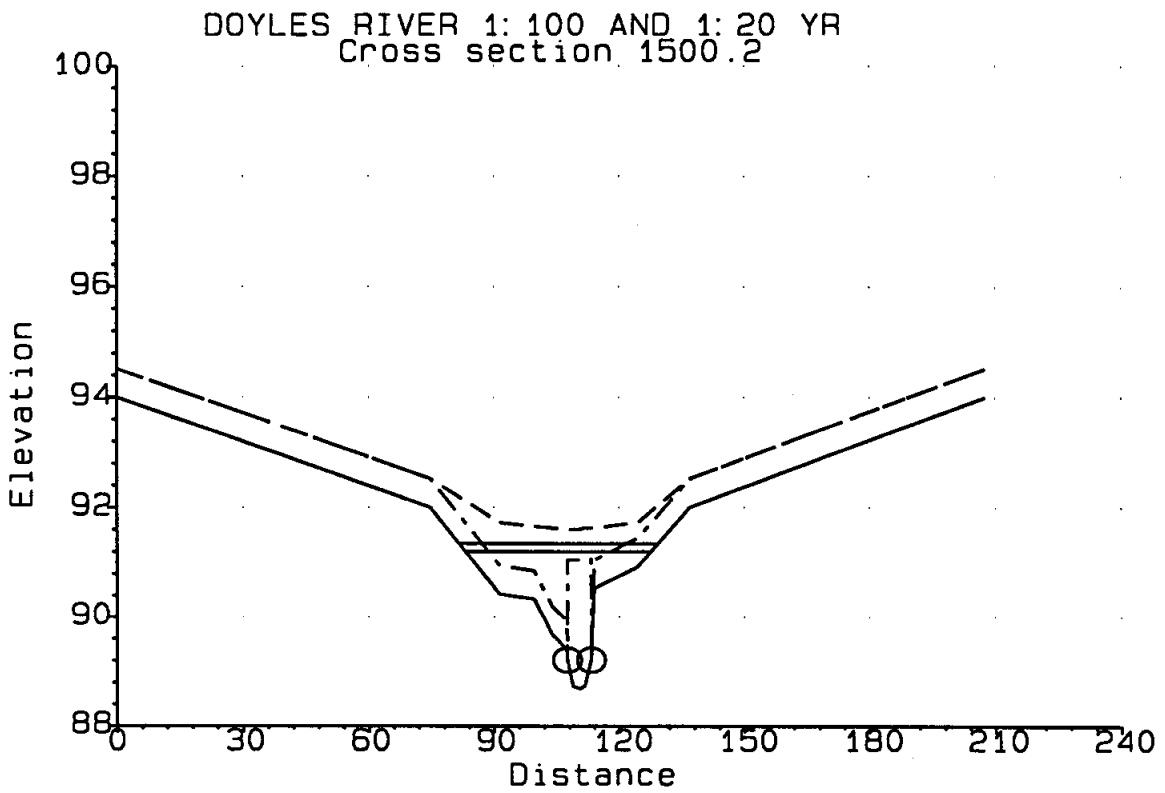
160
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 1500.1
Elevation
100
98
96
94
92
90
88
0
30
60
90
120
150
180
210
240
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 1500.2
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94
92
90
88
0
30
60
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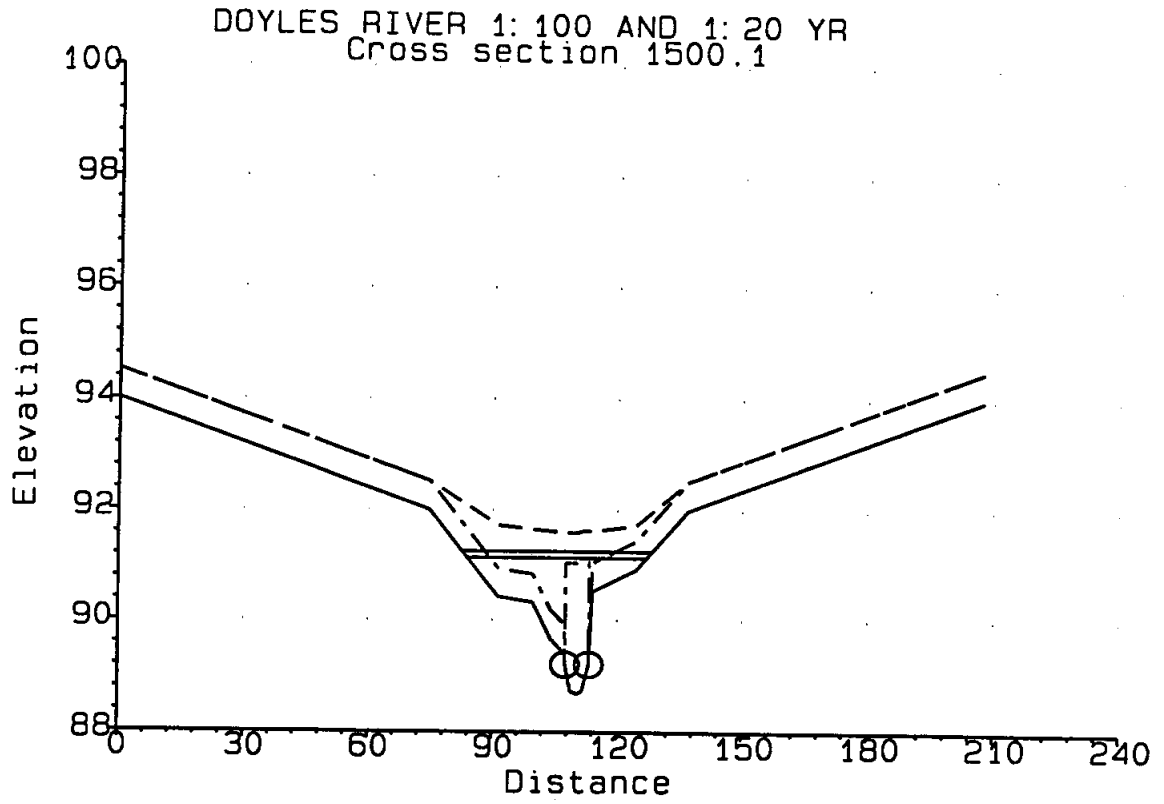
120
150
180
210
240
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 1500.1
Elevation
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96
94
92
90
88
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60
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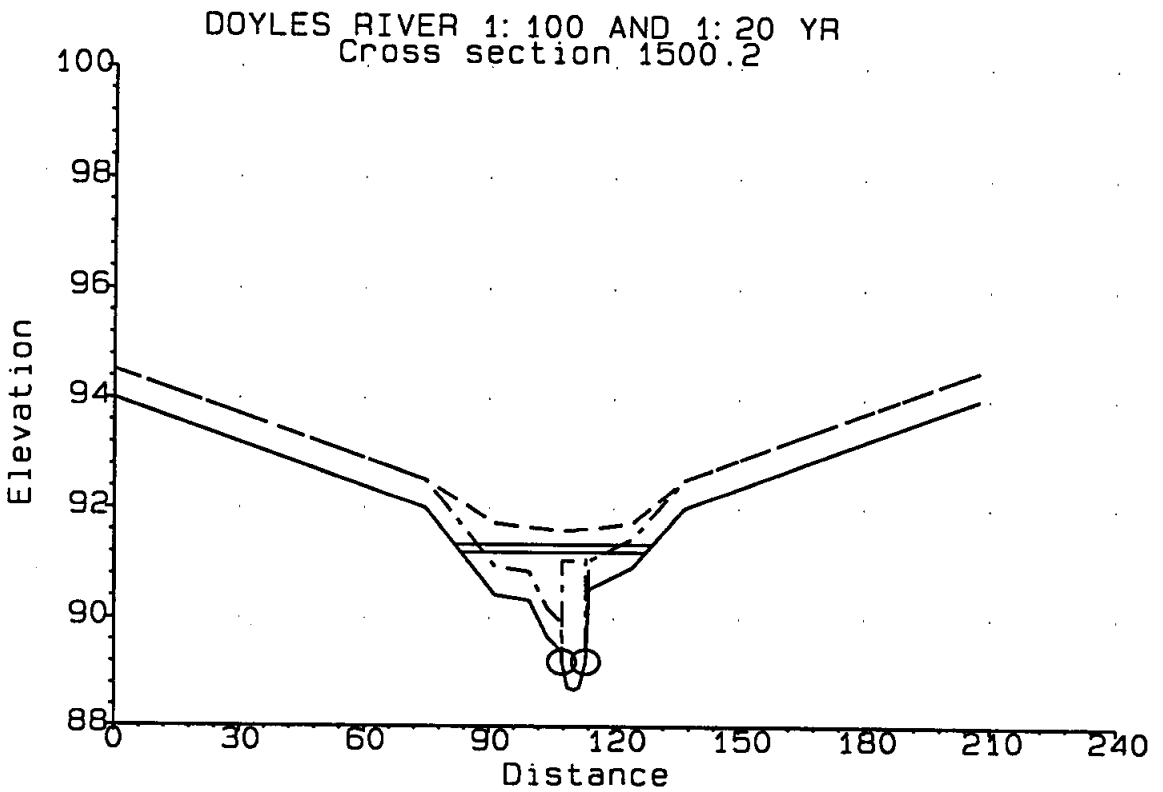
120
150
180
210
240
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 1500.2
Elevation
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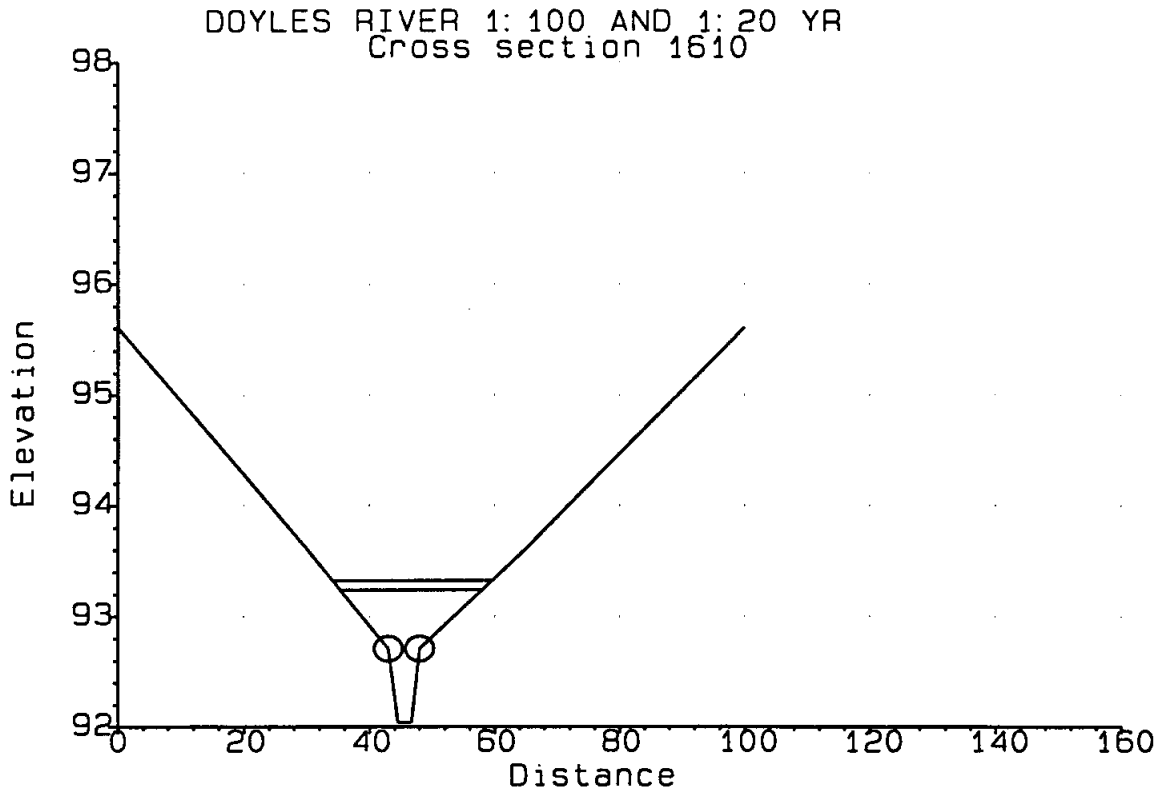
240
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 1610
Elevation
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93
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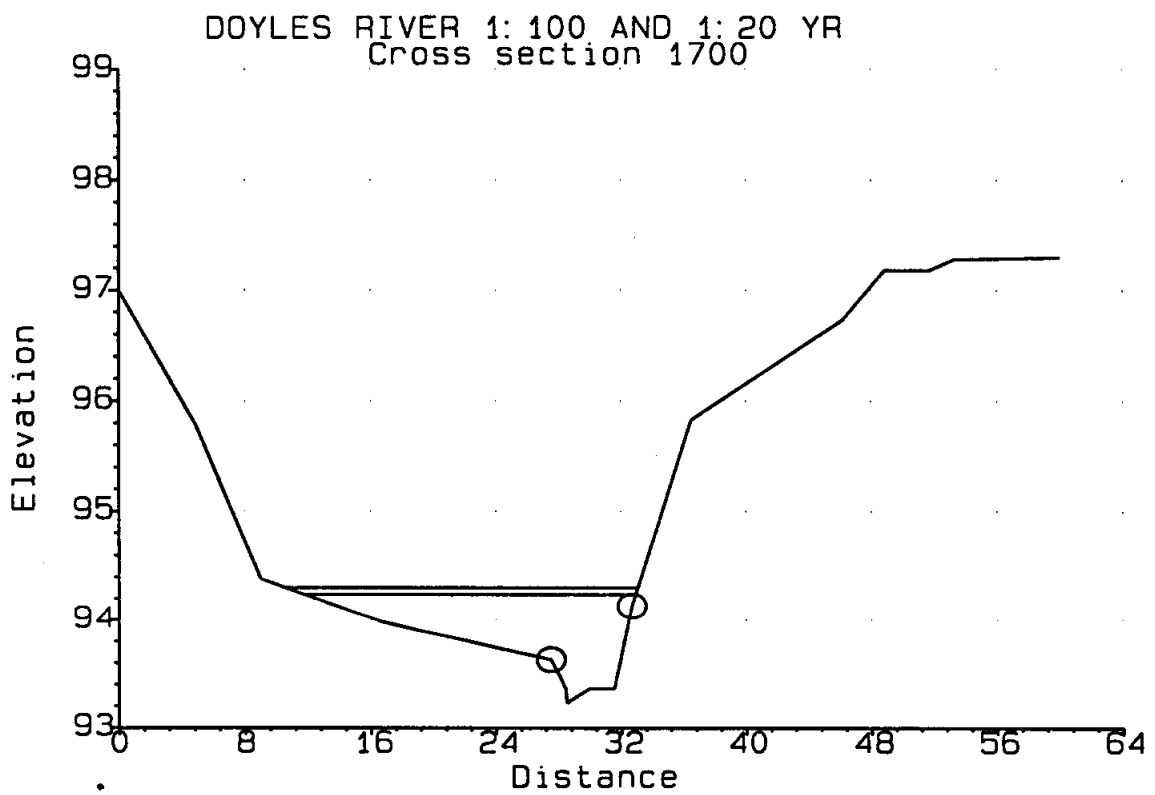
120
140
160
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 1700
Elevation
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94
93
0
8
16
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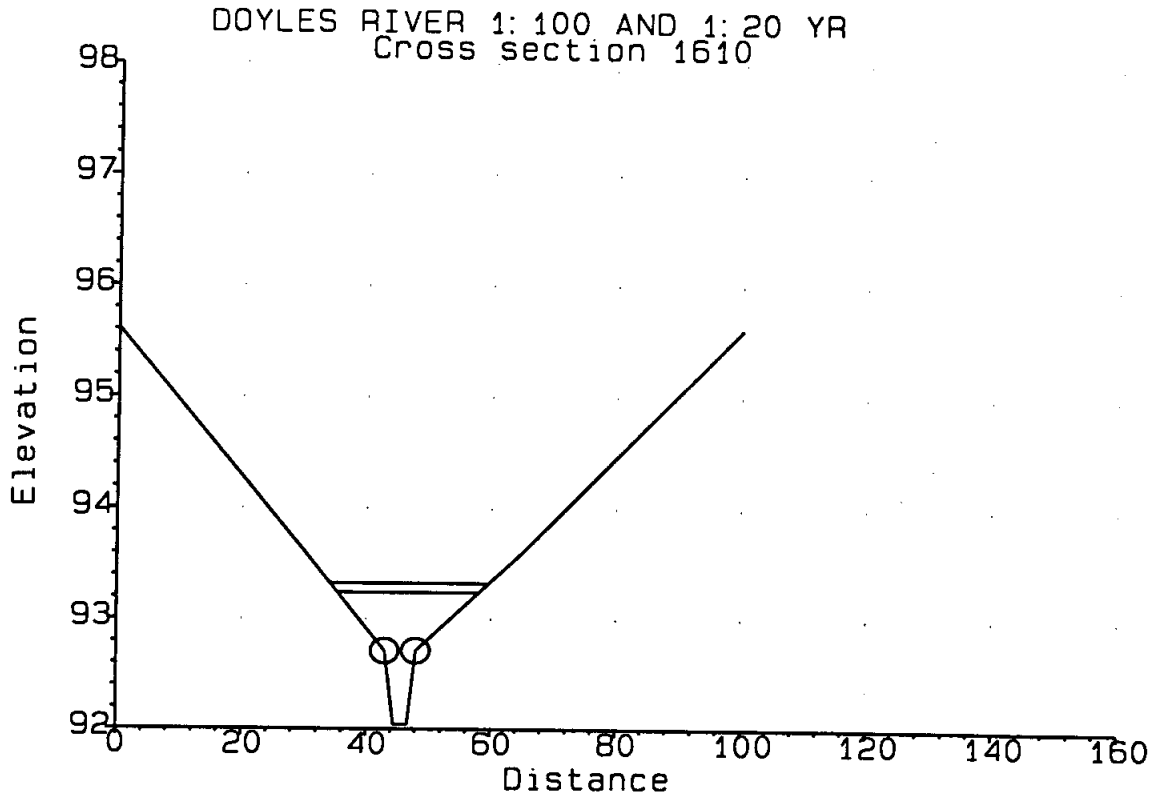
48
56
64
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 1610
Elevation
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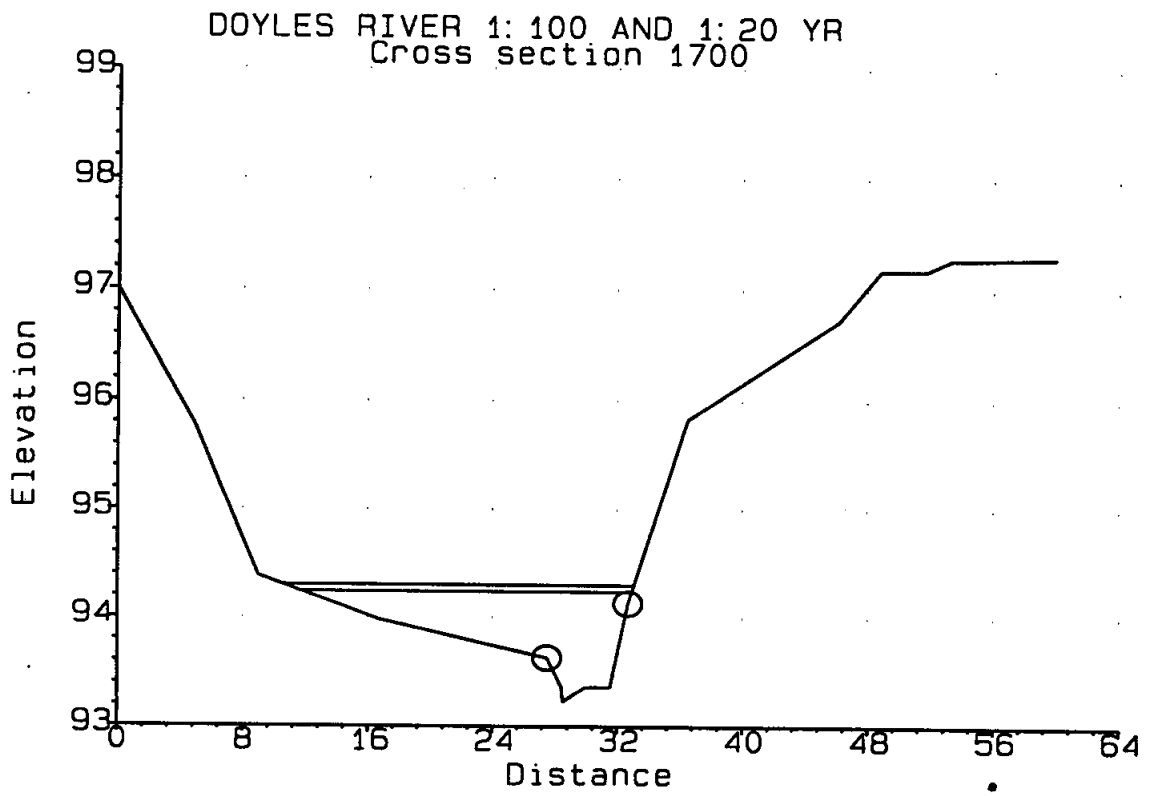
96
95
94
93
92
0
20
40
60
80
100
120
140
160
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 1700
Elevation
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98
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95
94
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0
8
16
24
32
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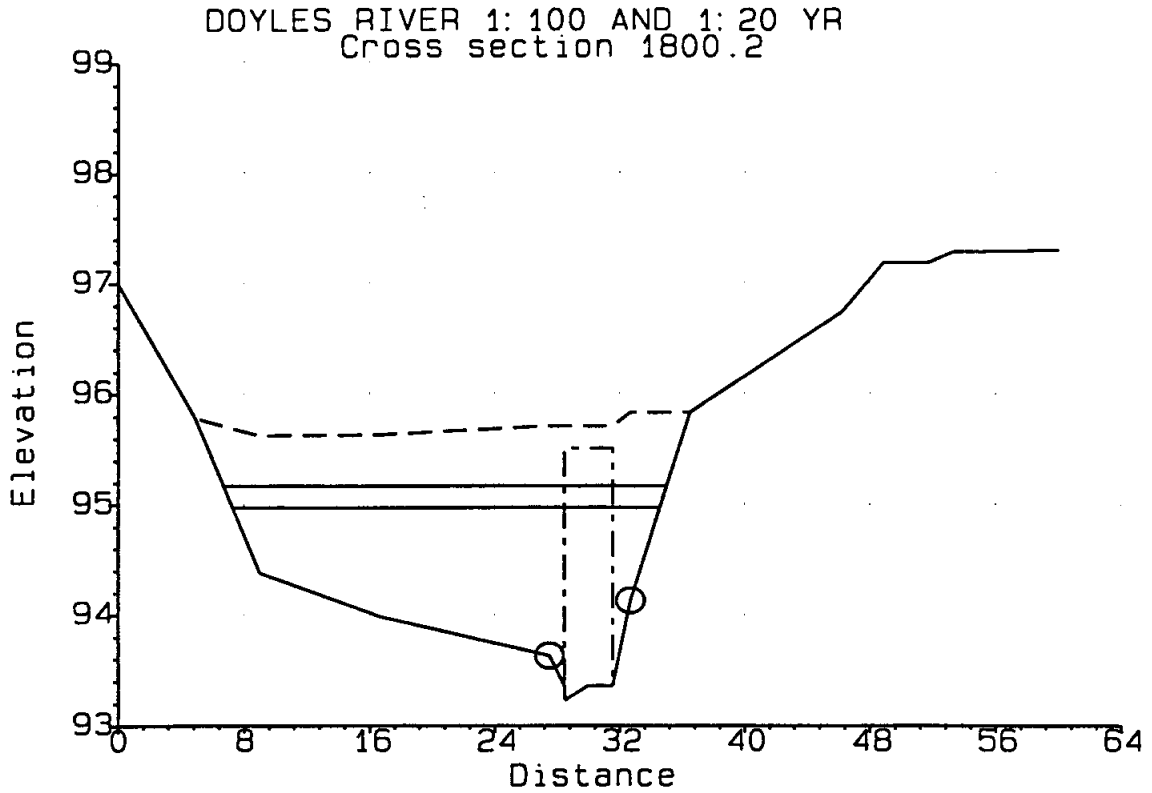
48
56
64
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 1800.2
Elevation
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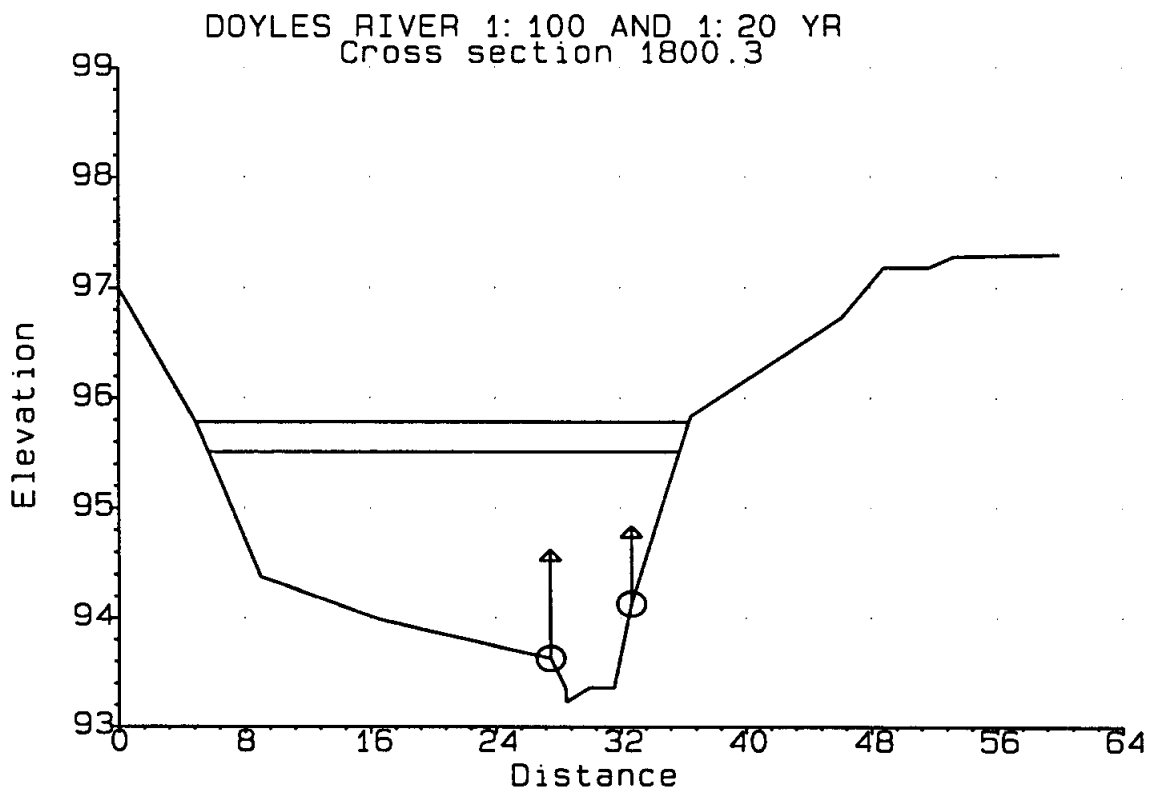
98
97
96
95
94
93
0
8
16
24
32
40
48
56
64
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 1800.3
Elevation
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0
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16
24
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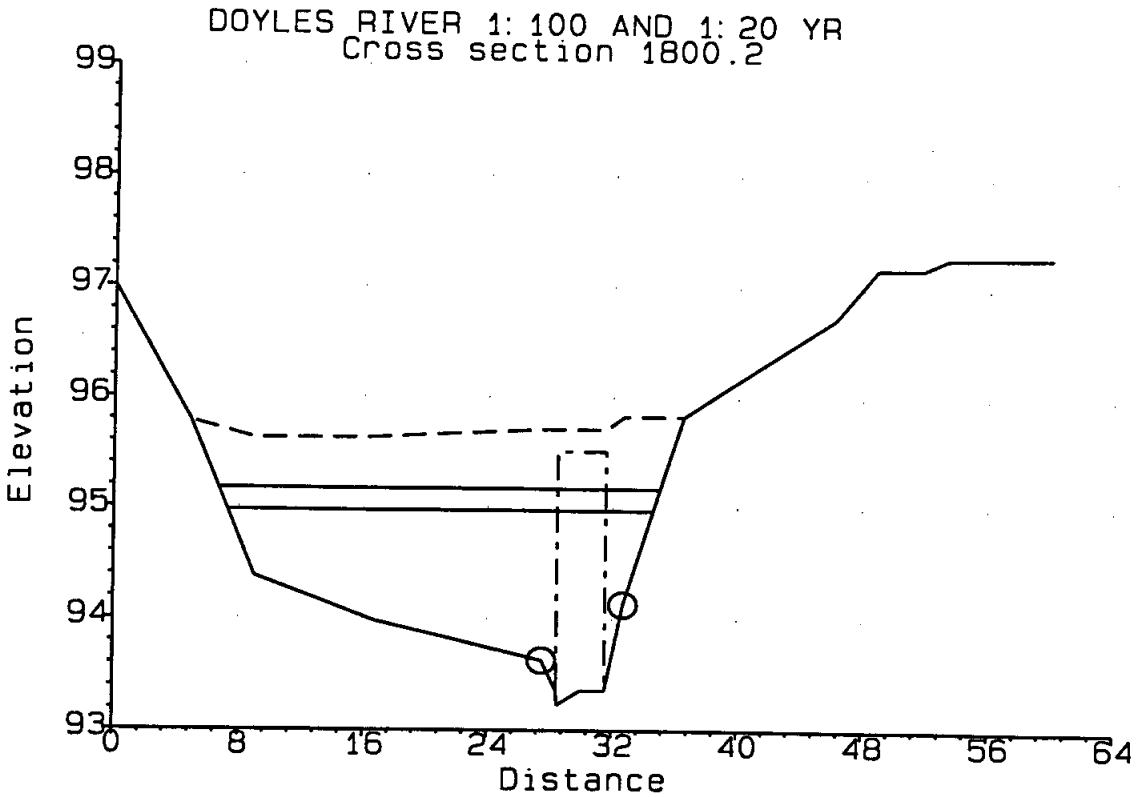
40
48
56
64
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 1800.2
Elevation
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0
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16
24
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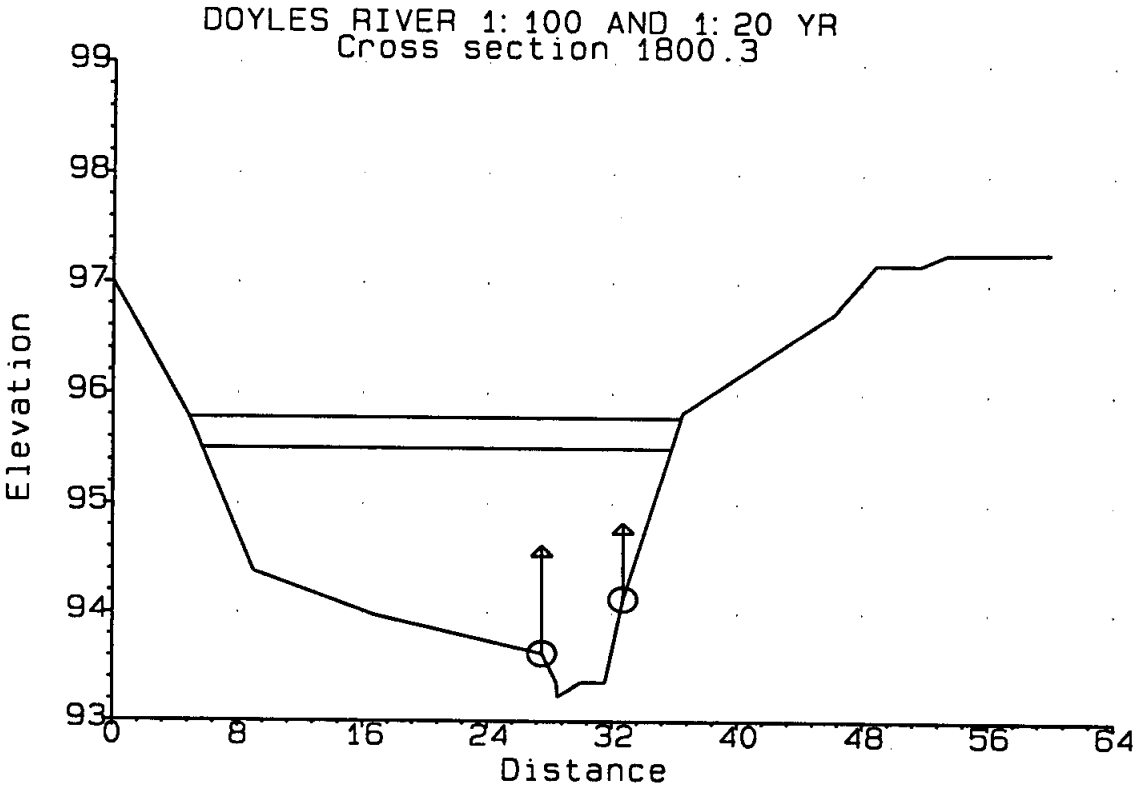
40
48
56
64
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 1800.3
Elevation
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16
24
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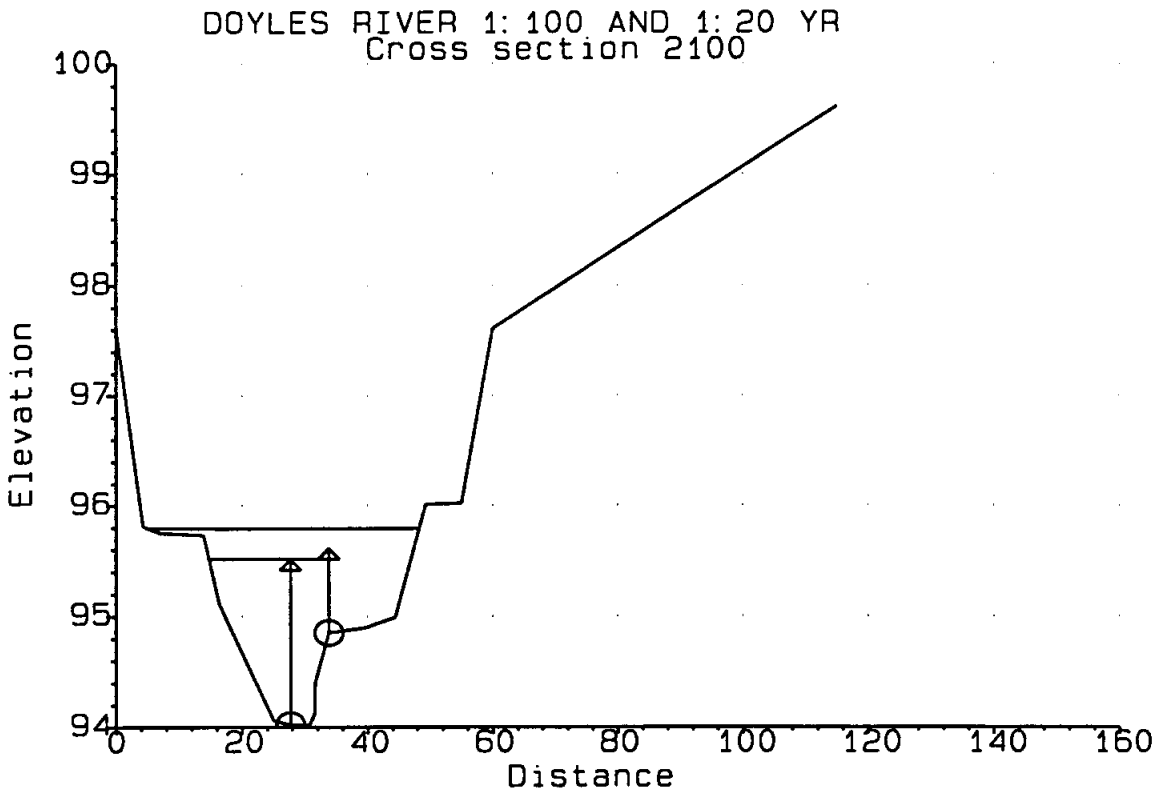
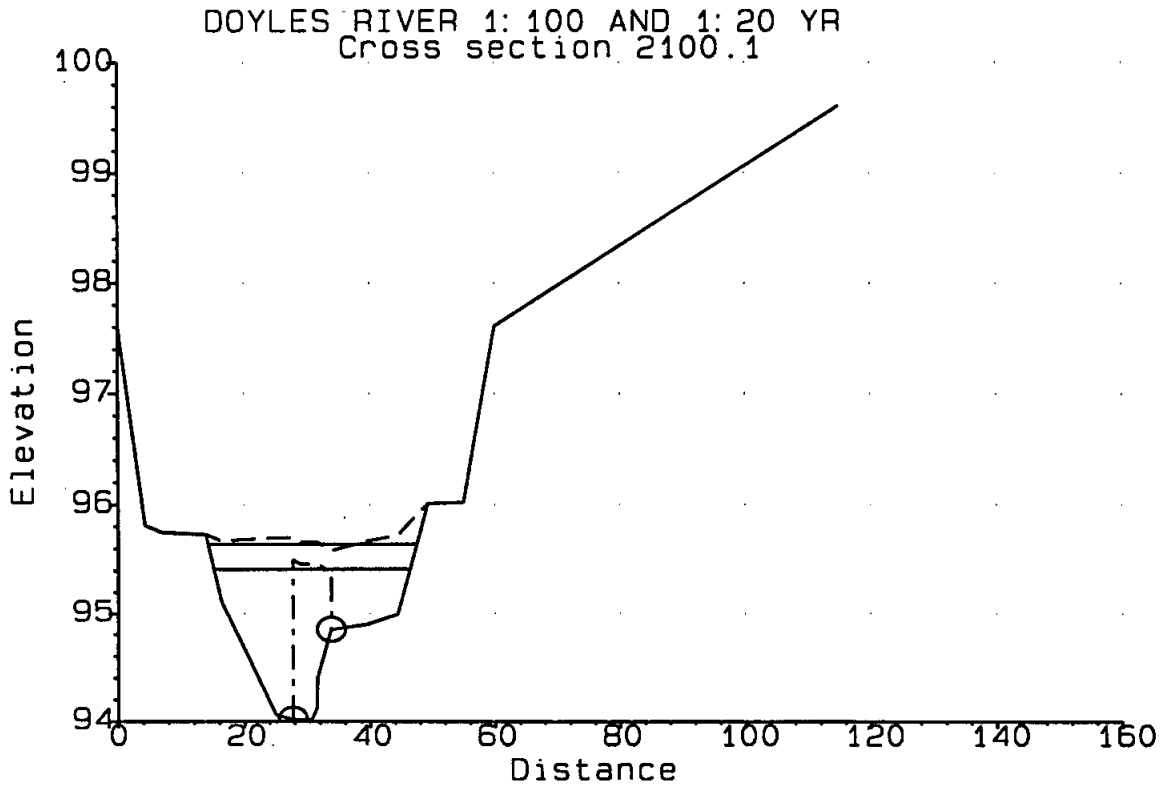
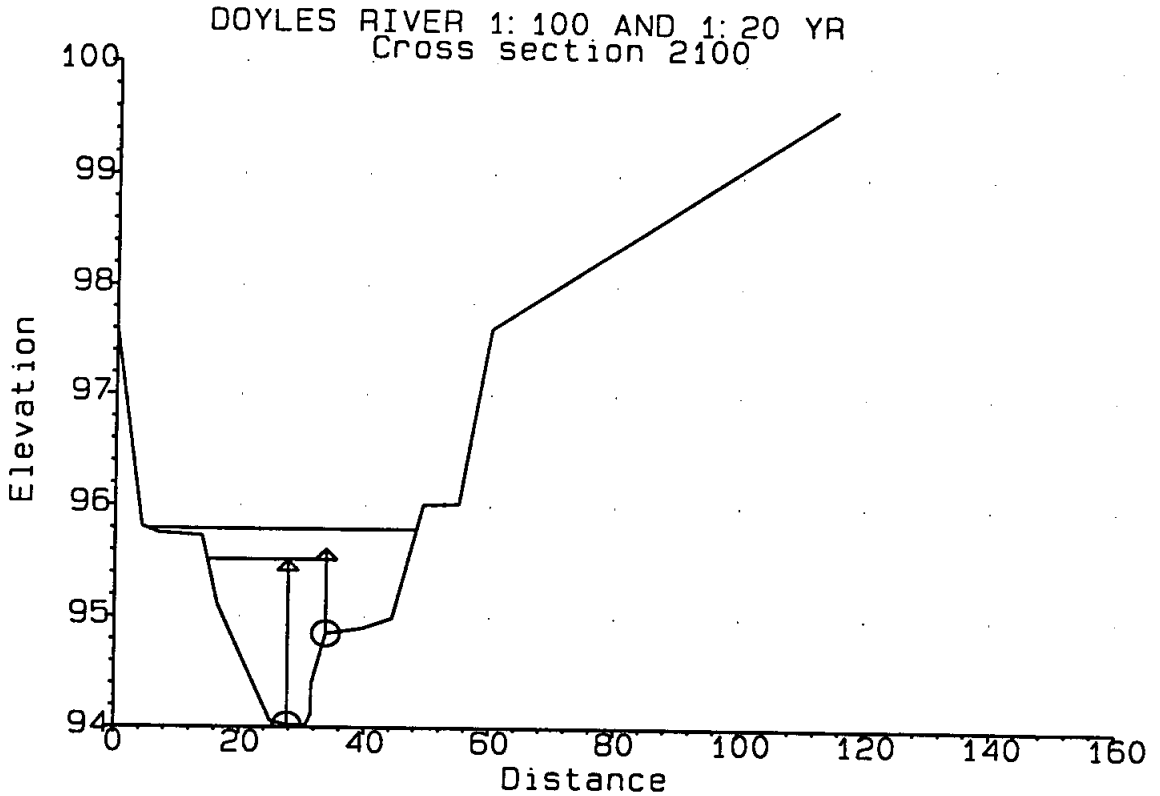
48
56
64
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 2100
Elevation
100
99
98
97
96
95
94
0
20
40
60
80
100
120
140
160
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 2100.1
Elevation
100
99
98
97
96
95
94
0
20
40
60
80
100
120
140
160
Distance


DOYLES RIVER 1: 100 AND 1: 20 YR
Cross section 2100
Elevation
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40
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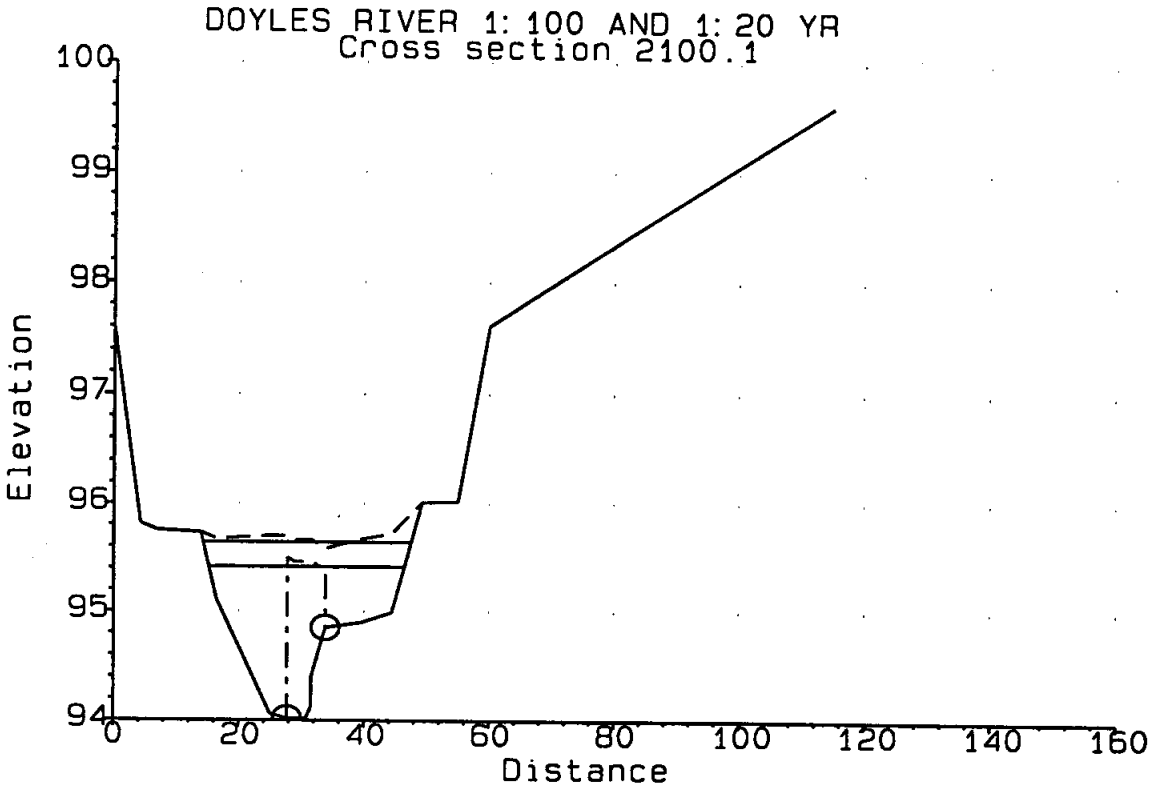
100
120
140
160
Distance


DOYLES RIVER 1: 100 AND 1: 20 YR
Cross section 2100.1
Elevation
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98
97
96
95
94
0
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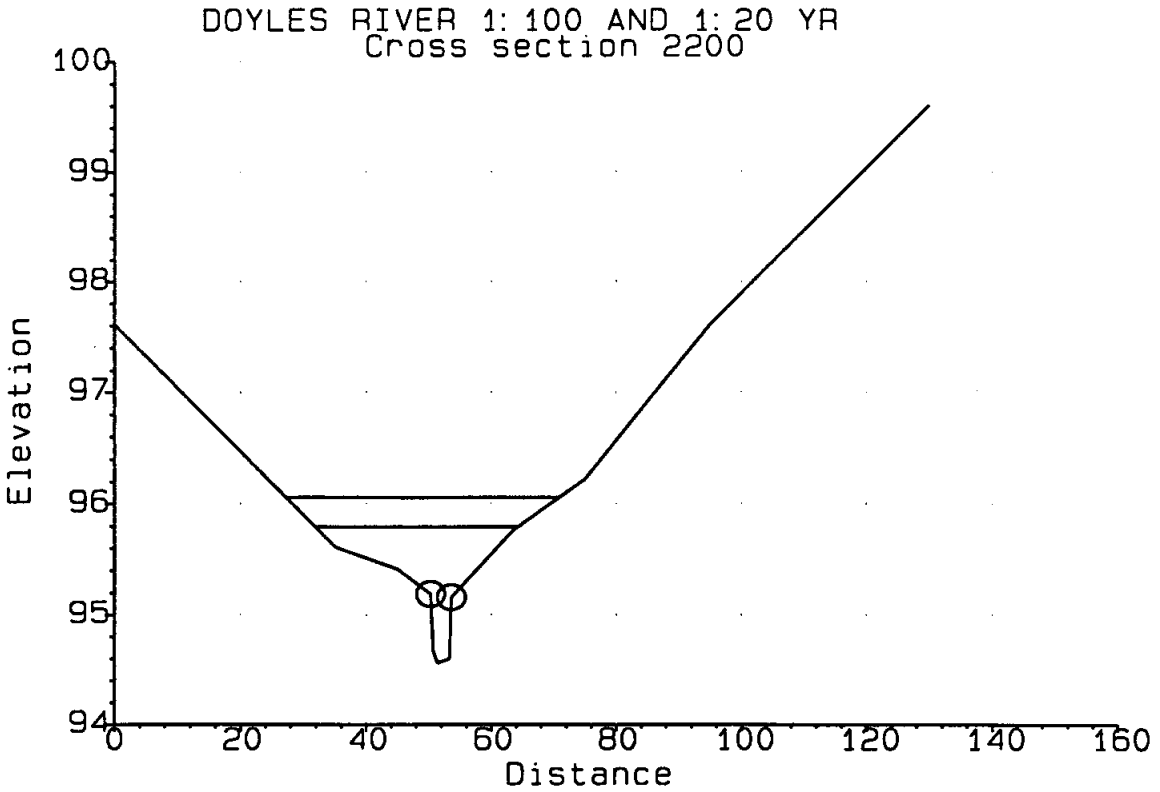
40
60
80
100
120
140
160
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 2200
Elevation
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96
95
94
0
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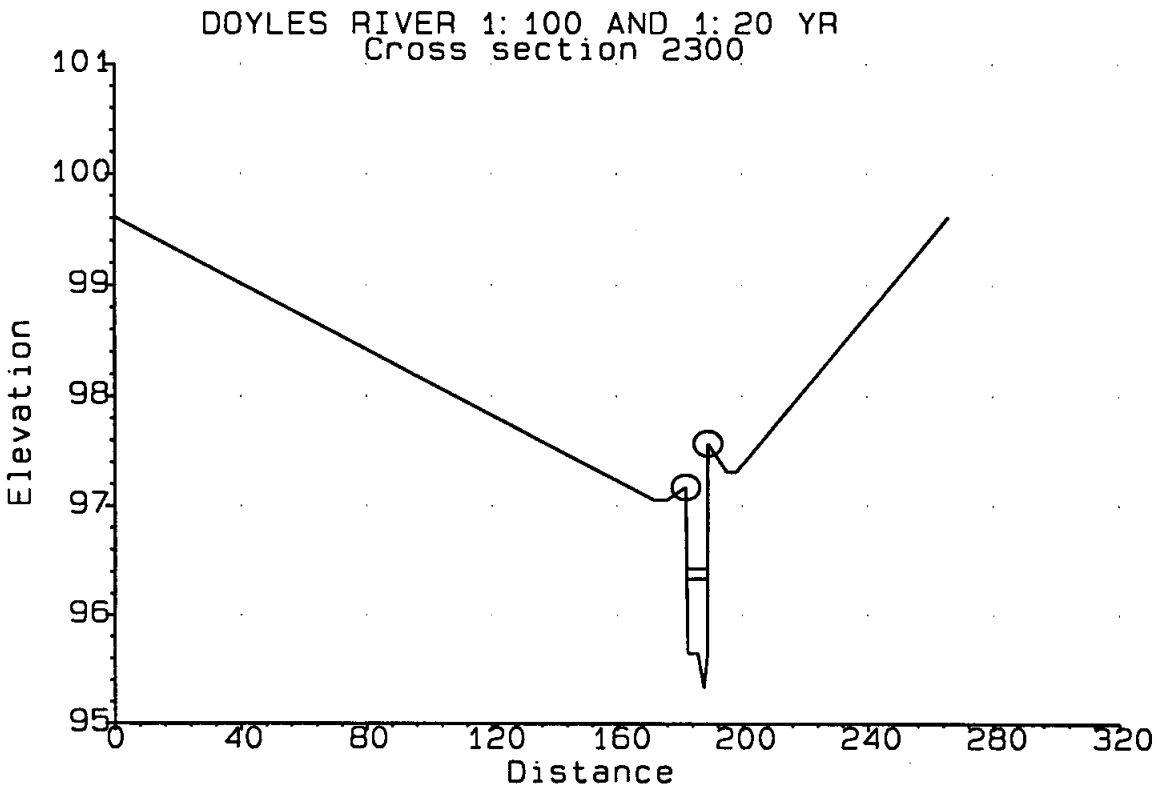
40
60
80
100
120
140
160
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 2300
Elevation
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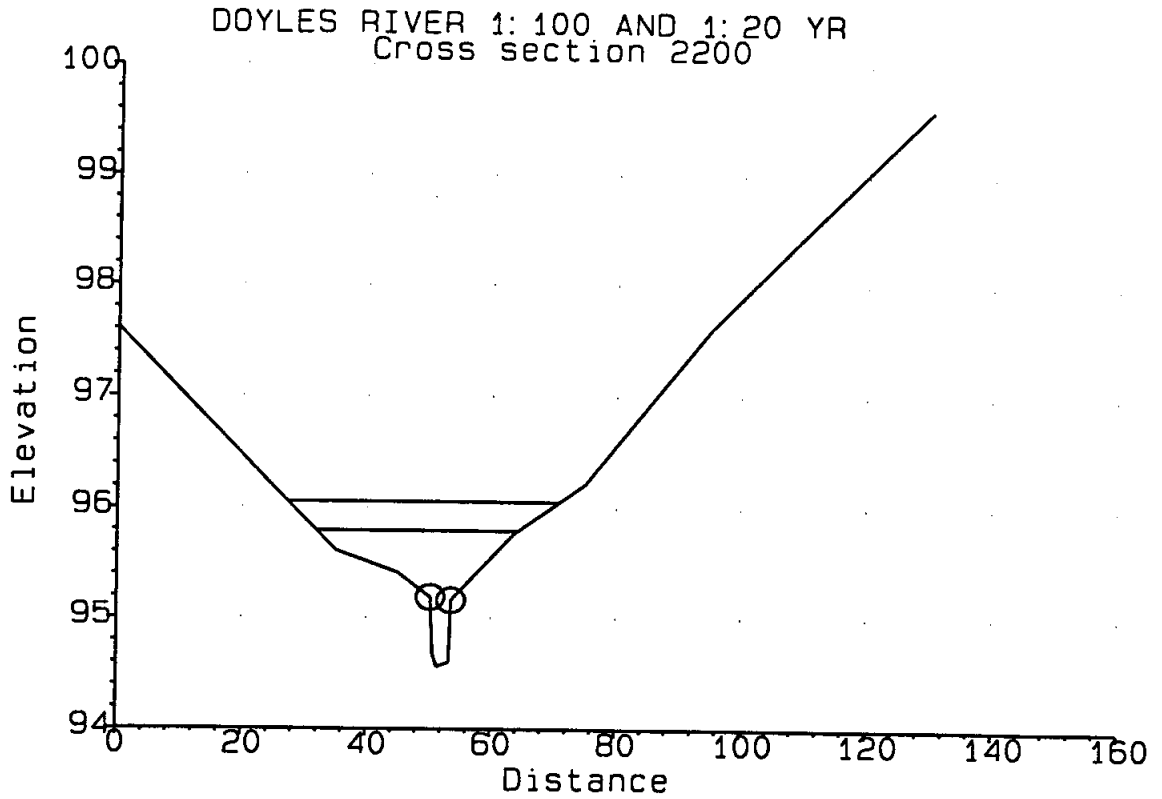
100
99
98
97
96
95
0
40
80
120
160
200
240
280
320
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 2200
Elevation
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120
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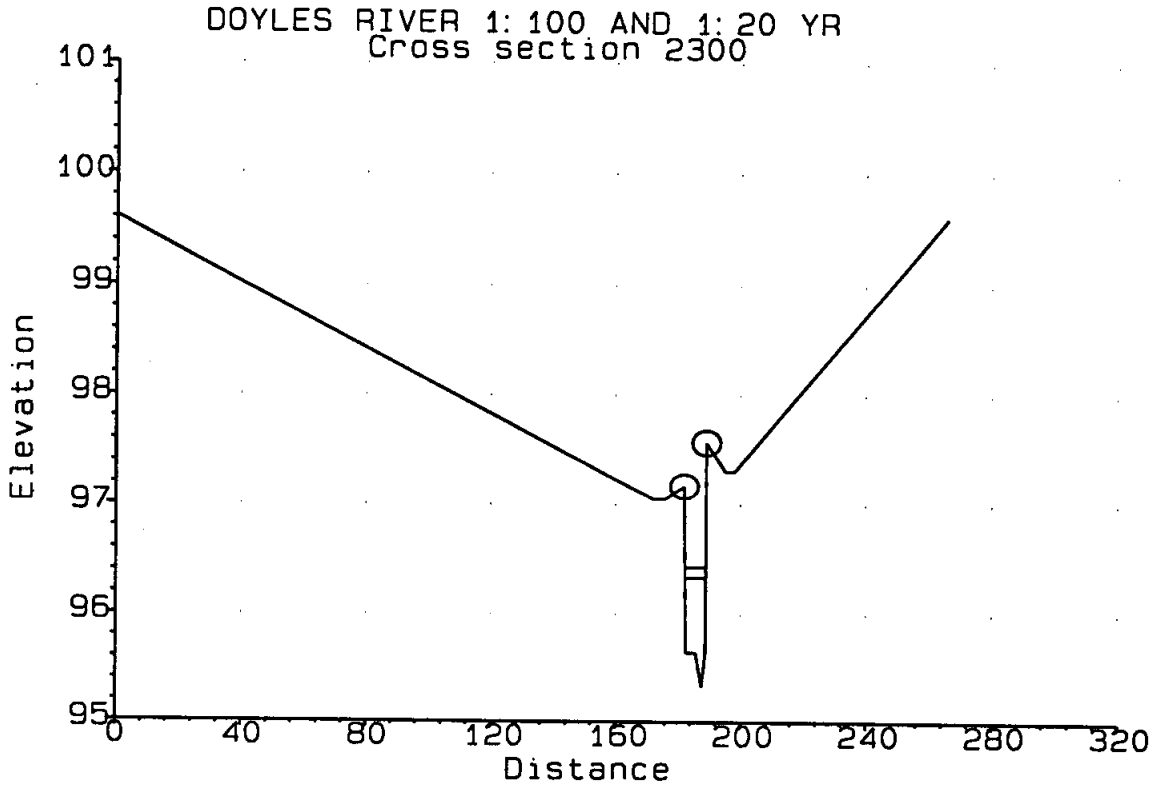
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 2300
Elevation
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100
99
98
97
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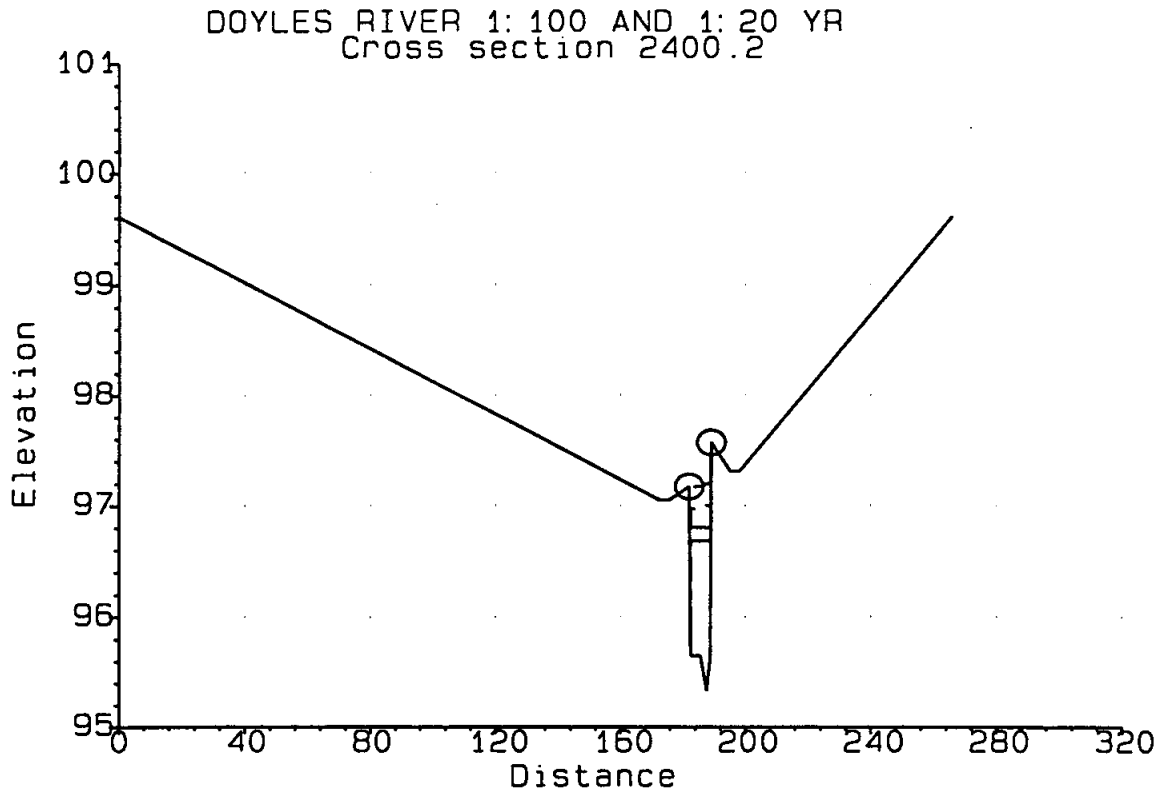
200
240
280
320
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 2400.2
Elevation
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99
98
97
96
95
0
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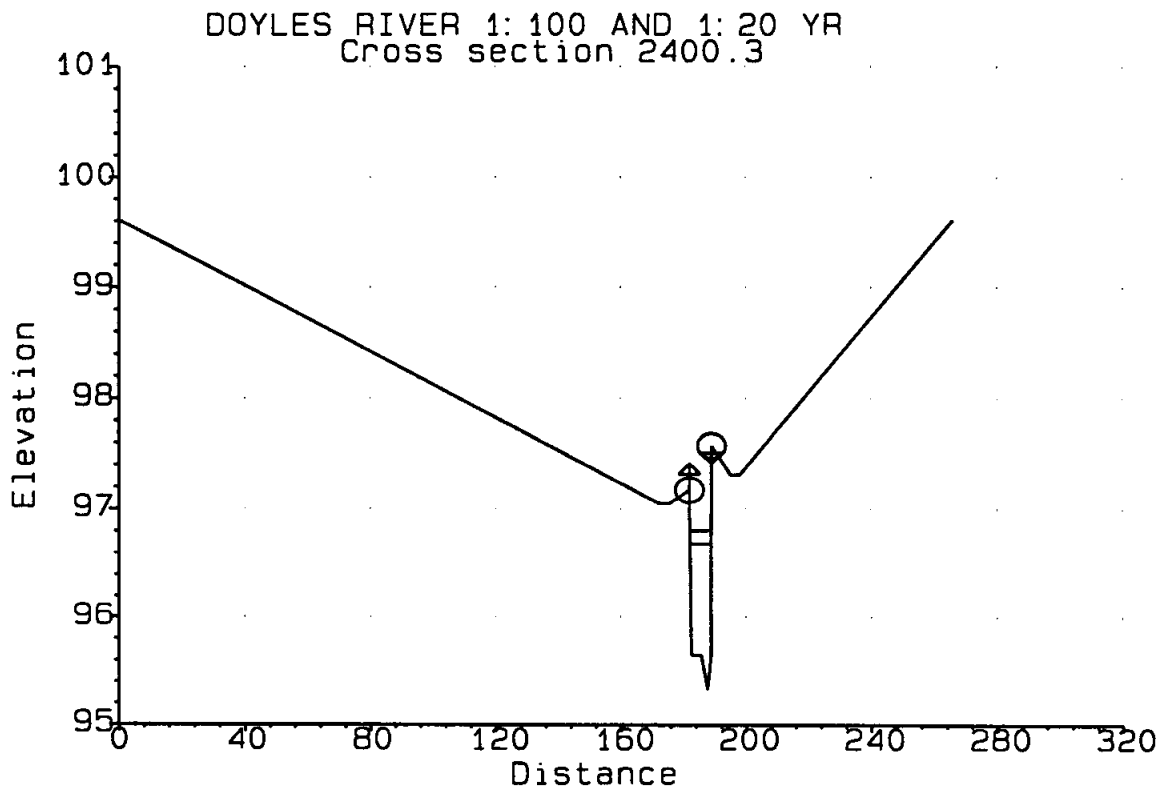
80
120
160
200
240
280
320
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 2400.3
Elevation
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95
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80
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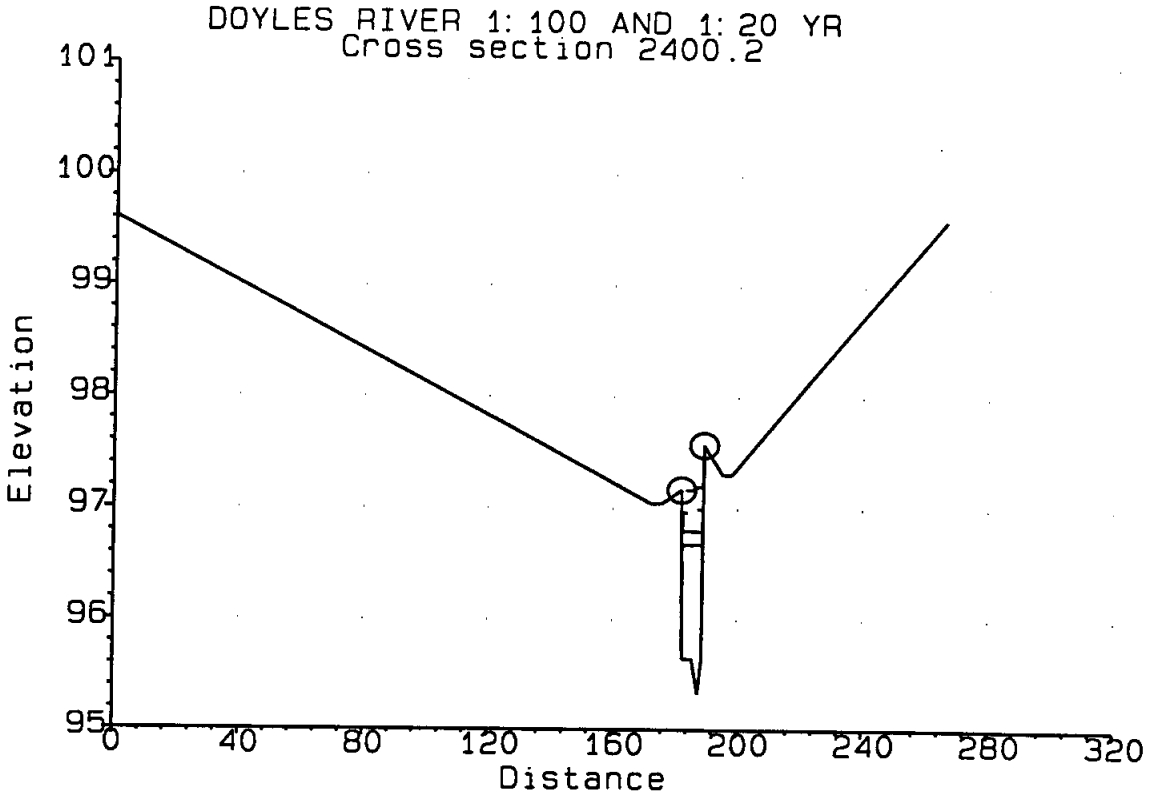
200
240
280
320
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 2400.2
Elevation
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80
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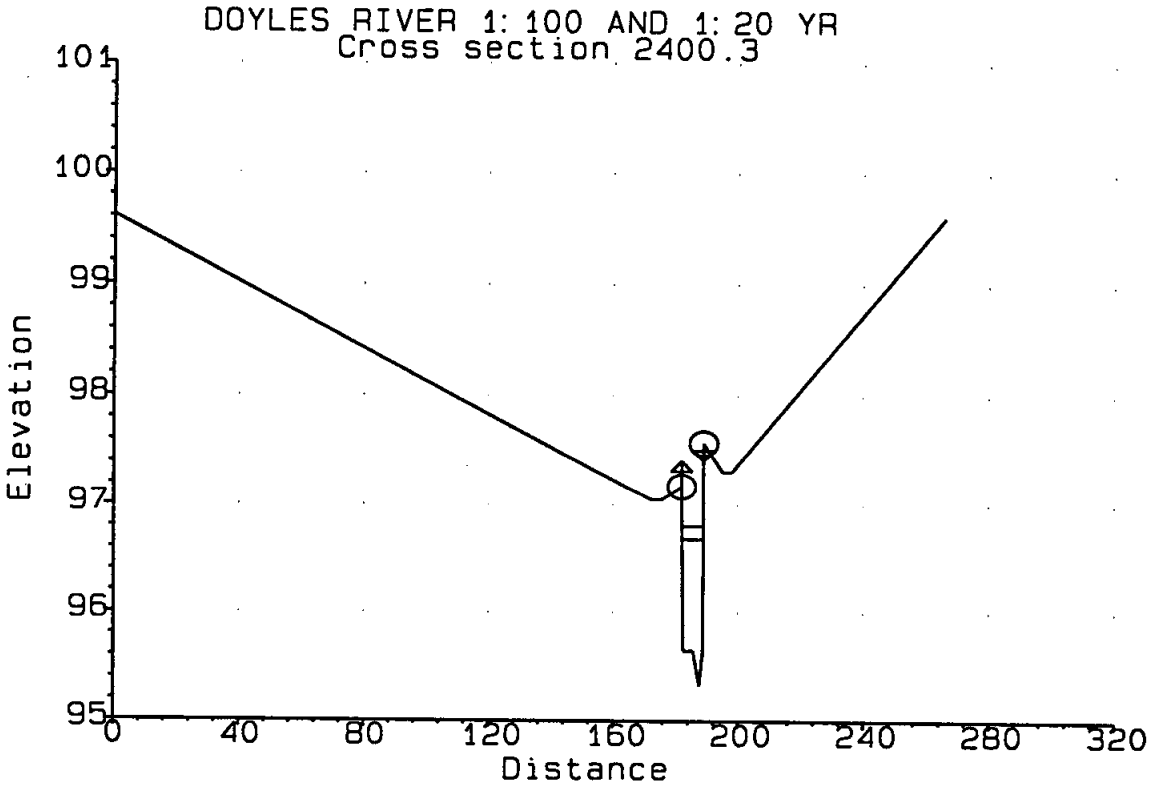
240
280
320
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 2400.3
Elevation
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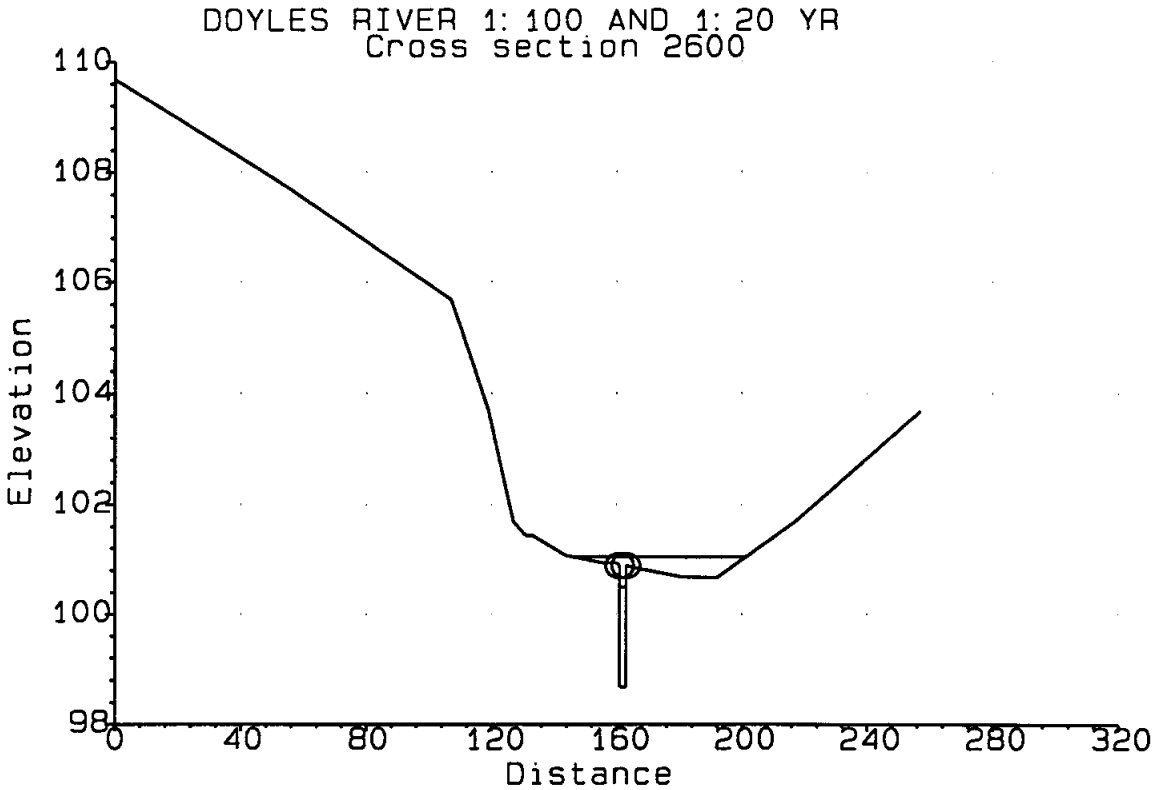
320
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 2600
Elevation
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108
106
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100
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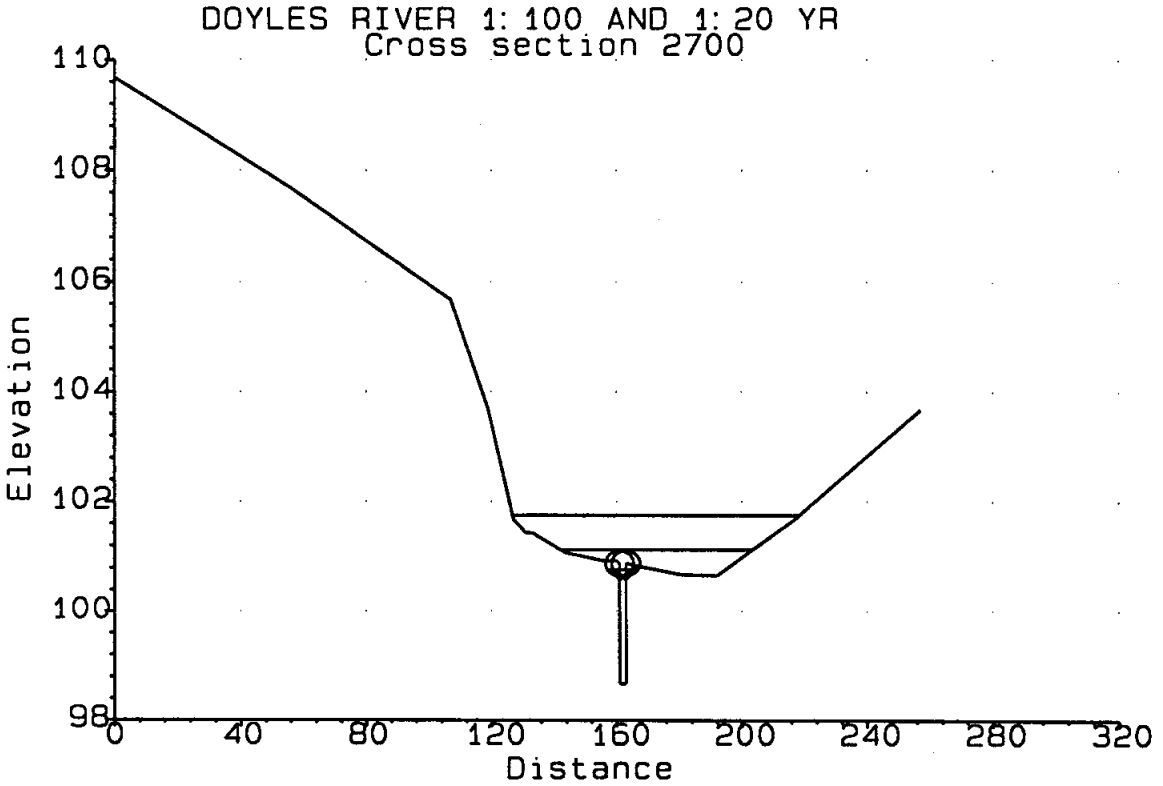
240
280
320
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 2700
Elevation
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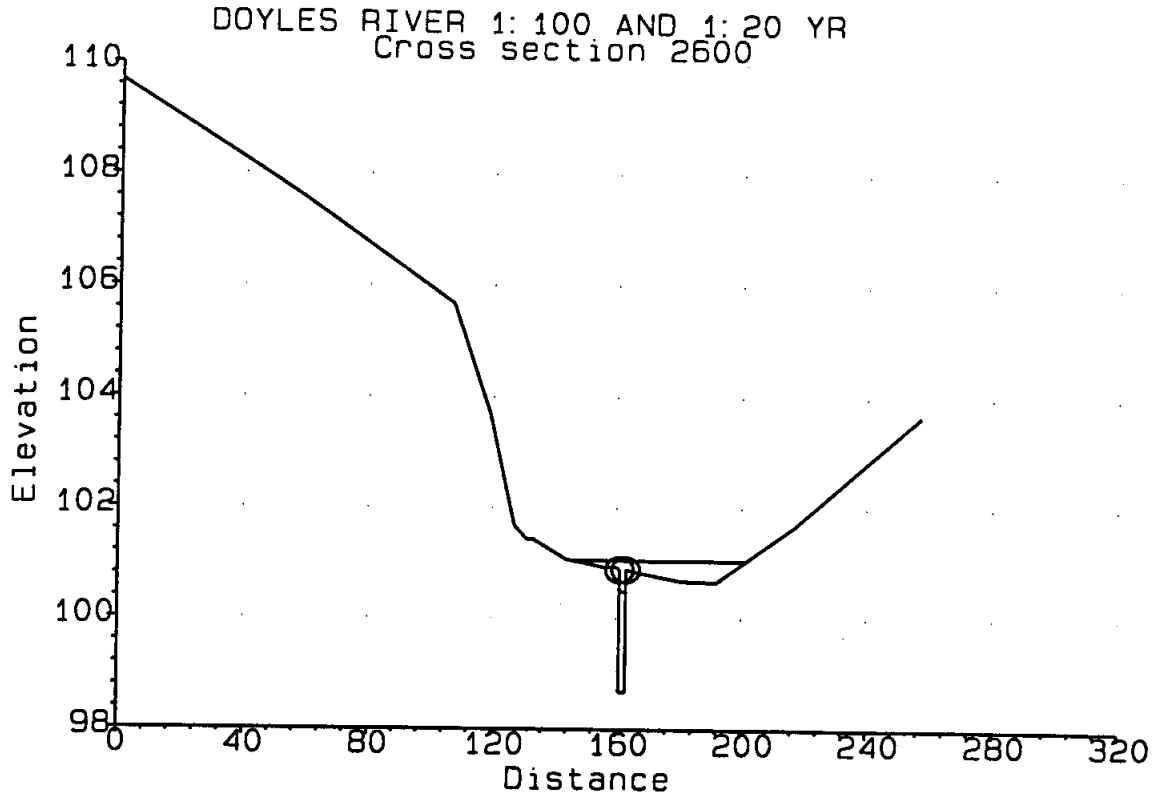
320
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 2600
Elevation
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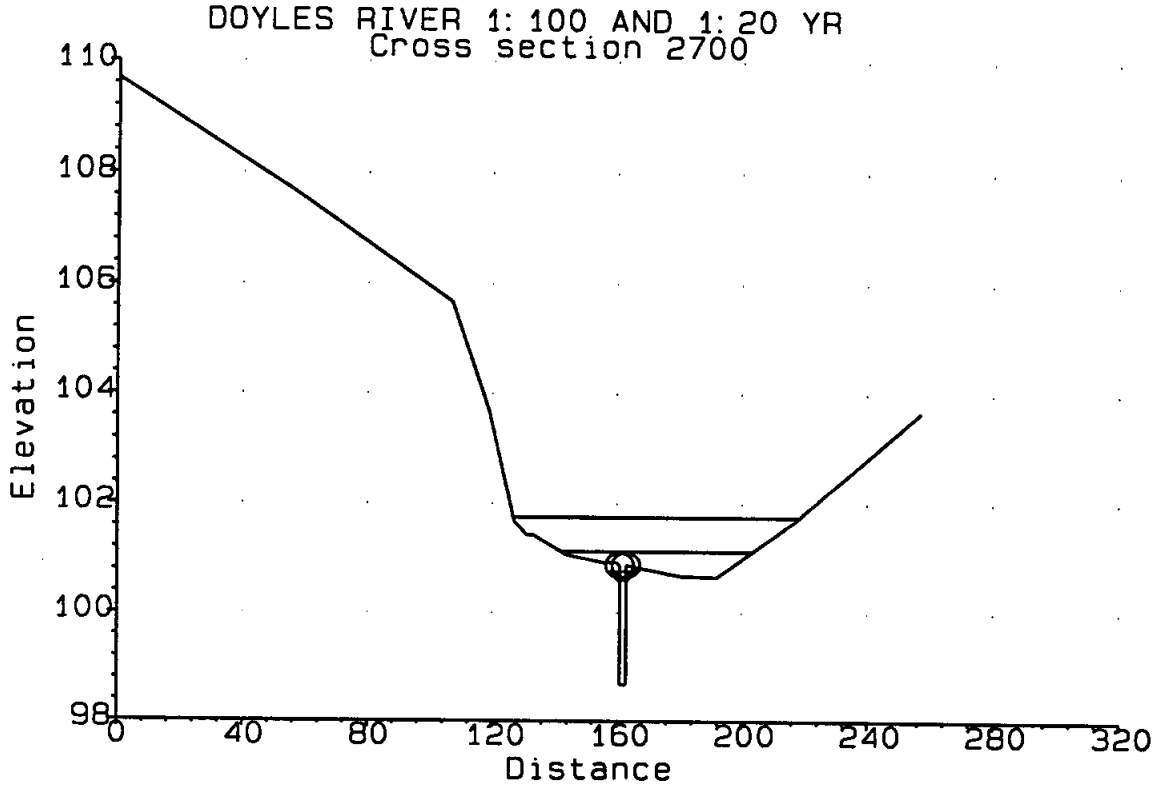
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 2700
Elevation
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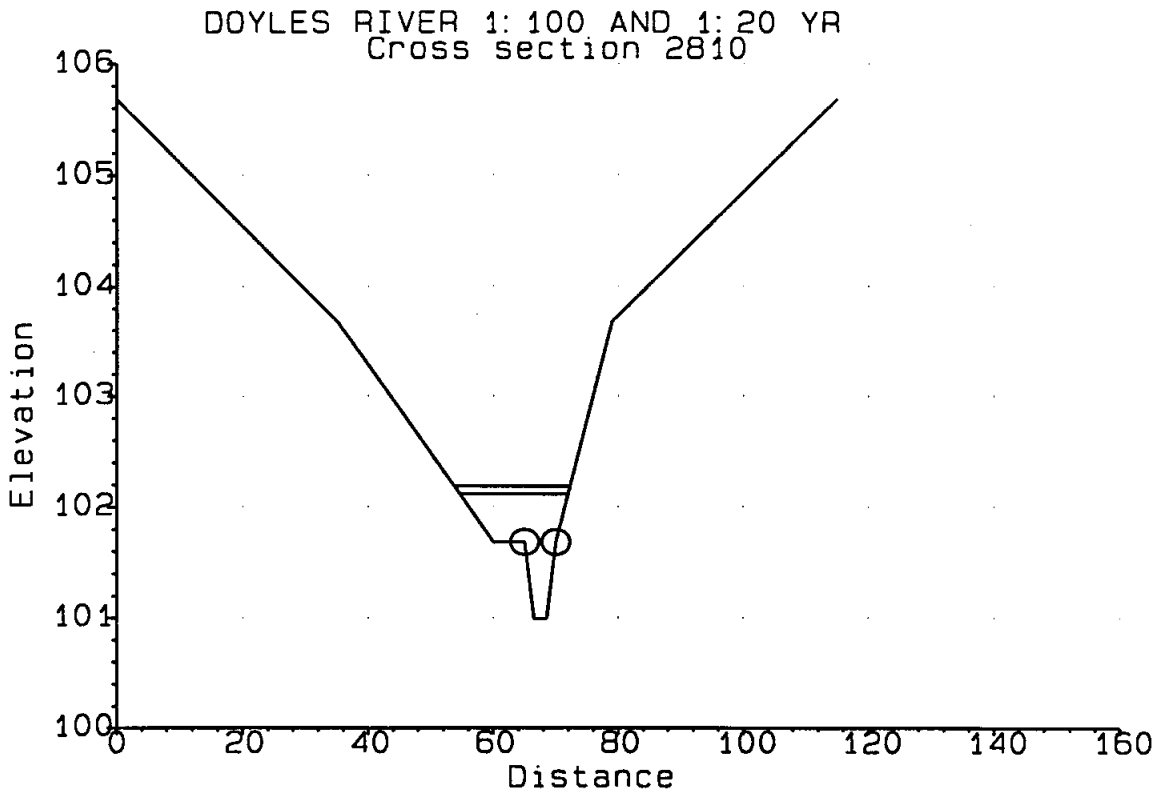
320
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 2810
Elevation
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105
104
103
102
101
100
0
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40
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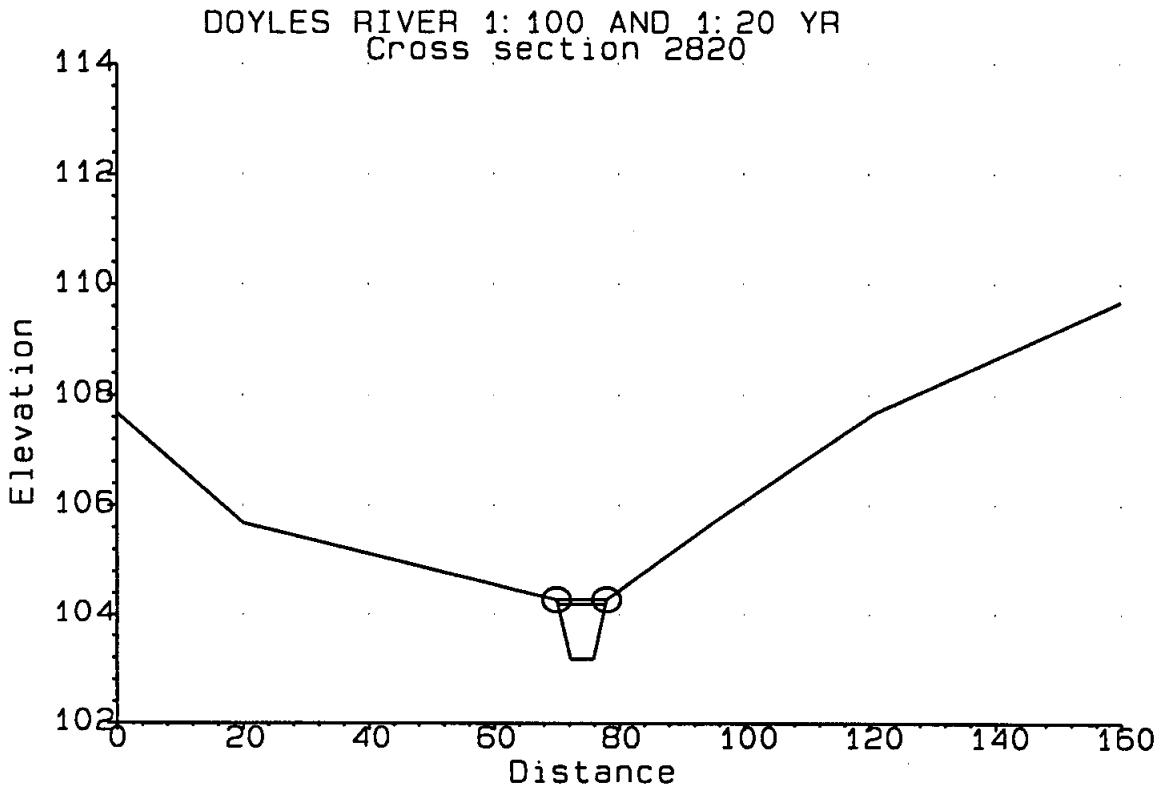
80
100
120
140
160
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 2820
Elevation
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112
110
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106
104
102
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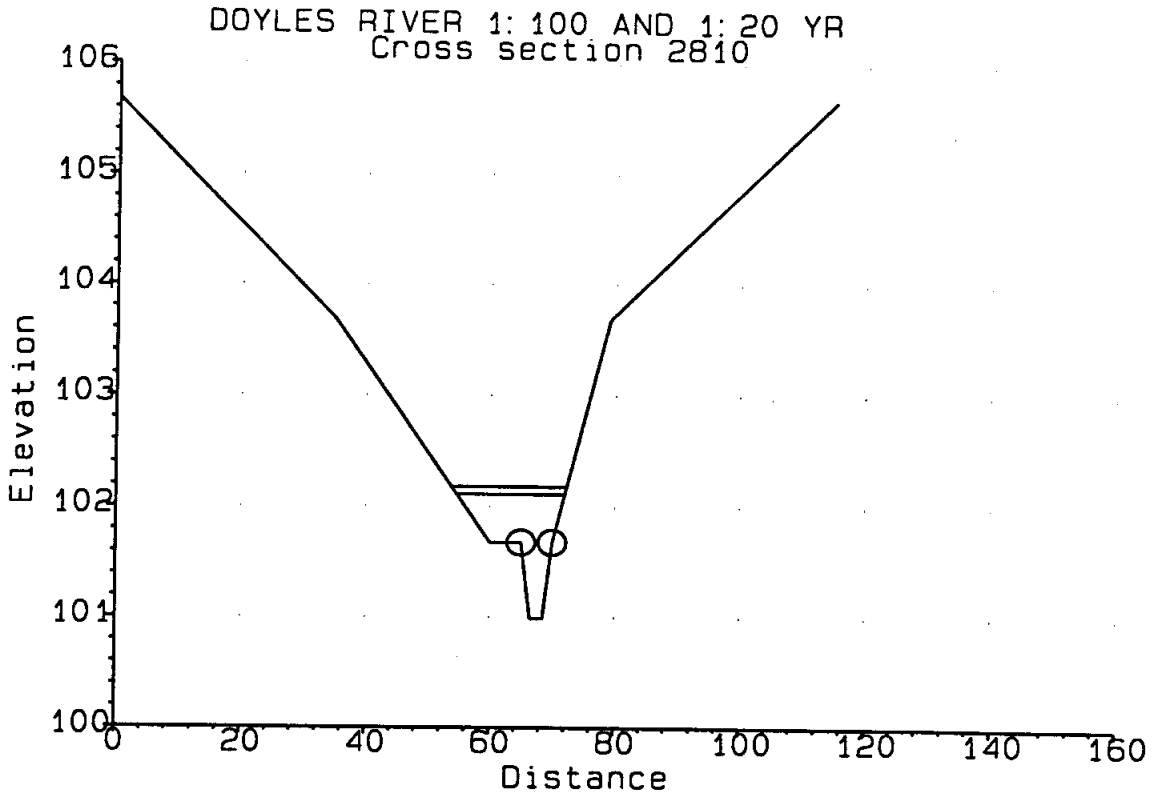
100
120
140
160
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 2810
Elevation
106
105
104
103
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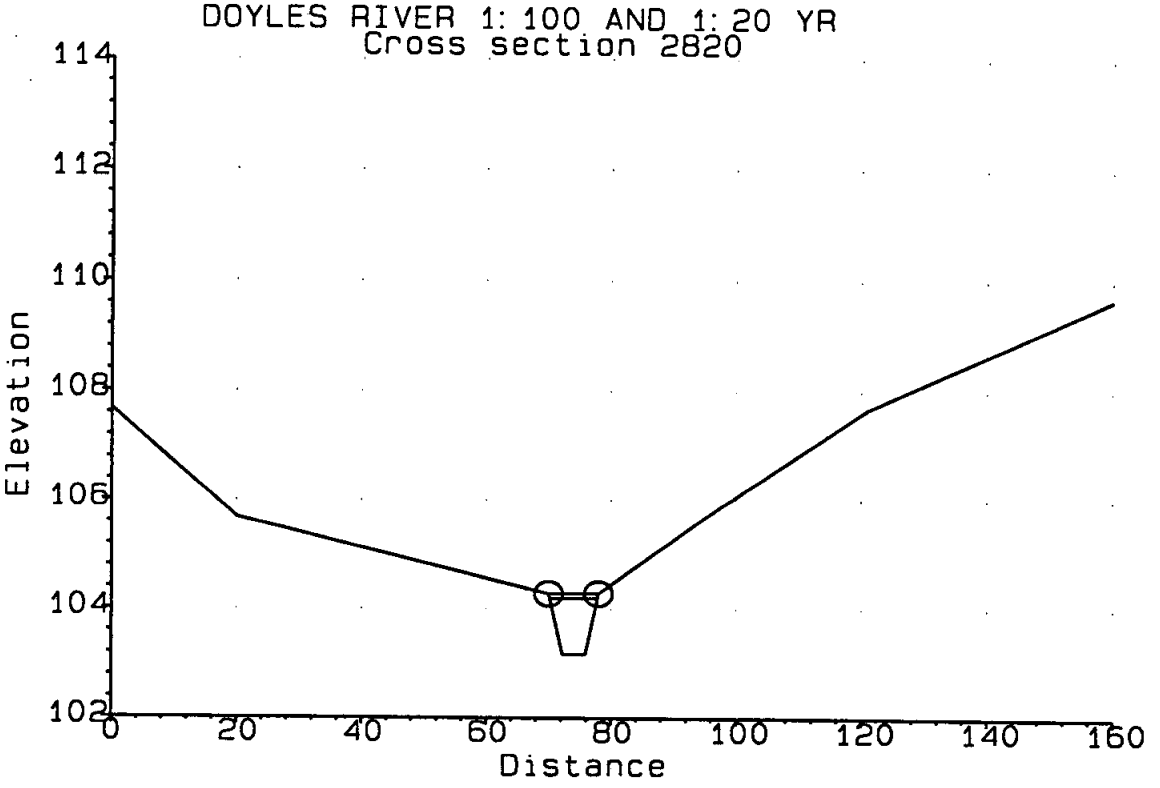
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 2820
Elevation
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110
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106
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120
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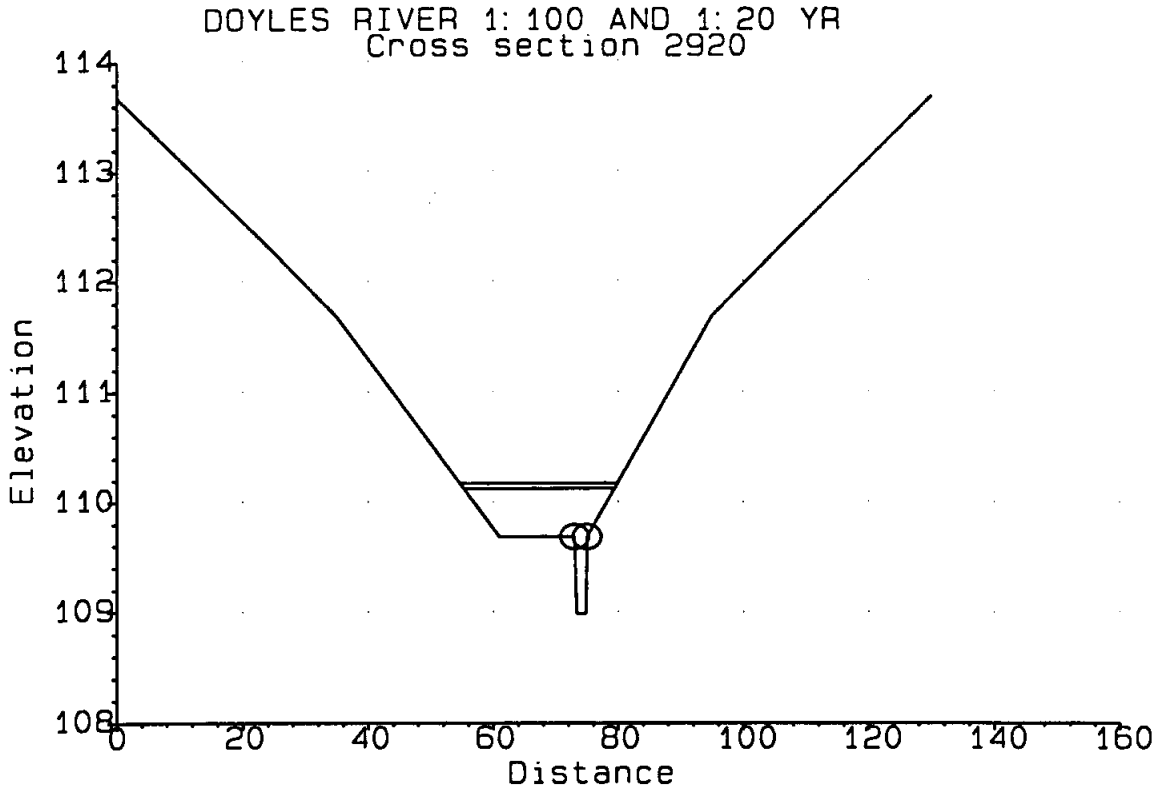
160
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 2920
Elevation
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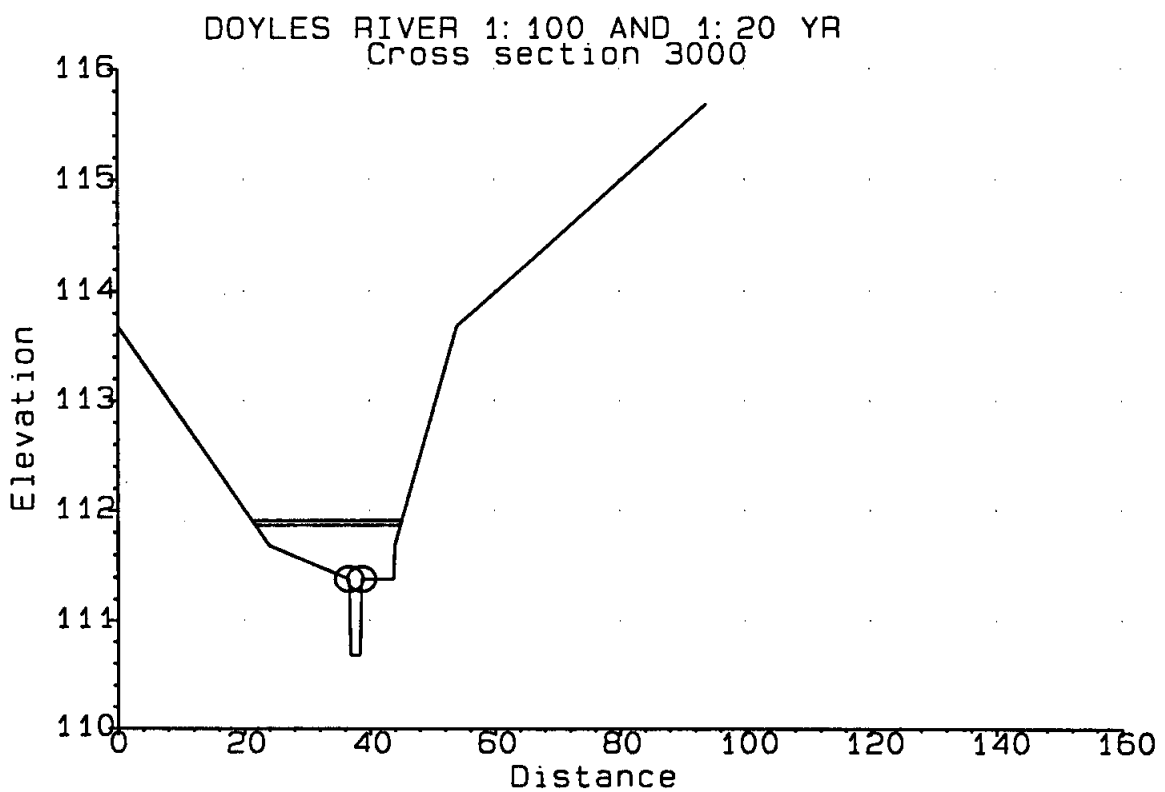
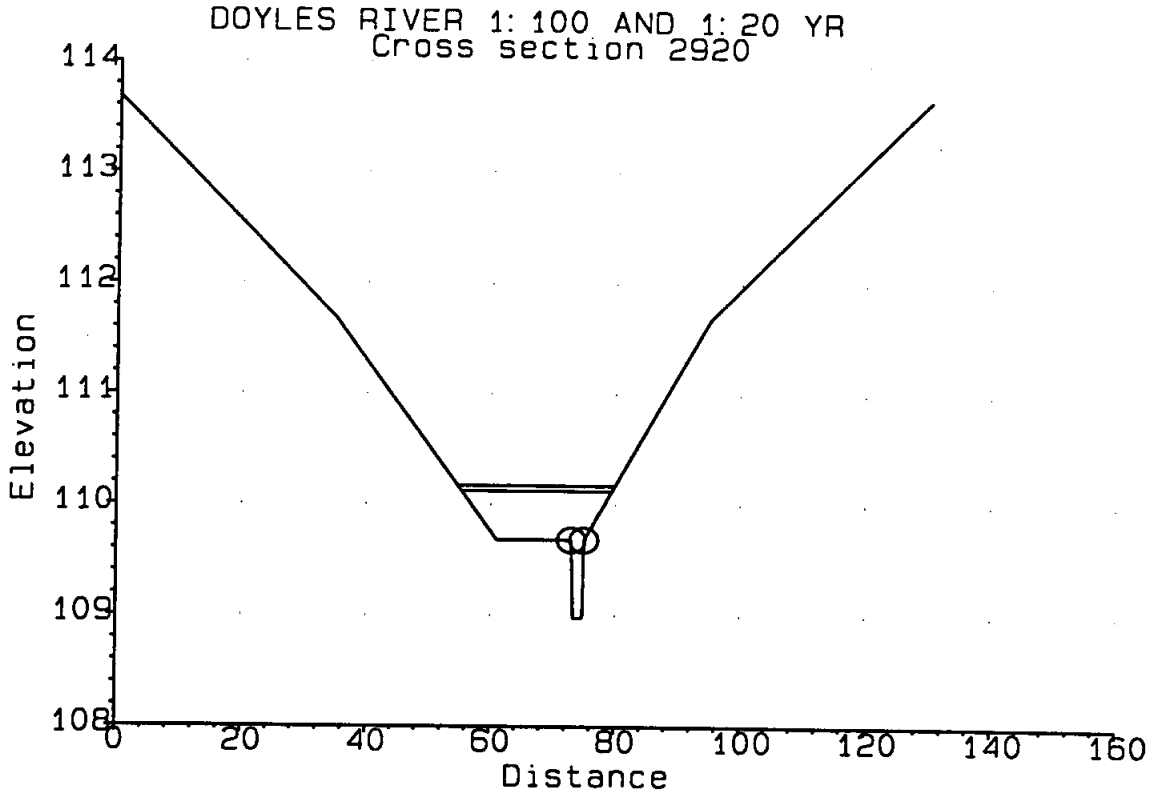
113
112
111
110
109
108
0
20
40
60
80
100
120
140
160
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 3000
Elevation
116
115
114
113
112
111
110
0
20
40
60
80
100
120
140
160
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 2920
Elevation
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113
112
111
110
109
108
0
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40
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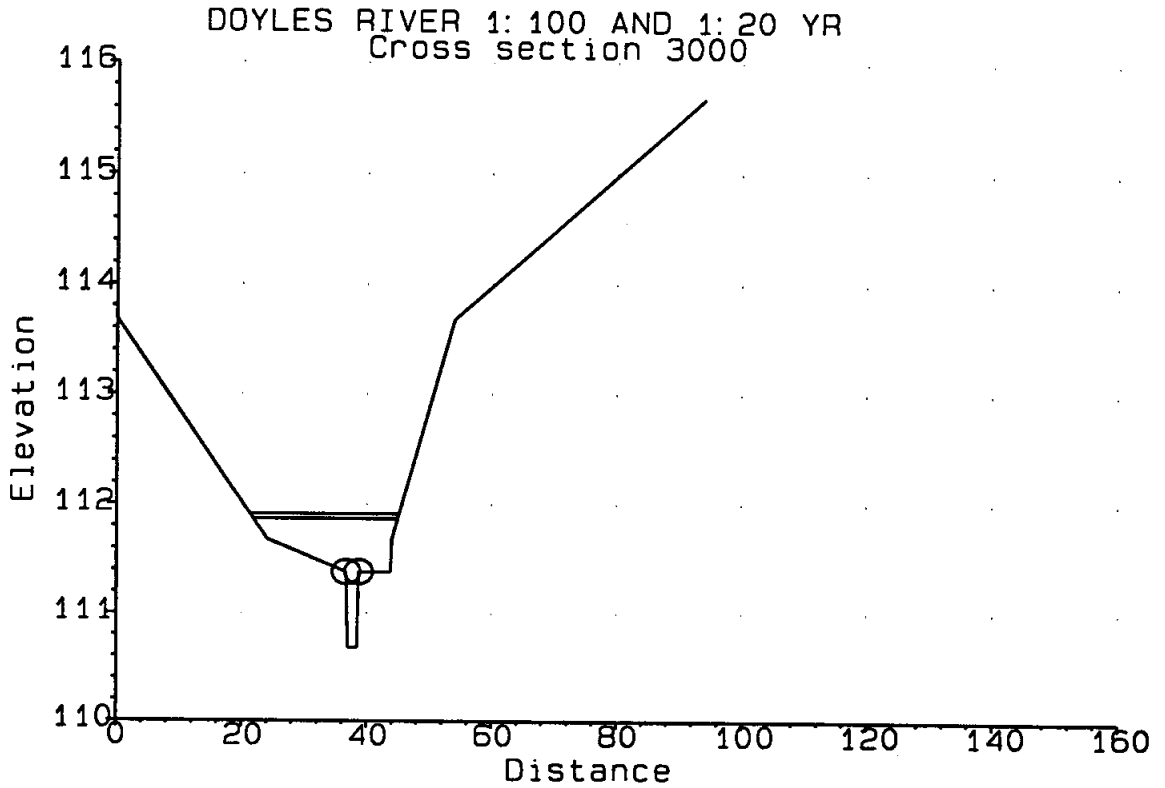
100
120
140
160
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 3000
Elevation
116
115
114
113
112
111
110
0
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40
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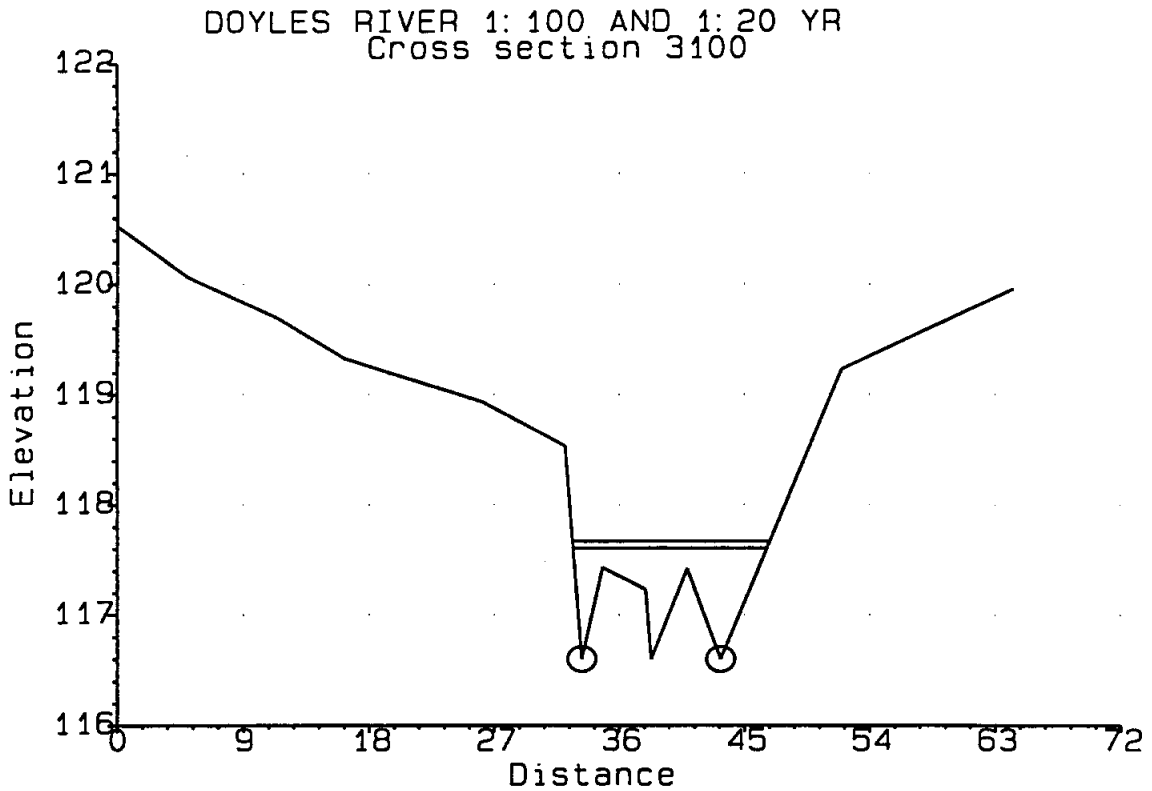
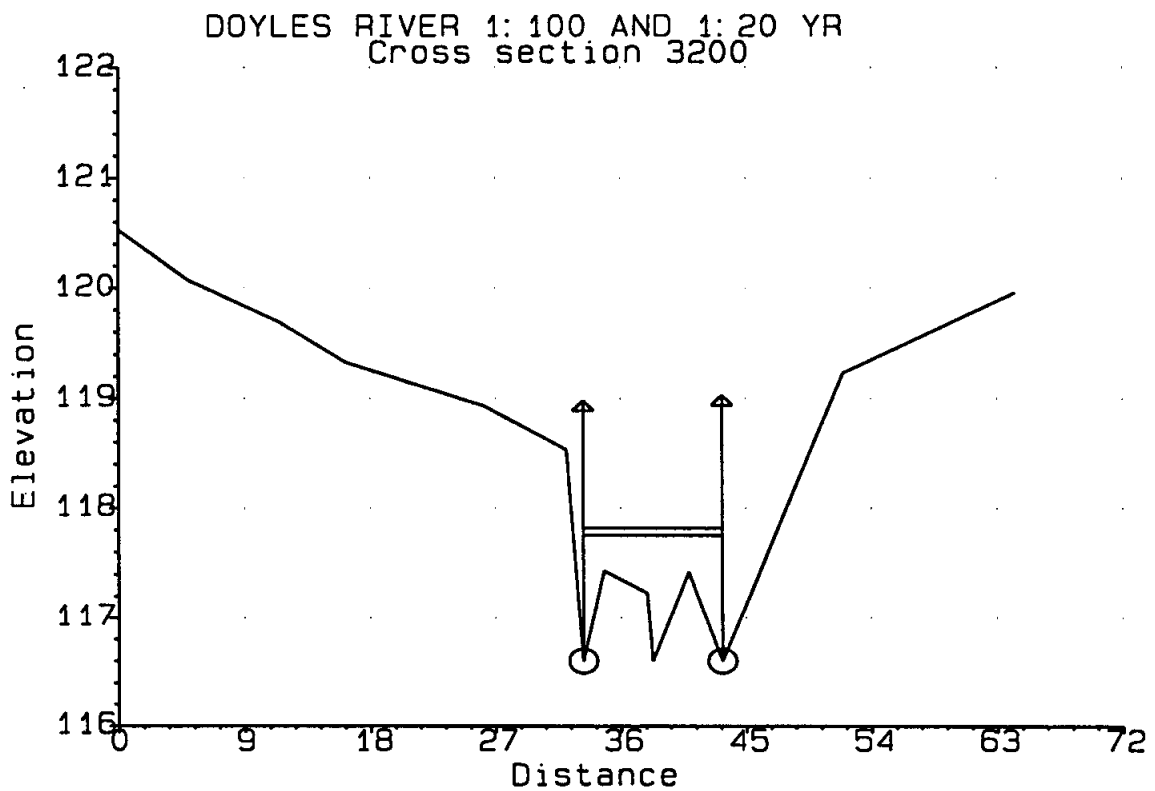
80
100
120
140
160
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 3100
Elevation
122
121
120
119
118
117
116
0
9
18
27
36
45
54
63
72
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 3200
Elevation
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121
120
119
118
117
116
0
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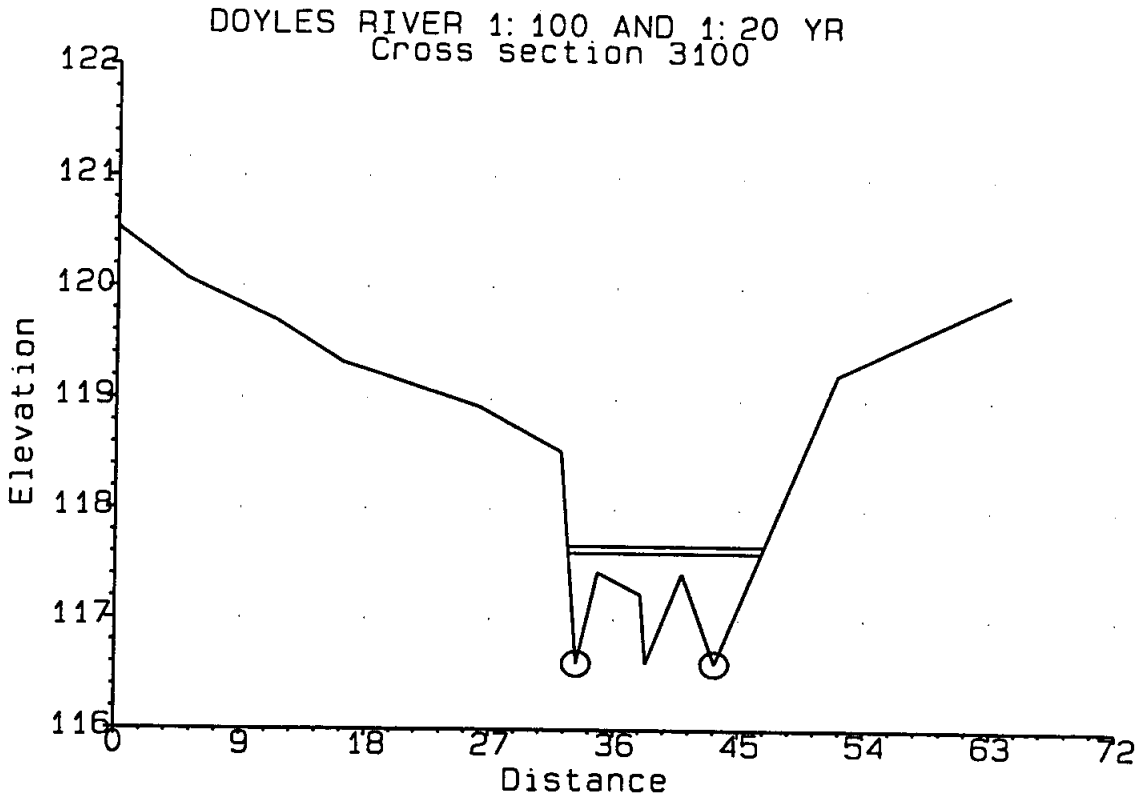
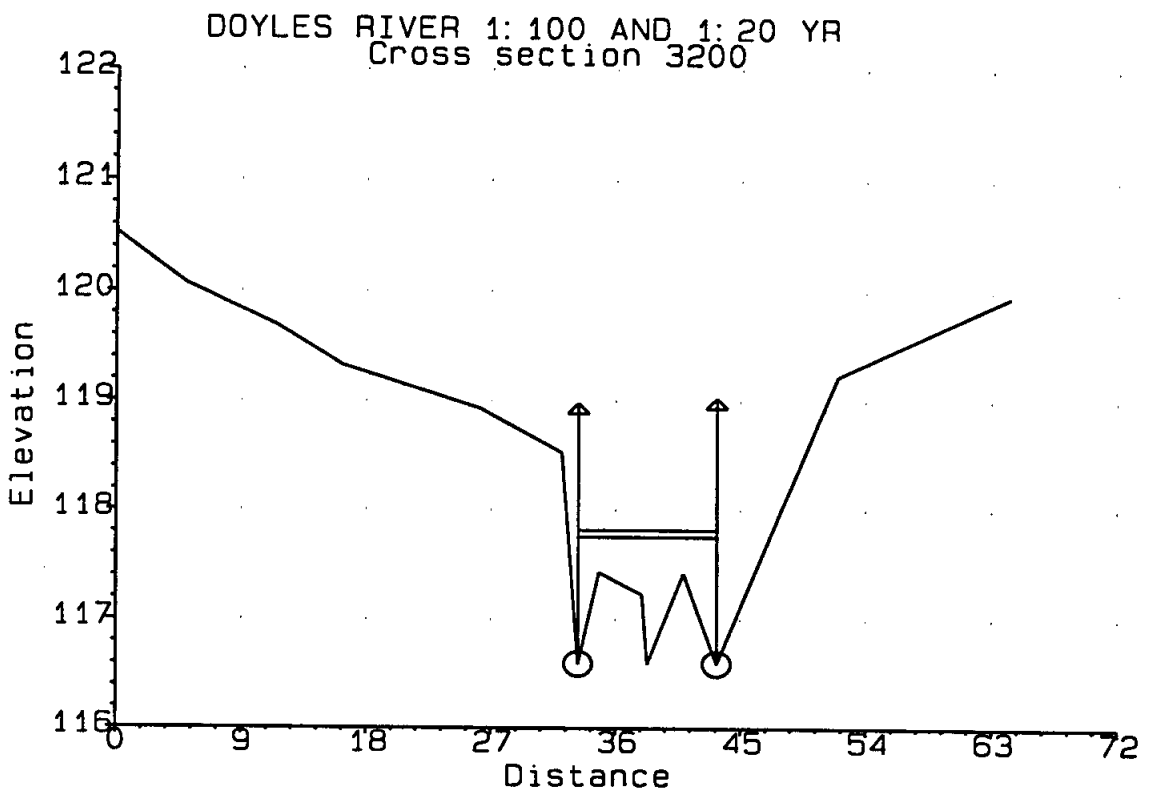
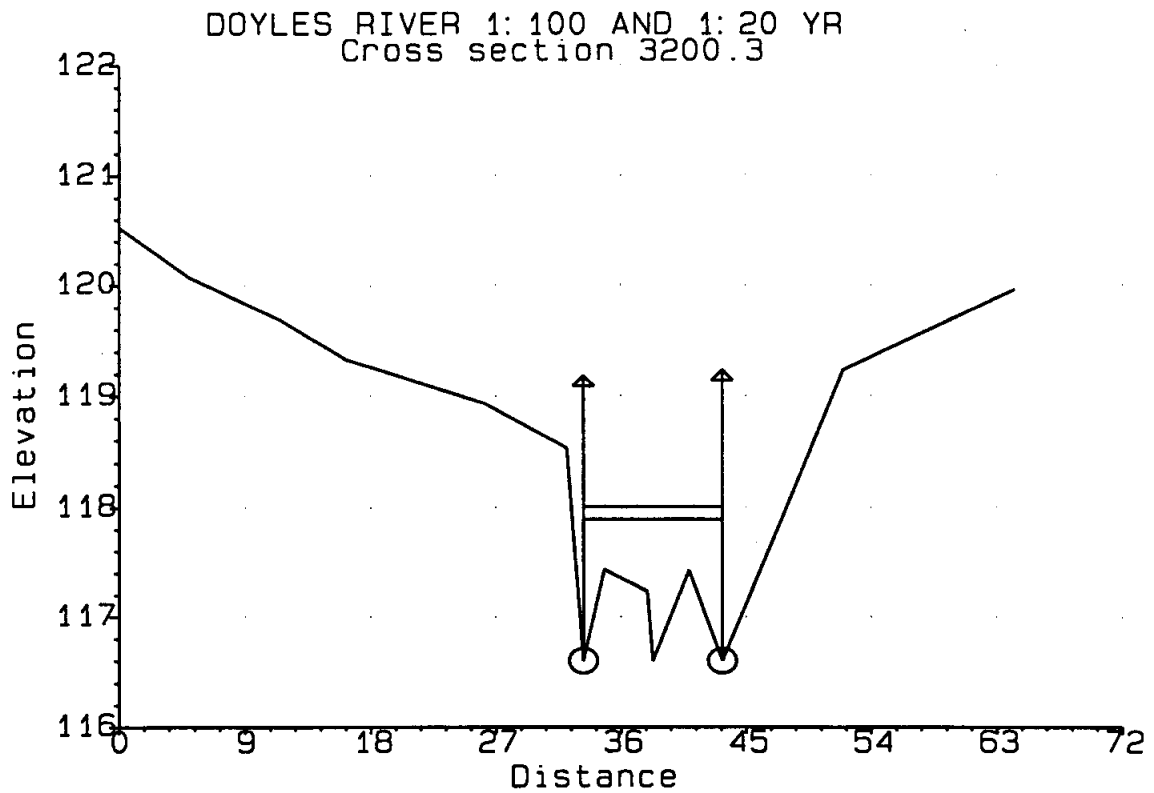
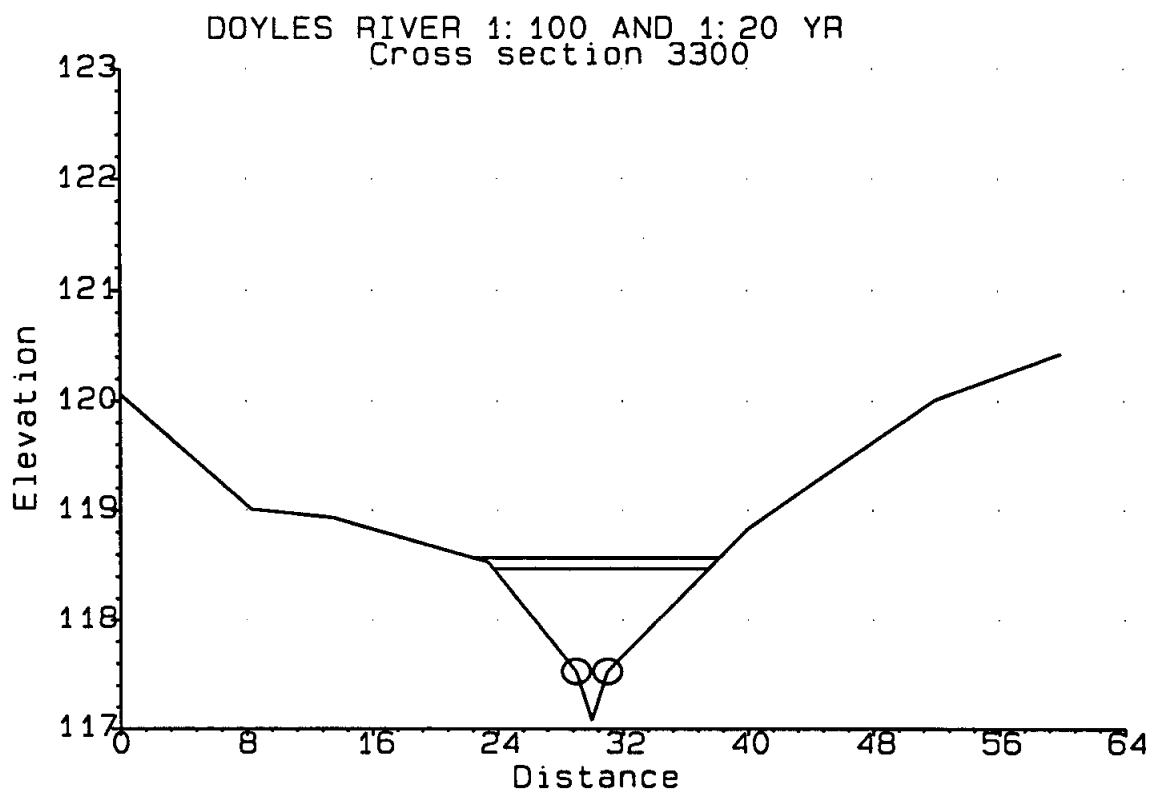
18
27
36
45
54
63
72
Distance


DOYLES RIVER 1: 100 AND 1: 20 YR
Cross section 3100
Elevation
122
121
120
119
118
117
116
0
9
18
27
36
45
54
63
72
Distance


DOYLES RIVER 1: 100 AND 1: 20 YR
Cross section 3200
Elevation
122
121
120
119
118
117
116
0
9
18
27
36
45
54
63
72
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 3200.3
Elevation
122
121
120
119
118
117
116
0
9
18
27
36
45
54
63
72
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 3300
Elevation
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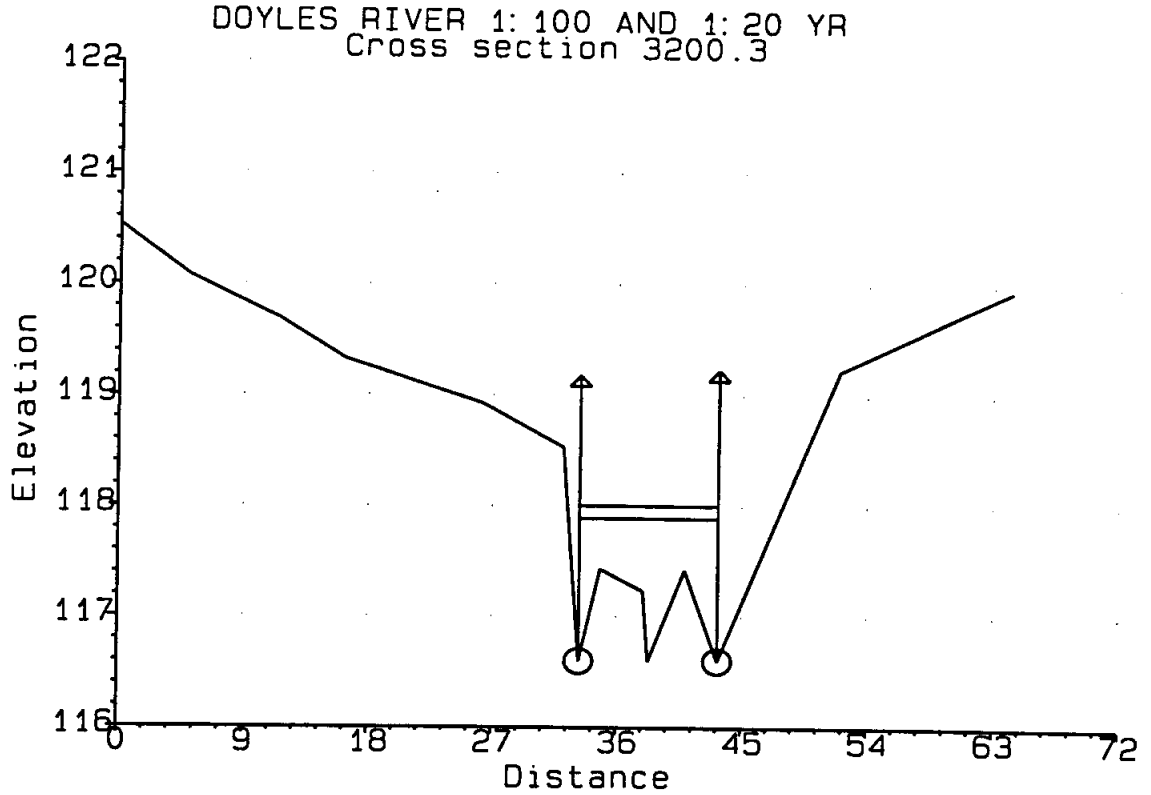
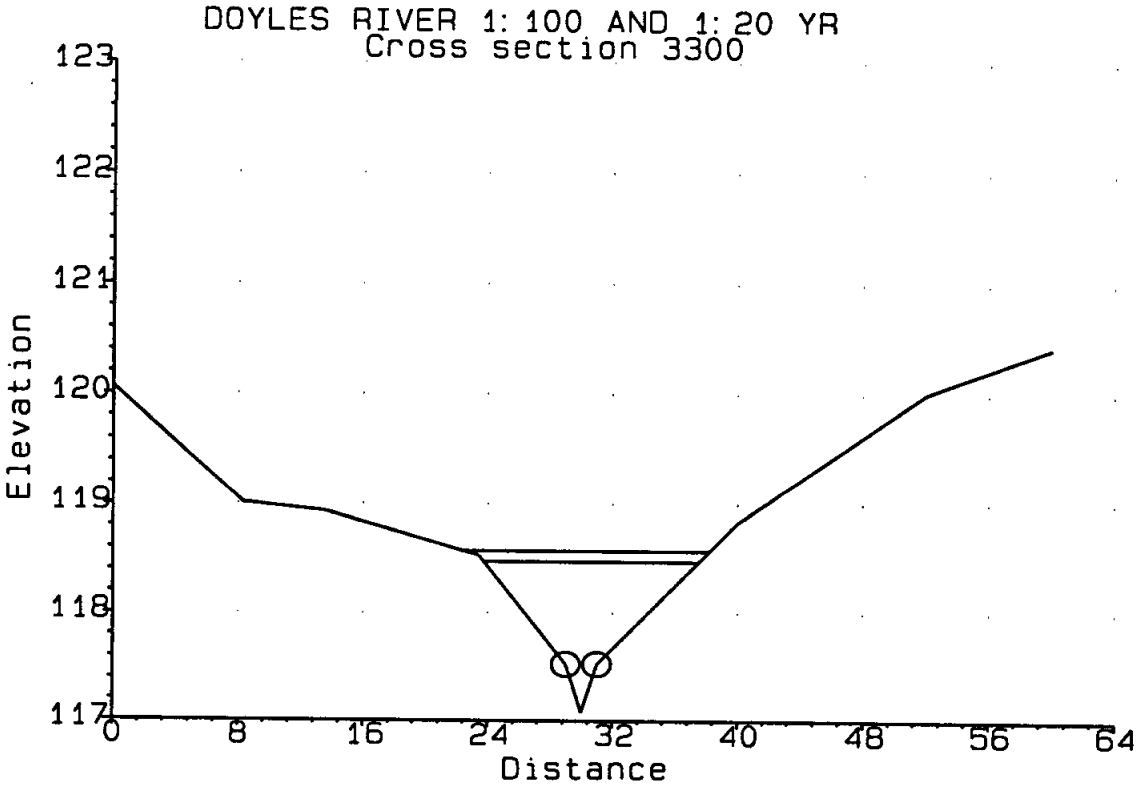
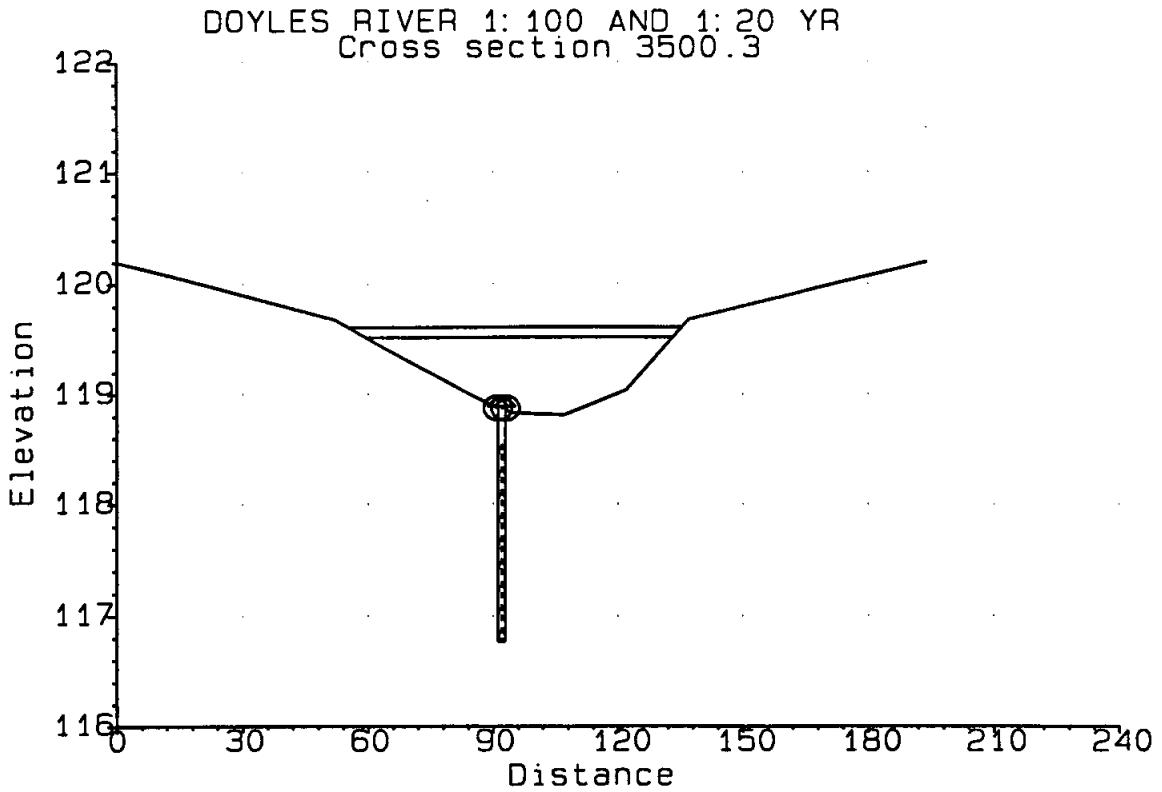
122
121
120
119
118
117
0
8
16
24
32
40
48
56
64
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 3200.3
Elevation
122
121
120
119
118
117
116
0
9
18
27
36
45
54
63
72
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 3300
Elevation
123
122
121
120
119
118
117
0
8
16
24
32
40
48
56
64
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 3500.3
Elevation
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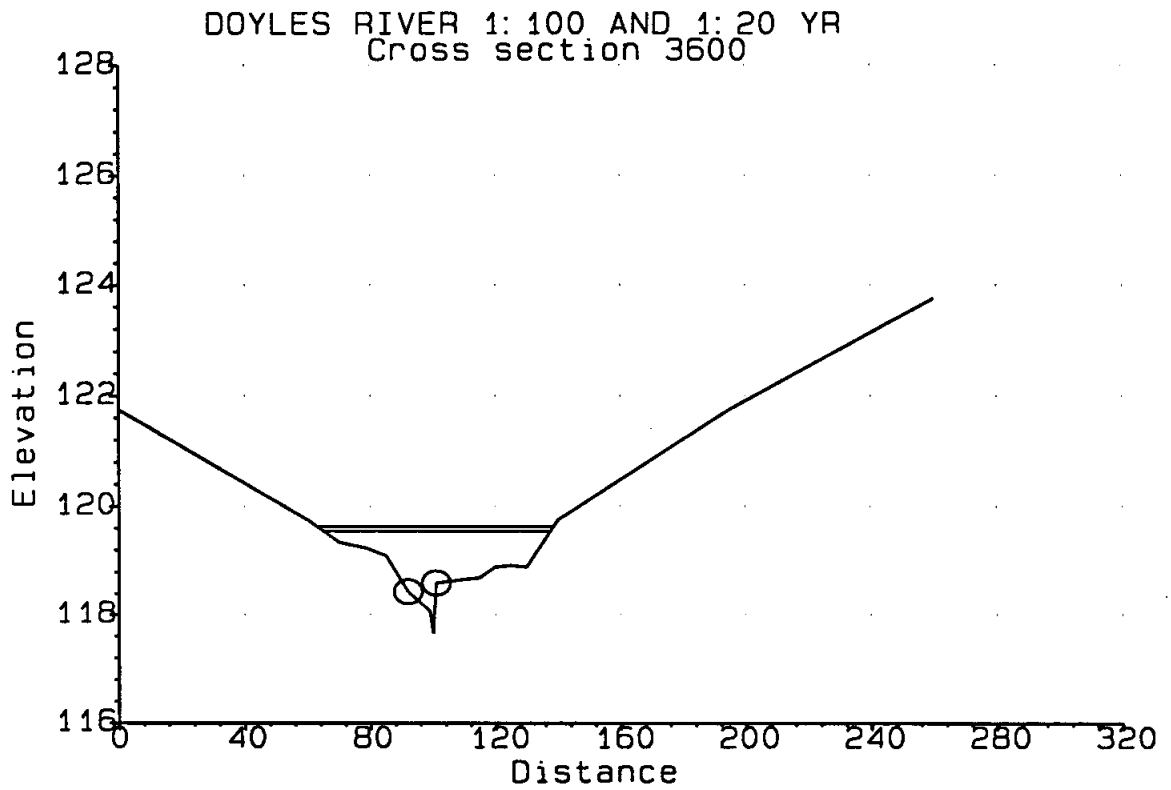
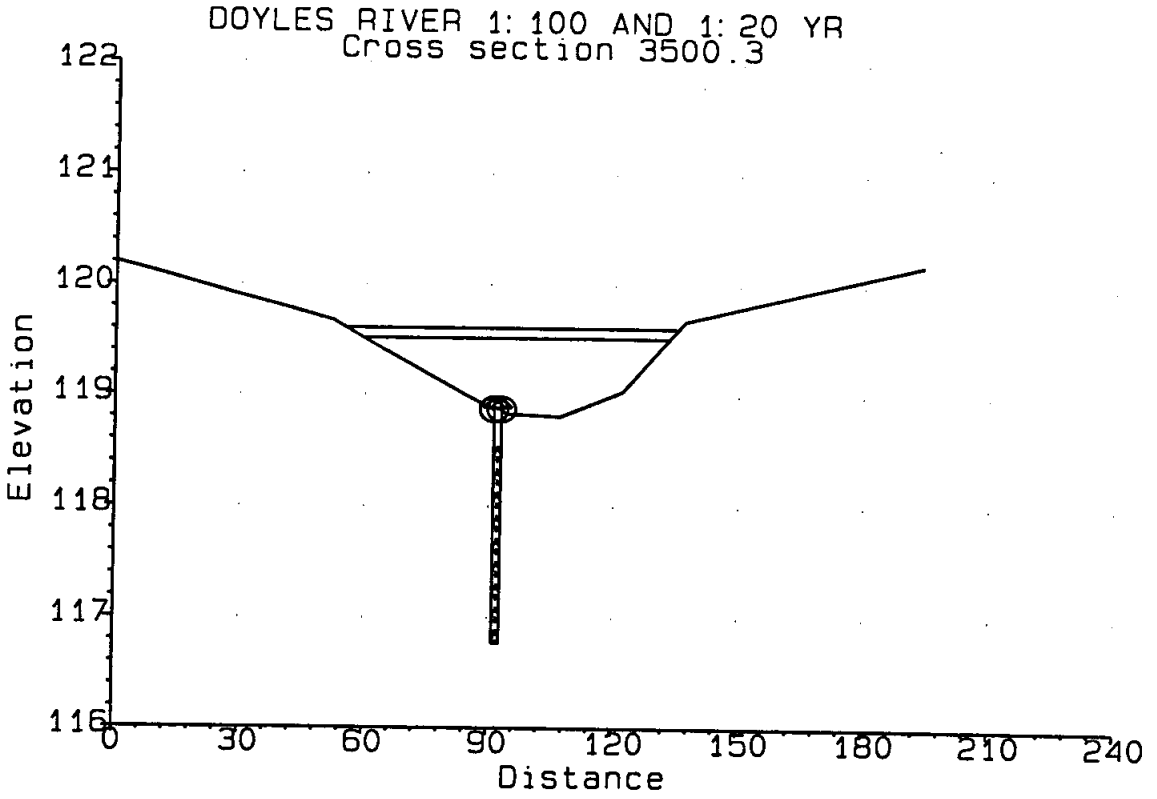
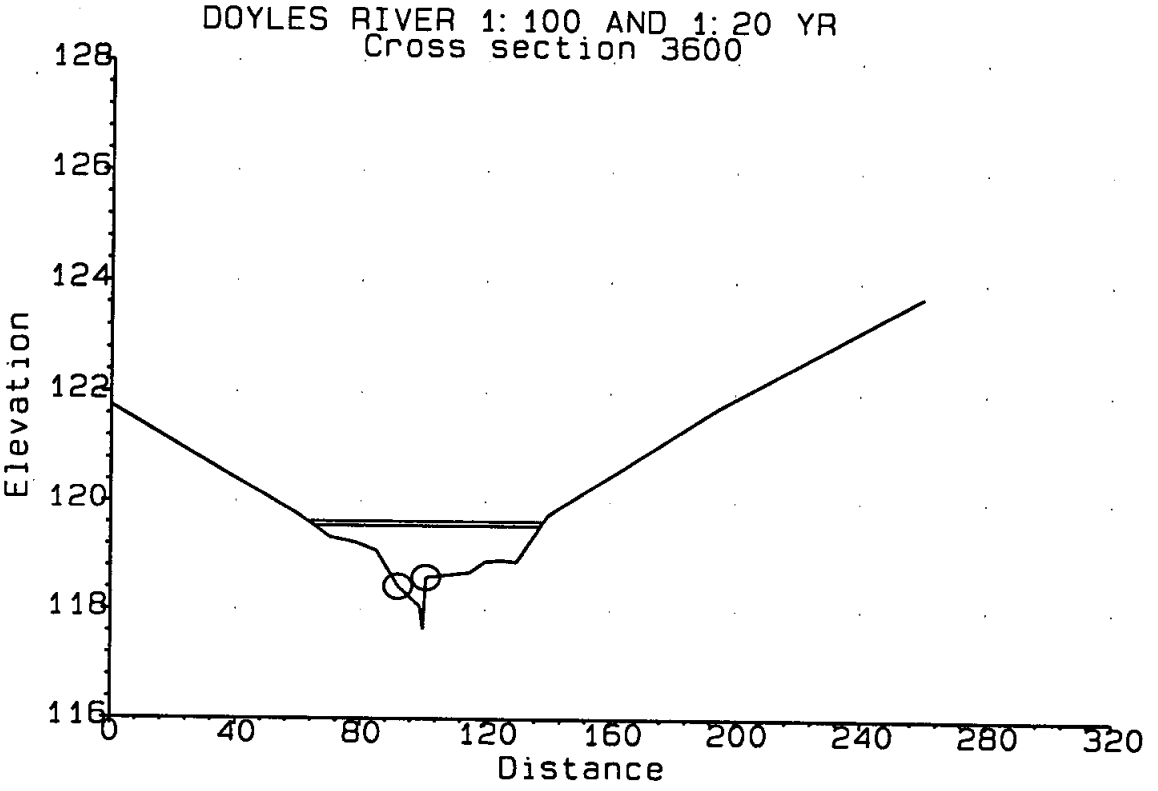
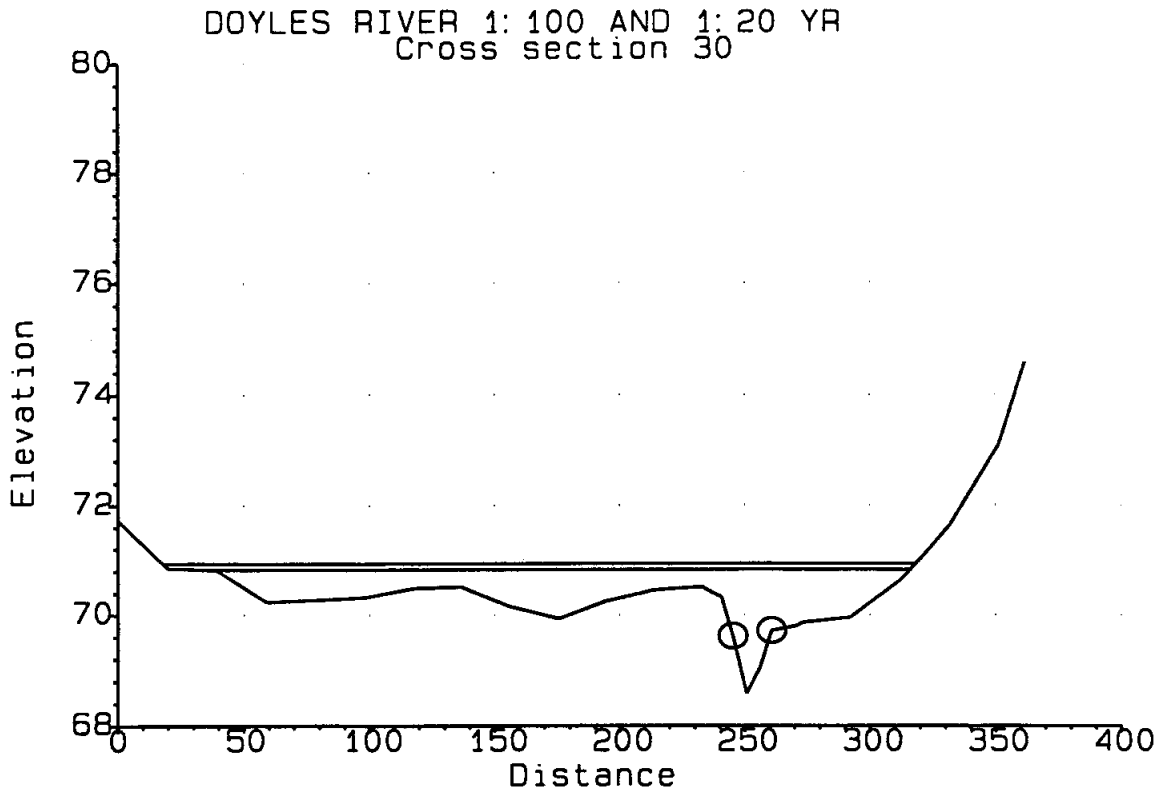
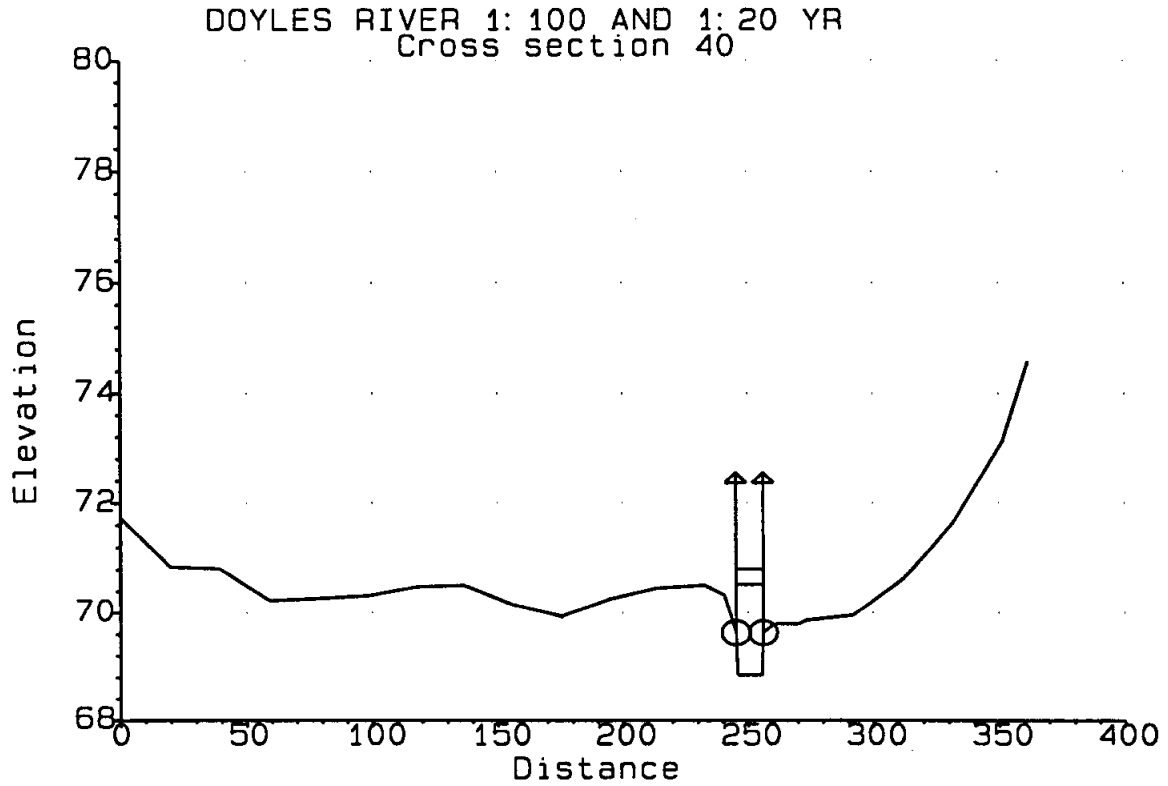
121
120
119
118
117
116
0
30
60
90
120
150
180
210
240
Distance

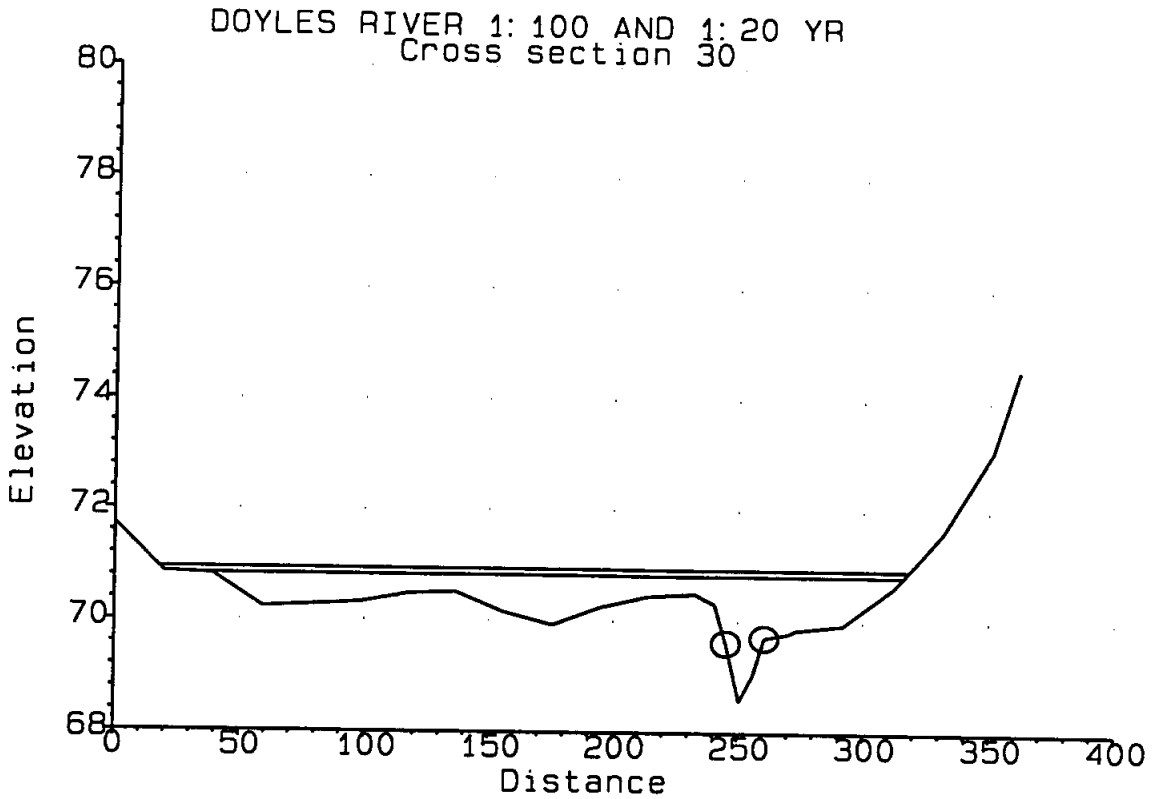

DOYLES RIVER 1:100 AND 1:20 YR
Cross section 3600
Elevation
128
126
124
122
120
118
116
0
40
80
120
160
200
240
280
320
Distance

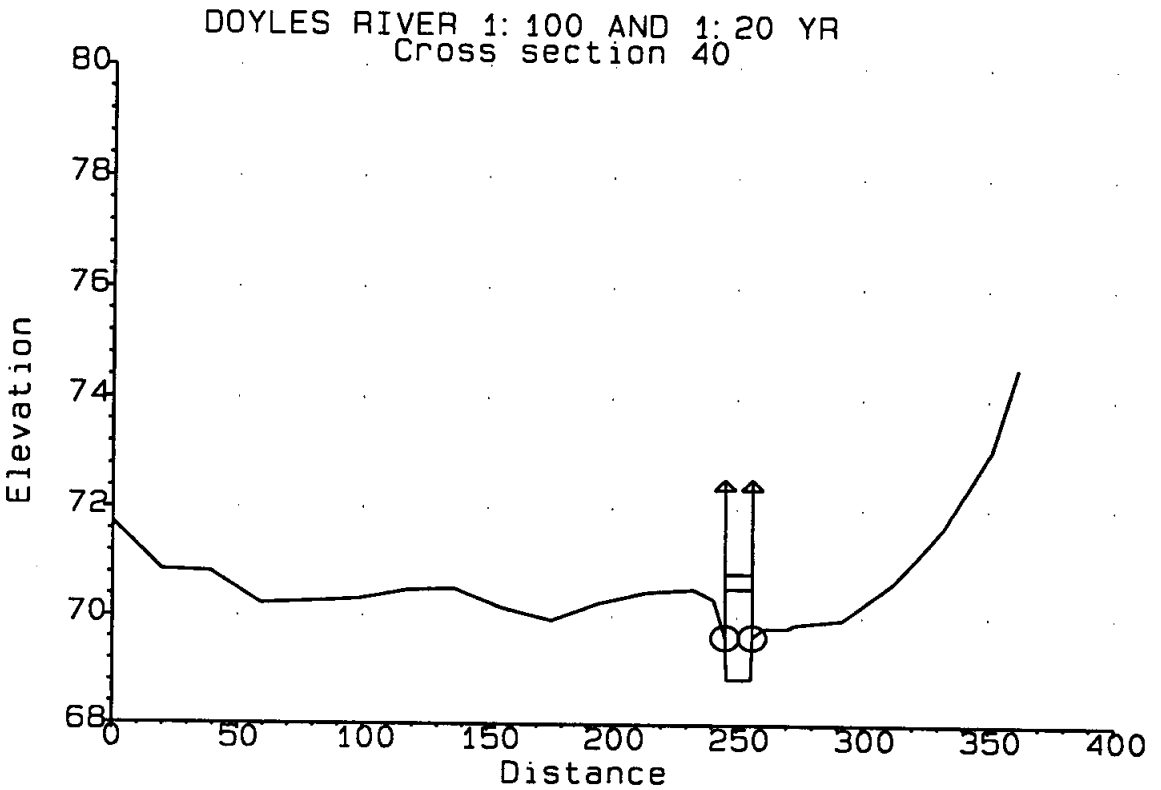

DOYLES RIVER 1:100 AND 1:20 YR
Cross section 3500.3
Elevation
122
121
120
119
118
117
116
0
30
60
90
120
150
180
210
240
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 3600
Elevation
128
126
124
122
120
118
116
0
40
80
120
160
200
240
280
320
Distance


DOYLES RIVER 1: 100 AND 1: 20 YR
Cross section 30
Elevation
80
78
76
74
72
70
68
0
50
100
150
200
250
300
350
400
Distance


DOYLES RIVER 1: 100 AND 1: 20 YR
Cross section 40
Elevation
80
78
76
74
72
70
68
0
50
100
150
200
250
300
350
400
Distance


DOYLES RIVER 1: 100 AND 1: 20 YR
Cross section 30
Elevation
80
78
76
74
72
70
68
0
50
100
150
200
250
300
350
400
Distance


DOYLES RIVER 1: 100 AND 1: 20 YR
Cross section 40
Elevation
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78
76
74
72
70
68
0
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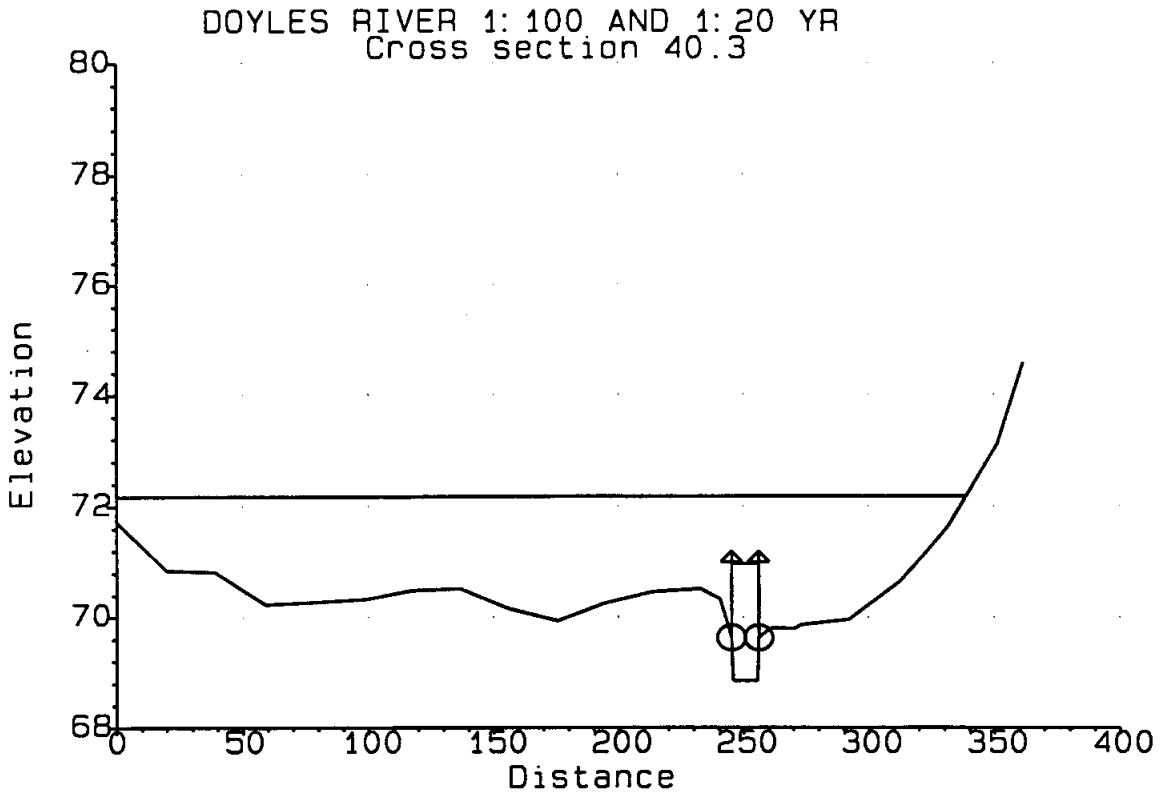
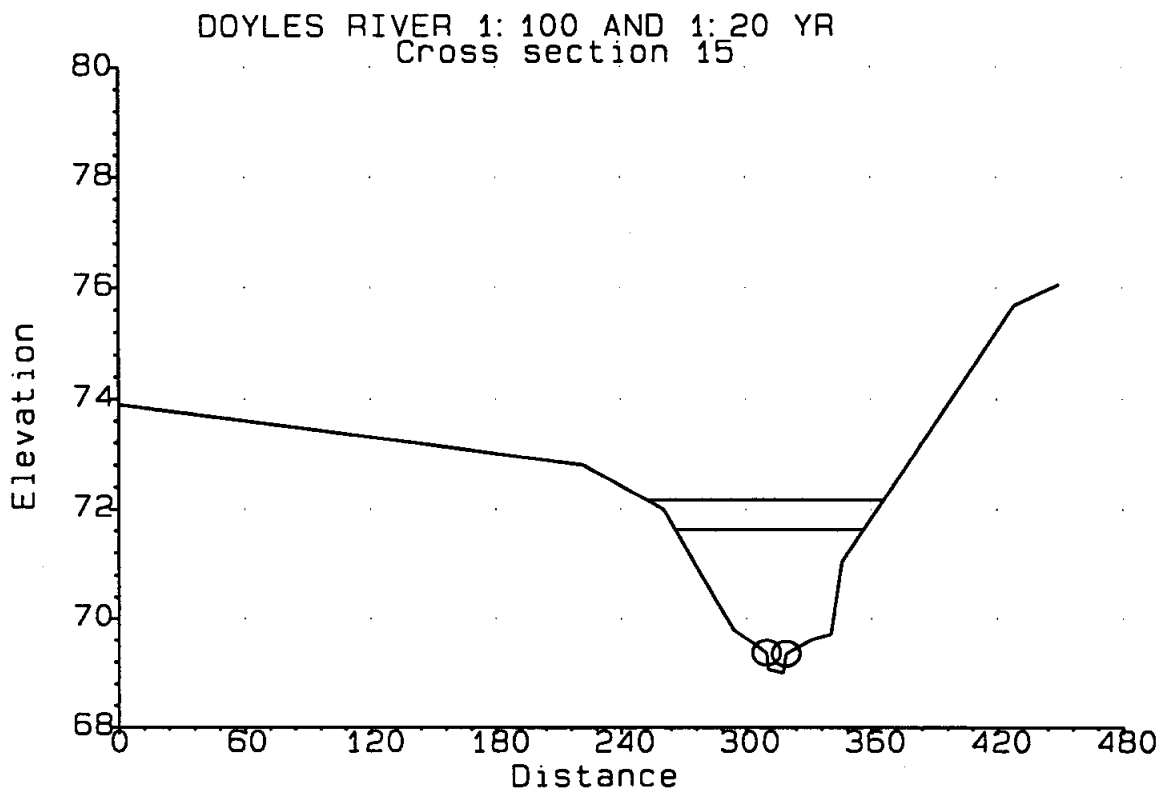
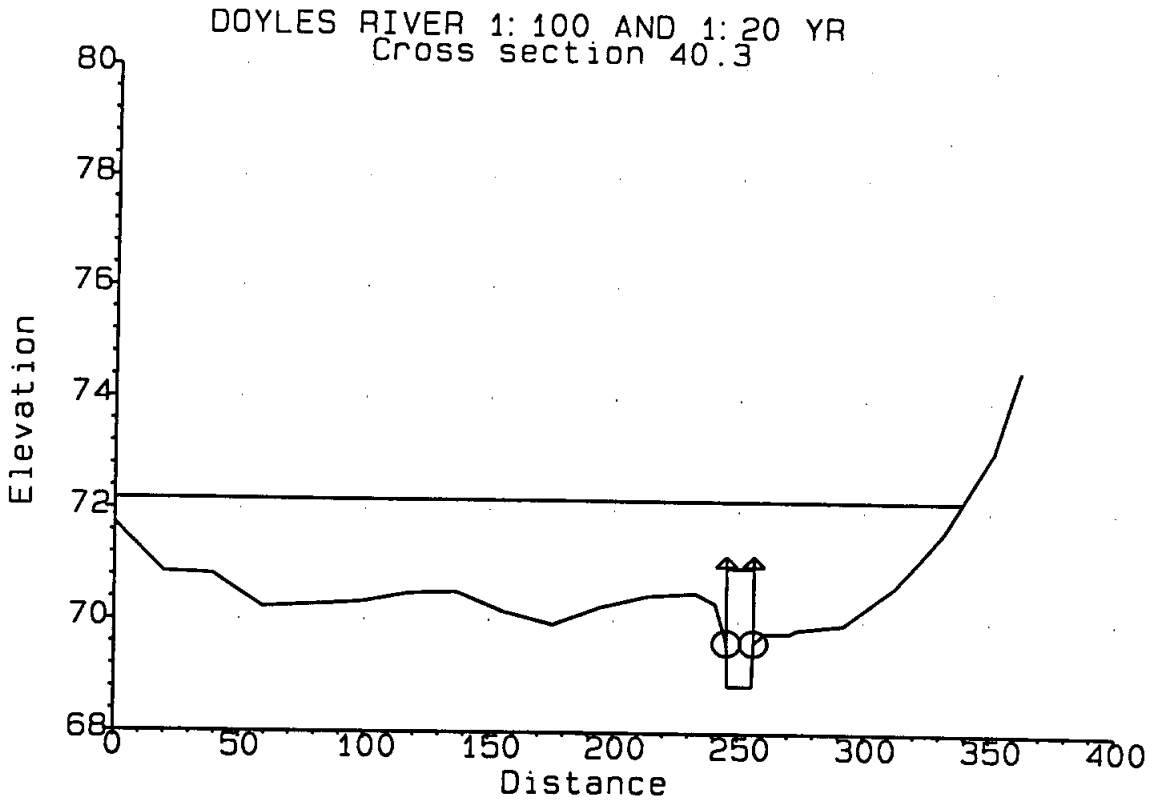
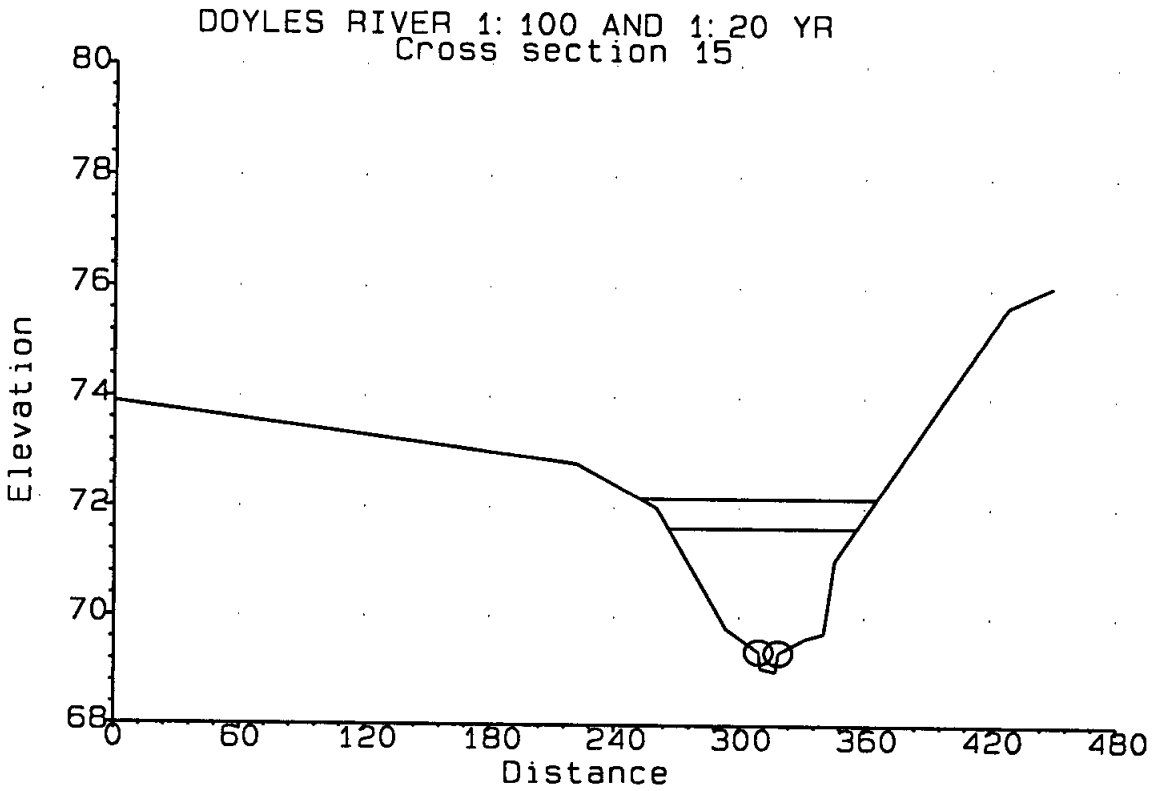
100
150
200
250
300
350
400
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 40.3
Elevation
80
78
76
74
72
70
68
0
50
100
150
200
250
300
350
400
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 15
Elevation
80
78
76
74
72
70
68
0
60
120
180
240
300
360
420
480
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 40.3
Elevation
80
78
76
74
72
70
68
0
50
100
150
200
250
300
350
400
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 15
Elevation
80
78
76
74
72
70
68
0
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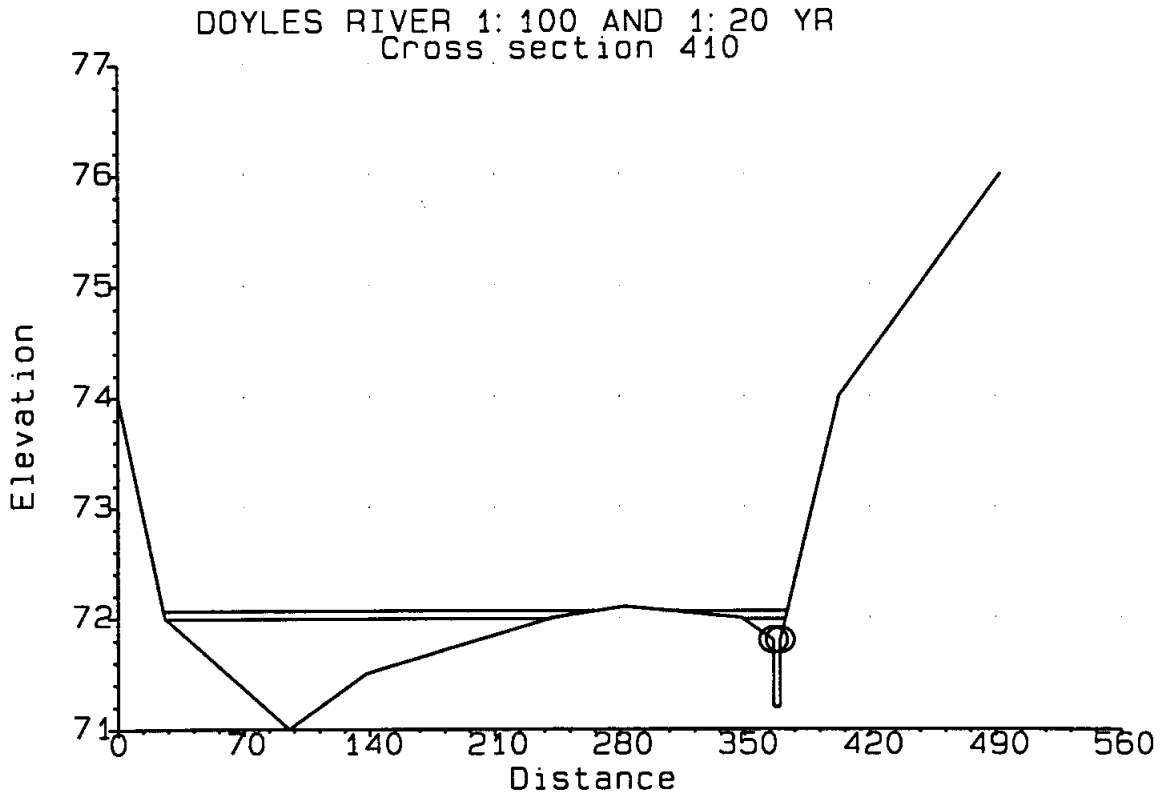
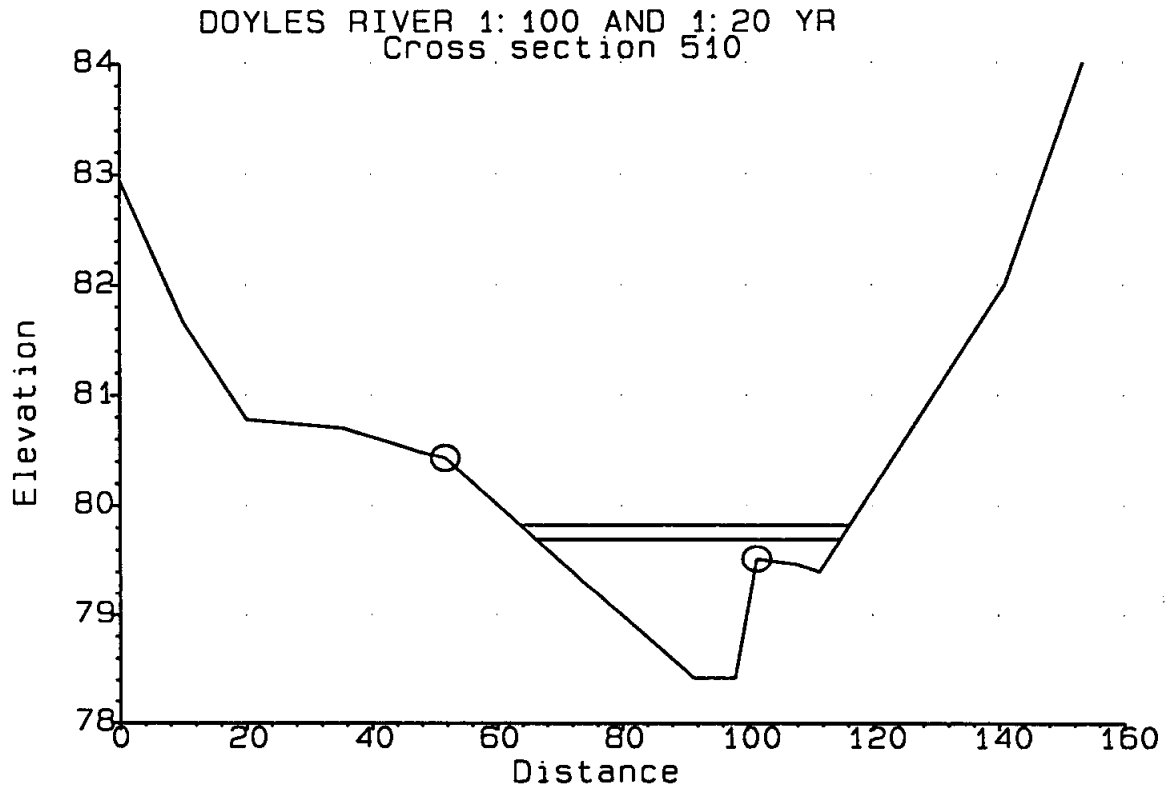
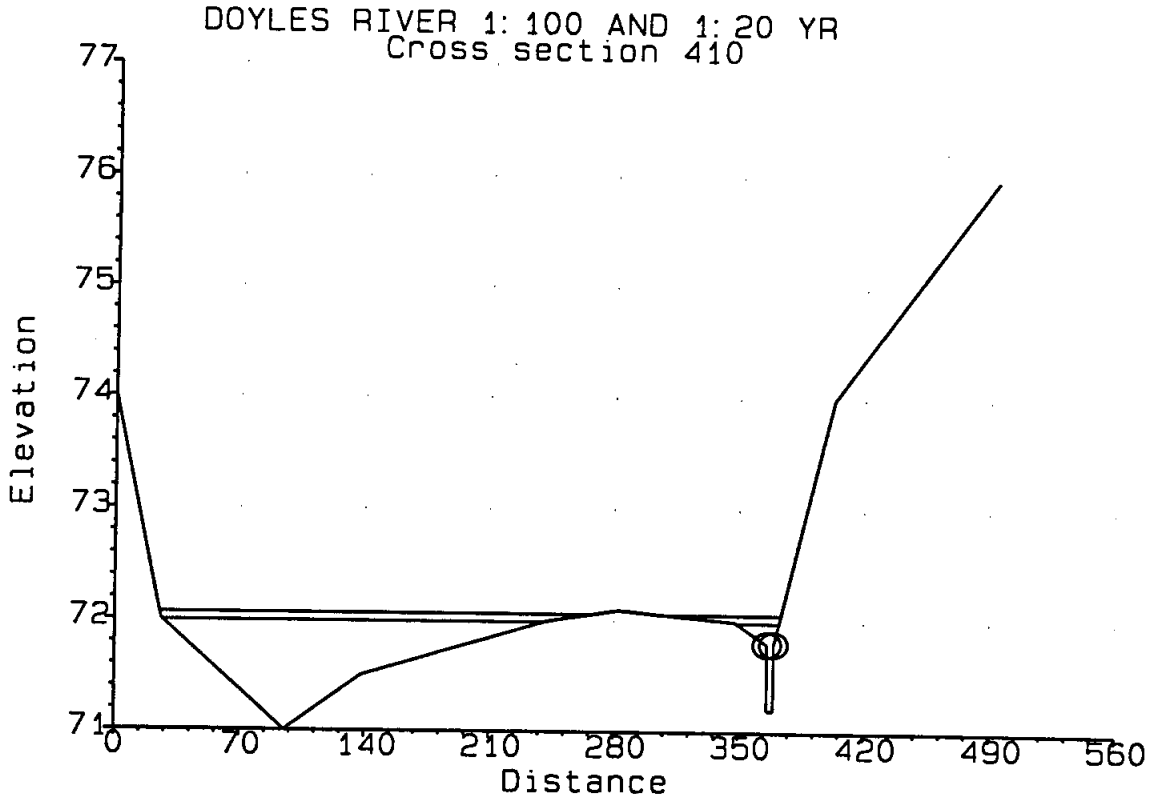
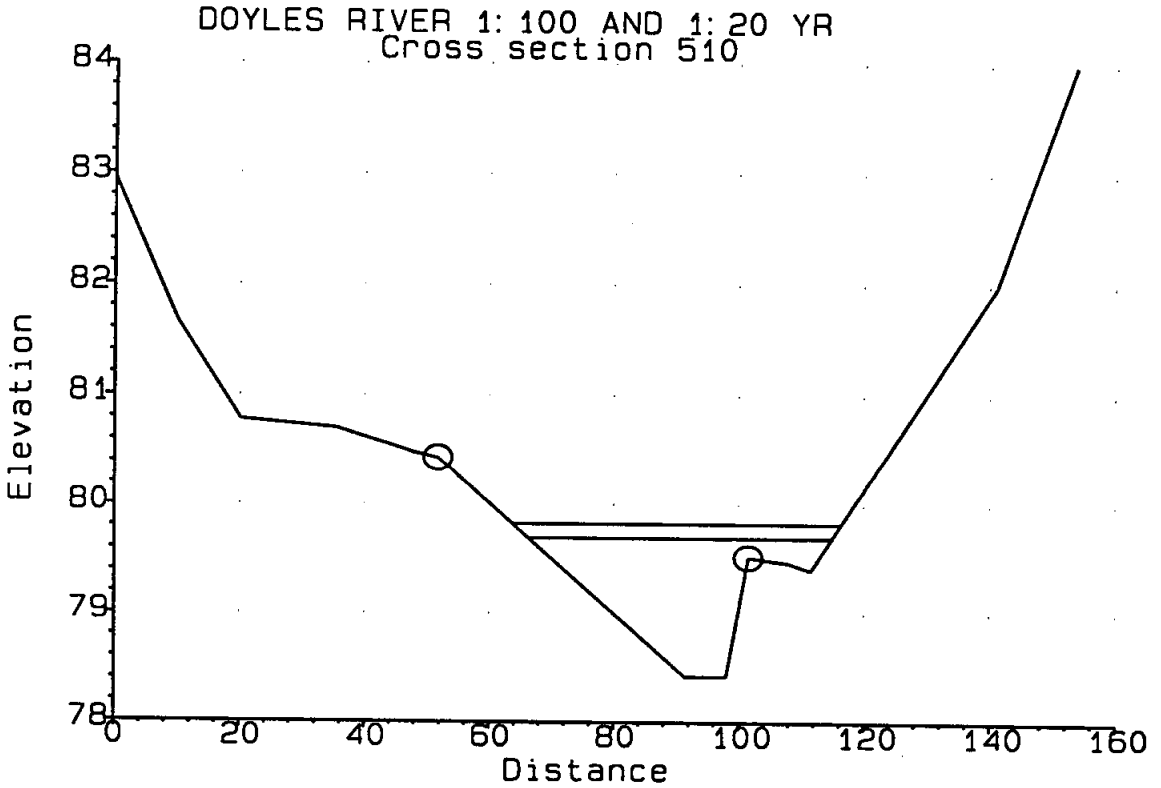
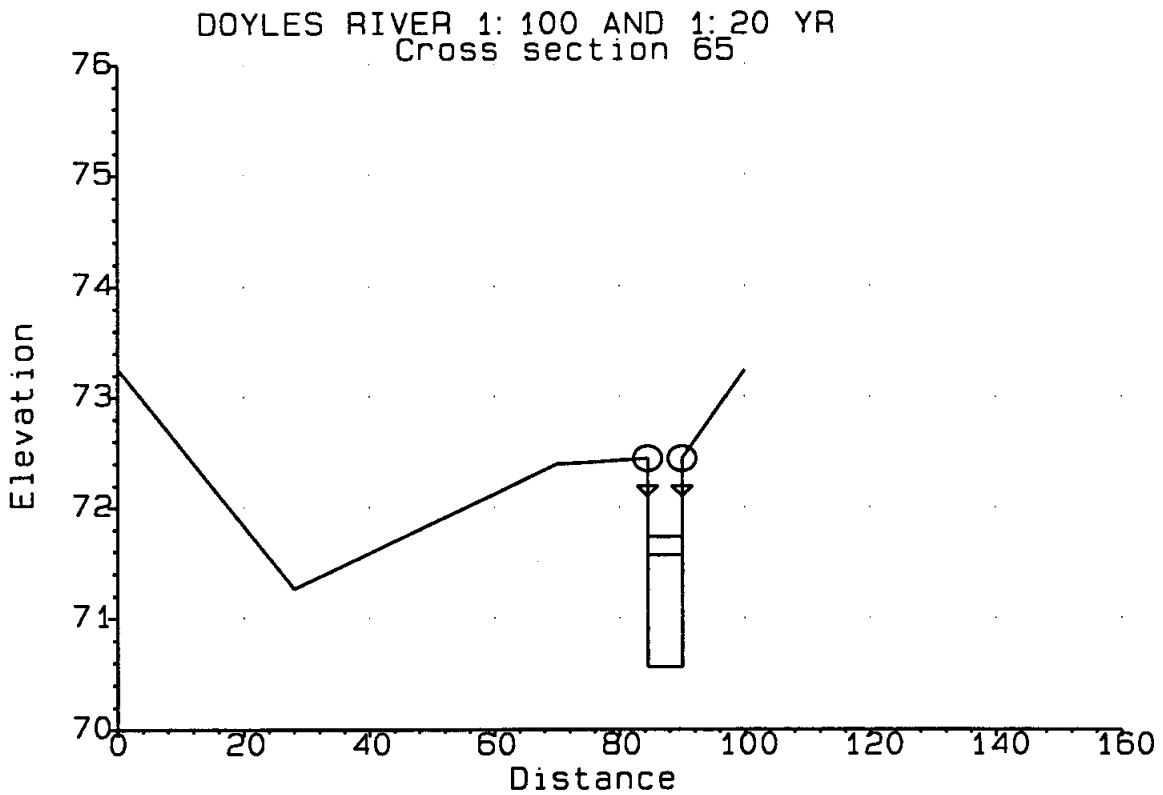
120
180
240
300
360
420
480
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 410
Elevation
77
76
75
74
73
72
71
0
70
140
210
280
350
420
490
560
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 510
Elevation
84
83
82
81
80
79
78
0
20
40
60
80
100
120
140
160
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 410
Elevation
77
76
75
74
73
72
71
0
70
140
210
280
350
420
490
560
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 510
Elevation
84
83
82
81
80
79
78
0
20
40
60
80
100
120
140
160
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 65
Elevation
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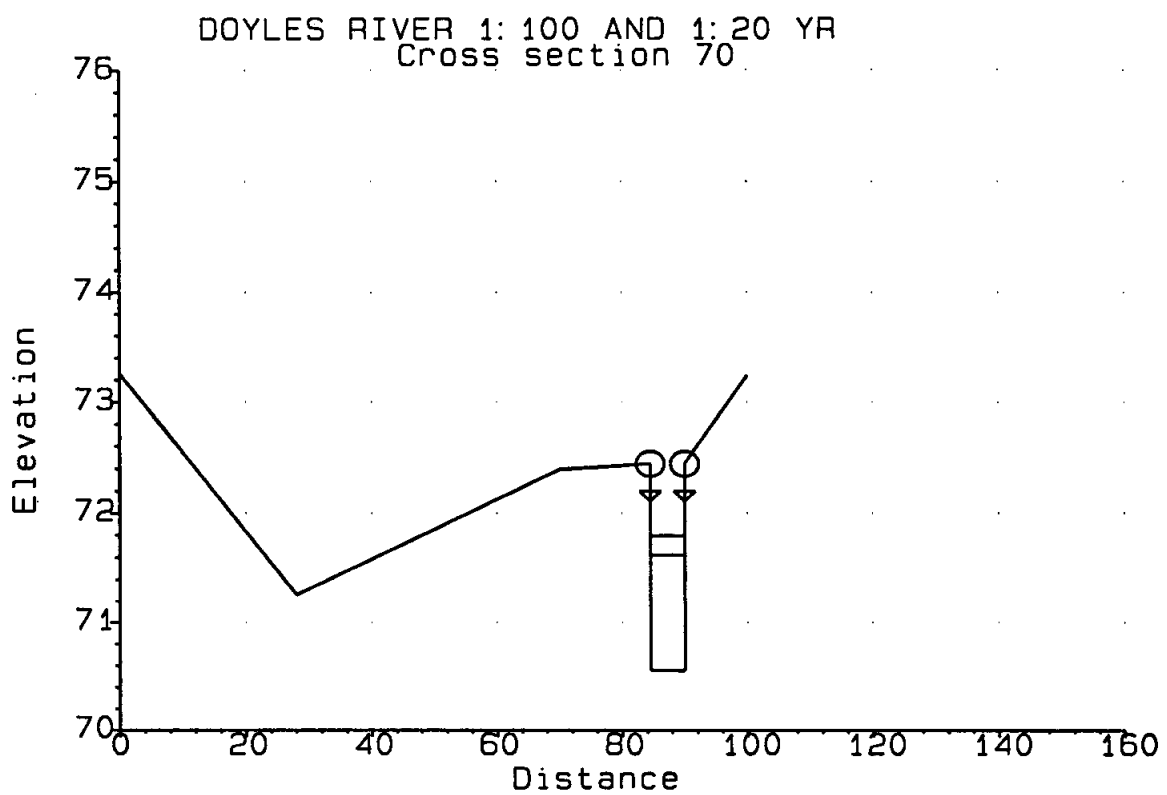
75
74
73
72
71
70
0
20
40
60
80
100
120
140
160
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 70
Elevation
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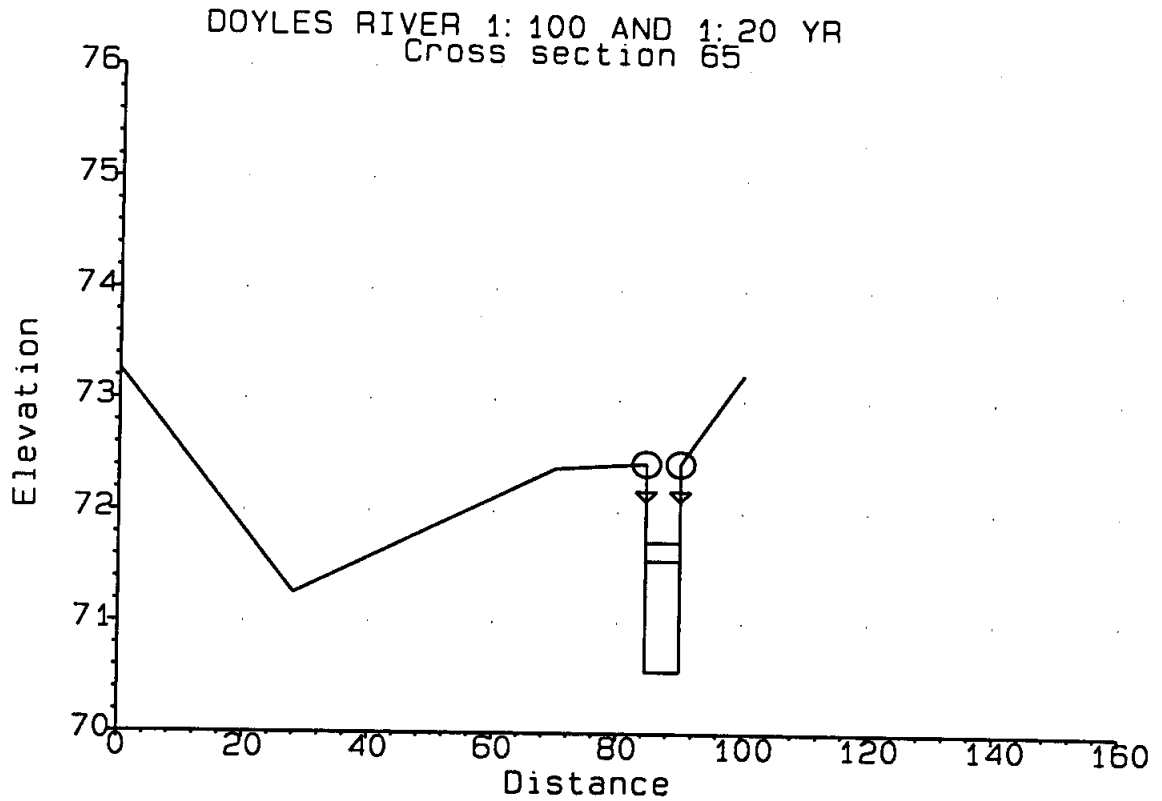
75
74
73
72
71
70
0
20
40
60
80
100
120
140
160
Distance


DOYLES RIVER 1: 100 AND 1: 20 YR
Cross section 65
Elevation
76
75
74
73
72
71
70
0
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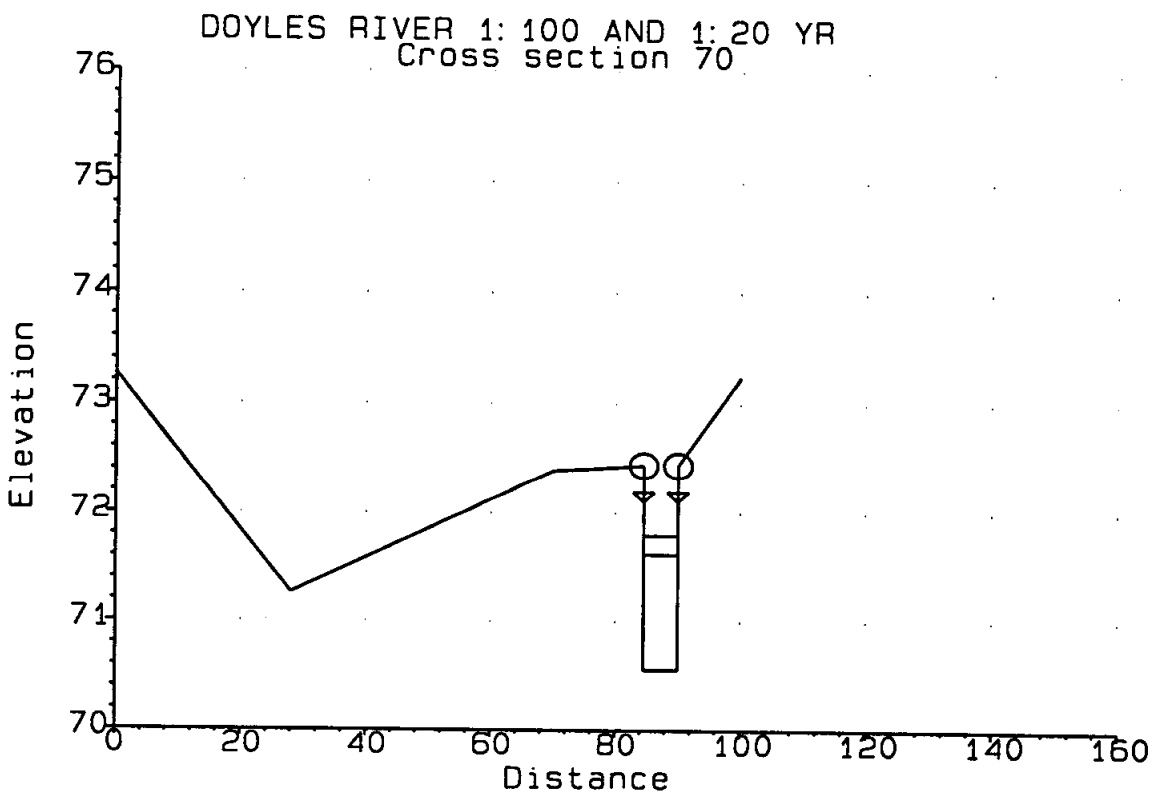
40
60
80
100
120
140
160
Distance


DOYLES RIVER 1: 100 AND 1: 20 YR
Cross section 70
Elevation
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75
74
73
72
71
70
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20
40
60
80
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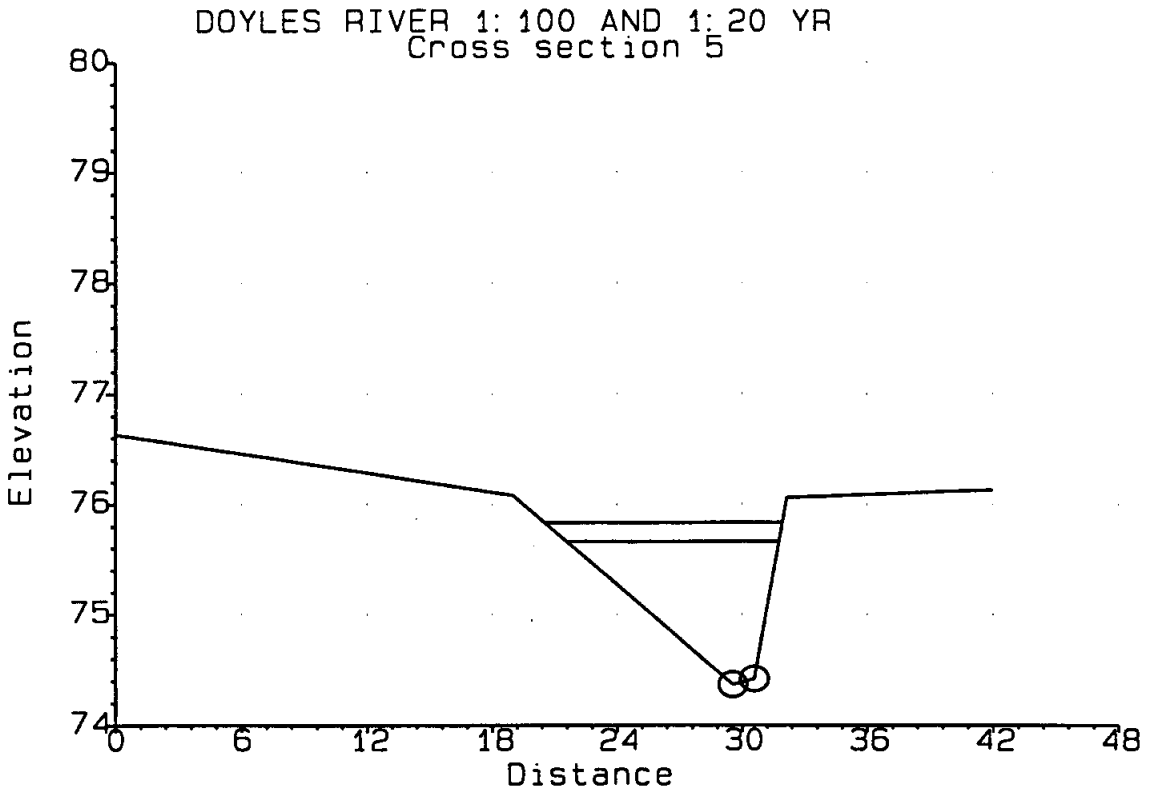
120
140
160
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 5
Elevation
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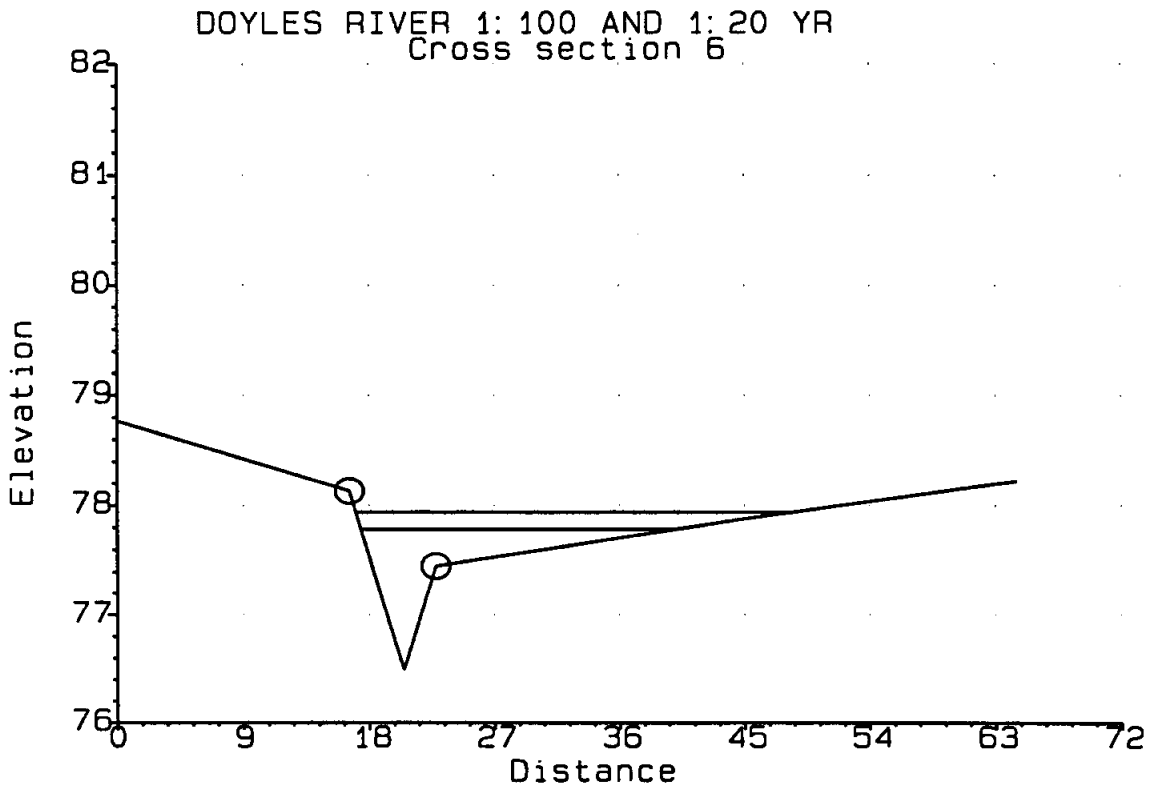
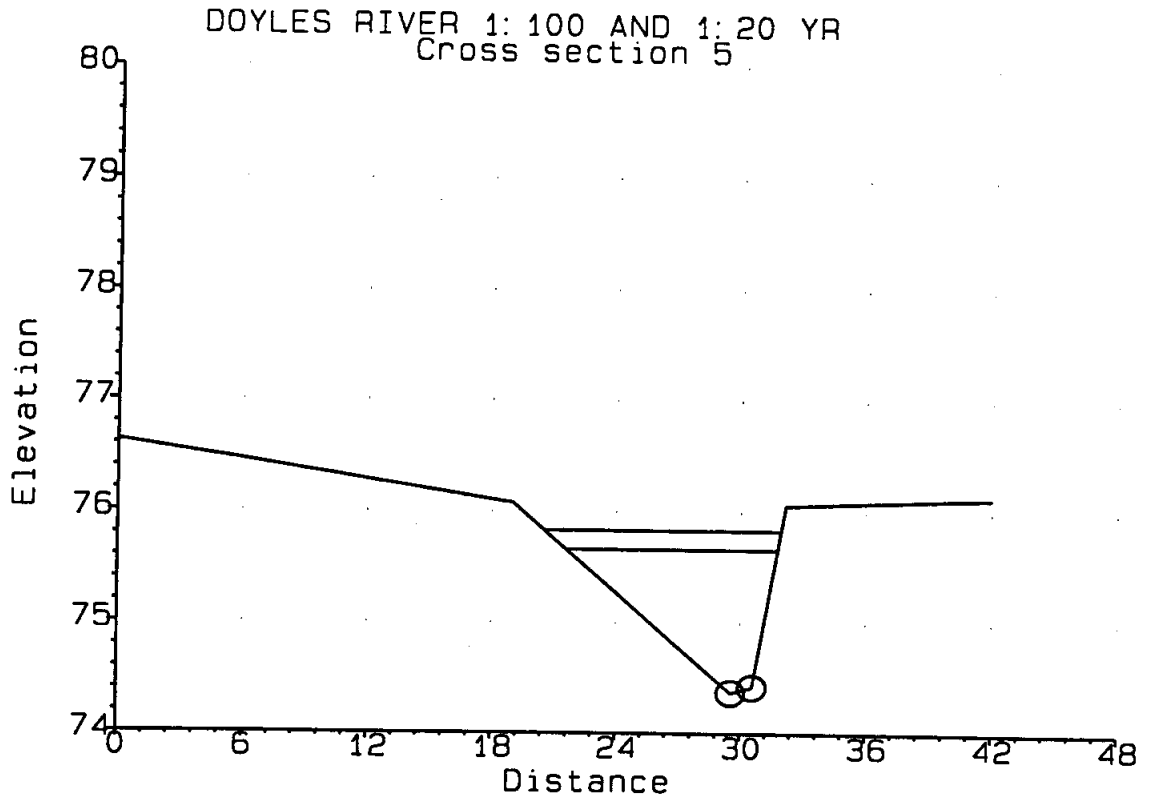
79
78
77
76
75
74
0
6
12
18
24
30
36
42
48
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 6
Elevation
82
81
80
79
78
77
76
0
9
18
27
36
45
54
63
72
Distance


DOYLES RIVER 1:100 AND 1:20 YR
Cross section 5
Elevation
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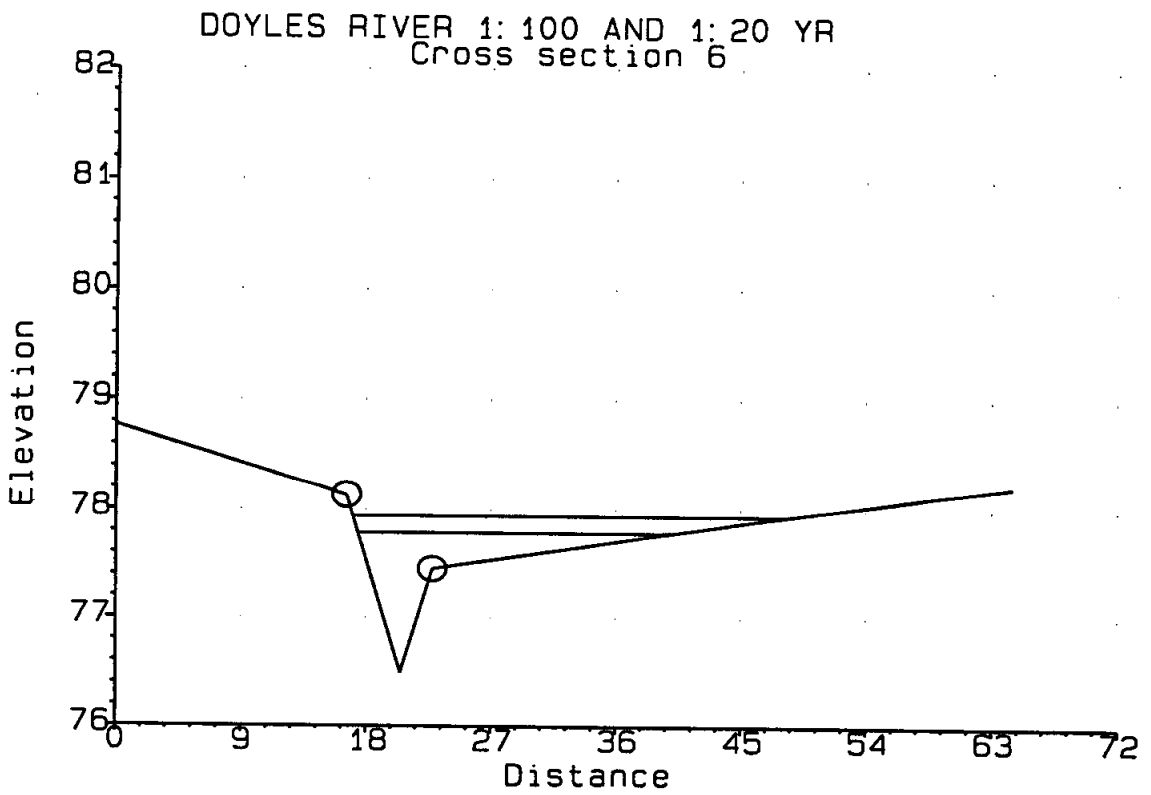
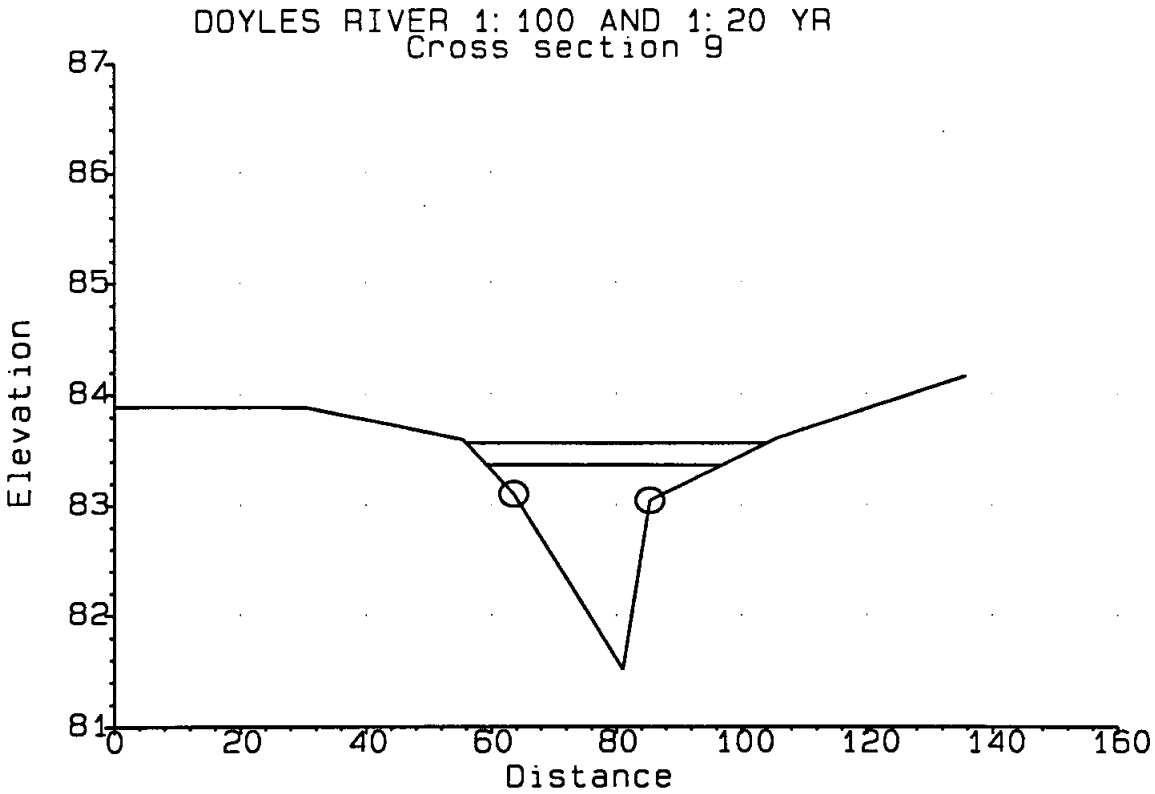
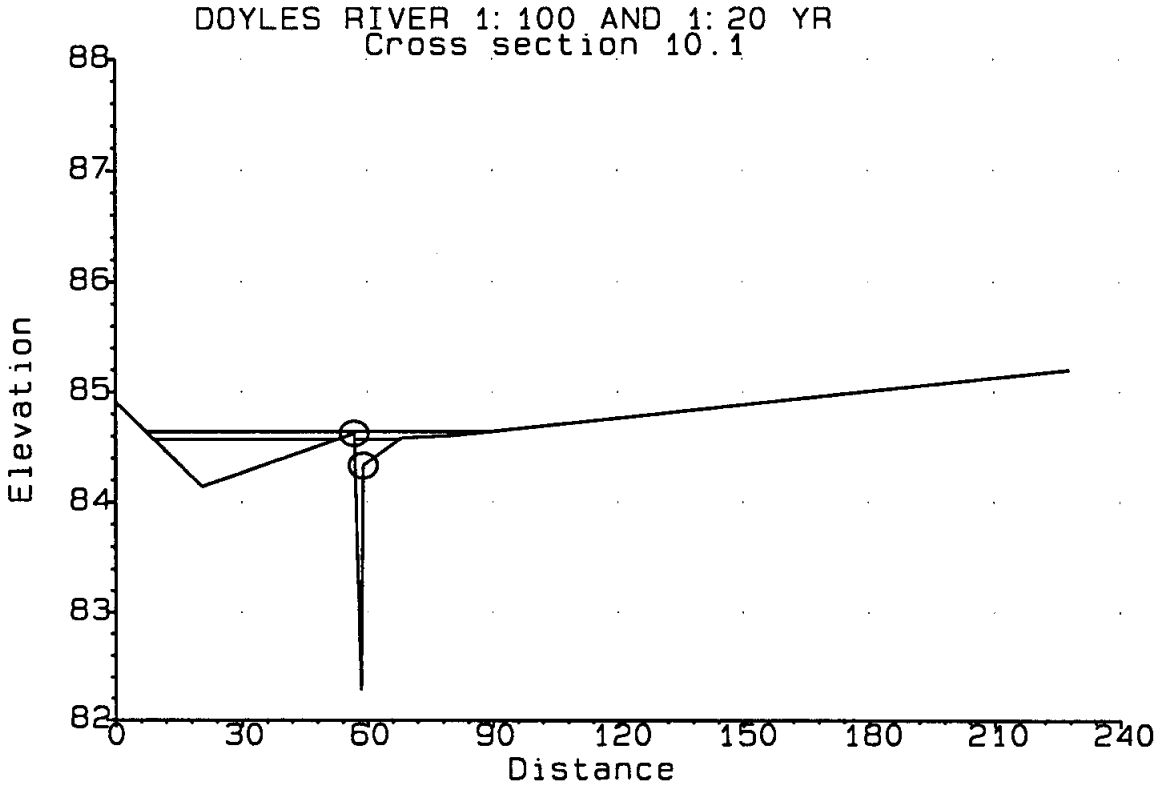
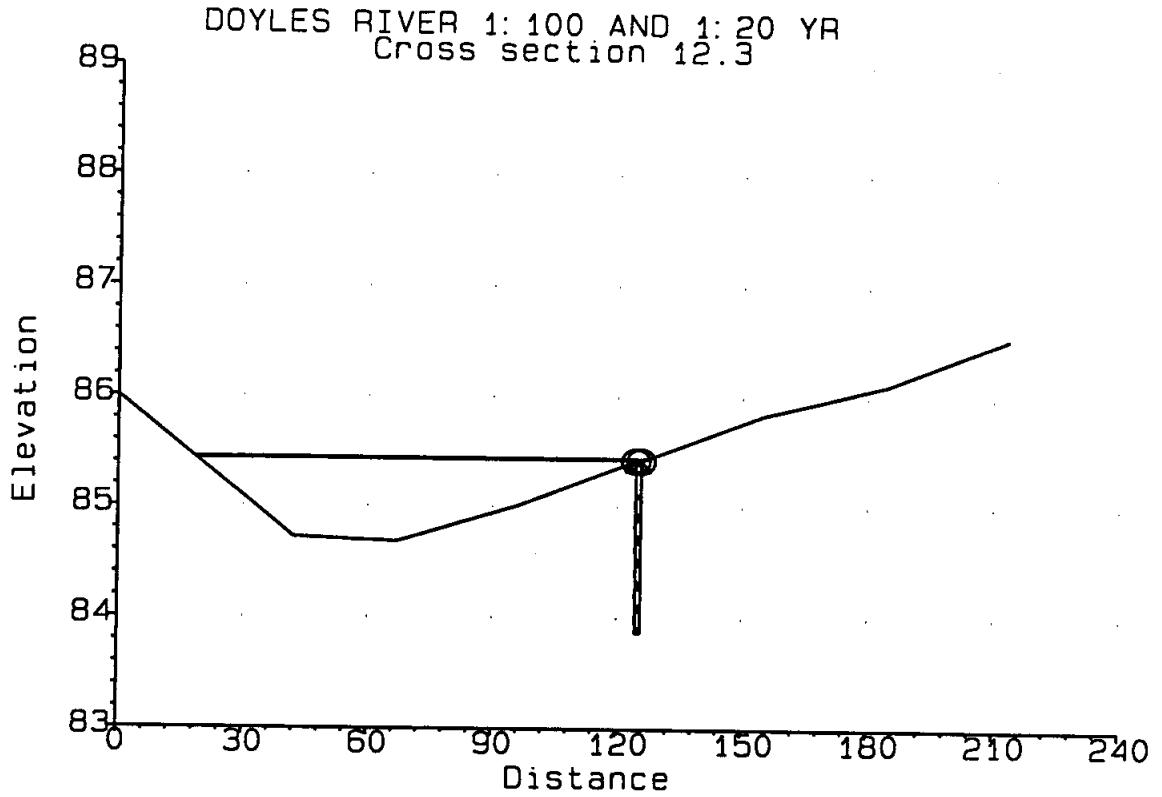
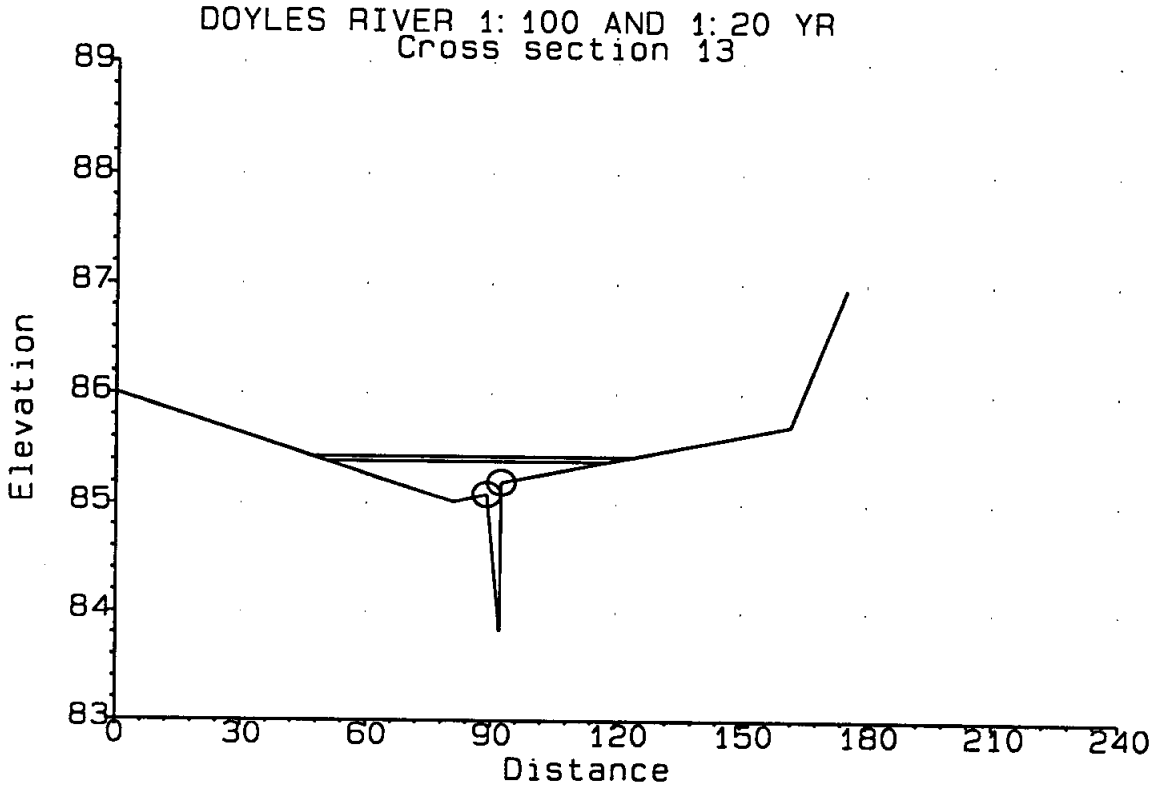
79
78
77
76
75
74
0
6
12
18
24
30
36
42
48
Distance

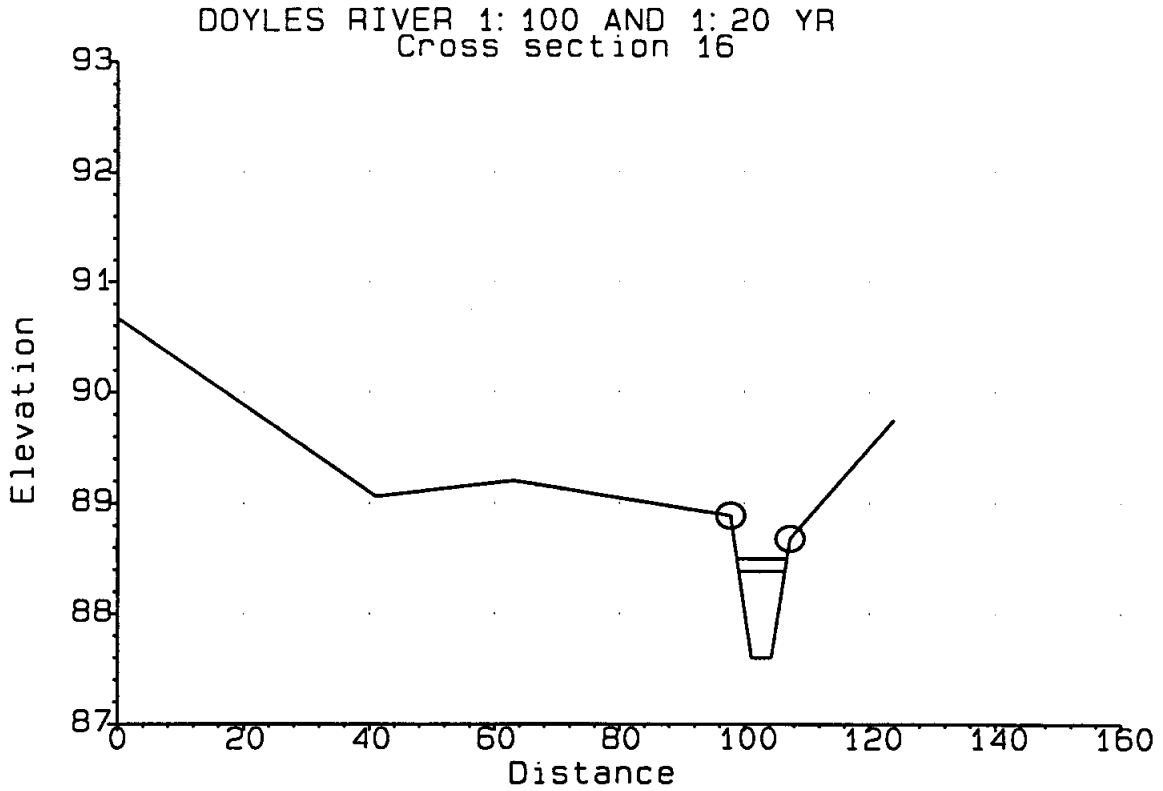

DOYLES RIVER 1:100 AND 1:20 YR
Cross section 6
Elevation
82
81
80
79
78
77
76
0
9
18
27
36
45
54
63
72
Distance

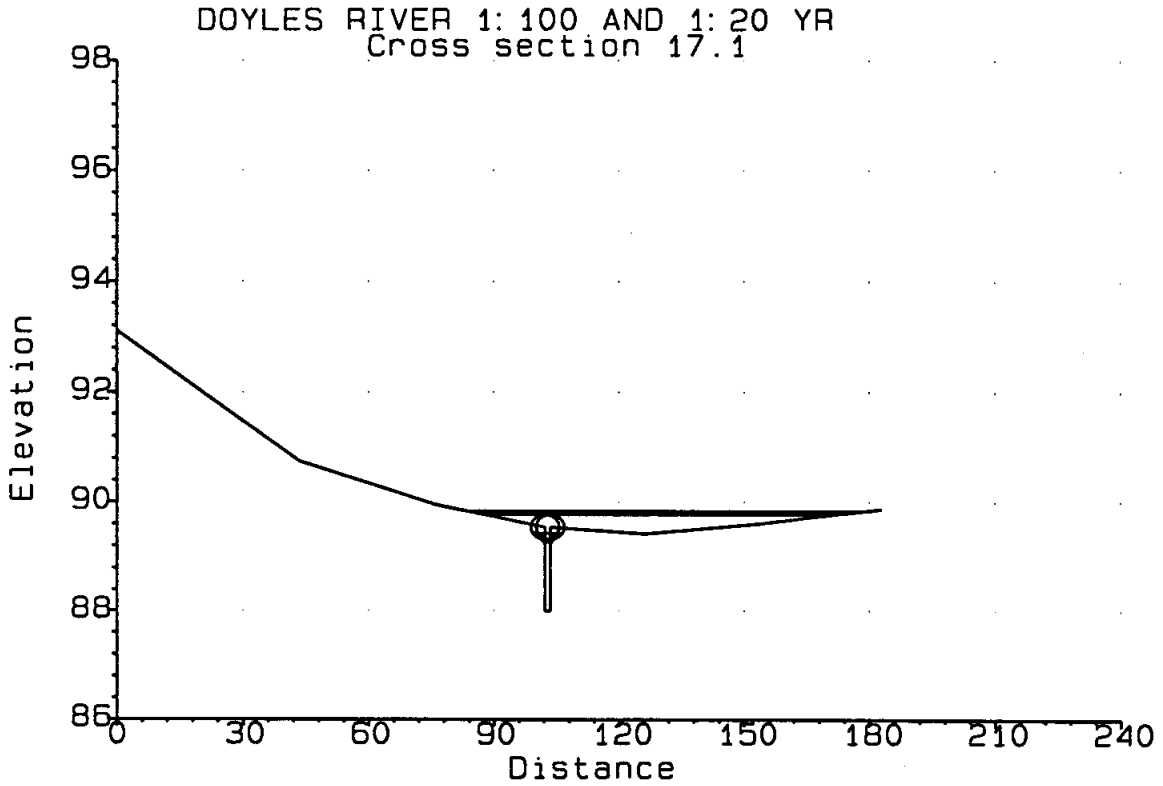

DOYLES RIVER 1:100 AND 1:20 YR
Cross section 9
Elevation
87
86
85
84
83
82
81
0
20
40
60
80
100
120
140
160
Distance

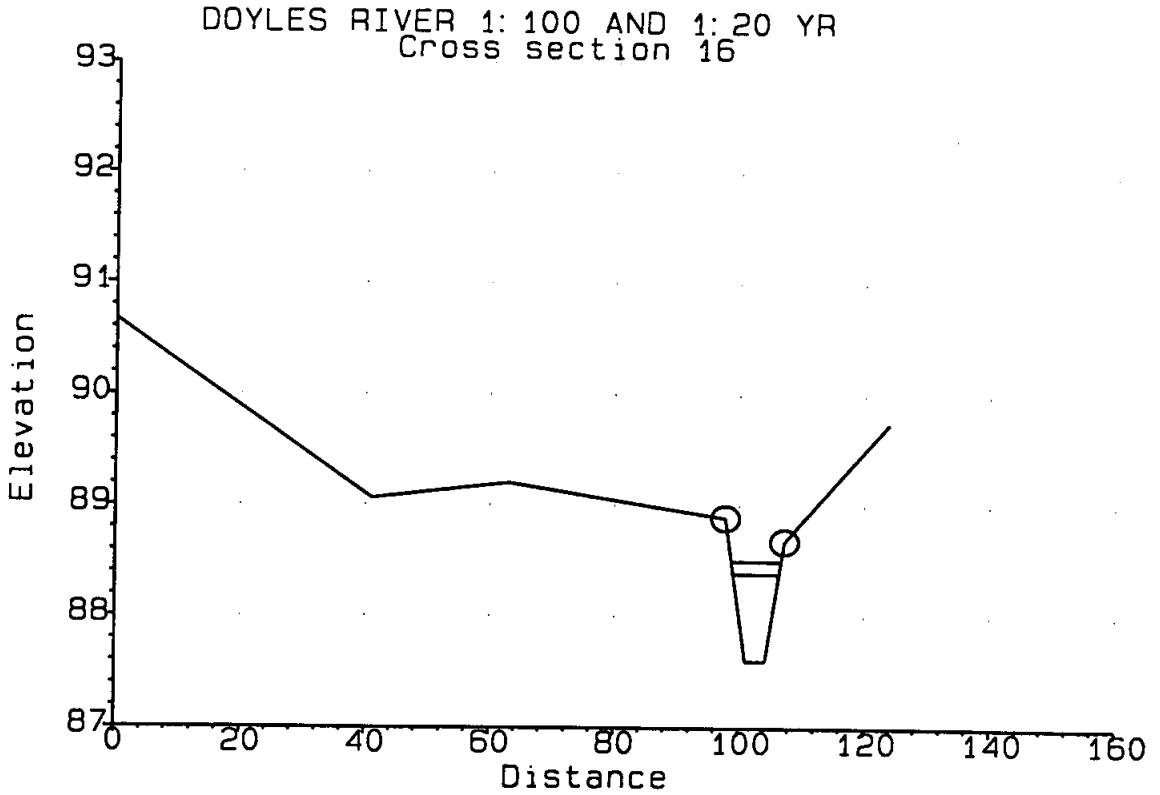

DOYLES RIVER 1:100 AND 1:20 YR
Cross section 10.1
Elevation
88
87
86
85
84
83
82
0
30
60
90
120
150
180
210
240
Distance

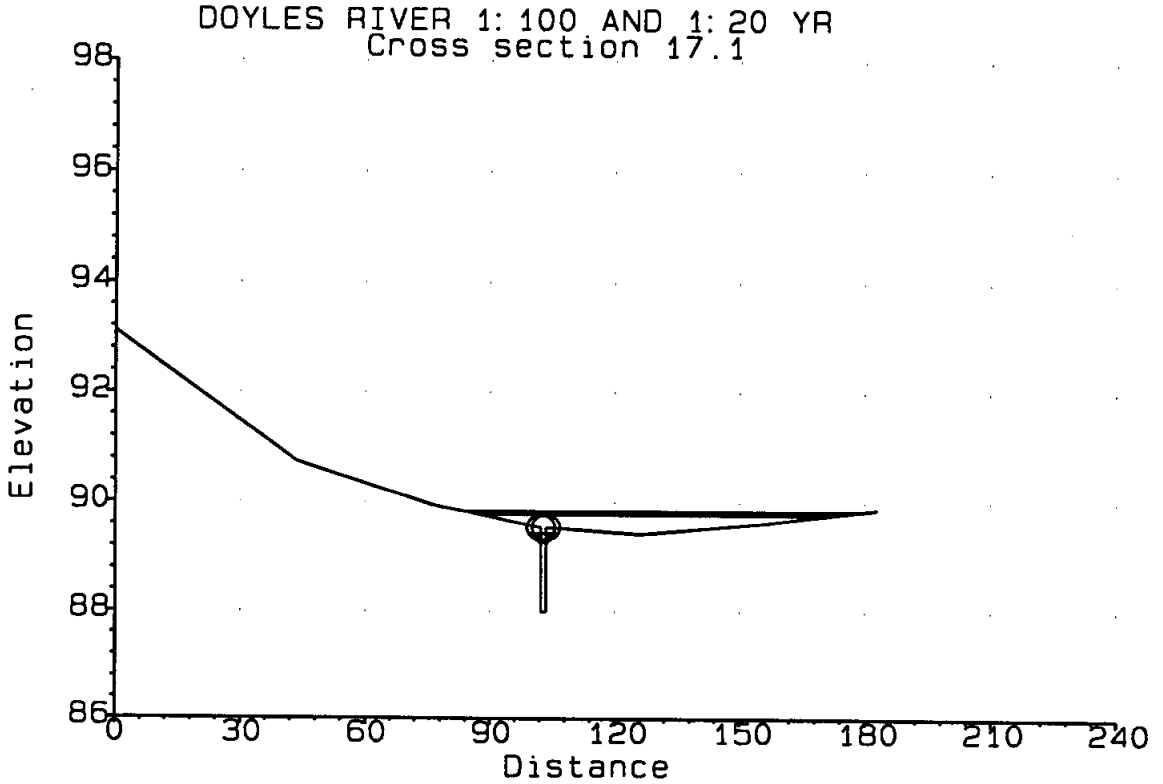

DOYLES RIVER 1:100 AND 1:20 YR
Cross section 12.3
Elevation
89
88
87
86
85
84
83
0
30
60
90
120
150
180
210
240
Distance

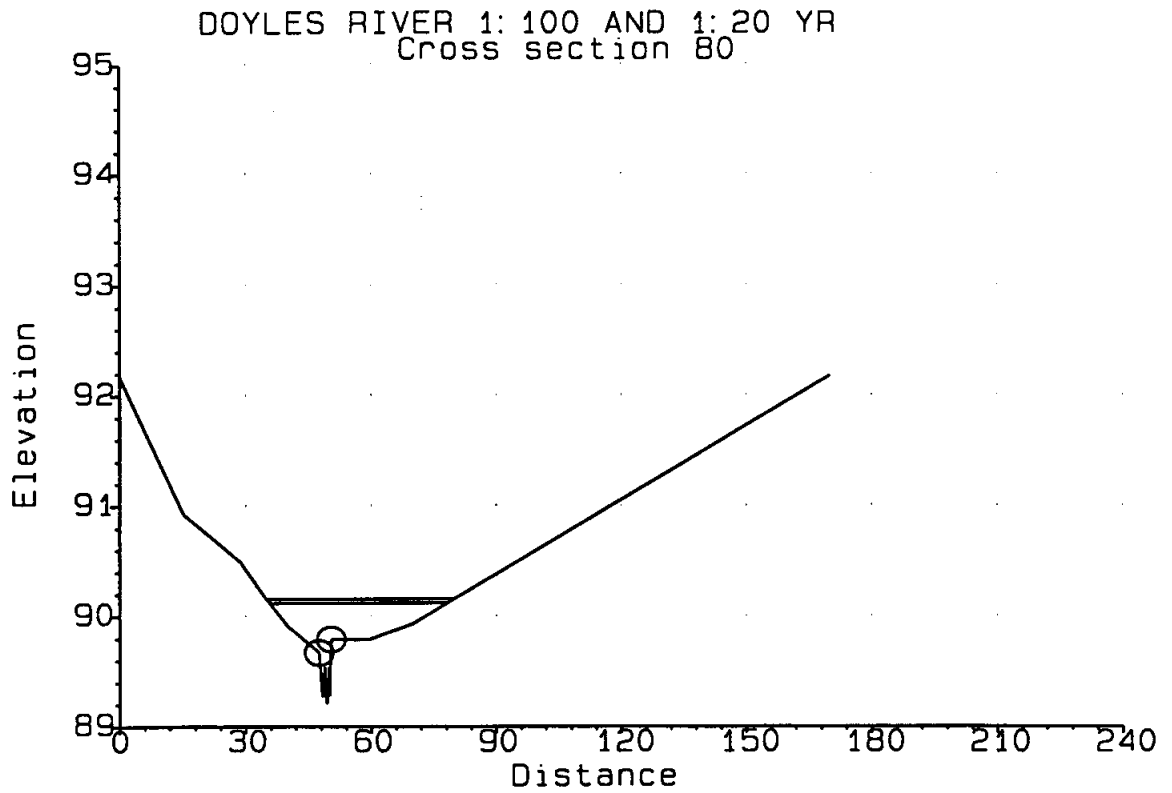

DOYLES RIVER 1:100 AND 1:20 YR
Cross section 13
Elevation
89
88
87
86
85
84
83
0
30
60
90
120
150
180
210
240
Distance

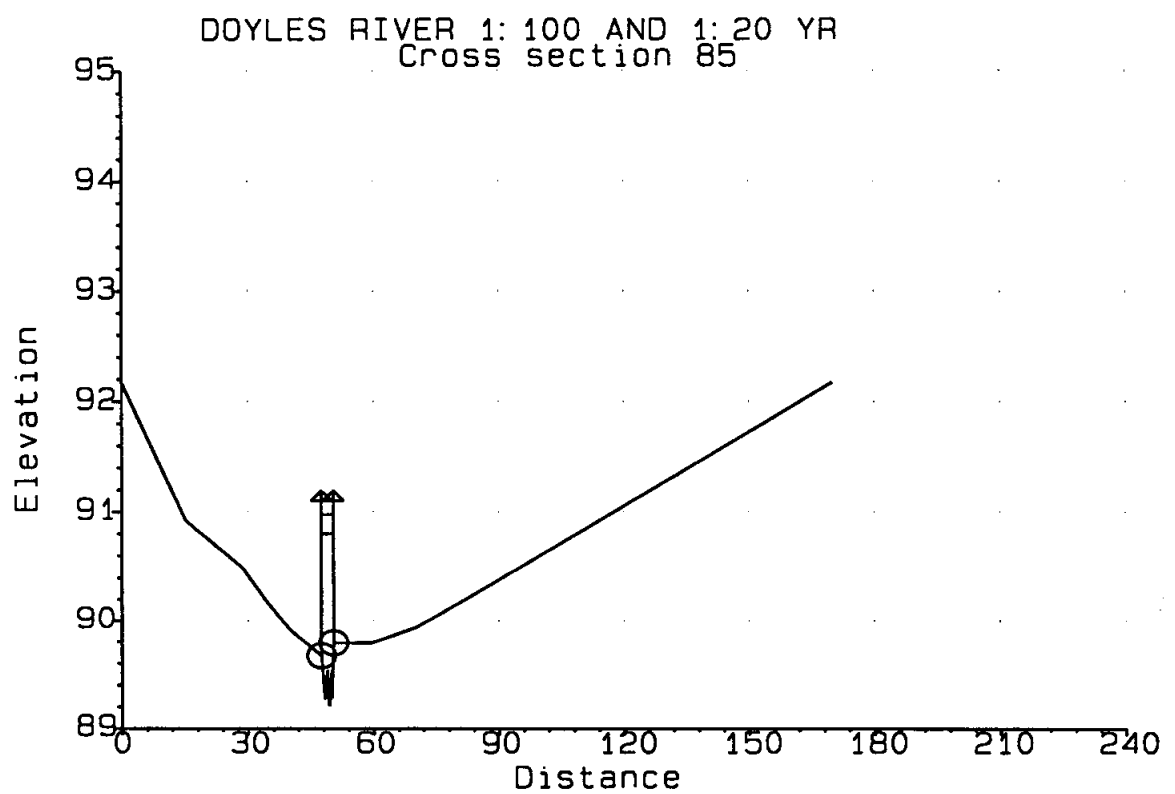

DOYLES RIVER 1:100 AND 1:20 YR
Cross section 16
Elevation
93
92
91
90
89
88
87
0
20
40
60
80
100
120
140
160
Distance

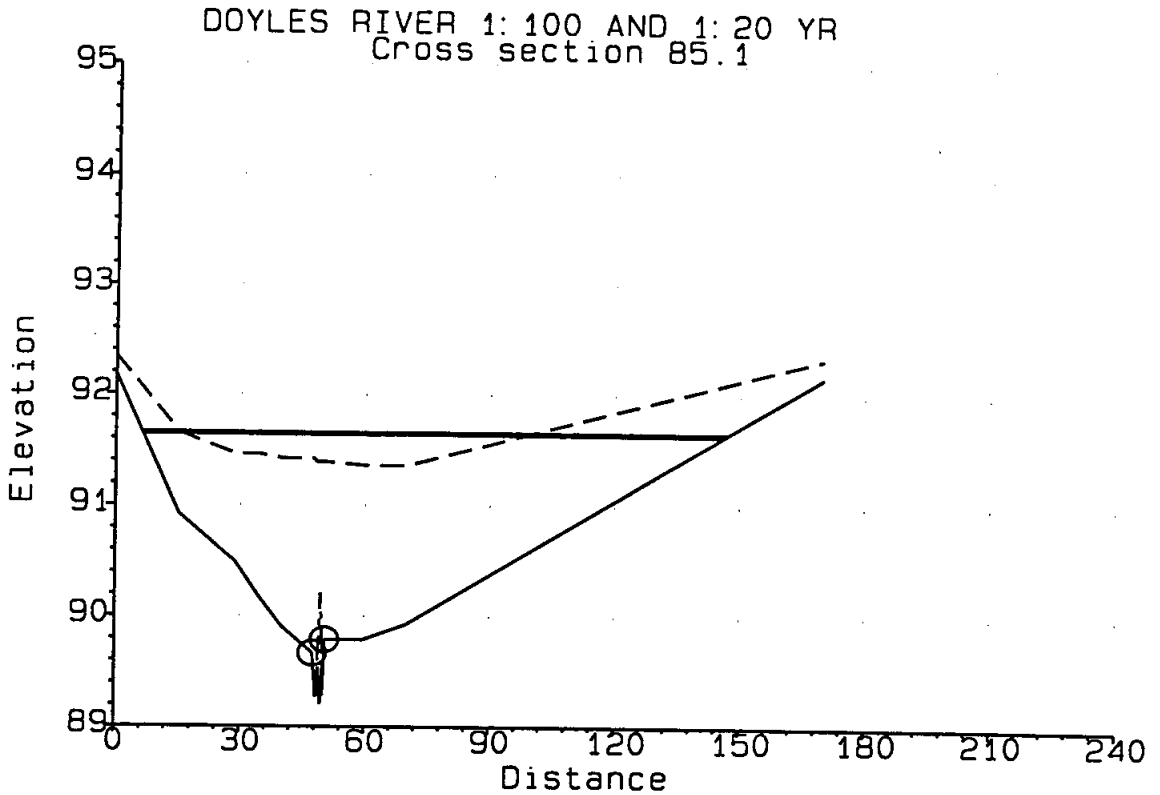

DOYLES RIVER 1:100 AND 1:20 YR
Cross section 17.1
Elevation
98
96
94
92
90
88
86
0
30
60
90
120
150
180
210
240
Distance

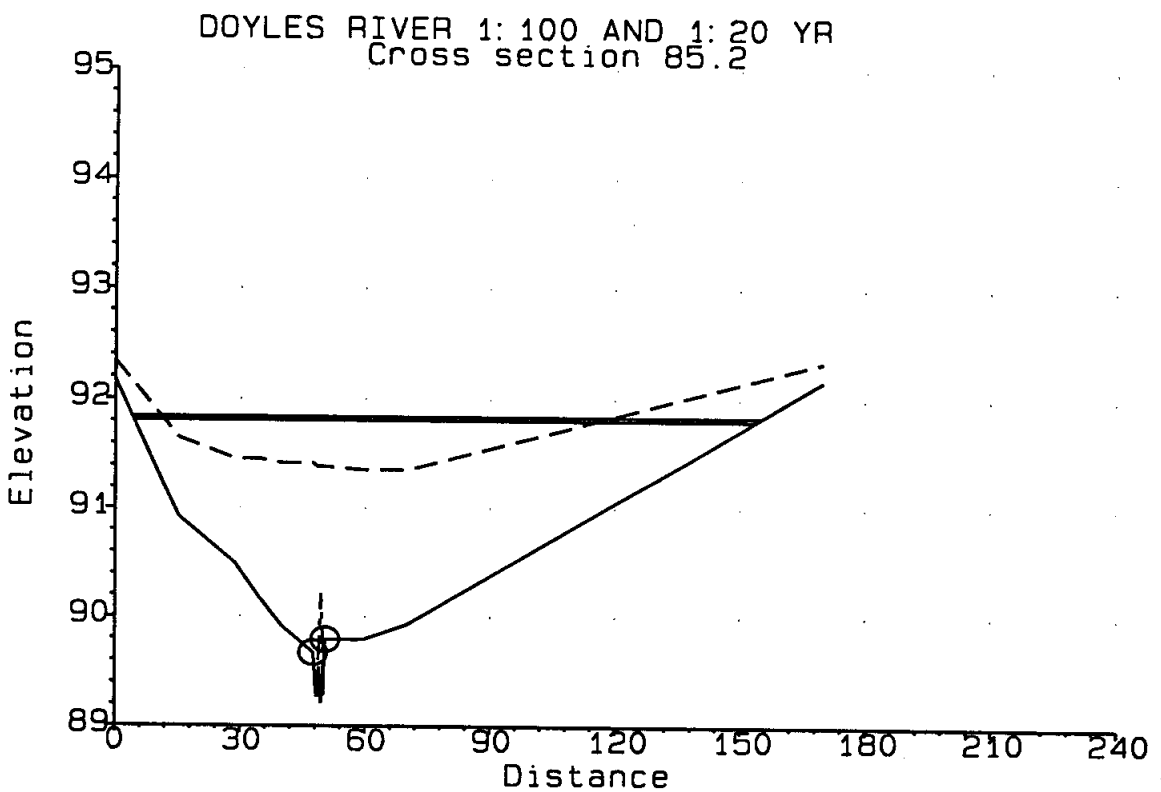

DOYLES RIVER 1: 100 AND 1: 20 YR
Cross section 16
Elevation
93
92
91
90
89
88
87
0
20
40
60
80
100
120
140
160
Distance

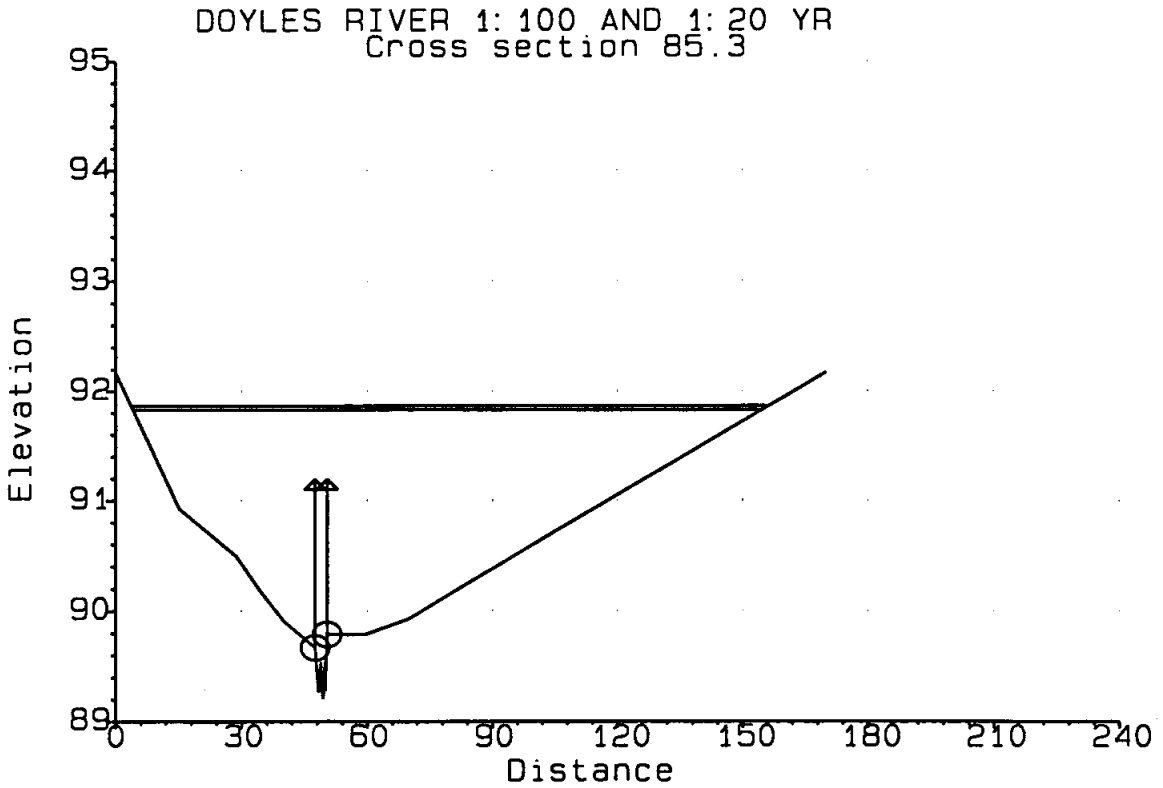

DOYLES RIVER 1: 100 AND 1: 20 YR
Cross section 17.1
Elevation
98
96
94
92
90
88
86
0
30
60
90
120
150
180
210
240
Distance

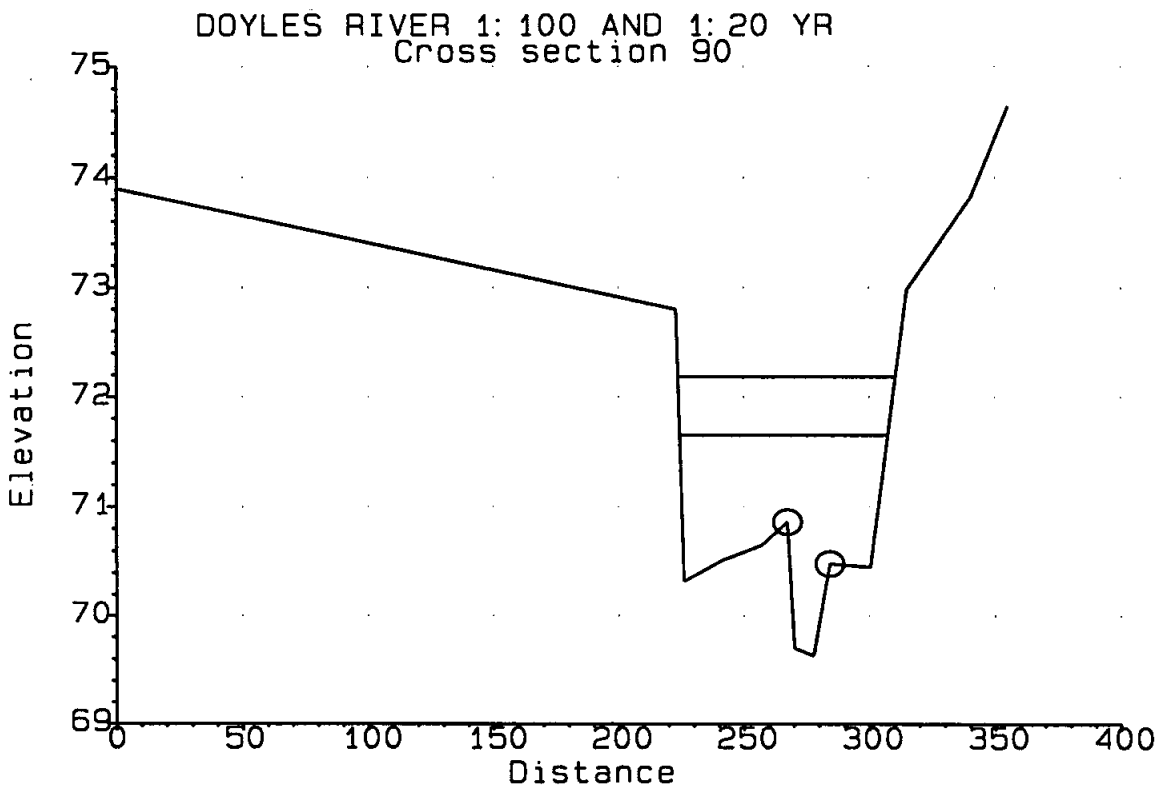

DOYLES RIVER 1: 100 AND 1: 20 YR
Cross section 80
Elevation
95
94
93
92
91
90
89
0
30
60
90
120
150
180
210
240
Distance

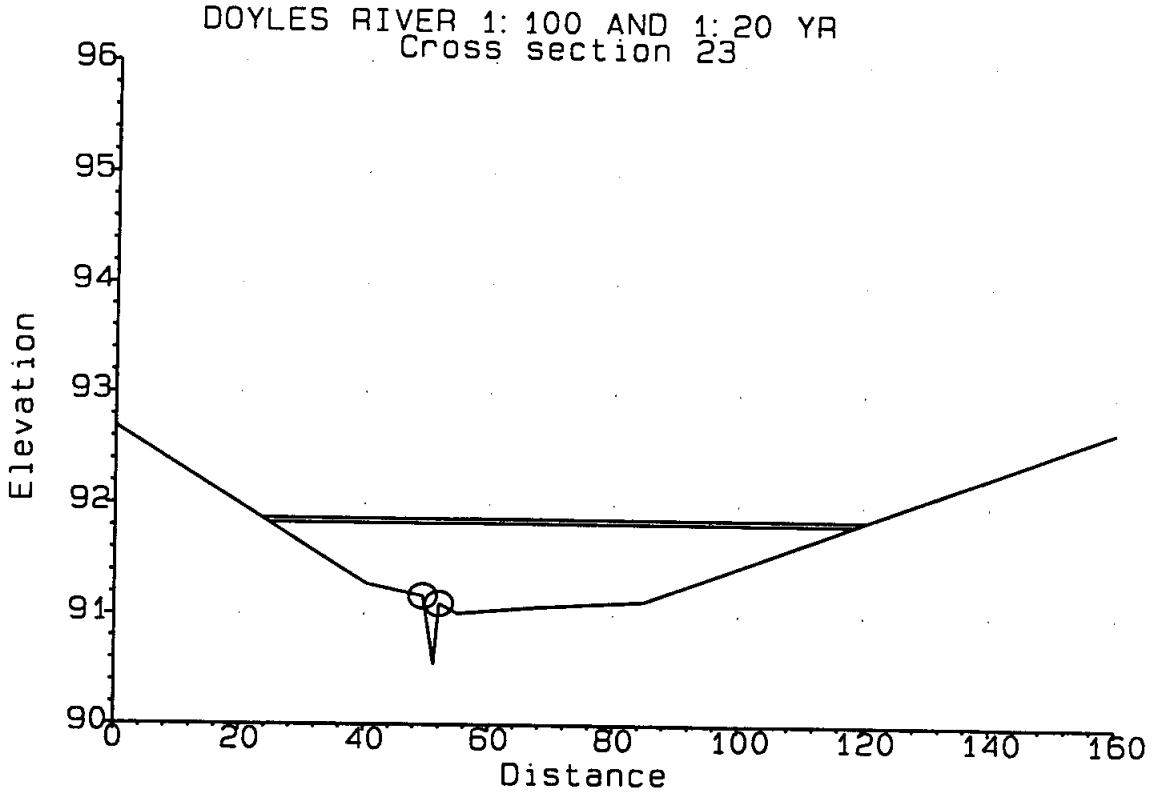

DOYLES RIVER 1: 100 AND 1: 20 YR
Cross section 85
Elevation
95
94
93
92
91
90
89
0
30
60
90
120
150
180
210
240
Distance

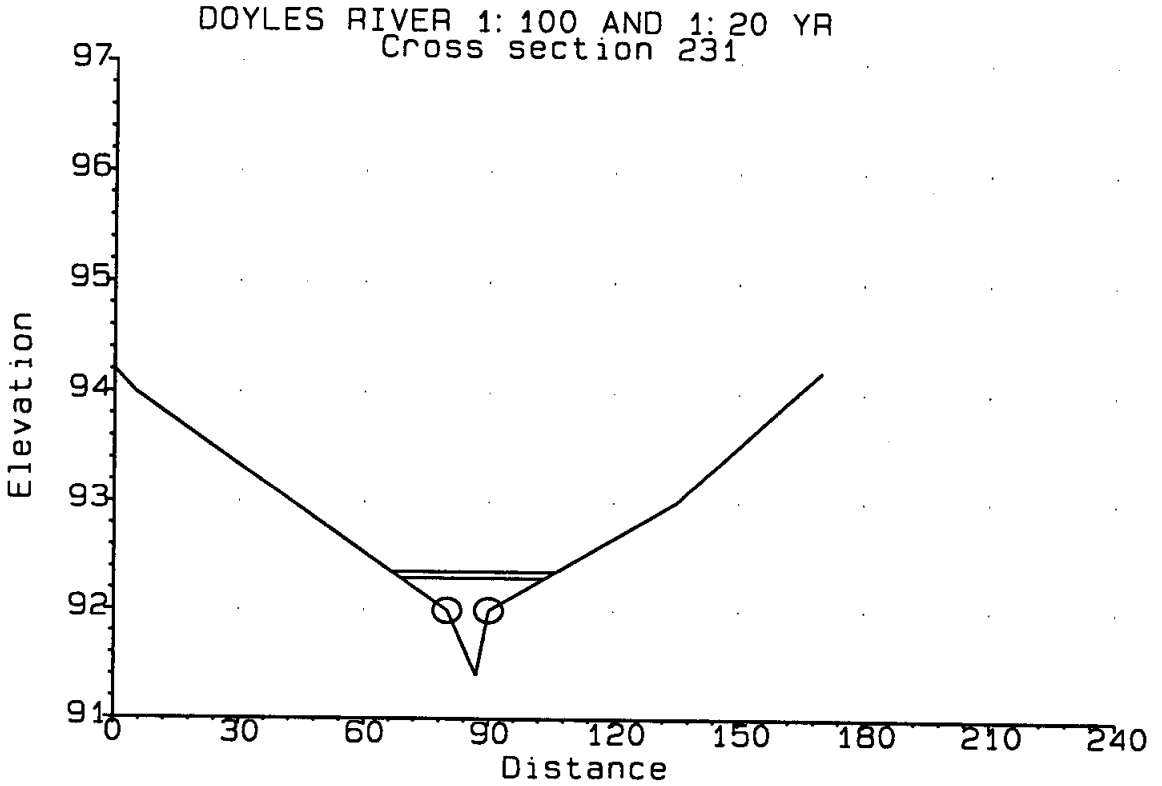

DOYLES RIVER 1:100 AND 1:20 YR
Cross section 85.1
Elevation
95
94
93
92
91
90
89
0
30
60
90
120
150
180
210
240
Distance

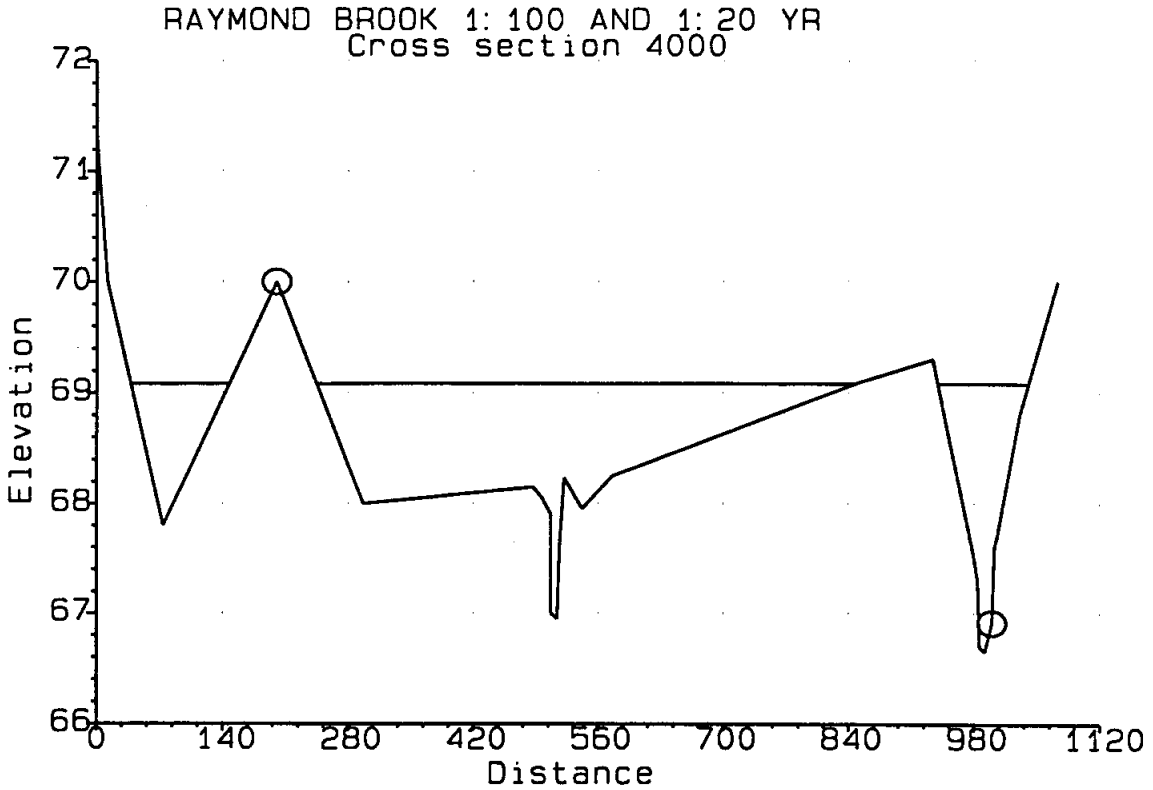

DOYLES RIVER 1:100 AND 1:20 YR
Cross section 85.2
Elevation
95
94
93
92
91
90
89
0
30
60
90
120
150
180
210
240
Distance

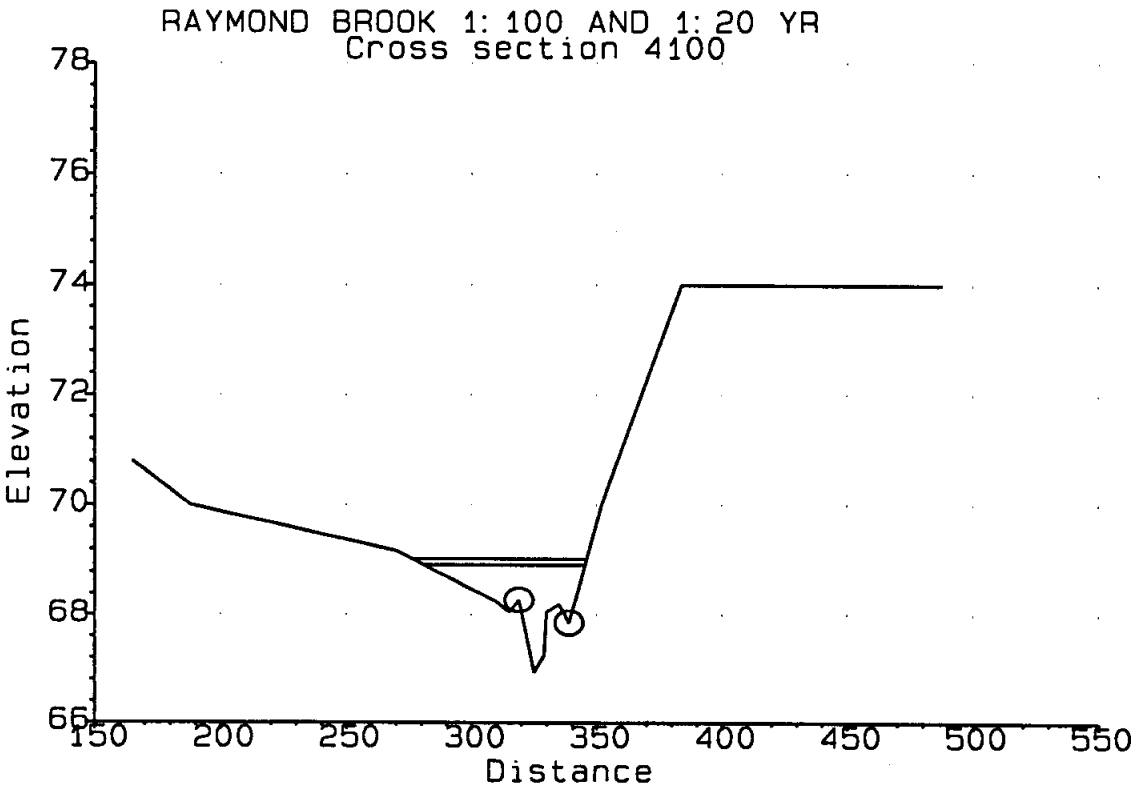

DOYLES RIVER 1:100 AND 1:20 YR
Cross section 85.3
Elevation
95
94
93
92
91
90
89
0
30
60
90
120
150
180
210
240
Distance

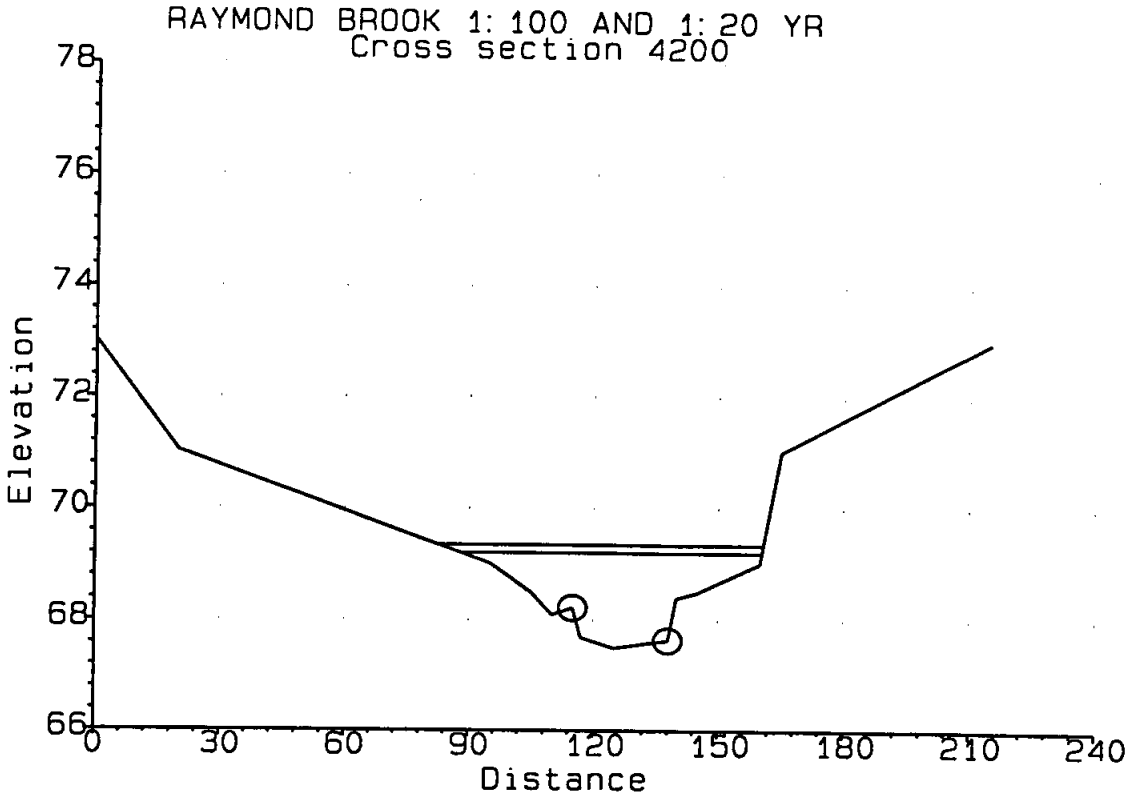

DOYLES RIVER 1:100 AND 1:20 YR
Cross section 90
Elevation
75
74
73
72
71
70
69
0
50
100
150
200
250
300
350
400
Distance

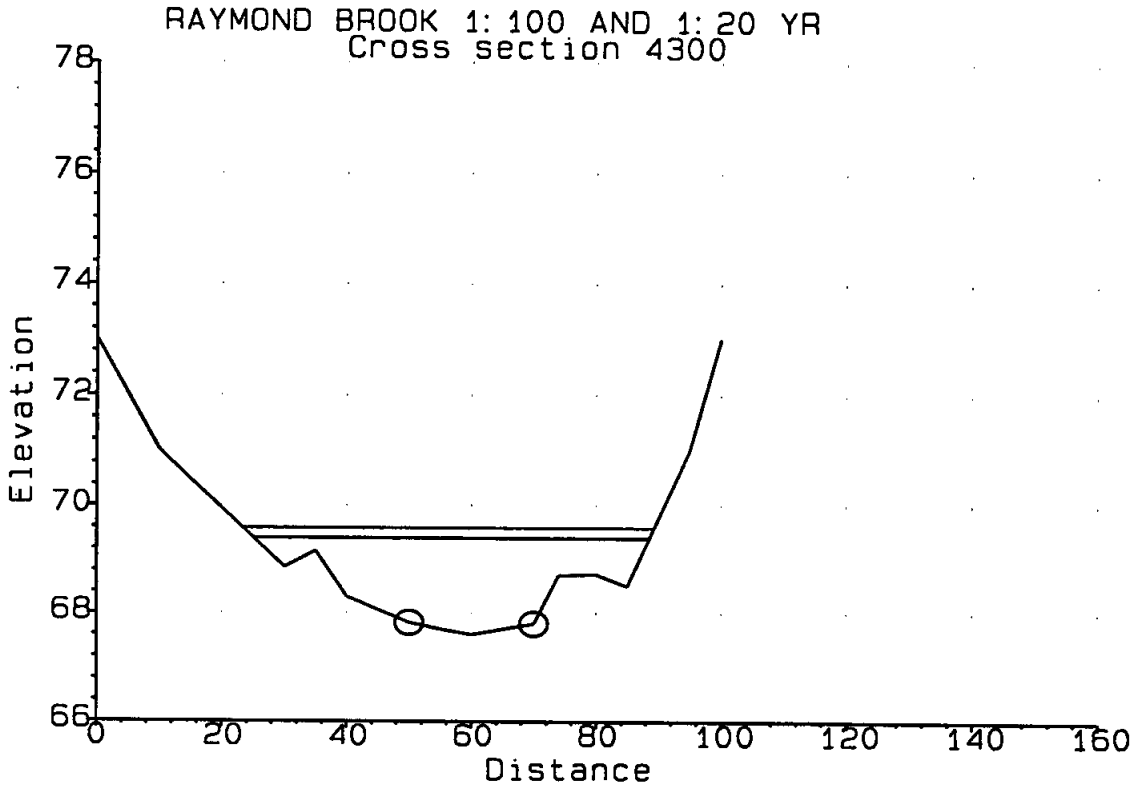

DOYLES RIVER 1: 100 AND 1: 20 YR
Cross section 23
Elevation
96
95
94
93
92
91
90
0
20
40
60
80
100
120
140
160
Distance

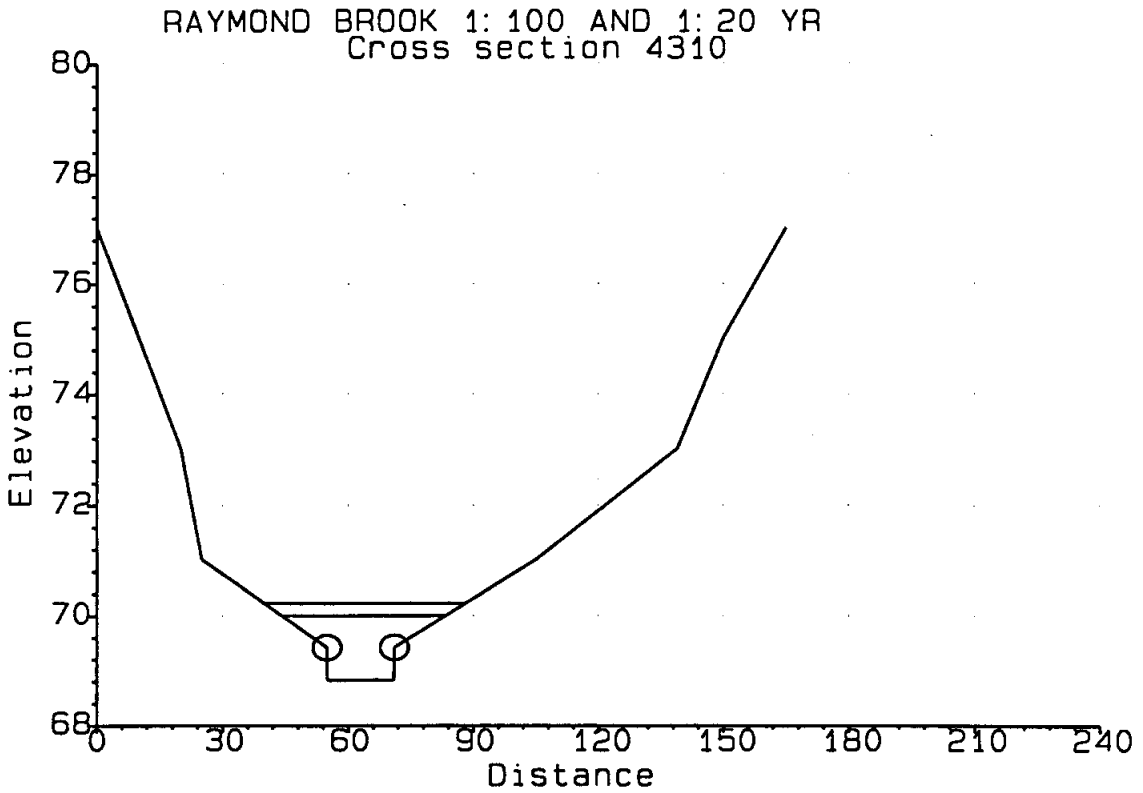

DOYLES RIVER 1: 100 AND 1: 20 YR
Cross section 231
Elevation
97
96
95
94
93
92
91
0
30
60
90
120
150
180
210
240
Distance

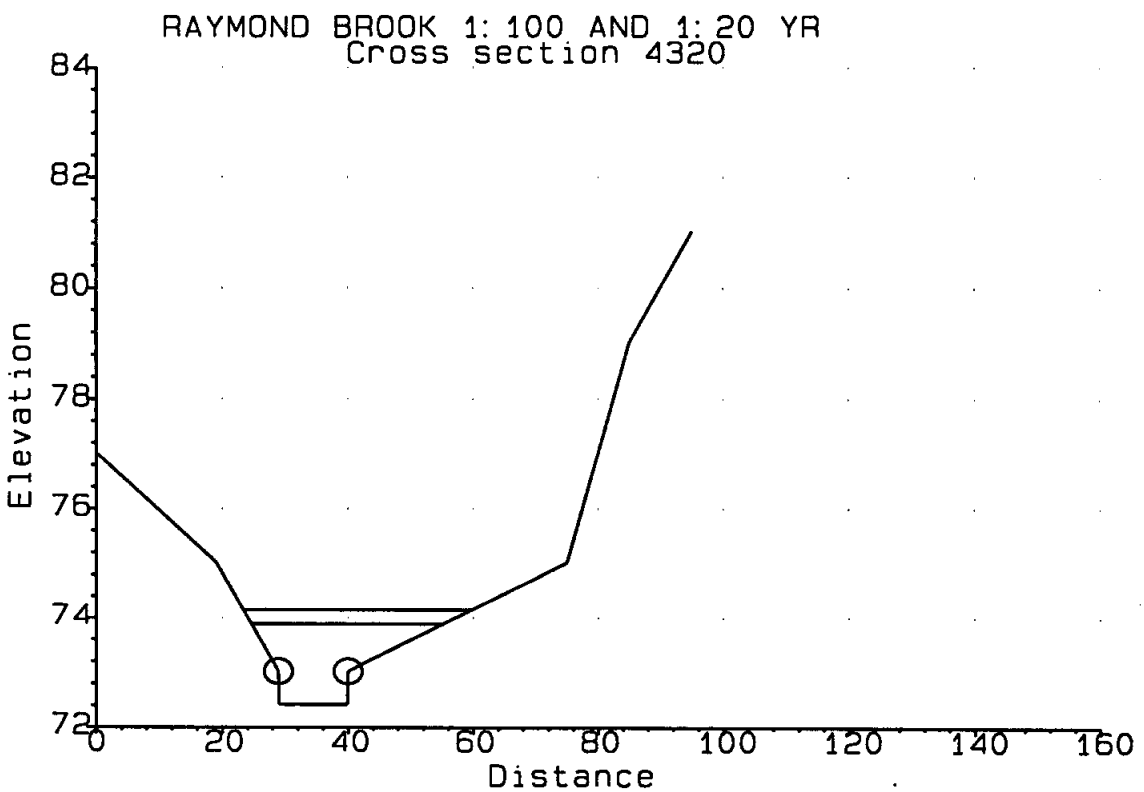

RAYMOND BROOK 1:100 AND 1:20 YR
Cross section 4000
Elevation
72
71
70
69
68
67
66
0
140
280
420
560
700
840
980
1120
Distance

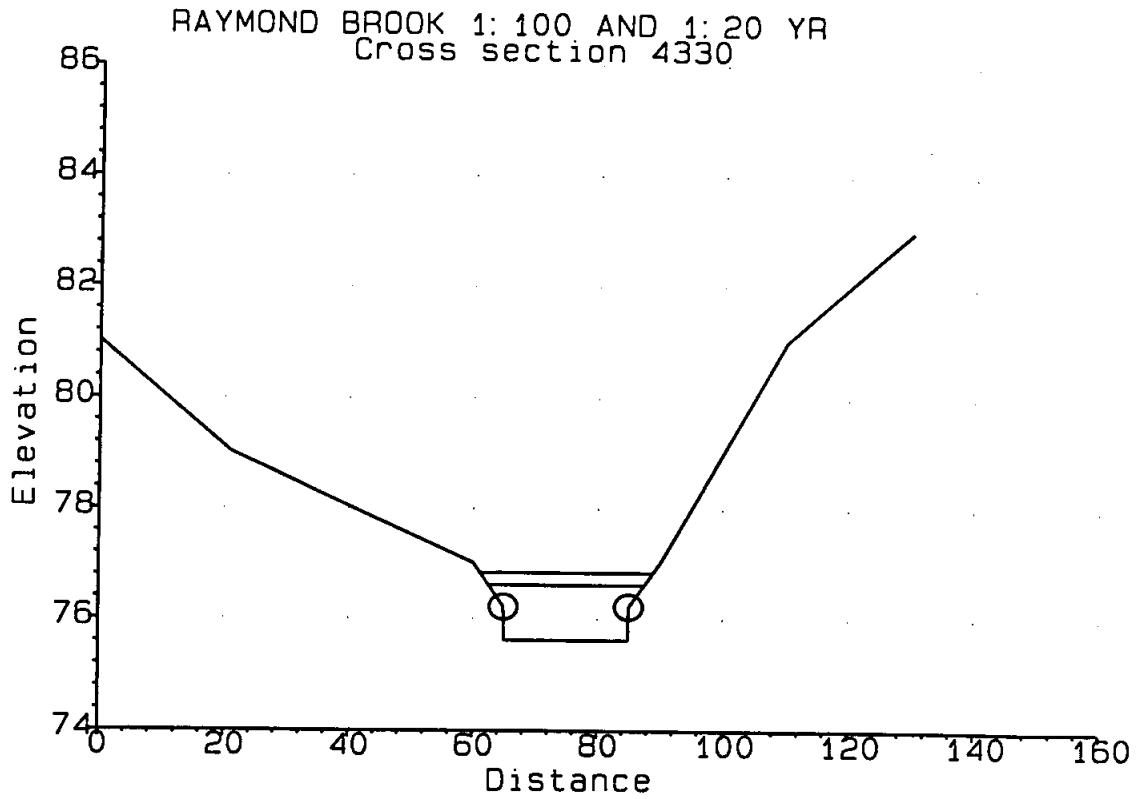

RAYMOND BROOK 1:100 AND 1:20 YR
Cross section 4100
Elevation
78
76
74
72
70
68
66
150
200
250
300
350
400
450
500
550
Distance

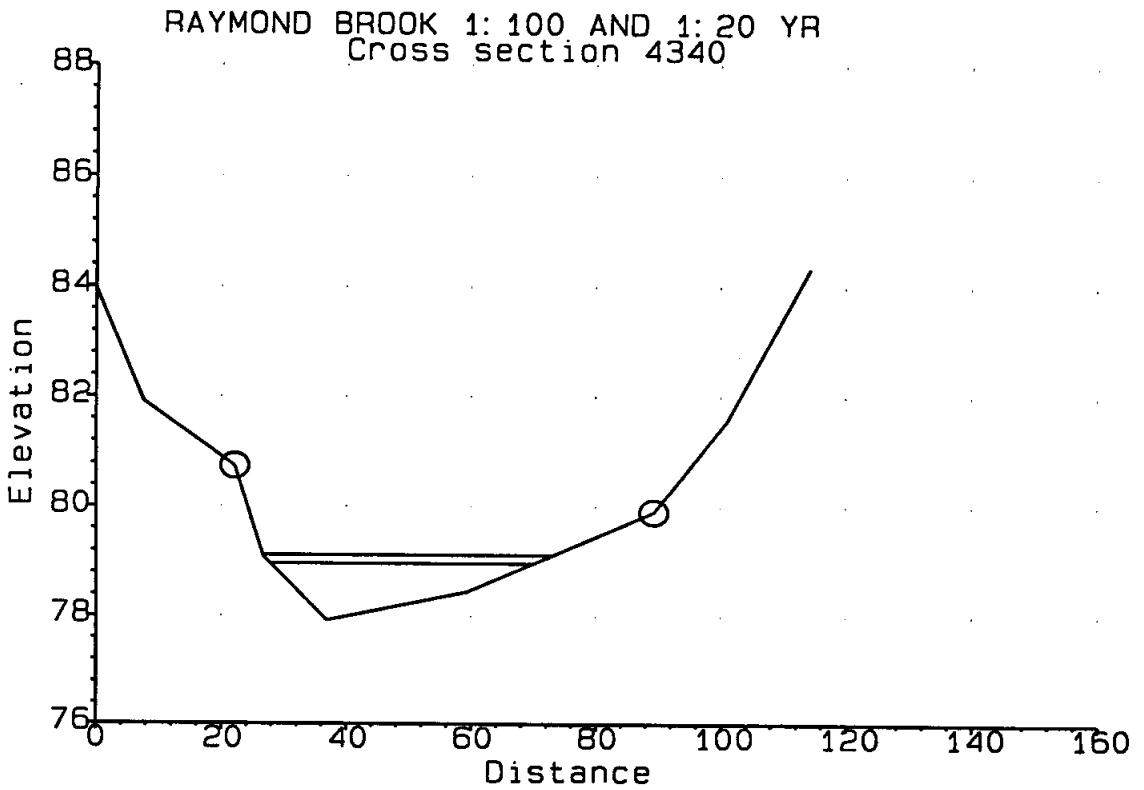

RAYMOND BROOK 1:100 AND 1:20 YR
Cross section 4200
Elevation
78
76
74
72
70
68
66
0
30
60
90
120
150
180
210
240
Distance

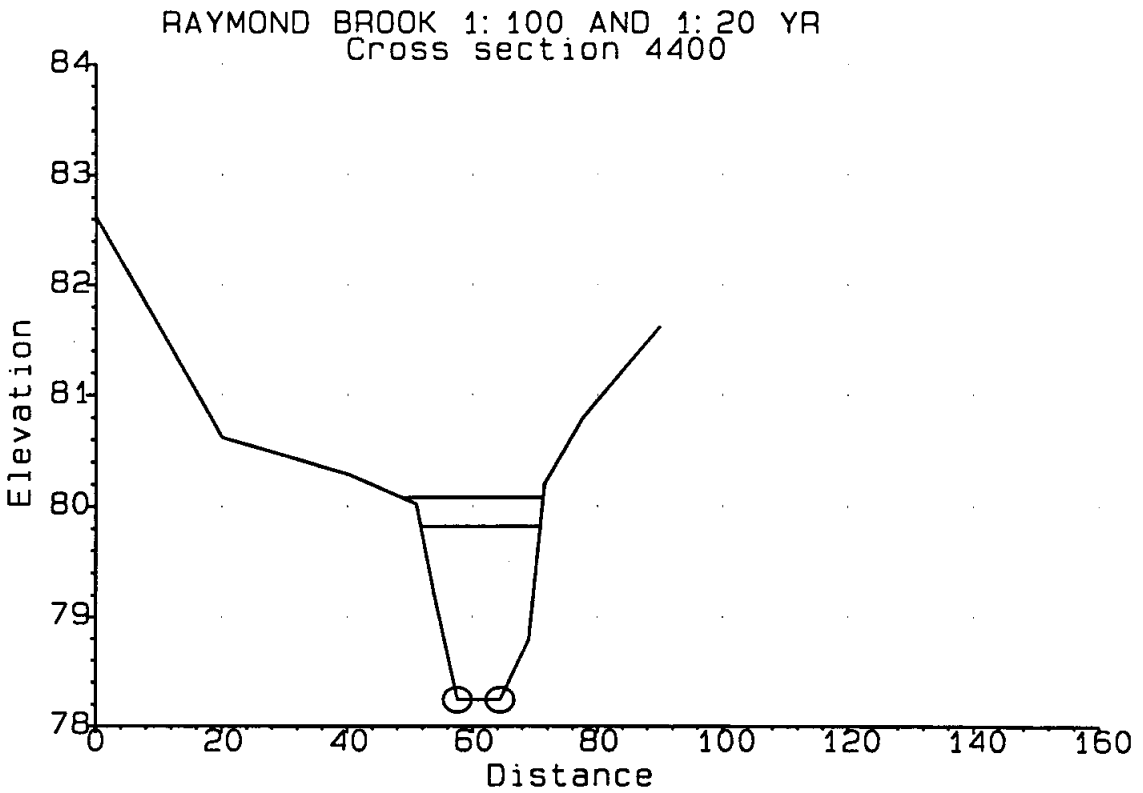

RAYMOND BROOK 1:100 AND 1:20 YR
Cross section 4300
Elevation
78
76
74
72
70
68
66
0
20
40
60
80
100
120
140
160
Distance

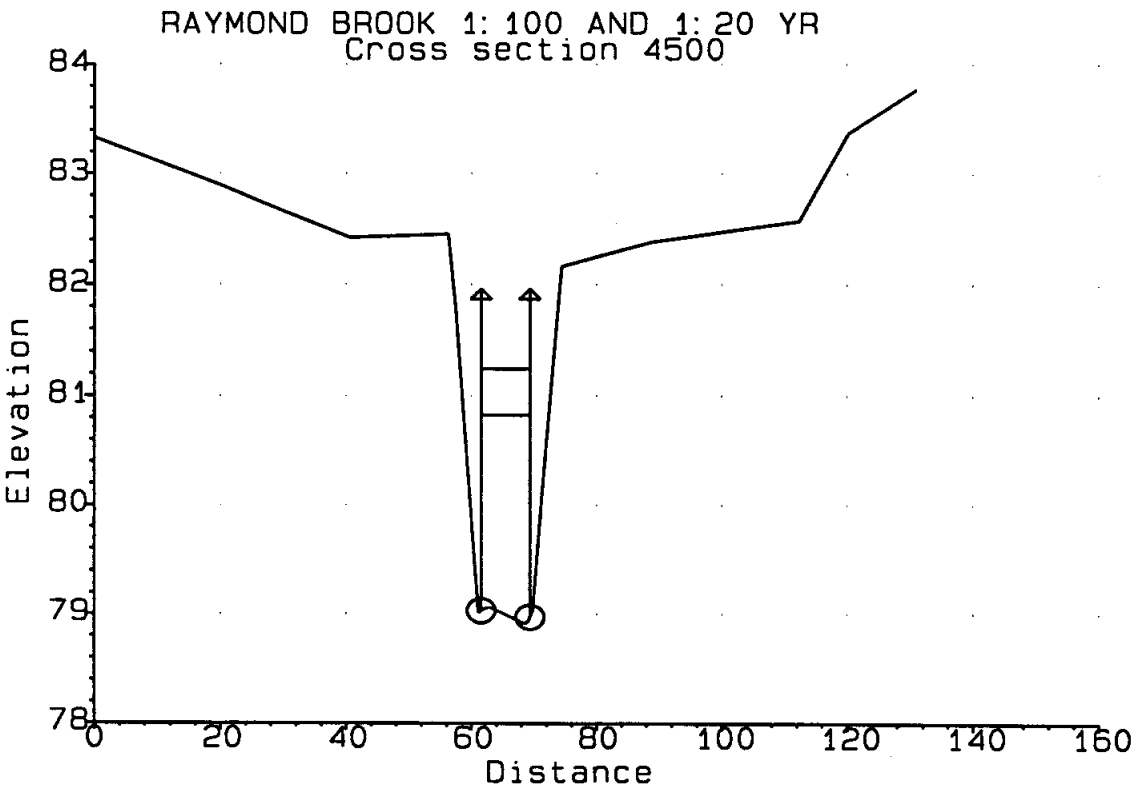

RAYMOND BROOK 1:100 AND 1:20 YR
Cross section 4310
Elevation
80
78
76
74
72
70
68
0
30
60
90
120
150
180
210
240
Distance

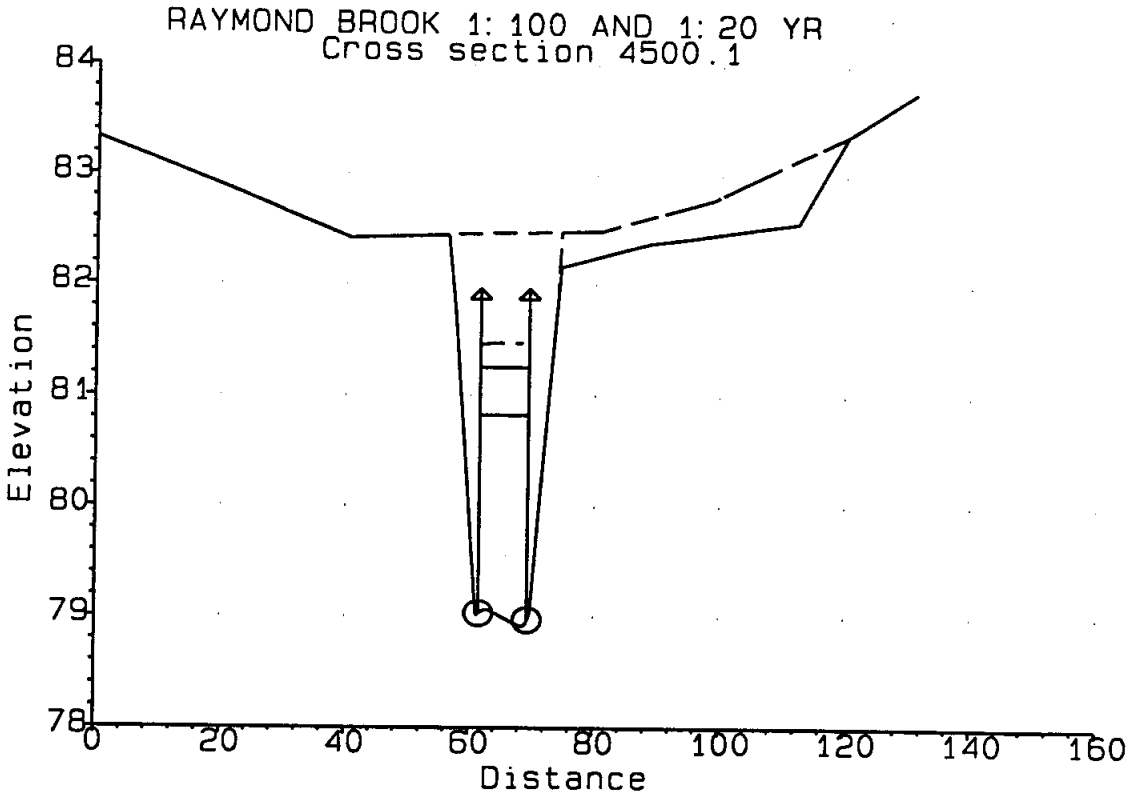

RAYMOND BROOK 1:100 AND 1:20 YR
Cross section 4320
Elevation
84
82
80
78
76
74
72
0
20
40
60
80
100
120
140
160
Distance

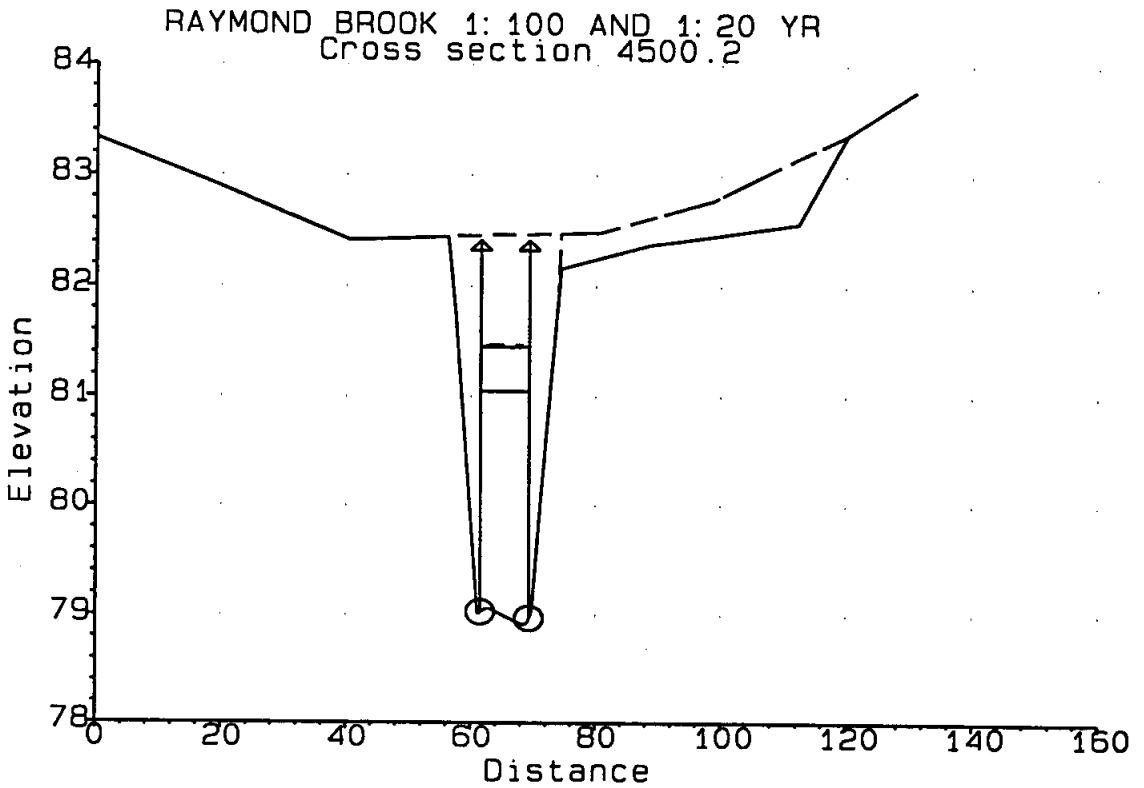

RAYMOND BROOK 1:100 AND 1:20 YR
Cross section 4330
Elevation
86
84
82
80
78
76
74
0
20
40
60
80
100
120
140
160
Distance

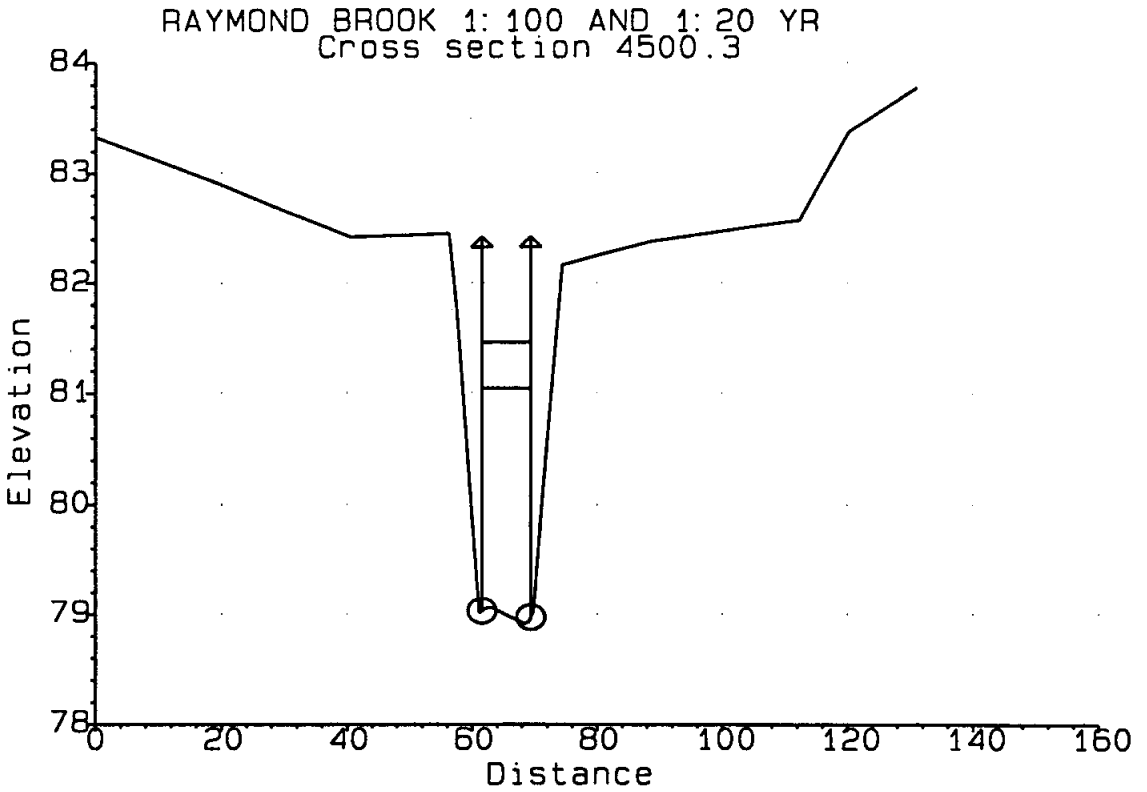

RAYMOND BROOK 1:100 AND 1:20 YR
Cross section 4340
Elevation
88
86
84
82
80
78
76
0
20
40
60
80
100
120
140
160
Distance

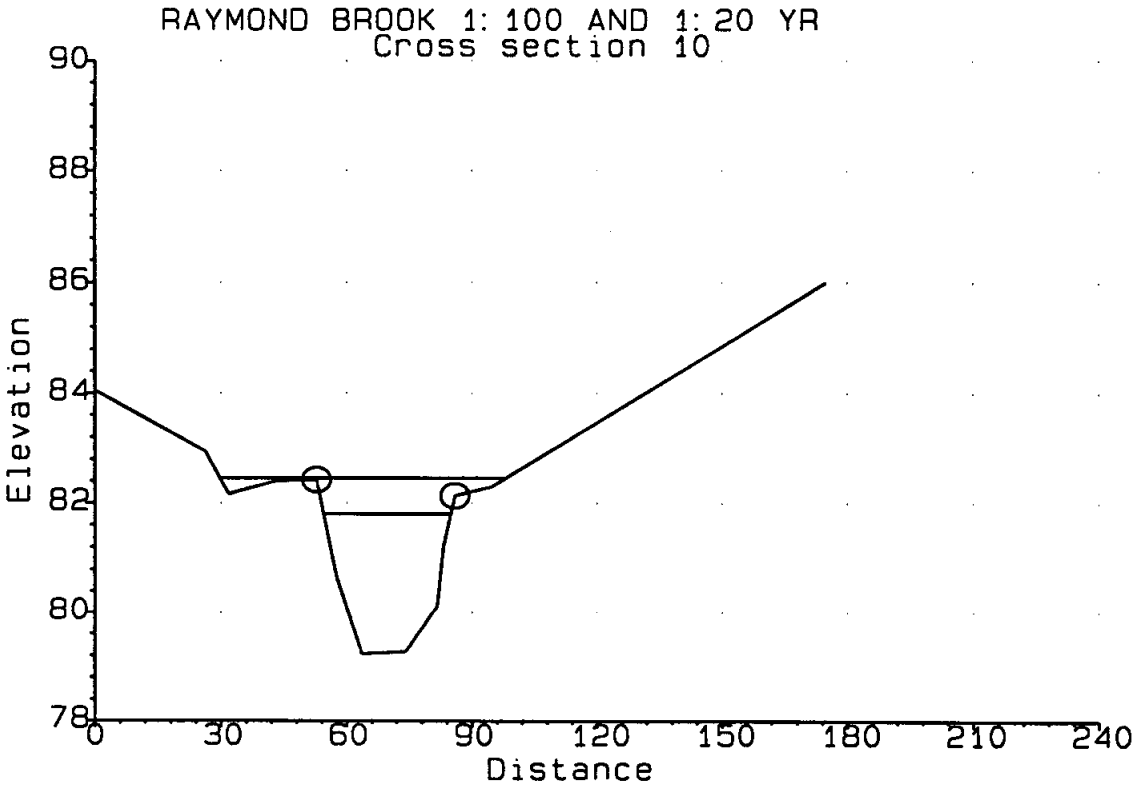

RAYMOND BROOK 1: 100 AND 1: 20 YR
Cross section 4400
Elevation
84
83
82
81
80
79
78
0
20
40
60
80
100
120
140
160
Distance

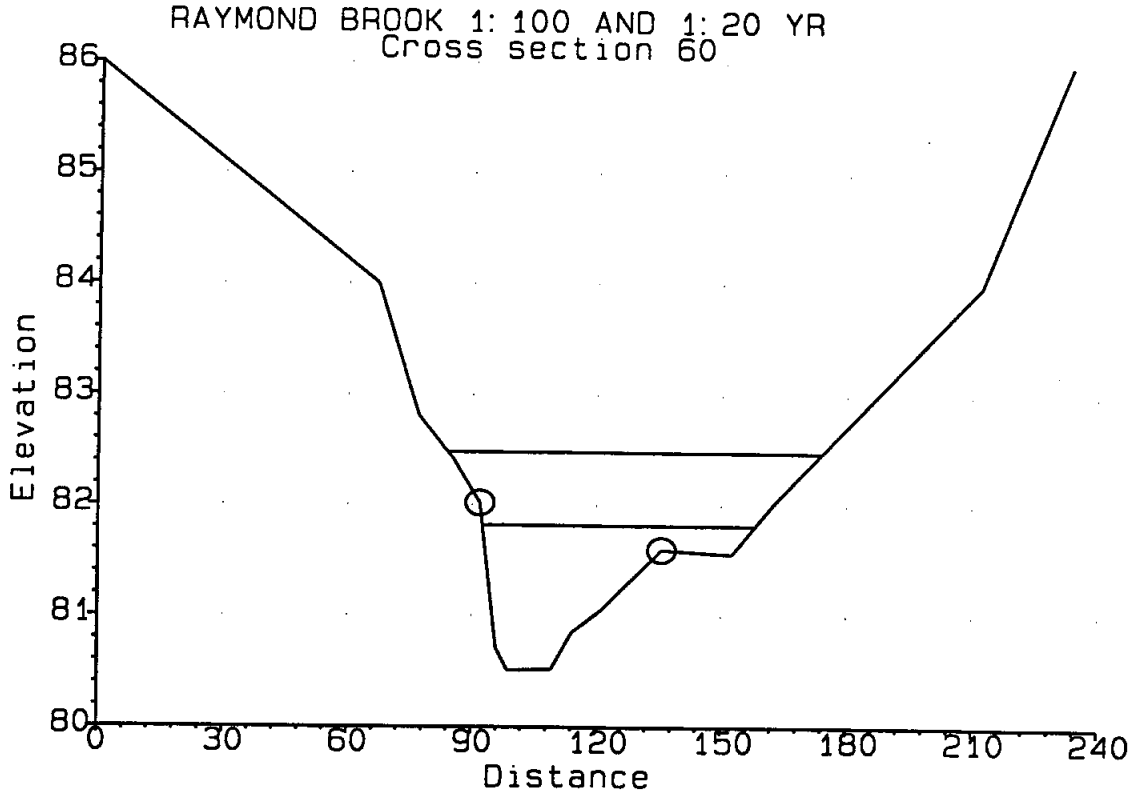

RAYMOND BROOK 1: 100 AND 1: 20 YR
Cross section 4500
Elevation
84
83
82
81
80
79
78
0
20
40
60
80
100
120
140
160
Distance

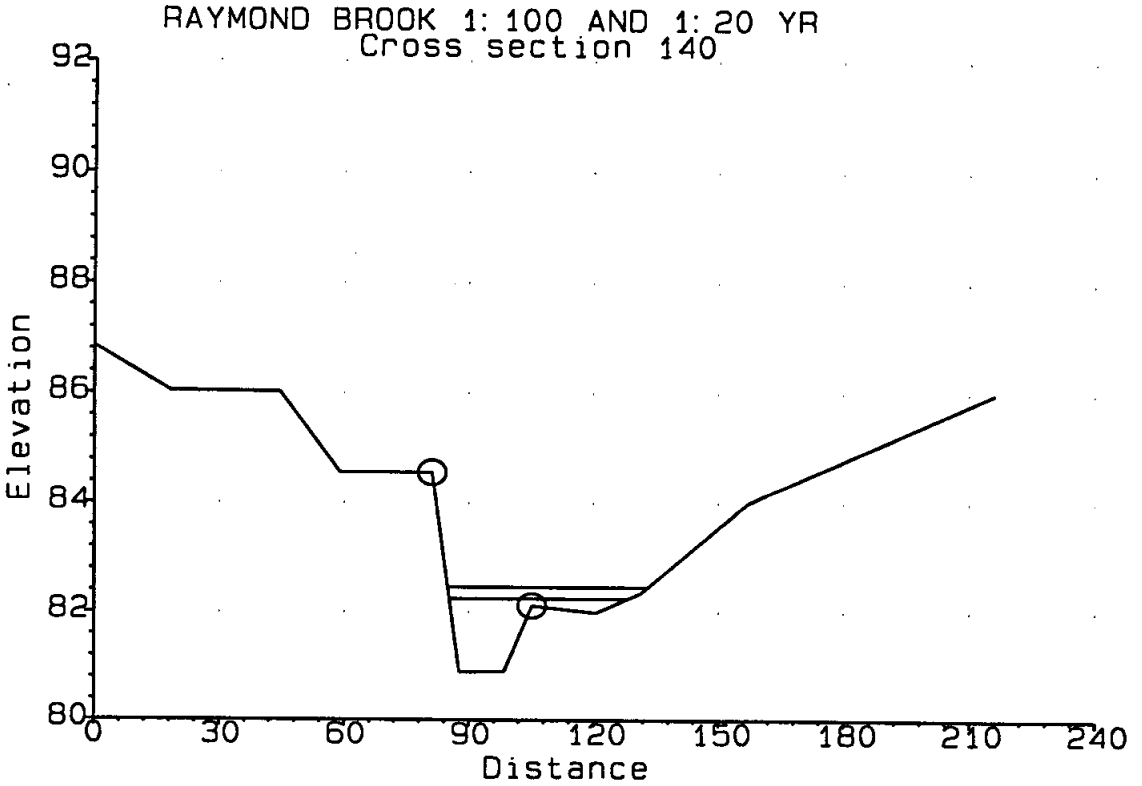

RAYMOND BROOK 1:100 AND 1:20 YR
Cross section 4500.1
Elevation
84
83
82
81
80
79
78
0
20
40
60
80
100
120
140
160
Distance

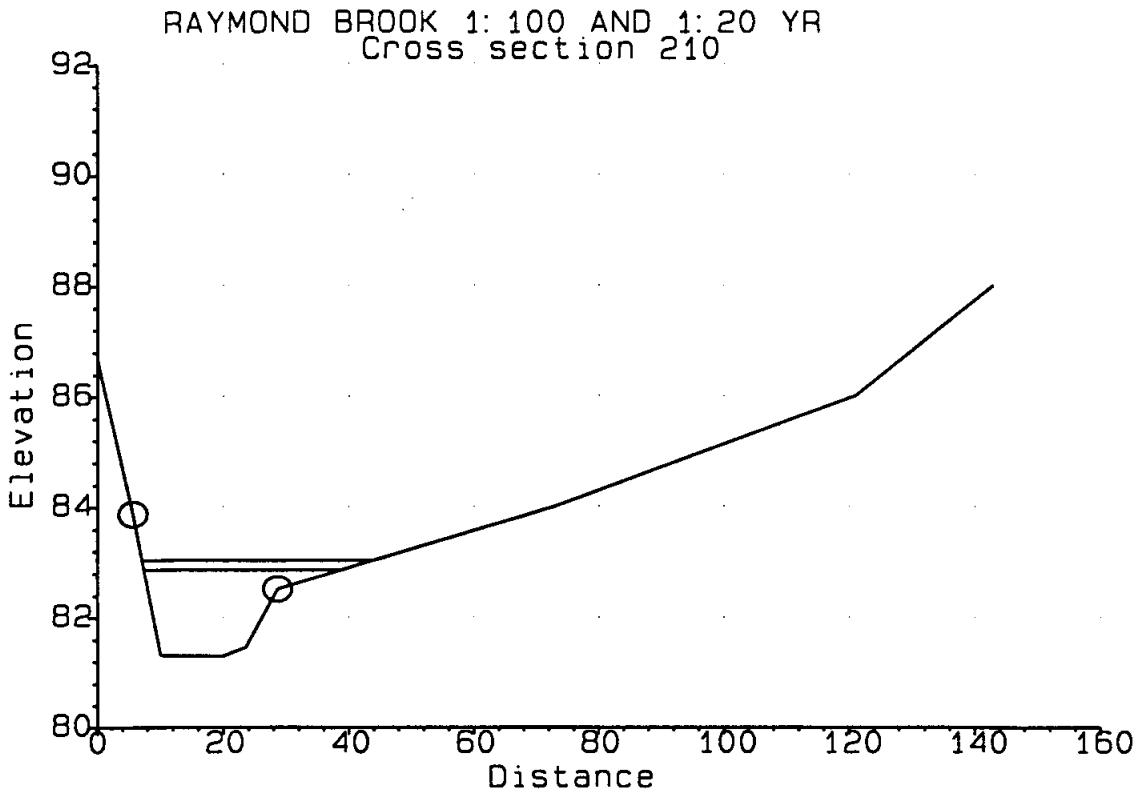

RAYMOND BROOK 1:100 AND 1:20 YR
Cross section 4500.2
Elevation
84
83
82
81
80
79
78
0
20
40
60
80
100
120
140
160
Distance

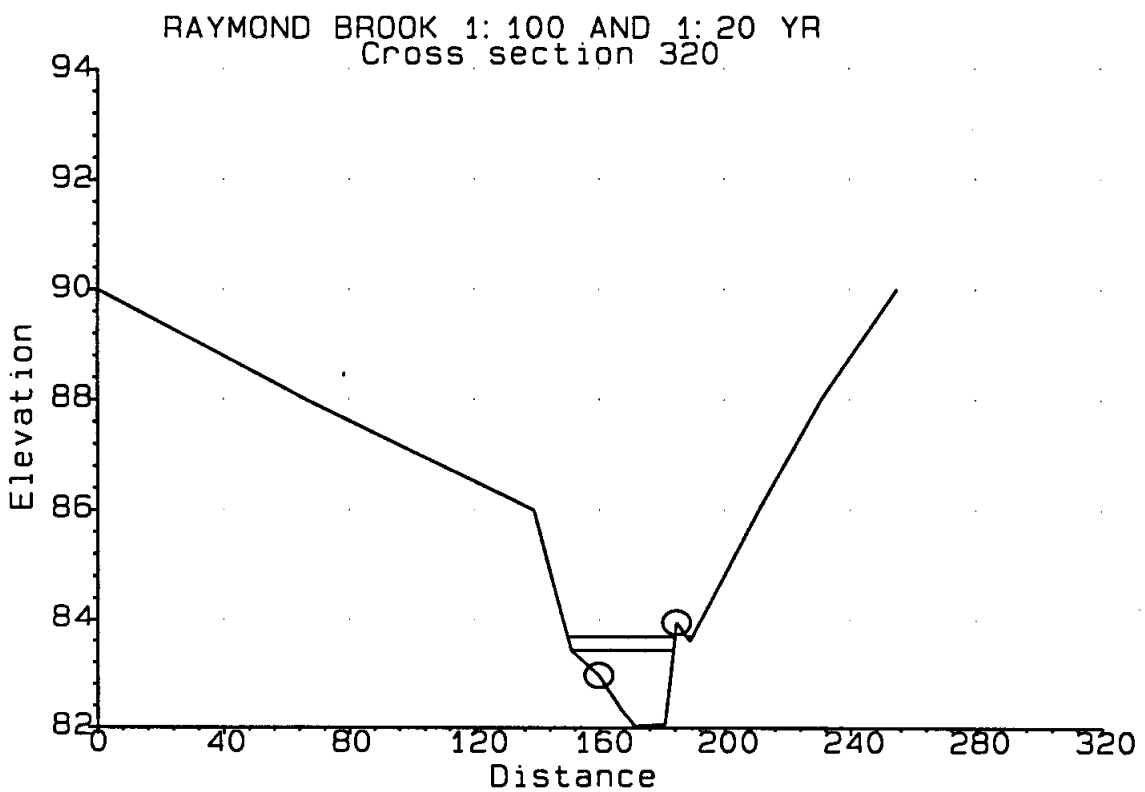

RAYMOND BROOK 1:100 AND 1:20 YR
Cross section 4500.3
Elevation
84
83
82
81
80
79
78
0
20
40
60
80
100
120
140
160
Distance

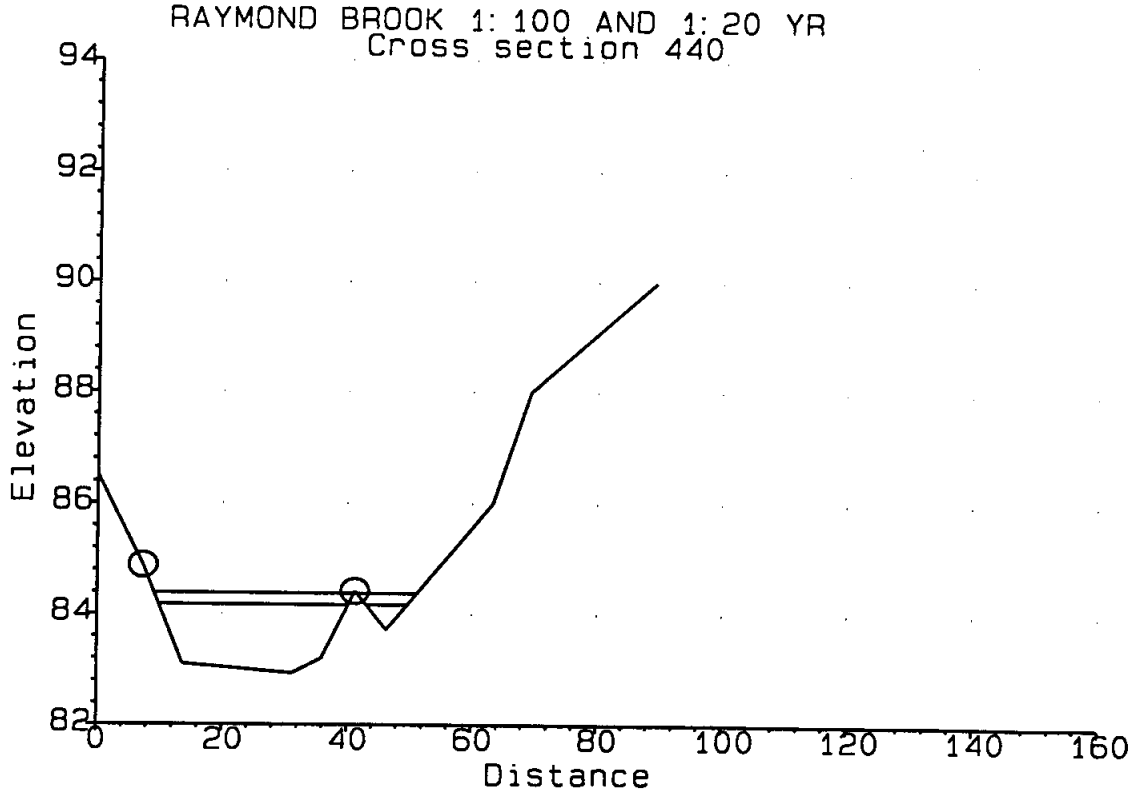

RAYMOND BROOK 1:100 AND 1:20 YR
Cross section 10
Elevation
90
88
86
84
82
80
78
0
30
60
90
120
150
180
210
240
Distance

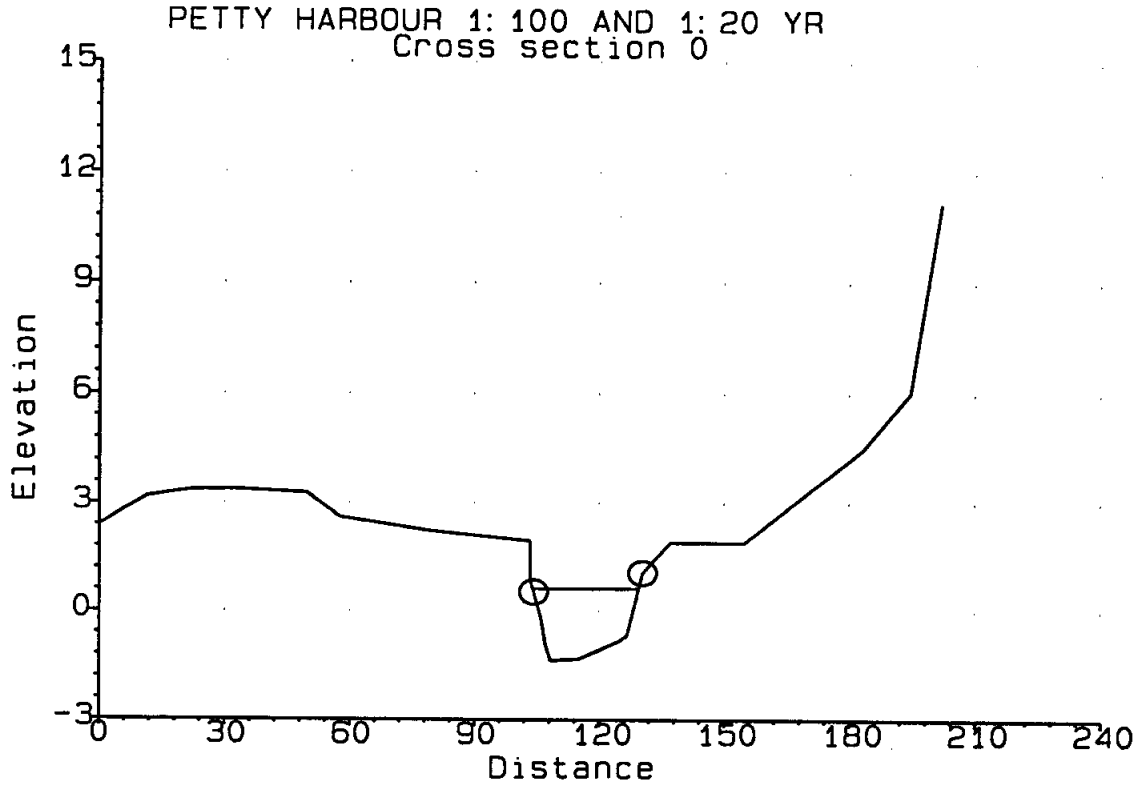

RAYMOND BROOK 1: 100 AND 1: 20 YR
Cross section 60
Elevation
86
85
84
83
82
81
80
0
30
60
90
120
150
180
210
240
Distance

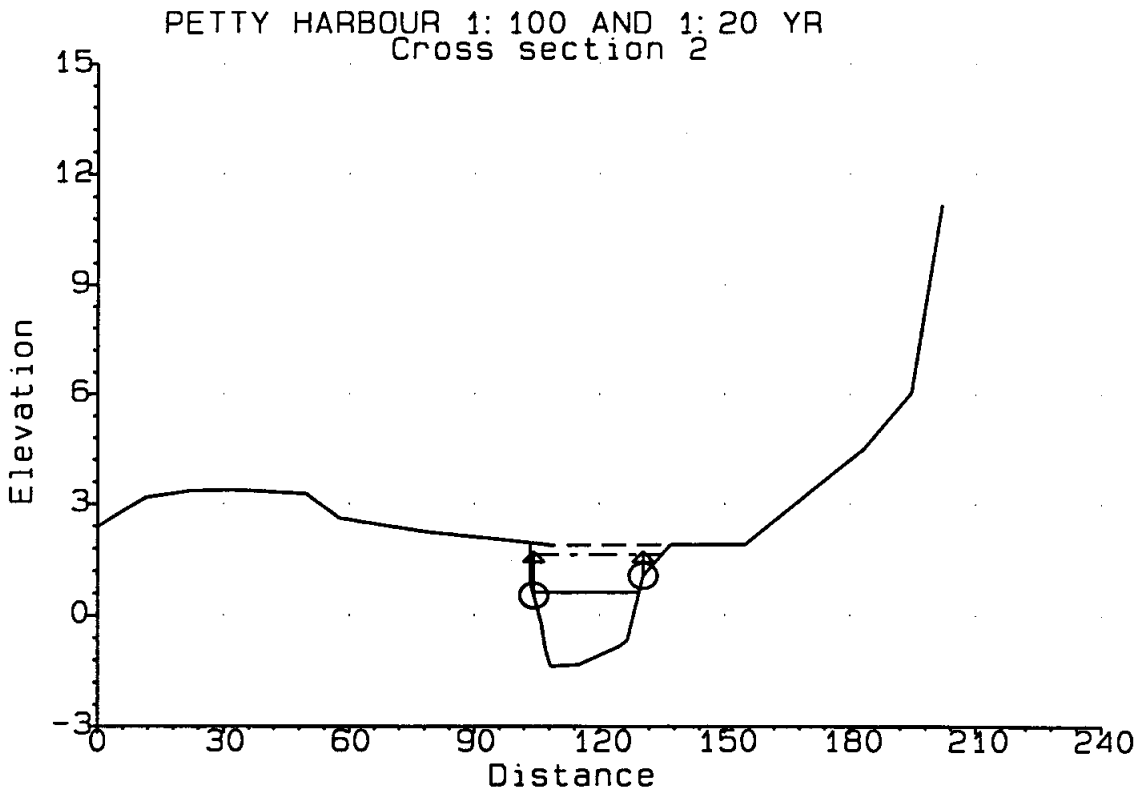

RAYMOND BROOK 1: 100 AND 1: 20 YR
Cross section 140
Elevation
92
90
88
86
84
82
80
0
30
60
90
120
150
180
210
240
Distance

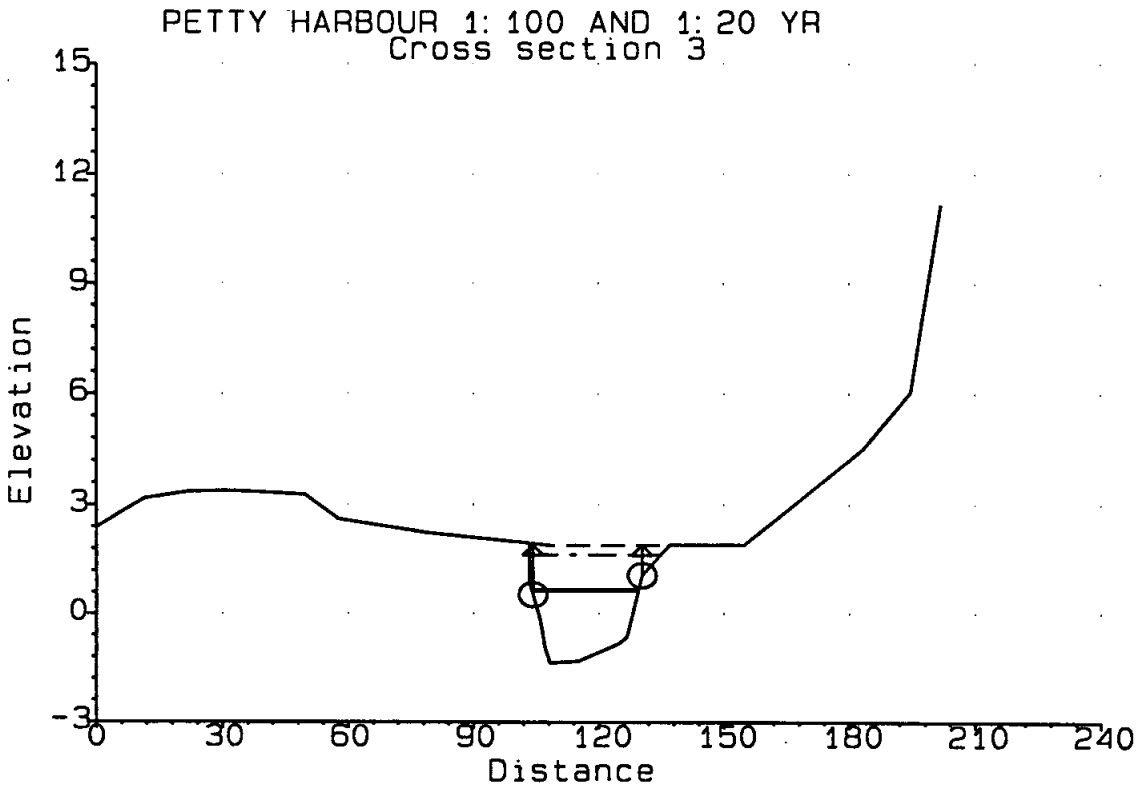

RAYMOND BROOK 1: 100 AND 1: 20 YR
Cross section 210
Elevation
92
90
88
86
84
82
80
0
20
40
60
80
100
120
140
160
Distance

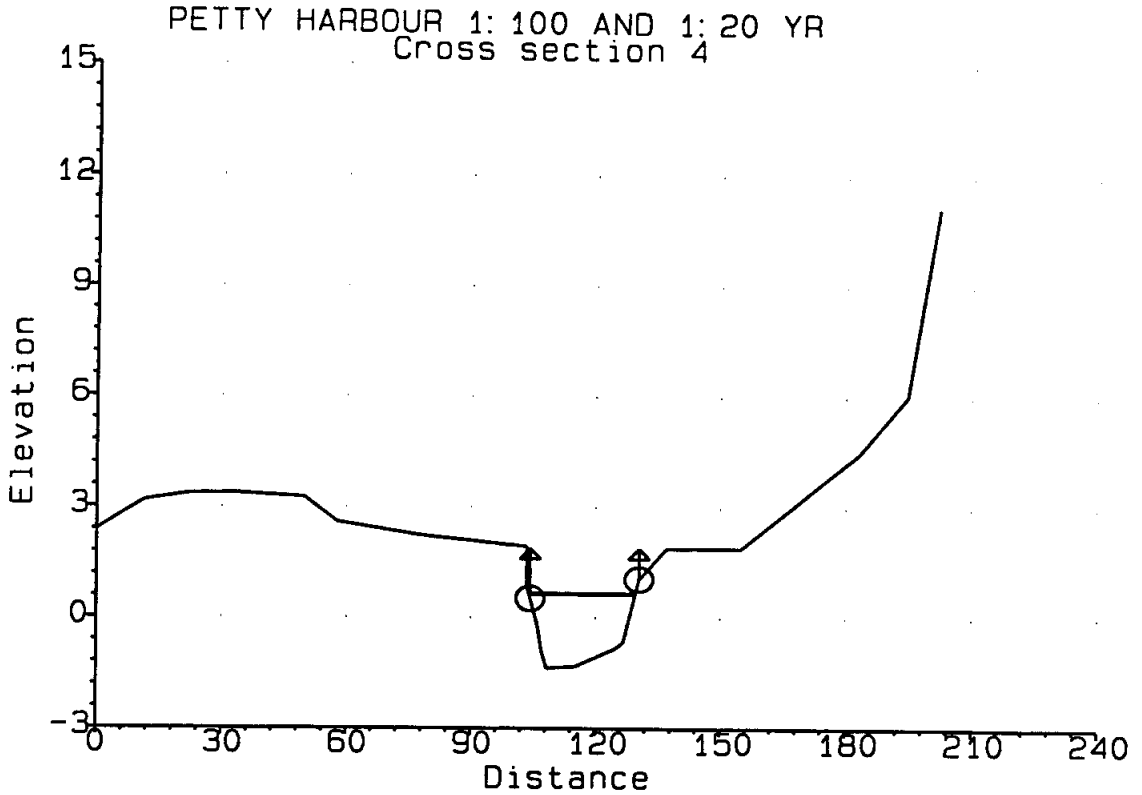

RAYMOND BROOK 1: 100 AND 1: 20 YR
Cross section 320
Elevation
94
92
90
88
86
84
82
0
40
80
120
160
200
240
280
320
Distance

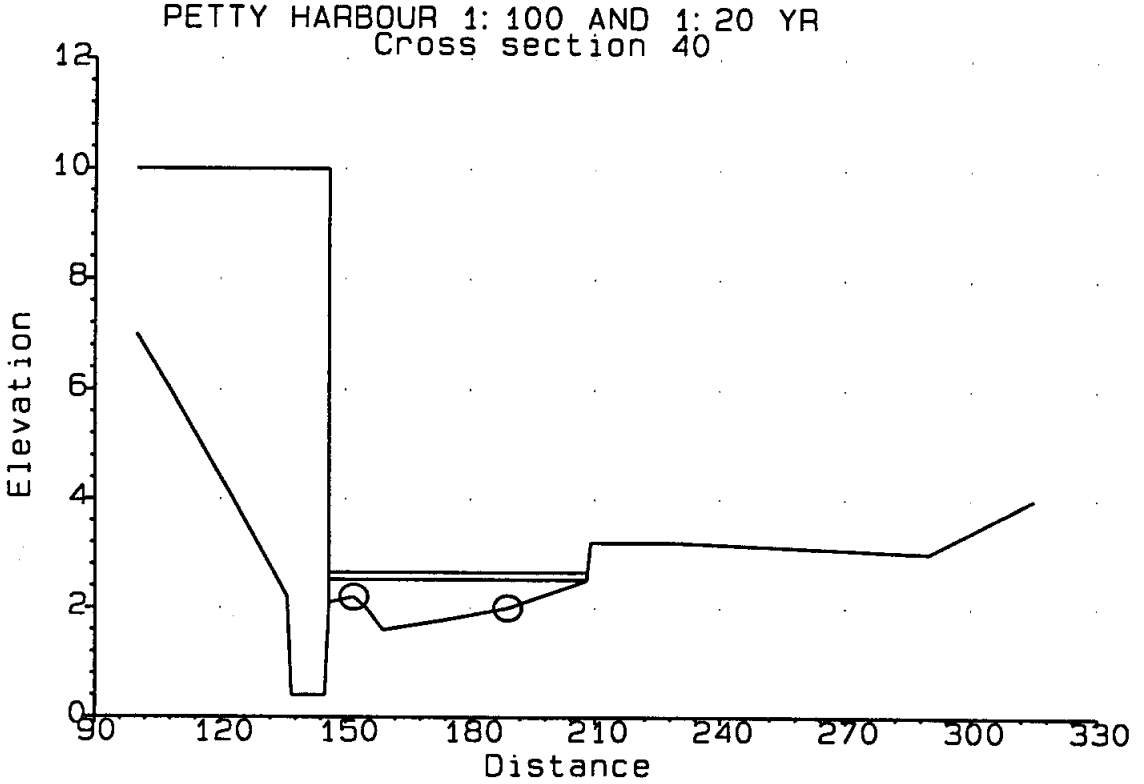

RAYMOND BROOK 1: 100 AND 1: 20 YR
Cross section 440
Elevation
94
92
90
88
86
84
82
0
20
40
60
80
100
120
140
160
Distance

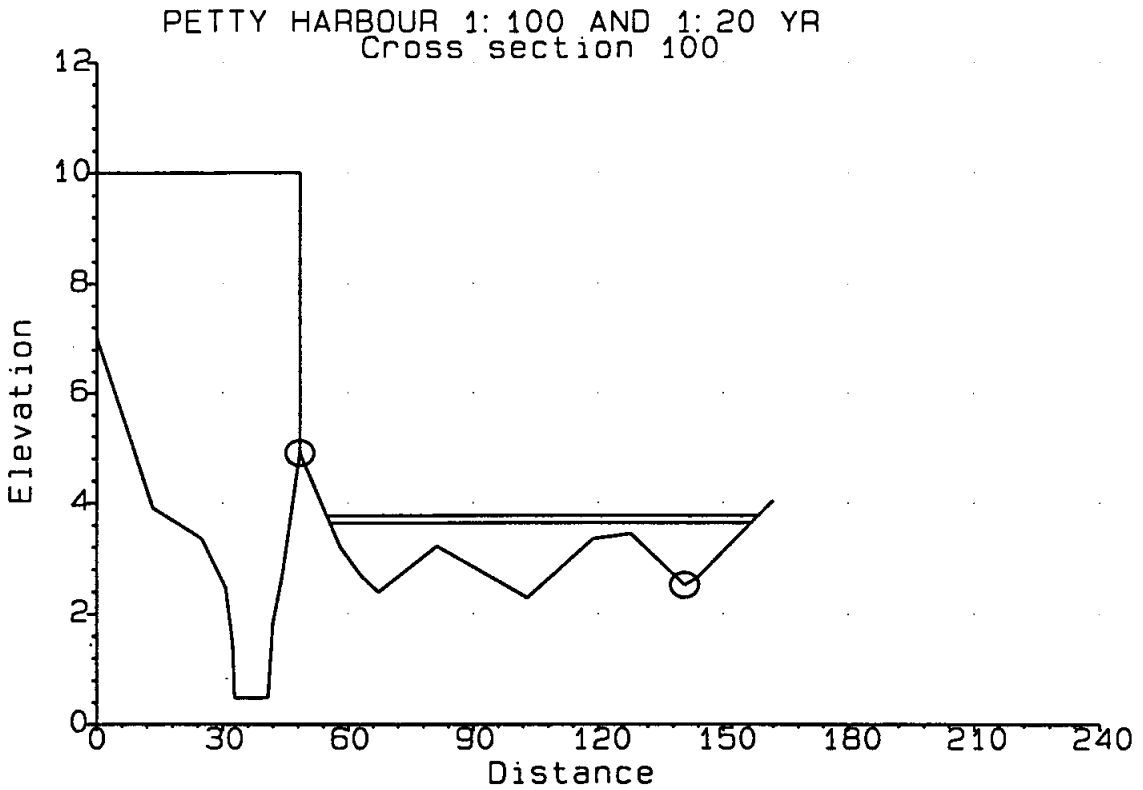

PETTY HARBOUR 1: 100 AND 1: 20 YR
Cross section 0
Elevation
15
12
9
6
3
0
-3
0
30
60
90
120
150
180
210
240
Distance

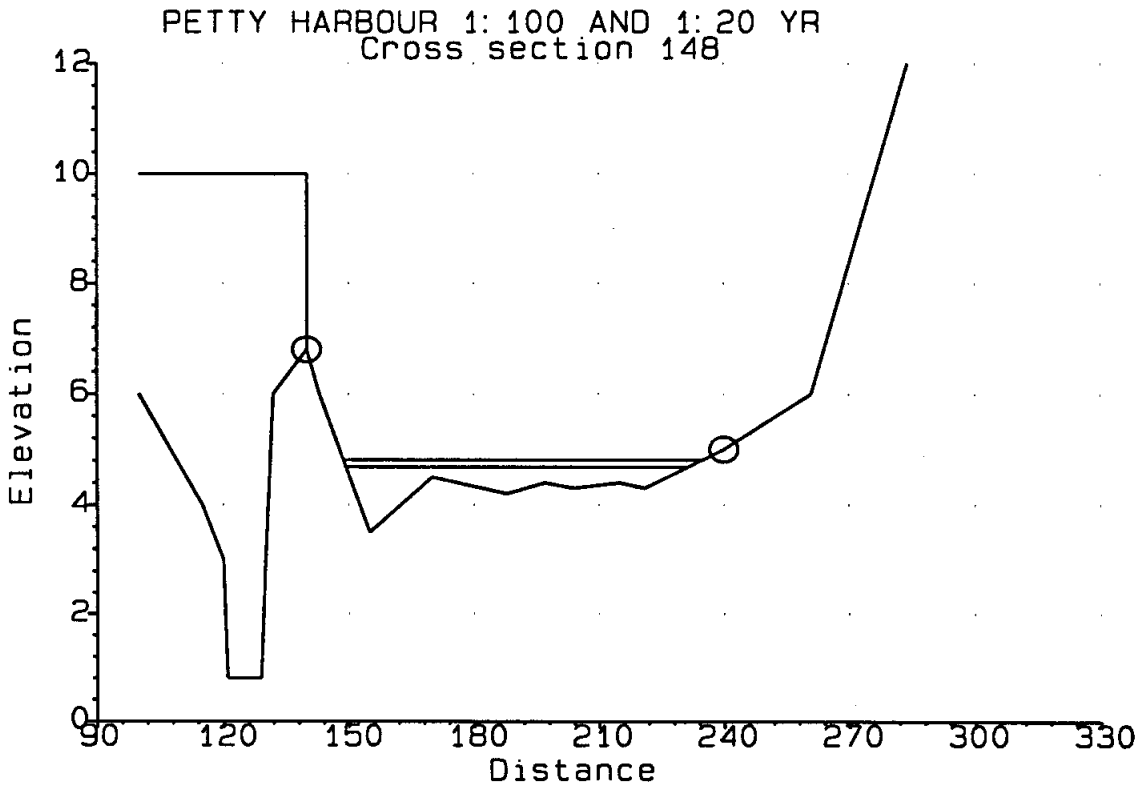

PETTY HARBOUR 1: 100 AND 1: 20 YR
Cross section 2
Elevation
15
12
9
6
3
0
-3
0
30
60
90
120
150
180
210
240
Distance

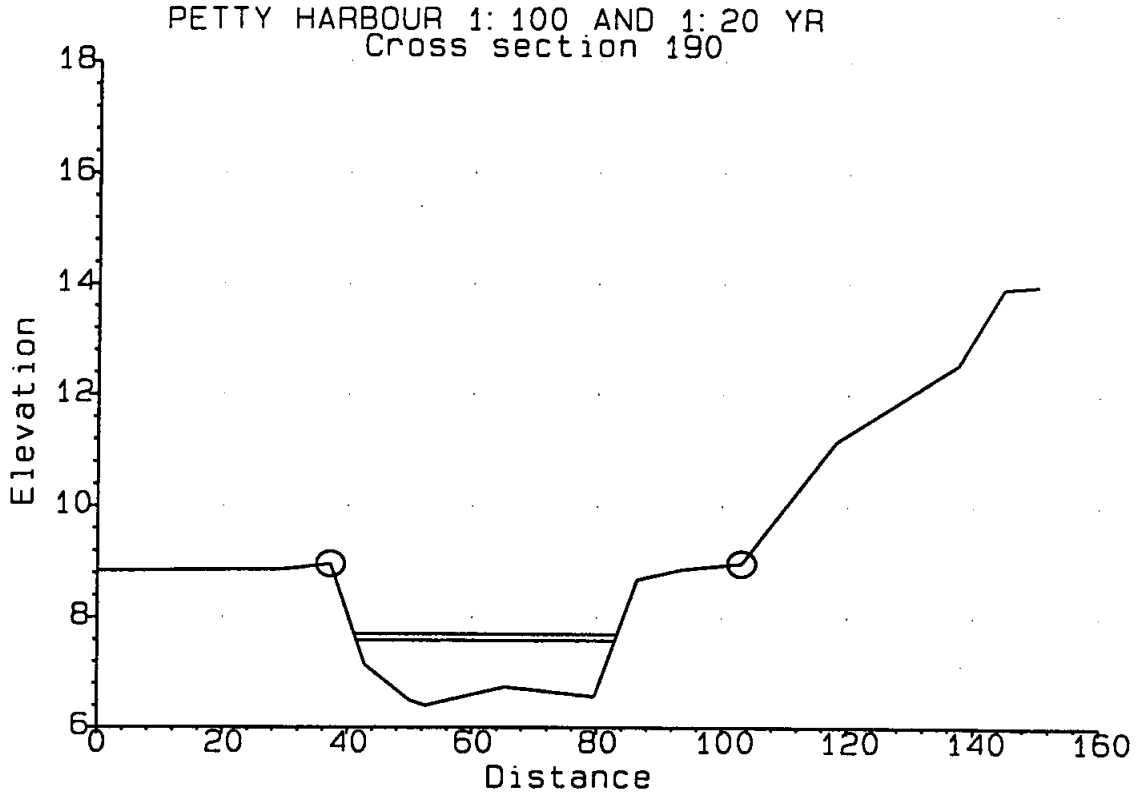

PETTY HARBOUR 1: 100 AND 1: 20 YR
Cross section 3
Elevation
15
12
9
6
3
0
-3
0
30
60
90
120
150
180
210
240
Distance

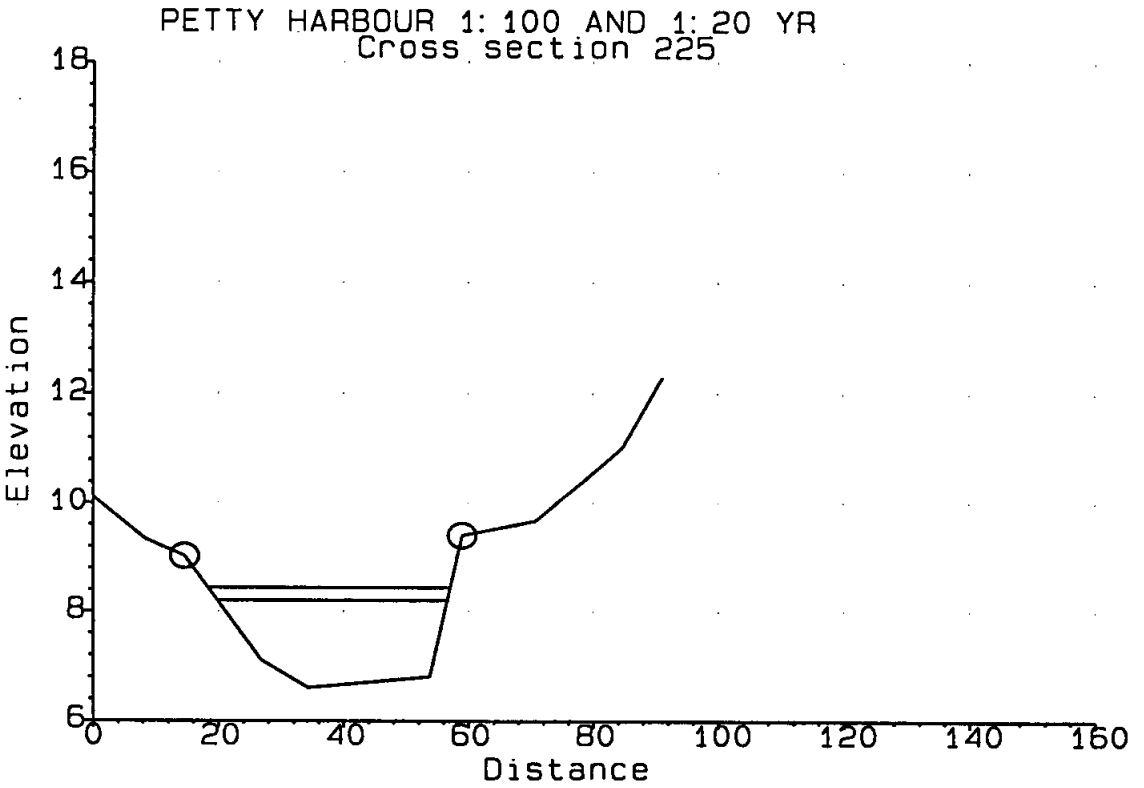

PETTY HARBOUR 1: 100 AND 1: 20 YR
Cross section 4
Elevation
Distance
15
12
9
6
3
0
-3
0
30
60
90
120
150
180
210
240

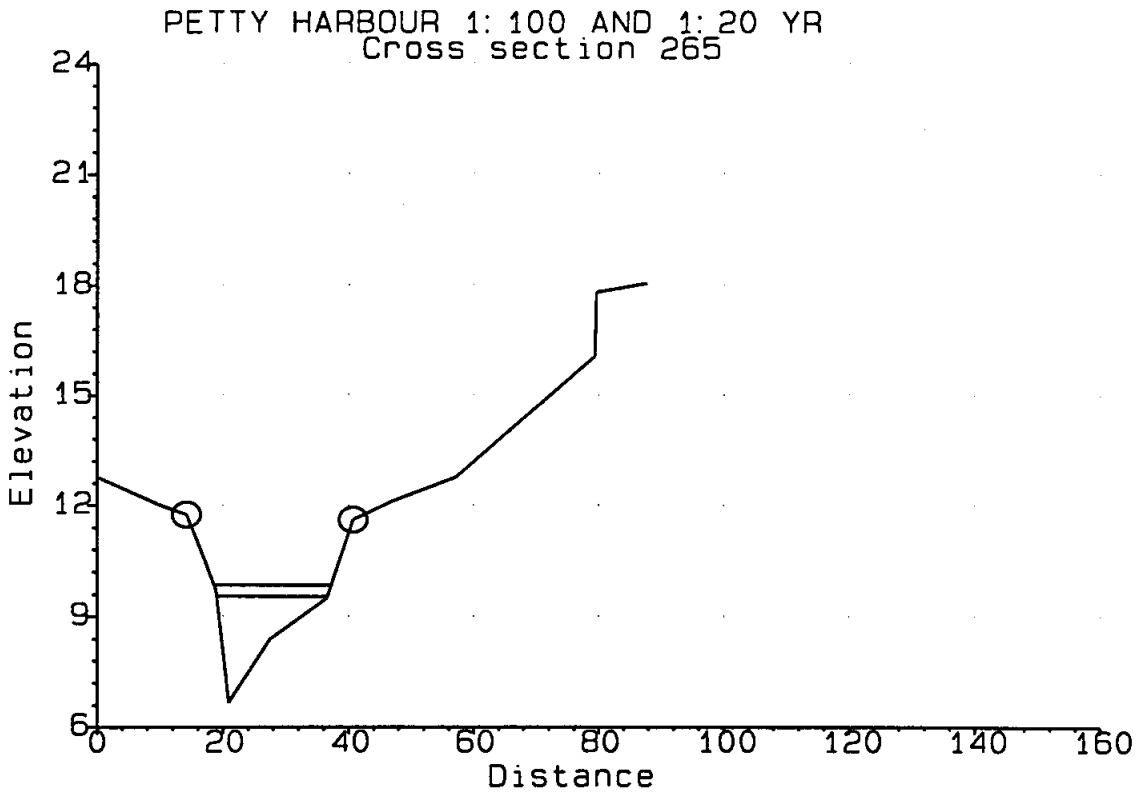

PETTY HARBOUR 1: 100 AND 1: 20 YR
Cross section 40
Elevation
Distance
12
10
8
6
4
2
0
90
120
150
180
210
240
270
300
330

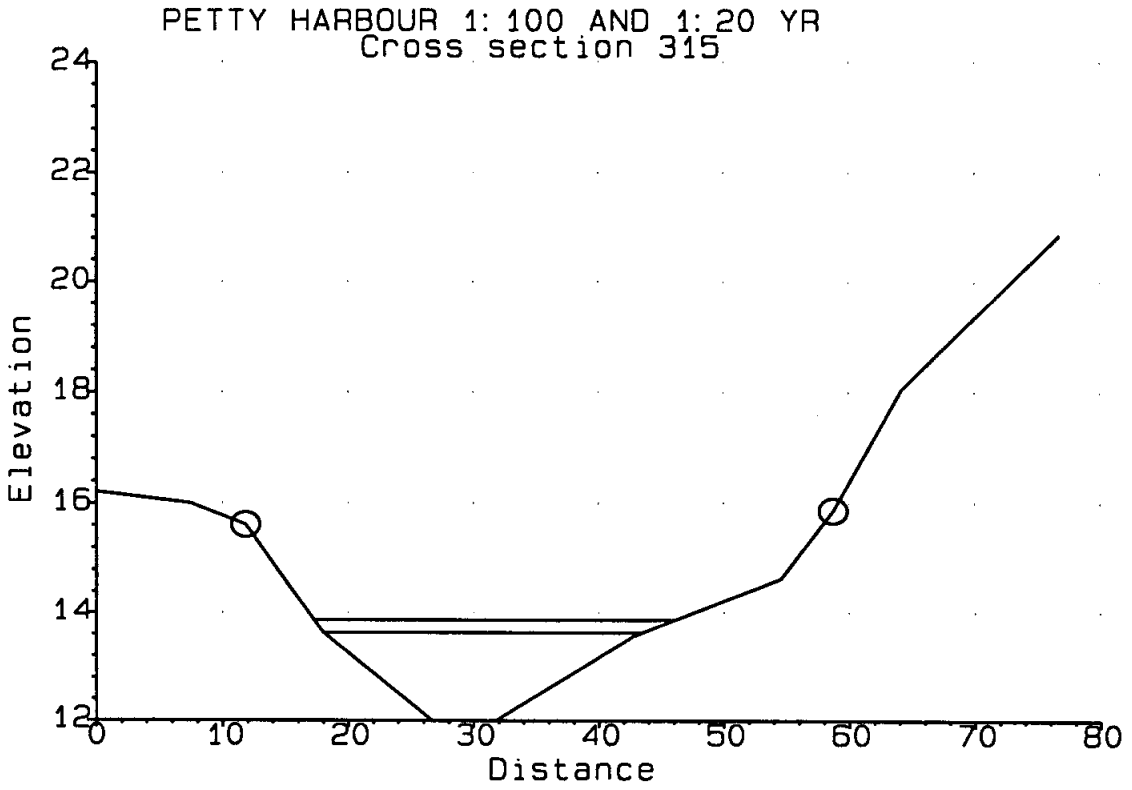

PETTY HARBOUR 1:100 AND 1:20 YR
Cross section 100
Elevation
Distance
0
2
4
6
8
10
12
0
30
60
90
120
150
180
210
240

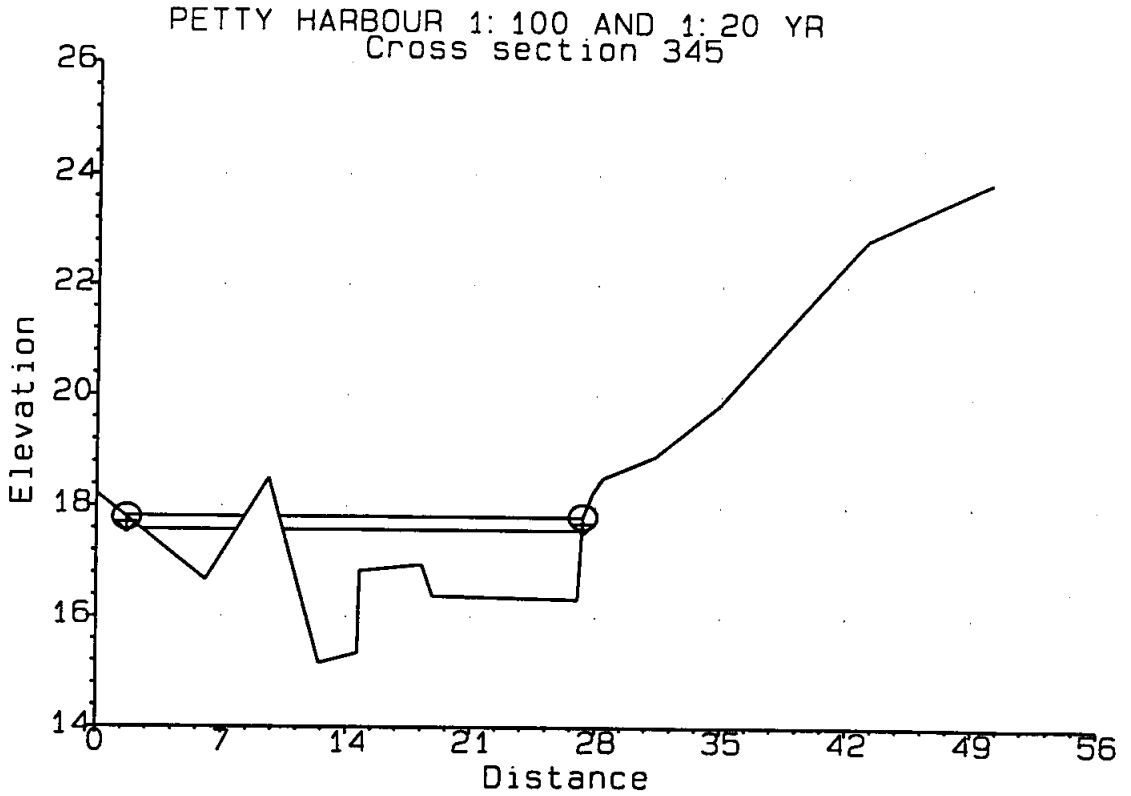

PETTY HARBOUR 1:100 AND 1:20 YR
Cross section 148
Elevation
Distance
0
2
4
6
8
10
12
90
120
150
180
210
240
270
300
330

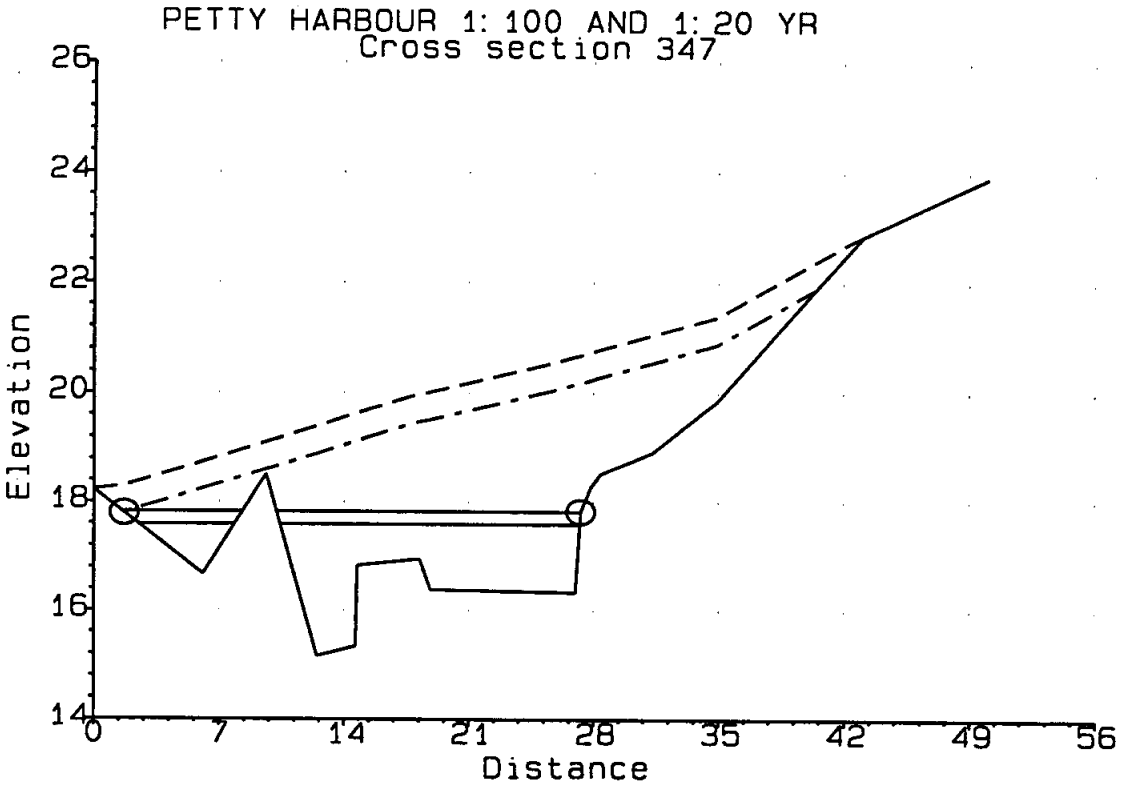

PETTY HARBOUR 1: 100 AND 1: 20 YR
Cross section 190
Elevation
Distance
18
16
14
12
10
8
6
0
20
40
60
80
100
120
140
160

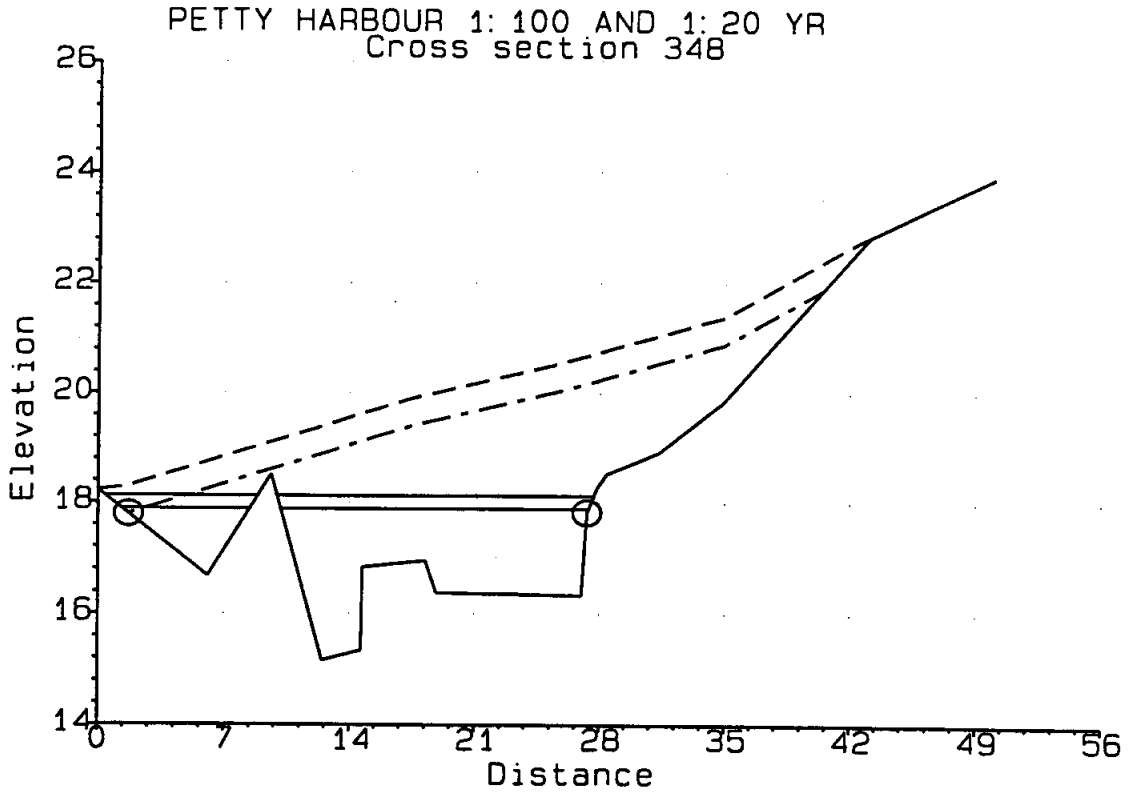

PETTY HARBOUR 1: 100 AND 1: 20 YR
Cross section 225
Elevation
Distance
18
16
14
12
10
8
6
0
20
40
60
80
100
120
140
160

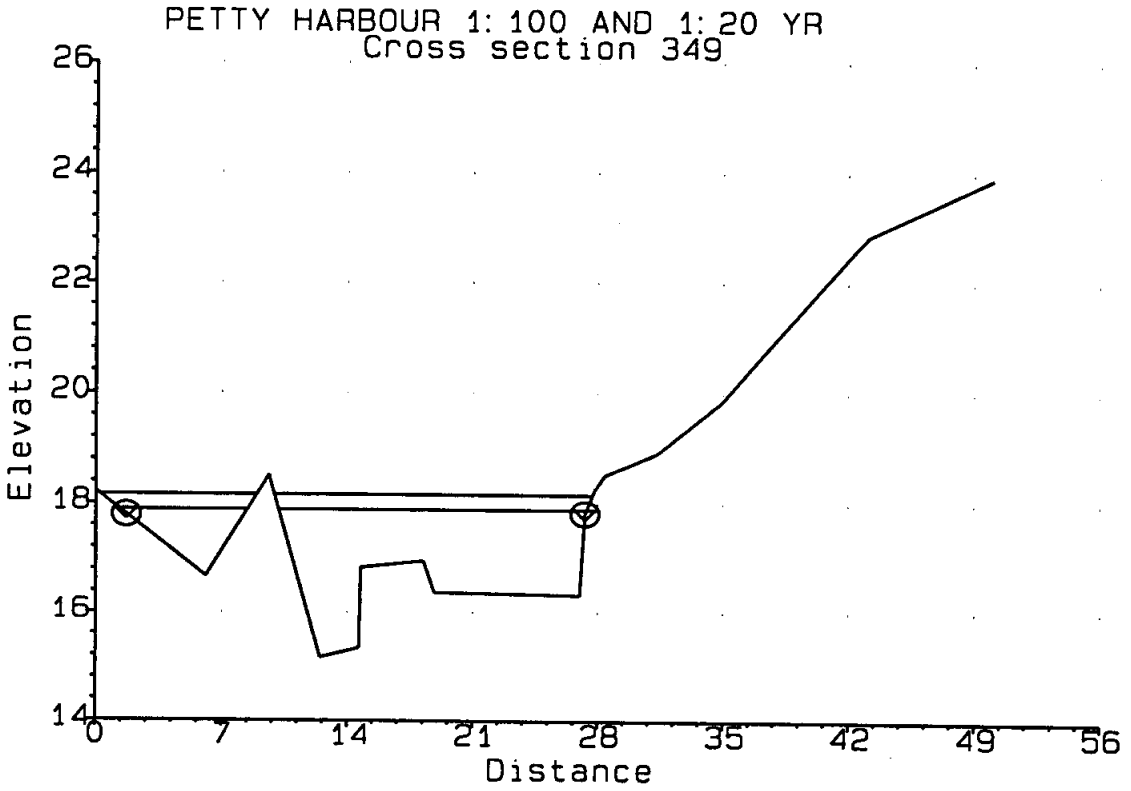

PETTY HARBOUR 1:100 AND 1:20 YR
Cross section 265
Elevation
24
21
18
15
12
9
6
0
20
40
60
80
100
120
140
160
Distance

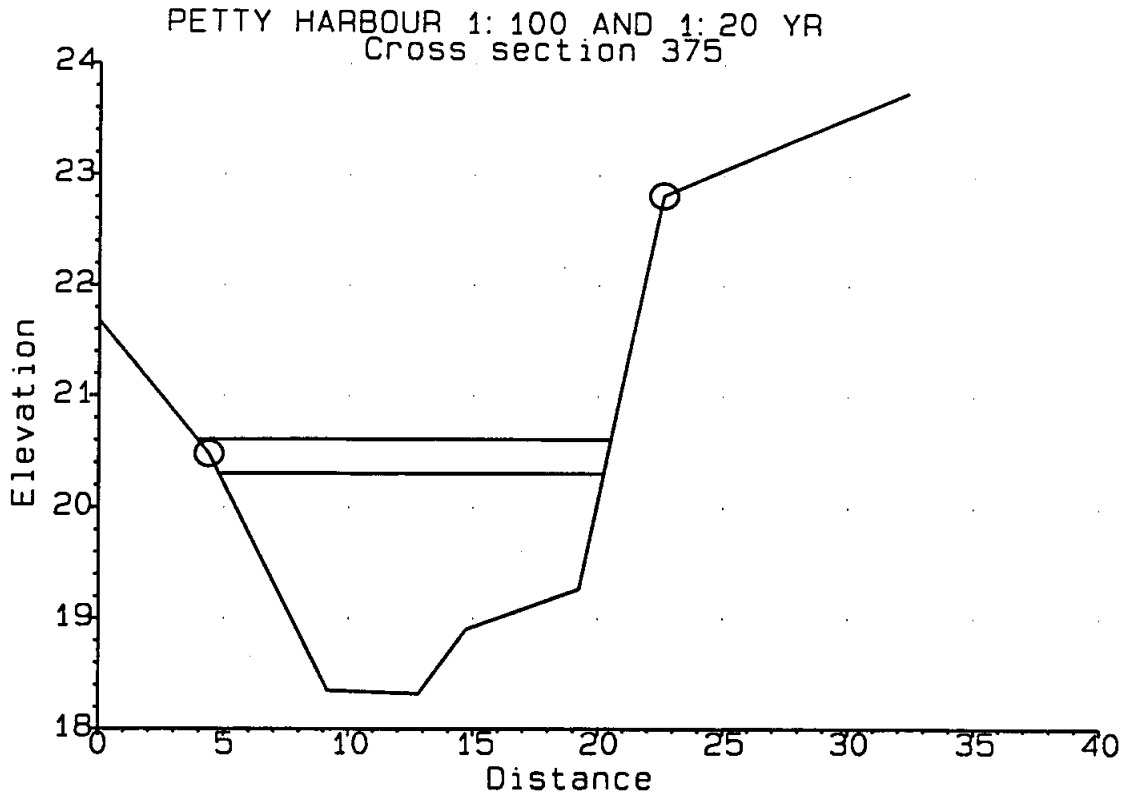

PETTY HARBOUR 1:100 AND 1:20 YR
Cross section 315
Elevation
24
22
20
18
16
14
12
0
10
20
30
40
50
60
70
80
Distance

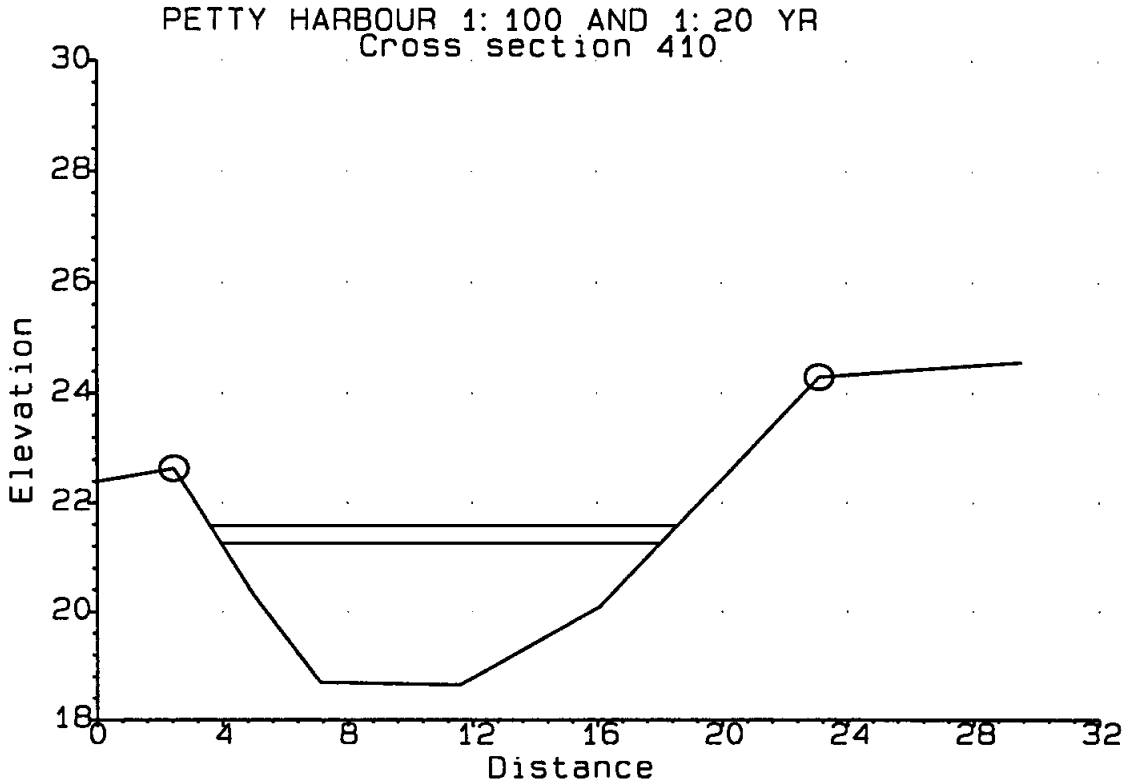

PETTY HARBOUR 1: 100 AND 1: 20 YR
Cross section 345
Elevation
26
24
22
20
18
16
14
0
7
14
21
28
35
42
49
56
Distance


PETTY HARBOUR 1: 100 AND 1: 20 YR
Cross section 347
Elevation
26
24
22
20
18
16
14
0
7
14
21
28
35
42
49
56
Distance


PETTY HARBOUR 1:100 AND 1:20 YR
Cross section 348
Elevation
26
24
22
20
18
16
14
0
7
14
21
28
35
42
49
56
Distance


PETTY HARBOUR 1:100 AND 1:20 YR
Cross section 349
Elevation
26
24
22
20
18
16
14
0
7
14
21
28
35
42
49
56
Distance


PETTY HARBOUR 1:100 AND 1:20 YR
Cross section 375
Elevation
24
23
22
21
20
19
18
0
5
10
15
20
25
30
35
40
Distance


PETTY HARBOUR 1:100 AND 1:20 YR
Cross section 410
Elevation
30
28
26
24
22
20
18
0
4
8
12
16
20
24
28
32
Distance

APPENDIX H

Storm Events

APPENDIX

TOP 214 STORM EVENTS

Number	Start	End	Duration	#Events	Min Wd	Max Wd	Mean W	Avg Dir	Surge
1	620220-	620221-02:00	13	14	32	68	48.36	119	0.86
2	620302-	620304-22:00	70	68	32	63	44.93	57	0.33
3	620323-	620323-20:00	17	17	32	40	35.24	74	0.59
4	620603-	620604-00:00	12	8	32	40	34.75	55	0.65
5	620912-	620914-10:00	40	21	31	48	34.14	72	0.58
6	621115-	621115-17:00	15	14	32	48	36.29	69	0.48
7	621231-	630102-04:00	52	47	32	69	45.89	84	0.47
8	630108-	630109-20:00	22	21	32	48	38.29	129	0.8
9	630119-	630119-18:00	15	14	32	48	37.79	109	0.28
10	630512-	630513-04:00	15	15	32	42	37.4	57	0.57
11	630923-	630924-05:00	18	16	32	40	35	45	0.33
12	631103-	631104-12:00	16	13	32	56	38.08	134	0.83
13	640121-	640122-17:00	21	11	32	35	32.27	120	0.57
14	640804-	640805-04:00	17	16	32	45	36.5	77	0.46
15	641221-	641222-12:00	16	17	32	68	52.35	105	0.97
16	641229-	641230-11:00	27	11	31	40	32.91	52	0.68
17	650125-	650126-21:00	27	28	31	43	37.07	62	0.35
18	650226-	650227-13:00	14	9	32	40	33.11	137	0.71
19	650228-	650301-02:00	22	17	31	53	39.71	70	0.65
20	650301-	650302-10:00	21	19	35	56	44.16	80	0.66
21	651117-	651119-10:00	40	38	32	56	39.29	130	0.39
22	651218-	651219-09:00	14	15	32	61	47.27	50	0.19
23	660109-	660109-20:00	14	15	40	64	50.53	77	0.63
24	660118-	660118-20:00	17	18	32	51	38.83	67	-0.04
25	660124-	660125-04:00	13	14	40	56	47.64	45	0.35
26	660127-	660130-00:00	53	41	31	80	49.93	75	0.38
27	660131-	660131-20:00	12	13	32	55	40.15	113	0.33
28	660309-	660310-11:00	18	11	32	35	32.27	45	0.98
29	660401-	660401-18:00	16	16	32	40	34.56	77	0.36
30	661011-	661012-10:00	16	16	32	48	39.19	139	0.52
31	661029-	661030-16:00	17	18	32	77	45.72	136	0.75
32	670102-	670103-10:00	15	16	32	50	39.63	66	0.41
33	670205-	670206-05:00	18	18	31	61	43.11	133	0.5
34	670324-	670326-17:00	49	45	31	55	41.13	61	0.85
35	670527-	670528-11:00	27	13	31	35	32.38	91	0.59
36	680104-	680105-10:00	16	16	32	51	38.38	80	0.29
37	680301-	680302-01:00	14	10	32	48	38	132	0.58
38	680416-	680416-18:00	16	11	32	37	32.91	131	0.82
39	680501-	680502-01:00	16	17	32	48	41.18	137	0.46
40	680821-	680822-07:00	14	14	32	58	46	96	0.33
41	681111-	681112-03:00	13	14	32	48	39	64	0.06
42	681113-	681113-23:00	12	13	32	64	46.46	113	0.21
43	690108-	690108-19:00	12	9	31	48	38.33	116	0.5
44	690204-	690204-23:00	19	20	32	80	53.1	133	0.79
45	690210-	690211-08:00	23	22	32	56	38.95	110	0.61
46	690211-	690212-04:00	12	7	32	42	35	140	0.46
47	690215-	690216-23:00	28	22	31	40	35.59	121	0.75
48	690226-	690301-17:00	73	65	31	55	38.89	54	0.45
49	690308-	690309-17:00	38	32	31	64	43.5	78	0.36
50	690314-	690315-02:00	13	12	32	40	34.92	34	0.22
51	691109-	691110-01:00	12	7	31	32	31.71	45	0.55
52	691121-	691122-03:00	20	12	32	42	35.75	129	0.62
53	691228-	691229-06:00	22	21	32	61	37.24	127	0.56
54	700407-	700408-17:00	19	12	32	45	36.17	89	0.65
55	700905-	700906-04:00	17	17	32	48	39	131	0.35
56	701025-	701025-22:00	12	10	32	48	37	64	0.27
57	701114-	701115-22:00	27	26	31	45	38	52	0.66
58	701210-	701211-11:00	18	19	32	58	47.11	75	0.44

59	701218-	701219-01:00	16	17	32	56	47.29	134	0.65
60	701224-	701226-01:00	27	25	32	53	42.72	84	0.36
61	710116-	710117-01:00	12	13	35	80	56.77	55	-0.11
62	711114-	711115-02:00	16	17	32	56	46.82	42	0.25
63	711218-	711219-06:00	12	8	32	40	36.88	42	0.47
64	720329-	720330-14:00	26	27	32	56	42.93	26	0.48
65	720408-	720409-11:00	14	14	32	45	38.07	56	-0.01
66	720510-	720511-01:00	14	15	32	56	42.67	74	0.43
67	720816-	720816-19:00	13	14	32	40	35.64	44	0.32
68	721109-	721109-22:00	17	13	31	39	32.69	83	0.56
69	721110-	721113-10:00	61	62	34	64	43.95	31	0.26
70	730211-	730212-05:00	15	16	32	45	36.81	69	0.53
71	730222-	730222-14:00	14	10	32	40	37.1	54	0.55
72	730806-	730806-15:00	14	5	31	32	31.8	77	0.33
73	740205-	740205-19:00	12	12	32	64	45.08	89	0.26
74	740327-	740328-00:00	16	17	32	51	42.59	118	0.65
75	740424-	740425-06:00	19	10	31	32	31.9	50	0.72
76	740528-	740529-09:00	12	5	31	35	32.2	104	0.35
77	740926-	740927-06:00	20	18	32	53	39.72	95	0.35
78	741003-	741004-04:00	25	25	32	53	39.2	124	0.78
79	741017-	741017-20:00	15	9	32	35	32.67	56	0.64
80	741122-	741124-01:00	29	24	32	45	38.08	33	0.11
81	741215-	741216-12:00	33	34	32	72	50.76	47	0.56
82	750102-	750102-13:00	12	13	32	80	49.77	126	0.7
83	750108-	750109-06:00	18	18	32	64	45.67	75	0.33
84	750207-	750208-01:00	23	16	31	39	33.75	83	0.26
85	750312-	750312-22:00	17	14	32	42	36.5	48	0.66
86	750315-	750316-10:00	12	13	34	56	44.08	71	0.55
87	750529-	750529-21:00	15	12	32	37	33.67	61	0.41
88	750608-	750608-20:00	17	13	32	37	34.38	56	0.49
89	750901-	750902-03:00	15	9	32	37	33.78	102	0.32
90	751210-	751211-06:00	15	7	32	37	34.71	125	0.64
91	760516-	760517-00:00	23	17	32	42	34.41	35	0.71
92	760612-	760613-03:00	13	9	32	40	34.78	62	0.41
93	761106-	761106-16:00	12	12	32	56	42.83	133	0.72
94	761119-	761119-23:00	22	22	32	84	49.82	105	0.41
95	761227-	761228-11:00	34	24	34	56	39.92	107	0.38
96	770107-	770108-15:00	30	19	30	41	36.16	99	0.61
97	770321-	770322-11:00	17	16	30	46	37.88	58	0.58
98	770324-	770324-20:00	12	7	30	33	31.14	91	0.3
99	771002-	771003-11:00	12	10	30	48	36.5	140	0.5
100	771015-	771015-22:00	12	12	30	52	42.25	122	0.76
101	771206-	771207-09:00	14	15	33	46	40.47	92	0.18
102	771215-	771216-08:00	16	17	37	74	54.65	139	0.49
103	780207-	780208-19:00	32	32	30	63	42.38	16	0.72
104	780212-	780214-04:00	43	40	30	65	44.1	48	0.54
105	780315-	780315-14:00	13	14	30	57	38.79	144	0.59
106	780428-	780429-11:00	16	14	30	44	35.14	103	0.55
107	790118-	790119-16:00	18	19	30	83	58.68	53	0.32
108	790129-	790131-04:00	40	39	31	65	46.64	63	0.53
109	790318-	790319-19:00	34	28	30	65	42.82	56	0.53
110	790412-	790413-11:00	23	22	30	52	39.32	46	0.71
111	790418-	790419-01:00	12	9	30	46	36.44	59	0.38
112	791030-	791031-12:00	26	23	30	43	35.17	57	0.33
113	800208-	800209-09:00	22	23	30	52	38.04	44	0.35
114	800311-	800312-01:00	14	14	30	56	38.5	127	0.5
115	800322-	800326-14:00	103	90	30	63	42.5	48	0.59
116	800524-	800524-18:00	14	8	30	33	31.13	133	-0.06
117	800709-	800710-10:00	18	12	30	39	32.25	148	0.58

118	801002-	801003-06:00	13	13	30	52	36.23	131	0.31
120	801108-	801109-08:00	13	12	30	46	35	144	0.59
121	801119-	801119-17:00	13	14	33	56	48.07	89	0.36
122	810110-	810111-04:00	17	12	30	46	34.75	117	0.81
123	810306-	810308-04:00	39	40	31	48	39.63	39	0.59
124	810315-	810315-12:00	12	10	33	48	41.5	116	0.29
125	810320-	810322-07:00	38	39	33	65	50.95	43	0.48
126	810523-	810524-10:00	25	12	30	31	30.58	87	0.6
127	810610-	810611-02:00	13	13	30	37	33.69	55	-0.04
128	810714-	810715-00:00	12	9	30	46	36.78	142	0.41
129	810806-	810807-07:00	21	13	30	37	32.77	51	0.32
130	810906-	810908-14:00	49	37	30	37	31.59	56	0.25
131	810924-	810925-05:00	27	27	30	46	37.81	88	0.4
132	811120-	811121-01:00	25	20	30	46	37.85	23	0.13
133	811126-	811126-17:00	13	11	31	59	46.82	57	0.59
134	811230-	811230-12:00	12	12	30	48	41.17	93	0.34
135	820214-	820214-13:00	12	12	30	70	51.58	112	0.27
136	820222-	820224-02:00	32	26	30	41	34.04	63	0.49
137	820407-	820407-21:00	12	10	31	46	35.1	118	0.48
138	820620-	820621-05:00	19	17	30	52	41.12	84	0.66
139	821002-	821004-02:00	40	40	31	63	46.45	40	0.4
140	821013-	821014-12:00	14	5	30	30	30	21	0.24
141	821219-	821220-06:00	14	15	30	43	33.6	84	0.56
142	830116-	830117-09:00	13	14	30	52	43.43	129	0.74
143	830212-	830213-09:00	12	13	30	63	46.46	67	0.61
144	830224-	830225-14:00	16	15	30	50	39.67	68	0.44
145	830302-	830303-05:00	16	16	31	46	35.44	141	0.92
146	830405-	830407-01:00	48	43	30	46	35.16	60	0.32
147	830414-	830414-23:00	15	14	30	46	36.57	28	0.88
148	830418-	830418-16:00	12	10	31	46	36.7	116	0.6
149	830511-	830512-06:00	17	4	30	33	31.5	86	0.86
150	830813-	830813-19:00	12	9	30	43	33.67	57	0.55
151	830901-	830902-00:00	13	9	30	35	31.44	118	0.42
152	831022-	831023-01:00	25	15	30	44	35.6	39	0.68
153	831025-	831026-13:00	29	29	30	72	43	90	0.66
154	831111-	831112-15:00	19	20	30	61	45.3	131	0.18
155	831117-	831117-23:00	13	13	30	46	37.69	141	0.36
156	840119-	840120-05:00	14	15	30	50	38.33	55	0.52
157	840225-	840225-17:00	17	15	30	44	37.6	134	0.55
158	840309-	840310-11:00	13	13	30	65	48.92	98	0.55
159	840327-	840327-19:00	13	12	30	52	38.75	58	0.1
160	840330-	840330-20:00	13	10	30	37	34.1	56	0.43
161	840410-	840410-18:00	15	15	30	56	43.4	70	0.19
163	840428-	840428-23:00	16	17	30	39	33.18	29	0.52
165	850319-	850320-04:00	12	7	30	37	31.57	62	0.42
166	850424-	850425-00:00	19	19	31	61	41.68	59	0.25
167	851101-	851103-10:00	51	47	30	52	36.26	47	0.32
168	860409-	860410-10:00	12	8	30	37	32.63	124	0.65
169	860410-	860412-03:00	32	25	30	48	35.6	135	0.71
170	860416-	860417-03:00	12	7	30	33	30.86	124	0.27
171	860731-	860801-10:00	22	13	30	37	31	97	0.39
172	861018-	861018-18:00	14	12	30	41	34	57	0.61
175	870302-	870303-14:00	15	15	30	37	32.73	46	0.21
176	870429-	870430-04:00	27	20	30	44	34.3	136	0.6
177	870705-	870706-08:00	15	12	30	44	37.08	44	-0.04
178	870812-	870812-22:00	17	18	30	44	36	41	0.5
179	871201-	871201-22:00	15	15	31	48	37.07	140	0.43
181	880119-	880121-00:00	31	25	30	43	36.04	46	0.69
182	880213-	880213-21:00	12	12	33	65	48.75	145	0.42

183	880226-	880227-08:00	16	16	30	41	34.38	98	0.24
184	880409-	880411-18:00	44	42	30	50	37.14	47	0.23
185	880417-	880418-15:00	31	28	30	39	33.04	106	0.74
186	880420-	880421-03:00	19	20	30	46	38.65	112	0.46
187	880425-	880425-21:00	13	14	30	46	35.21	74	0.07
188	880430-	880430-19:00	14	11	30	43	34.91	107	0.65
189	880501-	880502-02:00	13	14	30	43	34.86	32	0.55
191	880817-	880818-14:00	25	19	30	37	32.16	118	0.41
192	881023-	881024-09:00	13	7	30	33	31.43	140	0.65
193	881121-	881122-10:00	16	13	31	67	44.46	47	0.12
194	881214-	881215-06:00	15	16	30	52	37.63	74	0.41
195	890225-	890225-23:00	16	12	30	37	33.08	76	0.54
196	890326-	890326-22:00	21	21	31	74	42.9	69	0.51
197	890611-	890612-02:00	12	3	30	31	30.67	136	0.27
198	891203-	891204-11:00	12	13	37	56	49.54	141	0.04
199	900130-	900131-14:00	18	17	30	43	35.71	57	0.78
200	900424-	900425-11:00	13	7	33	46	37.71	39	0.73
201	900519-	900520-00:00	17	8	30	31	30.63	60	0.43
202	901027-	901028-08:00	30	27	30	57	40.07	47	0.01
203	901029-	901030-16:00	18	11	30	41	32	137	0.34
204	911029-	911030-13:00	37	36	30	54	38.42	42	0.5
205	911111-	911112-10:00	15	16	30	39	34	89	0.6
206	920201-	920201-22:00	14	14	31	46	37.5	68	0.16
207	920321-	920322-04:00	13	10	30	41	34.1	57	0.41
208	920428-	920428-16:00	12	5	30	33	31.4	32	0.2
209	920618-	920619-02:00	20	15	30	39	33.27	41	0.56
210	921022-	921023-06:00	20	11	30	37	32.64	75	0.7
211	921026-	921027-04:00	12	9	30	37	32.67	101	0.74
212	921101-	921102-17:00	19	15	30	56	43.2	50	0.3
213	921211-	921211-16:00	12	10	30	37	31.6	28	0.77
214	921212-	921213-11:00	12	10	30	37	33.6	32	0.86

Spreadsheet Sorted by Average Wind Speed

Number	Start	End	Duration	#Events	Min Wd	Max Wd	Mean W	Avg Dir	Surge	Wd^2
107	790118-	790119-16:00	18	19	30	83	58.68	53	0.32	3443.34
61	710116-	710117-01:00	12	13	35	80	56.77	55	-0.11	3222.83
102	771215-	771216-08:00	16	17	37	74	54.65	139	0.49	2986.62
44	690204-	690204-23:00	19	20	32	80	53.1	133	0.79	2819.61
15	641221-	641222-12:00	16	17	32	68	52.35	105	0.97	2740.52
135	820214-	820214-13:00	12	12	30	70	51.58	112	0.27	2660.5
125	810320-	810322-07:00	38	39	33	65	50.95	43	0.48	2595.9
81	741215-	741216-12:00	33	34	32	72	50.76	47	0.56	2576.58
23	660109-	660109-20:00	14	15	40	64	50.53	77	0.63	2553.28
26	660127-	660130-00:00	53	41	31	80	49.93	75	0.38	2493
94	761119-	761119-23:00	22	22	32	84	49.82	105	0.41	2482.03
82	750102-	750102-13:00	12	13	32	80	49.77	126	0.7	2477.05
198	891203-	891204-11:00	12	13	37	56	49.54	141	0.04	2454.21
158	840309-	840310-11:00	13	13	30	65	48.92	98	0.55	2393.17
182	880213-	880213-21:00	12	12	33	65	48.75	145	0.42	2376.56
1	620220-	620221-02:00	13	14	32	68	48.36	119	0.86	2338.69
121	801119-	801119-17:00	13	14	33	56	48.07	89	0.36	2310.72
25	660124-	660125-04:00	13	14	40	56	47.64	45	0.35	2269.57
59	701218-	701219-01:00	16	17	32	56	47.29	134	0.65	2236.34
22	651218-	651219-09:00	14	15	32	61	47.27	50	0.19	2234.45
58	701210-	701211-11:00	18	19	32	58	47.11	75	0.44	2219.35
62	711114-	711115-02:00	16	17	32	56	46.82	42	0.25	2192.11
133	811126-	811126-17:00	13	11	31	59	46.82	57	0.59	2192.11
108	790129-	790131-04:00	40	39	31	65	46.64	63	0.53	2175.29
42	681113-	681113-23:00	12	13	32	64	46.46	113	0.21	2158.53
143	830212-	830213-09:00	12	13	30	63	46.46	67	0.61	2158.53
139	821002-	821004-02:00	40	40	31	63	46.45	40	0.4	2157.6
40	680821-	680822-07:00	14	14	32	58	46	96	0.33	2116
7	621231-	630102-04:00	52	47	32	69	45.89	84	0.47	2105.89
31	661029-	661030-16:00	17	18	32	77	45.72	136	0.75	2090.32
83	750108-	750109-06:00	18	18	32	64	45.67	75	0.33	2085.75
154	831111-	831112-15:00	19	20	30	61	45.3	131	0.18	2052.09
73	740205-	740205-19:00	12	12	32	64	45.08	89	0.26	2032.21
2	620302-	620304-22:00	70	68	32	63	44.93	57	0.33	2018.7
193	881121-	881122-10:00	16	13	31	67	44.46	47	0.12	1976.69
20	650301-	650302-10:00	21	19	35	56	44.16	80	0.66	1950.11
104	780212-	780214-04:00	43	40	30	65	44.1	48	0.54	1944.81
86	750315-	750316-10:00	12	13	34	56	44.08	71	0.55	1943.05
69	721110-	721113-10:00	61	62	34	64	43.95	31	0.26	1931.6
49	690308-	690309-17:00	38	32	31	64	43.5	78	0.36	1892.25
142	830116-	830117-09:00	13	14	30	52	43.43	129	0.74	1886.16
161	840410-	840410-18:00	15	15	30	56	43.4	70	0.19	1883.56
212	921101-	921102-17:00	19	15	30	56	43.2	50	0.3	1866.24
33	670205-	670206-05:00	18	18	31	61	43.11	133	0.5	1858.47
153	831025-	831026-13:00	29	29	30	72	43	90	0.66	1849
64	720329-	720330-14:00	26	27	32	56	42.93	26	0.48	1842.98
196	890326-	890326-22:00	21	21	31	74	42.9	69	0.51	1840.41
93	761106-	761106-16:00	12	12	32	56	42.83	133	0.72	1834.41
109	790318-	790319-19:00	34	28	30	65	42.82	56	0.53	1833.55
60	701224-	701226-01:00	27	25	32	53	42.72	84	0.36	1825
66	720510-	720511-01:00	14	15	32	56	42.67	74	0.43	1820.73
74	740327-	740328-00:00	16	17	32	51	42.59	118	0.65	1813.91
115	800322-	800326-14:00	103	90	30	63	42.5	48	0.59	1806.25
103	780207-	780208-19:00	32	32	30	63	42.38	16	0.72	1796.06
100	771015-	771015-22:00	12	12	30	52	42.25	122	0.76	1785.06
166	850424-	850425-00:00	19	19	31	61	41.68	59	0.25	1737.22
124	810315-	810315-12:00	12	10	33	48	41.5	116	0.29	1722.25

39	680501-	680502-01:00	16	17	32	48	41.18	137	0.46	1695.79
134	811230-	811230-12:00	12	12	30	48	41.17	93	0.34	1694.97
34	670324-	670326-17:00	49	45	31	55	41.13	61	0.85	1691.68
138	820620-	820621-05:00	19	17	30	52	41.12	84	0.66	1690.85
101	771206-	771207-09:00	14	15	33	46	40.47	92	0.18	1637.82
27	660131-	660131-20:00	12	13	32	55	40.15	113	0.33	1612.02
202	901027-	901028-08:00	30	27	30	57	40.07	47	0.01	1605.6
95	761227-	761228-11:00	34	24	34	56	39.92	107	0.38	1593.61
77	740926-	740927-06:00	20	18	32	53	39.72	95	0.35	1577.68
19	650228-	650301-02:00	22	17	31	53	39.71	70	0.65	1576.88
144	830224-	830225-14:00	16	15	30	50	39.67	68	0.44	1573.71
123	810306-	810308-04:00	39	40	31	48	39.63	39	0.59	1570.54
32	670102-	670103-10:00	15	16	32	50	39.63	66	0.41	1570.54
110	790412-	790413-11:00	23	22	30	52	39.32	46	0.71	1546.06
21	651117-	651119-10:00	40	38	32	56	39.29	130	0.39	1543.7
78	741003-	741004-04:00	25	25	32	53	39.2	124	0.78	1536.64
30	661011-	661012-10:00	16	16	32	48	39.19	139	0.52	1535.86
41	681111-	681112-03:00	13	14	32	48	39	64	0.06	1521
55	700905-	700906-04:00	17	17	32	48	39	131	0.35	1521
45	690210-	690211-08:00	23	22	32	56	38.95	110	0.61	1517.1
48	690226-	690301-17:00	73	65	31	55	38.89	54	0.45	1512.43
24	660118-	660118-20:00	17	18	32	51	38.83	67	-0.04	1507.77
105	780315-	780315-14:00	13	14	30	57	38.79	144	0.59	1504.66
159	840327-	840327-19:00	13	12	30	52	38.75	58	0.1	1501.56
186	880420-	880421-03:00	19	20	30	46	38.65	112	0.46	1493.82
114	800311-	800312-01:00	14	14	30	56	38.5	127	0.5	1482.25
204	911029-	911030-13:00	37	36	30	54	38.42	42	0.5	1476.1
36	680104-	680105-10:00	16	16	32	51	38.38	80	0.29	1473.02
156	840119-	840120-05:00	14	15	30	50	38.33	55	0.52	1469.19
43	690108-	690108-19:00	12	9	31	48	38.33	116	0.5	1469.19
8	630108-	630109-20:00	22	21	32	48	38.29	129	0.8	1466.12
80	741122-	741124-01:00	29	24	32	45	38.08	33	0.11	1450.09
12	631103-	631104-12:00	16	13	32	56	38.08	134	0.83	1450.09
65	720408-	720409-11:00	14	14	32	45	38.07	56	-0.01	1449.32
113	800208-	800209-09:00	22	23	30	52	38.04	44	0.35	1447.04
37	680301-	680302-01:00	14	10	32	48	38	132	0.58	1444
57	701114-	701115-22:00	27	26	31	45	38	52	0.66	1444
97	770321-	770322-11:00	17	16	30	46	37.88	58	0.58	1434.89
132	811120-	811121-01:00	25	20	30	46	37.85	23	0.13	1432.62
131	810924-	810925-05:00	27	27	30	46	37.81	88	0.4	1429.6
9	630119-	630119-18:00	15	14	32	48	37.79	109	0.28	1428.08
200	900424-	900425-11:00	13	7	33	46	37.71	39	0.73	1422.04
155	831117-	831117-23:00	13	13	30	46	37.69	141	0.36	1420.54
194	881214-	881215-06:00	15	16	30	52	37.63	74	0.41	1416.02
157	840225-	840225-17:00	17	15	30	44	37.6	134	0.55	1413.76
206	920201-	920201-22:00	14	14	31	46	37.5	68	0.16	1406.25
10	630512-	630513-04:00	15	15	32	42	37.4	57	0.57	1398.76
53	691228-	691229-06:00	22	21	32	61	37.24	127	0.56	1386.82
184	880409-	880411-18:00	44	42	30	50	37.14	47	0.23	1379.38
71	730222-	730222-14:00	14	10	32	40	37.1	54	0.55	1376.41
177	870705-	870706-08:00	15	12	30	44	37.08	44	-0.04	1374.93
179	871201-	871201-22:00	15	15	31	48	37.07	140	0.43	1374.18
17	650125-	650126-21:00	27	28	31	43	37.07	62	0.35	1374.18
56	701025-	701025-22:00	12	10	32	48	37	64	0.27	1369
63	711218-	711219-06:00	12	8	32	40	36.88	42	0.47	1360.13
70	730211-	730212-05:00	15	16	32	45	36.81	69	0.53	1354.98
128	810714-	810715-00:00	12	9	30	46	36.78	142	0.41	1352.77
148	830418-	830418-16:00	12	10	31	46	36.7	116	0.6	1346.89
147	830414-	830414-23:00	15	14	30	46	36.57	28	0.88	1337.36

99	771002-	771003-11:00	12	10	30	48	36.5	140	0.5	1332.25
14	640804-	640805-04:00	17	16	32	45	36.5	77	0.46	1332.25
85	750312-	750312-22:00	17	14	32	42	36.5	48	0.66	1332.25
111	790418-	790419-01:00	12	9	30	46	36.44	59	0.38	1327.87
6	621115-	621115-17:00	15	14	32	48	36.29	69	0.48	1316.96
167	851101-	851103-10:00	51	47	30	52	36.26	47	0.32	1314.79
118	801002-	801003-06:00	13	13	30	52	36.23	131	0.31	1312.61
54	700407-	700408-17:00	19	12	32	45	36.17	89	0.65	1308.27
96	770107-	770108-15:00	30	19	30	41	36.16	99	0.61	1307.55
181	880119-	880121-00:00	31	25	30	43	36.04	46	0.69	1298.88
178	870812-	870812-22:00	17	18	30	44	36	41	0.5	1296
52	691121-	691122-03:00	20	12	32	42	35.75	129	0.62	1278.06
199	900130-	900131-14:00	18	17	30	43	35.71	57	0.78	1275.2
67	720816-	720816-19:00	13	14	32	40	35.64	44	0.32	1270.21
169	860410-	860412-03:00	32	25	30	48	35.6	135	0.71	1267.36
152	831022-	831023-01:00	25	15	30	44	35.6	39	0.68	1267.36
47	690215-	690216-23:00	28	22	31	40	35.59	121	0.75	1266.65
145	830302-	830303-05:00	16	16	31	46	35.44	141	0.92	1255.99
3	620323-	620323-20:00	17	17	32	40	35.24	74	0.59	1241.86
187	880425-	880425-21:00	13	14	30	46	35.21	74	0.07	1239.74
112	791030-	791031-12:00	26	23	30	43	35.17	57	0.33	1236.93
146	830405-	830407-01:00	48	43	30	46	35.16	60	0.32	1236.23
106	780428-	780429-11:00	16	14	30	44	35.14	103	0.55	1234.82
137	820407-	820407-21:00	12	10	31	46	35.1	118	0.48	1232.01
120	801108-	801109-08:00	13	12	30	46	35	144	0.59	1225
11	630923-	630924-05:00	18	16	32	40	35	45	0.33	1225
46	690211-	690212-04:00	12	7	32	42	35	140	0.46	1225
50	690314-	690315-02:00	13	12	32	40	34.92	34	0.22	1219.41
188	880430-	880430-19:00	14	11	30	43	34.91	107	0.65	1218.71
189	880501-	880502-02:00	13	14	30	43	34.86	32	0.55	1215.22
92	760612-	760613-03:00	13	9	32	40	34.78	62	0.41	1209.65
122	810110-	810111-04:00	17	12	30	46	34.75	117	0.81	1207.56
4	620603-	620604-00:00	12	8	32	40	34.75	55	0.65	1207.56
90	751210-	751211-06:00	15	7	32	37	34.71	125	0.64	1204.78
29	660401-	660401-18:00	16	16	32	40	34.56	77	0.36	1194.39
91	760516-	760517-00:00	23	17	32	42	34.41	35	0.71	1184.05
183	880226-	880227-08:00	16	16	30	41	34.38	98	0.24	1181.98
88	750608-	750608-20:00	17	13	32	37	34.38	56	0.49	1181.98
176	870429-	870430-04:00	27	20	30	44	34.3	136	0.6	1176.49
5	620912-	620914-10:00	40	21	31	48	34.14	72	0.58	1165.54
160	840330-	840330-20:00	13	10	30	37	34.1	56	0.43	1162.81
207	920321-	920322-04:00	13	10	30	41	34.1	57	0.41	1162.81
136	820222-	820224-02:00	32	26	30	41	34.04	63	0.49	1158.72
205	911111-	911112-10:00	15	16	30	39	34	89	0.6	1156
172	861018-	861018-18:00	14	12	30	41	34	57	0.61	1156
89	750901-	750902-03:00	15	9	32	37	33.78	102	0.32	1141.09
84	750207-	750208-01:00	23	16	31	39	33.75	83	0.26	1139.06
127	810610-	810611-02:00	13	13	30	37	33.69	55	-0.04	1135.02
87	750529-	750529-21:00	15	12	32	37	33.67	61	0.41	1133.67
150	830813-	830813-19:00	12	9	30	43	33.67	57	0.55	1133.67
214	921212-	921213-11:00	12	10	30	37	33.6	32	0.86	1128.96
141	821219-	821220-06:00	14	15	30	43	33.6	84	0.56	1128.96
209	920618-	920619-02:00	20	15	30	39	33.27	41	0.56	1106.89
163	840428-	840428-23:00	16	17	30	39	33.18	29	0.52	1100.91
18	650226-	650227-13:00	14	9	32	40	33.11	137	0.71	1096.27
195	890225-	890225-23:00	16	12	30	37	33.08	76	0.54	1094.29
185	880417-	880418-15:00	31	28	30	39	33.04	106	0.74	1091.64
38	680416-	680416-18:00	16	11	32	37	32.91	131	0.82	1083.07
16	641229-	641230-11:00	27	11	31	40	32.91	52	0.68	1083.07

129	810806-	810807-07:00	21	13	30	37	32.77	51	0.32	1073.87
175	870302-	870303-14:00	15	15	30	37	32.73	46	0.21	1071.25
68	721109-	721109-22:00	17	13	31	39	32.69	83	0.56	1068.64
211	921026-	921027-04:00	12	9	30	37	32.67	101	0.74	1067.33
79	741017-	741017-20:00	15	9	32	35	32.67	56	0.64	1067.33
210	921022-	921023-06:00	20	11	30	37	32.64	75	0.7	1065.37
168	860409-	860410-10:00	12	8	30	37	32.63	124	0.65	1064.72
35	670527-	670528-11:00	27	13	31	35	32.38	91	0.59	1048.46
13	640121-	640122-17:00	21	11	32	35	32.27	120	0.57	1041.35
28	660309-	660310-11:00	18	11	32	35	32.27	45	0.98	1041.35
117	800709-	800710-10:00	18	12	30	39	32.25	148	0.58	1040.06
76	740528-	740529-09:00	12	5	31	35	32.2	104	0.35	1036.84
191	880817-	880818-14:00	25	19	30	37	32.16	118	0.41	1034.27
203	901029-	901030-16:00	18	11	30	41	32	137	0.34	1024
75	740424-	740425-06:00	19	10	31	32	31.9	50	0.72	1017.61
72	730806-	730806-15:00	14	5	31	32	31.8	77	0.33	1011.24
51	691109-	691110-01:00	12	7	31	32	31.71	45	0.55	1005.52
213	921211-	921211-16:00	12	10	30	37	31.6	28	0.77	998.56
130	810906-	810908-14:00	49	37	30	37	31.59	56	0.25	997.928
165	850319-	850320-04:00	12	7	30	37	31.57	62	0.42	996.665
149	830511-	830512-06:00	17	4	30	33	31.5	86	0.86	992.25
151	830901-	830902-00:00	13	9	30	35	31.44	118	0.42	988.474
192	881023-	881024-09:00	13	7	30	33	31.43	140	0.65	987.845
208	920428-	920428-16:00	12	5	30	33	31.4	32	0.2	985.96
98	770324-	770324-20:00	12	7	30	33	31.14	91	0.3	969.7
116	800524-	800524-18:00	14	8	30	33	31.13	133	-0.06	969.077
171	860731-	860801-10:00	22	13	30	37	31	97	0.39	961
170	860416-	860417-03:00	12	7	30	33	30.86	124	0.27	952.34
197	890611-	890612-02:00	12	3	30	31	30.67	136	0.27	940.649
201	900519-	900520-00:00	17	8	30	31	30.63	60	0.43	938.197
126	810523-	810524-10:00	25	12	30	31	30.58	87	0.6	935.136
140	821013-	821014-12:00	14	5	30	30	30	21	0.24	900

Spreadsheet Sorted by Surge

Number	Start	End	Duration	#Events	Min Wd	Max Wd	Mean W	Avg Dir	Surge	Wd^2
28	660309-	660310-11:00	18	11	32	35	32.27	45	0.98	1041.35
15	641221-	641222-12:00	16	17	32	68	52.35	105	0.97	2740.52
145	830302-	830303-05:00	18	16	31	46	35.44	141	0.92	1255.99
147	830414-	830414-23:00	15	14	30	46	36.57	28	0.88	1337.36
1	620220-	620221-02:00	13	14	32	68	48.36	119	0.86	2338.69
149	830511-	830512-06:00	17	4	30	33	31.5	86	0.86	992.25
214	921212-	921213-11:00	12	10	30	37	33.6	32	0.86	1128.96
34	670324-	670326-17:00	49	45	31	55	41.13	61	0.85	1691.68
12	631103-	631104-12:00	16	13	32	56	38.08	134	0.88	1450.09
38	680416-	680416-18:00	16	11	32	37	32.91	131	0.82	1083.07
122	810110-	810111-04:00	17	12	30	46	34.75	117	0.81	1207.56
8	630108-	630109-20:00	22	21	32	48	38.29	129	0.8	1466.12
44	690204-	690204-23:00	19	20	32	80	53.1	133	0.79	2819.61
78	741003-	741004-04:00	25	25	32	53	39.2	124	0.78	1536.64
199	900130-	900131-14:00	18	17	30	43	35.71	57	0.78	1275.2
213	921211-	921211-16:00	12	10	30	37	31.6	28	0.77	998.56
100	771015-	771015-22:00	12	12	30	52	42.25	122	0.76	1785.06
31	661029-	661030-16:00	17	18	32	77	45.72	136	0.75	2090.32
47	690215-	690216-23:00	28	22	31	40	35.59	121	0.75	1266.65
142	830116-	830117-09:00	13	14	30	52	43.43	129	0.74	1886.16
185	880417-	880418-15:00	31	28	30	39	33.04	106	0.74	1091.64
211	921026-	921027-04:00	12	9	30	37	32.67	101	0.74	1067.33
200	900424-	900425-11:00	13	7	33	46	37.71	39	0.73	1422.04
93	761106-	761106-16:00	12	12	32	56	42.83	133	0.72	1834.41
103	780207-	780208-19:00	32	32	30	63	42.38	16	0.72	1796.06
75	740424-	740425-06:00	19	10	31	32	31.9	50	0.72	1017.61
91	760516-	760517-00:00	23	17	32	42	34.41	35	0.71	1184.05
110	790412-	790413-11:00	23	22	30	52	39.32	46	0.71	1546.06
169	860410-	860412-03:00	32	25	30	48	35.6	135	0.71	1267.36
18	650226-	650227-13:00	14	9	32	40	33.11	137	0.71	1096.27
210	921022-	921023-06:00	20	11	30	37	32.64	75	0.7	1065.37
82	750102-	750102-13:00	12	13	32	80	49.77	126	0.7	2477.05
181	880119-	880121-00:00	31	25	30	43	36.04	46	0.69	1298.88
152	831022-	831023-01:00	25	15	30	44	35.6	39	0.68	1267.36
16	641229-	641230-11:00	27	11	31	40	32.91	52	0.68	1083.07
153	831025-	831026-13:00	29	29	30	72	43	90	0.66	1849
138	820620-	820621-05:00	19	17	30	52	41.12	84	0.66	1690.85
85	750312-	750312-22:00	17	14	32	42	36.5	48	0.66	1332.25
57	701114-	701115-22:00	27	26	31	45	38	52	0.66	1444
20	650301-	650302-10:00	21	19	35	56	44.16	80	0.66	1950.11
74	740327-	740328-00:00	16	17	32	51	42.59	118	0.65	1813.91
54	700407-	700408-17:00	19	12	32	45	36.17	89	0.65	1308.27
19	650228-	650301-02:00	22	17	31	53	39.71	70	0.65	1576.88
168	860409-	860410-10:00	12	8	30	37	32.63	124	0.65	1064.72
4	620603-	620604-00:00	12	8	32	40	34.75	55	0.65	1207.56
192	881023-	881024-09:00	13	7	30	33	31.43	140	0.65	987.845
59	701218-	701219-01:00	16	17	32	56	47.29	134	0.65	2236.34
188	880430-	880430-19:00	14	11	30	43	34.91	107	0.65	1218.71
79	741017-	741017-20:00	15	9	32	35	32.67	56	0.64	1067.33
90	751210-	751211-06:00	15	7	32	37	34.71	125	0.64	1204.78
23	660109-	660109-20:00	14	15	40	64	50.53	77	0.63	2553.28
52	691121-	691122-03:00	20	12	32	42	35.75	129	0.62	1278.06
143	830212-	830213-09:00	12	13	30	63	46.46	67	0.61	2158.53
172	861018-	861018-18:00	14	12	30	41	34	57	0.61	1156
45	690210-	690211-08:00	23	22	32	56	38.95	110	0.61	1517.1
96	770107-	770108-15:00	30	19	30	41	36.16	99	0.61	1307.55
126	810523-	810524-10:00	25	12	30	31	30.58	87	0.6	935.136

148	830418-	830418-16:00	12	10	31	46	36.7	116	0.6	1346.89
205	911111-	911112-10:00	15	16	30	39	34	89	0.6	1156
176	870429-	870430-04:00	27	20	30	44	34.3	136	0.6	1176.49
105	780315-	780315-14:00	13	14	30	57	38.79	144	0.59	1504.66
120	801108-	801109-08:00	13	12	30	46	35	144	0.59	1225
123	810306-	810308-04:00	39	40	31	48	39.63	39	0.59	1570.54
35	670527-	670528-11:00	27	13	31	35	32.38	91	0.59	1048.46
133	811126-	811126-17:00	13	11	31	59	46.82	57	0.59	2192.11
115	800322-	800326-14:00	103	90	30	63	42.5	48	0.59	1806.25
3	620323-	620323-20:00	17	17	32	40	35.24	74	0.59	1241.86
117	800709-	800710-10:00	18	12	30	39	32.25	148	0.58	1040.06
97	770321-	770322-11:00	17	16	30	46	37.88	58	0.58	1434.89
37	680301-	680302-01:00	14	10	32	48	38	132	0.58	1444
5	620912-	620914-10:00	40	21	31	48	34.14	72	0.58	1165.54
10	630512-	630513-04:00	15	15	32	42	37.4	57	0.57	1398.76
13	640121-	640122-17:00	21	11	32	35	32.27	120	0.57	1041.35
68	721109-	721109-22:00	17	13	31	39	32.69	83	0.56	1068.64
81	741215-	741216-12:00	33	34	32	72	50.76	47	0.56	2576.58
141	821219-	821220-06:00	14	15	30	43	33.6	84	0.56	1128.96
209	920618-	920619-02:00	20	15	30	39	33.27	41	0.56	1106.89
53	691228-	691229-06:00	22	21	32	61	37.24	127	0.56	1386.82
106	780428-	780429-11:00	16	14	30	44	35.14	103	0.55	1234.82
86	750315-	750316-10:00	12	13	34	56	44.08	71	0.55	1943.05
189	880501-	880502-02:00	13	14	30	43	34.86	32	0.55	1215.22
157	840225-	840225-17:00	17	15	30	44	37.6	134	0.55	1413.76
158	840309-	840310-11:00	13	13	30	65	48.92	98	0.55	2393.17
71	730222-	730222-14:00	14	10	32	40	37.1	54	0.55	1376.41
150	830813-	830813-19:00	12	9	30	43	33.67	57	0.55	1133.67
51	691109-	691110-01:00	12	7	31	32	31.71	45	0.55	1005.52
195	890225-	890225-23:00	16	12	30	37	33.08	76	0.54	1094.29
104	780212-	780214-04:00	43	40	30	65	44.1	48	0.54	1944.81
70	730211-	730212-05:00	15	16	32	45	36.81	69	0.53	1354.98
108	790129-	790131-04:00	40	39	31	65	46.64	63	0.53	2175.29
109	790318-	790319-19:00	34	28	30	65	42.82	56	0.53	1833.55
163	840428-	840428-23:00	16	17	30	39	33.18	29	0.52	1100.91
30	661011-	661012-10:00	16	16	32	48	39.19	139	0.52	1535.86
156	840119-	840120-05:00	14	15	30	50	38.33	55	0.52	1469.19
196	890326-	890326-22:00	21	21	31	74	42.9	69	0.51	1840.41
33	670205-	670206-05:00	18	18	31	61	43.11	133	0.5	1858.47
178	870812-	870812-22:00	17	18	30	44	36	41	0.5	1296
204	911029-	911030-13:00	37	36	30	54	38.42	42	0.5	1476.1
114	800311-	800312-01:00	14	14	30	56	38.5	127	0.5	1482.25
99	771002-	771003-11:00	12	10	30	48	36.5	140	0.5	1332.25
43	690108-	690108-19:00	12	9	31	48	38.33	116	0.5	1469.19
88	750608-	750608-20:00	17	13	32	37	34.38	56	0.49	1181.98
136	820222-	820224-02:00	32	26	30	41	34.04	63	0.49	1158.72
102	771215-	771216-08:00	16	17	37	74	54.65	139	0.49	2986.62
125	810320-	810322-07:00	38	39	33	65	50.95	43	0.48	2595.9
64	720329-	720330-14:00	26	27	32	56	42.93	26	0.48	1842.98
6	621115-	621115-17:00	15	14	32	48	36.29	69	0.48	1316.96
137	820407-	820407-21:00	12	10	31	46	35.1	118	0.48	1232.01
63	711218-	711219-06:00	12	8	32	40	36.88	42	0.47	1360.13
7	621231-	630102-04:00	52	47	32	69	45.89	84	0.47	2105.89
39	680501-	680502-01:00	16	17	32	48	41.18	137	0.46	1695.79
186	880420-	880421-03:00	19	20	30	46	38.65	112	0.46	1493.82
14	640804-	640805-04:00	17	16	32	45	36.5	77	0.46	1332.25
46	690211-	690212-04:00	12	7	32	42	35	140	0.46	1225
48	690226-	690301-17:00	73	65	31	55	38.89	54	0.45	1512.43
144	830224-	830225-14:00	16	15	30	50	39.67	68	0.44	1573.71

58	701210-	701211-11:00	18	19	32	58	47.11	75	0.44	2219.35
179	871201-	871201-22:00	15	15	31	48	37.07	140	0.43	1374.18
160	840330-	840330-20:00	13	10	30	37	34.1	56	0.43	1162.81
66	720510-	720511-01:00	14	15	32	56	42.67	74	0.43	1820.73
201	900519-	900520-00:00	17	8	30	31	30.63	60	0.43	938.197
165	850319-	850320-04:00	12	7	30	37	31.57	62	0.42	996.665
182	880213-	880213-21:00	12	12	33	65	48.75	145	0.42	2376.56
151	830901-	830902-00:00	13	9	30	35	31.44	118	0.42	988.474
191	880817-	880818-14:00	25	19	30	37	32.16	118	0.41	1034.27
92	760612-	760613-03:00	13	9	32	40	34.78	62	0.41	1209.65
94	761119-	761119-23:00	22	22	32	84	49.82	105	0.41	2482.03
32	670102-	670103-10:00	15	16	32	50	39.63	66	0.41	1570.54
207	920321-	920322-04:00	13	10	30	41	34.1	57	0.41	1162.81
87	750529-	750529-21:00	15	12	32	37	33.67	61	0.41	1133.67
128	810714-	810715-00:00	12	9	30	46	36.78	142	0.41	1352.77
194	881214-	881215-06:00	15	16	30	52	37.63	74	0.41	1416.02
131	810924-	810925-05:00	27	27	30	46	37.81	88	0.4	1429.6
139	821002-	821004-02:00	40	40	31	63	46.45	40	0.4	2157.6
21	651117-	651119-10:00	40	38	32	56	39.29	130	0.39	1543.7
171	860731-	860801-10:00	22	13	30	37	31	97	0.39	961
111	790418-	790419-01:00	12	9	30	46	36.44	59	0.38	1327.87
26	660127-	660130-00:00	53	41	31	80	49.93	75	0.38	2493
95	761227-	761228-11:00	34	24	34	56	39.92	107	0.38	1593.61
29	660401-	660401-18:00	16	16	32	40	34.56	77	0.36	1194.39
121	801119-	801119-17:00	13	14	33	56	48.07	89	0.36	2310.72
49	690308-	690309-17:00	38	32	31	64	43.5	78	0.36	1892.25
60	701224-	701226-01:00	27	25	32	53	42.72	84	0.36	1825
155	831117-	831117-23:00	13	13	30	46	37.69	141	0.36	1420.54
55	700905-	700906-04:00	17	17	32	48	39	131	0.35	1521
25	660124-	660125-04:00	13	14	40	56	47.64	45	0.35	2269.57
17	650125-	650126-21:00	27	28	31	43	37.07	62	0.35	1374.18
77	740926-	740927-06:00	20	18	32	53	39.72	95	0.35	1577.68
113	800208-	800209-09:00	22	23	30	52	38.04	44	0.35	1447.04
76	740528-	740529-09:00	12	5	31	35	32.2	104	0.35	1036.84
134	811230-	811230-12:00	12	12	30	48	41.17	93	0.34	1694.97
203	901029-	901030-16:00	18	11	30	41	32	137	0.34	1024
40	680821-	680822-07:00	14	14	32	58	46	96	0.33	2116
27	660131-	660131-20:00	12	13	32	55	40.15	113	0.33	1612.02
83	750108-	750109-06:00	18	18	32	64	45.67	75	0.33	2085.75
72	730806-	730806-15:00	14	5	31	32	31.8	77	0.33	1011.24
2	620302-	620304-22:00	70	68	32	63	44.93	57	0.33	2018.7
11	630923-	630924-05:00	18	16	32	40	35	45	0.33	1225
112	791030-	791031-12:00	26	23	30	43	35.17	57	0.33	1236.93
167	851101-	851103-10:00	51	47	30	52	36.26	47	0.32	1314.79
146	830405-	830407-01:00	48	43	30	46	35.16	60	0.32	1236.23
89	750901-	750902-03:00	15	9	32	37	33.78	102	0.32	1141.09
129	810806-	810807-07:00	21	13	30	37	32.77	51	0.32	1073.87
67	720816-	720816-19:00	13	14	32	40	35.64	44	0.32	1270.21
107	790118-	790119-16:00	18	19	30	83	58.68	53	0.32	3443.34
118	801002-	801003-06:00	13	13	30	52	36.23	131	0.31	1312.61
212	921101-	921102-17:00	19	15	30	56	43.2	50	0.3	1866.24
98	770324-	770324-20:00	12	7	30	33	31.14	91	0.3	969.7
124	810315-	810315-12:00	12	10	33	48	41.5	116	0.29	1722.25
36	680104-	680105-10:00	16	16	32	51	38.38	80	0.29	1473.02
9	630119-	630119-18:00	15	14	32	48	37.79	109	0.28	1428.08
170	860416-	860417-03:00	12	7	30	33	30.86	124	0.27	952.34
56	701025-	701025-22:00	12	10	32	48	37	64	0.27	1369
197	890611-	890612-02:00	12	3	30	31	30.67	136	0.27	940.649
135	820214-	820214-13:00	12	12	30	70	51.58	112	0.27	2660.5

73	740205-	740205-19:00	12	12	32	64	45.08	89	0.26	2032.21
69	721110-	721113-10:00	61	62	34	64	43.95	31	0.26	1931.6
84	750207-	750208-01:00	23	16	31	39	33.75	83	0.26	1139.06
166	850424-	850425-00:00	19	19	31	61	41.68	59	0.25	1737.22
62	711114-	711115-02:00	16	17	32	56	46.82	42	0.25	2192.11
130	810906-	810908-14:00	49	37	30	37	31.59	56	0.25	997.928
183	880226-	880227-08:00	16	16	30	41	34.38	98	0.24	1181.98
140	821013-	821014-12:00	14	5	30	30	30	21	0.24	900
184	880409-	880411-18:00	44	42	30	50	37.14	47	0.23	1379.38
50	690314-	690315-02:00	13	12	32	40	34.92	34	0.22	1219.41
42	681113-	681113-23:00	12	13	32	64	46.46	113	0.21	2158.53
175	870302-	870303-14:00	15	15	30	37	32.73	46	0.21	1071.25
208	920428-	920428-16:00	12	5	30	33	31.4	32	0.2	985.96
161	840410-	840410-18:00	15	15	30	56	43.4	70	0.19	1883.56
22	651218-	651219-09:00	14	15	32	61	47.27	50	0.19	2234.45
101	771206-	771207-09:00	14	15	33	46	40.47	92	0.18	1637.82
154	831111-	831112-15:00	19	20	30	61	45.3	131	0.18	2052.09
206	920201-	920201-22:00	14	14	31	46	37.5	68	0.16	1406.25
132	811120-	811121-01:00	25	20	30	46	37.85	23	0.13	1432.62
193	881121-	881122-10:00	16	13	31	67	44.46	47	0.12	1976.69
80	741122-	741124-01:00	29	24	32	45	38.08	33	0.11	1450.09
159	840327-	840327-19:00	13	12	30	52	38.75	58	0.1	1501.56
187	880425-	880425-21:00	13	14	30	46	35.21	74	0.07	1239.74
41	681111-	681112-03:00	13	14	32	48	39	64	0.06	1521
198	891203-	891204-11:00	12	13	37	56	49.54	141	0.04	2454.21
202	901027-	901028-08:00	30	27	30	57	40.07	47	0.01	1605.6
65	720408-	720409-11:00	14	14	32	45	38.07	56	-0.01	1449.32
177	870705-	870706-08:00	15	12	30	44	37.08	44	-0.04	1374.93
127	810610-	810611-02:00	13	13	30	37	33.69	55	-0.04	1135.02
24	660118-	660118-20:00	17	18	32	51	38.83	67	-0.04	1507.77
116	800524-	800524-18:00	14	8	30	33	31.13	133	-0.06	969.077
61	710116-	710117-01:00	12	13	35	80	56.77	55	-0.11	3222.83