Professional Engineering Consultants, P.A.
303 S. TOPEKA ▪ WICHITA, KANSAS 67202 ▪ 316-262-2691 ▪ FAX 316-262-3003 ▪ www.pec1.com ▪ designers@pec1.com

LETTER OF TRANSMITTAL

TO: Vicky Huang - Engineering Department 7th Floor
455 N. Main
Wichita, KS 67202
ATTENTION:
COPIES TO: FILE

PROJECT NO.: 36-97d09-4366
PROJECT: Chapel Hill Plat
DATE: 4/14/99
FROM: Karen Rand
REFERENCE: Drainage Plan

WE ARE SENDING YOU: ☒ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications

☐ Copy of letter ☐ Change order ☐ AutoCAD Drawing Files - Version 14 on 3.5" diskette(s)

COPIES	DATE	NO.	DESCRIPTION
1			HEC-1 Model for Chapel Hill
1			Revised Four Corner Plan (City Datum)

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit ____ copies for approval

☒ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution

☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints

☐ For review and comment ☐ _____

☐ FOR BIDS DUE _____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS: This is a revised HEC-1 model for Chapel Hill Addition. Due to field conditions, the pond size has been modified as well as the outfall location and size. The new parameters were used in the revised HEC-1 model and the design highwater for the pond increased slightly. This small change in water elevation is not expected to change the minimum openings for the lots adjacent to the pond. A revised Four Corner Plan is also included, using City of Wichita Datum for the elevations. A copy of the four corner plan is also being forwarded to Mike Gable, OCI.

RECEIVED
APR 15 1999
CITY - ENGINEERING

COPY TO _____ SIGNED Karen Rand

If enclosures are not as noted, kindly notify us at once.

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*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             MAY   1991                *
*          VERSION 4.0.1E               *
*     Lahey F77L-EM/32 version 5.01     *
*       Dodson & Associates, Inc.       *
*  RUN DATE  04/13/99  TIME  15:15:06   *
*****************************************
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*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 551-1748              *
*                                       *
*****************************************
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```
X    X  XXXXXXX   XXXXX          X
X    X  X       X     X        XX
X    X  X       X                X
XXXXXXX  XXXX    X       XXXXX   X
X    X  X       X                X
X    X  X       X    X           X
X    X  XXXXXXX  XXXXX          XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  1       ID       CHAPEL HILL, WICHITA KS
  2       ID       25-, & 100-Year Storms
  3       ID       Professional Engineering Consultants
  4       ID       Wichita, Ks
  5       ID       KER 10/6/98
  6       ID       File:  T:\DAR\HEC1\CHAPEL.ih1
  7       IT      6 12DEC97    0600       0 13DEC97    1154
  8       IN     30 12DEC97    0600
  9       IO      3       0
 10       JR    PREC  .78947   1.000
          *
          *DIAGRAM
          *

 11       KK    BAS1        Developed Residential
 12       BA    .017
 13       PB     7.8
 14       PC    0.08    .09     .10     .11     .12     .133    .147    .163    .181    .204
 15       PC    .235    .283    .663    .735    .772    .799    .820    .835    .850    .865
 16       PC    .880    .890    .900    .910    .916    .925    .934    .943    .952    .958
 17       PC    .964    .970    .976    .982    .988    .994   1.000
 18       LS       0      90       0
 19       UD     .15
          *
          *

 20       KK    BAS2        Developed Commercial
 21       BA   .0334
 22       PB     7.8
 23       PC    0.08    .09     .10     .11     .12     .133    .147    .163    .181    .204
 24       PC    .235    .283    .663    .735    .772    .799    .820    .835    .850    .865
 25       PC    .880    .890    .900    .910    .916    .925    .934    .943    .952    .958
 26       PC    .964    .970    .976    .982    .988    .994   1.000
 27       LS       0      93       0
 28       UD     .15
          *
          *

 29       KK    BAS3        Street & Right of Way
 30       BA   .0059
 31       PB     7.8
 32       PC    0.08    .09     .10     .11     .12     .133    .147    .163    .181    .204
 33       PC    .235    .283    .663    .735    .772    .799    .820    .835    .850    .865
 34       PC    .880    .890    .900    .910    .916    .925    .934    .943    .952    .958
 35       PC    .964    .970    .976    .982    .988    .994   1.000
 36       LS       0      90       0
 37       UD     .15
          *

 38       KK   TOTAL
 39       HC       3
          *
          *
          *       6'6"x3'6" Inlet against pond bank with
          *       58"x34" RCPHE Outlet to K-96 Ditch
```

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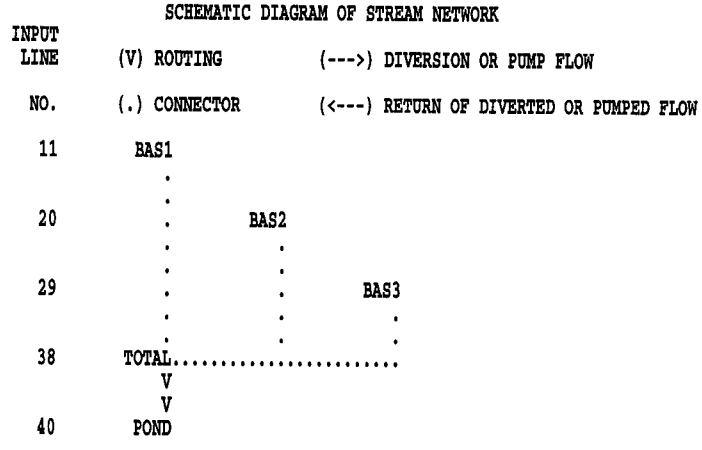
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  40          KK    POND
  41          RS       1    ELEV      59
  42          SA    2.57    2.96     3.2
  43          SE      59    61.1      62
  44          SQ       0     3.6    10.2    18.8      29    40.5    53.2    67.1      82      88
  45          SQ    94.6      99     100     120     150
  46          SE    59.0    59.2    59.4    59.6    59.8      60    60.2    60.4    60.6    60.7
  47          SE      61    61.2    61.3      62      63
              *
  48          ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK



(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             MAY   1991                *
*           VERSION 4.0.1E              *
*     Lahey F77L-EM/32 version 5.01     *
*       Dodson & Associates, Inc.       *
*  RUN DATE  04/13/99  TIME  15:15:06   *
*****************************************
```

```
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*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*        DAVIS, CALIFORNIA 95616        *
*           (916) 551-1748              *
*                                       *
*****************************************
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                          CHAPEL HILL, WICHITA KS
                          25-, & 100-Year Storms
                          Professional Engineering Consultants
                          Wichita, Ks
                          KER 10/6/98
                          File:  T:\DAR\HEC1\CHAPEL.ih1

  9 IO          OUTPUT CONTROL VARIABLES
                     IPRNT          3  PRINT CONTROL
                     IPLOT          0  PLOT CONTROL
                     QSCAL         0.  HYDROGRAPH PLOT SCALE

    IT          HYDROGRAPH TIME DATA
                      NMIN          6  MINUTES IN COMPUTATION INTERVAL
                     IDATE     12DEC97  STARTING DATE
                     ITIME        0600  STARTING TIME
                        NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                    NDDATE     13DEC97  ENDING DATE
                    NDTIME        1154  ENDING TIME
                    ICENT           19  CENTURY MARK

                  COMPUTATION INTERVAL    0.10 HOURS
                      TOTAL TIME BASE   29.90 HOURS

        ENGLISH UNITS
             DRAINAGE AREA         SQUARE MILES
             PRECIPITATION DEPTH   INCHES
             LENGTH, ELEVATION     FEET
             FLOW                  CUBIC FEET PER SECOND
             STORAGE VOLUME        ACRE-FEET
             SURFACE AREA          ACRES
             TEMPERATURE           DEGREES FAHRENHEIT

    JP          MULTI-PLAN OPTION
                     NPLAN          1  NUMBER OF PLANS

    JR          MULTI-RATIO OPTION
                    RATIOS OF PRECIPITATION
                   0.79     1.00


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


             **************
             *            *
 11 KK       *     BAS1   *            Developed Residential
             *            *
             **************

  8 IN          TIME DATA FOR INPUT TIME SERIES
                     JXMIN         30  TIME INTERVAL IN MINUTES
                    JXDATE     12DEC97  STARTING DATE
                    JXTIME        600  STARTING TIME

               SUBBASIN RUNOFF DATA

 12 BA          SUBBASIN CHARACTERISTICS
                     TAREA       0.02  SUBBASIN AREA

                PRECIPITATION DATA

 13 PB               STORM       7.80  BASIN TOTAL PRECIPITATION

 14 PI            INCREMENTAL PRECIPITATION PATTERN
```

0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.08	0.08	0.08	0.08	0.08
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

```
  18 LS         SCS LOSS RATE
                    STRTL        0.22  INITIAL ABSTRACTION
                   CRVNBR       90.00  CURVE NUMBER
                    RTIMP        0.00  PERCENT IMPERVIOUS AREA

  19 UD         SCS DIMENSIONLESS UNITGRAPH
                     TLAG        0.15  LAG

                                              ***

                                        UNIT HYDROGRAPH
                                   10 END-OF-PERIOD ORDINATES
            19.       41.       28.       12.        5.        2.        1.        0.        0.        0.

    TOTAL RAINFALL =    7.80, TOTAL LOSS =    1.19, TOTAL EXCESS =    6.61

   PEAK FLOW     TIME                             MAXIMUM AVERAGE FLOW
                                          6-HR        24-HR       72-HR      29.90-HR
 +    (CFS)      (HR)
                              (CFS)
 +        64.     6.00                     10.          3.          2.            2.
                            (INCHES)     5.373       6.609       6.609         6.609
                             (AC-FT)        5.          6.          6.            6.

                            CUMULATIVE AREA =     0.02 SQ MI

       ***           ***           ***           ***           ***

                             HYDROGRAPH AT STATION      BAS1
                              FOR PLAN 1, RATIO = 0.79

    TOTAL RAINFALL =    6.16, TOTAL LOSS =    1.16, TOTAL EXCESS =    5.00

   PEAK FLOW     TIME                             MAXIMUM AVERAGE FLOW
                                          6-HR        24-HR       72-HR      29.90-HR
 +    (CFS)      (HR)
                              (CFS)
 +        49.     6.00                      7.          2.          2.            2.
                            (INCHES)     4.082       5.000       5.000         5.000
                             (AC-FT)        4.          5.          5.            5.

                            CUMULATIVE AREA =     0.02 SQ MI

       ***           ***           ***           ***           ***

                             HYDROGRAPH AT STATION      BAS1
                              FOR PLAN 1, RATIO = 1.00

    TOTAL RAINFALL =    7.80, TOTAL LOSS =    1.19, TOTAL EXCESS =    6.61

   PEAK FLOW     TIME                             MAXIMUM AVERAGE FLOW
                                          6-HR        24-HR       72-HR      29.90-HR
 +    (CFS)      (HR)
                              (CFS)
 +        64.     6.00                     10.          3.          2.            2.
                            (INCHES)     5.373       6.609       6.609         6.609
                             (AC-FT)        5.          6.          6.            6.

                            CUMULATIVE AREA =     0.02 SQ MI
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*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

           **************
           *            *
 20 KK     *    BAS2    *         Developed Commercial
           *            *
           **************

  8 IN         TIME DATA FOR INPUT TIME SERIES
                  JXMIN        30  TIME INTERVAL IN MINUTES
                  JXDATE  12DEC97  STARTING DATE
                  JXTIME      600  STARTING TIME

              SUBBASIN RUNOFF DATA

 21 BA         SUBBASIN CHARACTERISTICS
                  TAREA      0.03  SUBBASIN AREA

               PRECIPITATION DATA

 22 PB            STORM      7.80  BASIN TOTAL PRECIPITATION

 23 PI           INCREMENTAL PRECIPITATION PATTERN
                  0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
                  0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
                  0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
                  0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
                  0.00    0.00    0.00    0.00    0.00    0.01    0.01    0.01    0.01    0.01
                  0.01    0.01    0.01    0.01    0.01    0.08    0.08    0.08    0.08    0.08
                  0.01    0.01    0.01    0.01    0.01    0.01    0.01    0.01    0.01    0.01
                  0.01    0.01    0.01    0.01    0.01    0.00    0.00    0.00    0.00    0.00
                  0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
                  0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
                  0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
                  0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
                  0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
                  0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
                  0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
                  0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
                  0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
                  0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00

 27 LS         SCS LOSS RATE
                  STRTL      0.15  INITIAL ABSTRACTION
                 CRVNBR     93.00  CURVE NUMBER
                  RTIMP      0.00  PERCENT IMPERVIOUS AREA

 28 UD         SCS DIMENSIONLESS UNITGRAPH
                   TLAG      0.15  LAG

                                         ***

                                   UNIT HYDROGRAPH
                               10 END-OF-PERIOD ORDINATES
         38.      81.      55.      23.      10.      4.      2.      1.      0.      0.

   TOTAL RAINFALL =    7.80, TOTAL LOSS =    0.84, TOTAL EXCESS =    6.96

  PEAK FLOW    TIME                        MAXIMUM AVERAGE FLOW
                                    6-HR      24-HR      72-HR     29.90-HR
+   (CFS)      (HR)
                          (CFS)
+    130.      6.00                  20.        6.         5.          5.
                       (INCHES)    5.610     6.964      6.964       6.964
                        (AC-FT)      10.       12.        12.         12.

                   CUMULATIVE AREA =     0.03 SQ MI

     ***          ***          ***          ***          ***

                     HYDROGRAPH AT STATION     BAS2
                       FOR PLAN 1, RATIO = 0.79

   TOTAL RAINFALL =    6.16, TOTAL LOSS =    0.82, TOTAL EXCESS =    5.34
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  PEAK FLOW     TIME                               MAXIMUM AVERAGE FLOW
                                          6-HR       24-HR       72-HR       29.90-HR
+   (CFS)       (HR)
                              (CFS)
+      101.     6.00                       16.          5.          4.            4.
                            (INCHES)     4.325       5.338       5.338         5.338
                             (AC-FT)        8.         10.         10.           10.

                             CUMULATIVE AREA =      0.03 SQ MI


       ***            ***            ***            ***            ***

                              HYDROGRAPH AT STATION      BAS2
                                FOR PLAN 1, RATIO = 1.00

     TOTAL RAINFALL =    7.80, TOTAL LOSS =    0.84, TOTAL EXCESS =     6.96

  PEAK FLOW     TIME                               MAXIMUM AVERAGE FLOW
                                          6-HR       24-HR       72-HR       29.90-HR
+   (CFS)       (HR)
                              (CFS)
+      130.     6.00                       20.          6.          5.            5.
                            (INCHES)     5.610       6.964       6.964         6.964
                             (AC-FT)       10.         12.         12.           12.

                             CUMULATIVE AREA =      0.03 SQ MI



*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


                **************
                *            *
  29 KK         *    BAS3    *           Street & Right of Way
                *            *
                **************

   8 IN              TIME DATA FOR INPUT TIME SERIES
                          JXMIN          30   TIME INTERVAL IN MINUTES
                         JXDATE     12DEC97   STARTING DATE
                         JXTIME         600   STARTING TIME

                   SUBBASIN RUNOFF DATA

  30 BA              SUBBASIN CHARACTERISTICS
                          TAREA        0.01   SUBBASIN AREA

                     PRECIPITATION DATA

  31 PB                   STORM        7.80   BASIN TOTAL PRECIPITATION

  32 PI                INCREMENTAL PRECIPITATION PATTERN
                         0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                         0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                         0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                         0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                         0.00      0.00      0.00      0.00      0.00      0.01      0.01      0.01      0.01      0.01
                         0.01      0.01      0.01      0.01      0.01      0.08      0.08      0.08      0.08      0.08
                         0.01      0.01      0.01      0.01      0.01      0.01      0.01      0.01      0.01      0.01
                         0.01      0.01      0.01      0.01      0.01      0.00      0.00      0.00      0.00      0.00
                         0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                         0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                         0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                         0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                         0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                         0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                         0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                         0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                         0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                         0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00

  36 LS              SCS LOSS RATE
                         STRTL         0.22   INITIAL ABSTRACTION
                        CRVNBR        90.00   CURVE NUMBER
                         RTIMP         0.00   PERCENT IMPERVIOUS AREA
```

```
 37 UD        SCS DIMENSIONLESS UNITGRAPH
                   TLAG        0.15  LAG

                                                 ***

                                             UNIT HYDROGRAPH
                                          10 END-OF-PERIOD ORDINATES
               7.      14.      10.      4.      2.      1.      0.      0.      0.      0.

      TOTAL RAINFALL =    7.80, TOTAL LOSS =    1.19, TOTAL EXCESS =    6.61

    PEAK FLOW    TIME                            MAXIMUM AVERAGE FLOW
                                       6-HR       24-HR       72-HR     29.90-HR
  +  (CFS)       (HR)
                          (CFS)
  +     22.      6.00                    3.          1.          1.          1.
                       (INCHES)      5.373       6.609       6.609       6.609
                        (AC-FT)         2.          2.          2.          2.

                       CUMULATIVE AREA =    0.01 SQ MI


       ***          ***          ***          ***          ***

                        HYDROGRAPH AT STATION     BAS3
                          FOR PLAN 1, RATIO = 0.79

      TOTAL RAINFALL =    6.16, TOTAL LOSS =    1.16, TOTAL EXCESS =    5.00

    PEAK FLOW    TIME                            MAXIMUM AVERAGE FLOW
                                       6-HR       24-HR       72-HR     29.90-HR
  +  (CFS)       (HR)
                          (CFS)
  +     17.      6.00                    3.          1.          1.          1.
                       (INCHES)      4.082       5.000       5.000       5.000
                        (AC-FT)         1.          2.          2.          2.

                       CUMULATIVE AREA =    0.01 SQ MI


       ***          ***          ***          ***          ***

                        HYDROGRAPH AT STATION     BAS3
                          FOR PLAN 1, RATIO = 1.00

      TOTAL RAINFALL =    7.80, TOTAL LOSS =    1.19, TOTAL EXCESS =    6.61

    PEAK FLOW    TIME                            MAXIMUM AVERAGE FLOW
                                       6-HR       24-HR       72-HR     29.90-HR
  +  (CFS)       (HR)
                          (CFS)
  +     22.      6.00                    3.          1.          1.          1.
                       (INCHES)      5.373       6.609       6.609       6.609
                        (AC-FT)         2.          2.          2.          2.

                       CUMULATIVE AREA =    0.01 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

              **************
              *            *
 38 KK        *   TOTAL    *
              *            *
              **************

 39 HC        HYDROGRAPH COMBINATION
                 ICOMP          3  NUMBER OF HYDROGRAPHS TO COMBINE

                                                 ***

       ***          ***          ***          ***          ***

                        HYDROGRAPH AT STATION     TOTAL
                          FOR PLAN 1, RATIO = 0.79

    PEAK FLOW    TIME                            MAXIMUM AVERAGE FLOW
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                                      6-HR       24-HR       72-HR      29.90-HR
  +   (CFS)       (HR)
                              (CFS)
  +     167.       6.00                  26.         8.          6.          6.
                           (INCHES)    4.226      5.201       5.201       5.201
                            (AC-FT)      13.        16.         16.         16.

                           CUMULATIVE AREA =     0.06 SQ MI


       ***            ***            ***            ***            ***

                            HYDROGRAPH AT STATION    TOTAL
                             FOR PLAN 1, RATIO = 1.00

   PEAK FLOW     TIME                             MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR      29.90-HR
  +   (CFS)       (HR)
                              (CFS)
  +     216.       6.00                  33.        10.          8.          8.
                           (INCHES)    5.512      6.820       6.820       6.820
                            (AC-FT)      17.        20.         20.         20.

                           CUMULATIVE AREA =     0.06 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

               **************
               *            *
   40 KK       *     POND   *
               *            *
               **************

                 HYDROGRAPH ROUTING DATA

   41 RS          STORAGE ROUTING
                       NSTPS          1  NUMBER OF SUBREACHES
                        ITYP       ELEV  TYPE OF INITIAL CONDITION
                      RSVRIC      59.00  INITIAL CONDITION
                           X       0.00  WORKING R AND D COEFFICIENT

   42 SA              AREA        2.6       3.0       3.2

   43 SE         ELEVATION      59.00     61.10     62.00

   44 SQ         DISCHARGE         0.        4.       10.       19.       29.       41.       53.       67.       82.       88.
                                  95.       99.      100.      120.      150.

   46 SE         ELEVATION      59.00     59.20     59.40     59.60     59.80     60.00     60.20     60.40     60.60     60.70
                                61.00     61.20     61.30     62.00     63.00

                                                              ***

                                                    COMPUTED STORAGE-ELEVATION DATA

            STORAGE       0.00      5.80      8.57
          ELEVATION      59.00     61.10     62.00

                                                 COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

            STORAGE       0.00      0.52      1.04      1.57      2.11      2.66      3.21      3.78      4.35      4.63
            OUTFLOW       0.00      3.60     10.20     18.80     29.00     40.50     53.20     67.10     82.00     88.00
          ELEVATION      59.00     59.20     59.40     59.60     59.80     60.00     60.20     60.40     60.60     60.70

            STORAGE       5.51      5.80      6.10      6.40      8.57     11.91
            OUTFLOW      94.60     96.80     99.00    100.00    120.00    150.00
          ELEVATION      61.00     61.10     61.20     61.30     62.00     63.00
       ***            ***            ***            ***            ***

                            HYDROGRAPH AT STATION     POND
                             FOR PLAN 1, RATIO = 0.79

   PEAK FLOW     TIME                             MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR      29.90-HR
  +   (CFS)       (HR)
```

		(CFS)					
+	90.	6.20		25.	8.	6.	6.
			(INCHES)	4.134	5.199	5.201	5.201
			(AC-FT)	12.	16.	16.	16.

PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE			
			6-HR	24-HR	72-HR	29.90-HR
+ (AC-FT)	(HR)					
5.	6.20		2.	1.	1.	1.

PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE			
			6-HR	24-HR	72-HR	29.90-HR
+ (FEET)	(HR)					
60.79	6.20		59.66	59.25	59.20	59.20

CUMULATIVE AREA = 0.06 SQ MI

*** *** *** *** ***

HYDROGRAPH AT STATION POND
FOR PLAN 1, RATIO = 1.00

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	29.90-HR
+ (CFS)	(HR)					
		(CFS)				
+ 101.	6.20		33.	10.	8.	8.
		(INCHES)	5.417	6.817	6.819	6.819
		(AC-FT)	16.	20.	20.	20.

PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE			
			6-HR	24-HR	72-HR	29.90-HR
+ (AC-FT)	(HR)					
7.	6.20		2.	1.	1.	1.

PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE			
			6-HR	24-HR	72-HR	29.90-HR
+ (FEET)	(HR)					
61.34	6.20		59.84	59.31	59.25	59.25

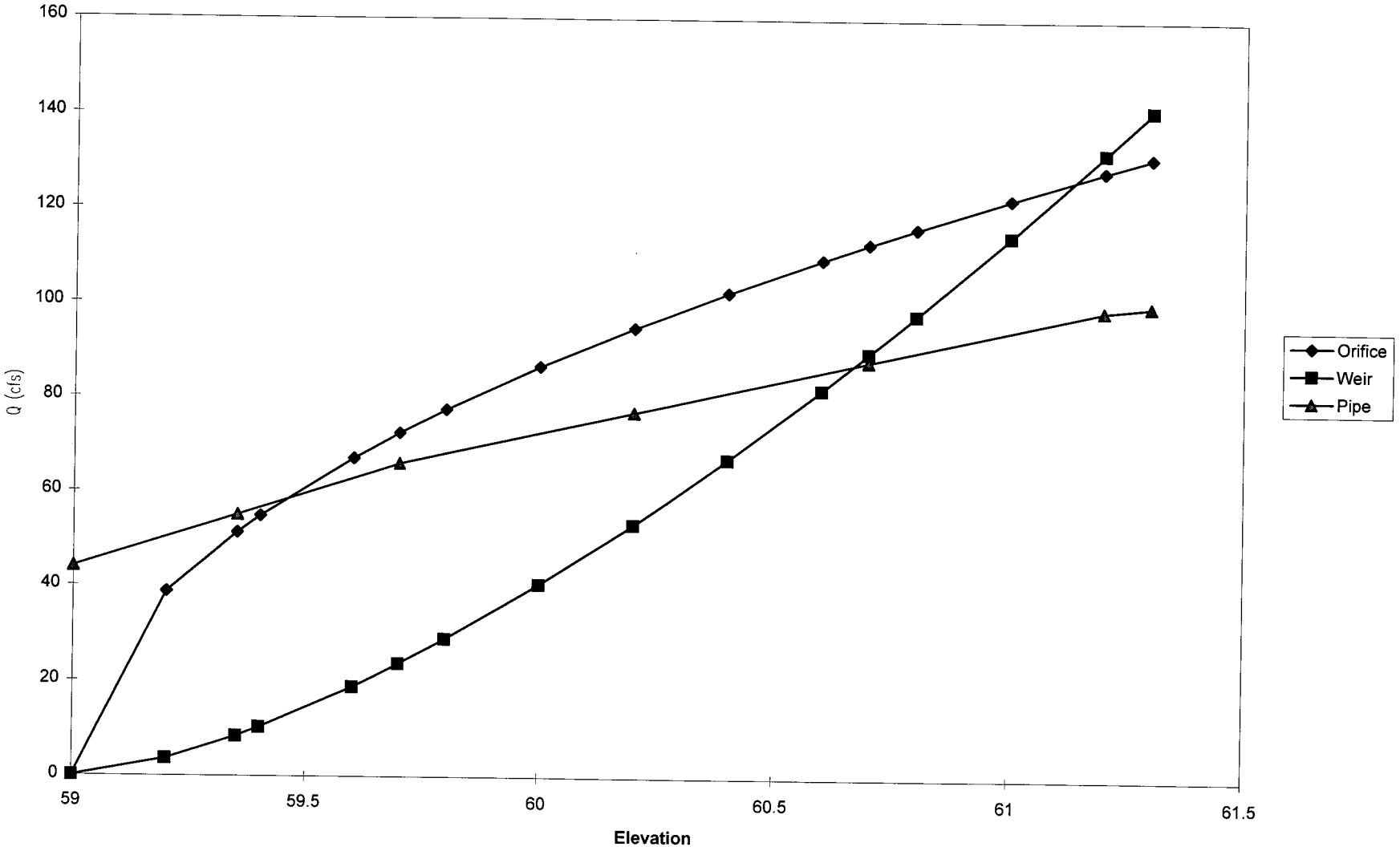
CUMULATIVE AREA = 0.06 SQ MI

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1	RATIO 2
					0.79	1.00
HYDROGRAPH AT						
+	BAS1	0.02	1	FLOW	49.	64.
				TIME	6.00	6.00
HYDROGRAPH AT						
+	BAS2	0.03	1	FLOW	101.	130.
				TIME	6.00	6.00
HYDROGRAPH AT						
+	BAS3	0.01	1	FLOW	17.	22.
				TIME	6.00	6.00
3 COMBINED AT						
+	TOTAL	0.06	1	FLOW	167.	216.
				TIME	6.00	6.00
ROUTED TO						
+	POND	0.06	1	FLOW	90.	101.
				TIME	6.20	6.20
			** PEAK STAGES IN FEET **			
			1	STAGE	60.79	61.34
				TIME	6.20	6.20

*** NORMAL END OF HEC-1 ***

Flow Control
Chapel Hill Addition
Pond Outflow



4/13/99