ANEXO V: RESULTADOS DE LA MODELIZACIÓN DE LA HIDRÁULICA FLUVIAL: FICHEROS DE SALIDAS DE HEC-RAS

BD

Arroyo Camarmilla

ED

ESTADO ACTUAL

BD

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                    HEC-RAS Version 3.1.3 May 2005
                     U.S. Army Corp of Engineers
                    Hydrologic Engineering Center
                          609 Second Street
                          Davis, California

     X     X  XXXXXX    XXXX         XXXX        XX       XXXX
     X     X  X        X    X       X   X      X  X     X
     X     X  X        X            X   X     X    X    X
     XXXXXXX  XXXX     X       XXX  XXXX      XXXXXX     XXXX
     X     X  X        X            X  X      X    X         X
     X     X  X        X    X       X   X     X    X         X
     X     X  XXXXXX    XXXX        X    X    X    X    XXXXX


PROJECT DATA
Project Title: Alcala_Henares
Project File : Poliseda.prj
Run Date and Time: 19/01/2006 15:41:29

Project in SI units


PLAN DATA

Plan Title: Plan 20
Plan File : C:\TRABAJO\2005-43-MP_POLISEDA\HecRas_Poliseda\Poliseda.p20

          Geometry Title: Actual_Puente
          Geometry File : C:\TRABAJO\2005-43-MP_POLISEDA\HecRas_Poliseda\Poliseda.g01

          Flow Title    : Actual
          Flow File     : C:\TRABAJO\2005-43-MP_POLISEDA\HecRas_Poliseda\Poliseda.f01

Plan Summary Information:
Number of:  Cross Sections =   17    Multiple Openings  =    0
            Culverts       =    1    Inline Structures  =    0
            Bridges        =    0    Lateral Structures =    0

Computational Information
    Water surface calculation tolerance  =  0.01
    Critical depth calculation tolerance =  0.01
    Maximum number of iterations         =  20
    Maximum difference tolerance         =  0.3
    Flow tolerance factor                =  0.001

Computation Options
    Critical depth computed only where necessary
    Conveyance Calculation Method: At breaks in n values only
    Friction Slope Method:         Average Conveyance
    Computational Flow Regime:     Mixed Flow


FLOW DATA

Flow Title: Actual
Flow File : C:\TRABAJO\2005-43-MP_POLISEDA\HecRas_Poliseda\Poliseca.f01

Flow Data (m3/s)

  River          Reach          RS                    T 5          T 500
  Poliseda       Arroyo         1439                   .72          13.36
  Poliseda       Arroyo         1039                  1.44          26.72
  Poliseda       Arroyo         539                   2.16          40.08
  Poliseda       Arroyo         239                   2.88          53.44
  Poliseda       Arroyo         139                    3.6           66.8


Boundary Conditions

  River          Reach          Profile               Upstream              Downstream

  Poliseda       Arroyo         T 5                   Normal S = 0.007      Normal S = 0.007
  Poliseda       Arroyo         T 500                 Normal S = 0.007      Normal S = 0.007


GEOMETRY DATA

Geometry Title: Actual_Puente
Geometry File : C:\TRABAJO\2005-43-MP_POLISEDA\HecRas_Poliseda\Poliseda.g01
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BD

CROSS SECTION

RIVER: Poliseda
REACH: Arroyo RS: 1439

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-199.18	611.77	-130.67	610.12	-120.62	610.16	-122.3	610	-84.29	609.95
-75.86	609.8	-3.5	609.5	-1	607.64	0	607.64	1	607.65
3.5	609.1	86.62	609.9	155.22	609.27	170.16	609.68		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-199.18	.045	-3.5	.035	3.5	.045

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-3.5	3.5	100	100	.1	.3

CROSS SECTION

RIVER: Poliseda
REACH: Arroyo RS: 1339

INPUT
Description:
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-181.24	611.06	-138.96	610	-45.17	606.74	-6.29	606.35	-3.68	604.57
.68	605.08	0	605.07	.99	605.68	3.56	606.57	13.06	606.67
25.77	606.7	47.09	607.86	67.73	608.15	142.55	608.14	196.16	609.96

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-181.24	.045	-3.68	.035	3.56	.045

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-3.68	3.56	100	100	.1	.3

CROSS SECTION

RIVER: Poliseda
REACH: Arroyo RS: 1239

INPUT
Description:
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-139.11	610	-101.8	608.7	-2	605	-3.5	604.95	1.1	603.52
0	603.5	1	603.51	4	604.96	7.5	604.98	7.89	605
94.52	607.33								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-139.11	.045	-3.5	.035	4	.045

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
3.5	4	100	100	.1	.3

CROSS SECTION

RIVER: Poliseda
REACH: Arroyo RS: 1139

INPUT
Description:
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-170.07	610	-169.47	609.99	-7.06	603	-3.64	604.98	0	603.27
0	603.25	.98	603.26	3.7	604.98	4.01	605	96.05	605.9
194.42	608.2								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-170.07	.045	-3.64	.035	3.7	.045

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-3.64	3.7	100	100	.1	.3

CROSS SECTION

RIVER: Poliseda
REACH: Arroyo RS: 1039

INPUT
Description:
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-139.16	609.04	-4.47	605	-1	603.08	0	603.08	1	603.09

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    3.68     605   68.59  605.24   87.38  605.32  185.98  605.25  194.08  605.27
     237     605

Manning's n Values          num=      3
     Sta   n Val     Sta   n Val     Sta   n Val
 -139.16    .045   -4.47    .035    3.68    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -4.47    3.68              100     100     100             .1      .3

CROSS SECTION


RIVER: Poliseda
REACH: Arroyo               RS: 939

INPUT
Description:
Station Elevation Data      num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 -196.59  607.75  -77.79     607     -60     605      -7   603.3    -.92  602.82
       0  602.8      .59  602.81       7   603.4    8.43     605   98.44     605
   98.49  604.58     284     605

Manning's n Values          num=      3
     Sta   n Val     Sta   n Val     Sta   n Val
 -190.59    .045      -7    .035       7    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -7       7              100     100     100             .1      .3

CROSS SECTION


RIVER: Poliseda
REACH: Arroyo               RS: 839

INPUT
Description:
Station Elevation Data      num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 -127.23  605.59   95.68     605     -92   604.8    -3.5  604.6    -1  602.77
       0  602.75       1  602.76       3.5  604.4   92.53  604.03   96.42  604.1
     274     605

Manning's n Values          num=      3
     Sta   n Val     Sta   n Val     Sta   n Val
 -127.23    .040    -3.5    .035     3.5    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -3.5     3.5              100     100     100             .1      .3
Right Levee     Station=     3.5     Elevation=   604.4

CROSS SECTION


RIVER: Poliseda
REACH: Arroyo               RS: 739

INPUT
Description:
Station Elevation Data      num=      9
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   88.07     605      -7   604.1      -1  602.58       0  602.55       1  602.57
       7   604.1   99.05   604.1  100.12  604.14     287     605

Manning's n Values          num=      3
     Sta   n Val     Sta   n Val     Sta   n Val
  -88.07    .045      -7    .035       7    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -7       7              100     100     100             .1      .3

CROSS SECTION


RIVER: Poliseda
REACH: Arroyo               RS: 639

INPUT
Description:
Station Elevation Data      num=      8
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  -185.4     606  -50.03     605      -7  603.5      -1  602.5       0  602.49
       1  602.51       7  603.5      310     605

Manning's n Values          num=      3
     Sta   n Val     Sta   n Val     Sta   n Val
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  -185.6    .045      -7    .035       7    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -7       7                100     100     100              .1       .3

CROSS SECTION


RIVER: Poliseda
REACH: Arroyo              RS: 539

INPUT
Description:
Station Elevation Data     num=        9
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  -55.01     605  -29.95   602.1      -7   602.1    -1.2  601.24       0  601.25
       1  601.26       7   602.1  159.58  602.95     336     605

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
  -55.01    .045      -7    .035       7    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -7       7                100     100     100              .1       .3

CROSS SECTION


RIVER: Poliseda
REACH: Arroyo              RS: 439

INPUT
Description:
Station Elevation Data     num=        9
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  -72.39  603.46  -35.85   602.5   -6.95  602.35      -1  600.06       0  600.05
       1  600.07    6.98   602.4      98  603.02  114.98  603.34

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
   72.39    .045   -6.95    .035    6.98    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -6.95    6.98                100     100     100              .1       .3
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CROSS SECTION

RIVER: Polisede
REACH: Arroyo              RS: 330

INPUT
Description:
Station Elevation Data     num=      10
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
 -182.79      605   -78.32   601.51    -4.44      600       -2   598.51         0   598.5
       2   598.52     5.43      600     50.1   600.58  240.021   602.2       311      605

Manning's n Values         num=      3
     Sta   n Val      Sta   n Val      Sta   n Val
 -182.79    .045    -4.44    .035     5.43    .045

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -4.44    5.43                 100     100     100             .1      .3

CROSS SECTION


RIVER: Polisede
REACH: Arroyo              RS: 239

INPUT
Descriptica:
Station Elevation Data     num=      12
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
    -451      605     -299   604.9   -40.42   600.81     -7.26      600         1   598.41
       0   598.39        1   598.4      3.3      600     15.35   600.17     21.72   600.23
  108.34   600.98   136.4   601.26

Manning's n Values         num=      3
     Sta   n Val      Sta   n Val      Sta   n Val
    -451    .045    -7.26    .035      3.3    .065

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -7.26     3.3                 204     204     204             .1      .3

CROSS SECTION


RIVER: Polisede
REACH: Arroyo              RS: 139

INPUT
Description:
Station Elevation Data     num=      10
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
 -172.72   602.8   -112.5   604.57   -105.39   604.13   -67.05   602.37    -8.26      600
    -1.2   597.3        0   597.29         1   597.3     2.62      600     15.56      600
   21.74      600    94.09   600.27     98.26   600.34      343      600      452    602.9

Manning's n Values         num=      3
     Sta   n Val      Sta   n Val      Sta   n Val
 -172.72    .045    -8.26    .035     2.62    .045

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -8.26    2.62                 204     204     204             .1      .3

CROSS SECTION


RIVER: Polisede
REACH: Arroyo              RS: 39

INPUT
Description:
Station Elevation Data     num=      9
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
    -152   599.9        -6   599.9        -6   595.9        -3   595.9         0   595.9
       3   595.9         6   595.9         6   599.9       207   599.9

Manning's n Values         num=      3
     Sta   n Val      Sta   n Val      Sta   n Val
    -152    .065        -6     .02         6    .065


Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
              6       6                  15      15      15             .3      .5

CULVERT

RIVER: Polisede
REACH: Arroyo              RS: 30



INPUT
Description:
Distance from Upstream XS =       .5
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Deck/Roadway Width        =      10
Weir Coefficient          =    1.44
Upstream  Deck/Roadway Coordinates
    num=       2
     Sta Hi Cord Lo Cord      Sta Hi Cord Lo Cord
      -6   599.9   599.7        6   599.9   599.7

Upstream Bridge Cross Section Data
Station Elevation Data    num=       9
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    -152   599.9      -6   599.9      -6   595.8      -3   595.8       0   595.8
       3   595.8       6   595.8       6   599.9     297   599.9

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
    -152    .045        6    .02        6    .045

Bank Sta: Left   Right    Coeff Contr.   Expan.
             -6       6              .3      .5

Downstream  Deck/Roadway Coordinates
    num=       2
     Sta Hi Cord Lo Cord      Sta Hi Cord Lo Cord
      -6   599.9   599.7        6   599.9   599.7

Downstream Bridge Cross Section Data
Station Elevation Data    num=       9
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    -152   599.9      -6   599.9   -4.95   595.8       3   595.8       0   595.8
       3   595.8    4.95   595.8       6   599.9     297   599.9

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
    -152    .045        6    .02        6    .045

Bank Sta: Left   Right    Coeff Contr.   Expan.
             -6       6              .3      .5

Upstream Embankment side slope             =       0 horiz. to 1.0 vertical
Downstream Embankment side slope           =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins        =
Energy head used in spillway design        =
Spillway height used in design             =
Weir crest shape                           = Broad Crested

Number of Culverts =  2

Culvert Name      Shape      Rise     Span
Culvert #1          Box       3.8        5
FHWA Chart # 8 - flared wingwalls
FHWA Scale # 1 - Wingwall flared 30 to 75 deg.
Solution Criteria = Highest U.S. BC
Culvert Upstrm Dist  Length     Top n   Bottom n  Depth Blocked  Entrance Loss Coef   Exit Loss Coef
                 .5      10      .018      .018              0                    1
Upstream   Elevation =  595.8
           Centerline Station = -3
Downstream Elevation =  595.8
           Centerline Station = -3

Culvert Name      Shape      Rise     Span
Culvert #2          Box       3.8        5
FHWA Chart # 8 - flared wingwalls
FHWA Scale # 1 - Wingwall flared 30 to 75 deg.
Solution Criteria = Highest U.S. BC
Culvert Upstrm Dist  Length     Top n   Bottom n  Depth Blocked  Entrance Loss Coef   Exit Loss Coef
                 .5      10      .018      .018              0                    1
Upstream   Elevation =  595.8
           Centerline Station =  3
Downstream Elevation =  595.8
           Centerline Station =  3

CROSS SECTION


RIVER: Poliseda
REACH: Arroyo             RS: 29

INPUT
Description:
Station Elevation Data    num=       9
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    -152   599.9      -6   599.9   -4.95   595.8      -3   595.8       0   595.8
       3   595.8    4.95   595.8       6   599.9     297   599.9

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
    -152    .045        6    .02        6    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             -6       6                  136      136      136              .3      .5


CROSS SECTION


RIVER: Poliseda
REACH: Arroyo             RS: 0

INPUT
Description:
```

BD

Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-186	599.9	-25	600	-5	600	-4.95	595	0	595
4.95	595	5	600	180	600.2	437	600.6		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-186	.045	-5	.035	5	.045

Bank Sta: Left	Right	Coeff Contr.	Expan.
-5	5	.1	.3

SUMMARY OF MANNING'S N VALUES

River:Poliseda

Reach	River Sta.	n1	n2	n3
Arroyo	1439	.045	.035	.045
Arroyo	1339	.045	.035	.045
Arroyo	1239	.045	.035	.045
Arroyo	1139	.045	.035	.045
Arroyo	1039	.045	.035	.045
Arroyo	939	.045	.035	.045
Arroyo	839	.045	.035	.045
Arroyo	739	.045	.035	.045
Arroyo	639	.045	.035	.045
Arroyo	539	.045	.035	.045
Arroyo	439	.045	.035	.045
Arroyo	339	.045	.035	.045
Arroyo	239	.045	.035	.045
Arroyo	139	.045	.035	.045
Arroyo	39	.045	.02	.045
Arroyo	30	Culvert		
Arroyo	29	.045	.02	.045
Arroyo	0	.045	.035	.045

SUMMARY OF REACH LENGTHS

River: Poliseda

Reach	River Sta.	Left	Channel	Right
Arroyo	1439	100	100	100
Arroyo	1339	100	100	100
Arroyo	1239	100	100	100
Arroyo	1139	100	100	100
Arroyo	1039	100	100	100
Arroyo	939	100	100	100
Arroyo	839	100	100	100
Arroyo	739	100	100	100
Arroyo	639	100	100	100
Arroyo	539	100	100	100
Arroyo	439	100	100	100
Arroyo	339	100	100	100
Arroyo	239	204	204	204
Arroyo	139	204	204	204
Arroyo	39	15	15	15
Arroyo	30	Culvert		
Arroyo	29	136	136	136
Arroyo	0			

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SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Poliseda

Reach	River Sta.	Contr.	Expan.
Arroyo	1439	.1	.3
Arroyo	1339	.1	.3
Arroyo	1239	.1	.3
Arroyo	1139	.1	.3
Arroyo	1039	.1	.3
Arroyo	939	.1	.3
Arroyo	839	.1	.3
Arroyo	739	.1	.3
Arroyo	639	.1	.3
Arroyo	539	.1	.3
Arroyo	439	.1	.3
Arroyo	339	.1	.3
Arroyo	239	.1	.3
Arroyo	139	.1	.3
Arroyo	39	.3	.5
Arroyo	30	Culvert	
Arroyo	29	.3	.5
Arroyo	0	.1	.3

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Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Arroyo	1439	T 5	0.72	607.64	607.87	607.87	607.96	0.022326	1.39	0.52	2.67	1.00
Arroyo	1439	T 500	13.36	607.64	608.85	608.86	609.27	0.015920	3.86	4.58	5.71	1.01
Arroyo	1333	T 5	0.72	605.07	605.28	605.30	605.40	0.029878	1.52	0.47	2.68	1.15
Arroyo	1333	T 500	13.36	605.07	606.99	606.95	606.84	0.042491	4.08	3.27	5.19	1.64
Arroyo	1239	T 5	0.72	603.50	603.96	603.72	603.97	0.005637	0.55	1.31	3.76	0.30
Arroyo	1239	T 500	13.36	603.50	605.61	604.66	605.63	0.000474	0.79	28.16	53.12	0.20
Arroyo	1139	T 5	0.72	603.25	603.86		603.87	0.010662	0.71	1.75	3.84	0.19
Arroyo	1139	T 500	13.36	603.25	605.57		605.59	0.000365	0.70	36.54	88.18	0.17
Arroyo	1039	T 5	1.44	603.08	603.45	603.42	603.57	0.015398	1.52	0.95	3.27	0.39
Arroyo	1039	T 500	26.72	603.08	604.80	604.80	605.35	0.014007	3.29	8.13	7.50	1.01
Arroyo	939	T 5	1.44	602.80	603.45		603.45	0.000257	0.25	6.01	18.64	0.12
Arroyo	939	T 500	26.72	602.80	604.62	603.76	604.68	0.000417	0.79	49.61	56.07	0.20
Arroyo	839	T 5	1.44	602.75	603.35	603.11	603.39	0.002895	0.85	1.69	3.73	0.40
Arroyo	839	T 500	26.72	602.75	604.53	604.43	604.56	0.001679	1.58	54.41	194.49	0.35
Arroyo	739	T 5	1.44	602.55	603.19		603.20	0.001201	0.53	2.72	6.81	0.27
Arroyo	739	T 500	26.72	602.55	604.25		604.35	0.002738	1.48	31.87	151.62	0.47
Arroyo	639	T 5	1.44	602.49	602.78	602.78	602.88	0.020828	1.38	1.05	5.37	1.00
Arroyo	639	T 500	26.72	602.49	603.76	603.76	603.94	0.006419	2.80	19.57	74.46	0.73
Arroyo	539	T 5	2.16	601.24	601.67	601.58	601.72	0.007034	0.99	2.17	8.37	0.61
Arroyo	539	T 500	40.08	601.24	602.74	602.45	602.78	0.001250	1.09	69.55	157.96	0.33
Arroyo	439	T 5	2.16	600.05	600.47	600.37	600.62	0.018862	1.73	1.25	4.09	1.00
Arroyo	439	T 500	40.08	600.05	601.89	601.69	602.43	0.012860	3.27	12.26	11.43	1.07
Arroyo	339	T 5	2.16	598.50	599.34	598.80	599.35	0.000004	0.46	4.68	7.26	0.18
Arroyo	339	T 500	40.08	598.50	600.98	600.37	601.01	0.000547	1.32	83.74	149.44	0.23
Arroyo	239	T 5	2.88	598.39	599.20		599.26	0.002325	0.87	3.32	6.28	0.38
Arroyo	239	T 500	53.44	598.39	600.33		600.91	0.001669	1.64	65.78	232.69	0.36
Arroyo	139	T 5	3.60	597.29	597.86	597.80	598.08	0.018413	2.08	1.73	3.89	1.01
Arroyo	139	T 500	66.80	597.29	600.29	600.29	600.45	0.002913	2.12	77.02	332.06	0.49
Arroyo	39	T 5	3.60	595.90	596.35	596.11	596.37	0.000571	0.67	9.39	12.00	0.32
Arroyo	39	T 500	66.80	595.90	599.05	597.37	599.21	0.000473	1.76	37.96	12.00	0.32
Arroyo	30		Culvert									
Arroyo	29	T 5	3.60	595.80	596.07	596.04	596.16	0.004550	1.05	3.46	10.04	0.84
Arroyo	29	T 500	66.80	595.80	597.60		598.28	0.002915	3.41	19.58	10.87	0.81
Arroyo	0	T 5	3.60	595.00	595.33	595.24	595.39	0.007001	1.10	3.28	9.91	0.61
Arroyo	0	T 500	66.80	595.00	597.15	596.66	597.65	0.007008	3.14	21.30	9.94	0.68

ESTADO FUTURO

ED

HEC-RAS Version 3.1.3 May 2005
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X       X   X     X  X     X
X     X  X        X            X   X     X    X   X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X            X  X      X    X       X
X     X  X        X    X       X   X     X    X       X
X     X  XXXXXX    XXXX        X    X    X    X   XXXXX
```

PROJECT DATA
Project Title: Alcala_Henares
Project File : Poliseda.prj
Run Date and Time: 18/01/2006 9:32:43

Project in SI units

PLAN DATA

Plan Title: Plan 16
Plan File : C:\TRABAJO\2005-43-MP_POLISEDA\HecRas_Poliseda\Poliseda.p16

Geometry Title: Actual_2
Geometry File : C:\TRABAJO\2005-43-MP_POLISEDA\HecRas_Poliseda\Poliseda.g02

Flow Title : Futuro
Flow File : C:\TRABAJO\2005-43-MP_POLISEDA\HecRas_Poliseda\Poliseda.f02

Plan Summary Information:
Number of: Cross Sections = 14 Multiple Openings = 0
Culverts = 0 Inline Structures = 0
Bridges = 0 Lateral Structures = 0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculation tolerance = 0.01
Maximum number of iterations = 20
Maximum difference tolerance = 0.3
Flow tolerance factor = 0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Mixed Flow

FLOW DATA

Flow Title: Futuro
Flow File : C:\TRABAJO\2005-43-MP_POLISEDA\HecRas_Poliseda\Poliseda.f02

Flow Data (m3/s)

River	Reach	RS	T 5	T 500
Poliseda	Arroyo	1409	.72	13.36
Poliseda	Arroyo	1039	1.44	26.72
Poliseda	Arroyo	539	2.16	40.08
Poliseda	Arroyo	239	6.11	59.37
Poliseda	Arroyo	139	6.83	72.73

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Poliseda	Arroyo	T 5	Normal S = 0.007	Normal S = 0.007
Poliseda	Arroyo	T 500	Normal S = 0.007	Normal S = 0.007

BD

GEOMETRY DATA

Geometry Title: Actual_2
Geometry File : C:\TRABAJO\2005-43-MP_PGOUTSEDA\HecRas_Poliseda\Poliseca.g02

CROSS SECTION

RIVER: Poliseda
REACH: Arroyo RS: 1439

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-199.18	611.77	-130.67	610.12	-129.62	610.16	-122.3	610	-84.29	609.85
-75.86	609.8	-3.5	609.5	-1	607.64	0	607.64	1	607.65
3.5	609.1	86.62	609.9	155.22	609.47	170.16	609.68		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
199.18	.045	-3.5	.035	3.5	.045

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-3.5	3.5	100	100	.1	.3

CROSS SECTION

RIVER: Poliseda
REACH: Arroyo RS: 1339

INPUT
Description:
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
181.24	611.06	-108.96	610	-45.17	606.72	-9.29	606.35	-3.68	606.57
-.98	605.09	0	605.07	.99	605.09	3.56	606.57	13.06	606.67
25.77	606.71	37.09	607.86	87.73	608.15	162.95	608.14	196.16	609.96

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-181.24	.045	-3.68	.035	3.56	.045

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-3.68	3.56	100	100	.1	.3

CROSS SECTION

RIVER: Poliseda
REACH: Arroyo RS: 1239

INPUT
Description:
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-159.11	610	-101.8	608.7	-9	605	-3.5	604.05	1.1	603.52
0	603.5	1	603.51	4	604.96	7.5	604.98	7.89	605
94.52	607.33								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-159.11	.045	-3.5	.035	4	.045

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-3.5	4	100	100	.1	.3

CROSS SECTION

RIVER: Poliseca
REACH: Arroyo RS: 1139

INPUT
Description:
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-170.07	610	-169.67	609.99	-7.06	605	3.54	604.98	-1	603.27
0	603.25	.98	603.26	3.7	601.98	4.01	605	96.05	605.9
194.62	608.2								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-170.07	.045	-3.54	.035	3.7	.045

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
3.54	3.7	100	100	.1	.3

BD

CROSS SECTION

RIVER: Poliseda

```
REACH: Arroyo              RS: 1039

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 -139.16  609.04    4.47     605      -1  603.08       0  603.08       1  603.09
    3.68     605   68.53  605.24   87.38  605.32  185.98  605.25  194.08  605.27
     237     605

Manning's n Values        num=      3
     Sta   n Val     Sta   n Val     Sta   n Val
 -139.16    .045   -4.47    .035    3.68    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            4.47    3.68              100     100     100             .1      .3

CROSS SECTION


RIVER: Poliseda
REACH: Arroyo              RS: 939

INPUT
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 -196.59  607.75  -77.79     607      -60     605      -7  603.3    -.92  602.81
       0  602.8      .99  602.81       7  603.4     8.43     605   96.44     605
   99.43  604.98     254     605

Manning's n Values        num=      3
     Sta   n Val     Sta   n Val     Sta   n Val
 -196.59    .045      -7    .035       7    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            -7       7              100     100     100             .1      .3

CROSS SECTION


RIVER: Poliseda
REACH: Arroyo              RS: 839

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 -127.23  605.59  -96.68     605      -92  604.8       3  604.5      -1  602.77
       0  602.75       1  602.76      3.5  604.4   92.52  604.08   96.42  604.1
     274     605

Manning's n Values        num=      3
     Sta   n Val     Sta   n Val     Sta   n Val
 -127.23    .045    -3.5    .035     3.5    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            -3.5     3.5              100     100     100             .1      .3
Right Levee     Station=      3.5      Elevation=   604.4

CROSS SECTION


RIVER: Poliseda
REACH: Arroyo              RS: 739

INPUT
Description:
Station Elevation Data    num=      9
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  -88.07     605      -7  604.2       -1  602.58       0  602.55       1  602.57
       7  604.2     99.05  604.2   107.13  604.14     287     605

Manning's n Values        num=      3
     Sta   n Val     Sta   n Val     Sta   n Val
  -88.07    .045      -7    .035       7    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            -7       7              100     100     100             .1      .3

CROSS SECTION


RIVER: Poliseda
REACH: Arroyo              RS: 659

INPUT
Description:
Station Elevation Data    num=      8
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  -185.6     606  -50.03     604       -7  603.3       1  602.5       3  602.49
       1  602.51       7  603.5      316     605

Manning's n Values        num=      3
     Sta   n Val     Sta   n Val     Sta   n Val
  -185.6    .045      -7    .035       7    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            -7       7              100     100     100             .1      .3

CROSS SECTION
```

ED

RIVER: Poliseda
REACH: Arroyo RS: 539

INPUT
Description:
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-58.07	605	-23.35	602.1	-7	602.1	-1.2	601.24	0	601.25
1	601.26	7	602.1	159.58	602.95	338	605		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-55.01	.045	-7	.055	7	.045

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
7	7	100	100	.1	.3

CROSS SECTION

RIVER: Poliseda
REACH: Arroyo RS: 439

INPUT
Description:
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-72.39	603.46	-35.85	602.5	-6.95	602.35	-1	600.06	0	600.05
1	600.07	6.98	602.4	98	603.02	114.98	603.34		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-72.39	.045	-6.95	.035	6.98	.045

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-6.95	6.98	100	100	.1	.3

CROSS SECTION

RIVER: Poliseda
REACH: Arroyo RS: 339

INPUT
Description:
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-182.79	605	-78.32	601.51	-4.44	600	-2	598.51	0	598.5
2	598.52	5.43	600	50.1	600.58	240.321	602.2	311	605

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-182.79	.045	-4.44	.035	5.43	.045

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-4.44	5.43	100	100	.1	.3

CROSS SECTION

RIVER: Poliseda
REACH: Arroyo RS: 239

INPUT
Description:
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-451	605	-209	604.9	-40.42	600.81	-7.26	600	-1	598.61
0	598.39	1	598.4	3.3	600	15.35	600.17	21.12	600.23
108.34	603.38	136.4	601.26						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-451	.045	-7.26	.035	3.3	.045

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-7.26	3.3	100	100	.1	.3

CROSS SECTION

RIVER: Poliseda
REACH: Arroyo RS: 139

INPUT
Description:
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-172.72	602.8	-112.5	604.57	-105.39	604.13	-67.05	602.37	-8.26	600
-1.2	598.3	0	598.29	1	598.3	2.62	600	15.16	600
71.74	600	94.08	600.27	98.76	600.54	343	600	452	602.9

BD

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
172.72 .045 -8.26 .035 2.62 .045

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-8.26 2.62 100 100 100 .1 .3

SUMMARY OF MANNING'S N VALUES

River:Poligono

Reach	River Sta.	n1	n2	n3
Arroyo	1439	.045	.035	.045
Arroyo	1339	.045	.035	.045
Arroyo	1239	.045	.035	.045
Arroyo	1139	.045	.035	.045
Arroyo	1039	.045	.035	.045
Arroyo	939	.045	.035	.045
Arroyo	839	.045	.035	.045
Arroyo	739	.045	.035	.045
Arroyo	639	.045	.035	.045
Arroyo	539	.045	.035	.045
Arroyo	439	.045	.035	.045
Arroyo	339	.045	.035	.045
Arroyo	239	.045	.035	.045
Arroyo	139	.045	.035	.045

SUMMARY OF REACH LENGTHS

River: Poligono

Reach	River Sta.	Left	Channel	Right
Arroyo	1439	100	100	100
Arroyo	1339	100	100	100
Arroyo	1239	100	100	100
Arroyo	1139	100	100	100
Arroyo	1039	100	100	100
Arroyo	939	100	100	100
Arroyo	839	100	100	100
Arroyo	739	100	100	100
Arroyo	639	100	100	100
Arroyo	539	100	100	100
Arroyo	439	100	100	100
Arroyo	339	100	100	100
Arroyo	239	100	100	100
Arroyo	139	100	100	100

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Poligono

Reach	River Sta.	Contr.	Expan.
Arroyo	1439	.1	.3
Arroyo	1339	.1	.3
Arroyo	1239	.1	.3
Arroyo	1139	.1	.3
Arroyo	1039	.1	.3
Arroyo	939	.1	.3
Arroyo	839	.1	.3
Arroyo	739	.1	.3
Arroyo	639	.1	.3
Arroyo	539	.1	.3
Arroyo	439	.1	.3
Arroyo	339	.1	.3
Arroyo	239	.1	.3
Arroyo	139	.1	.3

BD

Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Arroyo	1439	T 5	0.72	607.64	607.87	607.87	607.96	0.022326	1.39	0.52	2.67	1.00
Arroyo	1439	T 500	13.36	607.64	608.86	608.86	609.27	0.015326	2.86	6.68	5.71	1.01
Arroyo	1339	T 5	0.72	605.07	605.23	605.30	605.40	0.029878	1.52	0.47	2.68	1.15
Arroyo	1339	T 500	13.36	605.07	605.99	606.25	606.84	0.042491	4.08	3.27	5.19	1.64
Arroyo	1239	T 5	0.72	603.50	603.96	603.72	603.97	0.001637	0.55	1.31	3.76	0.30
Arroyo	1239	T 500	13.36	603.50	605.61	604.66	605.63	0.000474	0.79	28.16	53.12	0.20
Arroyo	1139	T 5	0.72	603.25	603.86		603.87	0.000662	0.41	1.75	3.84	0.19
Arroyo	1139	T 500	13.36	603.25	605.57		605.59	0.000365	0.71	36.54	88.12	0.17
Arroyo	1039	T 5	1.44	603.30	603.45	603.42	603.57	0.015398	1.52	0.95	3.17	0.89
Arroyo	1039	T 500	26.72	603.08	604.80	604.80	605.35	0.014007	5.29	8.13	7.50	1.31
Arroyo	939	T 5	1.44	602.80	603.45		603.45	0.000257	0.25	5.01	18.64	0.13
Arroyo	939	T 500	26.72	602.80	604.61	603.76	604.64	0.000417	0.79	49.61	56.37	0.20
Arroyo	839	T 5	1.44	602.75	603.35	603.11	603.39	0.002895	0.86	1.69	3.73	0.40
Arroyo	839	T 500	26.72	602.75	604.53	604.43	604.56	0.001679	1.18	54.41	194.49	0.35
Arroyo	739	T 5	1.44	602.55	603.19		603.20	0.001201	0.53	2.72	6.82	0.27
Arroyo	739	T 500	26.72	602.55	604.25		604.35	0.002738	1.49	31.97	151.62	0.47
Arroyo	639	T 5	1.44	602.49	602.78	602.78	602.88	0.020817	1.38	1.05	5.37	1.00
Arroyo	639	T 500	26.72	602.49	603.76	603.76	603.94	0.006419	2.00	19.37	74.46	0.70
Arroyo	539	T 5	2.16	601.24	601.67	601.58	601.72	0.007111	1.00	2.16	8.05	0.61
Arroyo	539	T 500	40.08	601.24	602.74	602.45	602.78	0.001250	1.09	69.55	157.96	0.33
Arroyo	439	T 5	2.16	600.05	600.47	600.47	600.62	0.018888	1.74	1.24	4.09	1.00
Arroyo	439	T 500	40.08	600.05	601.89	601.89	602.13	0.012860	3.27	12.26	11.43	1.01
Arroyo	339	T 5	2.16	598.50	598.74	598.80	598.76	0.000118	0.27	7.86	8.82	0.09
Arroyo	339	T 500	40.08	598.50	600.99	600.37	601.02	0.000528	1.01	85.77	151.01	0.23
Arroyo	239	T 5	6.11	598.39	598.63		598.68	0.001683	0.94	6.52	8.59	0.34
Arroyo	239	T 500	59.37	598.39	600.67		600.87	0.003801	2.33	47.72	107.60	0.58
Arroyo	139	T 5	6.83	598.20	598.22	598.34	598.35	0.007036	1.64	4.18	6.88	0.67
Arroyo	139	T 500	72.73	598.29	600.37	600.37	600.46	0.003684	2.04	98.08	374.12	0.55