00BREAK00

1) COUNTY: Clare and Isabella

2) STUDY NAME: City of Clare

3) WATERCOURSE: Little Tobacco Drain

4) DOCUMENT TYPE: 100 yr encroached

00BREAK00

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*****************************************************
*  WATER SURFACE PROFILES                           *
*  VERSION OF NOVEMBER 1976                         *
*  UPDATED MAY 1984                                 *
*                                                   *
*  RUN DATE   3 JUL 90 TIME   15:04:05              *
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*  U.S. ARMY CORPS OF ENGINEERS
*  THE HYDROLOGIC ENGINEERING CENTER
*  609 SECOND STREET, SUITE D
*  DAVIS, CALIFORNIA 95616
*  (916) 440-2105 (FTS) 448-2105
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X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                        X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
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Appears reasonable

NOTE: THE SECNO'S BEGIN 1000 FT U/S OF THE CORPORATE LIMIT. THEREFORE TO COMPARE TO THE FIS REPORT STATIONING, 1000 FT MUST BE ADDED TO THESE VALUES

CITY OF CLARE, MI
SPECIAL PROBLEM REPORT
LITTLE TOBACCO DRAIN
HEC-2 ENCROACHED RUN

THIS RUN EXECUTED 3 JUL 90 15:04:05

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*****************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
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C
T1   CLARE, MI -FIS, SPECIAL PROBLEM REPORT
T2   LITTLE TOBACCO DRAIN
T3   100 YEAR FLOOD, ENCROACHED RUN

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

      0.        2.        0.        0.   0.000000    0.00      0.0       0.     820.000    0.000

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

   110.000   150.000   200.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

NC      0.070     0.070     0.040     0.300     0.500     0.000     0.000     0.000     0.000     0.000
QT      2.000   550.000   550.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
ET      0.000     0.000     1.400     0.000     0.000     0.000     0.000     0.000     0.000     0.000
        CROSS SECTION #1 MOVED DOWNSTREAM TO CORPORATE LIMIT
X1      0.000    26.000   237.000   250.000     0.000     0.000     0.000     0.000     0.000     0.000
GR    824.400     0.000   822.600    25.000   821.100    50.000   818.400    75.000   816.500   100.000
GR    815.900   125.000   815.400   150.000   815.900   175.000   816.000   200.000   816.600   225.000
GR    816.300   237.000   814.900   238.000   813.900   240.000   813.300   245.000   814.900   249.500
GR    816.700   250.000   816.000   275.000   816.200   300.000   816.100   325.000   816.600   350.000
GR    817.900   375.000   820.300   400.000   821.400   425.000   821.700   450.000   822.100   475.000
GR    822.600   500.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

        CROSS SECTION #1
X1    220.000     0.000     0.000     0.000   220.000   220.000   220.000     0.000     0.000     0.000

X1   1010.000     0.000     0.000     0.000   790.000   790.000   790.000     0.000     2.150     0.000

X1   1105.000    12.000   546.000   563.000    95.000    95.000    95.000     0.000    -0.270     0.000
GR    826.230     0.000   819.580   388.000   819.680   546.000   817.280   549.000   816.480   550.000
GR    815.980   556.000   817.280   561.000   819.030   563.000   820.230   606.000   820.530   627.000
GR    821.030   649.000   826.630   765.000     0.000     0.000     0.000     0.000     0.000     0.000

X1   1200.000     0.000     0.000     0.000    95.000    95.000    95.000     0.000     0.270     0.000
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ET      0.000       0.000       4.100     700.000     880.500       0.000       0.000       0.000       0.000       0 000
X1   1400.000      20.000     854.000     875.000     200.000     200.000     200.000       0.000      -1.090       0.000
GR    827.000       0.000     822.100     700.000     822.100     725.000     821.700     750.000     822.500     775.000
GR    822.100     800.000     822.700     825.000     822.000     854.000     818.600     859.000     818.000     860.000
GR    817.700     865.000     817.600     870.000     818.600     872.000     820.300     875.000     822.500     900.000
GR    823.200     925.000     823.800     950.000     824.500     975.000     827.400    1000.000     829.600    1010.000

ET      0.000       0.000       4.100     682.600     883.800       0.000       0.000       0.000       0.000       0.000
        CROSS SECTION #2
X1   1800.000       0.000       0.000       0.000     400.000     400.000     400.000       0.000       1.090       0.000

NC      0.050       0.040       0.000       0.300       0.500       0.000       0.000       0.000       0.000       0.000
ET      0.000       0.000       4.100     708.300     883.700       0.000       0.000       0.000       0.000       0.000
X1   1900.000       0.000       0.000       0.000     100.000     100.000     100.000       0.000       0.510       0.000

ET      0.000       0.000       4.100     700.000     882.400       0.000       0.000       0.000       0.000       0.000
X1   2000.000       0.000       0.000       0.000     100.000     100.000     100.000       0.000       0.520       0.000

NC      0.050       0.040       0.000       0.500       1.000       0.000       0.000       0.000       0.000       0.000
ET      0.000       4.100       6.100     719.240     917.150     719.240     898.270       0.000       0.000       0.000
X1   2160.000       0.000       0.000       0.000     160.000     160.000     160.000       0.000       0.820       0.000

ET      0.000       4.100       6.100     793.210     920.250     793.210     898.410       0.000       0.000       0.000
X1   2300.000       0.000       0.000       0.000     140.000     140.000     140.000       0.000       0.720       0.000

ET      0.000       4.100       6.100     847.000     922.260     847.000     898.550       0.000       0.000       0.000
X1   2400.000       0.000       0.000       0.000     100.000     100.000     100.000       0.000       0.520       0.000

ET      0.000       4.100       4.100     840.050     888.950       0.000       0.000       0.000       0.000       0.000
X1   2450.000       0.000       0.000       0.000      50.000      50.000      50.000       0.000       0.260       0.000

ET      0.000       4.100       4.100     852.550     876.450       0.000       0.000       0.000       0.000       0.000
X1   2500.000       0.000       0.000       0.000      50.000      50.000      50.000       0.000       0.250       0.000

ET      0.000       4.100       4.100     217.250     237.150       0.000       0.000       0.000       0.000       0.000
X1   2508.000       8.000     220.000     234.400       8.000       8.000       8.000       0.000       0.000       0.000
GR    830.000       0.000     829.400     190.000     821.300     220.000     821.300     220.100     821.300     234.300
GR    821.300     234.400     829.400     270.000     830.000     500.000       0.000       0.000       0.000       0.000

ET      0.000       4.100       4.100     218.750     235.650       0.000       0.000       0.000       0.000       0.000
X1   2514.000       0.000       0.000       0.000       6.000       6.000       6.000       0.000       0.000       0.000

        CROSS SECTION DOWNSTREAM OF EAST 6TH BRIDGE
X1   2519.000       8.000     220.000     234.400       5.000       5.000       5.000       0.000       0.000       0.000
X3     10.000       0.000       0.000       0.000       0.000       0.000       0.000     828.800     828.800       0.000
GR    830.000       0.000     829.400     190.000     821.300     220.000     821.300     220.100     821.300     234.300
GR    821.300     234.400     829.400     270.000     830.000     500.000       0.000       0.000       0.000       0.000
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NC      0.000      0.000      0.020      0.000      0.000      0.000      0.000      0.000      0.000      0.000
        DOWNSTREAM FACE OF EAST 6TH ST.  BRIDGE
X1   2520.000      0.000      0.000      0.000      1.000      1.000      1.000      0.000      0.000      0.000
X3     10.000      0.000      0.000      0.000      0.000      0.000      0.000    829.400    829.400      0 000
BT     -6.000    190.000    829.400      0.000    220.000    829.400    821.300    220.100    829.400    828.200
BT      0.000    234.300    829.400    828.200    234.400    829.400    821.300    270.000    829.400      0.000

        UPSTREAM FACE OF EAST 6TH ST.  BRIDGE
X1   2556.000      0.000      0.000      0.000     36.000     36.000     36.000      0.000      0.000      0.000
X2      0.000      0.000      0.000      0.000      0.000      0.000      1.000      0.000      0.000      0.000
X3     10.000      0.000      0.000      0.000      0.000      0.000      0.000    829.400    829.400      0.000

        CROSS SECTION UPSTREAM OF 6TH STREET BRIDGE
X1   2557.000      0.000      0.000      0.000      1.000      1.000      1.000      0.000      0.000      0.000
X3     10.000      0.000      0.000      0.000      0.000      0.000      0.000    829.400    829.400      0.000

ET      0.000      4.100      4.100    217.000    237.400      0.000      0.000      0.000      0.000      0.000
X1   2560.000      0.000      0.000      0.000      3.000      3.000      3.000      0.000      0.000      0.000

ET      0.000      4.100      4.100    212.000    242.400      0.000      0.000      0.000      0.000      0.000
X1   2565.000      0.000      0.000      0.000      5.000      5.000      5.000      0.000      0.010      0.000

ET      0.000      0.000      1.400      0.000      0.000      0.000      0.000      0.000      0.000      0.000
X1   2760.000      0.000      0.000      0.000    195.000    195.000    195.000      0.000      0.230      0.000

NC      0.040      0.000      0.035      0.000      0.000      0.000      0.000      0.000      0.000      0.000
        DOWNSTREAM FACE OF FIFTH ST.  BRIDGE
X1   2960.000     20.000    232.000    250.000    200.000    200.000    200.000      0.866      0.000      0.000
X3     10.000      0.000      0.000      0.000      0.000      0.000      0.000    828.800    828.800      0.000
GR    831.900      0.000    831.700     50.000    831.500    100.000    831.400    150.000    831.100    200.000
GR    826.600    232.000    826.500    232.100    821.800    233.000    821.500    234.000    821.100    235.000
GR    820.900    240.000    820.800    245.000    821.300    248.000    826.500    248.900    826.600    250.000
GR    831.100    300.000    831.200    350.000    831.400    400.000    831.800    450.000    832.300    500.000

SB      0.000      1.600      2.800      0.000     15.600      0.000     80.000      0.000      0.000      0.000
NC      0.000      0.000      0.020      0.000      0.000      0.000      0.000      0.000      0.000      0.000
ET      0.000      4.100      4.100    200.910    216.500      0.000      0.000      0.000      0.000      0.000
        UPSTREAM FACE OF FIFTH STREET BRIDGE
X1   3006.000      0.000      0.000      0.000     46.000     46.000     46.000      0.000      0.000      0.000
X2      0.000      0.000      1.000    826.500    831.100      0.000      0.000      0.000      0.866      0.000
BT     -7.000      0.000    831.900      0.000    200.000    831.100      0.000    232.000    831.100      0.000
BT      0.000    232.100    831.100    826.500    248.900    831.100    826.500    250.000    831.100      0.000
BT      0.000    300.000    831.100      0.000      0.000      0.000      0.000      0.000      0.000      0.000

NC      0.000      0.000      0.035      0.000      0.000      0.000      0.000      0.000      0.000      0.000
ET      0.000      4.100      6.100     64.000    354.000    181.000    239.000      0.000      0.000      0.000
        DOWNSTREAM FACE OF FOURTH STREET BRIDGE
X1   3300.000      8.000    200.000    218.500    294.000    294.000    294.000      0.766      0.000      0.000
GR    830.000      0.000    829.400    180.000    821.300    200.000    821.300    200.100    821.300    218.400
GR    821.300    218.500    829.400    240.000    830.000    500.000      0.000      0.000      0.000      0.000
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SB      0.000      1.800      3.000      0.000     14.000      0.000     78.000      0.000      0.000      0.000
NC      0.000      0.000      0.023      0.000      0.000      0.000      0.000      0.000      0.000      0.000
ET      0.000      4.100      6.110      0.100    338.000    130.000    225.000      0.000      0.000      0.000
        UPSTREAM FACE OF FOURTH STREET BRIDGE
X1   3365.000      0.000      0.000      0.000     65.000     65.000     65.000      0.000      0.000      0.000
X2      0.000      0.000      1.000    826.800    829.400      0.000      0.000      0.000      0.766      0.000
BT     -6.000      0.000    830.000      0.000    200.000    829.400    821.300    200.100    829.400    826.800
BT      0.000    218.400    829.400    826.800    218.500    829.400    821.300    240.000    829.400      0.000

NC      0.000      0.000      0.040      0.600      0.000      0.000      0.000      0.000      0.000      0.000
ET      0.000      4.100      6.100      0.100    390.000    220.000    350.000      0.000      0.000      0.000
        CROSS SECTION #4
X1   3400.000     25.000    250.000    267.000     35.000     35.000     35.000      0.000      0.000      0.000
GR    830.200      0.000    830.800     25.000    830.500     50.000    830.600     75.000    827.000    100.000
GR    826.900    125.000    829.900    150.000    829.300    175.000    826.700    200.000    825.700    225.000
GR    824.900    250.000    821.900    252.000    820.900    255.000    820.400    260.000    821.900    265.000
GR    825.000    267.000    825.600    275.000    825.700    300.000    826.000    325.000    826.400    350.000
GR    826.300    375.000    826.600    400.000    827.100    425.000    826.800    450.000    835.000    500.000

NC      0.050      0.080      0.000      0.300      0.500      0.000      0.000      0.000      0.000      0.000
ET      0.000      4.100      6.100    111.200    303.200    150.000    302.000      0.000      0.000      0.000
        DOWNSTREAM FACE OF THIRD ST. BRIDGE
X1   3840.000      8.000    200.000    214.400    440.000    440.000    440.000      0.000      0.000      0.000
GR    828.000      0.000    827.500    180.000    822.200    200.000    822.200    200.100    822.200    214.300
GR    822.200    214.400    827.500    230.000    828.000    500.000      0.000      0.000      0.000      0.000

SB      0.000      1.520      3.000      0.000     14.300      0.000     64.000      0.000      0.000      0.000
NC      0.000      0.000      0.022      0.000      0.900      0.000      0.000      0.000      0.000      0.000
ET      0.000      4.100      6.110    111.000    294.000    150.000    302.000      0.000      0.000      0.000
        UPSTREAM FACE OF THIRD ST. BRIDGE
X1   3858.000      0.000      0.000      0.000     18.000     18.000     18.000      0.000      0.000      0.000
X2      0.000      0.000      1.000    826.700    827.500      0.000      0.000      0.000      0.000      0.000
BT     -6.000    180.000    827.500      0.000    200.000    827.500    822.200    200.100    827.500    826.700
BT      0.000    214.300    827.500    826.700    214.400    827.500    822.200    230.000    827.500      0.000

NC      0.080      0.000      0.040      0.000      0.900      0.000      0.000      0.000      0.000      0.000
ET      0.000      4.100      1.400    163.000    201.600      0.000      0.000      0.000      0.000      0.000
        CROSS SECTION #5
X1   4150.000     16.000    163.000    200.000    292.000    292.000    292.000      0.000      0.000      0.000
GR    828.100      0.000    827.100     50.000    827.500     75.000    827.300    100.000    827.600    115.000
GR    828.500    150.000    828.100    163.000    823.000    171.000    822.700    175.000    821.900    180.000
GR    823.100    184.000    825.200    185.000    832.100    200.000    834.300    225.000    836.800    250.000
GR    837.500    275.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000

NC      0.000      0.000      0.000      0.000      0.500      0.000      0.000      0.000      0.000      0.000
ET      0.000      4.100      0.000    163.000    200.000      0.000      0.000      0.000      0.000      0.000
X1   4175.000      0.000      0.000      0.000     25.000     25.000     25.000      0.000      0.450      0.000
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ET      0.000      4.100      0.000    163.000    203.250      0.000      0.000      0.000      0.000      0.000
X1   4195.000      0.000      0.000      0.000     20.000     20.000     20.000      0.000      0.360      0.000

NC      0.000      0.000      0.000      0.000      1.000      0.000      0.000      0.000      0.000      0.000
ET      0.000      4.100      0.000    167.000    208.000      0.000      0.000      0.000      0.000      0.000
        DOWNSTREAAM FACE OF 2ND ST. BRIDGE
X1   4200.000     14.000    191.000    205.000      5.000      5.000      5.000      0.000      0.000      0.000
GR    833.000      0.000    831.500    190.000    830.700    190.100    829.000    191.000    823.300    192.000
GR    822.800    196.000    822.900    201.000    823.100    204.000    829.000    205.000    830.700    205.900
GR    831.500    206.000    833.000    210.000    835.300    245.000    837.700    270.000      0.000      0.000

SB      0.000      1.490      3.000      0.000     14.000      0.000     90 000      0.000      0.000      0.000
NC      0.000      0.000      0.022      0.000      0.000      0.000      0.000      0.000      0.000      0.000
ET      0.000      4.100      1.410    180.920    212.500      0.000      0 000      0.000      0.000      0.000
        UPSTREAM FACE OF 2ND ST. BRIDGE
X1   4220.000      0.000      0.000      0.000     20.000     20.000     20.000      0.000      0.000      0.000
X2      0.000      0.000      1.000    829.000    831.500      0.000      0.000      0.000      0.000      0.000
BT     -4.000    190.000    831.500      0.000    191.000    831.500    829.000    205.000    831.500    829.000
BT      0.000    206.000    831.500      0.000      0.000      0.000      0.000      0.000      0.000      0.000

NC      0.050      0.050      0.035      0.000      0.500      0.000      0.000      0.000      0.000      0.000
ET      0.000      1.400      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
        DOWNSTREAM FACE OF C&O R.R.
X1   4259.000     16.000    238.000    250.000     39.000     39.000     39.000      0.000      0.000      0.000
X3     10.000      0.000      0.000      0.000      0.000      0.000      0.000    833.400    833.400      0.000
GR    835.900      0.000    835.900     50.000    836.000    100.000    836.200    150.000    836.400    200.000
GR    830.200    238.000    822.500    240.000    822.300    245.000    823.600    246.000    824.100    248.000
GR    830.200    250.000    836.900    300 000    837.300    350.000    837.600    400.000    837.900    450.000
GR    838.100    500.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000

SB      0.000      1.800      3.000      0.000     12.000      0.000    100.000      0.000      0.000      0.000
NH      7.000      0.050     50.000      1.000    150.000      0.050    238.000      0.035    250.000      0.050
NH    300.000      1.000    350.000      0.050    450.000      0.000      0.000      0.000      0.000      0.000
ET      0.000      1.410      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
        UPSTREAM FACE OF C&O R.R.
X1   4285.000      0.000      0.000      0.000     26.000     26.000     26.000      0.000      0.000      0.000
X2      0.000      0.000      1.000    830.200    836.400      0.000      0.000      0.000      0.000      0.000
X3     10.000      0.000      0.000      0.000      0.000      0.000      0.000    836.400    836.400      0.000
BT     -4.000    200.000    836.400      0.000    238.000    836.600    830.200    250.000    836.600    830.200
BT      0.000    300.000    836.900      0.000      0.000      0 000      0.000      0.000      0.000      0.000

NH      7.000      0.050     50.000      1.000    150.000      0.050    238.000      0.035    250.000      0.050
NH    300.000      1.000    350.000      0.050    450.000      0.000      0.000      0.000      0.000      0.000
ET      0.000      4.100      6.100    229.000    259.000    234.000    255.000      0.000      0.000      0.000
X1   4335.000      0.000      0.000      0.000     50.000     50.000     50.000      0.000      0.050      0.000

NH      7.000      0.050     50.000      1.000    150.000      0.050    238.000      0.035    250.000      0.050
NH    300.000      1.000    350.000      0.050    450.000      0.000      0.000      0.000      0.000      0.000
ET      0.000      4.100      6.100    220 000    268.000    230.000    260.000      0.000      0.000      0.000
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X1   4464.000     0.000     0.000     0.000   129.000   129.000   129.000     0.000     0.050     0.000

NH      7.000     0.050    50.000     1.000   150.000     0.050   238.000     0.035   250.000     0.050
NH    300.000     1.000   350.000     0.050   450.000     0.000     0.000     0.000     0.000     0.000
ET      0.000     0.000     4.100   226.000   264.000     0.000     0.000     0.000     0.000     0.000
X1   4643.000     0.000     0.000     0.000   179.000   179.000   179.000     0.000     0.100     0.000

NH      7.000     0.050   600.000     1.000   650.000     0.050   800.000     0.035   817.200     0.050
NH   1052.000     1.000  1152.000     0.050  1250.000     0.000     0.000     0.000     0.000     0.000
ET      0.000     4.100     6.100   210.080  1250.000   740.000   950.000     0.000     0.000     0.000
         CROSS SECTION DOWNSTREAM OF MCEWAN ST.
X1   5000.000    16.000   800.000   817.200   357.000   357.000   357.000     0.000     0.000     0.000
GR    836.600     0.000   833.000   600.000   832.900   650.000   831.600   800.000   830.400   800.100
GR    823.500   800.200   822.700   808.000   822.700   808.100   822.700   809.000   822.700   809.100
GR    823.900   817.000   830.400   817.100   831.600   817.200   832.100  1052.000   834.400  1152.000
GR    836.600  1250.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

NH      7.000     0.050   600.000     1.000   650.000     0.050   800.000     0.035   817.200     0.050
NH   1052.000     1.000  1152.000     0.050  1250.000     0.000     0.000     0.000     0.000     0.000
ET      0.000     4.100     6.100   209.080  1250.000   740.000   950.000     0 000     0.000     0.000
         DOWNSTREAM FACE OF MCEWAN ST.  BRIDGE
X1   5001.000     0 000     0.000     0.000     1.000     1.000     1.000     0.000     0.000     0.000
BT    -11.000   800.000   831.600     0.000   800.100   831.600   830.400   800.200   831.600   830.400
BT      0.000   808.000   831.600   830.400   808.100   831.600   822.700   809.000   831.600   822.700
BT      0.000   809.100   831.600   830.400   817.000   831.600   830.400   817.100   831.600   830.400
BT      0.000   817.200   831.600     0.000  1052.000   832.100     0.000     0.000     0.000     0.000

NH      7.000     0.050   600.000     1.000   650.000     0.050   800.000     0.035   817.200     0.050
NH   1052.000     1.000  1152.000     0.050  1250.000     0.000     0.000     0.000     0.000     0.000
ET      0.000     4.100     6.100   116.090  1115.140   740.000   950.000     0.000     0.000     0.000
         UPSTREAM FACE OF MCEWAN ST.  BRIDE
X1   5101.000     0.000     0.000     0.000   100.000   100.000   100.000     0.000     0.000     0.000
X2      0.000     0.000     0.000     0.000     0.000     0.000     1.000     0.000     0.000     0.000

NH      7.000     0.050   600.000     1.000   650.000     0.050   800.000     0.035   817.200     0.050
NH   1052.000     1.000  1152.000     0.050  1250.000     0.000     0.000     0.000     0.000     0.000
ET      0.000     4.100     6.100   218.350  1219.400   740.000   950.000     0.000     0.000     0.000
         CROSS SECTION UPSTREAM OF MCEWAN ST.  BRIDGE
X1   5102.000     0.000     0.000     0.000     1.000     1.000     1.000     0.000     0.000     0.000

NC      0.080     0.050     0.040     0.300     0.500     0.000     0.000     0.000     0.000     0.000
ET      0.000     0.000     4.100   800.000  1000.000     0.000     0.000     0.000     0.000     0.000
         CROSS SECTION #7
X1   5324.000    23.000   897.000   915.000   222.000   222.000   222.000     0.000     0.000     0.000
GR    836.600     0.000   830.100   740.000   830.000   765.000   830.300   790.000   830.100   815.000
GR    830.800   840.000   829.800   865.000   827.000   890.000   825.900   897.000   824.100   899.000
GR    823.200   900.000   823.700   905.000   823.600   910.000   824.200   912.000   825.800   915.000
GR    826.500   940.000   827.800   965.000   829.100   990.000   829.600  1015.000   832.200  1040.000
GR    832.400  1065.000   833.900  1090.000   836.600  1100.000     0.000     0.000     0.000     0.000
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NC      0.045      0.045      0.035      0.000      0.000      0.000      0.000      0.000      0.000      0.000
ET      0.000      0.000      4.100    672.000    923.000      0.000      0.000      0.000      0.000      0.000
        CROSS SECTION DOWNSTREAM OF MAPLE ST.  BRIDGE
X1   6100.000     12.000    875.000    892.100    776.000    776.000    776.000      0.818      0.000      0.000
GR    836.600      0.000    830.400    675.000    831.500    845.000    826.500    865.000    824.700    875.000
GR    824.700    875.100    824.700    892.000    824.700    892.100    826.500    900.000    832.000    925.000
GR    832.900    935.000    836.600   1150.000      0.000      0.000      0.000      0.000      0.000      0.000

ET      0.000      0.000      4.100    550.000    755.000      0.000      0.000      0.000      0.000      0.000
        DOWNSTREAM FACE OF MAPLE ST.  BRIDGE
X1   6101.000      0.000      0.000      0.000      1.000      1.000      1.000      0.000      0.000      0.000
X2      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.818      0.000
X3     10.000      0.000      0.000      0.000      0.000      0.000      0.000    830.600    830.600      0.000
BT    -12.000      0.000    836 600      0.000    675.000    830.400      0.000    845.000    831.500      0.000
BT      0.000    865.000    831.700      0.000    875.000    831.800    824.700    875.100    831.800    829.400
BT      0.000    892.000    831.800    829.400    892.100    831.800    824.700    900.000    831.900      0.000
BT      0.000    925.000    832.000      0.000    935.000    832.900      0.000   1150.000    836.600      0.000

NC      0.000      0.000      0.020      0.000      0.000      0.000      0.000      0.000      0.000      0.000
ET      0.000      0.000      4.100    550.000    755.000      0.000      0.000      0 000      0.000      0.000
        UPSTREAM FACE OF MAPLE ST.  BRIDGE
X1   6145.000      0.000      0.000      0.000     44.000     44.000     44.000      0.000      0.000      0.000
X2      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.818      0.000
X3     10.000      0.000      0.000      0.000      0.000      0.000      0.000    831.800    831.800      0.000
BT    -12.000      0.000    836.600      0.000    675.000    830.400      0.000    845.000    831.500      0.000
BT      0.000    865.000    831.700      0.000    875.000    831.800    824.700    875.100    831.800    829.400
BT      0.000    892.000    831.800    829.400    892.100    831.800    824.700    900.000    831.900      0.000
BT      0.000    925.000    832.000      0.000    935.000    832.900      0.000   1150.000    836.600      0.000

ET      0.000      0.000      4.100    550.000    755.000      0.000      0.000      0.000      0.000      0.000
        CROSS SECTION UPSTREAM OF MAPLE ST.  BRIDE
X1   6146.000      0.000      0.000      0.000      1.000      1.000      1.000      0.000      0.000      0.000

NC      0.070      0.000      0.040      0.100      0.300      0.000      0.000      0.000      0.000      0.000
ET      0.000      0.000      4.100     20.000    270.000      0.000      0.000      0.000      0.000      0.000
        CROSS SECTION #8
X1   7400.000     20.000     35.000     60.000   1254.000   1254.000   1254.000      0.000      0.000      0.000
GR    841.300      0.000    829.400     25.000    829.400     35.000    826.400     38.000    824.300     40.000
GR    824.700     45.000    825.600     50.000    826.300     51.000    829.600     60.000    828.800     85.000
GR    828.800    110.000    828.500    135.000    828.600    160.000    828.500    185.000    828.400    210.000
GR    828.300    235.000    828.400    260.000    828.600    285.000    832.000    400.000    836.600    405.000

ET      0.000      0.000      4.100     20.000    270.000      0.000      0.000      0.000      0.000      0.000
        CROSS SECTION AT UPSTREAM CORPORATE LIMIT
X1   7600.000      0.000      0.000      0.000    200.000    200.000    200.000      0.000      0.000      0.000
EJ      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

*PROF 1

CCHV=   0.300 CEHV=   0.500
*SECNO 0.000
        CROSS SECTION #1 MOVED DOWNSTREAM TO CORPORATE LIMIT
     0.00      6.70    820.00      0.00    820.00    820.00      0.00      0.00      0.00    816.30
     550.      281.       71.      198.      624.       76.      468.        0.        0.     816.70
     0.00      0.45      0.93      0.42     0.070     0.040     0.070     0.000    813.30     60.19
 0.000076         0        0.        0.         0         0         0      0.00    336.69    396.88

*SECNO 220.000
        CROSS SECTION #1
   220.00      6.72    820.02      0.00      0.00    820.02      0.00      0.02      0.00    816.30
     550.      281.       71.      198.      627.       76.      470.        6.        2.     816.70
     0.12      0.45      0.93      0.42     0.070     0.040     0.070     0.000    813.30     60.03
 0.000075      220.      220.      220.         0         0         0      0.00    337.02    397.05

*SECNO 1010.000
  1010.00      4.69    820.14      0.00      0.00    820.17      0.03      0.14      0.01    818.45
     550.      272.      115.      163.      289.       50.      194.       21.        7.     818.85
     0.31      0.94      2.29      0.84     0.070     0.040     0.070     0.000    815.45     80.34
 0.000802      790.      790.      790.         2         0         0      0 00    295.64    375.98

*SECNO 1105 000
  1105.00      4.46    820.17      0.00      0.00    820.45      0.28      0.15      0.12    819.41
     550.      185.      319.       46.      152.       58.       37.       22.        8.     818.76
     0.31      1.22      5.45      1.24     0.070     0.040     0.070     0.000    815.71    337.23
 0.004790       95.       95.       95.         1         0         0      0.00    284.17    621.41

*SECNO 1200.000
  1200.00      4.69    820 67      0.00      0.00    820.83      0.16      0.35      0.03    819.68
     550.      219.      275.       56.      199.       62.       51.       23.        9.     819.03
     0.32      1.10      4.42      1.09     0.070     0.040     0.070     0.000    815.98    324.38
 0.002900       95.       95.       95.         3         0         0      0.00    308.80    633.18

*SECNO 1400.000
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  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


3265 DIVIDED FLOW

  1400.00     4.75    821.26    820.37      0.00    821.81      0.54      0.78      0.19    820.91
     550.      25.      487.      39.       35.      78.       24.       24.       10.     819.21
     0.33     0.69      6.27      1.61     0.070    0.040     0.070     0.000    816.51    663.27
 0.005588     200.      200.      200.         4       15         0      0.00    193.21    898.38

*SECNO 1800.000
        CROSS SECTION #2
  1800.00     5.37    822.97      0.00      0.00    823.15      0.18      1.24      0.11    822.00
     550.     127.      372.      51.      174.      91.       43.       26.       12.     820.30
     0.37     0.73      4.11      1.18     0 070    0.040     0.070     0.000    817.60    575.59
 0.001960     400.      400.      400.         1        0         0      0.00    341.23    916.82

CCHV=   0.300 CEHV=   0.500
*SECNO 1900.000

3265 DIVIDED FLOW

  1900.00     5.06    823.17      0.00      0.00    823 42      0.25      0.23      0.04    822.51
     550.      87.      391.      72.       93.      84.       32.       27.       13.     820.81
     0.38     0.93      4.66      2.25     0.050    0.040     0.040     0.000    818.11    620.32
 0.002780     100.      100.      100.         3        0         0      0.00    281.80    905.63

*SECNO 2000.000

3265 DIVIDED FLOW

  2000.00     4.80    823.43    822.51      0.00    823.85      0.42      0.35      0.08    823.03
     550.      39.      446.      65.       43.      79.       25.       27.       14.     821.33
     0.38     0.92      5.67      2.57     0.050    0.040     0.040     0.000    818 63    656.63
 0.004505     100.      100.      100.         4       15         0      0.00    208.59    898.90

CCHV=   0.500 CEHV=   1.000
*SECNO 2160.000

3265 DIVIDED FLOW
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  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


3470 ENCROACHMENT STATIONS=     719.2     917.1  TYPE=     1  TARGET=     197.910
  2160.00     4.75    824.20    823.33      0.00    824.67     0.48      0.76      0.06    823.85
     550.      25.      461.      64.       25.       77.      24.       27.       14.     822.15
    0.39     1.00      5.96      2.68     0.050     0.040    0.040     0.000    819.45    719.24
 0.005067     160.      160.      160.         4        15        0      0.00    135.43    898.27

*SECNO 2300.000

3265 DIVIDED FLOW


3470 ENCROACHMENT STATIONS=     793.2     920 2  TYPE=     1  TARGET=     127.040
  2300.00     4.76    824.93      0.00      0.00    825.46     0.53      0.73      0.05    824.57
     550.       4.      479.      67.        5.       78.      24.       28.       15.     822.87
    0.40     0.68      6.17      2.78     0.050     0.040    0.040     0.000    820.17    793.21
 0.005408     140.      140.      140.         2         0        0      0.00     76.93    898.41

*SECNO 2400.000

3470 ENCROACHMENT STATIONS=     847.0     922.3  TYPE=     1  TARGET=      75.260
  2400.00     4.78    825.47      0.00      0.00    826.00     0.53      0.54      0.00    825.09
     550.       2.      480.      68.        2       78.      24.       28.       15.     823.39
    0.40     0.93      6.16      2.78     0.050     0.040    0.040     0.000    820.69    847.00
 0.005368     100.      100.      100.         1         0        0      0.00     51.55    898.55

*SECNO 2450.000

3470 ENCROACHMENT STATIONS=     840.0     889.0  TYPE=     1  TARGET=      48.900
  2450.00     4.79    825.74      0 00      0.00    826.27     0.53      0.27      0.00    825.35
     550.       2.      479.      69.        3.       78.      21.       28.       15.     823.65
    0.40     0.78      6.11      3.35     0.050     0.040    0.040     0.000    820.95    840.05
 0.005260      50.       50.       50.         0         0        0      0.00     48.90    888.95

*SECNO 2500.000

3470 ENCROACHMENT STATIONS=     852.5     876.5  TYPE=     1  TARGET=      23.900
  2500.00     4.83    826.03      0.00      0.00    826.74     0.72      0.29      0.19    825.60
     550.       1.      541.       8.        1.       79.       3.       28.       15.     823.90
    0.41     1.13      6.84      2.72     0.050     0.040    0.040     0.000    821.20    852.55
 0.006482      50.       50.       50.         2         0        0      0.00     23 90    876.45
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  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

*SECNO 2508 000

3470 ENCROACHMENT STATIONS=     217.3     237.2  TYPE=     1  TARGET=      19.900
  2508.00     4.92    826.22     0.00      0.00   826.83     0.62      0.04      0.05    821.30
     550.      34.      473.      43.       13.     71.       13.       28.       15      821.30
     0.41     2.71     6.68     3.39     0.050    0.040    0.040     0.000    821.30    217.25
 0.003866       8.        8.       8.         2        0        0      0.00     19.90    237.15

*SECNO 2514.000

3470 ENCROACHMENT STATIONS=     218.8     235.7  TYPE=     1  TARGET=      16.900
  2514.00     4.94    826.24     0.00      0.00   827.04     0.80      0.03      0.18    821.30
     550.      12.      523.      15.        6.     71.        6.       28.       15.     821.30
     0.41     2.04     7.33     2.54     0.050    0.040    0.040     0.000    821.30    218.75
 0.004623       6.        6.       6.         0        0        0      0.00     16.90    235.65

*SECNO 2519.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      828.80 ELREA=      828.80

        CROSS SECTION DOWNSTREAM OF EAST 6TH BRIDGE
  2519.00     4.97    826.27     0.00      0.00   827.19     0.92      0.02      0.12    821.30
     550.       0.      550.       0.        0.     71.       0.       28.       15.     821.30
     0.41     0.00     7.70     0.00     0.000    0.040    0.000     0.000    821.30    220 00
 0.005068       5.        5.       5.         0        0        0      0.00     14.40    234.40

*SECNO 2520.000

3370 NORMAL BRIDGE,NRD=  6 MIN ELTRD=  829.40 MAX ELLC=  828.20

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      829.40 ELREA=      829.40

        DOWNSTREAM FACE OF EAST 6TH ST.  BRIDGE
  2520.00     4.97    826.27     0.00      0.00   827.20     0.93      0.00      0.01    821.30
     550.       0.      550.       0.        0.     71.       0.       28.       15.     821.30
     0.41     0.00     7.72     0.00     0.000    0.020    0.000     0.000    821.30    220.00
 0.002581       1.        1.       1.         0        0        0    -54.66     14.40    234.40
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  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

*SECNO 2556.000

3370 NORMAL BRIDGE,NRD=  6 MIN ELTRD=  829.40 MAX ELLC=  828.20


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      829.40 ELREA=      829.40

        UPSTREAM FACE OF EAST 6TH ST.  BRIDGE
  2556.00      5.15    826.45      0.00      0.00    827.32      0.86      0.09      0.03    821.30
     550.        0.      550.        0.        0.       74.        0.       28.       15.     821.30
     0.41      0.00      7.45      0.00     0.000     0.020     0.000     0.000    821.30    220.00
 0 002334       36.       36.       36.         2         0         0    -58.79     14.40    234.40


*SECNO 2557.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      829.40 ELREA=      829.40

        CROSS SECTION UPSTREAM OF 6TH STREET BRIDGE
  2557.00      5.18    826.48      0.00      0.00    827.33      0.84      0.00      0.01    821.30
     550.        0.      550.        0.        0.       75.        0.       28.       15.     821.30
     0.41      0.00      7.37      0.00     0.000     0.020     0.000     0.000    821.30    220.00
 0.001096        1.        1.        1.         2         0         0      0.00     14.40    234.40


*SECNO 2560.000

3470 ENCROACHMENT STATIONS=      217.0      237.4  TYPE=      1  TARGET=      20.400
  2560.00      5.61    826.91      0.00      0.00    827 47      0.56      0.00      0.14    821.30
     550.       20.      506.       25.       16.       81.       16.       28.       15.     821.30
     0.41      1.25      6.27      1.56     0.050     0.020     0.040     0.000    821.30    217.00
 0.000714        3.        3.        3.         3         0         0      0.00     20.40    237.40


*SECNO 2565.000

3470 ENCROACHMENT STATIONS=      212.0      242.4  TYPE=      1  TARGET=      30.400
  2565.00      5.98    827.29      0.00      0.00    827.60      0.31      0.00      0.13    821.31
     550.       52.      430.       68.       39.       86.       41.       28.       15.     821.31
     0.41      1.33      4.99      1.67     0.050     0.020     0.040     0.000    821.31    212.00
 0.000416        5.        5.        5.         2         0         0      0.00     30.40    242.40
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  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

*SECNO 2760.000
 2760.00     5.97    827.51      0.00      0.00    827.72      0.21      0.07      0.05    821.54
    550.      71.      374.      106.       66.      86.       78.       29.       15.     821.54
    0.43     1.07     4.34      1.35     0.050    0.020     0.040     0.000    821.54    197.87
0.000315     195.     195.      195.         2        0         0      0.00     62.78    260 66

*SECNO 2960.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      828.80 ELREA=      828.80

        DOWNSTREAM FACE OF FIFTH ST. BRIDGE
 2960.00     6.86    827.66      0.00      0.00    828.20      0.54      0.15      0.34    826.60
    550.       0.      550.        0.        0.      93.        0.       30.       15.     826.60
    0.43     0.00     5.91      0.00     0.000    0.035     0.000     0.000    820.80    200.91
0.003236     200.     200.      200.         2        0         0      0.00     15.59    216.50


SPECIAL BRIDGE

5070, VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     0.00      1.60      2.80      0.00     15.60      0.00     80.00     0.00    820.80    820.80

*SECNO 3006.000
PRESSURE FLOW


 EGPRS      EGLWC      H3        QWEIR     QPR       BAREA   TRAPEZOID     ELLC      ELTRD
                                                              AREA
    828.83    828.20     0.00        0.      550.       80.       89.     826.50    831.10


3470 ENCROACHMENT STATIONS=     200.9     216.5  TYPE=     1  TARGET=      15.590
        UPSTREAM FACE OF FIFTH STREET BRIDGE
 3006.00     7.61    828.41      0.00      0.00    828.83      0.43      0.63      0.00    826.60
    550.       0.      550.        0.        0.     105.        0.       30.       15      826.60
    0.44     0.01     5.25      0.00     0.000    0.020     0.000     0.000    820.80    200.91
0.000784      46.      46.       46.         2        0         0      0.00     15.59    216.50


*SECNO 3300.000
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


3470 ENCROACHMENT STATIONS=      49.0     271.2  TYPE=     1  TARGET=     290.000
        DOWNSTREAM FACE OF FOURTH STREET BRIDGE
  3300.00     7.72    829.02     0.00      0.00    829.14     0.12      0.16      0.15    821.30
     550       93.      356.      101.       56.      109.      61.       31.       15.     821.30
    0.47     1.65      3.25      1.67     0.040    0.035    0.040     0.000    821.30    138.59
 0.000384     294.      294.      294.         2        0        0      0.00     44.48    183.07


SPECIAL BRIDGE

5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     0 00      1.80      3.00      0.00     14.00      0.00     78.00      0.00    821.30    821.30

*SECNO 3365 000
PRESSURE AND WEIR FLOW

 EGPRS      EGLWC      H3        QWEIR     QPR       BAREA   TRAPEZOID      ELLC      ELTRD
                                                              AREA
    830.41    829.19     0.00       98.      449.       78.       77.      826.80    829.40


3470 ENCROACHMENT STATIONS=       0.1     338.0  TYPE=     1  TARGET=     337.900
        UPSTREAM FACE OF FOURTH STREET BRIDGE
  3365.00     8.54    829.84     0.00      0.00    829.95     0.11      0.80      0.00    821.30
     550.      79.      384.       87.       91.      121.     105.       32.       16.     821.30
    0.47     0.87      3.18      0.82     0.040    0.023    0.040     0.000    821.30     37.66
 0.000139      65.       65.       65.         2        0        3      0.00    290.94    328.60


CCHV=   0.600 CEHV=   1.000
*SECNO 3400.000

3470 ENCROACHMENT STATIONS=       0.1     390.0  TYPE=     1  TARGET=     389.900
        CROSS SECTION #4
  3400 00     9.61    830.01     0.00      0.00    830.02     0.00      0.00      0.06    824.90
     550.     188.      108.      254.      422.      143.     492.       32.       16.     825.00
    0.49     0.45      0.75      0.52     0.040    0.040    0.040     0.000    820.40     79.09
 0.000031      35.       35.       35.         2        0        0      0.00    310.91    390.00
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  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

CCHV=   0.300 CEHV=   0.500
*SECNO 3840.000
3280 CROSS SECTION   3840.00 EXTENDED      2.03 FEET

3470 ENCROACHMENT STATIONS=     111.2     303.2  TYPE=     1  TARGET=     192.000
        DOWNSTREAM FACE OF THIRD ST. BRIDGE
  3840.00     7.83   830.03     0.00      0.00   830.05     0.02      0.03      0.01   822.20
     550.     219.     204.     127.      271.     113.     261.       41.       18.    822.20
    0.60     0.81     1.81     0.49     0.050    0.040    0.080    0.000    822.20   111.20
 0.000152     440.     440.     440.         2        0        0     0.00    192.00   303.20


SPECIAL BRIDGE

5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
    0.00      1.52      3.00      0.00      14.30     0.00      64.00     0.00      822.20    822.20

CCHV=   0.300 CEHV=   0.900
*SECNO 3858 000
3280 CROSS SECTION   3858.00 EXTENDED      2.18 FEET

PRESSURE AND WEIR FLOW

 EGPRS     EGLWC     H3        QWEIR     QPR       BAREA   TRAPEZOID     ELLC      EI TRD
                                                             AREA
   831.77    830.05    0.00      362.      188.      64.       64.       826.70    827.50


3470 ENCROACHMENT STATIONS=     111.0     294.0  TYPE=     1  TARGET=     183.000
        UPSTREAM FACE OF THIRD ST. BRIDGE
  3858.00     7.98   830.18     0.00      0.00   830.23     0.05      0.18      0.00   822.20
     550.     175.     282       94.      285.     115.     251.       41.       19.    822.20
    0.61     0.61     2.45     0.37     0.050    0.022    0.080    0.000    822.20   111.00
 0.000082      18.      18.      18.         2        0        7     0.00    183.00   294.00


CCHV=   0.300 CEHV=   0.900
*SECNO 4150.000

3470 ENCROACHMENT STATIONS=     163.0     201.6  TYPE=     1  TARGET=      38.600
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        CROSS SECTION #5
  4150 00      8.33    830.23      0.00      0.00    830.39      0.16      0.06      0.10    828.10
     550.        0.      550.        0.        0.      171.        0.       44.       19.    832.10
     0.63      0.00      3.22      0.00     0.000     0.040     0.000     0.000    821.90    163.00
 0.001054      292.      292.      292.         1         0         0      0.00     32.92    195.92


CCHV=   0.300 CEHV=   0.500
*SECNO 4175.000

3470 ENCROACHMENT STATIONS=      163.0      200.0  TYPE=      1  TARGET=      37.000
  4175.00      7.89    830.24      0.00      0.00    830.44      0.19      0.03      0.01    828.55
     550.        0.      550.        0.        0.      157.        0.       44.       19.  100000.00
     0.63      0.00      3.50      0.00     0.000     0.040     0.000     0.000    822.35    163.00
 0.001330       25.       25.       25.         0         0         0      0.00     31.99    194.99


*SECNO 4195.000

3470 ENCROACHMENT STATIONS=      163.0      203.3  TYPE=      1  TARGET=      40.250
  4195.00      7.55    830.26      0.00      0.00    830.48      0.22      0.03      0.01    828 91
     550.        0.      550.        0.        0.      146.        0.       44.       19.    832.91
     0.64      0.00      3.76      0.00     0.000     0.040     0.000     0.000    822.71    163.00
 0.001613       20.       20.       20.         0         0         0      0.00     31.26    194.26


CCHV=   0.300 CEHV=   1.000
*SECNO 4200.000

3470 ENCROACHMENT STATIONS=      167.0      208.0  TYPE=      1  TARGET=      41.000
        DOWNSTREAAM FACE OF 2ND ST. BRIDGE
  4200.00      7.47    830.27      0.00      0.00    830.78      0.51      0.01      0.29    829.00
     550.        0.      550.        0.        0.       96.        0.       44.       19.    829.00
     0.64      0.50      5.72      0.50     0.080     0.040     0.080     0.000    822.80    190.33
 0.003689        5.        5.        5.         0         0         0      0.00     15.34    205.67


SPECIAL BRIDGE

5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
SB   XK        XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
     0.00       1.49       3.00       0.00      14.00       0.00      90.00       0.00     822.80     822.80

*SECNO 4220.000
PRESSURE FLOW
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  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
  Q         GLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


 EGPRS      EGLWC      H3       QWEIR      QPR       BAREA   TRAPEZOID      ELLC      ELTRD
                                                              AREA
   831.14    830.78    0.00        0.       550.      90.       87.      829.00    831.50


3470 ENCROACHMENT STATIONS=      180.9     212.5  TYPE=     1  TARGET=      31.580
        UPSTREAM FACE OF 2ND ST. BRIDGE
  4220.00     7.88   830.68     0.00      0.00   831.14     0.45      0.36      0.00   829.00
     550.       0.     550.       0.        1.     102.       1.       44.       19.    829.00
     0.64     0.30     5.39     0.30     0.080    0.022    0.080    0.000   822.80   190.11
 0.000915      20.      20.      20.         2        0        0     0.00    15.79   205.89


CCHV=   0.300 CEHV=   0.500
*SECNO 4259.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      833.40 ELREA=      833.40

        DOWNSTREAM FACE OF C&O R.R.
  4259.00     8.29   830.59     0.00      0.00   831.37     0.78      0.07      0.17   830.20
     550.       0.     550.       0.        0.     77.       0.       44.       19.    830.20
     0.64     0.00     7.10     0.00     0.000    0.035    0.000    0.000   822.30   238.00
 0.005570      39.      39.      39.         2        0        0     0.00    12.00   250.00


SPECIAL BRIDGE

5070, VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     0.00      1.80      3.00      0.00     12.00      0.00    100.00     0.00    822.30    822.30

1490 NH CARD USED
*SECNO 4285.000
PRESSURE FLOW


 EGPRS      EGLWC      H3       QWEIR      QPR       BAREA   TRAPEZOID      ELLC      ELTRD
                                                              AREA
   831.44    831.37    0.00        0.       550.      100.      95.      830.20    836.40
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      836.40 ELREA=      836.40

        UPSTREAM FACE OF C&O R.R.
  4285.00      8.37    830.67      0.00      0.00    831.44      0.76      0.06      0.00    830.20
     550.        0.       550        0.        0.       78.        0.       44.       19.     830.20
     0.64      0.00      7.01      0.00     0.000     0.035     0.000     0.000    822.30    238.00
 0.005341       26.       26.       26.         3         0         0      0.00     12.00    250.00


1490 NH CARD USED
*SECNO 4335 000

3470 ENCROACHMENT STATIONS=      229.0      259.0  TYPE=      1  TARGET=      30.000
  4335.00      8.67    831.02      0.00      0.00    831.71      0.68      0.25      0.02    830.25
     550.        2.       546.       2.        2.       82.        2.       44.       19.     830.25
     0.64      1.05      6.65      1.06     0.050     0.035     0.050     0.000    822.35    233.25
 0.004524       50.       50.       50.         2         0         0      0.00     22.53    255.78


1490 NH CARD USED
*SECNO 4464.000
3280 CROSS SECTION    4464.00 EXTENDED      43.46 FEET


3470 ENCROACHMENT STATIONS=      220.0      268.0  TYPE=      1  TARGET=      48.000
  4464.00      9.31    831.71      0.00      0.00    832.24      0.53      0.49      0.05    830.30
     550.        8.       532.      10.        6.       90        7.       45.       19.     830.30
     0.65      1.32      5.94      1.32     0.050     0.035     0.050     0.000    822.40    229.37
 0.003201      129.      129.      129.         2         0         0      0.00     31.14    260.51


1490 NH CARD USED
*SECNO 4643.000
  4643.00      9.85    832.35      0.00      0.00    832.76      0.42      0.49      0.03    830.40
     550.       16.       514.      20.       12.       96.       14.       45.       20.     830.40
     0.66      1.41      5.35      1.41     0.050     0.035     0.050     0.000    822.50    226.07
 0.002366      179.      179.      179.         2         0         0      0.00     38.46    264.53


1490 NH CARD USED
*SECNO 5000.000
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  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


3470 ENCROACHMENT STATIONS=     210.1     1250.0  TYPE=     1  TARGET=    1039.920
        CROSS SECTION DOWNSTREAM OF MCEWAN ST.
  5000.00    10.35   833.05     0.00      0.00    833.09     0.04      0.21      0.11    831.60
     550.      50.     346.     154.      124.      168.     300.       48.       22.     831.60
     0.72     0.40     2.07     0.51     0.050     0.035    0 052     0.000    822.70    592.49
 0.000268     357.     357.     357.         2         0        0      0.00    500.60   1093.09


1490 NH CARD USED
*SECNO 5001.000

3370 NORMAL BRIDGE,NRD= 11 MIN ELTRD=  831.60 MAX ELLC=  830.40


3470 ENCROACHMENT STATIONS=     209.1     1250.0  TYPE=     1  TARGET=    1040.920
        DOWNSTREAM FACE OF MCEWAN ST.  BRIDGE
  5001.00    10.38   833.08     0.00      0.00    833.10     0.02      0.00      0.01    831.60
     550.      82.     221.     247.      131.      140.     308.       48.       22.     831.60
     0.72     0.63     1.58     0.80     0.051     0.035    0.052     0.000    822.70    587.46
 0.000635       1.       1.       1.         2         0        0    -28 22    506.95   1094.40


1490 NH CARD USED
*SECNO 5101.000

3370 NORMAL BRIDGE,NRD= 11 MIN ELTRD=  831.60 MAX ELLC=  830.40


3470 ENCROACHMENT STATIONS=     116.1     1115.1  TYPE=     1  TARGET=     999.050
        UPSTREAM FACE OF MCEWAN ST.  BRIDE
  5101.00    10.44   833.14     0.00      0.00    833.16     0.02      0.06      0.00    831.60
     550.      86.     212.     252.      142.      141.     323.       49.       23.     831.60
     0.75     0.61     1.50     0.78     0.051     0.035    0.052     0.000    822.70    578.43
 0.000571     100.     100.     100.         1         0        0    -28.22    518.33   1096.76


1490 NH CARD USED
*SECNO 5102.000

3470 ENCROACHMENT STATIONS=     218.4     1219.4  TYPE=     1  TARGET=    1001.050
        CROSS SECTION UPSTREAM OF MCEWAN ST.  BRIDGE
  5102.00    10.43   833.13     0.00      0.00    833.17     0.04      0.00      0.01    831.60
     550.      56.     330.     164.      144.      169.     326.       49.       23.     831.60
     0.75     0.39     1.95     0.50     0.051     0.035    0.052     0.000    822.70    576.85
 0.000236       1.       1.       1.         0         0        0      0.00    520.33   1097.17
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  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

CCHV=   0.300 CEHV=   0.500
*SECNO 5324.000
        CROSS SECTION #7
  5324.00     9 98    833.18      0.00      0.00    833.19      0.00      0.01      0.01    825.90
     550.     174.      120.      256.     1078.      165.      625.       56.       26.    825.80
    0.91      0.16      0.72      0.41     0.080     0.040     0.050     0.000    823 20    388.80
 0.000022     222.      222.      222.         2         0         0      0.00    689.28   1078.08

*SECNO 6100.000
        CROSS SECTION DOWNSTREAM OF MAPLE ST.  BRIDGE
  6100.00     8.51    833.21      0.00      0.00    833.21      0.01      0.02      0.00    824.70
     550.     316.      145.       89.      796.      119.      138.       82.       36.    824.70
    1.24      0.40      1.22      0.64     0.045     0.035     0.045     0.000    824.70    302.22
 0.000047     776.      776.      776.         2         0         0      0.00    47/.18    779.40

*SECNO 6101.000

3370 NORMAL BRIDGE,NRD= 12 MIN ELTRD=  830.40 MAX ELLC=  829.40

        DOWNSTREAM FACE OF MAPLE ST.  BRIDGE
  6101.00     8.51    833.21      0.00      0.00    833.22      0.01      0.00      0.00    824.70
     550.     461.       69.       21.      703.       85.       43.       82.       36.    824.70
    1.24      0.66      0.81      0.48     0.045     0.035     0.045     0.000    824.70    302.22
 0.000183       1.        1.        1.         0         0         0   -222.40    477.18    779.40

*SECNO 6145.000

3370 NORMAL BRIDGE,NRD= 12 MIN ELTRD=  830.40 MAX ELLC=  829.40

        UPSTREAM FACE OF MAPLE ST.  BRIDGE
  6145.00     8.51    833.21      0.00      0.00    833.22      0.01      0.01      0.00    824.70
     550.     422.      109.       19.      706.       85.       43.       83.       37.    824.70
    1.25      0.60      1.28      0.44     0.045     0.020     0.045     0.000    824.70    301.58
 0.000152       44.       44.       44.         0         0         0   -222.40    478.15    779.74

*SECNO 6146.000
        CROSS SECTION UPSTREAM OF MAPLE ST.  BRIDE
  6146.00     8.51    833.21      0.00      0.00    833.23      0.02      0.00      0.01    824.70
     550.     265.      212.       74.      799.      119.      139.       83.       37.    824.70
    1.25      0.33      1.78      0.53     0.045     0.020     0 045     0.000    824.70    301.48
 0.000033       1.        1.        1.         0         0         0      0.00    478.31    779.79
```

```
  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

CCHV=   0.100 CEHV=   0.300
*SECNO 7400 000
        CROSS SECTION #8
  7400.00     8.96    833.26      0.00      0.00    833.26      0.00      0.03      0.00    829.40
     550.      10.       81.      459.       54.      171.     1388.      121.       49.    829.60
     2 25     0.18      0.48      0.33     0.070     0.040     0.045     0.000    824.30     16.90
 0.000015    1254.     1254.     1254.         2         0         0      0.00    384.47    401.37

*SECNO 7600.000
        CROSS SECTION AT UPSTREAM CORPORATE LIMIT
  7600.00     8.96    833.26      0.00      0.00    833.26      0.00      0.00      0.00    829.40
     550.      10.       81.      459.       54.      171.     1390.      128.       51.    829.60
     2.41     0.18      0.48      0.33     0.070     0.040     0.045     0.000    824.30     16.89
 0.000015     200.      200.      200.         0         0         0      0.00    384.48    401.37
```

THIS RUN EXECUTED 3 JUL 90 15:04:15

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*****************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
*****************************************************
```

T1 CITY OF CLARE FIS, SPECIAL PROBLEM REPORT
T2 LITTLE TOBACCO DRAIN
T3 100-YEAR FLOOD, ENCROACHED RUN

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	3.	0.	0.	0.000000	0.00	0.0	0.	820.100	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

```
  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

*PROF 2

CCHV=   0.300 CEHV=   0.500
*SECNO 0.000
 2800 NAT Q1=     630.54  WSEL=     820.00  ENC Q1=     630.54  WSEL=     820.10  RATIO=  0.0000
 NAT Q1=     658.   RATIOS LOB,CH,ROB=  0.5112  0.1273  0.3615  WSEL=     820.10

3470 ENCROACHMENT STATIONS=       87.5      368.3  TYPE=      4  TARGET=        0.042
        CROSS SECTION #1 MOVED DOWNSTREAM TO CORPORATE LIMIT
     0.00      6.80    820.10      0.00    820.00    820.10      0.00      0.00      0.00    816.30
     550.      281.       73.      196.      602.       78.      442.        0.        0.     816.70
     0.00      0.47      0.94      0.44     0.070     0.040     0.070     0.000    813.30     87.52
 0.000076        0.        0.        0.         0         0         0      0.00    280.77    368.29


*SECNO 220.000
 2800 NAT Q1=     635.14  WSEL=     820.02  ENC Q1=     635.14  WSEL=     820.12  RATIO=  0.0000
 NAT Q1=     663.   RATIOS LOB,CH,ROB=  0.5112  0.1270  0.3618  WSEL=     820.12

3470 ENCROACHMENT STATIONS=       87.3      368.5  TYPE=      4  TARGET=        0.042
        CROSS SECTION #1
   220.00      6.82    820.12      0.00    820.02    820.12      0.00      0.02      0.00    816.30
     550.      281.       73.      196.      604.       78.      444.        6.        1.     816.70
     0 12      0.47      0.94      0.44     0.070     0.040     0.070     0.000    813.30     87.34
 0.000075      220.      220.      220.         0         0         0      0.00    281.12    368.46


*SECNO 1010.000
 2800 NAT Q1=     194.25  WSEL=     820.14  ENC Q1=     194.25  WSEL=     820.24  RATIO=  0.0000
 NAT Q1=     210.   RATIOS LOB,CH,ROB=  0.4960  0.2012  0.3028  WSEL=     820.24

3470 ENCROACHMENT STATIONS=      108.2      342 5  TYPE=      4  TARGET=        0.076
  1010.00      4.79    820.24      0.00    820.14    820.27      0.03      0.14      0.01    818.45
     550.      273.      120.      158.      274.       51.      174.       20.        6.     818.85
     0.29      1.00      2.33      0.91     0.070     0.040     0.070     0.000    815.45    108.24
 0.000802      790.      790.      790.         2         0         0      0.00    234.22    342.46


*SECNO 1105.000
 2800 NAT Q1=      79.47  WSEL=     820.17  ENC Q1=      79.47  WSEL=     820.27  RATIO=  0.0000
 NAT Q1=      89.   RATIOS LOB,CH,ROB=  0.3653  0.5437  0.0910  WSEL=     820.27

3470 ENCROACHMENT STATIONS=      392.4      573.5  TYPE=      4  TARGET=        0.102
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 SECNO      DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
 Q          QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
 TIME       VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
 SLOPE      XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 1105.00     4 55    820.26      0.00    820.17    820.57     0.31      0.15      0.14     819.41
    550.     191.      335.       24.      139.       60.      14.       21.        7.      818.76
    0.30     1.38      5.58      1.69     0.070     0.040    0.070     0.000    815.71     392.43
0.004873      95.       95.       95.         2         0        0      0.00    181.02     573.45

*SECNO 1200.000
 2800 NAT Q1=     102.14  WSEL=     820.67  ENC Q1=     102.14  WSEL=     820.77  RATIO=  0.0000
 NAT Q1=     114.  RATIOS LOB,CH,ROB=  0.4221  0.4691  0.1088  WSEL=     820.77

3470 ENCROACHMENT STATIONS=     386.7     579.0  TYPE=     4  TARGET=       0.103
 1200.00     4.80    820.78      0.00    820.67    820.95     0.17      0.35      0.04     819.68
    550.     229.      286.       35.      185.       64.      25.       22.        7.      819.03
    0.31     1.24      4.45      1.42     0.070     0.040    0.070     0.000    815.98     386.66
0.002823      95.       95.       95.         2         0        0      0.00    192.33     578.98

*SECNO 1400.000

3265 DIVIDED FLOW

3470 ENCROACHMENT STATIONS=     700.0     880.5  TYPE=     1  TARGET=     180.500
 1400.00     4.84    821.35    820.31    821.26    821.90     0.55      0.76      0.19     820.91
    550.      33.      496.       21.       41.       79.      10.       23.        8.      819.21
    0.32     0.80      6.25      2.00     0.070     0.040    0.070     0.000    816.51     700.00
0.005384     200.      200.      200.         4        15        0      0.00    153.80     880.50

*SECNO 1800.000

3470 ENCROACHMENT STATIONS=     682.6     883.8  TYPE=     1  TARGET=     201.200
        CROSS SECTION #2
 1800.00     5.45    823.05      0.00    822.97    823.25     0.20      1.25      0.10     822.00
    550.     129.      390.       31.      147.       92.      21.       24.        9.      820.30
    0.35     0.88      4.23      1.48     0.070     0.040    0.070     0.000    817.60     682.60
0.002030     400.      400.      400.         2         0        0      0.00    201.20     883.80

CCHV=   0.300 CEHV=   0.500
*SECNO 1900.000

3470 ENCROACHMENT STATIONS=     708.3     883.7  TYPE=     1  TARGET=     175.400
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  SECNO      DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
  Q          QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
  TIME       VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE      XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 1900.00      5.14    823.25      0.00    823.17    823.53      0.28      0.24      0.04    822.51
    550.       88.      411.       51.       79.       86.       18.       25.       10.    820.81
    0.36      1.11      4.80      2.86     0.050     0.040     0.040     0.000    818.11    708.30
0.002871      100.      100.      100.         2         0         0      0.00    175.40    883.70

*SECNO 2000.000

3265 DIVIDED FLOW

3470 ENCROACHMENT STATIONS=      700.0      882.4  TYPE=      1  TARGET=      182.400
 2000.00      4.90    823.53    822.47    823.43    823.95      0.42      0.35      0.07    823.03
    550.       51.      454.       45.       48.       81.       14.       25.       10.    821.33
    0.36      1.06      5.64      3.25     0.050     0.040     0.040     0.000    818.63    700.00
0.004302      100.      100.      100.         4        15         0      0.00    165.20    882.40

CCHV=   0.500 CEHV=   1.000
*SECNO 2160.000

3265 DIVIDED FLOW

3470 ENCROACHMENT STATIONS=      719.2      898.3  TYPE=      1  TARGET=      179.030
 2160.00      4.80    824.25    823.34    824.20    824.69      0.44      0.72      0.02    823.85
    550.       30.      454.       66.       29.       78.       25.       26.       11.    822.15
    0.37      1.01      5.78      2.66     0.050     0.040     0.040     0.000    819.45    719.24
0.004695      160.      160.      160.         4        15         0      0.00    144.04    898.27

*SECNO 2300.000

3265 DIVIDED FLOW

3470 ENCROACHMENT STATIONS=      793.2      898.4  TYPE=      1  TARGET=      105.200
 2300.00      4.77    824.94      0.00    824.93    825.47      0.52      0.70      0.08    824.57
    550.        4.      478.       68.        6.       78.       24.       26.       11.    822.87
    0.38      0.69      6.13      2.78     0.050     0.040     0.040     0.000    820.17    793.21
0.005310      140.      140.      140.         2         0         0      0.00     78.12    898.41
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  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

*SECNO 2400.000

3470 ENCROACHMENT STATIONS=     847.0     898.5  TYPE=     1  TARGET=     51.550
  2400.00     4.78    825.47     0.00    825.47    826.00     0.52      0.53      0.00    825.09
     550.       2.      479.      69.        2.       78.      25.       26.       11.     823.39
     0.38     0.95      6.13     2.78     0.050     0.040    0.040     0.000    820.69    847.00
 0.005293     100.      100.     100.         2         0        0      0.00     51.55    898.55

*SECNO 2450.000

3470 ENCROACHMENT STATIONS=     840.0     889.0  TYPE=     1  TARGET=     48.900
  2450.00     4.79    825.74     0.00    825.74    826.26     0.53      0.26      0.00    825.35
     550.       2.      479.      69.        3.       78.      21.       27.       11.     823.65
     0 39     0.78      6.11     3.35     0.050     0.040    0 040     0.000    820.95    840.05
 0.005256      50.       50.      50.         0         0        0      0.00     48.90    888.95

*SECNO 2500.000

3470 ENCROACHMENT STATIONS=     852.5     876.5  TYPE=     1  TARGET=     23 900
  2500.00     4.83    826.03     0.00    826.03    826.74     0.72      0.29      0.19    825.60
     550.       1.      541.       8.        1.       79.       3.       27.       11.     823.90
     0.39     1.13      6.84     2.72     0.050     0.040    0.040     0.000    821.20    852.55
 0.006484      50.       50.      50.         2         0        0      0.00     23.90    876.45

*SECNO 2508.000

3470 ENCROACHMENT STATIONS=     217.3     237.2  TYPE=     1  TARGET=     19.900
  2508.00     4.92    826.22     0.00    826.22    826.83     0.62      0.04      0.05    821.30
     550.      34.      473.      43        13.       71.      13.       27.       11.     821.30
     0.39     2.71      6.68     3.39     0.050     0.040    0.040     0.000    821.30    217.25
 0.003866       8.        8.       8.         2         0        0      0.00     19.90    237.15

*SECNO 2514.000

3470 ENCROACHMENT STATIONS=     218.8     235.7  TYPE=     1  TARGET=     16.900
  2514.00     4.94    826.24     0.00    826.24    827.04     0.80      0.03      0.18    821.30
     550.      12.      523.      15.        6.       71.       6.       27.       11.     821.30
     0.39     2.04      7.34     2.54     0.050     0.040    0.040     0.000    821.30    218.75
 0.004624       6.        6.       6.         0         0        0      0.00     16.90    235.65
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  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

*SECNO 2519.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      828.80 ELREA=      828.80

        CROSS SECTION DOWNSTREAM OF EAST 6TH BRIDGE
  2519.00      4.97    826.27      0.00    826.27    827.19      0.92      0.02      0.12    821.30
     550.        0.      550.        0.        0.       71.        0.       27.       11.     821.30
    0.39      0.00      7.70      0.00     0.000     0.040     0.000     0.000    821.30    220.00
 0.005069        5.        5.        5.         0         0         0      0.00     14.40    234.40

*SECNO 2520.000

3370 NORMAL BRIDGE, NRD=  6 MIN ELTRD=  829.40 MAX ELLC=  828.20

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      829.40 ELREA=      829.40

        DOWNSTREAM FACE OF EAST 6TH ST.  BRIDGE
  2520.00      4.97    826.27      0.00    826.27    827.20      0.93      0.00      0.01    821.30
     550.        0.      550.        0.        0.       71.        0.       27.       11.     821.30
    0.39      0.00      7.72      0.00     0.000     0.020     0.000     0.000    821.30    220.00
 0.002581        1.        1.        1.         0         0         0    -54.66     14.40    234.40

*SECNO 2556.000

3370 NORMAL BRIDGE, NRD=  6 MIN ELTRD=  829.40 MAX ELLC=  828.20

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      829.40 ELREA=      829 40

        UPSTREAM FACE OF EAST 6TH ST.  BRIDGE
  2556.00      5.15    826.45      0.00    826.45    827.32      0.86      0.09      0.03    821.30
     550.        0.      550.        0.        0.       74.        0.       27.       11.     821.30
    0.39      0.00      7.45      0.00     0.000     0.020     0.000     0.000    821.30    220.00
 0.002334       36.       36.       36.         2         0         0    -58.78     14.40    234.40

*SECNO 2557.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      829.40 ELREA=      829.40
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        CROSS SECTION UPSTREAM OF 6TH STREET BRIDGE
  2557.00      5.18    826.48      0.00    826.48    827.33      0.84      0.00      0.01    821.30
     550.        0.      550.        0.        0.       75.        0.       27.       11.     821.30
     0.39      0.00      7.37      0.00     0.000     0.020     0.000     0.000    821.30    220.00
 0.001096        1.        1.        1.         2         0         0      0.00     14.40    234.40

*SECNO 2560.000

3470 ENCROACHMENT STATIONS=      217.0      237.4  TYPE=      1  TARGET=       20.400
  2560.00      5.61    826.91      0.00    826.91    827.47      0.56      0.00      0.14    821.30
     550.       20.      506.       25.       16.       81.       16.       27.       11.     821.30
     0.39      1.25      6.27      1.56     0.050     0.020     0.040     0.000    821.30    217.00
 0.000714        3.        3.        3.         3         0         0      0.00     20.40    237.40

*SECNO 2565.000

3470 ENCROACHMENT STATIONS=      212.0      242.4  TYPE=      1  TARGET=       30.400
  2565.00      5.98    827.29      0.00    827.29    827.60      0.31      0.00      0.13    821.31
     550.       52.      430.       68.       39.       86.       41.       27.       11.     821.31
     0.39      1.33      4.99      1.67     0.050     0.020     0.040     0.000    821.31    212.00
 0.000416        5.        5.        5.         2         0         0      0.00     30.40    242.40

*SECNO 2760.000
 2800 NAT Q1=     309.67  WSEL=     827.51  ENC Q1=     309.67  WSEL=     827.61  RATIO=  0.0000
 NAT Q1=     320.  RATIOS LOB,CH,ROB=  0.1300  0.6760  0.1941  WSEL=     827.61

3470 ENCROACHMENT STATIONS=      208.0      249.4  TYPE=      4  TARGET=        0.032
  2760.00      5.94    827.48      0.00    827.51    827.71      0.23      0.07      0.04    821.54
     550.       65.      384.      101.       52.       86.       64.       28.       12.     821 54
     0.41      1.24      4.49      1.59     0.050     0.020     0.040     0.000    821.54    207.96
 0.000339      195.      195.      195.         2         0         0      0.00     41.45    249.41

*SECNO 2960.000
 2800 NAT Q1=      96.69  WSEL=     827.66  ENC Q1=      99.40  WSEL=     827.76  RATIO= -0.0281
 NAT Q1=      99.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     827.76

3470 ENCROACHMENT STATIONS=      200.9      216.5  TYPE=      4  TARGET=        0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      828.80 ELREA=      828.80

        DOWNSTREAM FACE OF FIFTH ST. BRIDGE
  2960.00      6.84    827.64      0.00    827.66    828.19      0.55      0.16      0.32    826.60
     550.        0.      550.        0.        0.       93.        0.       28.       12.     826.60
     0.42      0.00      5.93      0.00     0.000     0.035     0.000     0.000    820.80    200.91
 0.003459      200.      200.      200.         2         0         0      0.00     15.59    216.50
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


SPECIAL BRIDGE

5070, VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     0.00      1.60      2.80      0.00     15.60      0.00     80.00      0.00    820 80    820.80

*SECNO 3006.000
PRESSURE FLOW

 EGPRS      EGLWC       H3        QWEIR      QPR       BAREA   TRAPEZOID      ELLC      ELTRD
                                                                  AREA
    828.82    828.19     0.00        0.       550.       80.       89.       826.50    831.10


3470 ENCROACHMENT STATIONS=     200.9     216.5  TYPE=     1  TARGET=      15.590
        UPSTREAM FACE OF FIFTH STREET BRIDGE
  3006.00      7.58    828.38      0.00    828.41    828.82      0.43      0.63      0.00    826.60
     550.        0.      550.         0        0.     104.        0.       28.       12.     826.60
     0.42      0.01      5.27      0.00     0.000     0.020     0.000     0.000    820.80    200.91
 0.000792       46.       46.       46.         2         0         0      0.00     15.59    216.50


*SECNO 3300.000

3470 ENCROACHMENT STATIONS=     138.6     183.1  TYPE=     1  TARGET=      58.000
        DOWNSTREAM FACE OF FOURTH STREET BRIDGE
  3300.00      7.71    829.01      0.00    829.02    829.13      0.12      0.16      0.15    821.30
     550.       93.      356.      101.       56.     109.       60.       30.       12.     821.30
     0.45      1.66      3.26      1.67     0.040     0.035     0.040     0.000    821.30    138.65
 0.000387      294.      294.      294.         0         0         0      0.00     44.40    183.04


SPECIAL BRIDGE

5070, VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     0.00      1.80      3.00      0.00     14.00      0.00     78.00      0.00    821.30    821.30

*SECNO 3365.000
     3700.    BRIDGE STENCL=     99.58    STENCR=    172.35
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```
  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

PRESSURE AND WEIR FLOW

 EGPRS      EGLWC       H3        QWEIR       QPR       BAREA   TRAPEZOID      ELLC      ELTRD
                                                                   AREA
   830.40    829.17     0.00        82.       464.        78.       77.      826.80    829.40


3470 ENCROACHMENT STATIONS=      130.0      225.0  TYPE=      1  TARGET=      95.000
        UPSTREAM FACE OF FOURTH STREET BRIDGE
  3365.00      8.58   829.88      0.00   829.84   829.99      0.11      0.87      0.00   821.30
     550.       77.     386.       87.      73.     122.       92.       30.       12.    821.30
     0.46      1.06     3.17      0.95    0.040    0.023     0.040     0.000   821.30   130.00
 0.000137       65.      65.       65.        2        0         2      0.00    95.00   225.00


CCHV=   0.600 CEHV=   1.000
*SECNO 3400.000

3470 ENCROACHMENT STATIONS=      220.0      350.0  TYPE=      1  TARGET=     130.000
        CROSS SECTION #4
  3400.00      9.65   830.05      0.00   830.01   830.06      0.01      0.00      0.06   824.90
     550.      115.     161.      274.     140.     144.      349.       30.       12.    825.00
     0 47      0.82     1.12      0.79    0.040    0.040     0.040     0.000   820.40   220.00
 0.000069       35.      35.       35.        2        0         0      0.00   130.00   350.00


CCHV=   0.300 CEHV=   0.500
*SECNO 3840.000
3280 CROSS SECTION   3840.00 EXTENDED      2.09 FEET


3470 ENCROACHMENT STATIONS=      150.0      302.0  TYPE=      1  TARGET=     152.000
        DOWNSTREAM FACE OF THIRD ST. BRIDGE
  3840.00      7.88   830.08      0.00   830.03   830.12      0 03      0.05      0.01   822.20
     550       179.     227.      143.     181.     114.      264.       36.       14.    822.20
     0.56      0.99     2.00      0.54    0.050    0.040     0.080     0.000   822.20   150.00
 0.000184      440.     440.      440.        0        0         0      0.00   152.00   302.00
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL BRIDGE

5070, VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	0.00	1.52	3.00	0.00	14.30	0.00	64.00	0.00	822.20	822.20

CCHV= 0.300 CEHV= 0.900
*SECNO 3858.000
3700. BRIDGE STENCL= 150.00 STENCR= 302.00
3280 CROSS SECTION 3858.00 EXTENDED 2.22 FEET

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
831.83	830.12	0.00	363.	187.	64.	64.	826.70	827.50

3470 ENCROACHMENT STATIONS= 150.0 302.0 TYPE= 1 TARGET= 152.000
UPSTREAM FACE OF THIRD ST. BRIDGE

3858.00	8.02	830.22	0.00	830.18	830.29	0.06	0.17	0.00	822.20
550.	136.	305.	110.	188.	116.	275.	37.	14.	822.20
0.56	0.72	2.64	0.40	0.050	0.022	0.080	0.000	822.20	150.00
0.000095	18.	18.	18.	2	0	7	0.00	152.00	302.00

CCHV= 0.300 CEHV= 0.900
*SECNO 4150.000
2800 NAT Q1= 169.41 WSEL= 830.23 ENC Q1= 181.07 WSEL= 830.33 RATIO= -0.0689
NAT Q1= 336. RATIOS LOB,CH,ROB= 0.4615 0.5385 0.0000 WSEL= 830.33
3280 CROSS SECTION 4150.00 EXTENDED 2.18 FEET

3470 ENCROACHMENT STATIONS= 163.0 200.0 TYPE= 4 TARGET= 0.462
CROSS SECTION #5

4150.00	8.38	830.28	0.00	830.23	830.44	0.16	0.07	0.09	828.10
550.	0.	550.	0.	0.	173.	0.	39.	14.	832.10
0.59	0.00	3.19	0.00	0.000	0.040	0.000	0.000	821.90	163.00
0.001025	292.	292.	292.	0	0	0	0.00	33.03	196.03

```
  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


CCHV=   0.300 CEHV=   0.500
*SECNO 4175.000
 2800 NAT Q1=     150.79  WSEL=     830.24  ENC Q1=     160.12  WSEL=     830.34  RATIO= -0.0619
 NAT Q1=     276.  RATIOS LOB,CH,ROB=  0.4199  0.5801  0.0000  WSEL=     830.34
3280 CROSS SECTION   4175.00 EXTENDED      1.75 FEET


3470 ENCROACHMENT STATIONS=     163.0     200.0  TYPE=     4  TARGET=       0.420
  4175.00     7.94   830.29     0.00   830.24   830.48     0.19     0.03     0.01   828.55
     550.       0.     550.       0.       0.     159.       0.      39.      14.    832.55
     0.59     0.00     3.47     0.00    0.000    0.040    0.000    0.000   822.35   163.00
 0.001292      25       25.      25.        0        0        0     0.00    32.10   195.10


*SECNO 4195 000
 2800 NAT Q1=     136.94  WSEL=     830.26  ENC Q1=     144.44  WSEL=     830.36  RATIO= -0.0548
 NAT Q1=     233.  RATIOS LOB,CH,ROB=  0.3790  0.6210  0.0000  WSEL=     830.36
3280 CROSS SECTION   4195.00 EXTENDED      1.40 FEET


3470 ENCROACHMENT STATIONS=     163.0     200.0  TYPE=     4  TARGET=       0.379
  4195.00     7.60   830.31     0.00   830.26   830.52     0.22     0.03     0.01   828.91
     550.       0.     550.       0.       0.     148.       0.      39.      14.    832.91
     0.59     0.00     3.72     0.00    0.000    0.040    0.000    0.000   822.71   163.00
 0.001573      20.      20.      20.        0        0        0     0.00    31.35   194.35


CCHV=   0.300 CEHV=   1.000
*SECNO 4200.000
 2800 NAT Q1=      90.56  WSEL=     830.27  ENC Q1=      92.79  WSEL=     830.37  RATIO= -0.0247
 NAT Q1=      93.  RATIOS LOB,CH,ROB=  0.0005  0.9991  0.0005  WSEL=     830.37

3470 ENCROACHMENT STATIONS=     191.0     205.0  TYPE=     4  TARGET=       0.001
        DOWNSTREAAM FACE OF 2ND ST. BRIDGE
  4200.00     7.52   830.32     0.00   830.27   830.82     0.50     0.01     0.29   829.00
     550.       0.     550.       0.       0.      97.       0.      39.      14.    829.00
     0.59     0.00     5.68     0 00    0.000    0.040    0.000    0.000   822.80   191.00
 0.004143       5.       5.       5.        0        0        0     0.00    14.00   205.00
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


SPECIAL BRIDGE

5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
    0.00      1.49      3.00      0.00      14.00     0.00      90.00     0.00      822.80    822.80

*SECNO 4220.000
    3700.   BRIDGE STENCL=    191.00    STENCR=    205.00
PRESSURE FLOW


 EGPRS      EGLWC      H3        QWEIR     QPR       BAREA   TRAPEZOID     ELLC      ELTRD
                                                              AREA
   831.18   830.82     0.00        0.      550.       90.       87       829.00    831.50


3470 ENCROACHMENT STATIONS=     191.0     205.0  TYPE=     4  TARGET=       1.000
 ELENCL=      0 00  ELENCR=      0.00
       UPSTREAM FACE OF 2ND ST.  BRIDGE
  4220.00     7.95   830.75     0.00   830.68   831.18     0.44     0.36     0.00   829.00
     550.       0.     550.       0.       1.     104.       1.       39.      14.    829 00
     0.59     0.00     5.31     0.32    0.000    0.022    0.080    0.000   822.80   190.09
 0.000964      20.      20.      20.        5        0        0     0.00    15.81   205.91


CCHV=   0.300 CEHV=   0.500
*SECNO 4259.000
 2800 NAT Q1=     73.70  WSEL=    830.59  ENC Q1=     75.60  WSEL=    830.69  RATIO= -0.0258
 NAT Q1=     76.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=    830.69

3470 ENCROACHMENT STATIONS=     238.0     250.0  TYPE=     4  TARGET=       0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      833.40 ELREA=      833.40

        DOWNSTREAM FACE OF C&O R.R.
  4259.00     8.36   830.66     0.00   830.59   831.42     0.77     0.07     0.17   830.20
     550.       0.     550.       0.       0.      78.       0.       39.      14.    830.20
     0.60     0.00     7.03     0.00    0.000    0.035    0.000    0.000   822.30   238.00
 0.005529      39.      39.      39.        2        0        0     0.00    12.00   250.00
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  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
  Q         GLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


SPECIAL BRIDGE

5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
    0.00      1.80      3.00      0.00      12.00     0.00      100.00    0.00      822.30    822.30

1490 NH CARD USED
*SECNO 4285 000
     3700.   BRIDGE STENCL=    238.00    STENCR=    250.00
 2800 NAT Q1=     75.26  WSEL=    830.67  ENC Q1=     77.18  WSEL=    830.77  RATIO= -0.0255
 NAT Q1=     77.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=    830.77
PRESSURE FLOW


 EGPRS     EGLWC     H3        QWEIR     QPR       BAREA     TRAPEZOID     ELLC      ELTRD
                                                                AREA
   831.50    831.42    0.00      0.        550.      100.      95.       830.20    836.40


3470 ENCROACHMENT STATIONS=     238.0     250.0  TYPE=     4  TARGET=       0.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     836.40 ELREA=     836.40

        UPSTREAM FACE OF C&O R.R.
  4285.00    8.46    830.76    0.00    830.67    831.50    0.74    0.08    0.00    830.20
     550.      0.      550.      0.        0.       80.      0.      39.     14.     830.20
    0.60    0.00      6.91    0.00     0.000     0.034   0.000   0.000  822.30    238.00
 0.005094     26.       26.     26.         1         0       0    0.00   12.00    250.00


1490 NH CARD USED
*SECNO 4335.000

3470 ENCROACHMENT STATIONS=     234.0     255.0  TYPE=     1  TARGET=      21.000
  4335.00    8.75    831.10    0.00    831.02    831.76    0.66    0.23    0.02    830.25
     550.      3.      544.      3.        2.       83.      3.      39.     14.     830.25
    0.60    1.22      6.56    1.22     0.050     0.035   0.050   0.000  822.35    234.00
 0.004344     50.       50.     50.         2         0       0    0.00   21.00    255.00


1490 NH CARD USED
*SECNO 4464.000
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  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


3470 ENCROACHMENT STATIONS=      230.0      260.0  TYPE=      1  TARGET=       30.000
  4464.00      9.36    831.76     0.00    831.71    832.27     0.52      0.47      0.04    830.30
     550.        9.      530.      11.        6.       90.       8.       40.       14.     830.30
     0.60      1.40      5.87     1.39     0.050     0.035    0.050     0.000    822 40    230.00
 0 003108      129.      129.     129.         2         0        0      0.00     30.00    260.00


1490 NH CARD USED
*SECNO 4643.000

3470 ENCROACHMENT STATIONS=      226.0      264.0  TYPE=      1  TARGET=       38.000
  4643.00      9.88    832.38     0.00    832.35    832.78     0.41      0.48      0.03    830.40
     550.       17.      512.      21.       12.       96.      15.       40.       15.     830.40
     0.61      1.41      5.31     1.45     0.050     0.035    0.050     0.000    822.50    226.00
 0.002322      179.      179.     179.         2         0        0      0.00     38.00    264.00


1490 NH CARD USED
*SECNO 5000.000

3470 ENCROACHMENT STATIONS=      740.0      950.0  TYPE=      1  TARGET=      210.000
        CROSS SECTION DOWNSTREAM OF MCEWAN ST.
  5000.00     10.38    833.08     0.00    833.05    833.14     0.06      0.25      0.10    831.60
     550.        45      389.     117.       73.      168.     178.       42.       16.     831.60
     0.67      0.61      2.31     0.66     0.050     0.035    0.050     0.000    822.70    740.00
 0.000334      357.      357.     357.         2         0        0      0.00    210.00    950.00


1490 NH CARD USED
*SECNO 5001.000

3370 NORMAL BRIDGE, NRD= 11 MIN ELTRD=  831.60 MAX ELLC=  830.40


3470 ENCROACHMENT STATIONS=      740.0      950.0  TYPE=      1  TARGET=      210.000
        DOWNSTREAM FACE OF MCEWAN ST.  BRIDGE
  5001.00     10.41    833.11     0.00    833.08    833.15     0.04      0.00      0.01    831.60
     550.        78.      270.     202.       75.      140.     182.       42.       16.     831.60
     0.67      1.04      1.92     1.11     0.050     0.035    0.050     0.000    822.70    740.00
 0.000933        1.        1.       1.         2         0        0    -28.22    210.00    950.00
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  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

1490 NH CARD USED
*SECNO 5101.000

3370 NORMAL BRIDGE,NRD= 11 MIN ELTRD=  831.60 MAX ELLC=  830.40

3470 ENCROACHMENT STATIONS=     740.0     950.0  TYPE=     1  TARGET=     210.000
        UPSTREAM FACE OF MCEWAN ST. BRIDE
  5101.00    10.50   833.20     0.00   833.14   833.24     0.03      0.09      0.00   831.60
     550.      82.     257.      211.     81.      142.     194.       43.       16.    831.60
     0.69     1.02     1.81     1.09    0.050    0.035    0.050    0.000   822.70   740.00
 0.000816     100.     100.      100.        2        0        0   -28.22   210.00   950.00

1490 NH CARD USED
*SECNO 5102.000

3470 ENCROACHMENT STATIONS=     740.0     950.0  TYPE=     1  TARGET=     210.000
        CROSS SECTION UPSTREAM OF MCEWAN ST. BRIDGE
  5102.00    10.49   833.19     0.00   833.13   833.25     0.05      0.00      0.01   831.60
     550.      49.     374.      127.     80.      170.     194.       43.       16.    831.60
     0.69     0.62     2.20     0.65    0.050    0.035    0.050    0.000   822.70   740.00
 0.000297       1.       1.        1.        1        0        0     0.00   210 00   950.00

CCHV=   0.300 CEHV=   0.500
*SECNO 5324.000

3470 ENCROACHMENT STATIONS=     800.0    1000.0  TYPE=     1  TARGET=     200.000
        CROSS SECTION #7
  5324.00    10.07   833.27     0.00   833.18   833.28     0.01      0.02      0.01   825.90
     550.     102.     158.      290.     361.     167.     492.       47.       17.    825.80
     0.79     0.28     0.95     0.59    0.080    0.040    0.050    0.000   823.20   800.00
 0.000037     222.     222.      222.        2        0        0     0.00   200.00  1000.00

*SECNO 6100.000

3470 ENCROACHMENT STATIONS=     549.7     755.0  TYPE=     1  TARGET=     251.000
        CROSS SECTION DOWNSTREAM OF MAPLE ST. BRIDGE
  6100.00     8.61   833.31     0.00   833.21   833.32     0.01      0.04      0.00   824.70
     550.     272.     175.      103.     468.     120.     130.       63.       21.    824.70
     1.03     0.58     1.45     0.79    0.045    0.035    0.045    0.000   824.70   549.70
 0.000066     776.     776.      776.        2        0        0     0.00   205.32   755.01
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  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

*SECNO 6101.000

3370 NORMAL BRIDGE,NRD= 12 MIN ELTRD=  830.40 MAX ELLC=  829.40

3470 ENCROACHMENT STATIONS=     550.0     755.0  TYPE=     1  TARGET=     205.000
        DOWNSTREAM FACE OF MAPLE ST.  BRIDGE
  6101.00     8.60   833.30     0.00   833.21   833.32     0.02      0.00      0.00   824.70
     550.     420.     103.      27.     374.      86.      35.        63.       21.    824.70
     1.03     1.12     1.19     0.78    0.045    0.035    0.045     0.000    824.70   550.00
 0.000390       1.       1.       1.        0        0        0   -222.04    205.00   755.00

*SECNO 6145.000

3370 NORMAL BRIDGE,NRD= 12 MIN ELTRD=  830.40 MAX ELLC=  829.40

3470 ENCROACHMENT STATIONS=     550.0     755.0  TYPE=     1  TARGET=     205.000
        UPSTREAM FACE OF MAPLE ST.  BRIDGE
  6145.00     8.62   833.32     0.00   833.21   833.34     0.03      0.01      0.00   824.70
     550.     369.     157.      24.     376.      87.      35.        63.       21.    824.70
     1.04     0.98     1.82     0.69    0.045    0.020    0.045     0.000    824.70   550.00
 0.000297      44.      44.      44.        0        0        0   -222.04    205.00   755.00

*SECNO 6146 000

3470 ENCROACHMENT STATIONS=     550.0     755.0  TYPE=     1  TARGET=     205.000
        CROSS SECTION UPSTREAM OF MAPLE ST.  BRIDE
  6146.00     8.61   833.31     0.00   833.21   833.34     0.03      0.00      0.00   824.70
     550.     220.     247.      84.     469.     121.     130.        63.       21.    824.70
     1.04     0.47     2.05     0.64    0.045    0.020    0.045     0.000    824.70   550.00
 0.000043       1.       1.       1.        0        0        0      0.00    205.00   755.00

CCHV=   0.100 CEHV=   0.300
*SECNO 7400.000

3470 ENCROACHMENT STATIONS=      20.0     270.0  TYPE=     1  TARGET=     250.000
        CROSS SECTION #8
  7400.00     9.08   833.38     0.00   833.26   833.38     0.00      0.04      0.00   829.40
     550.      12.     103.     435.      54.     174.    1003.        91.       27.    829.60
     1.80     0.23     0.59     0.43    0.070    0.040    0.045     0.000    824.30    20.00
 0.000022    1254.    1254.    1254.        2        0        0      0.00    250.00   270.00
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 7600.000

3470 ENCROACHMENT STATIONS= 20.0 270.0 TYPE= 1 TARGET= 250.000

CROSS SECTION AT UPSTREAM CORPORATE LIMIT

7600.00	9.08	833.38	0.00	833.26	833.39	0.00	0.00	0.00	829.40
550.	12.	102.	435.	54.	175.	1004.	97.	29.	829.60
1.92	0.22	0.59	0.43	0.070	0.040	0.045	0.000	824.30	20.00
0.000022	200.	200.	200.	0	0	0	0.00	250.00	270.00

THIS RUN EXECUTED 3 JUL 90 15:04:20

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*****************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

YEAR FLOOD, ENCROACHED

SUMMARY PRINTOUT TABLE 110

SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
0.000	820.00	0.00	820.00	336.69	280.98	71.06	197.96	0.00	0.00	237.00	250.00	0.00
0.000	820.10	0.10	820.10	280.77	281.27	73.05	195.67	0.04	87.52	237.00	250.00	368.29
220.000	820.02	0.00	820.02	337.02	281.01	70.88	198.11	0.00	0.00	237.00	250.00	0.00
220.000	820.12	0.10	820.12	281.12	281.30	72.87	195.83	0.04	87.34	237.00	250.00	368.47
1010.000	820.14	0.00	820.17	295.64	271.91	114.82	163.26	0.00	0.00	237.00	250.00	0.00
1010.000	820.24	0.10	820.27	234.22	272.64	119.76	157.60	0.08	108.24	237.00	250.00	342.46
1105.000	820.17	0.00	820.45	284.17	185.42	318.63	45.95	0.00	0.00	546.00	563.00	0.00
1105.000	820.26	0.09	820.57	181.02	191.33	334.68	24.00	0.10	392.43	546.00	563.00	573.45
1200.000	820.67	0.00	820.83	308.80	219.42	274.94	55.64	0.00	0.00	546.00	563.00	0.00
1200.000	820.78	0.11	820.95	192.33	229.04	286.02	34.94	0.10	386.66	546.00	563.00	578.98
1400.000	821.26	0.00	821.81	193.21	24.61	486.62	38.78	0.00	0.00	854.00	875.00	0.00
1400.000	821.35	0.09	821.90	153.80	32.77	496.31	20.92	180.50	700.00	854.00	875.00	880.50
1800.000	822.97	0.00	823.15	341.23	126.53	372.30	51.17	0.00	0.00	854.00	875.00	0.00
1800.000	823.05	0.08	823.25	201.20	128.89	390.37	30.74	201.20	682.60	854.00	875.00	883.80
1900.000	823.17	0.00	823.42	281.80	87.23	391.02	71.75	0.00	0.00	854.00	875.00	0.00
1900.000	823.25	0.08	823.53	175.40	87.60	411.23	51.17	175.40	708.30	854.00	875.00	883.70
2000.000	823.43	0.00	823.85	208.59	39.19	446.14	64.67	0.00	0.00	854.00	875.00	0.00
2000.000	823.53	0.09	823.95	165.20	50.77	454.19	45.04	182.40	700.00	854.00	875.00	882.40
2160.000	824.20	0.00	824.67	135.43	24.85	461.34	63.81	197.91	719.24	854.00	875.00	917.15
2160.000	824.25	0.05	824.69	144.04	29.80	453.93	66.27	179.03	719.24	854.00	875.00	898.27
2300.000	824.93	0.00	825.46	76.93	3.70	479.30	67.00	127.04	793.21	854.00	875.00	920.25
2300.000	824.94	0.01	825.47	78.12	4.11	478.00	67.89	105.20	793.21	854.00	875.00	898.41

SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
2400.000	825.47	0.00	826.00	51.55	1.88	480.27	67.85	75.26	847.00	854.00	875.00	922.26
2400.000	825.47	0.00	826.00	51.55	1.99	479.40	68.61	51.55	847.00	854.00	875.00	898.55
2450.000	825.74	0.00	826.27	48.90	2.40	478.78	68.82	48.90	840.05	854.00	875.00	888.95
2450.000	825.74	0.00	826.26	48.90	2.42	478.74	68.84	48.90	840.05	854.00	875.00	888.95
2500.000	826.03	0.00	826.74	23.90	0.67	541.20	8.13	23.90	852.55	854.00	875.00	876.45
2500.000	826.03	0.00	826.74	23.90	0.67	541.20	8.13	23.90	852.55	854.00	875.00	876.45
2508.000	826.22	0.00	826.83	19.90	33.94	473.11	42.95	19.90	217.25	220.00	234.40	237.15
2508.000	826.22	0.00	826.83	19.90	33.94	473.11	42.95	19.90	217.25	220.00	234.40	237.15
2514.000	826.24	0.00	827.04	16.90	12.16	522.58	15.26	16.90	218.75	220.00	234.40	235.65
2514.000	826.24	0.00	827.04	16.90	12.17	522.57	15.26	16.90	218.75	220.00	234.40	235.65
2519.000	826.27	0.00	827.19	14.40	0.00	550.00	0.00	0.00	0.00	220.00	234.40	0.00
2519.000	826.27	0.00	827.19	14.40	0.00	550.00	0.00	0.00	0.00	220.00	234.40	0.00
2520.000	826.27	0.00	827.20	14.40	0.00	550.00	0.00	0.00	0.00	220.00	234.40	0.00
2520.000	826.27	0.00	827.20	14.40	0.00	550.00	0.00	0.00	0.00	220.00	234.40	0.00
2556.000	826.45	0.00	827.32	14.40	0.00	550.00	0.00	0.00	0.00	220.00	234.40	0.00
2556.000	826.45	0.00	827.32	14.40	0.00	550.00	0.00	0.00	0.00	220.00	234.40	0.00
2557.000	826.48	0.00	827.33	14.40	0.00	550.00	0.00	0.00	0.00	220.00	234.40	0.00
2557.000	826.48	0.00	827.33	14.40	0.00	550.00	0.00	0.00	0.00	220.00	234.40	0.00
2560.000	826.91	0.00	827.47	20.40	19.50	505.83	24.66	20.40	217.00	220.00	234.40	237.40
2560.000	826.91	0.00	827.47	20.40	19.50	505.83	24.66	20.40	217.00	220.00	234.40	237.40
2565.000	827.29	0.00	827.60	30.40	52.03	430.11	67.86	30.40	212.00	220.00	234.40	242.40
2565.000	827.29	0.00	827.60	30.40	52.03	430.11	67.86	30.40	212.00	220.00	234.40	242.40
2760.000	827.51	0.00	827.72	62.78	70.68	373.78	105.54	0.00	0.00	220.00	234.40	0.00
2760.000	827.48	-0.03	827.71	41.45	64.67	384.17	101.16	0.03	207.96	220.00	234.40	249.41
2960.000	827.66	0.00	828.20	15.59	0.00	550.00	0.00	0.00	0.00	200.91	216.50	0.00
2960.000	827.64	-0.02	828.19	15.59	0.00	550.00	0.00	0.00	200.91	200.91	216.50	216.50
3006.000	828.41	0.00	828.83	15.59	0.00	550.00	0.00	15.59	200.91	200.91	216.50	216.50
3006.000	828.38	-0.02	828.82	15.59	0.00	550.00	0.00	15.59	200.91	200.91	216.50	216.50
3300.000	829.02	0.00	829.14	44.48	93.11	355.80	101.09	290.00	49.02	153.20	167.37	271.16
3300.000	829.01	-0.02	829.13	44.40	93.04	356.00	100.95	58.00	138.65	153.20	167.37	183.07
3365.000	829.84	0.00	829.95	290.94	78.79	384.41	86.79	337.90	0.10	153.20	167.37	338.00
3365.000	829.88	0.04	829.99	95.00	77.14	385.93	86.93	95.00	130.00	153.20	167.37	225.00
3400.000	830.01	0.00	830.02	310.91	187.84	107.86	254.31	389.90	0.10	250.00	267.00	390.00
3400.000	830.05	0.03	830.06	130.00	114.58	161.31	274.11	130.00	220.00	250.00	267.00	350.00

SECNO	CWSEL	DIFKWS	EG	TOPWID	GLOB	GCH	GROB	PERENC	STENCL	STCHL	STCHR	STENCR
3840.000	830.03	0.00	830.05	192.00	219.50	203.55	126.95	192.00	111.20	200.00	214.40	303.20
3840.000	830.08	0.06	830.12	152.00	179.49	227.31	143.20	152.00	150.00	200.00	214.40	302.00
3858.000	830.18	0.00	830.23	183.00	174.56	281.67	93.78	183.00	111.00	200.00	214.40	294.00
3858.000	830.22	0.04	830.29	152.00	135.76	304.57	109.67	152.00	150.00	200.00	214.40	302.00
4150.000	830.23	0.00	830.39	32.92	0.00	550.00	0.00	38.60	163.00	163.00	200.00	201.60
4150.000	830.28	0.05	830.44	33.03	0.00	550.00	0.00	0.46	163.00	163.00	200.00	200.00
4175.000	830.24	0.00	830.44	31.99	0.00	550.00	0.00	37.00	163.00	163.00	200.00	200.00
4175.000	830.29	0.05	830.48	32.10	0.00	550.00	0.00	0.42	163.00	163.00	200.00	200.00
4195.000	830.26	0.00	830.48	31.26	0.00	550.00	0.00	40.25	163.00	163.00	200.00	203.75
4195.000	830.31	0.05	830.52	31.35	0.00	550.00	0.00	0.38	163.00	163.00	200.00	200.00
4200.000	830.27	0.00	830.78	15.34	0.21	549.57	0.21	41.00	167.00	191.00	205.00	208.00
4200.000	830.32	0.05	830.82	14.00	0.00	550.00	0.00	0.00	191.00	191.00	205.00	205.00
4220.000	830.68	0.00	831.14	15.79	0.23	549.54	0.23	31.58	180.92	191.00	205.00	212.50
4220.000	830.75	0.06	831.18	15.81	0.00	549.74	0.26	1.00	191.00	191.00	205.00	205.00
4259.000	830.59	0.00	831.37	12.00	0.00	550.00	0.00	0.00	0.00	238.00	250.00	0.00
4259.000	830.66	0.06	831.42	12.00	0.00	550.00	0.00	0.00	238.00	238.00	250.00	250.00
4285.000	830.67	0.00	831.44	12.00	0.00	550.00	0.00	0.00	0.00	238.00	250.00	0.00
4285.000	830.76	0.09	831.50	12.00	0.00	550.00	0.00	0.00	238.00	238.00	250.00	250.00
4335.000	831.02	0.00	831.71	22.53	1.94	545.70	2.36	30.00	229.00	238.00	250.00	259.00
4335.000	831.10	0.07	831.76	21.00	2.54	544.34	3.12	21.00	234.00	238.00	250.00	255.00
4464.000	831.71	0.00	832.24	31.14	8.02	532.18	9.79	48.00	220.00	238.00	250.00	268.00
4464.000	831.76	0.05	832.27	30.00	9.02	530.02	10.96	30.00	230.00	238.00	250.00	260.00
4643.000	832.35	0.00	832.76	38.46	16.34	513.71	19.95	0.00	0.00	238.00	250.00	0.00
4643.000	832.38	0.03	832.78	38.00	16.92	512.00	21.09	38.00	226.00	238.00	250.00	264.00
5000.000	833.05	0.00	833.09	500.60	49.86	346.02	154.12	1039.92	210.08	800.00	817.20	1250.00
5000.000	833.08	0.03	833.14	210.00	44.91	388.53	116.56	210.00	740.00	800.00	817.20	950.00
5001.000	833.08	0.00	833.10	506.95	81.69	221.02	247.28	1040.92	209.08	800.00	817.20	1250.00
5001.000	833.11	0.03	833.15	210.00	78.16	269.68	202.16	210.00	740.00	800.00	817.20	950.00
5101.000	833.14	0.00	833.16	518.33	86.24	211.82	251.94	999.05	116.09	800.00	817.20	1115.14
5101.000	833.20	0.06	833.24	210.00	82.26	256.97	210.77	210.00	740.00	800.00	817.20	950.00
5102.000	833.13	0.00	833.17	520.33	56.45	329.62	163.93	1001.05	218.35	800.00	817.20	1219.40
5102.000	833.19	0.06	833.25	210.00	49.41	373.92	126.66	210.00	740.00	800.00	817.20	950.00
5324.000	833.18	0.00	833.19	689.28	173.70	119.90	256.40	0.00	0.00	897.00	915.00	0.00
5324.000	833.27	0.09	833.28	200.00	102.15	158.13	289.72	200.00	800.00	897.00	915.00	1000.00

SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
6100.000	833.21	0.00	833.21	477.18	316.40	145.08	88.51	0.00	0.00	715.75	729.74	0.00
6100.000	833.31	0.10	833.32	205.32	271.83	174.69	103.48	251.00	549.70	715.75	729.74	755.01
6101.000	833.21	0.00	833.22	477.18	460.72	68.53	20.75	0.00	0.00	715.75	729.74	0.00
6101.000	833.30	0.09	833.32	205.00	419.87	102.71	27.42	205.00	550.00	715.75	729.74	755.00
6145.000	833.21	0.00	833.22	478.15	421.62	109.31	19.07	0.00	0.00	715.75	729.74	0.00
6145.000	833.32	0.10	833.34	205.00	368.61	157.23	24.16	205.00	550.00	715.75	729.74	755.00
6146.000	833.21	0.00	833.23	478.31	264.64	211.52	73.84	0.00	0.00	715.75	729.74	0.00
6146.000	833.31	0.10	833.34	205.00	219.78	246.66	83.56	205.00	550.00	715.75	729.74	755.00
7400.000	833.26	0.00	833.26	384.47	9.55	81.47	458.98	0.00	0.00	35.00	60.00	0.00
7400.000	833.38	0.12	833.38	250.00	12.10	102.55	435.35	250.00	20.00	35.00	60.00	270.00
7600.000	833.26	0.00	833.26	384.48	9.56	81.42	459.02	0.00	0.00	35.00	60.00	0.00
7600.000	833.38	0.13	833.39	250.00	12.11	102.49	435.40	250.00	20.00	35.00	60.00	270.00

YEAR FLOOD, ENCROACHED

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
0.000	0.00	0.00	0.00	813.30	550.00	820.00	0.00	820.00	0.76	0.93	1168.67	630.54
0.000	0.00	0.00	0.00	813.30	550.00	820.10	0.00	820.10	0.76	0.94	1120.67	630.84
220.000	220.00	0.00	0.00	813.30	550.00	820.02	0.00	820.02	0.75	0.93	1174.31	635.14
220.000	220.00	0.00	0.00	813.30	550.00	820.12	0.00	820.12	0.75	0.94	1126.07	635.28
1010.000	790.00	0.00	0.00	815.45	550.00	820.14	0.00	820.17	8.02	2.29	533.27	194.25
1010.000	790.00	0.00	0.00	815.45	550.00	820.24	0.00	820.27	8.02	2.33	498.88	194.27
1105.000	95.00	0.00	0.00	815.71	550.00	820.17	0.00	820.45	47.90	5.45	247.11	79.47
1105.000	95.00	0.00	0.00	815.71	550.00	820.26	0.00	820.57	48.73	5.58	212.87	78.79
1200.000	95.00	0.00	0.00	815.98	550.00	820.67	0.00	820.83	29.00	4.42	312.60	102.14
1200.000	95.00	0.00	0.00	815.98	550.00	820.78	0.00	820.95	28.23	4.45	273.41	103.51
1400.000	200.00	0.00	0.00	816.51	550.00	821.26	820.37	821.81	55.88	6.27	137.10	73.58
1400.000	200.00	0.00	0.00	816.51	550.00	821.35	820.31	821.90	53.84	6.25	130.88	74.95
1800.000	400.00	0.00	0.00	817.60	550.00	822.97	0.00	823.15	19.60	4.11	307.31	124.22
1800.000	400.00	0.00	0.00	817.60	550.00	823.05	0.00	823.25	20.30	4.23	259.83	122.07
1900.000	100.00	0.00	0.00	818.11	550.00	823.17	0.00	823.42	27.80	4.66	209.29	104.31
1900.000	100.00	0.00	0.00	818.11	550.00	823.25	0.00	823.53	28.71	4.80	182.26	102.65
2000.000	100.00	0.00	0.00	818.63	550.00	823.43	822.51	823.85	45.05	5.67	146.43	81.94
2000.000	100.00	0.00	0.00	818.63	550.00	823.53	822.47	823.95	43.02	5.64	142.48	83.95
2160.000	160.00	0.00	0.00	819.45	550.00	824.20	823.33	824.67	50.67	5.96	126.12	77.07
2160.000	160.00	0.00	0.00	819.45	550.00	824.25	823.34	824.69	46.95	5.78	132.92	80.27
2300.000	140.00	0.00	0.00	820.17	550.00	824.93	0.00	825.46	54.08	6.17	107.30	74.79
2300.000	140.00	0.00	0.00	820.17	550.00	824.94	0.00	825.47	53.10	6.13	108.40	75.48
2400.000	100.00	0.00	0.00	820.69	550.00	825.47	0.00	826.00	53.68	6.16	104.39	75.07
2400.000	100.00	0.00	0.00	820.69	550.00	825.47	0.00	826.00	52.93	6.13	104.99	75.60
2450.000	50.00	0.00	0.00	820.95	550.00	825.74	0.00	826.27	52.60	6.11	101.94	75.84
2450.000	50.00	0.00	0.00	820.95	550.00	825.74	0.00	826.26	52.56	6.11	101.97	75.86
2500.000	50.00	0.00	0.00	821.20	550.00	826.03	0.00	826.74	64.82	6.84	82.75	68.32
2500.000	50.00	0.00	0.00	821.20	550.00	826.03	0.00	826.74	64.84	6.84	82.74	68.31
2508.000	8.00	0.00	0.00	821.30	550.00	826.22	0.00	826.83	38.66	6.68	95.99	88.46
2508.000	8.00	0.00	0.00	821.30	550.00	826.22	0.00	826.83	38.66	6.68	95.98	88.46
2514.000	6.00	0.00	0.00	821.30	550.00	826.24	0.00	827.04	46.23	7.33	83.22	80.89
2514.000	6.00	0.00	0.00	821.30	550.00	826.24	0.00	827.04	46.24	7.34	83.22	80.88

SECND	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
2519.000	5.00	0.00	0.00	821.30	550.00	826.27	0.00	827.19	50.68	7.70	71.47	77.26
2519.000	5.00	0.00	0.00	821.30	550.00	826.27	0.00	827.19	50.69	7.70	71.47	77.25
2520.000	1.00	829.40	828.20	821.30	550.00	826.27	0.00	827.20	25.81	7.72	71.22	108.26
2520.000	1.00	829.40	828.20	821.30	550.00	826.27	0.00	827.20	25.81	7.72	71.22	108.25
2556.000	36.00	829.40	828.20	821.30	550.00	826.45	0.00	827.32	23.34	7.45	73.85	113.85
2556.000	36.00	829.40	828.20	821.30	550.00	826.45	0.00	827.32	23.34	7.45	73.85	113.84
2557.000	1.00	0.00	0.00	821.30	550.00	826.48	0.00	827.33	10.96	7.37	74.65	166.16
2557.000	1.00	0.00	0.00	821.30	550.00	826.48	0.00	827.33	10.96	7.37	74.65	166.15
2560.000	3.00	0.00	0.00	821.30	550.00	826.91	0.00	827.47	7.14	6.27	112.11	205.80
2560.000	3.00	0.00	0.00	821.30	550.00	826.91	0.00	827.47	7.14	6.27	112.11	205.79
2565.000	5.00	0.00	0.00	821.31	550.00	827.29	0.00	827.60	4.16	4.99	165.92	269.70
2565.000	5.00	0.00	0.00	821.31	550.00	827.29	0.00	827.60	4.16	4.99	165.92	269.70
2760.000	195.00	0.00	0.00	821.54	550.00	827.51	0.00	827.72	3.15	4.34	230.54	309.67
2760.000	195.00	0.00	0.00	821.54	550.00	827.48	0.00	827.71	3.39	4.49	201.17	298.80
2960.000	200.00	0.00	0.00	820.80	550.00	827.66	0.00	828.20	32.36	5.91	93.03	96.69
2960.000	200.00	0.00	0.00	820.80	550.00	827.64	0.00	828.19	34.59	5.93	92.74	93.52
3006.000	46.00	831.10	826.50	820.80	550.00	828.41	0.00	828.83	7.84	5.25	104.70	196.39
3006.000	46.00	831.10	826.50	820.80	550.00	828.38	0.00	828.82	7.92	5.27	104.36	195.43
3300.000	294.00	0.00	0.00	821.30	550.00	829.02	0.00	829.14	3.84	3.25	226.49	280.67
3300.000	294.00	0.00	0.00	821.30	550.00	829.01	0.00	829.13	3.87	3.26	225.85	279.65
3365.000	65.00	829.40	826.80	821.30	550.00	829.84	0.00	829.95	1.39	3.18	316.99	467.08
3365.000	65.00	829.40	826.80	821.30	550.00	829.88	0.00	829.99	1.37	3.17	286.49	469.27
3400.000	35.00	0.00	0.00	820.40	550.00	830.01	0.00	830.02	0.31	0.75	1057.18	986.02
3400.000	35.00	0.00	0.00	820.40	550.00	830.05	0.00	830.06	0.69	1.12	632.74	663.84
3840.000	440.00	0.00	0.00	822.20	550.00	830.03	0.00	830.05	1.52	1.81	644.49	446.12
3840.000	440.00	0.00	0.00	822.20	550.00	830.08	0.00	830.12	1.84	2.00	558.56	404.94
3858.000	18.00	827.50	826.70	822.20	550.00	830.18	0.00	830.23	0.82	2.45	651.12	605.58
3858.000	18.00	827.50	826.70	822.20	550.00	830.22	0.00	830.29	0.95	2.64	578.53	564.81
4150.000	292.00	0.00	0.00	821.90	550.00	830.23	0.00	830.39	10.54	3.22	170.89	169.41
4150.000	292.00	0.00	0.00	821.90	550.00	830.28	0.00	830.44	10.25	3.19	172.63	171.77
4175.000	25.00	0.00	0.00	822.35	550.00	830.24	0.00	830.44	13.30	3.50	156.97	150.79
4175.000	25.00	0.00	0.00	822.35	550.00	830.29	0.00	830.48	12.92	3.47	158.64	153.00
4195.000	20.00	0.00	0.00	822.71	550.00	830.26	0.00	830.48	16.13	3.76	146.35	136.94
4195.000	20.00	0.00	0.00	822.71	550.00	830.31	0.00	830.52	15.73	3.72	147.69	138.68

SECND	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
4200.000	5.00	0.00	0.00	822.80	550.00	830.27	0.00	830.78	36.89	5.72	96.94	90.56
4200.000	5.00	0.00	0.00	822.80	550.00	830.32	0.00	830.82	41.43	5.68	96.83	85.45
4220.000	20.00	831.50	829.00	822.80	550.00	830.68	0.00	831.14	9.15	5.39	103.48	181.80
4220.000	20.00	831.50	829.00	822.80	550.00	830.75	0.00	831.18	9.64	5.31	105.18	177.11
4259.000	39.00	0.00	0.00	822.30	550.00	830.59	0.00	831.37	55.70	7.10	77.44	73.70
4259.000	39.00	0.00	0.00	822.30	550.00	830.66	0.00	831.42	55.29	7.03	78.22	73.97
4285.000	26.00	836.40	830.20	822.30	550.00	830.67	0.00	831.44	53.41	7.01	78.42	75.26
4285.000	26.00	836.40	830.20	822.30	550.00	830.76	0.00	831.50	50.94	6.91	79.55	77.06
4335.000	50.00	0.00	0.00	822.35	550.00	831.02	0.00	831.71	45.24	6.65	86.12	81.78
4335.000	50.00	0.00	0 00	822.35	550.00	831.10	0.00	831.76	43.44	6.56	87.57	83.44
4464.000	129.00	0.00	0.00	822.40	550.00	831.71	0.00	832.24	32.01	5.94	103.13	97.71
4464.000	129.00	0.00	0.00	822.40	550.00	831.76	0.00	832.27	31.08	5.87	104.53	98.66
4643.000	179.00	0.00	0.00	822.50	550.00	832.35	0.00	832.76	23.66	5.35	121.85	113.08
4643.000	179.00	0.00	0.00	822.50	550.00	832.38	0.00	832.78	23.22	5.31	122.93	114.14
5000.000	357.00	0.00	0.00	822.70	550.00	833.05	0.00	833.09	2.68	2.07	591.75	335.78
5000.000	357.00	0.00	0.00	822.70	550.00	833.08	0.00	833.14	3.34	2.31	419.01	300.81
5001.000	1.00	831.60	830.40	822.70	550.00	833.08	0.00	833.10	6.35	1.58	578.74	218.18
5001.000	1.00	831.60	830.40	822.70	550.00	833.11	0.00	833.15	9.33	1.92	397.24	180 10
5101.000	100.00	831.60	830.40	822.70	550.00	833.14	0.00	833.16	5.71	1.50	606.50	230.19
5101.000	100.00	831.60	830.40	822.70	550.00	833.20	0.00	833.24	8.16	1.81	416.72	172.60
5102.000	1.00	0.00	0.00	822.70	550.00	833.13	0.00	833.17	2.36	1.95	639.66	358.17
5102.000	1.00	0.00	0.00	822.70	550.00	833.19	0.00	833.25	2.97	2.20	444.05	318.94
5324.000	222.00	0.00	0.00	823.20	550.00	833.18	0.00	833.19	0.22	0.72	1868.58	1170.17
5324.000	222.00	0.00	0.00	823.20	550.00	833.27	0.00	833.28	0.37	0.95	1020.26	901.17
6100.000	776.00	0.00	0.00	824.70	550.00	833.21	0.00	833.21	0.47	1.22	1052.99	798.09
6100.000	776.00	0.00	0.00	824.70	550.00	833.31	0.00	833.32	0.66	1.45	718.66	675.71
6101.000	1.00	830.40	829.40	824.70	550.00	833.21	0.00	833.22	1.83	0.81	830.60	406 33
6101.000	1.00	830.40	829.40	824.70	550.00	833.30	0.00	833.32	3.90	1.19	495.73	278.50
6145.000	44.00	830.40	829.40	824.70	550.00	833.21	0.00	833.22	1.52	1.28	834.01	446.69
6145.000	44.00	830.40	829.40	824.70	550.00	833.32	0.00	833.34	2.97	1.82	497.33	319.04
6146.000	1.00	0.00	0.00	824.70	550.00	833.21	0.00	833.23	0.33	1.78	1056.97	959.56
6146.000	1.00	0.00	0.00	824.70	550.00	833.31	0.00	833.34	0.43	2.05	719.87	839.14
7400.000	1254.00	0.00	0.00	824.30	550.00	833.26	0.00	833.26	0.15	0.48	1613 77	1434.88
7400.000	1254.00	0.00	0.00	824.30	550.00	833.38	0.00	833.38	0.22	0.59	1231.08	1174.69

SECND	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
7600.000	200.00	0.00	0.00	824.30	550.00	833.26	0.00	833.26	0.15	0.49	1615.60	1437.45
7600.000	200.00	0.00	0.00	824.30	550.00	833.38	0.00	833.39	0.22	0.59	1232.71	1177.21

YEAR FLOOD, ENCROACHED

SUMMARY PRINTOUT TABLE 150

SECND	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
0.000	550.00	820.00	0.00	0.00	0.00	336.69	0.00
0.000	550.00	820.10	0.10	0.00	0.10	280.77	0.00
220.000	550.00	820.02	0.00	0.02	0.00	337 02	220.00
220.000	550.00	820.12	0.10	0.02	0.10	281.12	220.00
1010.000	550.00	820.14	0.00	0.13	0.00	295.64	790.00
1010.000	550.00	820.24	0 10	0.13	0.10	234.22	790.00
1105.000	550.00	820.17	0.00	0.03	0.00	284.17	95.00
1105.000	550.00	820.26	0.09	0.02	0.09	181.02	95.00
1200.000	550.00	820.67	0.00	0.50	0.00	308.80	95.00
1200.000	550.00	820.78	0.11	0.52	0.11	192.33	95.00
1400.000	550.00	821.26	0.00	0.59	0.00	193.21	200.00
1400.000	550.00	821.35	0.09	0.57	0.09	153.80	200.00
1800.000	550.00	822.97	0.00	1.71	0.00	341.23	400.00
1800.000	550.00	823.05	0.08	1.70	0.08	201.20	400.00
1900.000	550.00	823.17	0.00	0.20	0.00	281.80	100.00
1900.000	550.00	823.25	0.08	0.20	0.08	175.40	100.00
2000.000	550.00	823.43	0.00	0.27	0.00	208.59	100.00
2000.000	550.00	823.53	0.09	0.28	0.09	165.20	100.00
2160.000	550.00	824.20	0.00	0.76	0.00	135.43	160.00
2160.000	550.00	824.25	0.05	0.72	0.05	144.04	160.00
2300.000	550.00	824.93	0.00	0.73	0.00	76.93	140.00
2300.000	550.00	824.94	0.01	0.70	0.01	78.12	140.00
2400.000	550.00	825.47	0.00	0.54	0.00	51.55	100.00
2400.000	550.00	825.47	0.00	0.53	0.00	51.55	100.00
2450.000	550.00	825.74	0.00	0.27	0.00	48.90	50.00
2450.000	550.00	825.74	0.00	0.26	0.00	48.90	50.00
2500.000	550.00	826.03	0.00	0.29	0.00	23.90	50.00
2500.000	550.00	826.03	0.00	0.29	0.00	23.90	50.00
2508.000	550.00	826.22	0.00	0.19	0.00	19.90	8.00
2508.000	550.00	826.22	0.00	0.19	0.00	19.90	8.00
2514.000	550.00	826.24	0.00	0.03	0.00	16.90	6.00
2514.000	550.00	826.24	0.00	0.03	0.00	16.90	6.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
2519.000	550.00	826.27	0.00	0.02	0.00	14.40	5.00
2519.000	550.00	826.27	0.00	0.02	0.00	14.40	5.00
2520.000	550.00	826.27	0.00	0.00	0.00	14.40	1.00
2520.000	550.00	826.27	0.00	0.00	0.00	14.40	1.00
2556.000	550.00	826.45	0.00	0.19	0 00	14.40	36.00
2556.000	550.00	826.45	0.00	0.19	0.00	14.40	36.00
2557.000	550.00	826.48	0.00	0.03	0.00	14.40	1.00
2557.000	550.00	826.48	0.00	0.03	0.00	14.40	1.00
2560.000	550.00	826.91	0.00	0.42	0.00	20.40	3.00
2560.000	550.00	826.91	0.00	0.42	0.00	20.40	3.00
2565.000	550.00	827.29	0.00	0.38	0.00	30.40	5.00
2565.000	550.00	827.29	0.00	0.38	0.00	30.40	5.00
2760.000	550.00	827.51	0.00	0.23	0.00	62.78	195.00
2760.000	550.00	827.48	-0.03	0.20	-0.03	41.45	195 00
2960.000	550.00	827.66	0.00	0.15	0.00	15.59	200.00
2960.000	550.00	827.64	-0.02	0.16	-0.02	15.59	200.00
3006.000	550.00	828.41	0.00	0.75	0.00	15.59	46.00
3006.000	550.00	828.38	-0.02	0.74	-0.02	15.59	46.00
3300.000	550.00	829.02	0.00	0.62	0.00	44.48	294.00
3300.000	550.00	829.01	-0.02	0.62	-0.02	44.40	294.00
3365.000	550.00	829.84	0.00	0.81	0.00	290.94	65.00
3365.000	550.00	829.88	0.04	0.87	0.04	95.00	65.00
3400.000	550.00	830.01	0.00	0.18	0.00	310.91	35 00
3400.000	550.00	830.05	0.03	0.17	0.03	130.00	35.00
3840.000	550.00	830.03	0.00	0.02	0.00	192.00	440.00
3840.000	550.00	830.08	0.06	0.04	0.06	152.00	440.00
3858.000	550.00	830 18	0.00	0.15	0.00	183.00	18.00
3858.000	550.00	830.22	0.04	0.14	0.04	152.00	18.00
4150.000	550.00	830.23	0.00	0.05	0.00	32.92	292.00
4150.000	550.00	830.28	0.05	0.06	0.05	33.03	292.00
4175.000	550.00	830.24	0.00	0.01	0.00	31.99	25.00
4175.000	550.00	830.29	0.05	0.01	0.05	32.10	25.00
4195.000	550.00	830.26	0.00	0.01	0.00	31.26	20.00
4195.000	550.00	830.31	0.05	0.01	0.05	31.35	20.00

SECND	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
4200.000	550.00	830.27	0.00	0.01	0.00	15.34	5.00
4200.000	550.00	830.32	0.05	0.01	0.05	14.00	5.00
4220.000	550.00	830.68	0.00	0.41	0.00	15.79	20.00
4220.000	550.00	830.75	0.06	0.43	0.06	15.81	20.00
4259.000	550.00	830.59	0.00	-0.09	0.00	12.00	39.00
4259.000	550.00	830.66	0.06	-0.09	0.06	12.00	39.00
4285.000	550.00	830.67	0.00	0.08	0.00	12.00	26 00
4285.000	550.00	830.76	0.09	0.10	0.09	12.00	26.00
4335.000	550.00	831.02	0.00	0.35	0.00	22.53	50.00
4335.000	550.00	831.10	0.07	0.34	0.07	21.00	50.00
4464.000	550.00	831.71	0.00	0.68	0.00	31.14	129.00
4464.000	550.00	831.76	0.05	0.66	0.05	30.00	129.00
4643.000	550.00	832.35	0.00	0.64	0.00	38.46	179.00
4643.000	550.00	832.38	0.03	0.62	0.03	38.00	179 00
5000.000	550.00	833.05	0.00	0.70	0.00	500.60	357.00
5000.000	550.00	833.08	0.03	0.70	0.03	210.00	357.00
5001.000	550.00	833.08	0.00	0.03	0.00	506.95	1.00
5001.000	550.00	833.11	0.03	0.03	0.03	210.00	1.00
5101.000	550.00	833.14	0.00	0.06	0.00	518.33	100.00
5101.000	550.00	833.20	0.06	0.09	0.06	210.00	100.00
5102.000	550.00	833.13	0.00	-0.01	0.00	520.33	1.00
5102.000	550.00	833.19	0.06	-0.01	0.06	210.00	1.00
5324.000	550.00	833.18	0.00	0.06	0.00	689.28	222.00
5324.000	550.00	833.27	0.09	0.08	0.09	200.00	222.00
6100 000	550.00	833.21	0.00	0.02	0.00	477.18	776.00
6100.000	550.00	833.31	0.10	0.03	0.10	205.32	776.00
6101.000	550.00	833.21	0.00	0.00	0.00	477.18	1.00
6101.000	550.00	833.30	0.09	0.00	0.09	205.00	1.00
6145.000	550.00	833.21	0.00	0.01	0.00	478.15	44.00
6145.000	550.00	833.32	0.10	0.01	0.10	205.00	44.00
6146.000	550.00	833.21	0.00	-0.01	0.00	478.31	1.00
6146 000	550.00	833.31	0.10	0.00	0.10	205.00	1.00
7400.000	550.00	833.26	0.00	0.05	0.00	384.47	1254.00
7400.000	550.00	833.38	0.12	0.07	0.12	250.00	1254.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
7600.000	550.00	833.26	0.00	0.00	0.00	384.48	200.00
7600.000	550.00	833.38	0.13	0.00	0.13	250.00	200.00

SUMMARY OF ERRORS AND SPECIAL NOTES

FLOODWAY DATA, YEAR FLOOD, ENCROACHED
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
0.000	281.	1121.	0.5	820.1	820.0	0.1
220.000	281.	1126.	0.5	820.1	820.0	0.1
1010.000	234.	499.	1.1	820.2	820.1	0.1
1105.000	181.	213.	2.6	820 3	820.2	0.1
1200.000	192.	273.	2.0	820.8	820.7	0.1
1400.000	180.	131.	4.2	821.4	821.3	0.1
1800 000	201.	260.	2.1	823.1	823.0	0.1
1900.000	175.	182.	3.0	823.3	823.2	0.1
2000 000	182.	142.	3.9	823.5	823.4	0.1
2160.000	179.	133.	4.1	824.2	824.2	0.0
2300.000	105.	108.	5.1	824.9	824.9	0.0
2400.000	52.	105.	5.2	825.5	825.5	0.0
2450.000	49.	102.	5.4	825.7	825.7	0.0
2500.000	24.	83.	6.6	826.0	826.0	0.0
2508.000	20.	96.	5.7	826.2	826.2	0.0
2514.000	17.	83.	6.6	826.2	826.2	0.0
2519.000	14.	71.	7.7	826.3	826.3	0.0
2520.000	14.	71.	7.7	826.3	826.3	0.0
2556 000	14.	74.	7.4	826.5	826.5	0.0
2557.000	14.	75.	7.4	826.5	826.5	0.0
2560.000	20.	112.	4.9	826.9	826.9	0.0
2565.000	30.	166.	3.3	827.3	827.3	0.0
2760.000	41.	201.	2.7	827.5	827.5	0.0
2960.000	16.	93.	5.9	827.7	827.7	0.0
3006 000	16.	104.	5.3	828.4	828.4	0.0
3300.000	44.	226.	2.4	829.0	829.0	0.0
3365.000	95.	286.	1.9	829.8	829.8	0.0
3400.000	130.	633.	0.9	830.0	830.0	0.0
3840.000	152.	559.	1.0	830.1	830.0	0.1
3858.000	152.	579.	1.0	830.2	830.2	0.0
4150.000	33.	173.	3.2	830.2	830.2	0.0
4175.000	32.	159.	3.5	830 2	830.2	0.0
4195.000	31.	148.	3.7	830.3	830.3	0.0
4200.000	14.	97.	5.7	830.3	830.3	0.0
4220.000	16.	105.	5.2	830.8	830.7	0.1
4259.000	12.	78.	7.0	830.7	830.6	0.1
4285.000	12.	80	6.9	830.8	830.7	0.1
4335.000	21.	88.	6.3	831.1	831.0	0.1
4464.000	30.	105.	5.3	831.7	831.7	0.0
4643.000	38.	123.	4.5	832.3	832.3	0.0
5000.000	210.	419.	1.3	833.0	833.0	0.0
5001.000	210.	397.	1.4	833.1	833.1	0.0

FLOODWAY DATA, YEAR FLOOD, ENCROACHED
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE
5101.000	210.	417.	1.3	833.2	833.1	0.1
5102.000	210.	444.	1.2	833.2	833.1	0.1
5324.000	200.	1020.	0.5	833.3	833.2	0.1
6100 000	205.	719.	0.8	833.3	833.2	0.1
6101.000	205.	496.	1.1	833.3	833.2	0.1
6145.000	205.	497.	1.1	833.3	833.2	0.1
6146.000	205.	720.	0.8	833.3	833.2	0.1
7400 000	250.	1231.	0.4	833.4	833.3	0.1
7600.000	250.	1233.	0.4	833.4	833.3	0.1

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  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
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00BREAK00

1) COUNTY: Clare & Isabella

2) STUDY NAME: City of Clare

3) WATERCOURSE: little Tobacco Drain

4) DOCUMENT TYPE: report

00BREAK00

FLOOD INSURANCE STUDY

CITY OF CLARE, MICHIGAN

CLARE AND ISABELLA COUNTIES

REVISED PRELIMINARY

2/1/91

Federal Emergency Management Agency

COMMUNITY NUMBER - 260629

TABLE OF CONTENTS

		Page
1.0	INTRODUCTION	1
	1.1 Purpose of Study	1
	1.2 Authority and Acknowledgments	1
	1.3 Coordination	1
2.0	AREA STUDIED	2
	2.1 Scope of Study	2
	2.2 Community Description	2
	2.3 Principal Flood Problems	2
	2.4 Flood Protection Measures	4
3.0	ENGINEERING METHODS	4
	3.1 Hydrologic Analyses	4
	3.2 Hydraulic Analyses	5
4.0	FLOODPLAIN MANAGEMENT APPLICATIONS	6
	4.1 Floodplain Boundaries	6
	4.2 Floodways	7
5.0	INSURANCE APPLICATION	9
6.0	FLOOD INSURANCE RATE MAP	10
7.0	OTHER STUDIES	10
8.0	LOCATION OF DATA	10
9.0	REFERENCES AND BIBLIOGRAPHY	10

TABLE OF CONTENTS (continued)

Page

FIGURES

Figure	1	-	Vicinity Map	3
Figure	2	-	Floodway Schematic	9

TABLES

Table	1	-	Summary of Discharges	5
Table	2	-	Floodway Data	8

EXHIBITS

Flood Profiles

Tobacco River	Panel 01P
Little Tobacco Drain	Panel 02P

Flood Insurance Rate Map

Elevation Reference Marks

FLOOD INSURANCE STUDY

CITY OF CLARE,
CLARE AND ISABELLA COUNTIES,
MICHIGAN

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the City of Clare, Clare and Isabella Counties, Michigan, and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood risk data for various areas of the community that will be used to establish actuarial flood insurance rates and assist the community in its efforts to promote sound floodplain management. Minimum floodplain management requirements for participation in the National Flood Insurance Program are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the State (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses for this study were performed by the U.S. Army Corps of Engineers (COE), Detroit District, (the Study Contractor) for the Federal Emergency Management Agency (FEMA), under Inter-Agency Agreement No. EMW-85-E-1822, Project Order No. 1. This study was completed in August 1987.

1.3 Coordination

On May 15, 1985, streams requiring detailed study were identified at a meeting attended by representatives of the Study Contractor, FEMA, and the City of Clare. The technical aspects of the study were coordinated with and approved by the Michigan Department of Natural Resources (MDNR), the State coordinating agency.

On April 10, 1990, details of the Special Problem Report (SPR) investigations were discussed at meeting attended by representatives of the Study Contractor, MDNR, and the City of Clare.

On July 24, 1990, the results of this Flood Insurance Study were reviewed and accepted at a final coordination meeting attended by representatives of the Study Contractor, FEMA, and the community.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the incorporated area of the City of Clare, Clare and Isabella Counties, Michigan. The area of study is shown on the Vicinity Map (Figure 1).

Flooding caused by overflow of Little Tobacco Drain and the Tobacco River was studied in detail. Lake Shamrock was studied by approximate methods.

Areas having low development potential or minimal flood hazards were previously studied using approximate analyses. The results were shown on the Flood Hazard Boundary Map for the City of Clare, Michigan (Reference 1) and are incorporated into this Flood Insurance Study.

The areas studied were selected with priority given to all known flood hazard areas and areas of projected development or proposed construction through August 1992. The scope and methods of study were proposed to and agreed upon by FEMA and the City of Clare.

2.2 Community Description

The City of Clare is in Clare and Isabella Counties, Michigan, about 30 miles northwest of the City of Midland, Michigan, and 75 miles north of the City of Lansing, Michigan. It is bordered on the north, east, and west by Grant Township, Michigan; and on the south by Vernon Township, Michigan. The City of Clare incorporates approximately two square miles and is served by U.S. Highways 27 and 10. The 1980 population of the City of Clare was reported to be 3,300 (Reference 2).

2.3 Principal Flood Problems

The principal flood problems in the City of Clare occur when Little Tobacco Drain, the Tobacco River, and Lake Shamrock are at flood stage, especially as a result of snowmelt or rainfall on wet or frozen ground in the late winter or early spring. Depending on the weather, short periods of high runoff can occur at other times of the year. Although previous dams at the Lake Shamrock dam site failed in 1944 and 1962, there is no record of flooding problems occurring at the existing Lake Shamrock dam (Reference 3). The Clare Police Department routinely checks the level of the lake and is responsible for maintaining the established level.

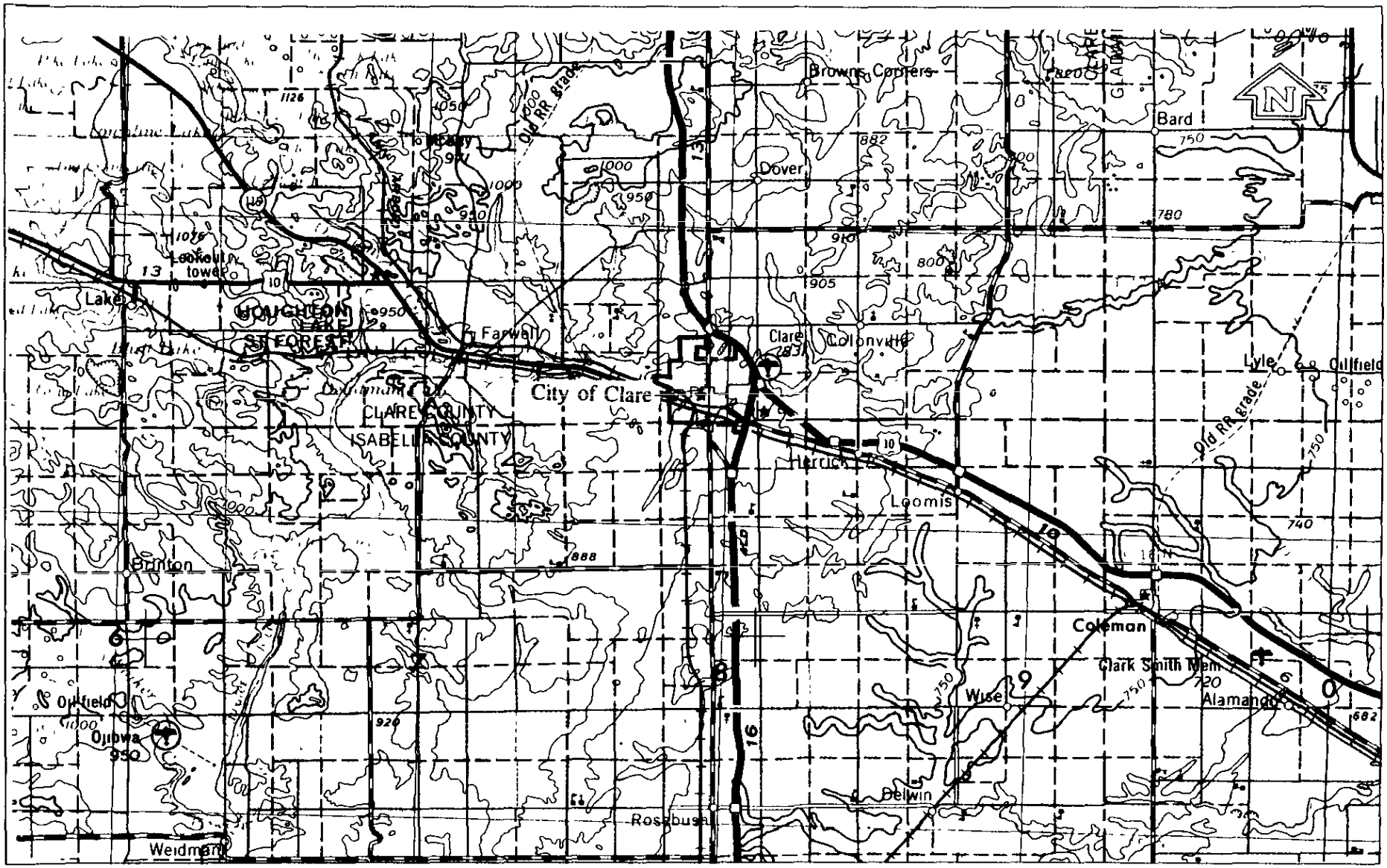


FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF CLARE, MI
(CLARE AND ISABELLA COS.)

APPROXIMATE SCALE

3 0 3 6 9 MILES

VICINITY MAP

2.4 Flood Protection Measures

Flood protection measures are not known to exist within the study area.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that is expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long-term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 100-year flood (1-percent chance of annual exceedence) in any 50-year period is approximately 40-percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60-percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for each riverine flooding source studied in detail affecting the community.

The drainage areas of the Tobacco River and Little Tobacco Drain were determined using the U.S. Soil Conservation Service (SCS) Lake Shamrock Dam Safety Program Inspection Report and topographic maps, respectively (References 3 and 4).

Because Little Tobacco Drain is not gaged, the SCS unit hydrograph option of the HEC-1 computer program was used to determine the discharge (Reference 5). Storage was accounted for by two methods. The MDNR has a method which estimates the effects of storage by measuring the amount of swamp area along the stream. This method was used for the upper portion of the stream. It was accounted for in HEC-1 by adjusting the basin lag time. In the lower portion of the basin, a modified puls routing reach was included. The stage-storage data was based on HEC-2 runs within the City of Clare and estimated storage based on visual observations for areas immediately upstream of the city. SCS curve numbers were used to determine the precipitation

losses. Soil types were determined using the SCS soil survey map for Isabella County (Reference 7). The percent of each soil class, the time of concentration values, and SCS lag time were computed. The 100-year, 24-hour rainfall was obtained from TP-40 (Reference 6). The SCS Type II rainfall distribution was applied.

On the Tobacco River, a USGS regression equation (Reference 8) was used to calculate the discharge. The 100-year discharge computed at the downstream corporate limit was found to compare favorably with the 100-year discharge indicated in the Lake Shamrock Dam Safety Program Inspection Report (Reference 3).

Peak discharge-drainage area relationships for the 100-year floods of each flooding source studied in detail in the community are shown in Table 1.

TABLE 1 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (SQ MILES)	PEAK DISCHARGE (CFS) 100-YEAR
LITTLE TOBACCO DRAIN at CSX railroad	8.9[1]	550
TOBACCO RIVER at Lake Shamrock dam	93.0	2,260

[1]excludes 0.5 square mile at Ponderosa Lake due to limited capacity

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

Cross-section data for the backwater analyses were obtained by field surveys in February and July 1986. All bridges and culverts on the Little Tobacco River were surveyed to obtain elevation and structural geometry data.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles and on the Flood Insurance Rate Map.

Roughness coefficients (Manning's "n") used in the hydraulic computations were chosen by engineering judgment and based on field observation of the streams and floodplain areas. The channel "n" values of the two streams studied range from 0.02 to 0.05 and the overbank values range from 0.04 to 0.08.

Expansion and contraction coefficients for the two streams in the study area were estimated to range from 0.1 to 0.6 and from 0.3 to 1.0. The starting water-surface elevation for Little Tobacco Drain was computed by considering the effect of five restrictive bridges located just downstream of the corporate limit. The starting water-surface elevation for the Tobacco River was determined using a known 100-year water-surface elevation for Lake Shamrock obtained from the National Dam Safety Program Inspection Report (Reference 3). The water-surface elevations were developed for the two streams using the HEC-2 step-backwater computer program (Reference 9). Flood profiles were drawn showing the computed water-surface elevations for floods of the selected recurrence intervals.

The hydraulic analyses for this study are based on the effects of unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD). Elevation reference marks used in this study are shown on the map and described in the exhibit labeled Elevation Reference Marks.

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The National Flood Insurance Program encourages State and local governments to adopt sound floodplain management programs. Therefore, each Flood Insurance Study provides 100-year flood elevations and delineations of the 100- and 500-year floodplain boundaries and 100-year floodway to assist communities in developing floodplain management measures.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent annual chance (500-year) flood is employed to indicate additional areas of flood risk in the community. For each stream studied in detail, the 100-year floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps at a scale of of 1:25000 with a contour interval of 3 meters (Reference 4).

The 100-year floodplain boundaries are shown on the Flood Insurance Rate Map. On this map, the 100-year floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A, AE, AH, AO, A99, V, and VE). Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map

scale and/or lack of detailed topographic data.

For the streams studied by approximate methods, only the 100-year floodplain boundary was delineated using the Flood Hazard Boundary Map for the City of Clare (Reference 1).

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces the flood-carrying capacity, increases the flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the National Flood Insurance Program, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 100-year floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. In Michigan though, under Michigan Act 245, Public Acts of 1929, as amended by Act 167, Public Acts of 1968 (Reference 13), encroachment in the floodplain is limited to that which will cause only an insignificant increase in flood heights. Thus, at the recommendation of the Bureau of Water Management, a floodway having no more than a 0.1-foot surcharge has been delineated for this study. The floodways in this study are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodways for this study were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations are tabulated for selected cross sections and are shown in Table 2, Floodway Data. The computed floodways are shown on the Flood Insurance Rate Map. In cases where the floodway and 100-year floodplain boundaries are either close together or collinear, only the floodway boundary is shown.

Along streams where floodways have not been computed, the community must ensure that the cumulative effect of development in the floodplain will not cause an increase in the base flood elevations greater than the state's allowable surcharge at any point within the community.

The area between the floodway and the 100-year floodplain boundaries is termed the floodway fringe. The floodway fringe

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE (FEET)
TOBACCO RIVER								
A	1000	46	345	6.6	827.8	827.8	827.8	0.0
B	2570	525	2156	1.0	829.8	829.8	829.8	0.0
C	3740	422	1176	1.9	830.0	830.0	830.1	0.1
LITTLE TOBACCO DRAIN								
A	1220[2]	281	1126	0.5	820.0	820.0	820.1	0.1
B	2800[2]	201	260	2.1	823.0	823.0	823.1	0.1
C	3960[2]	16	93	5.9	827.7	827.7	827.7	0.0
D	4400[2]	130	633	0.9	830.0	830.0	830.0	0.0
E	5150[2]	33	173	3.2	830.2	830.2	830.2	0.0
F	5200[2]	14	97	5.7	830.3	830.3	830.3	0.0
G	5259[2]	12	78	7.0	830.6	830.6	830.7	0.1
H	6324[2]	200	1020	0.5	833.2	833.2	833.3	0.1
I	8400[2]	250	1231	0.4	833.3	833.3	833.4	0.1

[1]FEET ABOVE CONFLUENCE WITH LAKE SHAMROCK
[2]FEET ABOVE CORPORATE LIMITS

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF CLARE, MI
(CLARE AND ISABELLA COS.)

FLOODWAY DATA

TOBACCO RIVER—LITTLE TOBACCO DRAIN

encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood by more than the state's allowable surcharge at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 2.

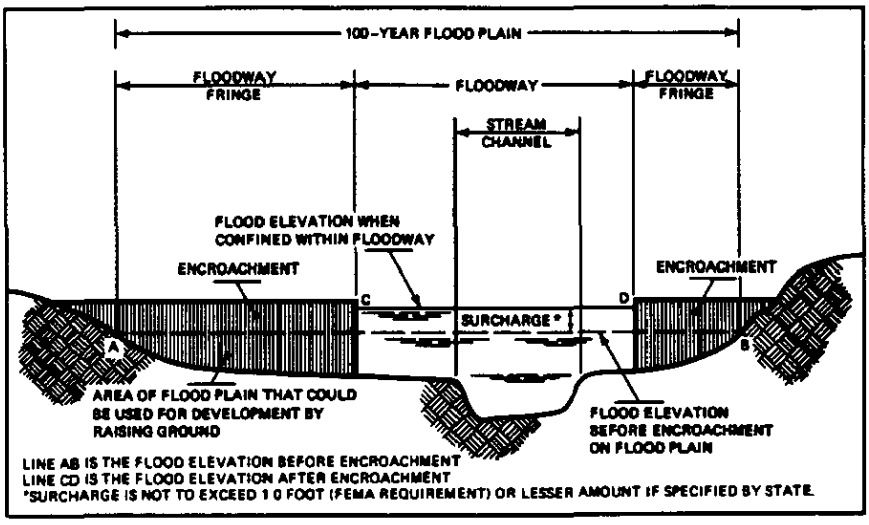


FIGURE 2 - Floodway Schematic

5.0 INSURANCE APPLICATION

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. These zones are as follows:

Zone A

Zone A is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base flood elevations or depths are shown within this zone.

Zone AE

Zone AE is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by detailed methods. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance rate zone that corresponds to areas outside the 100-year floodplain, areas of 100-year flooding where average depths are less than 1 foot, areas of 100-year flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 100-year flood by levees. No base flood elevations or depths are shown within this zone.

6.0 FLOOD INSURANCE RATE MAP

The Flood Insurance Rate Map is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the 100-year floodplains that were studied by detailed methods, shows selected whole-foot base flood elevations or average depths. Insurance agents use the zones and base flood elevations in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols the 100- and 500-year floodplains, the floodways, and the locations of selected cross sections used in the hydraulic analyses and floodway computations.

7.0 OTHER STUDIES

This Flood Insurance Study supersedes the previously printed Flood Hazard Boundary Map for the City of Clare (Reference 1).

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting the Natural and Technological Hazards Division, FEMA, 175 West Jackson Boulevard, 4th Floor, Chicago, Illinois 60604.

Future revisions may be made that do not result in the republishing of the Flood Insurance Study report. To ensure that any user is aware of all revisions, it is advisable to contact the map repository of flood hazard data located in the community.

9.0 REFERENCES AND BIBLIOGRAPHY

1. U.S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Hazard Boundary Map, City of Clare, Clare and Isabella Counties, Michigan, June 1978.

2. U.S. Department of Commerce, Bureau of the Census, 1980 Census of Population, Number of Inhabitants, Michigan, Washington, D.C., January 1982.

3. U.S. Army Corps of Engineers, Detroit District, Tobacco River Basin, Lake Shamrock Dam, Clare, Clare County, Michigan, Inventory No. 622, National Dam Safety Program Inspection Report, Detroit, Michigan, July 1979.

4. U.S. Geological Survey, 7.5 Minute Series Topographic Maps, Scale 1:25000, Contour Interval 3 Meters: Clare, Michigan, provisional edition 1983.

5. U.S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-1 Flood Hydrograph Package, Computer Program 723-X6-L2010, Users Manual, Davis, California, January 1985.

6. ----------, National Weather Service, Technical Paper No. 40, Rainfall Frequency Atlas of the United States, Washington, D.C., January 1963.

7. U.S. Department of Agriculture, Soil Conservation Service, Soil Survey of Isabella County, Michigan, Washington, D.C., 1985.

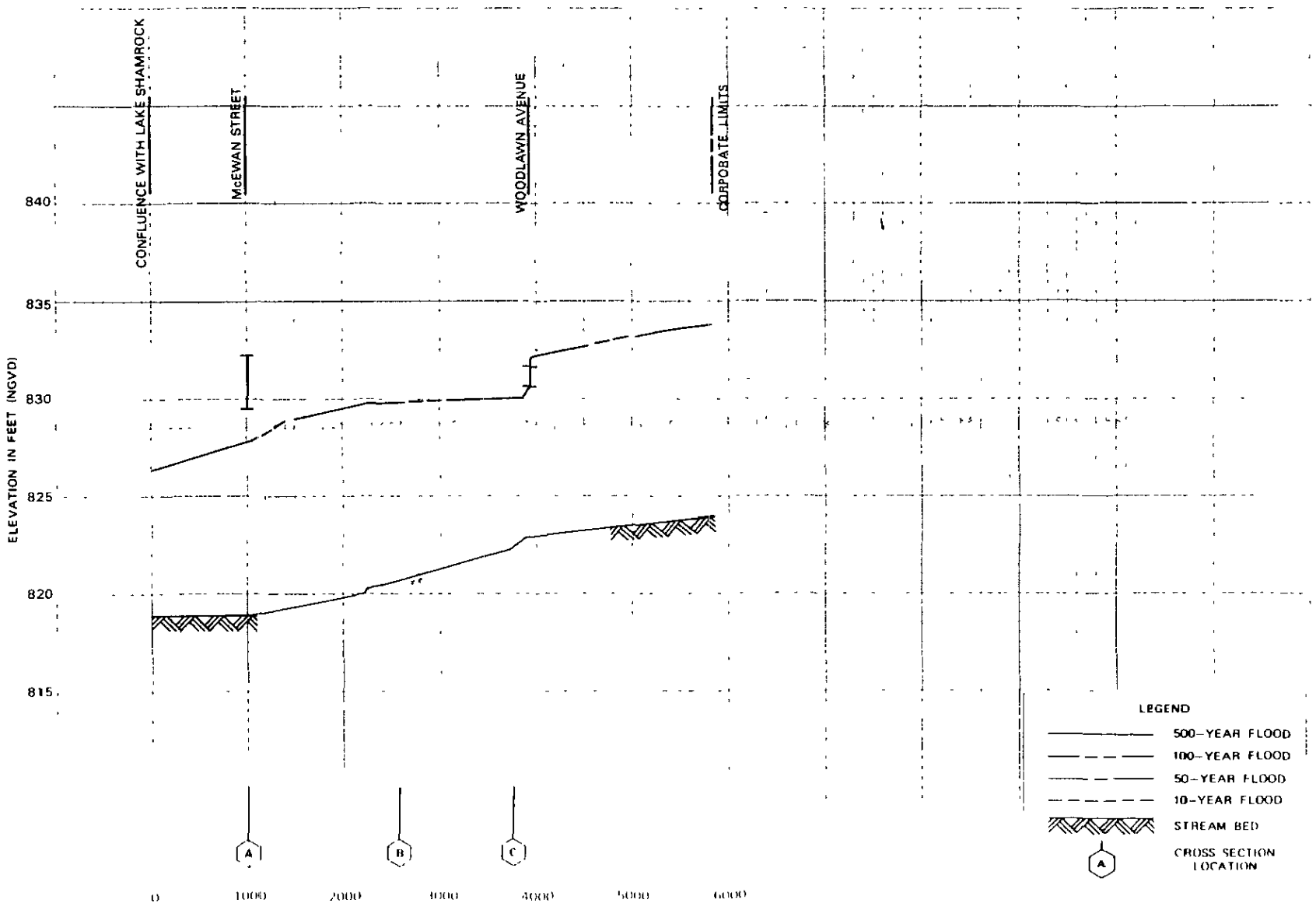
8. U.S. Geological Survey and Michigan Department of Natural Resources, Water Resources Investigations Report 84-4027, Statistical Models for Estimating Characteristics of Michigan Streams, Lansing, Michigan, 1984.

9. U.S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-2 Water-Surface Profiles, Generalized Computer Program, Davis, California, April 1984.

10. State of Michigan, Floodplain Control Act of 1968, Act 245, P.A. 1929 as amended by Act 167, P.A. 1968, Michigan Water Resources Commission, Lansing, Michigan, 1968.

ELEVATION REFERENCE MARKS

REFERENCE MARK	FLOOD INSURANCE RATE MAP PANEL	ELEVATION (FEET NGVD)	DESCRIPTION OF LOCATION
1	0001	833.39	chiseled square on southeast end of concrete bridge walk on U.S. Highway 27 bridge over the Tobacco River
2	0001	829.706	chiseled cross on northeast bolt on fire hydrant located at northwest corner of intersection of U.S. Highway 27 and Brookwood Drive
3	0001	830.745	chiseled cross on northwest bolt on fire hydrant located on corner of Vinewood Avenue near residence no. 1313
4	0001	843.025	chiseled cross on northeast bolt on fire hydrant located at northeast corner of intersection of U.S. Highway 27 and Sixth Street
5	0001	832.085	chiseled cross on northeast bolt on fire hydrant located at southeast corner of intersection of Jackson Street and Sixth Street
6	0001	831.481	chiseled cross on northeast bolt on fire hydrant located at northeast corner of intersection of Hemlock Street and Fourth Street
7	0001	838.219	chiseled cross on northeast bolt on fire hydrant located at northeast corner of intersection of U.S. Highway 27 and Fourth Street
8	0001	833.436	chiseled cross on northwest bolt on fire hydrant located at northeast corner of intersection of U.S. Highway 27 and First Street



FLOOD PROFILES

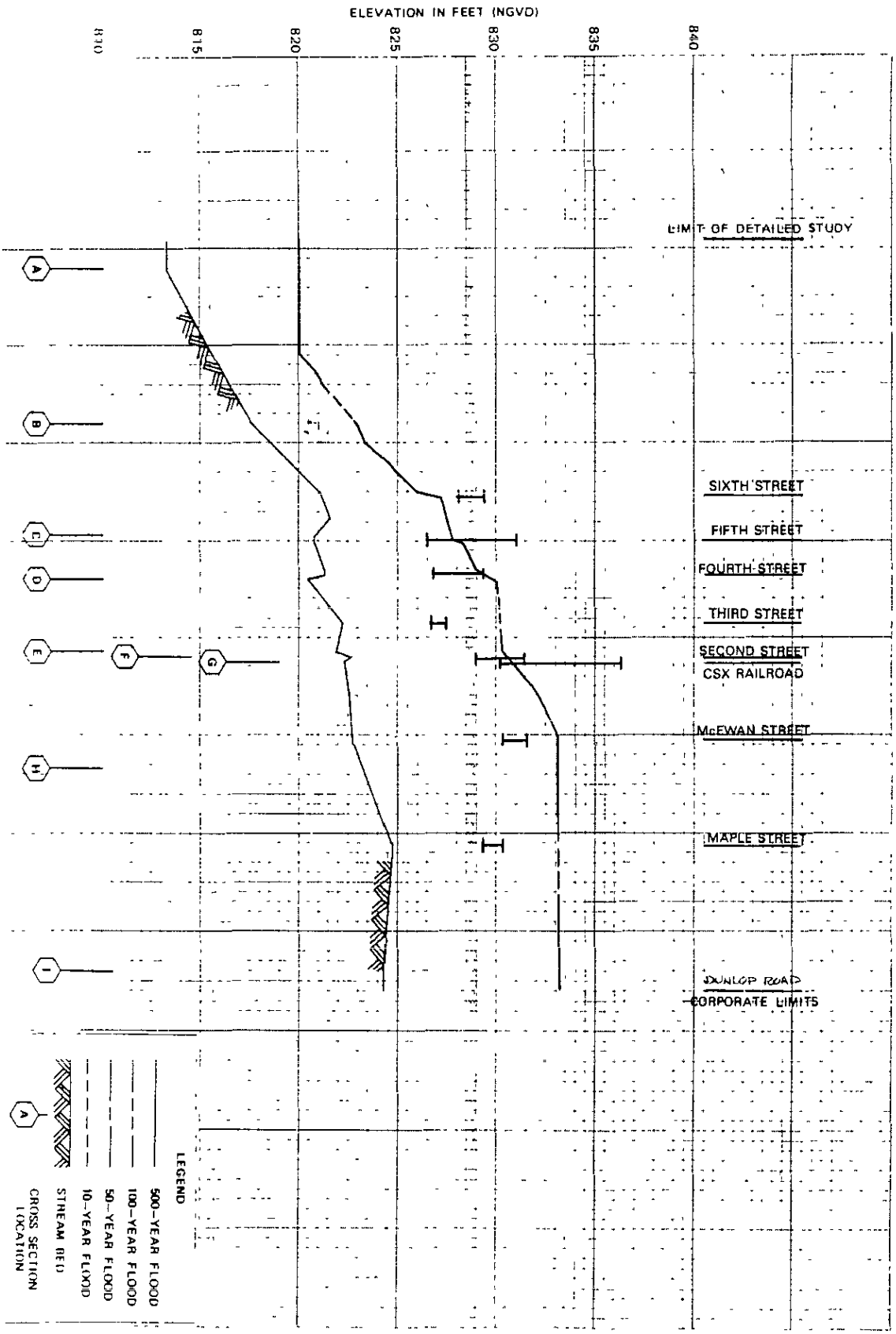
TOBACCO RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF CLARE, MI

(CLARE AND ISABELLA COS.)

01P



FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF CLARE, MI
(CLARE AND ISABELLA COS.)

FLOOD PROFILES

LITTLE TOBACCO DRAIN

02P

DEPARTMENT OF THE ARMY
DETROIT DISTRICT, CORPS OF ENGINEERS
BOX 1027
DETROIT, MICHIGAN 48231-1027

17 JUL 1990

IN REPLY REFER TO

Great Lakes Hydraulics and Hydrology Branch

RECEIVED

JUL 18 1990

NATURAL RESOURCES
LAND & WATER MGMT.

Mr. Bruce Menerey, P.E.
Technical Programs
Land and Water Management Division
Michigan Department of Natural Resources
P.O. Box 30028
Lansing, Michigan 48909

Dear Mr. Menerey:

Submitted for your review and approval is a copy of the hydraulic calculations for the City of Clare, Michigan, Special Problem Report FIS. Enclosed are the HEC-2 100-year encroached runs, a work map showing the revised flood plains and floodway and a brief write- up dealing with items that will assist the review process.

If you have any questions regarding the enclosed data, please contact Mr. Bruce Holbrook or Mr. David Schweiger at (313) 226-4886.

Sincerely,

R. Wilshaw, P.E.
Chief, Great Lakes H&H Branch

Enclosures

City of Clare, Mi., FIS
Special Problem Report
Hydraulic Analysis

On December 6, 1988, during the final community meeting for the City of Clare, the City objected to the findings of the study. Subsequently, an appeal was made to FEMA. Upon consulting with the Detroit District, Corps of Engineers, the study contractor, and the MDNR, FEMA approved the undertaking of a Special Problem Report (SPR). Among the items included in the SPR was a review of the hydrology and floodway computations for the Little Tobacco Drain and the floodway computations for the Tobacco River.

As a result of the hydrologic review, changes were made that now give a 100-year discharge of 550 cfs on the Little Tobacco Drain. The 100-year discharge in the Preliminary FIS for the City of Clare was 890 cfs. The revised hydrology has been reviewed and approved by the Hydrologic Studies Section of the MDNR.

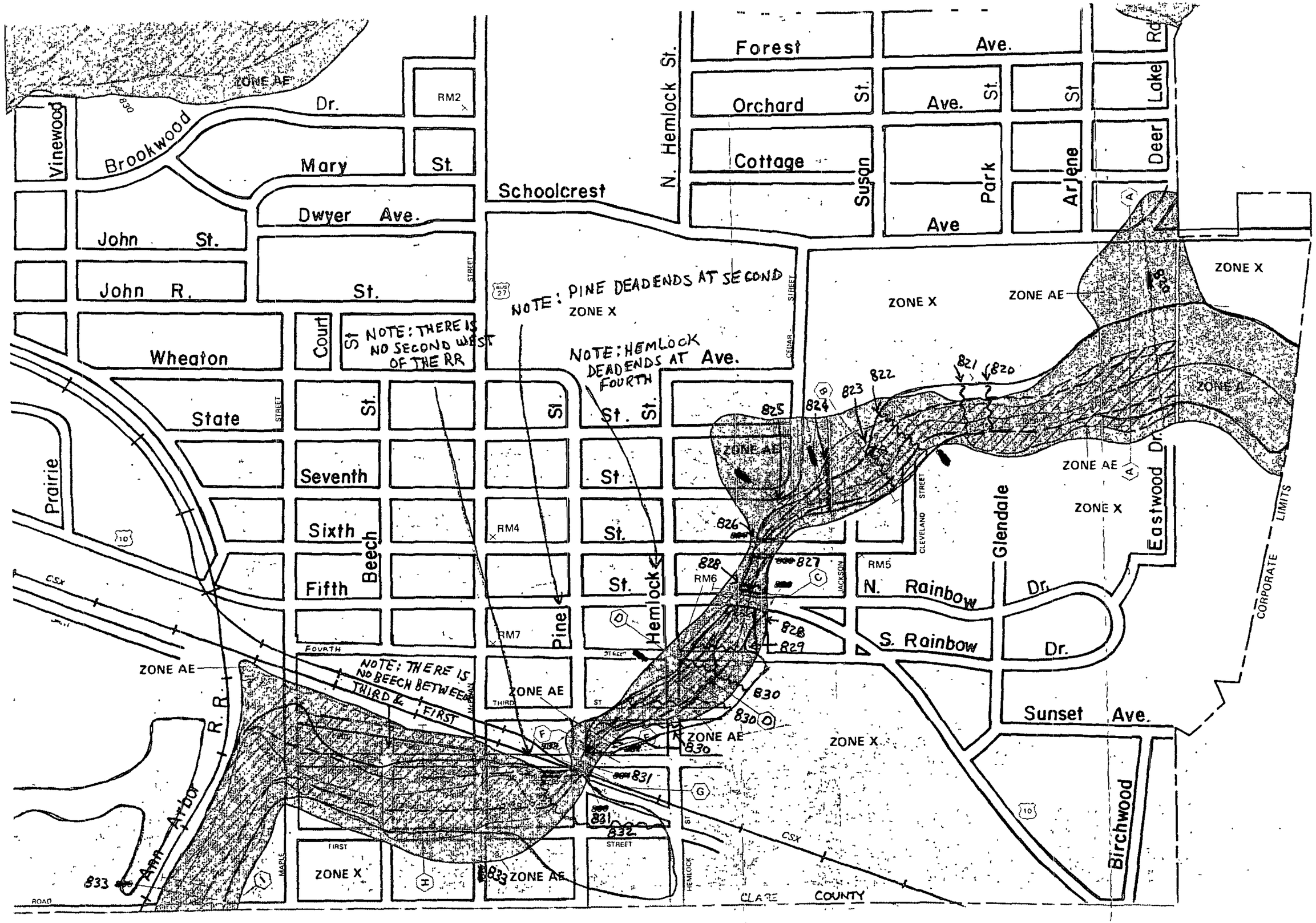
Because of the substantial change in the 100-year discharge on the Little Tobacco Drain, the HEC-2 models for the Drain were rerun utilizing the revised discharge. The hydraulic analysis in the Preliminary FIS used a starting water surface elevation based on computations by the MDNR, which accounted for the backwater effects of several bridges just downstream of the Corporate Limits. The starting water surface elevation for this study is based on the same procedure but with the new discharge. The new starting water surface elevation is now 4.0 feet lower. This lower starting elevation along with the reduced discharge resulted, in a critical depth message in the downstream end of the HEC-2 model. As a result, an interpolated section and two repeated sections were added to the model between secno's 1010 and 1800. Additionally the contraction and expansion coefficients were changed from 0.1 and 0.3 to 0.3 and 0.5, respectively, in the initial part of the model. Other changes to the model resulting from the change in discharge are minor modifications to or the addition of encroachments at several sections.

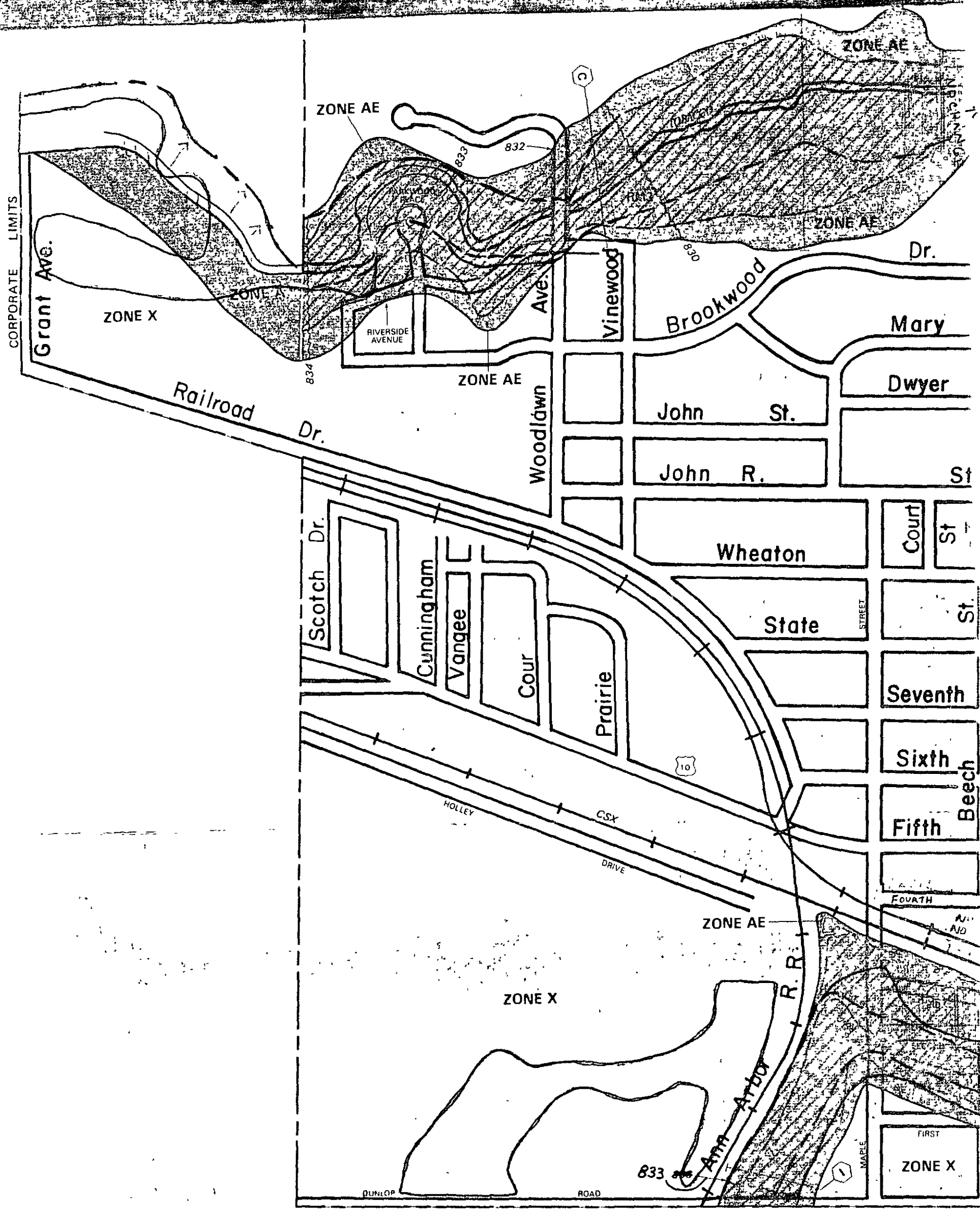
On the Little Tobacco Drain, based on the modified HEC-2 model, a new encroached HEC-2 run was executed. In all cases the top width is the same or less than those computed in the Preliminary FIS HEC-2. Upstream of McEwen Ave., the top widths range from 100 feet to 440 feet less.

On the Tobacco River, only the encroached model was rerun. A number of changes were made starting at secno 1400 to the upstream Corporate Limit. At secno 1400, no encroachment was taken since the modeled unencroached width is only 83 feet. In part because of this change, the amount of encroachment at secno's 2250 and 2570 could be substantially increased. The encroachments at secno's 3740 through 3885 were left unchanged. The encroachments at secno's 3890 through 3929 were substantially increased; however, due to the short reach length involved, negligible area is involved. Upstream of Woodlawn Road, starting at secno 4430, the amount of encroachment has been increased and realigned. The realignment is due to the topographic survey of lots 44 and 45 at the intersection of Riverside Dr. and Parkwood Place. The survey shows that the floodplain, and therefore the floodway, does not extend to the

indicated intersection. As a result, there will also be a limited modification made to the floodplain delineation in this area.

A copy of the HEC-2 computer model outputs for the encroached conditions, along with a revised work map is being provided for your information.


ZONE AE
830
Vinewood
Brookwood
Dr.
RM2
Mary
St.
Schoolcrest
N. Hemlock St.
Forest
Ave.
Orchard
St.
Ave.
St.
St
Lake
Rd
Cottage
Susan
Park
Arjene
Deer
Ave
John St.
Dwyer Ave.
John R.
St.
STREET
NOTE: PINE DEADENDS AT SECOND
ZONE X
STREET
ZONE X
ZONE AE
ZONE X
Wheaton
Court
St
NOTE: THERE IS NO SECOND WEST OF THE RR
NOTE: HEMLOCK DEADENDS AT Ave.
FOURTH
821
820
822
823
824
825
ZONE A
State
STREET
St.
St.
St.
St.
ZONE AE
ZONE AE
Prairie
Seventh
St.
826
STREET
CLEVELAND
Glendale
ZONE X
Eastwood
Dr.
Sixth
Beech
RM4
St.
828
827
JACKSON
RM5
N. Rainbow
Dr.
CORPORATE LIMITS
Fifth
St.
RM6
Hemlock
C
D
828
829
S. Rainbow
Dr.
RM7
Pine
FOURTH
STREET
ZONE AE
NOTE: THERE IS NO BEECH BETWEEN THIRD & FIRST
ZONE AE
THIRD
ST
830
830
D
Sunset Ave.
F
E
ZONE AE
830
ZONE X
831
G
831
832
STREET
CSX
Birchwood
R.R.
Ann Arbor
833
ZONE X
I
833
ZONE AE
MAPLE
FIRST
HEMLOCK
ST
CLARE COUNTY
ROAD


ZONE AE
ZONE AE
ZONE AE
ZONE AE
ZONE AE
ZONE X
ZONE X
ZONE X
832
833
834
830
833
PARKWOOD PLACE
RIVERSIDE AVENUE
CORPORATE LIMITS
Grant Ave.
Railroad Dr.
Woodlawn Ave.
Vinewood
Brookwood Dr.
Mary
Dwyer
John St.
John R.
St
Wheaton
Court
St
State
STREET
St.
Seventh
Sixth
Fifth
Beech
Scotch Dr.
Cunningham
Vangee
Cour
Prairie
10
HOLLEY
DRIVE
CSX
FOURTH
FIRST
R. R.
Arbor
Ann
MAPLE
DUNLOP
ROAD

City of Clare FIS

Little Tobacco Drain $\quad Q_{100} = 890\,cfs$

Estimate TWEL $_{D/S}$ of US 10 Westbound (8'x10' box culvert)

$$\text{Depth @ TWEL} \approx \frac{d_c + D}{2} \qquad d_c = \sqrt[3]{\frac{(Q/B)^2}{g}} = \sqrt[3]{\frac{(890/10)^2}{32.2}} = 6.27\,ft$$

$$\text{Depth @ TWEL} \approx \frac{6.27+8}{2} = 7.1\,ft$$

From plans invert = 805.3 $\Rightarrow$ TWEL = 805.3 + 7.1 = 812.4

Westbound US 10 plans show 10'x8' Reinf Conc Box; 67.5 L.F.

$A = 80\,ft^2 \quad R_h = 2.22\,ft$

$$XKOR = 1 + .5 + \frac{29.1\,(.013)^2\,67.5}{(2.22)^{4/3}} = 1.61$$

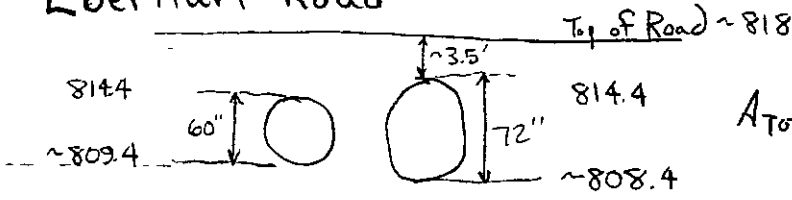
$$EG_{uls} = 812.4 + \left(\frac{890}{80}\right)^2 \frac{1.61}{64.4} = \underline{\underline{815.5}}$$

Eastbound US-10 $\quad$ 10'x8' Reinf Conc. Box, 92.5 L.F.

$$XKOR = 1 + .5 + \frac{29.1\,(.013)^2\,92.5}{(2.22)^{4/3}} = 1.66$$

$$EG_{uls} = 815.5 + \left(\frac{890}{80}\right)^2 \frac{1.66}{64.4} = \underline{\underline{818.7}}$$

Eberhart Road



$A_{TOTAL} = 47.91\,ft^2$

60" CMP $\quad A = 19.64\,ft^2 \quad R_h = 1.25 \quad XKOR = 1 + .9 + \frac{29.1\,(.032)^2\,36}{(1.25)^{4/3}} = 2.70$

72" CMP $\quad A = 28.27 \quad R_h = 1.5 \quad XKOR = 1 + .9 + \frac{29.1\,(.032)^2\,36}{(1.5)^{4/3}} = 2.525$

$$K_{EQ} = \frac{(19.64 + 28.27)^2}{\left[\sqrt{\frac{19.64^2}{2.70}} + \sqrt{\frac{28.27^2}{2.53}}\right]^2} = 2.60$$

TWEL = 818.7

Estimate Upstream Stage; combined pressure/weir flow

$Q_{weir} \sim (2.8)(150)(EG-818)^{3/2}$

$Q_{pressure} = 47.91\sqrt{\frac{64.4(EG-818.7)}{2.60}}$

Assume $EG_{uls} = 819.4$

$Q_T = 420(1.4)^{3/2} + 238.44\sqrt{.7} = 895\text{cfs} \sim 890\text{cfs}$

Use 819.4 u/s of Eberhart

Estimate Stage u/s US 27 North bound

10'x8' concrete box, 102 L.F. $A = 80\text{ft}^2$ $R_h = 2.22$

$XKOR = 1 + .5 + \frac{29.1(.013)^2 102}{2.22^{4/3}} = 1.67$

$EG_{uls} = 819.4 + \left(\frac{890}{80}\right)^2 \frac{1.67}{64.4} = 822.6$

Estimate Stage u/s US 27 Southbound

$XKOR = .5 + \frac{29.1(.013)^2(102)}{(2.22)^{4/3}} = .67$

Since the bridges are very close together, "exit" loss was not included

$EG_{uls} = 822.6 + \left(\frac{890}{80}\right)^2 \frac{.67}{64.4} = 823.9$

Neglecting friction loss between bridges, and to the FIS XSEC 0.00, the starting WSEL of 818 may be ~6 feet low for $Q_{100} = 890$ cfs

To Wally Date 6/12/86 Time

WHILE YOU WERE OUT

M Jerry Noel of Indie-Grandville T.C.

☐ Phoned you ☐ Wants to see you

☒ Asks that you phone ☒ Called on you

Tel. No. 616 846-5870 ☐ Wants an appointment

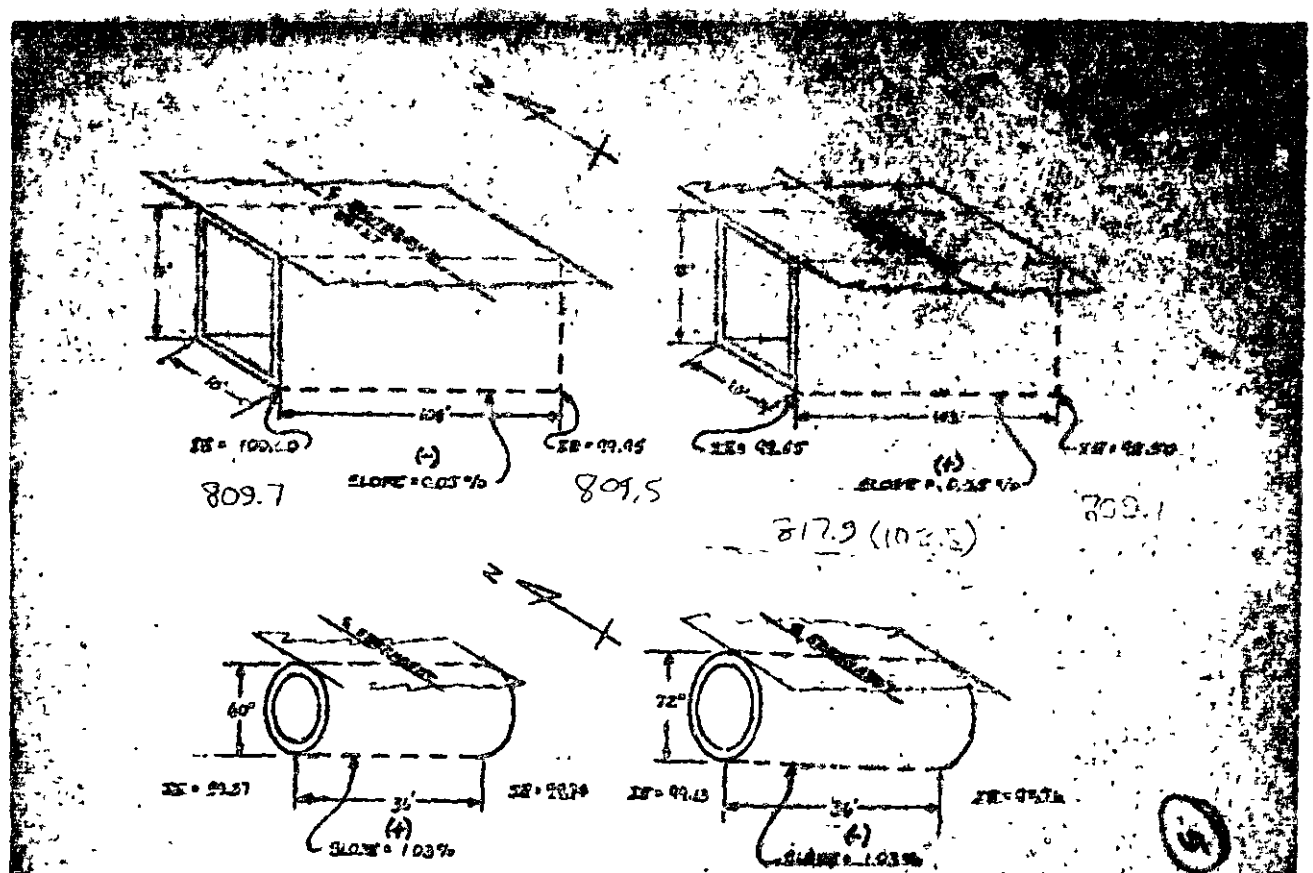
☐ Will call back

☐ Returned your call on 7/10 42

Message

Clear w-w-t-p 6-10-81

Signed MR



SIZE & SLOPE OF CULVERTS ON L.T. DRAIN @ US-27 & EBERHARDT

M [illegible] of [illegible]

☐ Phoned you ☐ Wants to see you T.C.

☐ Also call you phone 616-586-5879

☐ Called on you

☐ Wants an appointment

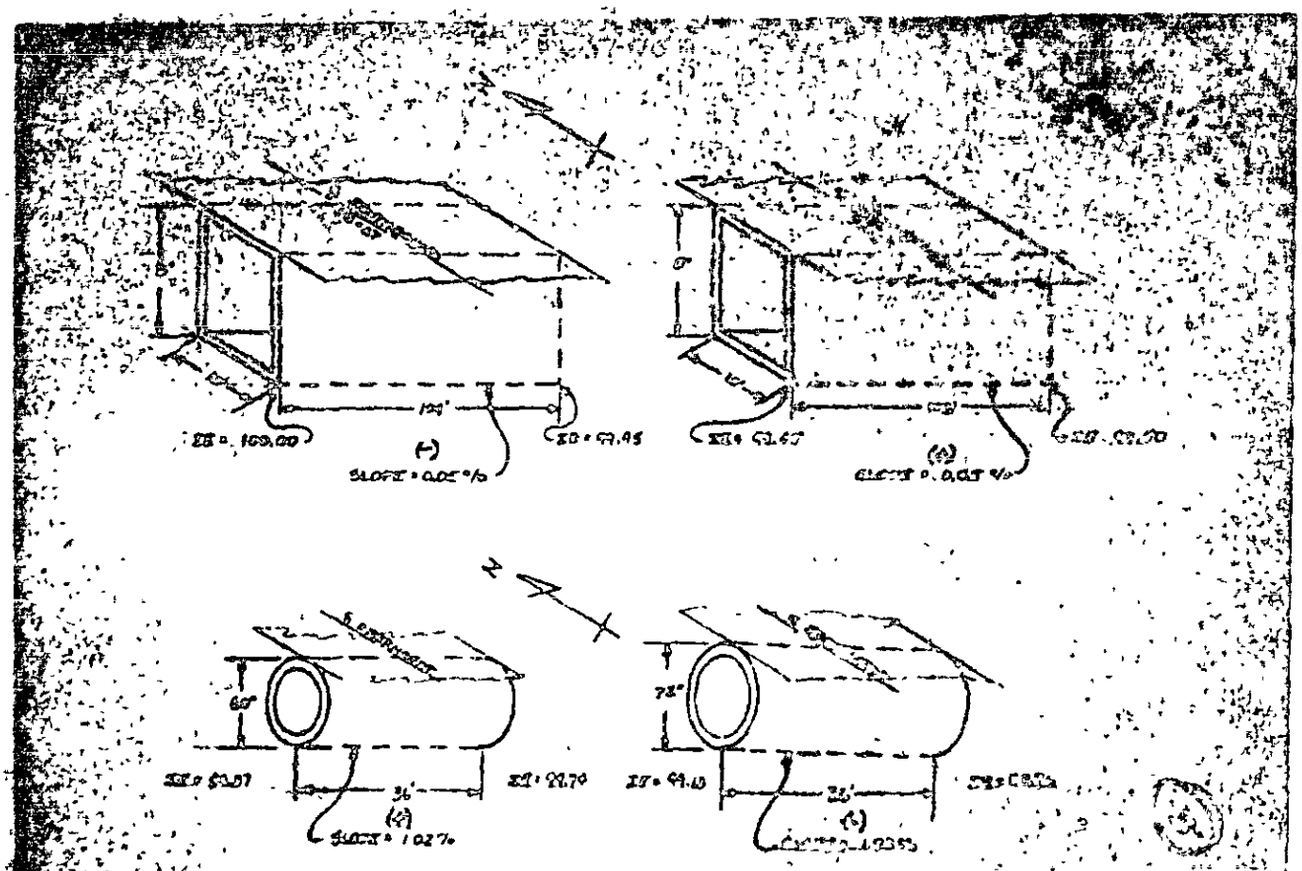
☐ Will call back

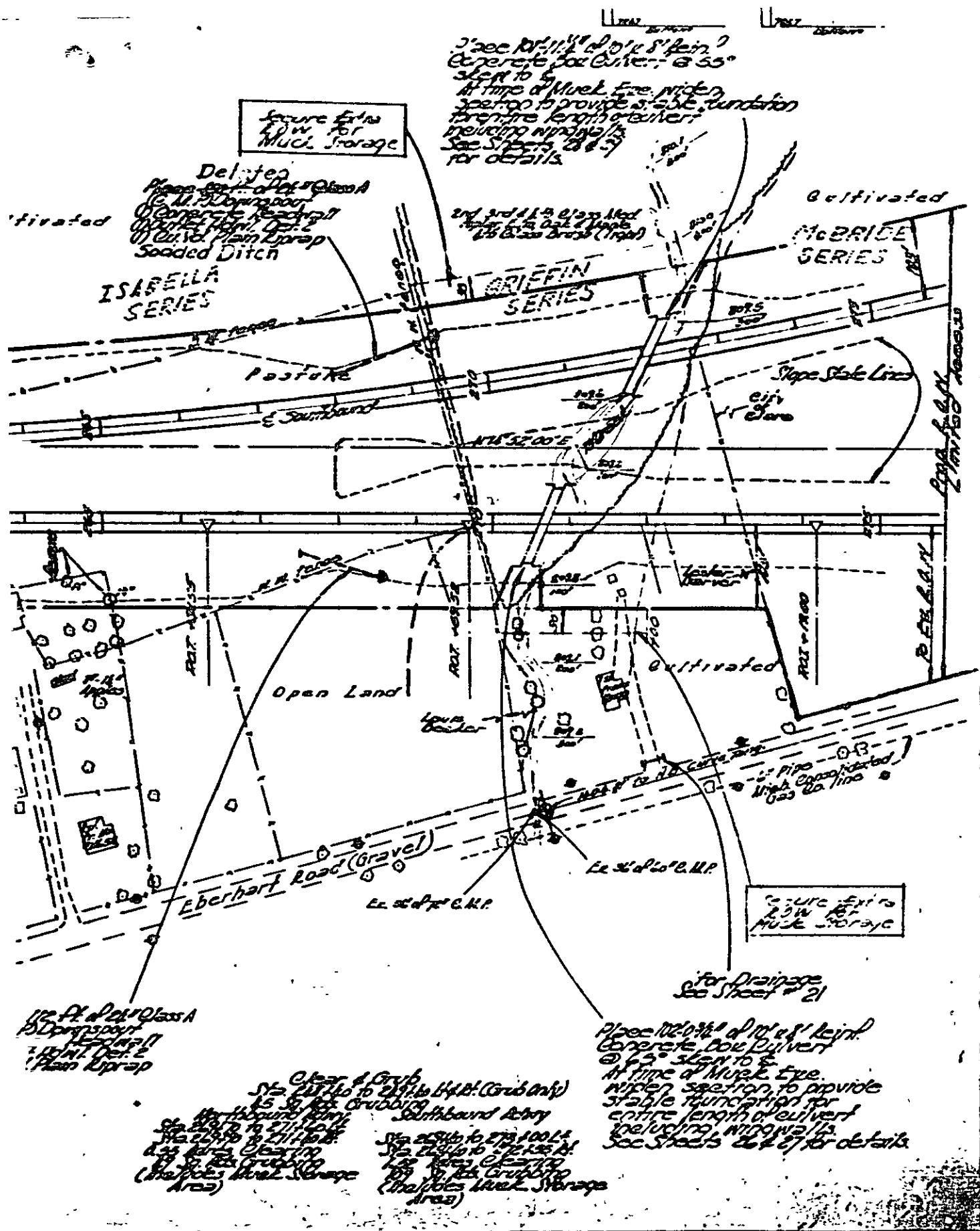
☐ Returned your call

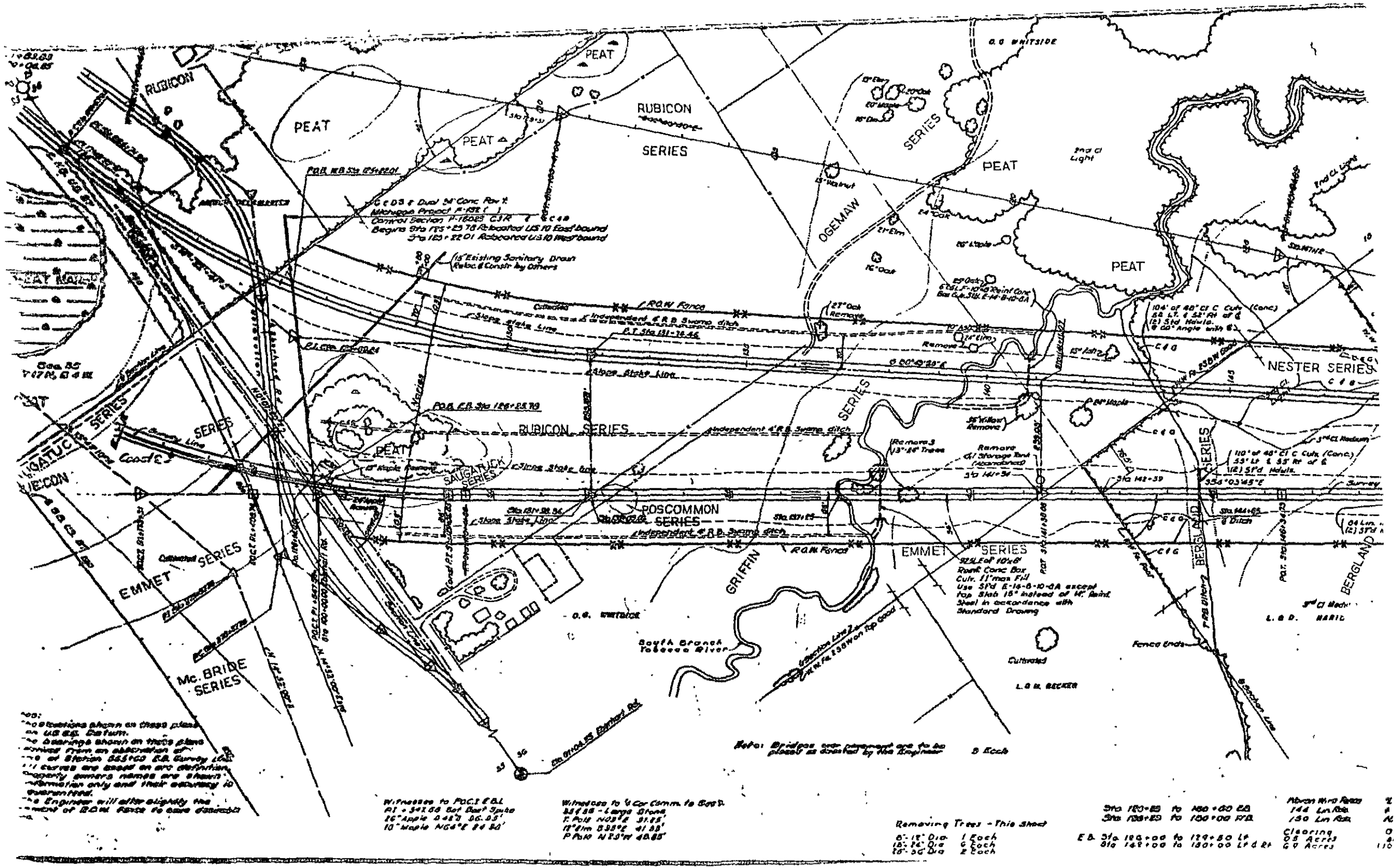
Message 7210 42

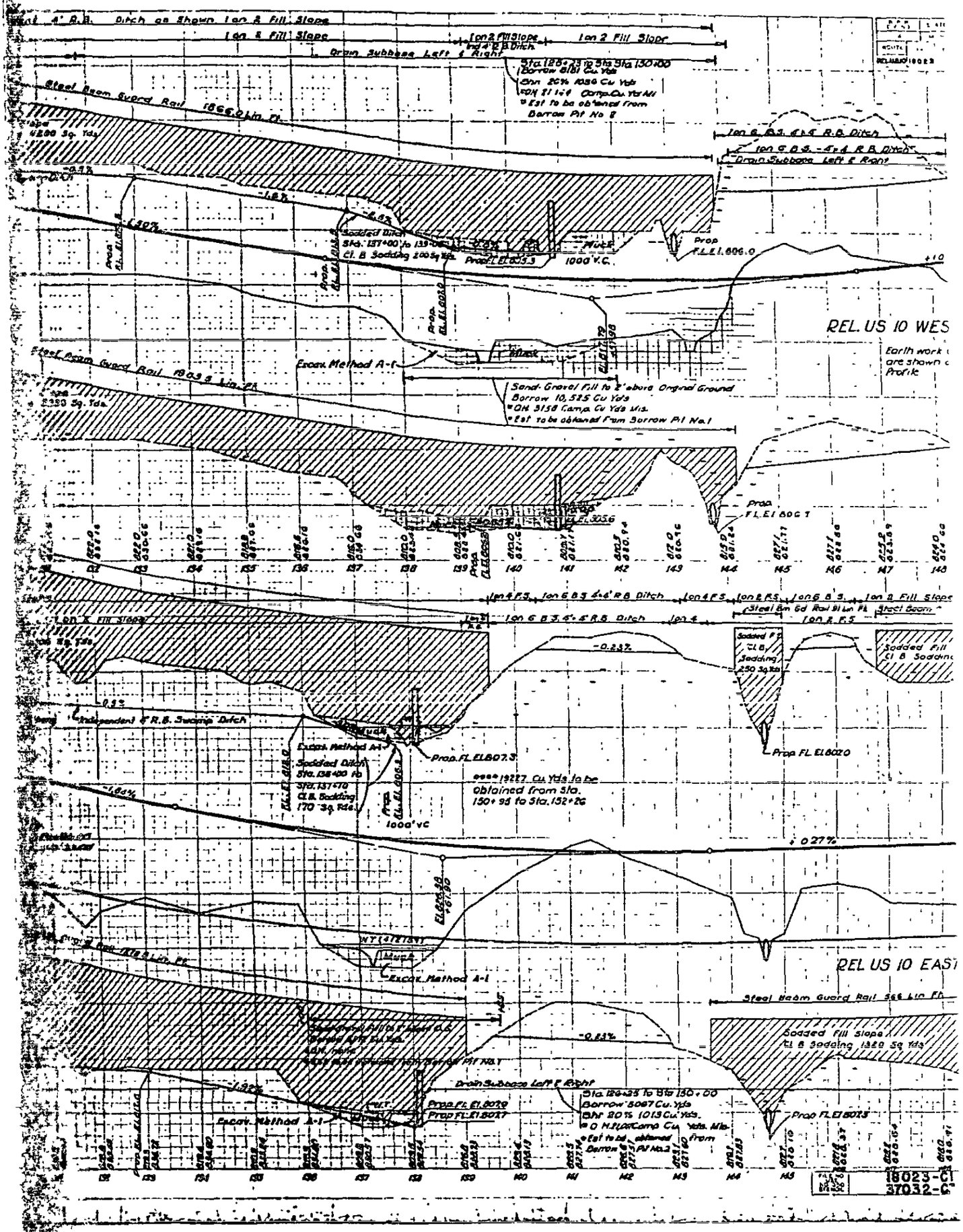
Clos w-w-T-P- 6-10-81

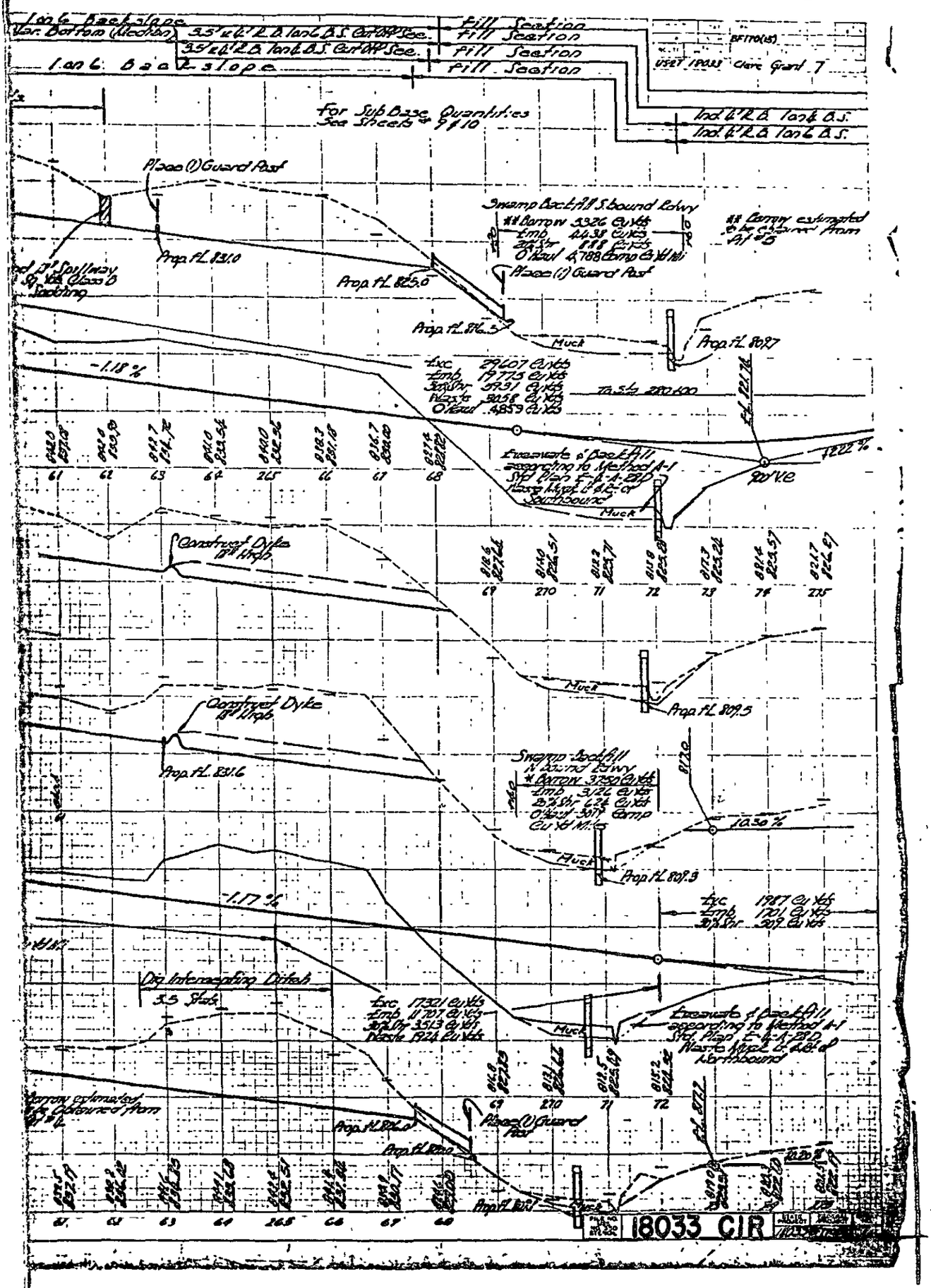
Signed MB

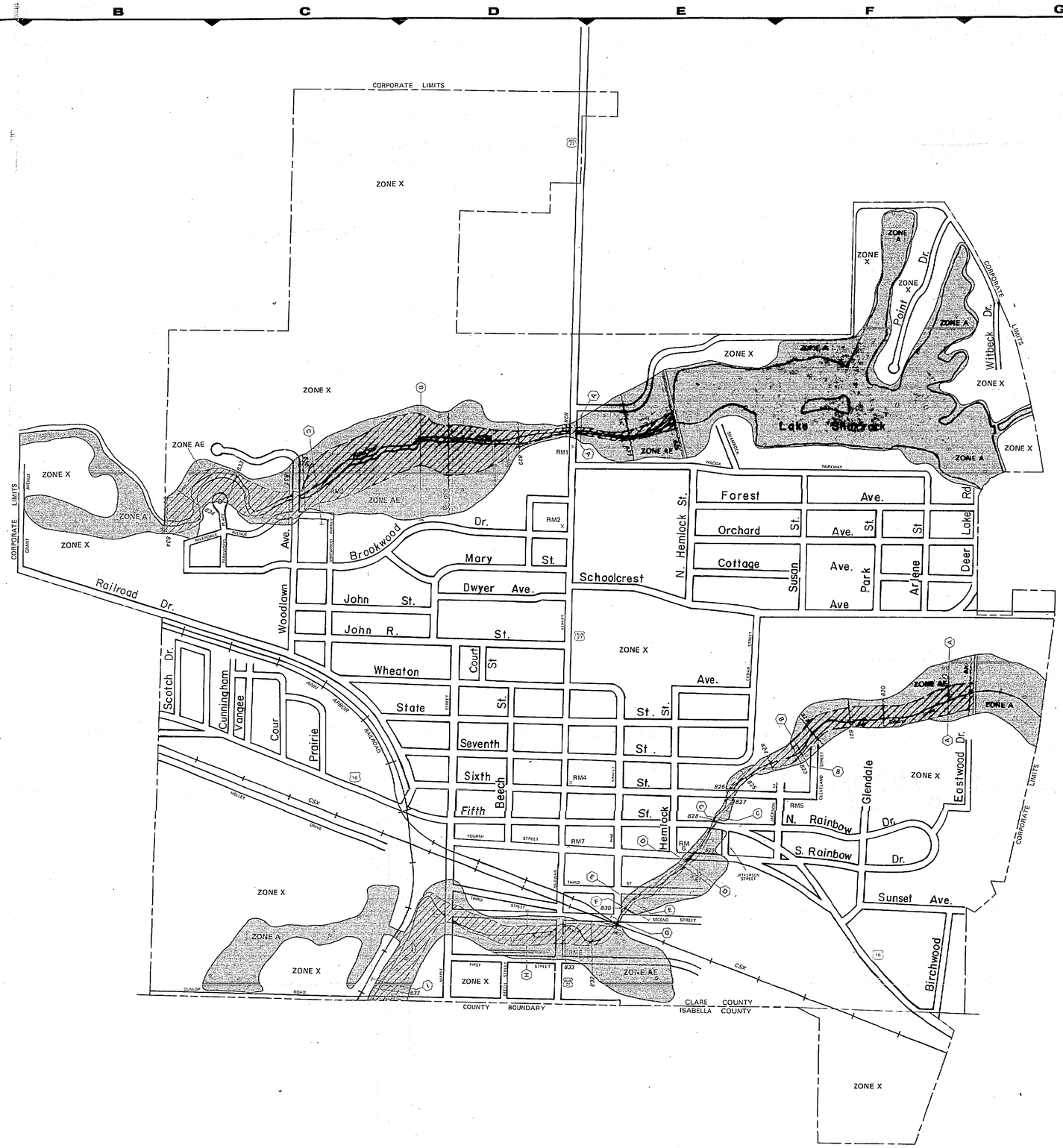



Secure Extra R/W for Muck Storage
Delete
Sodded Ditch
ISABELLA SERIES
GRIFFIN SERIES
McBRIDE SERIES
Cultivated
Pasture
Slope State Line
Southbound
Open Land
Cultivated
Eberhart Road (Gravel)
Secure Extra R/W for Muck Storage
for Drainage See Sheet # 21
Southbound Activity


RUBICON
PEAT
RUBICON SERIES
OSEMAW
SERIES
NESTER SERIES
SAUGATUCK SERIES
POSCOMMON SERIES
EMMET SERIES
GRIFFIN
BERGLAND
Mc. BRIDE SERIES
South Branch Tobacco River
Independent 4' R.B. Swamp ditch
R.O.W. Fence
Cultivated
Fence Ends
Removing Trees - This Sheet


Ditch as Shown 1on 2 Fill Slope
1on 2 Fill Slope
1on 2 Fill Slope
Drain Subbase Left & Right
Sta. 128+23 to Sta. Sta. 130+00
Borrow 8181 Cu. Yds
Steel Beam Guard Rail 1866.0 Lin. Ft.
1on 6 B.S. 4+4 R.B. Ditch
1on 6 B.S. -4+4 R.B. Ditch
Drain Subbase Left & Right
Sodded Ditch
Cl. B Sodding 200 Sq. Yds
Prop. FL El. 806.0
1000' V.C.
REL. US 10 WES
Excav. Method A-1
Steel Beam Guard Rail 1803.3 Lin. Ft.
Sand-Gravel Fill to 2' above Original Ground
Borrow 10,525 Cu Yds
Prop. FL El 807.7
1on 4 F.S.
1on 6 B.S. 4+4' R.B. Ditch
1on 2 F.S.
Steel Beam Gd Rail 91 Lin Ft
Sodded Fill Slope
Cl. B. Sodding 250 Sq. Yds
Independent 8' R.B. Swamp Ditch
Excav. Method A-1
Sodded Ditch
Sta. 138+00 to Sta. 137+70
Cl. B. Sodding 170 Sq. Yds.
Prop. FL El. 807.3
Prop. FL El. 807.0
19227 Cu. Yds to be obtained from Sta. 150+95 to Sta. 152+26
1000' VC
+0.27%
Steel Beam Guard Rail 1183.3 Lin. Ft.
Excav. Method A-1
REL. US 10 EAST
Steel Beam Guard Rail 566 Lin. Ft.
Sodded Fill Slope
Cl. B Sodding 1320 Sq. Yds
Drain Subbase Left & Right
Sta. 128+23 to Sta. 130+00
Borrow 8087 Cu. Yds
Prop. FL El. 807.9
Prop. FL El. 807.7
Excav. Method A-1
Prop. FL El. 807.3
18023-C
37032-C


1 on 6 Back slope
Var. Bottom (Median)
3.5' w 6:1 R.B. 1 on 6 B.S. Cut-off See.
3.5' w 6:1 R.B. 1 on 6 B.S. Cut-off See.
1 on 6 Back slope
Fill Section
Fill Section
Fill Section
Fill Section
BF 170(15)
USET 1 PASS Clear Grad 7
For Sub Base Quantities See Sheets 9 & 10
Incl. 6:1 R.B. 1 on 6 B.S.
Incl. 6:1 R.B. 1 on 6 B.S.
Place (1) Guard Post
Prop. FL 831.0
Prop. FL 825.0
Swamp Back Fill S. bound Rdwy
** Borrow 3326 Cu Yds
Emb. 44.38 Cu Yds
Str. 888 Cu Yds
O Haul 4,788 Comp Cu Yd Mi
** Borrow estimated to be obtained from Pit #5
Place (1) Guard Post
Prop. FL 816.5
Muck
Prop. FL 809.7
-1.18 %
Exc. 29,607 Cu Yds
Emb. 19,773 Cu Yds
Str. 5931 Cu Yds
Waste 9058 Cu Yds
O Haul 4859 Cu Yds
Total 280,600
Excavate & Back Fill according to Method A-1 Std. Plan E-A-1-28D Waste Haul 2 Mi. of Southbound
Muck
1.22 %
Construct Dike 18" High
Construct Dike 18" High
Prop. FL 831.6
Muck
Prop. FL 809.5
Swamp Back Fill N. bound Rdwy
** Borrow 3750 Cu Yds
Emb. 3126 Cu Yds
Str. 626 Cu Yds
O Haul 3019 Comp Cu Yd Mi
1.030 %
Muck
Prop. FL 809.9
-1.17 %
Exc. 1987 Cu Yds
Emb. 1701 Cu Yds
Str. 309 Cu Yds
Dig Intercepting Ditch
3.5 Slab
Exc. 17321 Cu Yds
Emb. 11,707 Cu Yds
Str. 3513 Cu Yds
Waste 1924 Cu Yds
Muck
Excavate & Back Fill according to Method A-1 Std. Plan E-A-1-28D Waste Haul 2 Mi. of Northbound
Borrow estimated to be obtained from Pit #2
Place (1) Guard Post
Prop. FL 820.0
Prop. FL 820.0
Prop. FL 809.7
Place
1.20 %
18033 CIR



LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

- **ZONE A** No base flood elevations determined.
- **ZONE AE** Base flood elevations determined.
- **ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
- **ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE A99** To be protected from 100-year flood by Federal flood protection system under construction; no base elevations determined.
- **ZONE V** Coastal flood with velocity hazard (wave action); no base flood elevations determined.
- **ZONE VE** Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

- **ZONE X** Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

- **ZONE X** Areas determined to be outside 500-year flood plain.
- **ZONE D** Areas in which flood hazards are undetermined.

UNDEVELOPED COASTAL BARRIERS

Flood Boundary

Floodway Boundary

Zone D Boundary

Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zone.

~~~567~~~ Base Flood Elevation Line; Elevation in Feet*

(A)———(A) Cross Section Line

(EL 19) Base Flood Elevation in Feet Where Uniform Within Zone*

RM5 × Elevation Reference Mark

M3.0 • Mile Mark

*Referenced to the National Geodetic Vertical Datum of 1929

NOTES

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all planimetric features outside Special Flood Hazard Areas or all areas subject to flooding, particularly from local drainage sources of small size.

Areas of Special Flood Hazard (100-year flood) include zones, A, AE, A1–A30, AH, AO, A99, V, VE and V1–V30.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the Federal Emergency Management Agency.

Floodway widths in some areas may be too narrow to show to scale. Refer to Floodway Data Table where floodway width is shown at 1/20 inch.

Coastal base flood elevations apply only landward of the shoreline.

This map incorporates approximate boundaries of coastal barriers established under the Coastal Barrier Resources Act (P.L. 97–348).

Elevation reference marks are described in the Flood Insurance Study Report.

Corporate limits shown are current as of Pending within this map. The user should contact appropriate community officials to determine if corporate limits have changed subsequent to the issuance of this map.

MAP REPOSITORY

INITIAL IDENTIFICATION:
JUNE 2, 1978

FLOOD HAZARD BOUNDARY MAP REVISION:

FLOOD INSURANCE RATE MAP EFFECTIVE:

FLOOD INSURANCE RATE MAP REVISIONS:

To determine if flood insurance is available, contact an insurance agent or call the National Flood Insurance Program at (800) 638-6620.

N

APPROXIMATE SCALE IN FEET

500 0 500

FLOOD PRONE STREET INDEX

NOTES TO USER

This index provides a list of all streets shown on the Flood Insurance Rate Map (FIRM) that are partially or totally within Special Flood Hazard Areas (SFHAs). This index should not be used as an authoritative source for determining whether specific streets, properties, or buildings are within an SFHA. The appropriate FIRM panel must be consulted for these purposes. This index is intended to be used only as a guide for determining which FIRM panel displays the street in question and the relative location of the street on the FIRM panel.

KEY

street name ..... panel number
BAKER STREET 0005 (A2)
grid location

NAMED STREETS

CEDAR STREET 0001 (E4)
CLEVELAND STREET 0001 (F4)
DEER LAKE ROAD 0001 (G3)
FIFTH STREET 0001 (E4)
FIRST STREET 0001 (D5,E5)
FOURTH STREET 0001 (E4)
GRANT AVENUE 0001 (A3,B3)
JEFFERSON STREET 0001 (E4)
MAPLE STREET 0001 (D5)
MCEWAN STREET 0001 (D2,D3,D5)
PARKWOOD PLACE 0001 (C3)
RIVERSIDE AVENUE 0001 (B3,C3)
SECOND STREET 0001 (D5,E5)
SIXTH STREET 0001 (E4)
THIRD STREET 0001 (D5,E5)
VINEWOOD AVENUE 0001 (C3)
WOODLAWN AVENUE 0001 (C3)

NUMBERED STREETS

U.S. ROUTE 10 ..... 0001 (E4)
U.S. ROUTE 27 BUSINESS 0001 (D2,D3,D5)

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
CLARE,
MICHIGAN
CLARE AND ISABELLA COUNTIES

(ONLY PANEL PRINTED)

2.1.91

COMMUNITY–PANEL NUMBER:
260624 0001 B

EFFECTIVE DATE:

REVISED
PRELIMINARY
Federal Emergency Management Agency

GREENHORNE & O'MARA E FRAME 88/12 STANDARD MIP
~~~

00BREAK00

1) COUNTY: Clare

2) STUDY NAME: city of Clare

3) WATERCOURSE: Tobacco River

4) DOCUMENT TYPE: 100 yr Encroached

00BREAK00

```
EEEEEE   EEEEEE          BBBBB    RRRRR    U    U    CCCC    EEEEEE
E        E               B    B   R    R   U    U   C    C   E
E        E       ------  BBBBB    R    R   U    U   C        E
EEEE     EEEE             B    B   RRRRR    U    U   C        EEEE
E        E                B    B   R   R    U    U   C    C   E
EEEEEE   EEEEEE           BBBBB    R    R    UUUU     CCCC    EEEEEE
```

USACOE DETROIT H800 VOS 7.1.0 PRINTER: 6

EE-BRUCE 17 JUL 90 14:02:48

TERMINAL: 113

CITY OF CLARE
SPECIAL PROBLEM REPORT
TOBACCO RIVER
ENCROACHED RUN

```
*******************************************************
*  WATER SURFACE PROFILES                             *
*  VERSION OF NOVEMBER 1976                           *
*  UPDATED MAY 1984                                   *
*                                                     *
*  RUN DATE   7 JUL 90 TIME   12:21:43                *
*******************************************************
```

```
************************************
*  U.S. ARMY CORPS OF ENGINEERS
*  THE HYDROLOGIC ENGINEERING CENTER
*  609 SECOND STREET, SUITE D
*  DAVIS, CALIFORNIA 95616
*  (916) 440-2105 (FTS) 448-2105
************************************
```

```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                        X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
```

THIS RUN EXECUTED 7 JUL 90 12:21:43

```
**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
**************************************************

C
T1  CITY OF CLARE, MI - FIS
T2  100-YEAR FLOOD
T3      TOBACCO RIVER

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

       0.       2         0.        0.   0.000000     0.00      0.0       0.    826.300    0.000

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1.000     0 000   -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

   110.000   150.000   200.000     0.000     0.000     0.000     0.000     0 000     0.000     0.000

NC     0.070     0.070     0.040     0.100     0.300     0.000     0.000     0.000     0.000     0.000
QT     2.000  2260.000  2260.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
ET     0.000     4.100     1.400   204.000   327.000     0.000     0.000     0.000     0 000     0.000
       CROSS SECTION AT LAKE SHAMROCK
X1     0.000    10.000   204.000   327.000     0.000     0.000     0.000     0.000     0.000     0.000
GR   835.800     0.000   835.100    50.000   834.600   100.000   834.200   150.000   833.800   175.000
GR   822.800   204.000   818.800   265.000   822.700   327.000   826.800   785.000   836.600  1120.000

NC     0.070     0.070     0.040     0.100     1.000     0.000     0.000     0.000     0.000     0.000
ET     0.000     4.100     4.100   204.000   250.000     0.000     0.000     0.000     0.000     0.000
       VALLEY SECTION A - SECTION DOWNSTREAM OF MCEWAN ST.  BRIDGE
X1  1000.000    26.000   204.000   250.000  1000.000  1000.000     0.000     0.000     0.000     0.000
GR   835.800     0.000   835.100    50.000   834.600   100.000   834.200   150.000   833.800   175.000
GR   822.800   204.000   822.800   204.100   822.200   206.000   821.200   210.000   818.800   215.000
GR   819.600   220.000   819.400   225.000   819.500   230.000   819.600   235.000   820.100   237.000
GR   820.800   245.000   822.400   247.000   822.700   249.800   822.700   250.000   832.300   275.000
GR   832.300   300.000   831.700   350.000   831.300   400.000   830.700   450.000   830.100   500.000
GR   840.000  5800.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

ET     0.000     4.100     4.100   204.000   250.000     0.000     0.000     0.000     0.000     0.000
       DOWNSTREAM FACE OF MCEWAN ST.  BRIDGE
X1  1001.000     0 000     0.000     0.000     1.000     1.000     1.000     0.000     0.000     0.000
BT    -6.000   175.000   833.800     0.000   204.000   833.500   822.800   204.100   833.500   829.500
BT     0.000   249.800   833.400   829.400   250.000   833.400   822.700   275.000   832.300     0.000
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NC      0.070      0.070      0 040      0.300      0.500      0.000      0.000      0.000      0.000      0.000
ET      0.000      4.100      4.100    204.000    250.000      0.000      0.000      0.000      0.000      0.000
        UPSTREAM FACE OF MCEWAN ST.  BRIDGE
X1   1042.000      0.000      0.000      0.000     41.000     41.000     41.000      0.000      0.000      0.000
X2      0.000      0.000      0.000      0.000      0.000      0.000      1.000      0.000      0.000      0.000

ET      0 000      4.100      1.400    204.000    250.000      0.000      0.000      0.000      0.000      0.000
        CROSS SECTION UPSTREAM OF MCEWAN ST BRIDGE
X1   1043.000      0.000      0.000      0.000      1.000      1.000      1.000      0.000      0.000      0.000

ET      0.000      0.000      4.100    187.000    269.000      0.000      0.000      0.000      0.000      0.000
X1   1400.000     34.000    205.000    250.000    357.000    357.000    357.000      0.000      0.000      0.000
GR    833.700      0.000    833.100     50.000    833.100     75.000    832.800    100.000    832.600    125.000
GR    832.600    150.000    832.100    174.000    831.100    181.000    830.300    183.000    829.400    185.000
GR    827.900    190.000    826.400    195.000    824.900    200.000    823.400    205.000    822.000    210.000
GR    821.000    215.000    819.200    220.000    819.600    225.000    819.700    230.000    820.100    235.000
GR    820.200    240.000    820.600    245.000    821.100    248.000    821.600    250.000    830.800    275.000
GR    830.800    300.000    830.700    325.000    830.500    350.000    830.300    375.000    830.200    400.000
GR    829.800    425.000    829.400    450.000    829.300    475.000    828.900    500.000      0.000      0.000

NC      0.000      0.080      0.030      0.000      0.000      0.000      0.000      0.000      0.000      0.000
ET      0.000      0.000      1.400      0.000      0.000      0.000      0.000      0.000      0.000      0.000
X1   1850.000     35.000    190.000    250.000    450.000    450.000    450.000      0.000      0.000      0.000
GR    831.000      0.000    830.700     50.000    830.700     75.000    830.400    100.000    830.400    125.000
GR    830.700    150.000    829.900    174.000    828.100    181.000    827.400    183.000    826.200    185.000
GR    825.200    190.000    824.200    195.000    823.200    200.000    822.200    205.000    821.400    210.000
GR    820.800    215.000    819.600    220.000    820.000    225.000    820.100    230.000    820.800    235.000
GR    820.900    240.000    821.000    245.000    821.700    248.000    822.600    250.000    828.900    275.000
GR    829.100    300.000    829.200    325.000    829.000    350.000    828.900    375.000    828.700    400.000
GR    828.300    425.000    827.800    450.000    827.400    475.000    827.400    500.000    840.000   1850.000

ET      0.000      4.100      6.100    316.000   1636.000    680.000   1200.000      0.000      0.000      0.000
X1   2250.000     36.000    781.000    850.000    400.000    400.000    400.000      0.000      0.000      0.000
GR    840.000      0.000    828.600    600.000    828.500    650.000    828.700    675.000    828.400    700.000
GR    828.500    725.000    828.900    750.000    828.000    774.000    825.500    781.000    824.700    783.000
GR    823.400    785.000    822.900    790.000    822.300    795.000    821.800    800.000    821.100    805.000
GR    820.800    810 000    820.600    815.000    820.000    820.000    820.200    825.000    820.400    830.000
GR    821.400    835.000    821.500    840.000    821.500    845.000    822.200    848.000    823.600    850.000
GR    827.200    875.000    827.600    900.000    827.900    925.000    827.600    950.000    827.500    975.000
GR    827.400   1000.000    827.000   1025.000    826.400   1050.000    826.000   1075.000    826.100   1100.000
GR    840.000   2880.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000

NC      0.000      0.085      0.025      0.000      0.000      0.000      0.000      0.000      0.000      0.000
ET      0.000      4.100      6.100    307.000   1467.000    625.000   1150.000      0.000      0.000      0.000
        VALLEY SECTION B - FIELD BOOK SECTION #10
X1   2570.000     36.000    849.000    925.000    320.000    320.000    320.000      0.000      0.000      0.000
GR    840.000      0.000    826.700    675.000    826.700    725.000    827.000    750.000    826.700    775.000
GR    826.900    800.000    827.500    825.000    826.500    849.000    823.400    856.000    822.600    858.000
GR    821.100    860.000    821.000    865.000    820.700    870.000    820.600    875.000    820.300    880.000
GR    820.400    885.000    820.400    890.000    820.300    895.000    820.300    900.000    820.700    905.000
GR    821.900    910.000    822.000    915.000    821.800    920.000    822.600    923.000    824.300    925.000
GR    825.900    950.000    826.400    975.000    826.800   1000.000    826.500   1025.000    826.500   1050.000
GR    826.400   1075.000    826.000   1100.000    825.300   1125.000    824.900   1150.000    825.000   1175.000
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GR    840.000   2700.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000

NC      0.000      0.070      0.040      0.000      0.000      0.000      0.000      0.000      0.000      0.000
ET      0.000      4.100      6.100    693.000   1268.000    693.000   1115.000      0.000      0.000      0.000
        VALLEY SECTION C - FIELD BOOK SECTION #11
X1   3740.000     29.000    950.000   1010.000   1170.000   1170.000   1170.000      0.000      0.000      0.000
GR    840.000      0.000    826.000    760.000    827.400    810.000    828.300    860.000    828.800    385.000
GR    828.800    910.000    829.100    935.000    828.800    950.000    825.600    962.000    824.100    964.000
GR    823.500    965.000    822.700    970.000    822.400    975.000    822.400    980.000    822.300    985.000
GR    822.400    990.000    822.400    995.000    822.500   1000.000    824.100   1004.000    824.400   1010.000
GR    828.400   1035.000    828.900   1060.000    829.500   1085.000    829.900   1110.000    830.300   1135.000
GR    830.200   1160.000    830.300   1185.000    830.300   2110.000    840.000   2150.000      0.000      0.000

ET      0.000      4.100      6.100    713.000   1248.000    713.000   1100.000      0.000      0.000      0.000
X1   3820.000      0.000      0.000      0.000     80.000     80.000     80.000      0.000      0.300      0.000

NC      0.070      0.070      0.045      0.500      1.000      0.000      0.000      0.000      0.000      0.000
ET      0.000      4.100      6.100    729.000   1232.000    729.000   1094.000      0.000      0.000      0.000
X1   3885.000      0.000      0.000      0.000     65.000     65.000     65.000      0.000      0.200      0.000

ET      0.000      0.000      4.100    980.000   1194.000      0.000      0.000      0.000      0.000      0.000
X1   3890.000     12.000   1000.000   1024.000      5.000      5.000      5.000      0.000      0.000      0.000
X4      2.000    828.000    980.000    828 000   1040.000      0.000      0.000      0.000      0.000      0.000
GR    840.000      0.000    831.600    980.000    823.800   1000.000    823.800   1000.100    823.300   1004.800
GR    822.900   1009.600    823.000   1014.400    823.500   1019.200    824.000   1023.900    824.000   1024.000
GR    831.600   1040.000    831.600   1300.000      0.000      0.000      0.000      0.000      0.000      0.000

ET      0.000      0.000      4.100    980.000   1228.000      0.000      0.000      0.000      0.000      0.000
        DOWNSTREAM FACE OF WOODLAWN BRIDGE
X1   3901.000      0.000      0.000      0.000     11.000     11.000     11.000      0.000      0.000      0.000

SB      0.000      1.560      3.000      0.000     24.000      0.000    196.440      0.000      0.000      0.000
ET      0.000      4.100      6.110    779.000   1228.000    950.000   1228.000      0.000      0.000      0.000
        UPSTREAM FACE OF WOODLAWN BRIDGE
X1   3929.000      0.000      0.000      0.000     28.000     28.000     28.000      0.000      0.000      0.000
X2      0.000      0.000      1.000    830.600    831.600      0.000      0.000      0.000      0.000      0.000
BT     -8.000      0.000    840.000      0.000    980.000    831.600      0.000   1000.000    831.600    823.800
BT      0.000   1000.100    831.600    830.600   1023.900    831.600    830.600   1024.000    831.600    824.000
BT      0.000   1040.000    831.600      0.000   1300.000    831.600      0.000      0.000      0.000      0.000

NC      0.000      0.000      0.000      0.300      0.500      0.000      0.000      0.000      0.000      0.000
ET      0.000      4.100      1.400    501.000   1023.000    552.640   1023.000      0.000      0.000      0.000
        CROSS SECTION UPSTREAM OF WOODLAWN BRIDGE
X1   3940.000     14.000    750.000    774.000     11.000     11.000     11.000      0.000      0.000      0.000
X4      2.000    828.000    730.000    828.000    790.000      0.000      0.000      0.000      0.000      0.000
GR    840.000      0.000    831.600    550.000    831.600    730.000    823.800    750.000    823.800    750.100
GR    823.300    754.800    822.900    759.600    823.000    764.400    823.500    769.200    824.000    773.900
GR    824.000    774.000    831.600    790.000    831.600   1050.000    840.000   2100.000      0.000      0.000
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ET      0.000      0.000      4.100    700.000   1000.000      0.000      0.000      0.000      0.000      0.000
X1   4430.000      0.000      0.000      0.000    490.000    490.000    490.000      0.000      0.280      0 000

NC      0.000      0.000      0.000      0.300      0.500      0.000      0.000      0.000      0.000      0.000
ET      0.000      0.000      4.100    700.000   1000.000      0.000      0.000      0.000      0.000      0.000
X1   4930.000      0.000      0.000      0.000    500.000    500.000    500.000      0.000      0.290      0.000

ET      0.000      0.000      4.100    650.000   1000.000      0.000      0.000      0.000      0.000      0.000
        CROSS SECTION AT UPSTREAM CORPORATE LIMIT
X1   5840.000      0.000      0.000      0.000    910.000    910.000    910.000      0.000      0.530      0.000
EJ      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
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  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

*PROF 1

CCHV=   0.100 CEHV=   0.300
*SECNO 0 000

3470 ENCROACHMENT STATIONS=     204.0     327.0  TYPE=     1  TARGET=     123.000
        CROSS SECTION AT LAKE SHAMROCK
     0.00      7.50    826.30      0.00      0.00    826.47      0.17      0.00      0.00    822.80
    2260.        0.     2260.        0.        0.      680.        0.        0.        0.  100000.00
     0.00      0.00      3.33      0.00     0.000     0.040     0.000     0.000    818.80    204.00
 0.000886        0.        0.        0         0         0         0      0.00    123.00    327.00

CCHV=   0.100 CEHV=   1.000
*SECNO 1000.000

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS=     204.0     250.0  TYPE=     1  TARGET=      46.000
        VALLEY SECTION A - SECTION DOWNSTREAM OF MCEWAN ST. BRIDGE
  1000.00      8.97    827.77      0.00      0.00    828.45      0.67      1.47      0.50    822.80
    2260.        0.     2260.        0.        0.      343.        0.       12.        2.  100000.00
     0.04      0.00      6.59      0.00     0.000     0.040     0.000     0.000    818.80    204.00
 0.002912     1000.     1000.     1000.         2         0         0      0.00     46.00    250.00

*SECNO 1001.000

3370 NORMAL BRIDGE,NRD=  6 MIN ELTRD=  832.30 MAX ELLC=  829.50

3470 ENCROACHMENT STATIONS=     204.0     250.0  TYPE=     1  TARGET=      46.000
        DOWNSTREAM FACE OF MCEWAN ST. BRIDGE
  1001.00      8.98    827.78      0.00      0.00    828.45      0.68      0.00      0.00    822.80
    2260.        0.     2260.        0.        0.      343.        0.       12.        2.  100000.00
     0.04      0.00      6.60      0.00     0.000     0.040     0.000     0.000    818.80    204.00
 0.002924        1.        1.        1.         0         0         0     -0.56     46.00    250.00

CCHV=   0.300 CEHV=   0.500
*SECNO 1042 000
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  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


3370 NORMAL BRIDGE, NRD=  6 MIN ELTRD=  832.30 MAX ELLC=  829.50


3470 ENCROACHMENT STATIONS=     204.0     250.0  TYPE=     1  TARGET=      46.000
        UPSTREAM FACE OF MCEWAN ST. BRIDGE
  1042.00      9.13    827.93      0.00      0.00    828.58      0.65      0.12      0.01    822.80
    2260.         0     2260.        0.        0.      349.        0.       12.        2.  100000.00
     0.04      0.00      6.47      0.00     0.000     0.040     0.000     0.000    818.80    204.00
 0.002754       41.       41.       41.         2         0         0     -0.60     46.00    250.00

*SECNO 1043.000

3470 ENCROACHMENT STATIONS=     204.0     250.0  TYPE=     1  TARGET=      46.000
        CROSS SECTION UPSTREAM OF MCEWAN ST BRIDGE
  1043.00      9.13    827.93      0.00      0.00    828.58      0.65      0.00      0.00    822.80
    2260.         0.    2260.        0.        0.      350.        0.       12.        2.  100000.00
     0.04      0.00      6.45      0.00     0.000     0.040     0.000     0.000    818.80    204.00
 0.002735        1.        1.        1.         0         0         0      0.00     46.00    250.00

*SECNO 1400.000
  1400.00      9.67    828.87      0.00      0.00    829.30      0.42      0.65      0.07    823.40
    2260.       86.     2049.      125.       50.      375.       72.       16.        3.    821.60
     0.06      1.72      5.46      1.74     0.070     0.040     0.070     0.000    819.20    186.75
 0.001308      357.      357.      357.         2         0         0      0.00     83.01    269.77


*SECNO 1850.000
  1850.00      9.85    829.45      0.00      0.00    829.68      0.23      0.32      0.06    825.20
    2260.       27.     1960.      273.       31.      477.      530.       23.        6.    822.60
     0.10      0.88      4.11      0.51     0.070     0.030     0.080     0.000    819.60    175.75
 0.000442      450.      450.      450.         2         0         0      0.00    543.77    719.53


*SECNO 2250.000

3470 ENCROACHMENT STATIONS=     316.0    1636.0  TYPE=     1  TARGET=    1320.000
  2250.00      9.76    829.76      0.00      0.00    829.83      0.07      0.11      0.05    825.50
    2260.       86.     1498.      676.      266.      566.     1558.       39.       13.    823.60
     0.16      0 32      2.65      0.43     0.070     0.030     0.080     0.000    820.00    539.19
 0.000177      400.      400.      400.         2         0         0      0.00   1028.90   1568.09
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  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

*SECNO 2570.000

3470 ENCROACHMENT STATIONS=     307.0     1467.0  TYPE=     1  TARGET=     1160.000
        VALLEY SECTION B - FIELD BOOK SECTION #10
  2570.00     9.53    829.83     0.00      0.00    829.87     0.04      0.03      0.01    826.50
    2260.     254.     1309.     697.      768.      640.    1973.       60.       20.     824.30
     0.22     0.33      2.05     0.35     0.070     0.025    0.085     0.000    820.30    515.41
 0.000072     320.      320.     320.         1         0        0      0.00    951.59   1467.00

*SECNO 3740.000

3470 ENCROACHMENT STATIONS=     693.0     1268.0  TYPE=     1  TARGET=      575.000
        VALLEY SECTION C - FIELD BOOK SECTION #11
  3740.00     7.69    829.99     0.00      0.00    830.12     0.13      0.20      0.05    828.80
    2260.     726.     1365.     169.      602.      372.     149.      121.       39.     824.40
     0.34     1.21      3.67     1.13     0.070     0.040    0.070     0.000    822.30    693.00
 0.000883    1170.     1170.    1170.         0         0        0      0.00    422.01   1115.01

*SECNO 3820.000

3470 ENCROACHMENT STATIONS=     713.0     1248.0  TYPE=     1  TARGET=      535.000
  3820.00     7.45    830.05     0.00      0.00    830.23     0.18      0.08      0.02    829.10
    2260.     636.     1462.     162.      489.      358.     127.      123.       39.     824 70
     0.35     1.30      4.08     1 28     0.070     0.040    0.070     0.000    822.60    713.00
 0.001150      80.       80.      80.         2         0        0      0.00    387.58   1100.58

CCHV=    0.500 CEHV=    1.000
*SECNO 3885.000

3470 ENCROACHMENT STATIONS=     729 0     1232.0  TYPE=     1  TARGET=      503.000
  3885.00     7.34    830.14     0.00      0.00    830.33     0.19      0.09      0.01    829.30
    2260.     608.     1478.     174.      416.      352.     117.      124.       40.     824.90
     0.36     1.46      4.20     1.49     0.070     0.045    0.070     0.000    822.80    729.00
 0.001584      65.       65.      65.         2         0        0      0.00    364.53   1093.53

*SECNO 3890.000

3265 DIVIDED FLOW
```

```
 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


3301 HV CHANGED MORE THAN HVINS

 3890.00     7.25    830.15      0.00      0.00    831.08      0.93      0.01      0.74    823.80
   2260.     339.     1508.     414.       85.      164.      206.      124.       40.     824.00
    0.36     3.99      9.21     2.01     0.070     0.045     0.070     0.000    822.90    980.00
0.006045       5.        5.        5.         0         0         0      0.00    211.73   1194.79

*SECNO 3901.000

3265 DIVIDED FLOW

        DOWNSTREAM FACE OF WOODLAWN BRIDGE
 3901.00     7.72    830.62      0.00      0.00    831.27      0.65      0.05      0.14    823.80
   2260.     330.     1398.     532.       94.      175.      293.      124.       40.     824.00
    0.36     3.50      7.99     1.81     0.070     0.045     0.070     0.000    822.90    980.00
0.004158      11.       11.       11.         6         0         0     0 00    246.83   1228.90


SPECIAL BRIDGE

5070, VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     0.00      1.56      3.00      0.00     24.00      0.00    196.44      0.00    822.90    822.90

*SECNO 3929.000
3280 CROSS SECTION   3929.00 EXTENDED      0.50 FEET

PRESSURE AND WEIR FLOW

 EGPRS      EGLWC      H3        QWEIR     QPR       BAREA   TRAPEZOID     ELLC      ELTRD
                                                              AREA
   833.82    831.27     0.00      621.      1640.     196.      185.      830.60    831.60


3470 ENCROACHMENT STATIONS=     779.0    1228.0  TYPE=     1  TARGET=     449.000
        UPSTREAM FACE OF WOODLAWN BRIDGE
 3929.00     9.20    832.10      0.00      0.00    832.31      0.21      1.04      0.00    823.80
   2260.     287.     1061.     912.      139.      211.      595.      125.       40.     824.00
    0.36     2.07      5.04     1.53     0.070     0.045     0.070     0.000    822.90    921.76
0.001292      28        28.       28.         2         0         4      0.00    306.24   1228.00
```

```
  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

CCHV=   0.300 CEHV=   0.500
*SECNO 3940 000

3470 ENCROACHMENT STATIONS=     501.0    1023.0  TYPE=     1  TARGET=     522.000
        CROSS SECTION UPSTREAM OF WOODLAWN BRIDGE
  3940.00     9.25   832.15     0.00      0.00   832.33     0.18      0.01      0.01   823.80
    2260.     324.    1021.     915.      234.     212.     660.      125.       40.    824.00
     0.36     1.39     4.82     1.39     0.070    0.045    0.070     0.000   822.90   514.06
 0.001174      11.      11.      11.         2        0        0      0.00   508.94  1023.00

*SECNO 4430.000
  4430.00     9.53   832.71     0.00      0.00   832.85     0.13      0.50      0.01   824.08
    2260.     351.     946.     964.      303.     219.     801.      139.       47.    824.28
     0.42     1.16     4.33     1.20     0.070    0.045    0.070     0.000   823.18   495.61
 0.000907     490.     490.     490.         2        0        0      0.00   658.24  1153.84

CCHV=   0.300 CEHV=   0.500
*SECNO 4930.000
  4930.00     9.69   833.16     0.00      0.00   833.27     0.11      0.42      0.01   824.37
    2260.     366.     905.     989.      343.     222.     862.      155.       55.    824.57
     0.48     1.07     4.07     1.15     0.070    0.045    0.070     0.000   823.47   485.35
 0.000784     500.     500.     500.         2        0        0      0.00   688.08  1173.43

*SECNO 5840.000
        CROSS SECTION AT UPSTREAM CORPORATE LIMIT
  5840.00     9 84   833.84     0.00      0.00   833.94     0.10      0.66      0.00   824.90
    2260.     382.     866.    1012.      385.     226.     926.      186.       69.    825.10
     0.59     0.99     3.83     1.09     0.070    0.045    0.070     0.000   824.00   475.20
 0 000680     910.     910.     910.         2        0        0      0.00   717.61  1192.81
```

THIS RUN EXECUTED 7 JUL 90 12:21:47

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*****************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
*****************************************************
```

T1 CITY OF CLARE, MI. - FIS
T2 100 - YEAR FLOOD
T3 TOBACCO RIVER

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	3.	0.	0.	0.000000	0.00	0.0	0.	826.400	0.000
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

```
  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
  Q         GLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

*PROF 2

CCHV=   0.100 CEHV=   0.300
*SECNO 0.000
 2800 NAT Q1=    759.14  WSEL=    826 30  ENC Q1=    811.94  WSEL=    826.40  RATIO= -0.0696
 NAT Q1=   1062.  RATIOS LOB,CH,ROB=  0.0048  0.7648  0.2304  WSEL=    826.40

3470 ENCROACHMENT STATIONS=     204.0     327.0  TYPE=     4  TARGET=       0.235
        CROSS SECTION AT LAKE SHAMROCK
    0.00      7.60   826.40      0.00   826.30   826.57      0.17      0.00      0.00   822.80
   2260.        0.    2260.        0.       0.     692.        0.        0.        0.    822.70
    0.00      0.00     3.27      0.00    0.000    0.040     0.000     0.000    818.80   204.00
 0.000837       0.       0.        0.        0        0         0      0.00    123.00   327.00


CCHV=   0.100 CEHV=   1.000
*SECNO 1000.000

3301 HV CHANGED MORE THAN HVINS


3470 ENCROACHMENT STATIONS=     204.0     250.0  TYPE=     1  TARGET=      46.000
        VALLEY SECTION A - SECTION DOWNSTREAM OF MCEWAN ST.  BRIDGE
  1000.00      9.01   827.81      0.00   827.77   828.48      0.67      1.41      0.50   822.80
   2260.        0.    2260.        0.       0.     345.        0.       12.        2.  100000.00
    0.04      0.00     6.56      0.00    0.000    0.040     0.000     0.000    818.80   204.00
 0.002868    1000.    1000.     1000.        2        0         0      0.00     46.00   250.00


*SECNO 1001.000

3370 NORMAL BRIDGE,NRD=  6 MIN ELTRD=  832.30 MAX ELLC=  829.50


3470 ENCROACHMENT STATIONS=     204.0     250.0  TYPE=     1  TARGET=      46.000
        DOWNSTREAM FACE OF MCEWAN ST.  BRIDGE
  1001.00      9.01   827.81      0.00   827.78   828.48      0.67      0.00      0.00   822.80
   2260.        0.    2260.        0.       0.     344.        0.       12.        2.  100000.00
    0.04      0.00     6.56      0.00    0.000    0.040     0.000     0.000    818.80   204.00
 0.002880       1.       1.        1.        0        0         0     -0.57     46.00   250.00
```

```
  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

CCHV=   0.300 CEHV=   0.500
*SECNO 1042.000

3370 NORMAL BRIDGE, NRD=  6 MIN ELTRD=  832.30 MAX ELLC=  829.50


3470 ENCROACHMENT STATIONS=     204.0     250.0  TYPE=     1  TARGET=      46.000
        UPSTREAM FACE OF MCEWAN ST.  BRIDGE
  1042.00      9.16    827.96      0.00    827.93    828.61      0.64      0.11      0.01    822.80
    2260.        0.     2260.        0.        0.      351.        0.       12.        2.  100000.00
     0.04      0.00      6.44      0 00     0.000     0.040     0.000     0.000    818.80    204.00
 0.002716       41.       41.       41.         2         0         0     -0.61     46.00    250.00


*SECNO 1043.000
 2800 NAT Q1=     432.17  WSEL=     827.93  ENC Q1=     504.13  WSEL=     828.03  RATIO= -0.1665
 NAT Q1=     532.  RATIOS LOB, CH, ROB=  0.0261  0.9468  0.0271  WSEL=     828.03

3470 ENCROACHMENT STATIONS=     204.0     250.0  TYPE=     4  TARGET=       0.053
        CROSS SECTION UPSTREAM OF MCEWAN ST BRIDGE
  1043.00      9.17    827 97      0.00    827.93    828.61      0.64      0.00      0.00    822.80
    2260.        0.     2260.        0.        0.      352.        0.       12.        2.     822.70
     0.04      0.00      6.42      0.00     0.000     0.040     0.000     0.000    818.80    204.00
 0.002697        1.        1.        1.         0         0         0      0.00     46.00    250.00


*SECNO 1400.000

3470 ENCROACHMENT STATIONS=     187.0     269.0  TYPE=     1  TARGET=      82.000
  1400.00      9.70    828.90      0.00    828.87    829.32      0.42      0.64      0.07    823.40
    2260.       86.     2046.      127.       50.      376.       72.       16.        3.     821.60
     0 06      1.71      5.44      1.76     0.070     0.040     0.070     0.000    819.20    187.00
 0.001292      357.      357.      357.         2         0         0      0.00     82.00    269.00


*SECNO 1850.000
 2800 NAT Q1=    1075.11  WSEL=     829.45  ENC Q1=    1075.11  WSEL=     829.55  RATIO=  0.0000
 NAT Q1=    1109.  RATIOS LOB, CH, ROB=  0.0124  0.8580  0.1296  WSEL=     829.55

3470 ENCROACHMENT STATIONS=     190.0     553.8  TYPE=     4  TARGET=       0.031
  1850.00      9.87    829.47      0.00    829.45    829.71      0.24      0.34      0.05    825.20
    2260.        0.     2001.      259.        0.      479.      409.       23.        5.     822.60
     0.10      0.00      4.18      0.63     0.000     0.030     0.080     0.000    819.60    190.00
 0.000499      450.      450.      450.         2         0         0      0.00    363.75    553.75
```

```
  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

*SECNO 2250.000

3470 ENCROACHMENT STATIONS=      680.0     1200.0  TYPE=      1  TARGET=      520.000
  2250.00      9.79    829.79      0.00    829.76    829.88      0.09      0.12      0.04    825.50
    2260.       55.     1621.      584.      139.      569.     1041.       35.        9.    823.60
     0.15      0.39      2.85      0.56     0.070     0.030     0.080     0.000    820.00    680.00
 0.000204      400.      400.      400.         2         0         0      0.00    520.00   1200.00

*SECNO 2570.000

3470 ENCROACHMENT STATIONS=      625.0     1150.0  TYPE=      1  TARGET=      525.000
        VALLEY SECTION B - FIELD BOOK SECTION #10
  2570.00      9.57    829.87      0.00    829.83    829.93      0.07      0.05      0.01    826.50
    2260.      291.     1594.      375.      655.      642.      860.       49.       13.    824.30
     0.19      0.44      2.48      0.44     0.070     0.025     0.085     0.000    820.30    625.00
 0.000106      320.      320.      320.         2         0         0      0.00    525.00   1150.00

*SECNO 3740.000

3470 ENCROACHMENT STATIONS=      693.0     1115.0  TYPE=      1  TARGET=      422.000
        VALLEY SECTION C - FIELD BOOK SECTION #11
  3740.00      7.80    830.10      0.00    829.99    830.23      0.12      0.27      0.03    828.80
    2260.      744.     1340.      176.      634.      380.      162.       94.       25.    824.40
     0.32      1.17      3.53      1.08     0.070     0.040     0.070     0.000    822.30    693.00
 0.000797     1170.     1170.     1170.         2         0         0      0.00    422.00   1115.00

*SECNO 3820.000

3470 ENCROACHMENT STATIONS=      713.0     1100.0  TYPE=      1  TARGET=      387.000
  3820.00      7.56    830.16      0.00    830.05    830.32      0.16      0.07      0.02    829.10
    2260.      652.     1441.      167.      512.      364.      136.       96.       26.    824.70
     0.33      1.27      3.96      1.23     0.070     0.040     0.070     0.000    822.60    713.00
 0.001057       80.       80.       80.         1         0         0      0.00    387.00   1100.00

CCHV=    0.500 CEHV=    1.000
*SECNO 3885.000

3470 ENCROACHMENT STATIONS=      729.0     1094.0  TYPE=      1  TARGET=      365.000
  3885.00      7.44    830.24      0.00    830.14    830.41      0.18      0.08      0.01    829.30
    2260.      624.     1457.      179.      435.      357.      125.       98.       27.    824.90
     0.33      1.43      4.08      1.44     0.070     0.045     0.070     0.000    822.80    729.00
 0.001463       65.       65.       65.         1         0         0      0.00    365.00   1094.00
```

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  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

*SECNO 3890.000

3265 DIVIDED FLOW


3301 HV CHANGED MORE THAN HVINS


3470 ENCROACHMENT STATIONS=      980.0     1194.0  TYPE=      1  TARGET=      214.000
  3890.00      7.35    830.25      0.00    830.15    831.10      0.85      0.01      0.67    823.80
    2260.      336.     1479.      445.       87.      166.      222.       98.       27.    824.00
     0.33      3.87      8.90      2.00     0.070     0.045     0.070     0.000    822.90    980.00
 0.005542        5.        5.        5.         0         0         0      0.00    211.14   1194.00

*SECNO 3901.000

3265 DIVIDED FLOW


3470 ENCROACHMENT STATIONS=      980.0     1228.0  TYPE=      1  TARGET=      248.000
        DOWNSTREAM FACE OF WOODLAWN BRIDGE
  3901.00      7.64    830.54      0.00    830.62    831.24      0.69      0.05      0.08    823.80
    2260.      332.     1417.      511.       93.      173.      277.       98.       27.    824.00
     0.34      3.58      8.18      1.85     0.070     0.045     0.070     0.000    822.90    980.00
 0.004430        11       11.       11.         3         0         0      0.00    240.85   1223.09


SPECIAL BRIDGE

5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     0.00      1.56      3.00      0.00     24.00      0.00    196.44      0.00    822.90    822.90

*SECNO 3929.000
     3700.    BRIDGE STENCL=     950.00     STENCR=    1228.00
3280 CROSS SECTION    3929.00 EXTENDED       0.59 FEET

PRESSURE AND WEIR FLOW
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```
  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


EGPRS       EGLWC       H3        QWEIR       QPR        BAREA   TRAPEZOID      ELLC      ELTRD
                                                                    AREA
  833.75    831.23      0.00       561.      1712.       196.       185.      830.60    831.60


3470 ENCROACHMENT STATIONS=     950.0     1228.0  TYPE=     1  TARGET=     278.000
        UPSTREAM FACE OF WOODLAWN BRIDGE
  3929.00      9.28   832.18      0.00   832.10   832.38      0.20      1.15      0.00   823.80
    2260.      286.     1046.      928.     139.     213.      612.       98.       27.    824.00
     0.34      2.05     4.92      1.52   0 070    0.045    0.070     0.000   822.90   950.00
 0.001215       28.      28.       28.        2        0        3      0.00   278.00  1228.00


CCHV=   0.300 CEHV=   0.500
*SECNO 3940.000
 2800 NAT Q1=    659.63  WSEL=    832.15  ENC Q1=    659.63  WSEL=    832.25  RATIO=  0.0000
 NAT Q1=    690.   RATIOS LOB,CH,ROB=  0.1475  0.4404  0.4121  WSEL=    832.25

3470 ENCROACHMENT STATIONS=     681.2      954.4  TYPE=     4  TARGET=       0.043
        CROSS SECTION UPSTREAM OF WOODLAWN BRIDGE
  3940.00      9.30   832.20      0.00   832.15   832.40      0.20      0.01      0.00   823.80
    2260.      299.     1057.      905.     155.     213.      573.       98.       27.    824.00
     0.34      1 93     4.96      1.58    0.070    0.045    0 070     0.000   822.90   681.19
 0.001235       11.      11.       11         0        0        0      0.00   273.19   954.38


*SECNO 4430.000

3470 ENCROACHMENT STATIONS=     700.0     1000.0  TYPE=     1  TARGET=     300.000
  4430.00      9.61   832.79      0.00   832.71   832.94      0.15      0.53      0.02   824.08
    2260.      285.      978.      997.     160.     221.      718.      110.       30.    824.28
     0.39      1.78     4.43      1.39    0.070    0.045    0.070     0.000   823.18   700.00
 0.000940      490.      490.      490.        0        0        0      0.00   300.00  1000.00


CCHV=   0.300 CEHV=   0 500
*SECNO 4930.000

3470 ENCROACHMENT STATIONS=     700.0     1000.0  TYPE=     1  TARGET=     300.000
  4930.00      9.78   833.25      0.00   833.16   833.39      0.14      0.44      0.00   824.37
    2260.      285.      952.     1024.     168.     225.      756.      123.       34.    824.57
     0.44      1.70     4.24      1.35    0.070    0.045    0.070     0.000   823.47   700.00
 0.000839      500       500.      500.        2        0        0      0.00   300.00  1000.00
```

```
  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

*SECNO 5840.000

3470 ENCROACHMENT STATIONS=     650.0     1000.0  TYPE=     1  TARGET=     350.000
        CROSS SECTION AT UPSTREAM CORPORATE LIMIT
  5840.00      9.98    833.98      0.00    833.84    834.09      0.11      0.70      0.01    824.90
    2260.      322.      905.     1033.      242.      229.      801.      148.       41.    825.10
     0.55      1.33      3.94      1.29     0.070     0.045     0.070     0.000    824.00    650.00
 0.000707      910.      910.      910.         2         0         0      0.00    350.00   1000.00
```

THIS RUN EXECUTED 7 JUL 90 12:21.50

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*************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
*************************************************
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

TOBACCO RIVER

SUMMARY PRINTOUT TABLE 110

SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
0.000	826.30	0.00	826.47	123.00	0.00	2260.00	0.00	123.00	204.00	204.00	327.00	327.00
0.000	826.40	0.10	826.57	123.00	0.00	2260.00	0.00	0.24	204.00	204.00	327.00	327.00
1000.000	827.77	0.00	828.45	46.00	0.00	2260.00	0.00	46.00	204.00	204.00	250.00	250.00
1000.000	827.81	0.04	828.48	46.00	0.00	2260.00	0.00	46.00	204.00	204.00	250 00	250.00
1001.000	827.78	0.00	828.45	46.00	0.00	2260.00	0.00	46.00	204.00	204.00	250.00	250.00
1001.000	827.81	0.04	828.48	46.00	0.00	2260.00	0.00	46.00	204.00	204.00	250.00	250.00
1042.000	827.93	0.00	828.58	46.00	0.00	2260.00	0.00	46.00	204.00	204.00	250.00	250.00
1042.000	827.96	0.04	828.61	46.00	0.00	2260.00	0.00	46.00	204.00	204.00	250.00	250.00
1043.000	827.93	0.00	828.58	46.00	0.00	2260.00	0.00	46.00	204.00	204.00	250.00	250.00
1043.000	827.97	0.04	828.61	46.00	0.00	2260.00	0.00	0.05	204.00	204.00	250.00	250.00
1400.000	828.87	0.00	829.30	83.01	85.84	2049.02	125.14	0.00	0.00	205.00	250.00	0.00
1400.000	828.90	0.02	829.32	82.00	86.36	2046.20	127.45	82.00	187.00	205.00	250.00	269.00
1850.000	829.45	0.00	829.68	543.77	27.28	1960.02	272.70	0.00	0.00	190.00	250.00	0.00
1850.000	829.47	0.03	829.71	363.75	0.00	2000.97	259.03	0.03	190.00	190.00	250.00	553.75
2250.000	829.76	0.00	829.83	1028.90	85.95	1498.48	675.57	1320.00	316.00	781.00	850.00	1636.00
2250.000	829.79	0.03	829.88	520.00	54.63	1621.25	584.13	520.00	680.00	781.00	850.00	1200.00
2570.000	829.83	0.00	829.87	951.59	253.82	1309.19	696.99	1160.00	307.00	849.00	925.00	1467.00
2570.000	829.87	0.03	829.93	525.00	291.00	1593.86	375.14	525.00	625.00	849.00	925.00	1150.00
3740.000	829.99	0.00	830.12	422.01	726.14	1365.12	168.74	575.00	693.00	950.00	1010.00	1268.00
3740.000	830.10	0.11	830.23	422.00	744.47	1339.83	175.69	422.00	693.00	950.00	1010.00	1115.00
3820.000	830.05	0.00	830.23	387.58	636.01	1462.15	161.84	535.00	713.00	950.00	1010.00	1248.00
3820.000	830.16	0.11	830.32	387.00	652.01	1440.82	167.17	387.00	713.00	950.00	1010.00	1100.00

SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
3885.000	830.14	0.00	830.33	364.53	607.92	1477.74	174.34	503.00	729.00	950.00	1010.00	1232.00
3885 000	830.24	0.10	830.41	365.00	623.72	1456.83	179.45	365.00	729.00	950.00	1010.00	1074.00
3890.000	830.15	0.00	831.08	211.73	338.62	1507.82	413.56	0.00	0.00	1000.00	1024.00	0.00
3890.000	830.25	0.10	831.10	211.14	335.97	1478.85	445.18	214.00	980.00	1000.00	1024.00	1174.00
3901.000	830.62	0.00	831.27	246.83	330.27	1398.19	531.54	0.00	0.00	1000.00	1024.00	0.00
3901.000	830.54	-0.07	831.24	240.85	332.03	1416.72	511.25	248.00	980.00	1000.00	1024.00	1228.00
3929.000	832.10	0.00	832.31	306.24	286.80	1060.94	912.26	449.00	779.00	1000.00	1024.00	1228.00
3929.000	832.18	0.09	832.38	278.00	286.21	1045.74	928.05	278.00	950.00	1000.00	1024.00	1228.00
3940.000	832.15	0.00	832.33	508.94	324.04	1021.02	914.94	522.00	501.00	750.00	774.00	1023 00
3940.000	832.20	0.05	832.40	273.19	298.68	1056.60	904.72	0.04	681.19	750.00	774.00	954 38
4430.000	832.71	0.00	832 85	658.24	350.58	945.56	963.86	0.00	0.00	750.00	774.00	0.00
4430.000	832.79	0.08	832.94	300.00	285.02	977.90	997.07	300.00	700.00	750.00	774.00	1000.00
4930.000	833.16	0.00	833.27	688.08	366.30	904.73	988.97	0.00	0.00	750.00	774.00	0.00
4930.000	833.25	0.09	833.39	300.00	284.78	951.60	1023.62	300.00	700.00	750.00	774.00	1000.00
5840.000	833.84	0.00	833.94	717.61	382.28	866.20	1011.52	0.00	0.00	750.00	774.00	0.00
5840.000	833.98	0.14	834.09	350.00	321.98	904.54	1033.48	350.00	650.00	750.00	774.00	1000.00

TOBACCO RIVER

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
0.000	0.00	0.00	0.00	818.80	2260.00	826.30	0.00	826.47	8.86	3.33	679.59	759.14
0.000	0.00	0.00	0.00	818.80	2260.00	826.40	0.00	826.57	8.37	3.27	691.91	781.38
1000.000	1000.00	0.00	0.00	818.80	2260.00	827.77	0.00	828.45	29.12	6.59	342.91	418.78
1000.000	1000.00	0.00	0.00	818.80	2260.00	827.81	0.00	828.48	28.68	6.56	344.69	422.01
1001.000	1.00	832.30	829.50	818.80	2260.00	827.78	0.00	828.45	29.24	6.60	342.54	417.96
1001.000	1.00	832.30	829.50	818.80	2260.00	827.81	0.00	828.48	28.80	6.56	344.29	421.16
1042.000	41.00	832.30	829.50	818.80	2260.00	827.93	0.00	828.58	27.54	6.47	349.50	430.69
1042.000	41.00	832.30	829.50	818.80	2260.00	827.96	0.00	828.61	27.16	6.44	351.12	433.67
1043.000	1.00	0.00	0.00	818.80	2260.00	827.93	0.00	828.58	27.35	6.45	350.23	432.17
1043.000	1.00	0.00	0.00	818.80	2260.00	827.97	0.00	828.61	26.97	6.42	351.85	435.14
1400.000	357.00	0.00	0.00	819.20	2260.00	828.87	0.00	829.30	13.08	5.46	496.92	624.87
1400.000	357.00	0.00	0.00	819.20	2260.00	828.90	0.00	829.32	12.92	5.44	498.81	628.79
1850.000	450.00	0.00	0.00	819.60	2260.00	829.45	0.00	829.68	4.42	4.11	1037.70	1075.11
1850.000	450.00	0.00	0.00	819.60	2260.00	829.47	0.00	829.71	4.99	4.18	887.48	1011.76
2250.000	400.00	0.00	0.00	820.00	2260.00	829.76	0.00	829.83	1.77	2.65	2390.10	1698.90
2250.000	400.00	0.00	0.00	820.00	2260.00	829.79	0.00	829.88	2.04	2.85	1748.79	1580.96
2570.000	320.00	0.00	0.00	820.30	2260.00	829.83	0.00	829.87	0.72	2.05	3381.11	2667.16
2570.000	320.00	0.00	0.00	820.30	2260.00	829.87	0.00	829.93	1.06	2.48	2155.91	2199.69
3740.000	1170.00	0.00	0.00	822.30	2260.00	829.99	0.00	830.12	8.83	3.67	1123.97	760.49
3740.000	1170.00	0.00	0.00	822.30	2260.00	830.10	0.00	830.23	7.97	3.53	1175.92	800.64
3820.000	80.00	0.00	0.00	822.60	2260.00	830.05	0.00	830.23	11.50	4.08	974.24	666.54
3820.000	80.00	0.00	0.00	822.60	2260.00	830.16	0.00	830.32	10.57	3.96	1012.23	695.03
3885.000	65.00	0.00	0.00	822.80	2260.00	830.14	0.00	830.33	15.84	4.20	884.21	567.88
3885.000	65.00	0.00	0.00	822.80	2260.00	830.24	0.00	830.41	14.63	4.08	917.02	590.84
3890.000	5.00	0.00	0.00	822.90	2260.00	830.15	0.00	831.08	60.45	9.21	454.19	290.68
3890.000	5.00	0.00	0.00	822.90	2260.00	830.25	0.00	831.10	55.42	8.90	475.12	303.59
3901.000	11.00	0.00	0.00	822.90	2260.00	830.62	0.00	831.27	41.58	7.99	562.46	350.47
3901.000	11.00	0.00	0.00	822.90	2260.00	830.54	0.00	831.24	44.30	8.18	542.85	339.55
3929.000	28.00	831.60	830.60	822.90	2260.00	832.10	0.00	832.31	12.92	5.04	943.92	628.86
3929.000	28.00	831.60	830.60	822.90	2260.00	832.18	0.00	832.38	12.15	4.92	964.50	648.50
3940.000	11.00	0.00	0.00	822.90	2260.00	832.15	0.00	832.33	11.74	4.82	1105.93	659.63
3940.000	11.00	0.00	0.00	822.90	2260.00	832.20	0.00	832.40	12.35	4.96	941.26	643.21

SECND	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
4430.000	490.00	0.00	0.00	823.18	2260.00	832.71	0.00	832.85	9.07	4.33	1322.58	750.58
4430.000	490.00	0.00	0.00	823.18	2260.00	832.79	0.00	832.94	9.40	4.43	1098.73	737.01
4930.000	500.00	0.00	0.00	823.47	2260.00	833.16	0.00	833.27	7.84	4.07	1428.03	807.07
4930.000	500.00	0.00	0.00	823.47	2260.00	833.25	0.00	833.39	8.39	4.24	1148.23	780.17
5840.000	910.00	0.00	0.00	824.00	2260.00	833.84	0.00	833.94	6.80	3.83	1537.00	866.60
5840.000	910.00	0.00	0.00	824.00	2260.00	833.98	0.00	834.09	7.07	3.94	1272.22	850.19

TOBACCO RIVER

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
0.000	2260.00	826.30	0.00	0.00	0.00	123.00	0.00
0.000	2260.00	826.40	0.10	0.00	0.10	123.00	0.00
1000.000	2260.00	827.77	0.00	1.47	0.00	46.00	1000.00
1000.000	2260.00	827.81	0 04	1.41	0.04	46.00	1000.00
1001.000	2260.00	827.78	0.00	0.00	0.00	46.00	1.00
1001.000	2260.00	827.81	0.04	0.00	0.04	46.00	1.00
1042.000	2260.00	827.93	0.00	0.15	0.00	46.00	41.00
1042.000	2260.00	827.96	0.04	0.15	0.04	46.00	41.00
1043.000	2260.00	827 93	0.00	0.01	0.00	46.00	1.00
1043.000	2260.00	827.97	0.04	0.01	0.04	46.00	1.00
1400.000	2260.00	828.87	0.00	0.94	0.00	83.01	357.00
1400.000	2260.00	828.90	0.02	0 93	0.02	82.00	357.00
1850.000	2260.00	829.45	0.00	0.57	0.00	543.77	450.00
1850 000	2260.00	829.47	0.03	0.57	0.03	363.75	450.00
2250.000	2260.00	829.76	0.00	0.31	0.00	1028.90	400.00
2250 000	2260.00	829.79	0.03	0.32	0.03	520.00	400.00
2570.000	2260.00	829.83	0.00	0.08	0.00	951.59	320.00
2570.000	2260.00	829.87	0.03	0.08	0.03	525.00	320.00
3740.000	2260.00	829.99	0 00	0.16	0.00	422.01	1170.00
3740.000	2260.00	830.10	0.11	0.24	0.11	422.00	1170.00
3820.000	2260.00	830.05	0.00	0.06	0.00	387.58	80 00
3820.000	2260.00	830.16	0 11	0.05	0.11	387.00	80.00
3885.000	2260.00	830.14	0.00	0.09	0.00	364.53	65.00
3885.000	2260.00	830.24	0.10	0.08	0.10	365.00	65.00
3890.000	2260.00	830.15	0.00	0.01	0.00	211.73	5.00
3890.000	2260.00	830.25	0.10	0.01	0.10	211.14	5.00
3901.000	2260.00	830.62	0.00	0.47	0.00	246.83	11.00
3901.000	2260.00	830.54	-0.07	0.29	-0.07	240.85	11.00
3929.000	2260.00	832.10	0.00	1.48	0.00	306.24	28.00
3929.000	2260.00	832.18	0.09	1.64	0.09	278.00	28.00
3940.000	2260 00	832.15	0.00	0.05	0.00	508.94	11.00
3940.000	2260.00	832.20	0.05	0.01	0.05	273.19	11.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
4430.000	2260.00	832.71	0.00	0.56	0.00	658.24	490.00
4430.000	2260.00	832.79	0.08	0.59	0.08	300.00	490.00
4930.000	2260.00	833.16	0.00	0.45	0.00	688.08	500.00
4930.000	2260.00	833.25	0.09	0.46	0.09	300.00	500.00
5840.000	2260.00	833.84	0.00	0.69	0.00	717.61	910 00
5840.000	2260.00	833.98	0.14	0.73	0.14	350.00	910.00

SUMMARY OF ERRORS AND SPECIAL NOTES

FLOODWAY DATA, TOBACCO RIVER
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE
0.000	123.	692.	3.3	826.4	826.3	0.1
1000.000	46.	345.	6.6	827.8	827.8	0.0
1001.000	46.	344.	6.6	827.8	827.8	0.0
1042.000	46.	351.	6.4	827.9	827.9	0.0
1043.000	46.	352.	6.4	827.9	827.9	0.0
1400.000	82.	499.	4.5	828.9	828.9	0.0
1850.000	364.	887.	2.5	829.4	829.4	0.0
2250.000	520.	1749.	1.3	829.8	829.8	0.0
2570.000	525.	2156.	1.0	829.8	829.8	0.0
3740.000	422.	1176.	1.9	830.1	830.0	0.1
3820.000	387.	1012.	2.2	830.1	830.0	0.1
3885.000	365	917.	2.5	830.2	830.1	0.1
3890 000	214.	475.	4.8	830.3	830.2	0.1
3901.000	243.	543.	4.2	830.6	830.6	0.0
3929.000	278.	964.	2.3	832.2	832.1	0.1
3940.000	273	941.	2.4	832.1	832.1	0.0
4430.000	300.	1099.	2.1	832.8	832.7	0.1
4930.000	300	1148.	2.0	833.3	833.2	0.1
5840.000	350.	1272.	1.8	833.9	833.8	0.1

THIS RUN EXECUTED 7 JUL 90 12:21:52

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  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
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