```
Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04  12.181     .03  44.827     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        12.181  44.827             54.4    51.7    46.1             .2       .4

CROSS SECTION


RIVER: Natural Drainage
REACH: South                RS: 1

INPUT
Description: xs-1
Station Elevation Data      num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 102.161   3.784 100.488   9.662  98.653  15.977  96.037  20.721  94.146
  24.571  92.825  28.372  91.449  31.723   91.05  35.187   90.91  39.699  90.993
  43.688   92.45  47.285  93.865  50.895  95.649  53.744  96.959  58.332  100.37
  63.003 101.418

Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04  15.977     .03  50.895     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        15.977  50.895                0       0       0             .1       .3

CROSS SECTION


RIVER: Natural Drainage
REACH: North                RS: 19

INPUT
Description: xs-19
Station Elevation Data      num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  89.824   3.801  89.277   8.285  88.762   13.65  88.278  16.294  88.105
  20.492  84.177  27.394  87.917  32.684  88.508  37.511  88.615  43.239  88.408
  45.479  87.981  50.005  92.349  53.923   92.35

Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04  16.294     .03  27.394     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        16.294  27.394             48.1    52.7    56.4             .1       .3

CROSS SECTION


RIVER: Natural Drainage
REACH: North                RS: 18

INPUT
Description: xs-18
Station Elevation Data      num=      15
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  79.655   3.915  79.801   7.426   79.65   9.375  77.433  10.897  77.379
  13.781  80.302  21.023  80.793  29.076  81.292  35.507  82.392  43.372    82.5
  44.902  82.142  47.913  82.352  50.369  83.267    54.3  83.784   56.81  85.637

Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04   7.426     .03  13.781     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         7.426  13.781             60.1    55.4      56             .1       .3

CROSS SECTION


RIVER: Natural Drainage
REACH: North                RS: 17

INPUT
Description: xs-17
Station Elevation Data      num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  77.473   3.738  77.352  13.846  75.237  27.261  75.161  30.441  74.564
  35.241  75.392  47.656  75.404  61.435  76.545  71.795  76.772   74.53  76.354
  77.194  78.945  84.126  80.247  89.497   80.54

Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04  27.261     .03  35.241     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        27.261  35.241             77.1    84.6    93.4             .1       .3

CROSS SECTION
```

RIVER: Natural Drainage
REACH: North RS: 16

INPUT
Description: xs-16
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	69.889	12.575	70.143	26.709	68.6	29.179	68.72	53.801	69.967
71.159	70.863	94.768	70.983	98.227	70.379	104.006	72.449	109.755	73.265
119.599	73.19								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	12.575	.03	53.801	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
12.575	53.801	142.8	99.3	55.8	.2	.4

CROSS SECTION

RIVER: Natural Drainage
REACH: North RS: 15

INPUT
Description: xs-15
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	82.02	3.895	82.26	28.937	70.84	37.727	70.23	45.668	69.96
57.015	69.75	71.323	69.49	86.808	65.96	91.71	66.094	95.498	65.971
101.412	65.27	105.769	63.874	108.096	62.903	111.185	62.569	112.891	64.013
119.709	66.74								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	101.412	.03	119.709	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
101.412	119.709	0	0	0	.1	.3

SUMMARY OF MANNING'S N VALUES

River:Natural Drainage

Reach	River Sta.	n1	n2	n3
East	14	.04	.03	.04
East	13	.04	.03	.04
East	12	.04	.03	.04
East	11	.04	.03	.04
East	10	.04	.03	.04
East	9	.04	.03	.04
West	8	.04	.03	.04
West	7	.04	.03	.04
West	6	.04	.03	.04
West	5	.04	.03	.04
West	4	.04	.03	.04
West	3	.04	.03	.04
South	2	.04	.03	.04
South	1	.04	.03	.04
North	19	.04	.03	.04
North	18	.04	.03	.04
North	17	.04	.03	.04
North	16	.04	.03	.04
North	15	.04	.03	.04

SUMMARY OF REACH LENGTHS

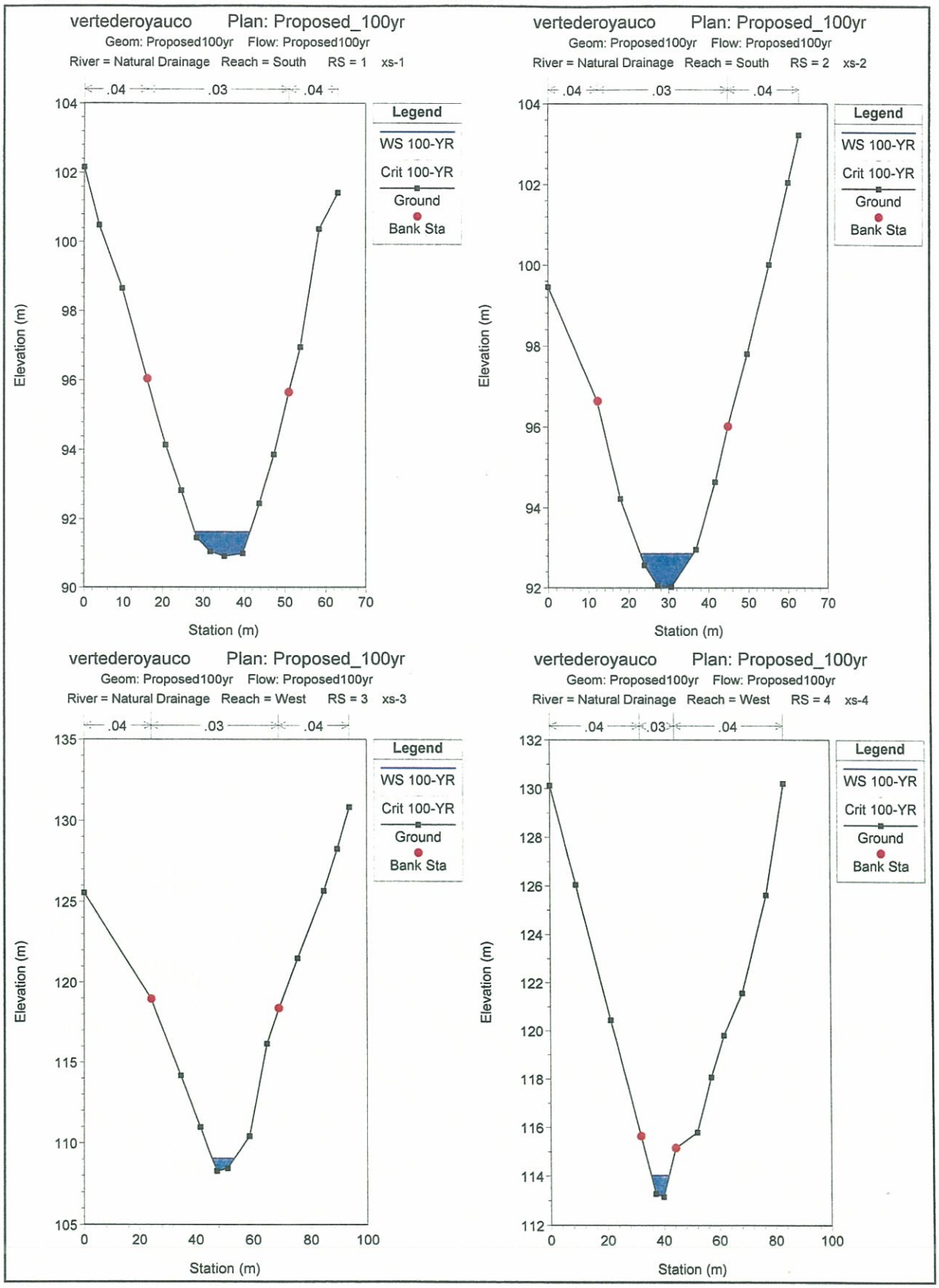
River: Natural Drainage

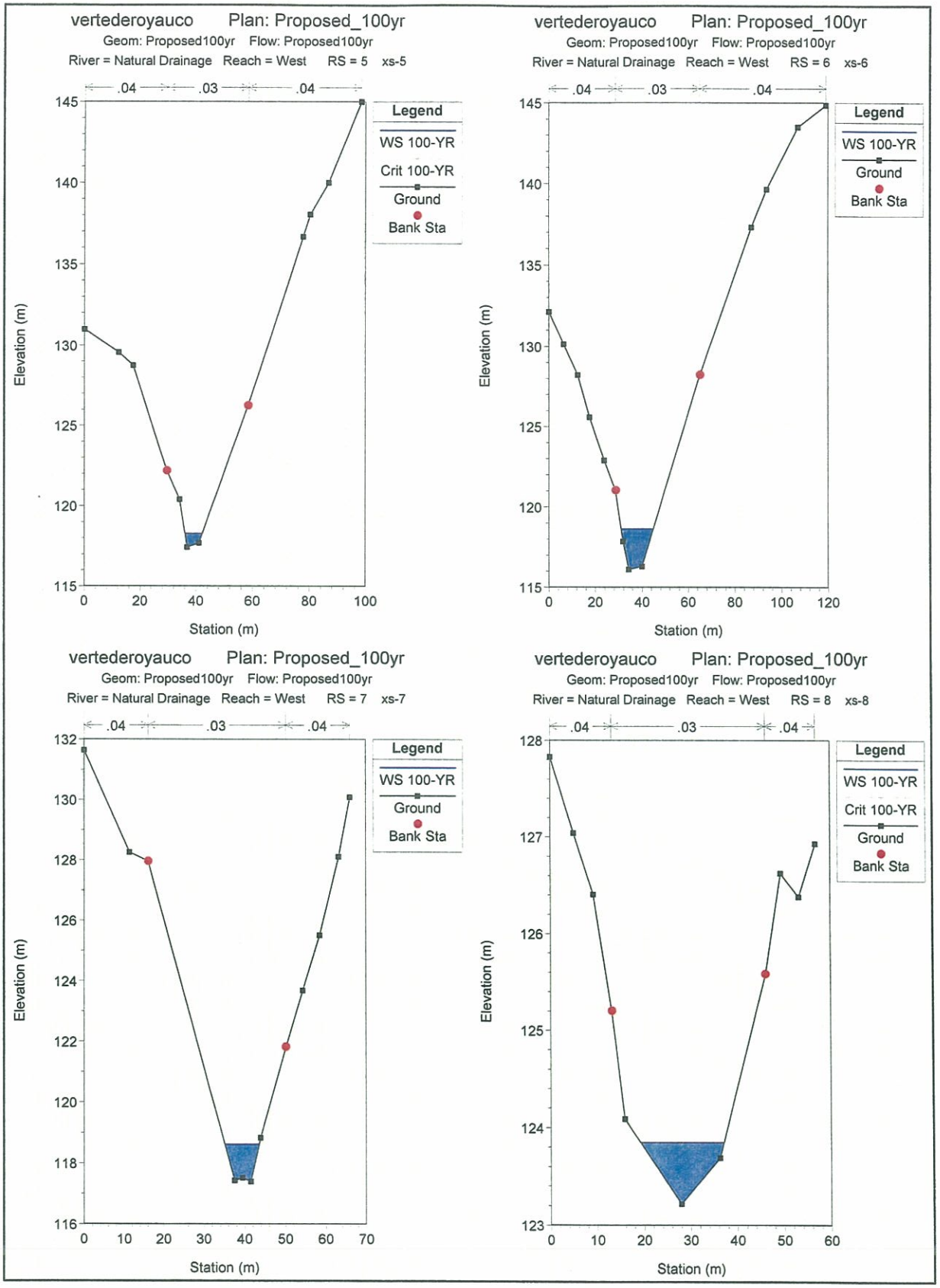
Reach	River Sta.	Left	Channel	Right
East	14	106.6	88.9	64.5
East	13	52.1	59	74.1
East	12	65.9	135.4	171.5
East	11	31	69.7	94.9
East	10	39.1	64.3	77.1
East	9	23.2	58.5	88.9
West	8	78.3	74.6	61
West	7	174.7	129.4	87.3
West	6	47.7	40.4	28.6
West	5	121	100.5	97.7
West	4	80.3	129.2	152.3
West	3	182.2	147.1	140
South	2	54.4	51.7	46.1
South	1	0	0	0
North	19	48.1	52.7	56.4
North	18	60.1	55.4	56
North	17	77.1	84.6	93.4
North	16	142.8	99.3	55.8

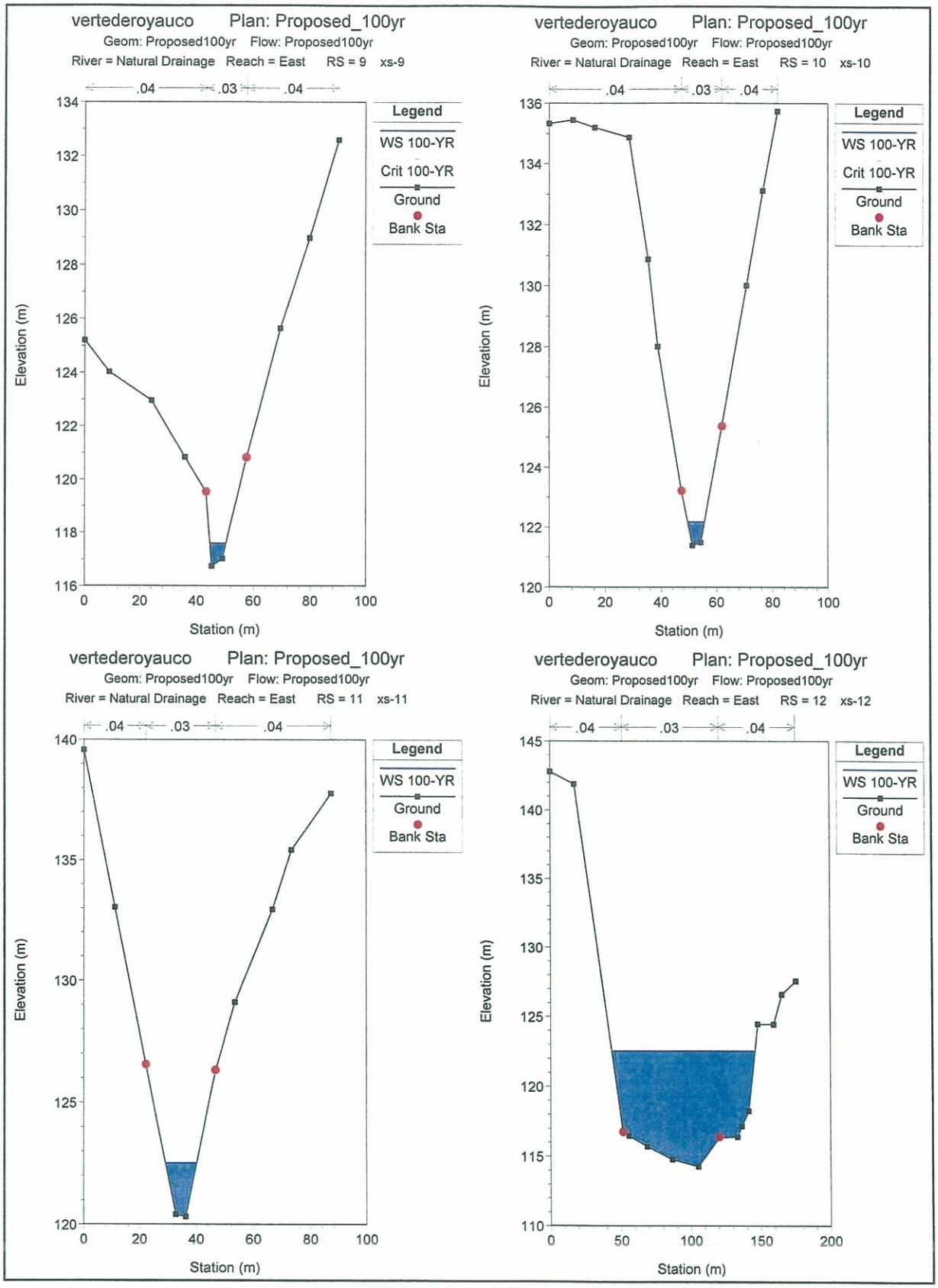
North	15	0	0	0

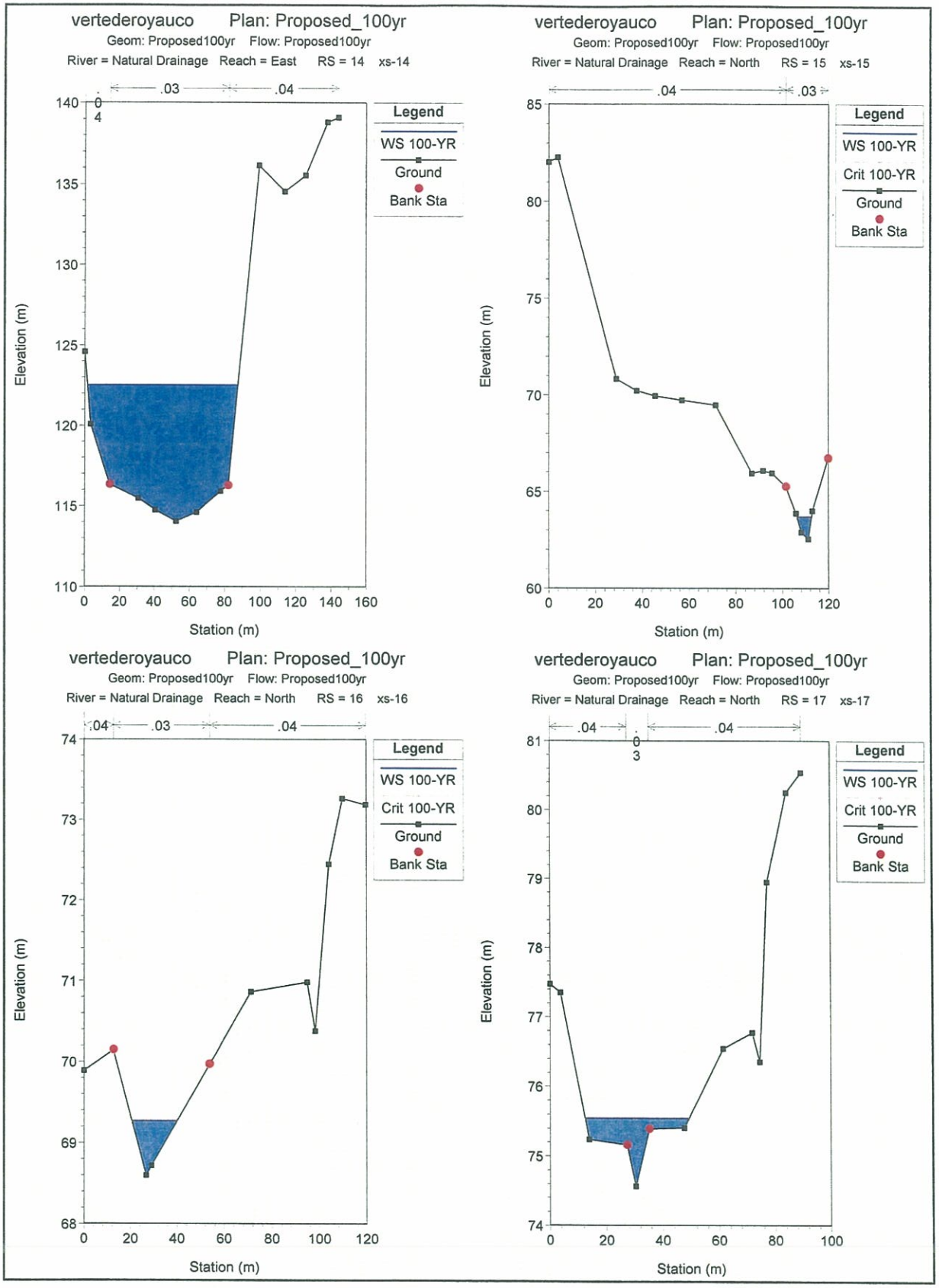
SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Natural Drainage

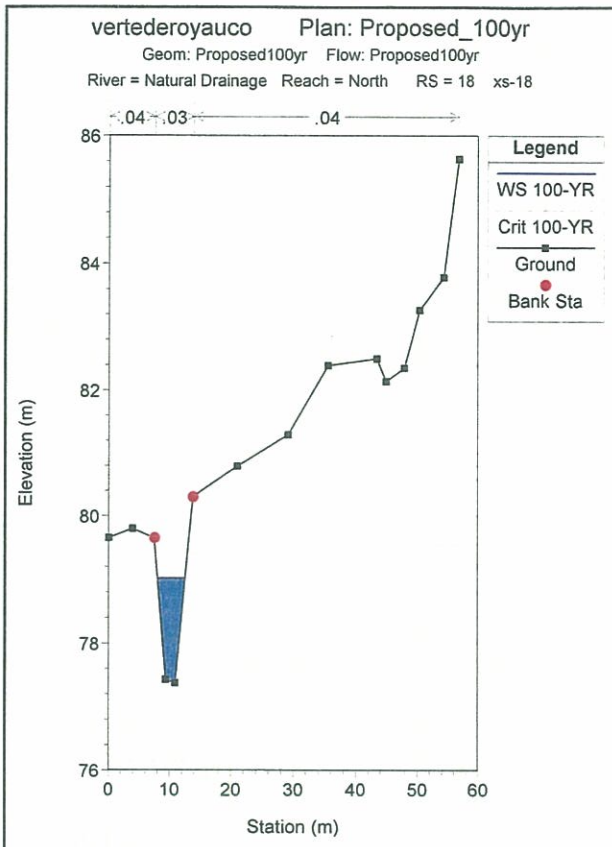
Reach	River Sta.	Contr.	Expan.
East	14	.1	.3
East	13	.2	.4
East	12	.2	.4
East	11	.1	.3
East	10	.1	.3
East	9	.1	.3
West	8	.1	.3
West	7	.2	.4
West	6	.2	.4
West	5	.1	.3
West	4	.1	.3
West	3	.1	.3
South	2	.2	.4
South	1	.1	.3
North	19	.1	.3
North	18	.1	.3
North	17	.1	.3
North	16	.2	.4
North	15	.1	.3

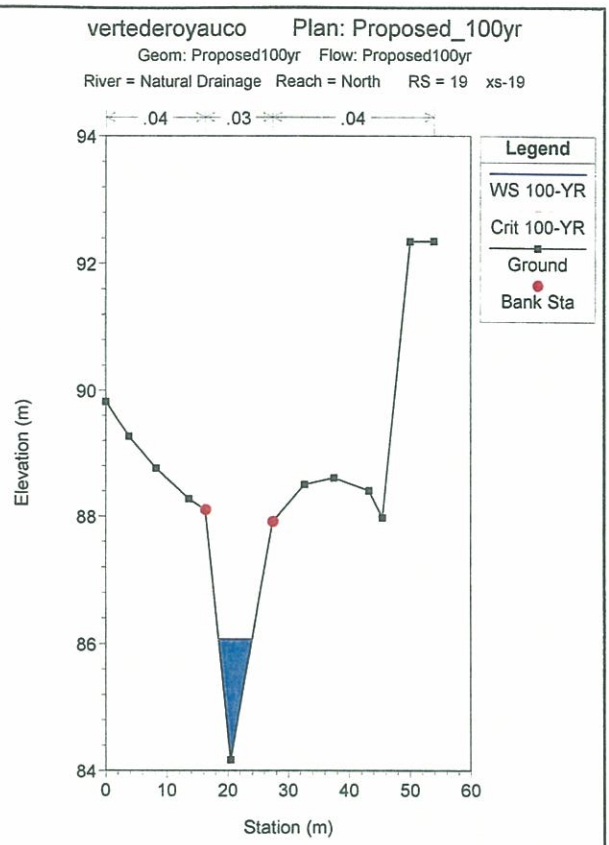

vertederoyauco Plan: Proposed_100yr
Geom: Proposed100yr Flow: Proposed100yr
River = Natural Drainage Reach = South RS = 1 xs-1
.04 .03 .04
Legend
WS 100-YR
Crit 100-YR
Ground
Bank Sta
Elevation (m)
Station (m)
vertederoyauco Plan: Proposed_100yr
Geom: Proposed100yr Flow: Proposed100yr
River = Natural Drainage Reach = South RS = 2 xs-2
.04 .03 .04
Legend
WS 100-YR
Crit 100-YR
Ground
Bank Sta
Elevation (m)
Station (m)
vertederoyauco Plan: Proposed_100yr
Geom: Proposed100yr Flow: Proposed100yr
River = Natural Drainage Reach = West RS = 3 xs-3
.04 .03 .04
Legend
WS 100-YR
Crit 100-YR
Ground
Bank Sta
Elevation (m)
Station (m)
vertederoyauco Plan: Proposed_100yr
Geom: Proposed100yr Flow: Proposed100yr
River = Natural Drainage Reach = West RS = 4 xs-4
.04 .03 .04
Legend
WS 100-YR
Crit 100-YR
Ground
Bank Sta
Elevation (m)
Station (m)


vertederoyauco Plan: Proposed_100yr
Geom: Proposed100yr Flow: Proposed100yr
River = Natural Drainage Reach = West RS = 5 xs-5
.04 .03 .04
Legend
WS 100-YR
Crit 100-YR
Ground
Bank Sta
Elevation (m)
Station (m)
vertederoyauco Plan: Proposed_100yr
Geom: Proposed100yr Flow: Proposed100yr
River = Natural Drainage Reach = West RS = 6 xs-6
.04 .03 .04
Legend
WS 100-YR
Ground
Bank Sta
Elevation (m)
Station (m)
vertederoyauco Plan: Proposed_100yr
Geom: Proposed100yr Flow: Proposed100yr
River = Natural Drainage Reach = West RS = 7 xs-7
.04 .03 .04
Legend
WS 100-YR
Ground
Bank Sta
Elevation (m)
Station (m)
vertederoyauco Plan: Proposed_100yr
Geom: Proposed100yr Flow: Proposed100yr
River = Natural Drainage Reach = West RS = 8 xs-8
.04 .03 .04
Legend
WS 100-YR
Crit 100-YR
Ground
Bank Sta
Elevation (m)
Station (m)


vertederoyauco Plan: Proposed_100yr
Geom: Proposed100yr Flow: Proposed100yr
River = Natural Drainage Reach = East RS = 9 xs-9
.04 .03 .04
Legend
WS 100-YR
Crit 100-YR
Ground
Bank Sta
Elevation (m)
Station (m)
vertederoyauco Plan: Proposed_100yr
Geom: Proposed100yr Flow: Proposed100yr
River = Natural Drainage Reach = East RS = 10 xs-10
.04 .03 .04
Legend
WS 100-YR
Crit 100-YR
Ground
Bank Sta
Elevation (m)
Station (m)
vertederoyauco Plan: Proposed_100yr
Geom: Proposed100yr Flow: Proposed100yr
River = Natural Drainage Reach = East RS = 11 xs-11
.04 .03 .04
Legend
WS 100-YR
Ground
Bank Sta
Elevation (m)
Station (m)
vertederoyauco Plan: Proposed_100yr
Geom: Proposed100yr Flow: Proposed100yr
River = Natural Drainage Reach = East RS = 12 xs-12
.04 .03 .04
Legend
WS 100-YR
Ground
Bank Sta
Elevation (m)
Station (m)


vertederoyauco Plan: Proposed_100yr
Geom: Proposed100yr Flow: Proposed100yr
River = Natural Drainage Reach = East RS = 14 xs-14
.03
.04
Legend
WS 100-YR
Ground
Bank Sta
Elevation (m)
Station (m)
vertederoyauco Plan: Proposed_100yr
Geom: Proposed100yr Flow: Proposed100yr
River = Natural Drainage Reach = North RS = 15 xs-15
.04
.03
Legend
WS 100-YR
Crit 100-YR
Ground
Bank Sta
Elevation (m)
Station (m)
vertederoyauco Plan: Proposed_100yr
Geom: Proposed100yr Flow: Proposed100yr
River = Natural Drainage Reach = North RS = 16 xs-16
.04
.03
.04
Legend
WS 100-YR
Crit 100-YR
Ground
Bank Sta
Elevation (m)
Station (m)
vertederoyauco Plan: Proposed_100yr
Geom: Proposed100yr Flow: Proposed100yr
River = Natural Drainage Reach = North RS = 17 xs-17
.04
.04
Legend
WS 100-YR
Crit 100-YR
Ground
Bank Sta
Elevation (m)
Station (m)


vertederoyauco Plan: Proposed_100yr
Geom: Proposed100yr Flow: Proposed100yr
River = Natural Drainage Reach = North RS = 18 xs-18
.04
.03
.04
Legend
WS 100-YR
Crit 100-YR
Ground
Bank Sta
Elevation (m)
Station (m)
86
84
82
80
78
76
0
10
20
30
40
50
60


vertederoyauco Plan: Proposed_100yr
Geom: Proposed100yr Flow: Proposed100yr
River = Natural Drainage Reach = North RS = 19 xs-19
.04
.03
.04
Legend
WS 100-YR
Crit 100-YR
Ground
Bank Sta
Elevation (m)
Station (m)
94
92
90
88
86
84
0
10
20
30
40
50
60

HEC-RAS Plan: Proposed100yr Profile: 100-YR

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
South	1	100-YR	16.15	90.91	91.62	91.62	91.89	0.011259	2.27923	7.09	13.53	1.01
South	2	100-YR	16.15	92.03	92.86	92.86	93.13	0.011292	2.30186	7.02	13.25	1.01
North	15	100-YR	11.96	62.57	63.70	63.70	64.06	0.011269	2.65443	4.51	6.34	1.01
North	16	100-YR	11.96	68.60	69.27	69.27	69.44	0.013120	1.83920	6.50	19.40	1.01
North	17	100-YR	15.90	74.56	75.54	75.54	75.69	0.007503	2.05112	11.53	36.91	0.84
North	18	100-YR	15.90	77.38	79.02	79.02	79.56	0.012407	3.25884	4.88	4.53	1.00
North	19	100-YR	15.90	84.18	86.07	86.07	86.54	0.011862	3.05706	5.20	5.51	1.00
West	3	100-YR	8.95	108.28	109.06	109.06	109.32	0.011732	2.26217	3.96	7.72	1.01
West	4	100-YR	8.95	113.17	114.04	114.04	114.34	0.011457	2.40866	3.72	6.34	1.00
West	5	100-YR	8.95	117.43	118.28	118.28	118.58	0.011851	2.43851	3.67	6.14	1.01
West	6	100-YR	8.95	116.12	118.64		118.65	0.000071	0.37751	23.71	13.76	0.09
West	7	100-YR	11.19	117.39	118.61		118.73	0.002977	1.56280	7.16	8.37	0.54
West	8	100-YR	11.19	123.22	123.85	123.85	124.02	0.013084	1.85217	6.04	17.79	1.01
East	9	100-YR	7.95	116.74	117.59	117.59	117.89	0.012133	2.40841	3.30	5.64	1.01
East	10	100-YR	7.95	121.39	122.18	122.18	122.46	0.011746	2.35373	3.38	6.08	1.01
East	11	100-YR	7.95	120.32	122.52		122.53	0.000173	0.51616	15.40	10.89	0.14
East	12	100-YR	7.95	114.27	122.53		122.53	0.000000	0.01366	653.02	102.53	0.00
East	13	100-YR	20.05	114.09	122.53		122.53	0.000000	0.03178	656.22	91.31	0.00
East	14	100-YR	20.05	114.06	122.53		122.53	0.000000	0.03800	566.39	85.85	0.00

APPENDIX F

SEDIMENT YIELD CALCULATIONS

SOIL ERODIBILITY FACTOR (K)
FROM USDA DATA BASE

Calc. consolidation from precip?
No
Carib. soil group
none
Clay (<0.002 mm), %
46
Erodibility, US
0.17
Graphic
993829439
How calc. time-varying erodibility?
daily K values vary about reference location K
How get soil erodibility?
set by user
Hydrologic class
D - highest runoff
Hydrologic class with subsurface drainage
D - highest runoff
Info
alluvial
NASIS 1:1 H20 ph for top horiz., pH
8.0
NASIS map unit symbol
PzD
NASIS rep. OM for top horiz., %
9.2
NASIS survey area symbol
PR787
Nominal consolidation time, yr
7.0
Rock cover, %
0
Sand (0.05-2 mm), %
28
Silt (0.002-0.05 mm), %
27
Soil fuel use ratio (relative to silt loam = 1.0)
1.3
T value, t/ac/yr
3.0
Texture
Clay

Calc. consolidation from precip?
  No
Carib. soil group
  none
Clay (<0.002 mm), %
  48
Erodibility, US
  0.24
Graphic
  0
How calc. time-varying erodibility?
  daily K values vary about reference location K
How get soil erodibility?
  set by user
Hydrologic class
  D - highest runoff
Hydrologic class with subsurface drainage
  D - highest runoff
Info
  fan
NASIS 1:1 H20 ph for top horiz., pH
  7.9
NASIS map unit symbol
  FrB
NASIS rep. OM for top horiz., %
  3.5
NASIS survey area symbol
  PR787
Nominal consolidation time, yr
  7.0
Rock cover, %
  0
Sand (0.05-2 mm), %
  23
Silt (0.002-0.05 mm), %
  29
Soil fuel use ratio (relative to silt loam = 1.0)
  1.3
T value, t/ac/yr
  5.0
Texture
  Clay

Calc. consolidation from precip?
No
Carib. soil group
none
Clay (<0.002 mm), %
39
Erodibility, US
0.28
Graphic
0
How calc. time-varying erodibility?
daily K values vary about reference location K
How get soil erodibility?
set by user
Hydrologic class
D - highest runoff
Hydrologic class with subsurface drainage
D - highest runoff
Info
hillslopes
NASIS 1:1 H20 ph for top horiz., pH
8.0
NASIS map unit symbol
SgD
NASIS rep. OM for top horiz., %
3.0
NASIS survey area symbol
PR787
Nominal consolidation time, yr
7.0
Rock cover, %
0
Sand (0.05-2 mm), %
22
Silt (0.002-0.05 mm), %
39
Soil fuel use ratio (relative to silt loam = 1.0)
1.2
T value, t/ac/yr
1.0
Texture
Clay loam

Calc. consolidation from precip?
No
Carib. soil group
none
Clay (<0.002 mm), %
39
Erodibility, US
0.28
Graphic
0
How calc. time-varying erodibility?
daily K values vary about reference location K
How get soil erodibility?
set by user
Hydrologic class
D - highest runoff
Hydrologic class with subsurface drainage
D - highest runoff
Info
hillslopes
NASIS 1:1 H20 ph for top horiz., pH
8.0
NASIS map unit symbol
SgF
NASIS rep. OM for top horiz., %
3.0
NASIS survey area symbol
PR787
Nominal consolidation time, yr
7.0
Rock cover, %
0
Sand (0.05-2 mm), %
22
Silt (0.002-0.05 mm), %
39
Soil fuel use ratio (relative to silt loam = 1.0)
1.2
T value, t/ac/yr
1.0
Texture
Clay loam