CITY OF ALBUQUERQUE

December 21, 2004

Gregory J. Krenik, PE
Mark Goodwin & Associates
P.O. 90606
Albuquerque, NM 87199

Re: BIA Building Phase 2 Drainage Report
Engineer's Stamp dated 11-5-04 (H14/D98)

Dear Mr. Krenik,

Based upon the information provided in your submittal dated 11-9-04, the above referenced report is approved for Site Plan for Building Permit action by the DRB. It is also approved for Building Permit. Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology.

This project requires a National Pollutant Discharge Elimination System (NPDES) permit. Refer to the attachment that is provided with this letter for details. If you have any questions please feel free to call the Municipal Development Department, Hydrology section at 768-3654 (Charles Caruso).

Also, prior to Certificate of Occupancy release, Engineer Certification of the grading plan per the DPM checklist will be required.

If you have any questions, you can contact me at 924-3986.

Sincerely,

Bradley L. Bingham, PE
Principal Engineer, Planning Dept.
Development and Building Services

C: Chuck Caruso, DMD
file

P.O. Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

DRAINAGE INFORMATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE: BIA Building, Phase 2 ZONE MAP/DRG #: H-14/D98

DRB#: EPC #: W.O.#:

LEGAL DESCRIPTION: Lot 84E, Indian School Properties

CITY ADDRESS:

ENGINEERING FIRM:	Mark Goodwin & Associates, PA	CONTACT:	Gregory J. Krenik, PE
ADDRESS:	PO Box 90606	PHONE:	828-2200
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87199
OWNER:	All Indian Pueblo Council	CONTACT:	Daniel Puzak
ADDRESS:	320 Central Avenue SW	PHONE:	843-9639
CITY, STATE:	Albuquerque. NM	ZIP CODE:	87102
ARCHITECT:	Design Collaborative Southwest (DCSW)	CONTACT:	Daniel Puzak
ADDRESS:	320 Central Avenue SW	PHONE:	843-9639
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87102
SURVEYOR:	Aldrich Land Surveying	CONTACT:	Tim Aldirch
ADDRESS:	P.O. Box 30701	PHONE:	884-1990
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87190-0701
CONTRACTOR:		CONTACT:	
ADDRESS:		PHONE:	
CITY, STATE:		ZIP CODE:	

CHECK TYPE OF SUBMITTAL:

- ✔ DRAINAGE REPORT
- ✔ DRAINAGE PLAN 1ST SUBMITTAL, **req. TCL or equal**
- ___ DRAINAGE PLAN RESUBMITTAL
- ___ CONCEPTUAL GRADING & DRAINAGE PLAN
- ✔ GRADING PLAN
- ___ EROSION CONTROL PLAN
- ___ ENGINEER'S CERTIFICATION (HYDROLOGY)
- ___ CLOMR/LOMR
- ___ TRAFFIC CIRCULATION LAYOUT (TCL)
- ___ ENGINEER'S CERTIFICATION (TCL)
- ___ ENGINEER'S CERTIFICATION (DRB APPR. SITE PLAN)
- ___ OTHER

CHECK TYPE OF APPROVAL SOUGHT:

- ___ SIA / FINANCIAL GUARANTEE RELEASE
- ___ PRELIMINARY PLAT APPROVAL
- ___ S. DEV. PLAN FOR SUB'D. APPROVAL
- ✔ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
- ___ SECTOR PLAN APPROVAL
- ___ FINAL PLAT APPROVAL
- ___ FOUNDATION PERMIT APPROVAL
- ___ BUILDING PERMIT APPROVAL
- ___ CERTIFICATE OF OCCUPANCY (PERM)
- ___ CERTIFICATE OF OCCUPANCY (TEMP)
- ✔ GRADING PERMIT APPROVAL
- ___ PAVING PERMIT APPROVAL
- ___ WORK ORDER APPROVAL
- ___ OTHER (specify)

RECEIVED
NOV 09 2004
HYDROLOGY SECTION

WAS A PRE-DESIGN CONFERENCE ATTENDED?

- ___ YES
- ✔ NO
- ___ COPY PROVIDED

DATE SUBMITTED: 11-05-04 BY:

Gregory J. Krenik, P.E.

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope of the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

1. **Conceptual Grading and Drainage Plan**: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans.
2. **Drainage Plans**: Required for building permits, grading permits, paving permits and site plans less than five (5) acres.
3. **Drainage Report**: Required for subdivisions containing more than ten (10) lots or constituting five (5) acres or more.

[redacted]

MARK GOODWIN & ASSOCIATES
CONSULTING ENGINEERS

DRAINAGE REPORT

for

US Department of The Interior

BIA SW Regional Headquarters

Phase 2

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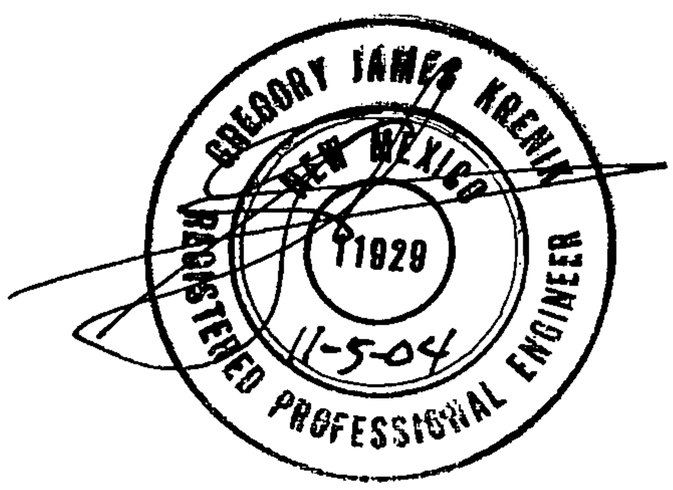
NOV 09 2004
HYDROLOGY SECTION

NOVEMBER 2004



SITE

CITY OF ALBUQUERQUE · NEW MEXICO · 1706

Albuquerque Geographic Information System

PLANNING DEPARTMENT

GRAPHIC SCALE IN FEET

250 0 750 1000

Zone Atlas Page

H-14-Z

Map Amended through November 01, 2003

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

PROJECT BIA PHASE 2
SUBJECT DRAINAGE CALCS
BY GJK DATE 11-4-04
CHECKED ____ DATE ____
SHEET 1 OF ____

- THE SITE CONSISTS OF 9.0449 AC AS PART OF THE ORIGINAL BIA BUILDING REPORT PREPARED BY MARK GOODWIN & ASSOCIATES ON 6-11-03. SEE APPENDIX "A"
- TOTAL SITE WHICH IS BOUNDED BY 12TH ST, INDIAN SCHOOL, MENAUL AND 9TH STREET = 47.3648 AC
- SITE IS NOT IN A 100 YR FLOOD ZONE PER MAP 35001C0331D
- SITE IS TO BE DEVELOPED IN PHASES
- NO OFFSITE FLOWS ENTER THE SITE.
- THIS REPORT WILL DISCUSS THE SECOND PHASE

AREA = 9.0449 AC

- SITE WILL BE SPLIT INTO 7 DRAINAGE BASINS

BASIN 1 WILL DRAIN TO A 6' CONCRETE CHANNEL AND THEN INTO THE NORTH EXISTING DBL D INLET.

BASIN 2 WILL DRAIN TO A 6' CONCRETE CHANNEL AND THEN INTO THE SOUTH EXISTING DBL D INLET.

BASIN 3 WILL DRAIN TO THE SOUTH EXISTING INLET.

BASIN 4 WILL DRAIN TO THE NEW POND.

BASIN 5 WILL DRAIN TO THE NEW TRUCK WELL.

BASIN 6 WILL DRAIN TO INDIAN SCHOOL ROAD.

BASIN 7 WILL DRAIN TO THE NORTH EXISTING INLET

BASIN	AREA (AC)	B(AC)(%)	C(AC)(%)	D(AC)(%)
1	2.0142	0.0357 (1.77)	0.0357 (1.77)	1.9428 (96.46)
2	2.4333	0.2244 (9.22)	0.2244 (9.22)	1.9845 (81.56)
3	1.5858	0.3519 (22.19)	0.3519 (22.19)	0.8820 (55.62)
4	2.1012	0.5195 (24.73)	0.5195 (24.72)	1.0622 (50.55)
5	0.0776	—	—	0.0776 (100)
6	0.4618	—	—	0.4618 (100)
7	0.3710	0.0431 (11.62)	0.0431 (11.62)	0.2848 (76.76)
	9.0449			

$P_1 = 1.90$in
$P_6 = 2.25$in
$P_{24} = 2.60$in

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PROJECT BIA PHASE 2
SUBJECT DRAINAGE CALCS
BY GJK DATE 11-4-04
CHECKED DATE
SHEET 2 OF

FROM AHYMO OUTPUT SHEETS 4-9

BASIN	Q (CFS)	V (AC-FT)
1	8.83	0.3312
2	10.01	0.3666
3	5.70	0.1978
4	7.34	0.2516
5	0.35	0.0130
6	2.06	0.0776
7	1.50	0.0539

- SIZE BASIN 4 RETENTION POND

$$V_{10day} = V_6 + \frac{A_D(P_{10d} - P_6)}{12} = 0.2576 + 1.0622\left(\frac{3.95 - 2.25}{12}\right)$$

$= 0.4021$ AC-FT
$= 17,515$ CF

ELEV	AREA (SF)	VOLUME (CF)	
61.50	24,335	0	
62.50	28,331	26,333	> 17,515 OK

- SIZE BASIN 5 INLET - SUMP CONDITION

$Q = 0.35$ CFS

USE "SGL D" INLET $P = 11$

$Q/P = 3.0H^{1.5}$

$H = 0.05'$

FROM NOAA SHEET
12" HDPE @ 1% CARRIES 4.7 CFS OK

- FIND WATER SURFACE WITH EXISTING LIFT STATION

AREA = BASINS C+E FROM PHASE 1 AND BASINS 1, 2, 3, 5+7 FROM PHASE 2
$= 0.1917 + 5.1958 + 2.6142 + 2.4333 + 1.5858 + 0.0776 + 0.3710$
$= 11.8694$ AC

$B = 0.8156 + 0.0357 + 0.2244 + 0.3519 + 0.0431$
$= 1.4707$ AC $= 12.39\%$

$C = 0.0517 + 0.0357 + 0.2244 + 0.3579 + 0.0431$
$= 0.7068$ AC $= 5.95\%$

$D = 4.5202 + 1.9428 + 1.9845 + 0.8820 + 0.0776 + 0.2848$
$= 9.6919$ AC $= 81.66\%$

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PROJECT RIA PHASE 2
SUBJECT DRAINAGE CALCS
BY GJK DATE 11-04-04
CHECKED _____ DATE _____
SHEET 3 OF ____

FROM AHYMO OUTPUT SHEETS 10-13

Q = 48.24 CFS
V = 1.7708 AC-FT

- USE EXISTING PONDING AREA FROM PHASE 1 (THERE WAS AN ERROR ON THE AREA OF L.S.)

ELEV	AREA (SF)	VOLUME (AC-FT)	OUTFLOW (CFS)
47.23	78.54	0	0
48.23	78.54	0.001803	0.01
49.23	78.54	0.003606	0.02
50.23	78.54	0.005409	0.03
51.23	78.54	0.007212	0.04
52.23	78.54	0.009015	0.991
53.23	78.54	0.010818	0.992
54.23	78.54	0.012621	0.993
55.23	78.54	0.014424	0.994
56.23	138.54	0.016916	1.990
57.23	138.54	0.020096	1.991
58.23	138.54	0.023277	1.992
59.23	138.54	0.026457	1.993
59.50	7,678.00	0.050682	1.994
60.50	179,270.00	2.196550	1.995

- LIFT STATION IS 10' DIAMETER - AREA = 78.54 ✓
- INLETS ARE 2 - "DBL D" INLETS (EXISTING)
- LEAD PUMP TURNS ON AT 52.23
- LAG PUMP TURNS ON AT 56.23

FROM AHYMO OUTPUT SHEETS 10-13

PEAK DISCHARGE = 1.995 CFS
MAX WATER SURFACE = 60.15

- FROM THE OUTPUT IT WILL TAKE 16.80 HRS TO DRAIN.
- IT WILL TAKE 11.20 HRS FOR THE WATER LEVEL TO REACH THE INLET GATES.

```
START                   TIME=0.0
***** HYDROGRAPH FOR BUREAU OF INDIAN AFFAIRS PHASE 2
RAINFALL                TYPE=1 RAIN QUARTER=0.0 IN
                        RAIN ONE=1.90 IN RAIN SIX=2.25 IN
                        RAIN DAY=2.60 IN DT=0.03333 HR
*****BASIN 1
COMPUTE NM HYD          ID=1 HYD NO=101.1 AREA=0.003147 SQ MI
                        PER A=0 B=1.77 C=1.77 D=96.46
                        TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD               ID=1 CODE=1
*****BASIN 2
COMPUTE NM HYD          ID=2 HYD NO=101.2 AREA=0.003820 SQ MI
                        PER A=0 B=9.22 C=9.22 D=81.56
                        TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD               ID=2 CODE=1
*****BASIN 3
COMPUTE NM HYD          ID=3 HYD NO=101.3 AREA=0.002478 SQ MI
                        PER A=0 B=22.19 C=22.19 D=55.62
                        TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD               ID=3 CODE=1
*****BASIN 4
COMPUTE NM HYD          ID=4 HYD NO=101.4 AREA=0.003283 SQ MI
                        PER A=0 B=24.73 C=24.72 D=50.55
                        TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD               ID=4 CODE=1
*****BASIN 5
COMPUTE NM HYD          ID=5 HYD NO=101.5 AREA=0.000121 SQ MI
                        PER A=0 B=0 C=0 D=100
                        TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD               ID=5 CODE=1
*****BASIN 6
COMPUTE NM HYD          ID=6 HYD NO=101.6 AREA=0.000722 SQ MI
                        PER A=0 B=0 C=0 D=100
                        TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD               ID=6 CODE=1
*****BASIN 7
COMPUTE NM HYD          ID=7 HYD NO=101.7 AREA=0.000580 SQ MI
                        PER A=0 B=11.62 C=11.62 D=76.76
                        TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD               ID=7 CODE=1
FINISH
```

```
          AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January,
1994
               RUN DATE (MON/DAY/YR) = 11/04/2004
               START TIME (HR:MIN:SEC) = 16:06:51     USER NO.=
M_GOODWN.I01
               INPUT FILE = BIA2.DAT

     START                 TIME=0.0
     ***** HYDROGRAPH FOR BUREAU OF INDIAN AFFAIRS PHASE 2
     RAINFALL              TYPE=1 RAIN QUARTER=0.0 IN
                           RAIN ONE=1.90 IN RAIN SIX=2.25 IN
                           RAIN DAY=2.60 IN DT=0.03333 HR

                    COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA
ATLAS 2 - PEAK AT 1.40 HR.
                    DT =    .033330 HOURS       END TIME =     5.999400
HOURS

     .0114
     .0269
     .0458
     .0703
     .1133
     .7788
    1.5414
    1.8344
    1.9958
    2.0306
    2.0579
    2.0806
    2.1003
    2.1177
    2.1335
    2.1478
    2.1611
    2.1735
    2.1850
    2.1959
    2.2063

      .0000    .0018    .0036    .0055    .0074    .0094
      .0134    .0155    .0177    .0199    .0222    .0245
      .0293    .0319    .0345    .0372    .0399    .0428
      .0489    .0521    .0554    .0589    .0625    .0663
      .0745    .0789    .0836    .0888    .0944    .1004
      .1421    .1865    .2502    .3372    .4515    .5973
     1.0003   1.2059   1.2918   1.3643   1.4288   1.4874
     1.5916   1.6384   1.6823   1.7237   1.7627   1.7995
     1.8674   1.8987   1.9284   1.9566   1.9834   1.9898
     2.0014   2.0068   2.0120   2.0169   2.0216   2.0262
     2.0349   2.0390   2.0430   2.0469   2.0507   2.0543
     2.0614   2.0648   2.0681   2.0713   2.0745   2.0776
     2.0836   2.0865   2.0894   2.0922   2.0949   2.0976
     2.1029   2.1055   2.1080   2.1105   2.1129   2.1153
     2.1201   2.1224   2.1247   2.1269   2.1291   2.1313
     2.1356   2.1377   2.1398   2.1418   2.1439   2.1459
     2.1498   2.1517   2.1537   2.1555   2.1574   2.1593
     2.1629   2.1647   2.1665   2.1683   2.1700   2.1718
     2.1752   2.1769   2.1785   2.1802   2.1818   2.1834
     2.1866   2.1882   2.1898   2.1914   2.1929   2.1944
     2.1975   2.1990   2.2004   2.2019   2.2034   2.2048
     2.2077   2.2091   2.2105   2.2119   2.2133   2.2147
```

2.2161

2.2174 2.2188 2.2201 2.2215 2.2228 2.2241

2.2254

2.2267 2.2280 2.2293 2.2306 2.2318 2.2331

2.2343

2.2356 2.2368 2.2381 2.2393 2.2405 2.2417

2.2429

2.2441 2.2453 2.2465 2.2476 2.2488 2.2500

*****BASIN 1
COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.003147 SQ MI
PER A=0 B=1.77 C=1.77 D=96.46
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 11.985 CFS UNIT VOLUME = .9984 B = 526.28 P60 = 1.9000
AREA = .003036 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .118483HR TP = .133300HR K/TP RATIO = .888844
SHAPE CONSTANT, N = 3.990548
UNIT PEAK = .29630 CFS UNIT VOLUME = .9561 B = 354.54 P60 = 1.9000
AREA = .000111 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.97325 INCHES = .3312 ACRE-FEET
PEAK DISCHARGE RATE = 8.83 CFS AT 1.500 HOURS BASIN AREA = .0031 SQ. MI.

*****BASIN 2
COMPUTE NM HYD ID=2 HYD NO=101.2 AREA=0.003820 SQ MI
PER A=0 B=9.22 C=9.22 D=81.56
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 12.301 CFS UNIT VOLUME = .9984 B = 526.28 P60 = 1.9000
AREA = .003116 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .118483HR TP = .133300HR K/TP RATIO = .888844
SHAPE CONSTANT, N = 3.990548

```
          UNIT PEAK =   1.8735    CFS   UNIT VOLUME =    .9937        B =
354.54       P60 = 1.9000
          AREA =       .000704 SQ MI    IA =    .42500 INCHES    INF =
1.04000 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT =    .033330

     PRINT HYD            ID=2 CODE=1

                                        PARTIAL HYDROGRAPH   101.20


          RUNOFF VOLUME =     1.79924 INCHES     =         .3666 ACRE-FEET
          PEAK DISCHARGE RATE =      10.01 CFS  AT   1.500 HOURS   BASIN
AREA =    .0038 SQ. MI.


     *****BASIN 3
     COMPUTE NM HYD       ID=3 HYD NO=101.3 AREA=0.002478 SQ MI
                          PER A=0 B=22.19 C=22.19 D=55.62
                          TP=0.1333 HR MASS RAINFALL=-1

          K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000
SHAPE CONSTANT, N =  7.106420
          UNIT PEAK =   5.4415    CFS   UNIT VOLUME =    .9973        B =
526.28       P60 = 1.9000
          AREA =       .001378 SQ MI    IA =    .10000 INCHES    INF =
.04000 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT =    .033330


          K =    .118483HR    TP =    .133300HR    K/TP RATIO =    .888844
SHAPE CONSTANT, N =  3.990548
          UNIT PEAK =   2.9250    CFS   UNIT VOLUME =    .9958        B =
354.54       P60 = 1.9000
          AREA =       .001100 SQ MI    IA =    .42500 INCHES    INF =
1.04000 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT =    .033330

     PRINT HYD            ID=3 CODE=1

                                        PARTIAL HYDROGRAPH   101.30


          RUNOFF VOLUME =     1.49630 INCHES     =         .1978 ACRE-FEET
          PEAK DISCHARGE RATE =       5.70 CFS  AT   1.500 HOURS   BASIN
AREA =    .0025 SQ. MI.


     *****BASIN 4
     COMPUTE NM HYD       ID=4 HYD NO=101.4 AREA=0.003283 SQ MI
                          PER A=0 B=24.73 C=24.72 D=50.55
                          TP=0.1333 HR MASS RAINFALL=-1

          K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000
SHAPE CONSTANT, N =  7.106420
          UNIT PEAK =   6.5520    CFS   UNIT VOLUME =    .9976        B =
```

```
526.28       P60 = 1.9000
          AREA =       .001660 SQ MI    IA =     .10000 INCHES     INF =
.04000 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT =    .033330


          K =    .118485HR    TP =    .133300HR    K/TP RATIO =    .888863
SHAPE CONSTANT, N =  3.990458
          UNIT PEAK =    4.3178    CFS   UNIT VOLUME =     .9972        B =
354.53       P60 = 1.9000
          AREA =       .001623 SQ MI    IA =     .42502 INCHES     INF =
1.04004 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT =    .033330

     PRINT HYD            ID=4 CODE=1

                                          PARTIAL HYDROGRAPH   101.40

          RUNOFF VOLUME =      1.43708 INCHES      =          .2516 ACRE-FEET
          PEAK DISCHARGE RATE =        7.34 CFS  AT    1.500 HOURS   BASIN
AREA =    .0033 SQ. MI.


     *****BASIN 5
     COMPUTE NM HYD       ID=5 HYD NO=101.5 AREA=0.000121 SQ MI
                          PER A=0 B=0 C=0 D=100
                          TP=0.1333 HR MASS RAINFALL=-1

          K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000
SHAPE CONSTANT, N =  7.106420
          UNIT PEAK =    .47771    CFS   UNIT VOLUME =     .9751        B =
526.28       P60 = 1.9000
          AREA =       .000121 SQ MI    IA =     .10000 INCHES     INF =
.04000 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT =    .033330

     PRINT HYD            ID=5 CODE=1

                                          PARTIAL HYDROGRAPH   101.50

          RUNOFF VOLUME =      2.01459 INCHES      =          .0130 ACRE-FEET
          PEAK DISCHARGE RATE =         .35 CFS  AT    1.500 HOURS   BASIN
AREA =    .0001 SQ. MI.


     *****BASIN 6
     COMPUTE NM HYD       ID=6 HYD NO=101.6 AREA=0.000722 SQ MI
                          PER A=0 B=0 C=0 D=100
                          TP=0.1333 HR MASS RAINFALL=-1

          K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000
SHAPE CONSTANT, N =  7.106420
          UNIT PEAK =    2.8505    CFS   UNIT VOLUME =     .9955        B =
526.28       P60 = 1.9000
```

```
          AREA =       .000722 SQ MI    IA =     .10000 INCHES     INF =
.04000 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT =    .033330

     PRINT HYD            ID=6 CODE=1

                                        PARTIAL HYDROGRAPH   101.60


          RUNOFF VOLUME =     2.01459 INCHES     =         .0776 ACRE-FEET
          PEAK DISCHARGE RATE =       2.06 CFS  AT   1.500 HOURS   BASIN
AREA =    .0007 SQ. MI.


     *****BASIN 7
     COMPUTE NM HYD       ID=7 HYD NO=101.7 AREA=0.000580 SQ MI
                          PER A=0 B=11.62 C=11.62 D=76.76
                          TP=0.1333 HR MASS RAINFALL=-1

          K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000
SHAPE CONSTANT, N =  7.106420
          UNIT PEAK =   1.7577    CFS   UNIT VOLUME =    .9933        B =
526.28      P60 = 1.9000
          AREA =       .000445 SQ MI    IA =     .10000 INCHES     INF =
.04000 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT =    .033330


          K =    .118483HR    TP =    .133300HR    K/TP RATIO =    .888844
SHAPE CONSTANT, N =  3.990548
          UNIT PEAK =   .35851    CFS   UNIT VOLUME =    .9637        B =
354.54       P60 = 1.9000
          AREA =       .000135 SQ MI    IA =     .42500 INCHES     INF =
1.04000 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT =    .033330

     PRINT HYD            ID=7 CODE=1

                                        PARTIAL HYDROGRAPH   101.70


          RUNOFF VOLUME =     1.74319 INCHES     =         .0539 ACRE-FEET
          PEAK DISCHARGE RATE =       1.50 CFS  AT   1.500 HOURS   BASIN
AREA =    .0006 SQ. MI.


     FINISH

          NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 16:06:51
```

```
START                TIME=0.0
***** HYDROGRAPH FOR BUREAU OF INDIAN AFFAIRS POND - LIFT STATION PHASE
2
RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.90 IN RAIN SIX=2.25 IN
                     RAIN DAY=2.60 IN DT=0.03333 HR
COMPUTE NM HYD       ID=1 HYD NO=101.1 AREA=0.018546 SQ MI
                     PER A=0 B=12.39 C=5.95 D=81.66
                     TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*LIFT STATION - 2 PUMPS PUMPING AT 1.00 CFS EACH WITH LAG
ROUTE RESERVOIR      ID=2  HYD NO=101.2  INFLOW ID=1  CODE=24
                     OUTFLOW (CFS)    STORAGE (AC-FT)  ELEVATION
                        0.00             0.00           4947.23
                        0.01             0.001803       4948.23
                        0.02             0.003606       4949.23
                        0.03             0.005409       4950.23
                        0.04             0.007212       4951.23
                        0.991            0.009015       4952.23
                        0.992            0.010818       4953.23
                        0.993            0.012621       4954.23
                        0.994            0.014424       4955.23
                        1.990            0.016916       4956.23
                        1.991            0.020096       4957.23
                        1.992            0.023277       4958.23
                        1.993            0.026457       4959.23
                        1.994            0.050682       4959.50
                        1.995            2.196550       4960.50
PRINT HYD            ID=2 CODE=1
FINISH
```

//

```
          AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January,
1994
               RUN DATE (MON/DAY/YR) = 11/05/2004
               START TIME (HR:MIN:SEC) = 11:24:39     USER NO.=
M_GOODWN.I01
               INPUT FILE = BIA2POND.DAT

     START                 TIME=0.0
     ***** HYDROGRAPH FOR BUREAU OF INDIAN AFFAIRS POND - LIFT STATION
PHASE 2
     RAINFALL              TYPE=1 RAIN QUARTER=0.0 IN
                           RAIN ONE=1.90 IN RAIN SIX=2.25 IN
                           RAIN DAY=2.60 IN DT=0.03333 HR

                    COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA
ATLAS 2 - PEAK AT 1.40 HR.
                    DT =     .033330 HOURS        END TIME =      5.999400
HOURS
  .0000    .0018    .0036    .0055    .0074    .0094
  .0114
  .0134    .0155    .0177    .0199    .0222    .0245
  .0269
  .0293    .0319    .0345    .0372    .0399    .0428
  .0458
  .0489    .0521    .0554    .0589    .0625    .0663
  .0703
  .0745    .0789    .0836    .0888    .0944    .1004
  .1133
  .1421    .1865    .2502    .3372    .4515    .5973
  .7788
 1.0003   1.2059   1.2918   1.3643   1.4288   1.4874
 1.5414
 1.5916   1.6384   1.6823   1.7237   1.7627   1.7995
 1.8344
 1.8674   1.8987   1.9284   1.9566   1.9834   1.9898
 1.9958
 2.0014   2.0068   2.0120   2.0169   2.0216   2.0262
 2.0306
 2.0349   2.0390   2.0430   2.0469   2.0507   2.0543
 2.0579
 2.0614   2.0648   2.0681   2.0713   2.0745   2.0776
 2.0806
 2.0836   2.0865   2.0894   2.0922   2.0949   2.0976
 2.1003
 2.1029   2.1055   2.1080   2.1105   2.1129   2.1153
 2.1177
 2.1201   2.1224   2.1247   2.1269   2.1291   2.1313
 2.1335
 2.1356   2.1377   2.1398   2.1418   2.1439   2.1459
 2.1478
 2.1498   2.1517   2.1537   2.1555   2.1574   2.1593
 2.1611
 2.1629   2.1647   2.1665   2.1683   2.1700   2.1718
 2.1735
 2.1752   2.1769   2.1785   2.1802   2.1818   2.1834
 2.1850
 2.1866   2.1882   2.1898   2.1914   2.1929   2.1944
 2.1959
 2.1975   2.1990   2.2004   2.2019   2.2034   2.2048
 2.2063
```

2.2077 2.2091 2.2105 2.2119 2.2133 2.2147
2.2161
2.2174 2.2188 2.2201 2.2215 2.2228 2.2241
2.2254
2.2267 2.2280 2.2293 2.2306 2.2318 2.2331
2.2343
2.2356 2.2368 2.2381 2.2393 2.2405 2.2417
2.2429
2.2441 2.2453 2.2465 2.2476 2.2488 2.2500

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.018546 SQ MI
PER A=0 B=12.39 C=5.95 D=81.66
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 59.792 CFS UNIT VOLUME = .9992 B =
526.28 P60 = 1.9000
AREA = .015145 SQ MI IA = .10000 INCHES INF =
.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

K = .122794HR TP = .133300HR K/TP RATIO = .921187
SHAPE CONSTANT, N = 3.842156
UNIT PEAK = 8.7905 CFS UNIT VOLUME = .9988 B =
344.50 P60 = 1.9000
AREA = .003401 SQ MI IA = .45134 INCHES INF =
1.11374 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.79030 INCHES = 1.7708 ACRE-FEET
PEAK DISCHARGE RATE = 48.24 CFS AT 1.500 HOURS BASIN
AREA = .0185 SQ. MI.

*LIFT STATION - 2 PUMPS PUMPING AT 1.00 CFS EACH WITH LAG
ROUTE RESERVOIR ID=2 HYD NO=101.2 INFLOW ID=1 CODE=24

OUTFLOW (CFS)	STORAGE (AC-FT)	ELEVATION
0.00	0.00	4947.23
0.01	0.001803	4948.23
0.02	0.003606	4949.23
0.03	0.005409	4950.23
0.04	0.007212	4951.23
0.991	0.009015	4952.23
0.992	0.010818	4953.23
0.993	0.012621	4954.23
0.994	0.014424	4955.23
1.990	0.016916	4956.23
1.991	0.020096	4957.23
1.992	0.023277	4958.23
1.993	0.026457	4959.23
1.994	0.050682	4959.50

1.995 2.196550 4960.50

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

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	4947.23	.000	.00
.80	.00	4947.23	.000	.00
1.60	33.51	4959.85	.795	1.99
2.40	2.02	4960.15	1.446	1.99
3.20	.43	4960.12	1.376	1.99
4.00	.28	4960.07	1.266	1.99
4.80	.27	4960.01	1.151	1.99
5.60	.30	4959.96	1.038	1.99
6.40	.03	4959.91	.922	1.99
7.20	.00	4959.84	.790	1.99
8.00	.00	4959.78	.658	1.99
8.80	.00	4959.72	.526	1.99
9.60	.00	4959.66	.395	1.99
10.40	.00	4959.60	.263	1.99
11.20	.00	4959.54	.131	1.99
12.00	.00	4951.57	.008	.37
12.80	.00	4950.05	.005	.03 ←
13.60	.00	4949.18	.004	.02
14.40	.00	4948.58	.002	.01
15.20	.00	4948.17	.002	.01
16.00	.00	4947.88	.001	.01
16.80	.00	4947.68	.001	.00

PEAK DISCHARGE = 1.995 CFS - PEAK OCCURS AT HOUR 2.40
MAXIMUM WATER SURFACE ELEVATION = 4960.150
MAXIMUM STORAGE = 1.4464 AC-FT INCREMENTAL TIME= .033330HRS

PRINT HYD ID=2 CODE=1

PARTIAL HYDROGRAPH 101.20

RUNOFF VOLUME = 1.79009 INCHES = 1.7706 ACRE-FEET
PEAK DISCHARGE RATE = 1.99 CFS AT 2.400 HOURS BASIN AREA = .0185 SQ. MI.

FINISH

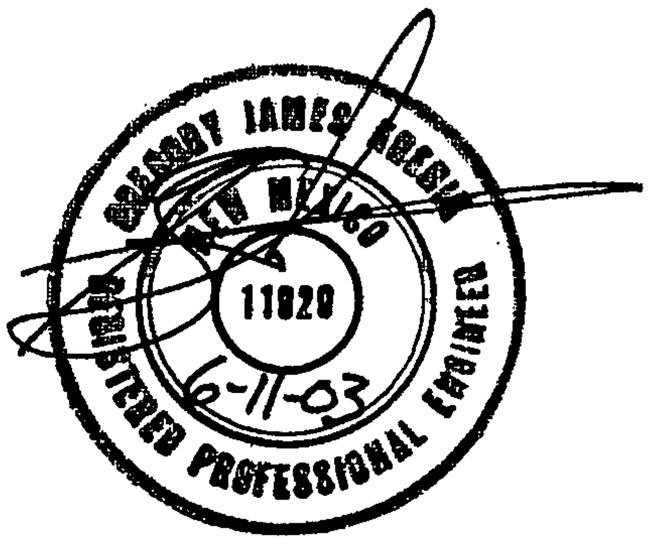
NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 11:24:39

APPENDIX "A"

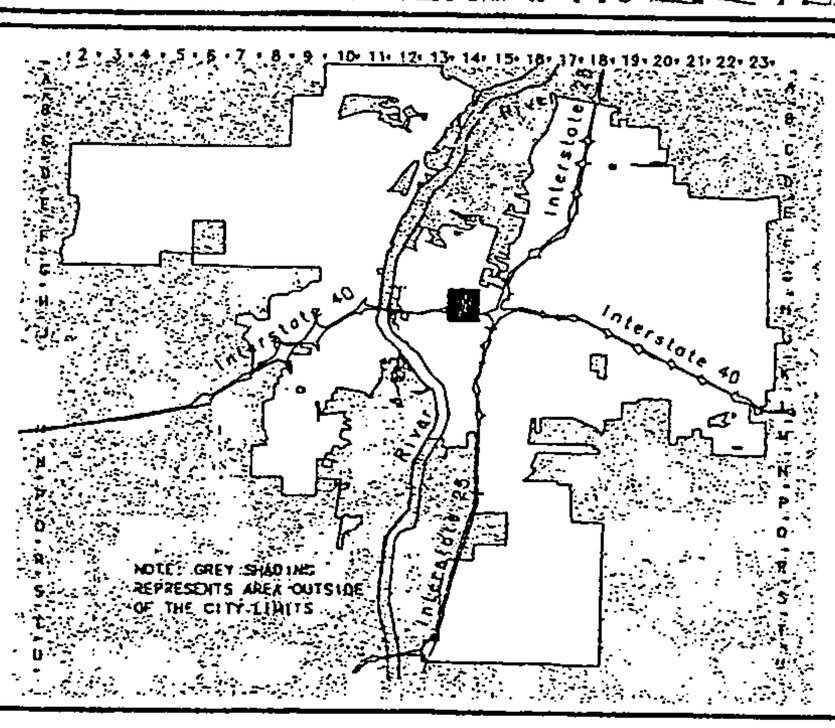
Drainage Report

for

US Department of The Interior
BIA SW Regional Headquarters



SITE



CITY OF
Albuquerque

Albuquerque Geographic Information System
PLANNING DEPARTMENT

GRAPHIC SCALE IN FEET

250 0 750 1000

Zone Atlas Page

H-14-Z

Map Amended through January 21, 2003

D. Mark Goodwin & Associates, P.A.
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e-mail: dmg@swcp.com

PROJECT BIA BUILDING
SUBJECT DRAINAGE CALCS
BY GJK DATE 3-25-03
CHECKED _____ DATE _____
SHEET 1 OF ____

- THE SITE IS BOUNDED BY 12TH ST, INDIAN SCHOOL, MENAUL AND 9TH STREET. TOTAL AREA = 47.3648 AC
- SITE IS NOT IN A 100 YR FLOOD ZONE PER MAP 35001C0331 D
- THE SITE IS TO BE DEVELOPED IN PHASES.
- NO OFFSITE FLOWS ENTER THE SITE
- THIS REPORT WILL DISCUSS THE FIRST PHASE

PHASE 1 = 8.6384 AC BIA BUILDING

50% TYPE "B" 50% TYPE "C"

- SITE WILL DISCHARGE LESS THAN EXISTING CONDITIONS.

$P_1 = 1.90$ in
$P_6 = 2.25$ in
$P_{24} = 2.60$ in

FROM AHYMO OUTPUT SHEETS 6-8
$Q = 21.67$ CFS

- DEVELOPED CONDITIONS

AREA = 25.1511 AC

6.8536 AC LANDSCAPING AREA

"B" = 3.4268 AC 13.625 %
"C" = 3.4268 AC 13.625 %
"D" = 18.2975 AC 72.75%

- PHASE 1 WILL BE SPLIT INTO FIVE DRAINAGE BASINS
  - BASIN A WILL INCLUDE ALL OF THE BLDG AND THE AREA EAST AND NORTH OF IT. WE WILL RETAIN THE RUNOFF IN A POND ON SITE. OVERFLOW WILL DRAIN TO 9TH STREET.
  - BASIN B WILL INCLUDE HALF OF THE AREA SOUTH OF THE BUILDING AND WILL DRAIN TO INDIAN SCHOOL RD.
  - BASIN C WILL INCLUDE THE WEST END OF THE BUILDING, THE TRUCK LOADING DOCK AREA AND HALF OF THE AREA SOUTH OF THE BUILDING. RUNOFF WILL GO TO AN INLET AND DRAIN TO THE LIFT STATION IN BASIN E

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PROJECT BIA BUILDING
SUBJECT DRAINAGE CALCS
BY GJK DATE 3-25-03
CHECKED ____ DATE ____
SHEET 2 OF ____

- BASIN D WILL DRAIN TO INDIAN SCHOOL ROAD
- BASIN E WILL DRAIN TO 4 DBL "D" INLETS WHICH DRAIN TO A LIFT STATION. FLOW WILL BE PUMPED TO AN EXISTING INLET IN 9TH STREET WHICH IS CONNECTED TO EXISTING 18" RCP WHICH DRAINS TO THE 30" RCP IN MENAUL BLVD.

PHASES 2+3 WILL FOLLOW A SIMILAR PATTERN OF RETENTION, DIRECT RUNOFF AND RUNOFF TO THE LIFT STATION

- FIRST BASINS A, B, C, D + E WILL BE CALCULATED.

BASIN	AREA (AC)	B(AC)(%)	C(AC)	D(AC)
A	2.3421	0.5847 = 24.96%	0.5846 = 24.96%	1.1728 = 50.08%
B	0.7921	0.1771 = 22.36%	0.1770 = 22.36%	0.4380 = 55.28%
C	0.1917	0	0	0.1917 = 100%
D	0.1167	0.0518 = 44.39%	0.0518 = 44.39%	0.0131 = 11.22%
E	5.1958	0.8156 = 15.70%	0.0517 = 1.00%	4.3285 = 83.30%

FROM RHYMO OUTPUT SHEETS 9-23

BASIN	Q (CFS)	V(AC-FT)	
A	8.16	0.2794	
B	2.85	0.0985	DIRECT TO INDIAN SCHOOL
C	0.86	0.0322	
D	0.33	0.0095	
E	21.11	0.7781	

- SIZE BASIN A RETENTION POND

$$V_{10day} = V_6 + \frac{A_D(P_{10d} - P_6)}{12} = 0.2794 + 1.1728\left(\frac{3.95 - 2.25}{12}\right)$$

$= 0.4455$ AC-FT
$= 19,408$ CF

ELEV	AREA(SF)	VOLUME(CF)
61.50	24,367	0
62.50	28,517	26,442

WATER SURFACE = 62.23

- SIZE BASIN C INLET - SUMP CONDITION

$Q = 0.86$ CFS

USE "SGL D" INLET IN SUMP P = 11

$Q/p = 3.0\,H^{1.5}$ $H = 0.09'$

FROM NOMO SHEET 5
12" HDPE @ 1% CARRIES 4.7 CFS OK

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e-mail: dmg@swcp.com

PROJECT BIA BUILDING
SUBJECT DRAINAGE CALCS
BY GJK DATE 3-25-03
CHECKED DATE
SHEET 3 OF

WE WILL ASSUME BASINS C + E WILL ACT AS ONE BASIN

AREA = 0.1917 + 5.1958
= 5.3875 AC
B = 0.8156 AC = 15.14%
C = 0.0517 AC 0.96%
D = 0.1917 + 4.3285 = 4.5202 AC = 83.90%
FROM AHYMO OUTPUT SHEETS 24-27
Q = 21.96 CFS
V = 0.8104 AC-FT

• SIZE PONDING AREA WITH LIFT STATION - 2 PUMPS w/ 1 CFS RATE

ELEV.	AREA (SF)	VOLUME (AC-FT)	OUTFLOW (CFS)
47.23	31.42	0.00	0.00
48.23	31.42	0.000721	0.01
49.23	31.42	0.001442	0.02
50.23	31.42	0.002163	0.03
51.23	31.42	0.002884	0.04
52.23	31.42	0.063605	0.991
53.23	31.42	0.004326	0.992
54.23	31.42	0.005047	0.993
55.23	31.42	0.005768	0.994
56.23	89.42	0.007155	1.990
57.23	89.42	0.009207	1.991
58.23	89.42	0.011259	1.992
59.23	89.42	0.013311	1.993
59.50	7,678.00	0.102468	1.994
60.50	160,228.00	2.029764	1.995

• LIFT STATION IS 10' DIAMETER
• INLETS ARE 2 - DBL D INLETS
• LEAD PUMP TURNS ON AT 52.23
• LAG PUMP TURNS ON AT 56.23
• PEAK DISCHARGE IS 1.994 CFS
• MAX WATER SURFACE IS 59.74

* AS MORE AREA GETS ADDED TO THE DRAINAGE BASIN IN THE FUTURE THE PUMPS WILL NEED TO BE UPGRADED FOR DISCHARGE TO KEEP WATER LEVEL 6" ABOVE GRATES.

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PROJECT RIA BUILDING
SUBJECT DRAINAGE CALCS
BY GJK DATE 3-25-03
CHECKED ____ DATE ____
SHEET 4 OF ____

• SIZE PARKING LOT INLETS - SUMP CONDITION

$Q = 21.11$ CFS — 2- "DBL D" INLETS

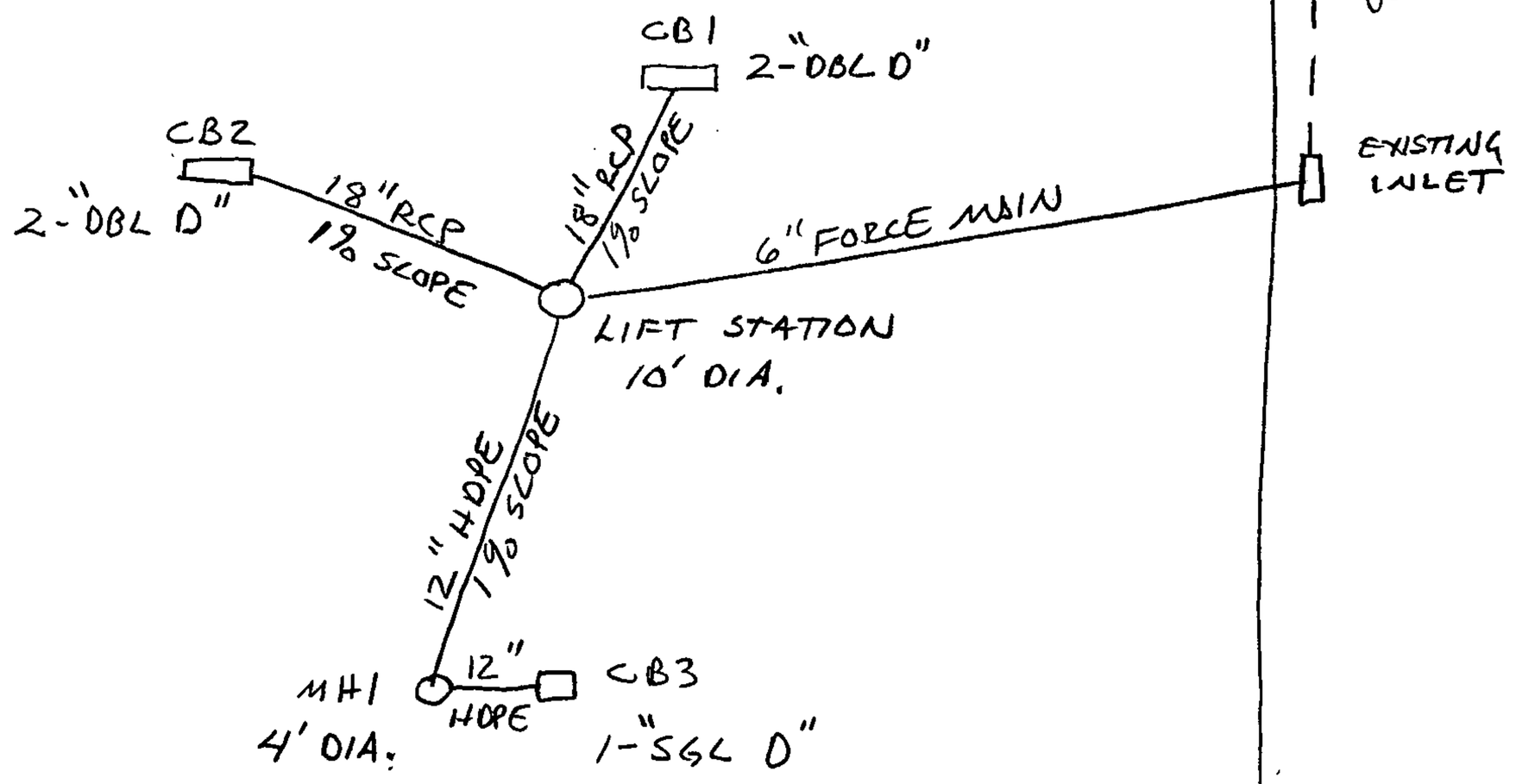
$Q/P = 3.0 H^{1.5}$ — $P = 17+17 = 34$

$H = 0.35'$ — $H = 0.56'$ ½ CLOGGED OK

FROM NOAA SHEET 5
18" RCP @ 1% CARRIES 10.5 CFS
$Q = 2 \times 10.5 = 21$ CFS OK

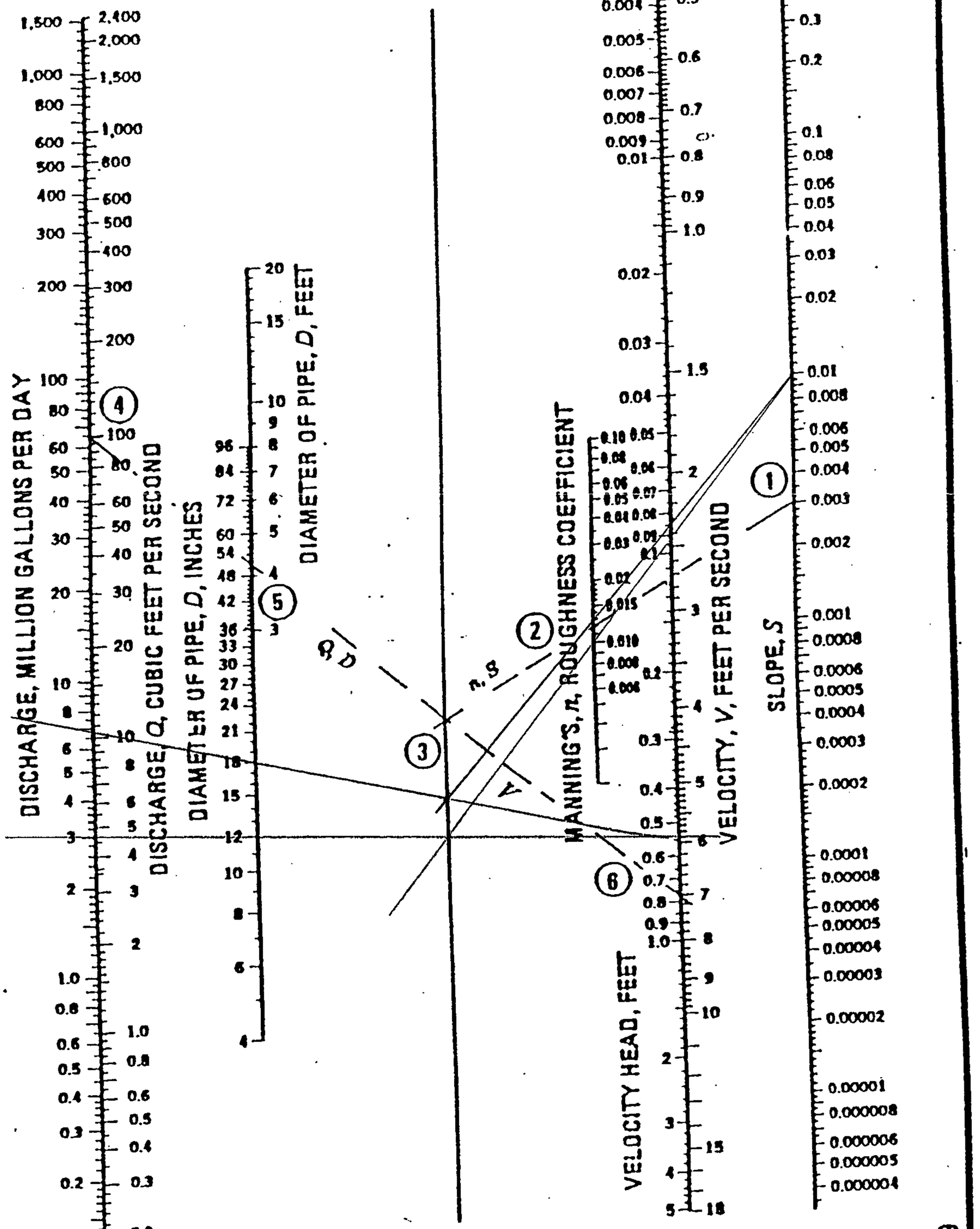
NOTE! ONCE LIFT STATION FILLS, THE OUTFLOW OF THE PUMPS AT 1.99 CFS WILL GOVERN INLET RATE.

STORMDRAIN DESIGN



STRUCTURE	GRATE/RIM	INV (IN)	INV (OUT)
CB1	59.35	—	56.35
CB2	59.28	—	56.23
CB3	59.30	—	56.80
MH1	63.20	56.50	56.50
L.S.	60.60	52.80 | 55.23	57.10
EXIST. INLET	60.63	58.03	57.13

Reference: American Concrete Pipe Association (1980).



B) Circular Pipe Solution

```
START                   TIME=0.0
***** HYDROGRAPH FOR BUREAU OF INDIAN AFFAIRS
***** EXISTING CONDITIONS BIA BUILDING AREA
RAINFALL                TYPE=1 RAIN QUARTER=0.0 IN
                        RAIN ONE=1.90 IN RAIN SIX=2.25 IN
                        RAIN DAY=2.60 IN DT=0.03333 HR
COMPUTE NM HYD          ID=1 HYD NO=101.1 AREA=0.013498 SQ MI
                        PER A=0 B=50 C=50 D=0
                        TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD               ID=1 CODE=1
FINISH
```

```
          AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January,
1994
               RUN DATE (MON/DAY/YR) = 04/02/2003
               START TIME (HR:MIN:SEC) = 15:30:09     USER NO.=
M_GOODWN.I01
               INPUT FILE = BIABLDG.DAT

     START                 TIME=0.0
     ***** HYDROGRAPH FOR BUREAU OF INDIAN AFFAIRS
     ***** EXISTING CONDITIONS BIA BUILDING AREA
     RAINFALL              TYPE=1 RAIN QUARTER=0.0 IN
                           RAIN ONE=1.90 IN RAIN SIX=2.25 IN
                           RAIN DAY=2.60 IN DT=0.03333 HR

                    COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA
ATLAS 2 - PEAK AT 1.40 HR.
                    DT =     .033330 HOURS       END TIME =      5.999400
HOURS

  .0000    .0018    .0036    .0055    .0074    .0094
  .0114
  .0134    .0155    .0177    .0199    .0222    .0245
  .0269
  .0293    .0319    .0345    .0372    .0399    .0428
  .0458
  .0489    .0521    .0554    .0589    .0625    .0663
  .0703
  .0745    .0789    .0836    .0888    .0944    .1004
  .1133
  .1421    .1865    .2502    .3372    .4515    .5973
  .7788
 1.0003   1.2059   1.2918   1.3643   1.4288   1.4874
 1.5414
 1.5916   1.6384   1.6823   1.7237   1.7627   1.7995
 1.8344
 1.8674   1.8987   1.9284   1.9566   1.9834   1.9898
 1.9958
 2.0014   2.0068   2.0120   2.0169   2.0216   2.0262
 2.0306
 2.0349   2.0390   2.0430   2.0469   2.0507   2.0543
 2.0579
 2.0614   2.0648   2.0681   2.0713   2.0745   2.0776
 2.0806
 2.0836   2.0865   2.0894   2.0922   2.0949   2.0976
 2.1003
 2.1029   2.1055   2.1080   2.1105   2.1129   2.1153
 2.1177
 2.1201   2.1224   2.1247   2.1269   2.1291   2.1313
 2.1335
 2.1356   2.1377   2.1398   2.1418   2.1439   2.1459
 2.1478
 2.1498   2.1517   2.1537   2.1555   2.1574   2.1593
 2.1611
 2.1629   2.1647   2.1665   2.1683   2.1700   2.1718
 2.1735
 2.1752   2.1769   2.1785   2.1802   2.1818   2.1834
 2.1850
 2.1866   2.1882   2.1898   2.1914   2.1929   2.1944
 2.1959
 2.1975   2.1990   2.2004   2.2019   2.2034   2.2048
 2.2063
```

2.2077 2.2091 2.2105 2.2119 2.2133 2.2147
2.2161
2.2174 2.2188 2.2201 2.2215 2.2228 2.2241
2.2254
2.2267 2.2280 2.2293 2.2306 2.2318 2.2331
2.2343
2.2356 2.2368 2.2381 2.2393 2.2405 2.2417
2.2429
2.2441 2.2453 2.2465 2.2476 2.2488 2.2500

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.013498 SQ MI
PER A=0 B=50 C=50 D=0
TP=0.1333 HR MASS RAINFALL=-1

K = .118483HR TP = .133300HR K/TP RATIO = .888844
SHAPE CONSTANT, N = 3.990548
UNIT PEAK = 35.901 CFS UNIT VOLUME = 1.000 B =
354.54 P60 = 1.9000
AREA = .013498 SQ MI IA = .42500 INCHES INF =
1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = .84675 INCHES = .6096 ACRE-FEET
PEAK DISCHARGE RATE = 21.67 CFS AT 1.500 HOURS BASIN
AREA = .0135 SQ. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 15:30:09

```
START                   TIME=0.0
***** HYDROGRAPH FOR BUREAU OF INDIAN AFFAIRS - BASIN A
RAINFALL                TYPE=1 RAIN QUARTER=0.0 IN
                        RAIN ONE=1.90 IN RAIN SIX=2.25 IN
                        RAIN DAY=2.60 IN DT=0.03333 HR
COMPUTE NM HYD          ID=1 HYD NO=101.1 AREA=0.003660 SQ MI
                        PER A=0 B=24.96 C=24.96 D=50.08
                        TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD               ID=1 CODE=1
FINISH
```

```
          AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January,
1994
               RUN DATE (MON/DAY/YR) = 03/27/2003
               START TIME (HR:MIN:SEC) = 08:18:10     USER NO.=
M_GOODWN.I01
               INPUT FILE = BIABA.DAT

     START                 TIME=0.0
     ***** HYDROGRAPH FOR BUREAU OF INDIAN AFFAIRS - BASIN A
     RAINFALL              TYPE=1 RAIN QUARTER=0.0 IN
                           RAIN ONE=1.90 IN RAIN SIX=2.25 IN
                           RAIN DAY=2.60 IN DT=0.03333 HR

                     COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA
ATLAS 2 - PEAK AT 1.40 HR.
                     DT =     .033330 HOURS       END TIME =     5.999400
HOURS
```

.0000	.0018	.0036	.0055	.0074	.0094
.0114					
.0134	.0155	.0177	.0199	.0222	.0245
.0269					
.0293	.0319	.0345	.0372	.0399	.0428
.0458					
.0489	.0521	.0554	.0589	.0625	.0663
.0703					
.0745	.0789	.0836	.0888	.0944	.1004
.1133					
.1421	.1865	.2502	.3372	.4515	.5973
.7788					
1.0003	1.2059	1.2918	1.3643	1.4288	1.4874
1.5414					
1.5916	1.6384	1.6823	1.7237	1.7627	1.7995
1.8344					
1.8674	1.8987	1.9284	1.9566	1.9834	1.9898
1.9958					
2.0014	2.0068	2.0120	2.0169	2.0216	2.0262
2.0306					
2.0349	2.0390	2.0430	2.0469	2.0507	2.0543
2.0579					
2.0614	2.0648	2.0681	2.0713	2.0745	2.0776
2.0806					
2.0836	2.0865	2.0894	2.0922	2.0949	2.0976
2.1003					
2.1029	2.1055	2.1080	2.1105	2.1129	2.1153
2.1177					
2.1201	2.1224	2.1247	2.1269	2.1291	2.1313
2.1335					
2.1356	2.1377	2.1398	2.1418	2.1439	2.1459
2.1478					
2.1498	2.1517	2.1537	2.1555	2.1574	2.1593
2.1611					
2.1629	2.1647	2.1665	2.1683	2.1700	2.1718
2.1735					
2.1752	2.1769	2.1785	2.1802	2.1818	2.1834
2.1850					
2.1866	2.1882	2.1898	2.1914	2.1929	2.1944
2.1959					
2.1975	2.1990	2.2004	2.2019	2.2034	2.2048
2.2063					
2.2077	2.2091	2.2105	2.2119	2.2133	2.2147

2.2161

2.2174 2.2188 2.2201 2.2215 2.2228 2.2241

2.2254

2.2267 2.2280 2.2293 2.2306 2.2318 2.2331

2.2343

2.2356 2.2368 2.2381 2.2393 2.2405 2.2417

2.2429

2.2441 2.2453 2.2465 2.2476 2.2488 2.2500

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.003660 SQ MI
PER A=0 B=24.96 C=24.96 D=50.08
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 7.2365 CFS UNIT VOLUME = .9978 B =
526.28 P60 = 1.9000
AREA = .001833 SQ MI IA = .10000 INCHES INF =
.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

K = .118483HR TP = .133300HR K/TP RATIO = .888844
SHAPE CONSTANT, N = 3.990548
UNIT PEAK = 4.8595 CFS UNIT VOLUME = .9978 B =
354.54 P60 = 1.9000
AREA = .001827 SQ MI IA = .42500 INCHES INF =
1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.43161 INCHES = .2794 ACRE-FEET
PEAK DISCHARGE RATE = 8.16 CFS AT 1.500 HOURS BASIN
AREA = .0037 SQ. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 08:18:10

```
START                   TIME=0.0
***** HYDROGRAPH FOR BUREAU OF INDIAN AFFAIRS - BASIN B
RAINFALL                TYPE=1 RAIN QUARTER=0.0 IN
                        RAIN ONE=1.90 IN RAIN SIX=2.25 IN
                        RAIN DAY=2.60 IN DT=0.03333 HR
COMPUTE NM HYD          ID=1 HYD NO=101.1 AREA=0.001238 SQ MI
                        PER A=0 B=22.36 C=22.36 D=55.28
                        TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD               ID=1 CODE=1
FINISH
```

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994

RUN DATE (MON/DAY/YR) = 03/27/2003
START TIME (HR:MIN:SEC) = 08:19:24 USER NO.= M_GOODWN.I01
INPUT FILE = BIABB.DAT

START TIME=0.0
***** HYDROGRAPH FOR BUREAU OF INDIAN AFFAIRS - BASIN B
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.90 IN RAIN SIX=2.25 IN
RAIN DAY=2.60 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
DT = .033330 HOURS END TIME = 5.999400 HOURS

.0000	.0018	.0036	.0055	.0074	.0094
.0114					
.0134	.0155	.0177	.0199	.0222	.0245
.0269					
.0293	.0319	.0345	.0372	.0399	.0428
.0458					
.0489	.0521	.0554	.0589	.0625	.0663
.0703					
.0745	.0789	.0836	.0888	.0944	.1004
.1133					
.1421	.1865	.2502	.3372	.4515	.5973
.7788					
1.0003	1.2059	1.2918	1.3643	1.4288	1.4874
1.5414					
1.5916	1.6384	1.6823	1.7237	1.7627	1.7995
1.8344					
1.8674	1.8987	1.9284	1.9566	1.9834	1.9898
1.9958					
2.0014	2.0068	2.0120	2.0169	2.0216	2.0262
2.0306					
2.0349	2.0390	2.0430	2.0469	2.0507	2.0543
2.0579					
2.0614	2.0648	2.0681	2.0713	2.0745	2.0776
2.0806					
2.0836	2.0865	2.0894	2.0922	2.0949	2.0976
2.1003					
2.1029	2.1055	2.1080	2.1105	2.1129	2.1153
2.1177					
2.1201	2.1224	2.1247	2.1269	2.1291	2.1313
2.1335					
2.1356	2.1377	2.1398	2.1418	2.1439	2.1459
2.1478					
2.1498	2.1517	2.1537	2.1555	2.1574	2.1593
2.1611					
2.1629	2.1647	2.1665	2.1683	2.1700	2.1718
2.1735					
2.1752	2.1769	2.1785	2.1802	2.1818	2.1834
2.1850					
2.1866	2.1882	2.1898	2.1914	2.1929	2.1944
2.1959					
2.1975	2.1990	2.2004	2.2019	2.2034	2.2048
2.2063					
2.2077	2.2091	2.2105	2.2119	2.2133	2.2147

```
2.2161
                    2.2174  2.2188  2.2201  2.2215  2.2228  2.2241
2.2254
                    2.2267  2.2280  2.2293  2.2306  2.2318  2.2331
2.2343
                    2.2356  2.2368  2.2381  2.2393  2.2405  2.2417
2.2429
                    2.2441  2.2453  2.2465  2.2476  2.2488  2.2500

     COMPUTE NM HYD       ID=1 HYD NO=101.1 AREA=0.001238 SQ MI
                          PER A=0 B=22.36 C=22.36 D=55.28
                          TP=0.1333 HR MASS RAINFALL=-1

          K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000
SHAPE CONSTANT, N =  7.106420
          UNIT PEAK =   2.7019    CFS   UNIT VOLUME =    .9949       B =
526.28      P60 = 1.9000
          AREA =      .000684 SQ MI    IA =    .10000 INCHES    INF =
.04000 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT =    .033330


          K =    .118483HR    TP =    .133300HR    K/TP RATIO =    .888844
SHAPE CONSTANT, N =  3.990548
          UNIT PEAK =   1.4725    CFS   UNIT VOLUME =    .9914       B =
354.54      P60 = 1.9000
          AREA =      .000554 SQ MI    IA =    .42500 INCHES    INF =
1.04000 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT =    .033330

     PRINT HYD            ID=1 CODE=1

                                        PARTIAL HYDROGRAPH   101.10


          RUNOFF VOLUME =     1.49233 INCHES     =        .0985 ACRE-FEET
          PEAK DISCHARGE RATE =       2.85 CFS  AT   1.500 HOURS   BASIN
AREA =    .0012 SQ. MI.


FINISH

     NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 08:19:24
```

```
START                   TIME=0.0
***** HYDROGRAPH FOR BUREAU OF INDIAN AFFAIRS - BASIN C
RAINFALL                TYPE=1 RAIN QUARTER=0.0 IN
                        RAIN ONE=1.90 IN RAIN SIX=2.25 IN
                        RAIN DAY=2.60 IN DT=0.03333 HR
COMPUTE NM HYD          ID=1 HYD NO=101.1 AREA=0.000300 SQ MI
                        PER A=0 B=0 C=0 D=100
                        TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD               ID=1 CODE=1
FINISH
```

```
          AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January,
1994
                RUN DATE (MON/DAY/YR) = 03/26/2003
                START TIME (HR:MIN:SEC) = 16:39:20     USER NO.=
M_GOODWN.I01
                INPUT FILE = BIABC.DAT

     START                    TIME=0.0
     ***** HYDROGRAPH FOR BUREAU OF INDIAN AFFAIRS - BASIN C
     RAINFALL                 TYPE=1 RAIN QUARTER=0.0 IN
                              RAIN ONE=1.90 IN RAIN SIX=2.25 IN
                              RAIN DAY=2.60 IN DT=0.03333 HR

                         COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA
ATLAS 2 - PEAK AT 1.40 HR.
                         DT =     .033330 HOURS       END TIME =     5.999400
HOURS

   .0000    .0018    .0036    .0055    .0074    .0094
   .0114    .0134    .0155    .0177    .0199    .0222
   .0245    .0269    .0293    .0319    .0345    .0372
   .0399    .0428    .0458    .0489    .0521    .0554
   .0589    .0625    .0663    .0703    .0745    .0789
   .0836    .0888    .0944    .1004    .1133    .1421
   .1865    .2502    .3372    .4515    .5973    .7788
  1.0003   1.2059   1.2918   1.3643   1.4288   1.4874
  1.5414   1.5916   1.6384   1.6823   1.7237   1.7627
  1.7995   1.8344   1.8674   1.8987   1.9284   1.9566
  1.9834   1.9898   1.9958   2.0014   2.0068   2.0120
  2.0169   2.0216   2.0262   2.0306   2.0349   2.0390
  2.0430   2.0469   2.0507   2.0543   2.0579   2.0614
  2.0648   2.0681   2.0713   2.0745   2.0776   2.0806
  2.0836   2.0865   2.0894   2.0922   2.0949   2.0976
  2.1003   2.1029   2.1055   2.1080   2.1105   2.1129
  2.1153   2.1177   2.1201   2.1224   2.1247   2.1269
  2.1291   2.1313   2.1335   2.1356   2.1377   2.1398
  2.1418   2.1439   2.1459   2.1478   2.1498   2.1517
  2.1537   2.1555   2.1574   2.1593   2.1611   2.1629
  2.1647   2.1665   2.1683   2.1700   2.1718   2.1735
  2.1752   2.1769   2.1785   2.1802   2.1818   2.1834
  2.1850   2.1866   2.1882   2.1898   2.1914   2.1929
  2.1944   2.1959   2.1975   2.1990   2.2004   2.2019
  2.2034   2.2048   2.2063   2.2077   2.2091   2.2105
  2.2119   2.2133   2.2147
```

2.2161

2.2174 2.2188 2.2201 2.2215 2.2228 2.2241

2.2254

2.2267 2.2280 2.2293 2.2306 2.2318 2.2331

2.2343

2.2356 2.2368 2.2381 2.2393 2.2405 2.2417

2.2429

2.2441 2.2453 2.2465 2.2476 2.2488 2.2500

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.000300 SQ MI
PER A=0 B=0 C=0 D=100
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 1.1844 CFS UNIT VOLUME = .9897 B = 526.28 P60 = 1.9000
AREA = .000300 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 2.01459 INCHES = .0322 ACRE-FEET
PEAK DISCHARGE RATE = .86 CFS AT 1.500 HOURS BASIN AREA = .0003 SQ. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 16:39:20

```
START                   TIME=0.0
***** HYDROGRAPH FOR BUREAU OF INDIAN AFFAIRS - BASIN D
RAINFALL                TYPE=1 RAIN QUARTER=0.0 IN
                        RAIN ONE=1.90 IN RAIN SIX=2.25 IN
                        RAIN DAY=2.60 IN DT=0.03333 HR
COMPUTE NM HYD          ID=1 HYD NO=101.1 AREA=0.000182 SQ MI
                        PER A=0 B=44.39 C=44.39 D=11.22
                        TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD               ID=1 CODE=1
FINISH
```

```
          AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January,
1994
               RUN DATE (MON/DAY/YR) = 04/01/2003
               START TIME (HR:MIN:SEC) = 16:22:27     USER NO.=
M_GOODWN.I01
               INPUT FILE = BIABD.DAT

     START                  TIME=0.0
     ***** HYDROGRAPH FOR BUREAU OF INDIAN AFFAIRS - BASIN D
     RAINFALL               TYPE=1 RAIN QUARTER=0.0 IN
                            RAIN ONE=1.90 IN RAIN SIX=2.25 IN
                            RAIN DAY=2.60 IN DT=0.03333 HR

                       COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA
ATLAS 2 - PEAK AT 1.40 HR.
                       DT =     .033330 HOURS        END TIME =      5.999400
HOURS
```

.0000	.0018	.0036	.0055	.0074	.0094
.0114					
.0134	.0155	.0177	.0199	.0222	.0245
.0269					
.0293	.0319	.0345	.0372	.0399	.0428
.0458					
.0489	.0521	.0554	.0589	.0625	.0663
.0703					
.0745	.0789	.0836	.0888	.0944	.1004
.1133					
.1421	.1865	.2502	.3372	.4515	.5973
.7788					
1.0003	1.2059	1.2918	1.3643	1.4288	1.4874
1.5414					
1.5916	1.6384	1.6823	1.7237	1.7627	1.7995
1.8344					
1.8674	1.8987	1.9284	1.9566	1.9834	1.9898
1.9958					
2.0014	2.0068	2.0120	2.0169	2.0216	2.0262
2.0306					
2.0349	2.0390	2.0430	2.0469	2.0507	2.0543
2.0579					
2.0614	2.0648	2.0681	2.0713	2.0745	2.0776
2.0806					
2.0836	2.0865	2.0894	2.0922	2.0949	2.0976
2.1003					
2.1029	2.1055	2.1080	2.1105	2.1129	2.1153
2.1177					
2.1201	2.1224	2.1247	2.1269	2.1291	2.1313
2.1335					
2.1356	2.1377	2.1398	2.1418	2.1439	2.1459
2.1478					
2.1498	2.1517	2.1537	2.1555	2.1574	2.1593
2.1611					
2.1629	2.1647	2.1665	2.1683	2.1700	2.1718
2.1735					
2.1752	2.1769	2.1785	2.1802	2.1818	2.1834
2.1850					
2.1866	2.1882	2.1898	2.1914	2.1929	2.1944
2.1959					
2.1975	2.1990	2.2004	2.2019	2.2034	2.2048
2.2063					
2.2077	2.2091	2.2105	2.2119	2.2133	2.2147

```
2.2161
                    2.2174  2.2188  2.2201  2.2215  2.2228  2.2241
2.2254
                    2.2267  2.2280  2.2293  2.2306  2.2318  2.2331
2.2343
                    2.2356  2.2368  2.2381  2.2393  2.2405  2.2417
2.2429
                    2.2441  2.2453  2.2465  2.2476  2.2488  2.2500

     COMPUTE NM HYD       ID=1 HYD NO=101.1 AREA=0.000182 SQ MI
                          PER A=0 B=44.39 C=44.39 D=11.22
                          TP=0.1333 HR MASS RAINFALL=-1

          K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000
SHAPE CONSTANT, N =  7.106420
          UNIT PEAK =    .80621E-01CFS   UNIT VOLUME =     .8874       B =
526.28      P60 = 1.9000
          AREA =       .000020 SQ MI    IA =     .10000 INCHES    INF =
.04000 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT =    .033330


          K =    .118483HR    TP =    .133300HR    K/TP RATIO =    .888844
SHAPE CONSTANT, N =  3.990548
          UNIT PEAK =    .42975    CFS   UNIT VOLUME =     .9700       B =
354.54      P60 = 1.9000
          AREA =       .000162 SQ MI    IA =     .42500 INCHES    INF =
1.04000 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT =    .033330

     PRINT HYD            ID=1 CODE=1

                                        PARTIAL HYDROGRAPH   101.10


          RUNOFF VOLUME =       .97778 INCHES     =         .0095 ACRE-FEET
          PEAK DISCHARGE RATE =         .33 CFS  AT   1.500 HOURS   BASIN
AREA =    .0002 SQ. MI.


     FINISH

          NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 16:22:27
```

```
START                   TIME=0.0
***** HYDROGRAPH FOR BUREAU OF INDIAN AFFAIRS - BASIN E
RAINFALL                TYPE=1 RAIN QUARTER=0.0 IN
                        RAIN ONE=1.90 IN RAIN SIX=2.25 IN
                        RAIN DAY=2.60 IN DT=0.03333 HR
COMPUTE NM HYD          ID=1 HYD NO=101.1 AREA=0.008118 SQ MI
                        PER A=0 B=15.70 C=1.00 D=83.30
                        TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD               ID=1 CODE=1
FINISH
```

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994

RUN DATE (MON/DAY/YR) = 04/01/2003
START TIME (HR:MIN:SEC) = 16:23:53 USER NO.= M_GOODWN.I01
INPUT FILE = BIABE.DAT

START TIME=0.0
***** HYDROGRAPH FOR BUREAU OF INDIAN AFFAIRS - BASIN E
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.90 IN RAIN SIX=2.25 IN
RAIN DAY=2.60 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
DT = .033330 HOURS END TIME = 5.999400 HOURS

.0000	.0018	.0036	.0055	.0074	.0094
.0114					
.0134	.0155	.0177	.0199	.0222	.0245
.0269					
.0293	.0319	.0345	.0372	.0399	.0428
.0458					
.0489	.0521	.0554	.0589	.0625	.0663
.0703					
.0745	.0789	.0836	.0888	.0944	.1004
.1133					
.1421	.1865	.2502	.3372	.4515	.5973
.7788					
1.0003	1.2059	1.2918	1.3643	1.4288	1.4874
1.5414					
1.5916	1.6384	1.6823	1.7237	1.7627	1.7995
1.8344					
1.8674	1.8987	1.9284	1.9566	1.9834	1.9898
1.9958					
2.0014	2.0068	2.0120	2.0169	2.0216	2.0262
2.0306					
2.0349	2.0390	2.0430	2.0469	2.0507	2.0543
2.0579					
2.0614	2.0648	2.0681	2.0713	2.0745	2.0776
2.0806					
2.0836	2.0865	2.0894	2.0922	2.0949	2.0976
2.1003					
2.1029	2.1055	2.1080	2.1105	2.1129	2.1153
2.1177					
2.1201	2.1224	2.1247	2.1269	2.1291	2.1313
2.1335					
2.1356	2.1377	2.1398	2.1418	2.1439	2.1459
2.1478					
2.1498	2.1517	2.1537	2.1555	2.1574	2.1593
2.1611					
2.1629	2.1647	2.1665	2.1683	2.1700	2.1718
2.1735					
2.1752	2.1769	2.1785	2.1802	2.1818	2.1834
2.1850					
2.1866	2.1882	2.1898	2.1914	2.1929	2.1944
2.1959					
2.1975	2.1990	2.2004	2.2019	2.2034	2.2048
2.2063					
2.2077	2.2091	2.2105	2.2119	2.2133	2.2147

2.2161

2.2174 2.2188 2.2201 2.2215 2.2228 2.2241

2.2254

2.2267 2.2280 2.2293 2.2306 2.2318 2.2331

2.2343

2.2356 2.2368 2.2381 2.2393 2.2405 2.2417

2.2429

2.2441 2.2453 2.2465 2.2476 2.2488 2.2500

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.008118 SQ MI
PER A=0 B=15.70 C=1.00 D=83.30
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 26.698 CFS UNIT VOLUME = .9989 B = 526.28 P60 = 1.9000
AREA = .006762 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .129290HR TP = .133300HR K/TP RATIO = .969919
SHAPE CONSTANT, N = 3.641827
UNIT PEAK = 3.3617 CFS UNIT VOLUME = .9962 B = 330.54 P60 = 1.9000
AREA = .001356 SQ MI IA = .49102 INCHES INF = 1.22485 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.79723 INCHES = .7781 ACRE-FEET
PEAK DISCHARGE RATE = 21.11 CFS AT 1.500 HOURS BASIN AREA = .0081 SQ. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 16:23:53

```
START                   TIME=0.0
***** HYDROGRAPH FOR BUREAU OF INDIAN AFFAIRS POND - LIFT STATION
RAINFALL                TYPE=1 RAIN QUARTER=0.0 IN
                        RAIN ONE=1.90 IN RAIN SIX=2.25 IN
                        RAIN DAY=2.60 IN DT=0.03333 HR
COMPUTE NM HYD          ID=1 HYD NO=101.1 AREA=0.008418 SQ MI
                        PER A=0 B=15.14 C=0.96 D=83.90
                        TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD               ID=1 CODE=1
*LIFT STATION - 2 PUMPS PUMPING AT 1.00 CFS EACH WITH LAG
ROUTE RESERVOIR         ID=2  HYD NO=101.2  INFLOW ID=1  CODE=24
                       OUTFLOW (CFS)    STORAGE (AC-FT)  ELEVATION
                          0.00              0.00           4947.23
                          0.01              0.000721       4948.23
                          0.02              0.001442       4949.23
                          0.03              0.002163       4950.23
                          0.04              0.002884       4951.23
                          0.991             0.003605       4952.23
                          0.992             0.004326       4953.23
                          0.993             0.005047       4954.23
                          0.994             0.005768       4955.23
                          1.990             0.007155       4956.23
                          1.991             0.009207       4957.23
                          1.992             0.011259       4958.23
                          1.993             0.013311       4959.23
                          1.994             0.102468       4959.50
                          1.995             2.029764       4960.50
PRINT HYD               ID=2 CODE=1
FINISH
```

```
          AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January,
1994
               RUN DATE (MON/DAY/YR) = 04/02/2003
               START TIME (HR:MIN:SEC) = 08:05:53     USER NO.=
M_GOODWN.I01
               INPUT FILE = BIAPOND.DAT

     START                  TIME=0.0
     ***** HYDROGRAPH FOR BUREAU OF INDIAN AFFAIRS POND - LIFT STATION
     RAINFALL               TYPE=1 RAIN QUARTER=0.0 IN
                            RAIN ONE=1.90 IN RAIN SIX=2.25 IN
                            RAIN DAY=2.60 IN DT=0.03333 HR

                    COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA
ATLAS 2 - PEAK AT 1.40 HR.
                    DT =     .033330 HOURS       END TIME =     5.999400
HOURS

   .0000   .0018   .0036   .0055   .0074   .0094
   .0114   .0134   .0155   .0177   .0199   .0222
   .0245   .0269   .0293   .0319   .0345   .0372
   .0399   .0428   .0458   .0489   .0521   .0554
   .0589   .0625   .0663   .0703   .0745   .0789
   .0836   .0888   .0944   .1004   .1133   .1421
   .1865   .2502   .3372   .4515   .5973   .7788
  1.0003  1.2059  1.2918  1.3643  1.4288  1.4874
  1.5414  1.5916  1.6384  1.6823  1.7237  1.7627
  1.7995  1.8344  1.8674  1.8987  1.9284  1.9566
  1.9834  1.9898  1.9958  2.0014  2.0068  2.0120
  2.0169  2.0216  2.0262  2.0306  2.0349  2.0390
  2.0430  2.0469  2.0507  2.0543  2.0579  2.0614
  2.0648  2.0681  2.0713  2.0745  2.0776  2.0806
  2.0836  2.0865  2.0894  2.0922  2.0949  2.0976
  2.1003  2.1029  2.1055  2.1080  2.1105  2.1129
  2.1153  2.1177  2.1201  2.1224  2.1247  2.1269
  2.1291  2.1313  2.1335  2.1356  2.1377  2.1398
  2.1418  2.1439  2.1459  2.1478  2.1498  2.1517
  2.1537  2.1555  2.1574  2.1593  2.1611  2.1629
  2.1647  2.1665  2.1683  2.1700  2.1718  2.1735
  2.1752  2.1769  2.1785  2.1802  2.1818  2.1834
  2.1850  2.1866  2.1882  2.1898  2.1914  2.1929
  2.1944  2.1959  2.1975  2.1990  2.2004  2.2019
  2.2034  2.2048  2.2063  2.2077  2.2091  2.2105
  2.2119  2.2133  2.2147
```

2.2161 2.2174 2.2188 2.2201 2.2215 2.2228 2.2241
2.2254 2.2267 2.2280 2.2293 2.2306 2.2318 2.2331
2.2343 2.2356 2.2368 2.2381 2.2393 2.2405 2.2417
2.2429 2.2441 2.2453 2.2465 2.2476 2.2488 2.2500

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.008418 SQ MI
PER A=0 B=15.14 C=0.96 D=83.90
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 27.884 CFS UNIT VOLUME = .9990 B = 526.28 P60 = 1.9000
AREA = .007063 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .129296HR TP = .133300HR K/TP RATIO = .969966
SHAPE CONSTANT, N = 3.641644
UNIT PEAK = 3.3605 CFS UNIT VOLUME = .9962 B = 330.52 P60 = 1.9000
AREA = .001355 SQ MI IA = .49106 INCHES INF = 1.22496 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.80503 INCHES = .8104 ACRE-FEET
PEAK DISCHARGE RATE = 21.96 CFS AT 1.500 HOURS BASIN AREA = .0084 SQ. MI.

*LIFT STATION - 2 PUMPS PUMPING AT 1.00 CFS EACH WITH LAG
ROUTE RESERVOIR ID=2 HYD NO=101.2 INFLOW ID=1 CODE=24

OUTFLOW (CFS)	STORAGE (AC-FT)	ELEVATION
0.00	0.00	4947.23
0.01	0.000721	4948.23
0.02	0.001442	4949.23
0.03	0.002163	4950.23
0.04	0.002884	4951.23
0.991	0.003605	4952.23
0.992	0.004326	4953.23
0.993	0.005047	4954.23
0.994	0.005768	4955.23
1.990	0.007155	4956.23
1.991	0.009207	4957.23
1.992	0.011259	4958.23
1.993	0.013311	4959.23
1.994	0.102468	4959.50
1.995	2.029764	4960.50

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

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	4947.23	.000	.00
.80	.00	4947.23	.000	.00
1.60	15.23	4959.62	.333	1.99
2.40	.93	4959.74	.559	1.99
3.20	.20	4959.68	.456	1.99
4.00	.13	4959.62	.334	1.99
4.80	.13	4959.56	.210	1.99
5.60	.14	4959.45	.087	1.99
6.40	.01	4950.38	.002	.03
7.20	.00	4948.63	.001	.01
8.00	.00	4947.79	.000	.01
8.80	.00	4947.45	.000	.00

PEAK DISCHARGE = 1.994 CFS - PEAK OCCURS AT HOUR 2.20
MAXIMUM WATER SURFACE ELEVATION = 4959.743
MAXIMUM STORAGE = .5706 AC-FT INCREMENTAL TIME= .033330HRS

PRINT HYD ID=2 CODE=1

PARTIAL HYDROGRAPH 101.20

RUNOFF VOLUME = 1.80499 INCHES = .8104 ACRE-FEET
PEAK DISCHARGE RATE = 1.99 CFS AT 2.200 HOURS BASIN AREA = .0084 SQ. MI.

FINISH

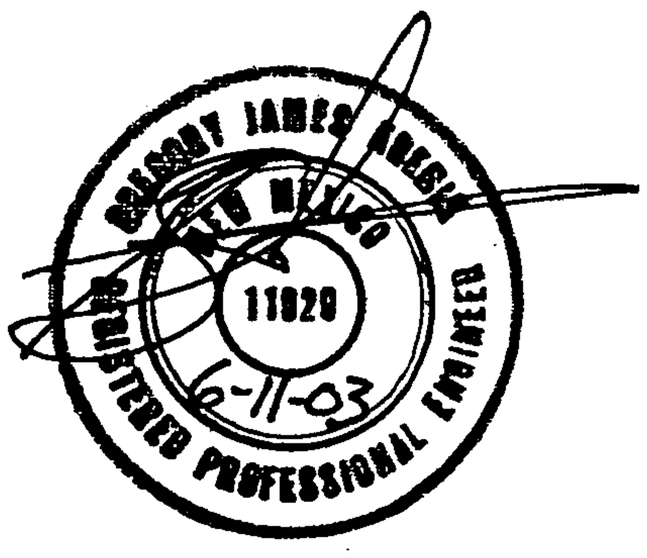
NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 08:05:53

H-141D98

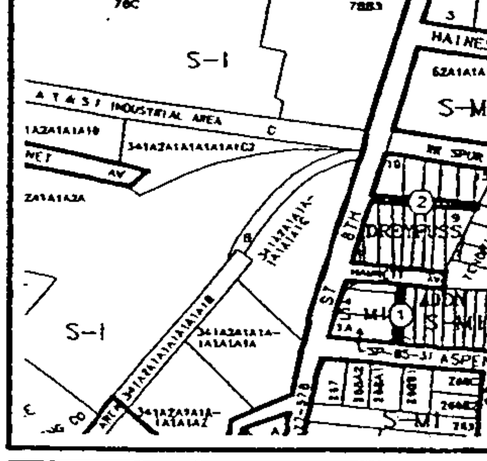
Drainage Report

for

US Department of The Interior
BIA SW Regional Headquarters



SITE



CITY OF
Albuquerque

A Albuquerque G Geographic I Information S System
PLANNING DEPARTMENT

GRAPHIC SCALE IN FEET

250 0 750 1000

Zone Atlas Page

H-14-Z

Map Amended through January 21, 2003

D. Mark Goodwin & Associates, P.A.
Consulting Engineers

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PROJECT BIA BUILDING
SUBJECT DRAINAGE CALCS
BY GJK DATE 3-25-03
CHECKED _____ DATE _____
SHEET 1 OF ____

- THE SITE IS BOUNDED BY 12TH ST, INDIAN SCHOOL, MENAUL AND 9TH STREET. TOTAL AREA = 47.3648 AC
- SITE IS NOT IN A 100 YR FLOOD ZONE PER MAP 35001C0331 D
- THE SITE IS TO BE DEVELOPED IN PHASES.
- NO OFFSITE FLOWS ENTER THE SITE
- THIS REPORT WILL DISCUSS THE FIRST PHASE

PHASE 1 = 8.6384 AC BIA BUILDING

50% TYPE "B" 50% TYPE "C"

- SITE WILL DISCHARGE LESS THAN EXISTING CONDITIONS.

$P_1 = 1.90$ in
$P_6 = 2.25$ in
$P_{24} = 2.60$ in

FROM AHYMO OUTPUT SHEETS 6-8
$Q = 21.67$ CFS

- DEVELOPED CONDITIONS

AREA = 25.1511 AC

6.8536 AC LANDSCAPING AREA

"B" = 3.4268 AC 13.625 %
"C" = 3.4268 AC 13.625 %
"D" = 18.2975 AC 72.75%

- PHASE 1 WILL BE SPLIT INTO FIVE DRAINAGE BASINS
  - BASIN A WILL INCLUDE ALL OF THE BLDG AND THE AREA EAST AND NORTH OF IT. WE WILL RETAIN THE RUNOFF IN A POND ON SITE. OVERFLOW WILL DRAIN TO 9TH STREET.
  - BASIN B WILL INCLUDE HALF OF THE AREA SOUTH OF THE BUILDING AND WILL DRAIN TO INDIAN SCHOOL RD.
  - BASIN C WILL INCLUDE THE WEST END OF THE BUILDING, THE TRUCK LOADING DOCK AREA AND HALF OF THE AREA SOUTH OF THE BUILDING. RUNOFF WILL GO TO A INLET AND DRAIN TO THE LIFT STATION IN BASIN E

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PROJECT BIA BUILDING
SUBJECT DRAINAGE CALCS
BY GJK DATE 3-25-03
CHECKED ____ DATE ____
SHEET 2 OF ____

- BASIN D WILL DRAIN TO INDIAN SCHOOL ROAD
- BASIN E WILL DRAIN TO 4 DBL "D" INLETS WHICH DRAIN TO A LIFT STATION. FLOW WILL BE PUMPED TO AN EXISTING INLET IN 9TH STREET WHICH IS CONNECTED TO EXISTING 18" RCP WHICH DRAINS TO THE 30" RCP IN MENAUL BLVD.

PHASES 2+3 WILL FOLLOW A SIMILAR PATTERN OF RETENTION, DIRECT RUNOFF AND RUNOFF TO THE LIFT STATION

- FIRST BASINS A, B, C, D + E WILL BE CALCULATED.

BASIN	AREA (AC)	B(AC)(%)	C(AC)	D(AC)
A	2.3421	0.5847 = 24.96%	0.5846 = 24.96%	1.1728 = 50.08%
B	0.7921	0.1771 = 22.36%	0.1770 = 22.36%	0.4380 = 55.28%
C	0.1917	0	0	0.1917 = 100%
D	0.1167	0.0518 = 44.39%	0.0518 = 44.39%	0.0131 = 11.22%
E	5.1958	0.8156 = 15.70%	0.0517 = 1.00%	4.3285 = 83.30%

FROM AHYMO OUTPUT SHEETS 9-23

BASIN	Q (CFS)	V(AC-FT)	
A	8.16	0.2794	
B	2.85	0.0985	DIRECT TO INDIAN SCHOOL
C	0.86	0.0322	
D	0.33	0.0095	
E	21.11	0.7781	

- SIZE BASIN A RETENTION POND

$$V_{10day} = V_6 + \frac{A_0(P_{10d} - P_6)}{12} = 0.2794 + 1.1728\left(\frac{3.95 - 2.25}{12}\right)$$

$= 0.4455$ AC-FT
$= 19,408$ CF

ELEV	AREA(SF)	VOLUME(CF)
61.50	24,367	0
62.50	28,517	26,442

WATER SURFACE = 62.23

- SIZE BASIN C INLET - SUMP CONDITION

$Q = 0.86$ CFS

USE "SGL D" INLET IN SUMP $P = 11$

$Q/P = 3.0\,H^{1.5}$ $H = 0.09'$

FROM NOMO SHEET 5
12" HDPE @ 1% CARRIES 4.7 CFS OK

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e-mail: dmg@swcp.com

PROJECT BIA BUILDING
SUBJECT DRAINAGE CALCS
BY GJK DATE 3-25-03
CHECKED DATE
SHEET 3 OF

WE WILL ASSUME BASINS C + E WILL ACT AS ONE BASIN

AREA = 0.1917 + 5.1958
= 5.3875 AC
B = 0.8156 AC = 15.14%
C = 0.0517 AC 0.96%
D = 0.1917 + 4.3285 = 4.5202 AC = 83.90%
FROM AHYMO OUTPUT SHEETS 24-27

Q = 21.96 CFS
V = 0.8104 AC-FT

- SIZE PONDING AREA WITH LIFT STATION - 2 PUMPS w/ 1 CFS RATE

ELEV.	AREA (SF)	VOLUME (AC-FT)	OUTFLOW (CFS)
47.23	31.42	0.00	0.00
48.23	31.42	0.000721	0.01
49.23	31.42	0.001442	0.02
50.23	31.42	0.002163	0.03
51.23	31.42	0.002884	0.04
52.23	31.42	0.663605	0.991
53.23	31.42	0.004326	0.992
54.23	31.42	0.005047	0.993
55.23	31.42	0.005768	0.994
56.23	89.42	0.007155	1.990
57.23	89.42	0.009207	1.991
58.23	89.42	0.011259	1.992
59.23	89.42	0.013311	1.993
59.50	7,678.00	0.102468	1.994
60.50	160,228.00	2.029764	1.995

- LIFT STATION IS 10' DIAMETER
- INLETS ARE 2 - DBL D INLETS
- LEAD PUMP TURNS ON AT 52.23
- LAG PUMP TURNS ON AT 56.23
- PEAK DISCHARGE IS 1.994 CFS
- MAX WATER SURFACE IS 59.74

* AS MORE AREA GETS ADDED TO THE DRAINAGE BASIN IN THE FUTURE THE PUMPS WILL NEED TO BE UPGRADED FOR DISCHARGE TO KEEP WATER LEVEL 6" ABOVE GATES.

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PROJECT BIA BUILDING
SUBJECT DRAINAGE CALCS
BY GJK DATE 3-25-03
CHECKED ____ DATE ____
SHEET 4 OF ____

• SIZE PARKING LOT INLETS - SUMP CONDITON

$Q = 21.11$ CFS — 2- "DBL D" INLETS

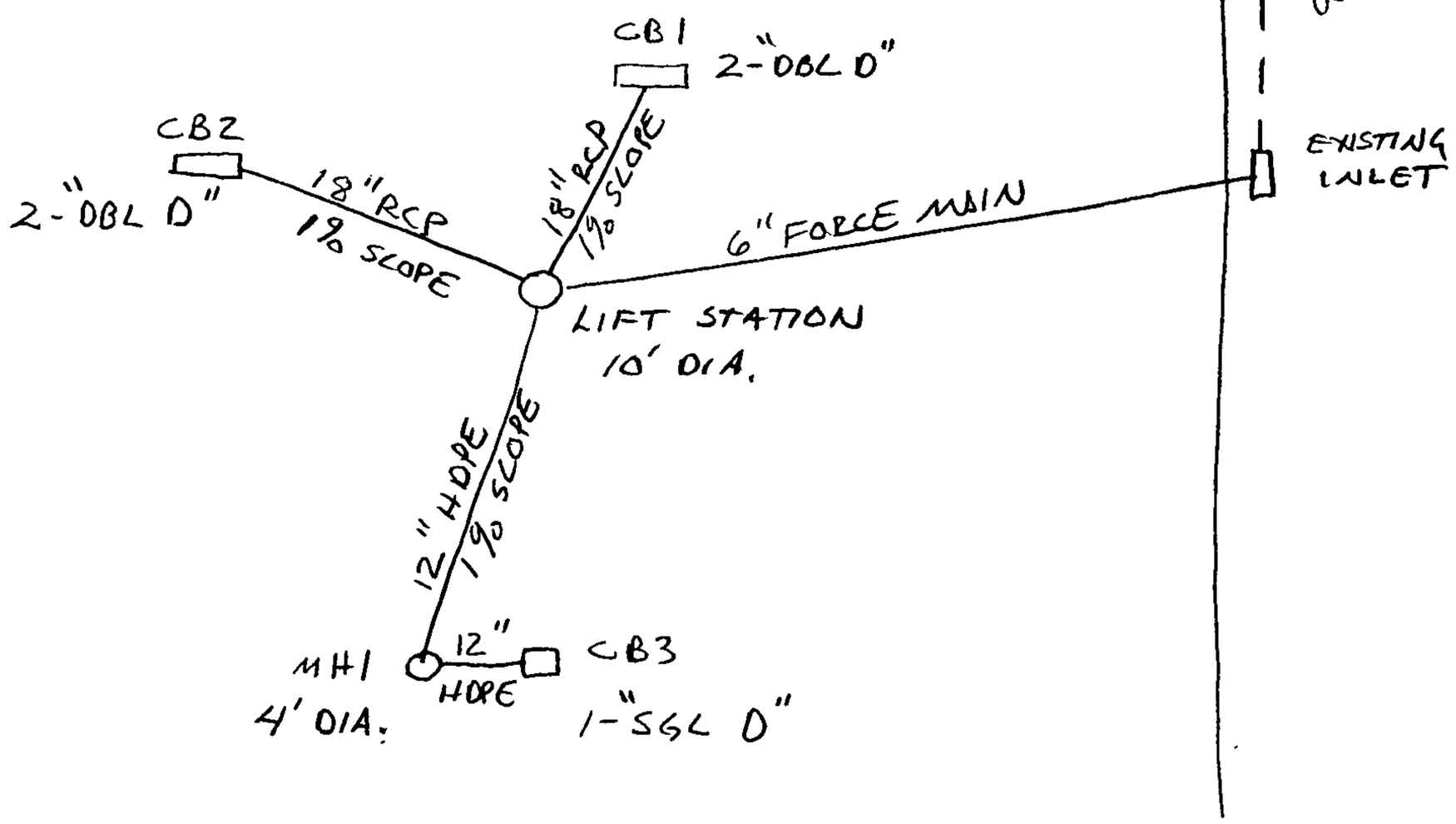
$Q/P = 3.0 H^{1.5}$ — $P = 17+17 = 34$

$H = 0.35'$ — $H = 0.56'$ ½ CLOGGED OK

FROM NOMO SHEET 5
18" RCP @ 1% CARRIES 10.5 CFS
$Q = 2 \times 10.5 = 21$ CFS OK

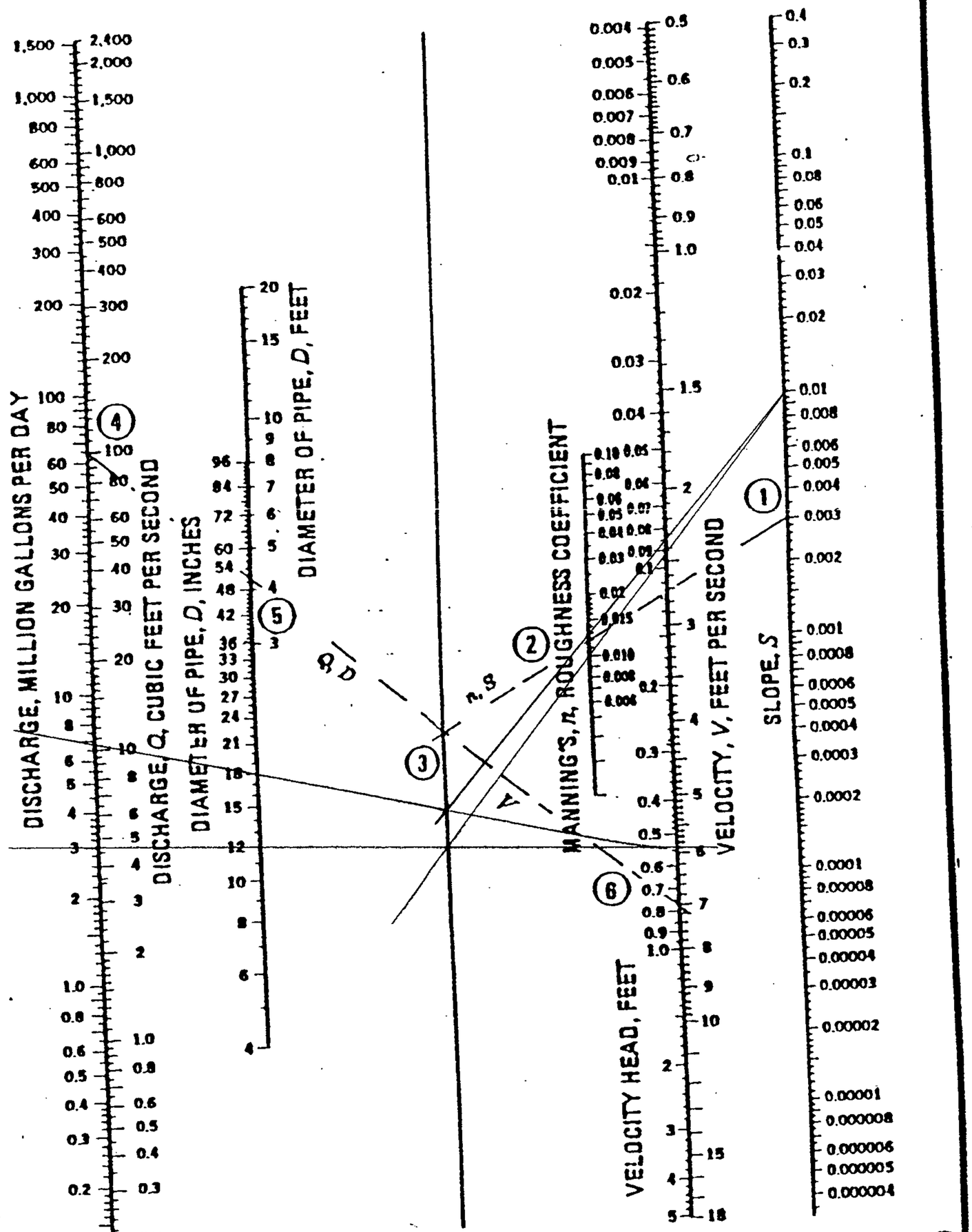
NOTE! ONCE LIFT STATION FILLS, THE OUTFLOW OF THE PUMPS AT 1.99 CFS WILL GOVERN INLET RATE.

STORMDRAIN DESIGN



STRUCTURE	GRATE/RIM	INV (IN)	INV (OUT)
CB1	59.35	—	56.35
CB2	59.28	—	56.23
CB3	59.30	—	56.80
MH1	63.20	56.50	56.50
L.S.	60.60	52.80 | 55.23	57.10
EXIST. INLET	60.63	58.03	57.13

Reference: American Concrete Pipe Association (1980).



B) Circular Pipe Solution

```
START                    TIME=0.0
***** HYDROGRAPH FOR BUREAU OF INDIAN AFFAIRS
***** EXISTING CONDITIONS BIA BUILDING AREA
RAINFALL                 TYPE=1 RAIN QUARTER=0.0 IN
                         RAIN ONE=1.90 IN RAIN SIX=2.25 IN
                         RAIN DAY=2.60 IN DT=0.03333 HR
COMPUTE NM HYD           ID=1 HYD NO=101.1 AREA=0.013498 SQ MI
                         PER A=0 B=50 C=50 D=0
                         TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD                ID=1 CODE=1
FINISH
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```
          AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January,
1994
                RUN DATE (MON/DAY/YR) = 04/02/2003
                START TIME (HR:MIN:SEC) = 15:30:09     USER NO.=
M_GOODWN.I01
                INPUT FILE = BIABLDG.DAT

     START                  TIME=0.0
     ***** HYDROGRAPH FOR BUREAU OF INDIAN AFFAIRS
     ***** EXISTING CONDITIONS BIA BUILDING AREA
     RAINFALL               TYPE=1 RAIN QUARTER=0.0 IN
                            RAIN ONE=1.90 IN RAIN SIX=2.25 IN
                            RAIN DAY=2.60 IN DT=0.03333 HR

                       COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA
ATLAS 2 - PEAK AT 1.40 HR.
DT =    .033330 HOURS        END TIME =     5.999400

 HOURS
    .0000    .0018    .0036    .0055    .0074    .0094
    .0114    .0134    .0155    .0177    .0199    .0222    .0245
    .0269    .0293    .0319    .0345    .0372    .0399    .0428
    .0458    .0489    .0521    .0554    .0589    .0625    .0663
    .0703    .0745    .0789    .0836    .0888    .0944    .1004
    .1133    .1421    .1865    .2502    .3372    .4515    .5973
    .7788   1.0003   1.2059   1.2918   1.3643   1.4288   1.4874
   1.5414   1.5916   1.6384   1.6823   1.7237   1.7627   1.7995
   1.8344   1.8674   1.8987   1.9284   1.9566   1.9834   1.9898
   1.9958   2.0014   2.0068   2.0120   2.0169   2.0216   2.0262
   2.0306   2.0349   2.0390   2.0430   2.0469   2.0507   2.0543
   2.0579   2.0614   2.0648   2.0681   2.0713   2.0745   2.0776
   2.0806   2.0836   2.0865   2.0894   2.0922   2.0949   2.0976
   2.1003   2.1029   2.1055   2.1080   2.1105   2.1129   2.1153
   2.1177   2.1201   2.1224   2.1247   2.1269   2.1291   2.1313
   2.1335   2.1356   2.1377   2.1398   2.1418   2.1439   2.1459
   2.1478   2.1498   2.1517   2.1537   2.1555   2.1574   2.1593
   2.1611   2.1629   2.1647   2.1665   2.1683   2.1700   2.1718
   2.1735   2.1752   2.1769   2.1785   2.1802   2.1818   2.1834
   2.1850   2.1866   2.1882   2.1898   2.1914   2.1929   2.1944
   2.1959   2.1975   2.1990   2.2004   2.2019   2.2034   2.2048
   2.2063
```

2.2077 2.2091 2.2105 2.2119 2.2133 2.2147
2.2161
2.2174 2.2188 2.2201 2.2215 2.2228 2.2241
2.2254
2.2267 2.2280 2.2293 2.2306 2.2318 2.2331
2.2343
2.2356 2.2368 2.2381 2.2393 2.2405 2.2417
2.2429
2.2441 2.2453 2.2465 2.2476 2.2488 2.2500

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.013498 SQ MI
PER A=0 B=50 C=50 D=0
TP=0.1333 HR MASS RAINFALL=-1

K = .118483HR TP = .133300HR K/TP RATIO = .888844
SHAPE CONSTANT, N = 3.990548
UNIT PEAK = 35.901 CFS UNIT VOLUME = 1.000 B =
354.54 P60 = 1.9000
AREA = .013498 SQ MI IA = .42500 INCHES INF =
1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = .84675 INCHES = .6096 ACRE-FEET
PEAK DISCHARGE RATE = 21.67 CFS AT 1.500 HOURS BASIN
AREA = .0135 SQ. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 15:30:09

```
START                   TIME=0.0
***** HYDROGRAPH FOR BUREAU OF INDIAN AFFAIRS - BASIN A
RAINFALL                TYPE=1 RAIN QUARTER=0.0 IN
                        RAIN ONE=1.90 IN RAIN SIX=2.25 IN
                        RAIN DAY=2.60 IN DT=0.03333 HR
COMPUTE NM HYD          ID=1 HYD NO=101.1 AREA=0.003660 SQ MI
                        PER A=0 B=24.96 C=24.96 D=50.08
                        TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD               ID=1 CODE=1
FINISH
```

```
          AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January,
1994
                RUN DATE (MON/DAY/YR) = 03/27/2003
                START TIME (HR:MIN:SEC) = 08:18:10     USER NO.=
M_GOODWN.I01
                INPUT FILE = BIABA.DAT

     START                    TIME=0.0
     ***** HYDROGRAPH FOR BUREAU OF INDIAN AFFAIRS - BASIN A
     RAINFALL                 TYPE=1 RAIN QUARTER=0.0 IN
                              RAIN ONE=1.90 IN RAIN SIX=2.25 IN
                              RAIN DAY=2.60 IN DT=0.03333 HR

                         COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA
ATLAS 2 - PEAK AT 1.40 HR.
                         DT =     .033330 HOURS        END TIME =      5.999400
HOURS
 .0000    .0018    .0036    .0055    .0074    .0094
 .0114    .0134    .0155    .0177    .0199    .0222    .0245
 .0269    .0293    .0319    .0345    .0372    .0399    .0428
 .0458    .0489    .0521    .0554    .0589    .0625    .0663
 .0703    .0745    .0789    .0836    .0888    .0944    .1004
 .1133    .1421    .1865    .2502    .3372    .4515    .5973
 .7788   1.0003   1.2059   1.2918   1.3643   1.4288   1.4874
1.5414   1.5916   1.6384   1.6823   1.7237   1.7627   1.7995
1.8344   1.8674   1.8987   1.9284   1.9566   1.9834   1.9898
1.9958   2.0014   2.0068   2.0120   2.0169   2.0216   2.0262
2.0306   2.0349   2.0390   2.0430   2.0469   2.0507   2.0543
2.0579   2.0614   2.0648   2.0681   2.0713   2.0745   2.0776
2.0806   2.0836   2.0865   2.0894   2.0922   2.0949   2.0976
2.1003   2.1029   2.1055   2.1080   2.1105   2.1129   2.1153
2.1177   2.1201   2.1224   2.1247   2.1269   2.1291   2.1313
2.1335   2.1356   2.1377   2.1398   2.1418   2.1439   2.1459
2.1478   2.1498   2.1517   2.1537   2.1555   2.1574   2.1593
2.1611   2.1629   2.1647   2.1665   2.1683   2.1700   2.1718
2.1735   2.1752   2.1769   2.1785   2.1802   2.1818   2.1834
2.1850   2.1866   2.1882   2.1898   2.1914   2.1929   2.1944
2.1959   2.1975   2.1990   2.2004   2.2019   2.2034   2.2048
2.2063   2.2077   2.2091   2.2105   2.2119   2.2133   2.2147
```

2.2161 2.2174 2.2188 2.2201 2.2215 2.2228 2.2241

2.2254 2.2267 2.2280 2.2293 2.2306 2.2318 2.2331

2.2343 2.2356 2.2368 2.2381 2.2393 2.2405 2.2417

2.2429 2.2441 2.2453 2.2465 2.2476 2.2488 2.2500

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.003660 SQ MI
PER A=0 B=24.96 C=24.96 D=50.08
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 7.2365 CFS UNIT VOLUME = .9978 B = 526.28 P60 = 1.9000
AREA = .001833 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .118483HR TP = .133300HR K/TP RATIO = .888844
SHAPE CONSTANT, N = 3.990548
UNIT PEAK = 4.8595 CFS UNIT VOLUME = .9978 B = 354.54 P60 = 1.9000
AREA = .001827 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.43161 INCHES = .2794 ACRE-FEET
PEAK DISCHARGE RATE = 8.16 CFS AT 1.500 HOURS BASIN AREA = .0037 SQ. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 08:18:10

```
START                    TIME=0.0
***** HYDROGRAPH FOR BUREAU OF INDIAN AFFAIRS - BASIN B
RAINFALL                 TYPE=1 RAIN QUARTER=0.0 IN
                         RAIN ONE=1.90 IN RAIN SIX=2.25 IN
                         RAIN DAY=2.60 IN DT=0.03333 HR
COMPUTE NM HYD           ID=1 HYD NO=101.1 AREA=0.001238 SQ MI
                         PER A=0 B=22.36 C=22.36 D=55.28
                         TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD                ID=1 CODE=1
FINISH
```

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994

RUN DATE (MON/DAY/YR) = 03/27/2003
START TIME (HR:MIN:SEC) = 08:19:24 USER NO.= M_GOODWN.I01
INPUT FILE = BIABB.DAT

START TIME=0.0
***** HYDROGRAPH FOR BUREAU OF INDIAN AFFAIRS - BASIN B
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.90 IN RAIN SIX=2.25 IN
RAIN DAY=2.60 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
DT = .033330 HOURS END TIME = 5.999400 HOURS

.0000	.0018	.0036	.0055	.0074	.0094
.0114	.0134	.0155	.0177	.0199	.0222	.0245
.0269	.0293	.0319	.0345	.0372	.0399	.0428
.0458	.0489	.0521	.0554	.0589	.0625	.0663
.0703	.0745	.0789	.0836	.0888	.0944	.1004
.1133	.1421	.1865	.2502	.3372	.4515	.5973
.7788	1.0003	1.2059	1.2918	1.3643	1.4288	1.4874
1.5414	1.5916	1.6384	1.6823	1.7237	1.7627	1.7995
1.8344	1.8674	1.8987	1.9284	1.9566	1.9834	1.9898
1.9958	2.0014	2.0068	2.0120	2.0169	2.0216	2.0262
2.0306	2.0349	2.0390	2.0430	2.0469	2.0507	2.0543
2.0579	2.0614	2.0648	2.0681	2.0713	2.0745	2.0776
2.0806	2.0836	2.0865	2.0894	2.0922	2.0949	2.0976
2.1003	2.1029	2.1055	2.1080	2.1105	2.1129	2.1153
2.1177	2.1201	2.1224	2.1247	2.1269	2.1291	2.1313
2.1335	2.1356	2.1377	2.1398	2.1418	2.1439	2.1459
2.1478	2.1498	2.1517	2.1537	2.1555	2.1574	2.1593
2.1611	2.1629	2.1647	2.1665	2.1683	2.1700	2.1718
2.1735	2.1752	2.1769	2.1785	2.1802	2.1818	2.1834
2.1850	2.1866	2.1882	2.1898	2.1914	2.1929	2.1944
2.1959	2.1975	2.1990	2.2004	2.2019	2.2034	2.2048
2.2063	2.2077	2.2091	2.2105	2.2119	2.2133	2.2147

```
2.2161
                    2.2174  2.2188  2.2201  2.2215  2.2228  2.2241
2.2254
                    2.2267  2.2280  2.2293  2.2306  2.2318  2.2331
2.2343
                    2.2356  2.2368  2.2381  2.2393  2.2405  2.2417
2.2429
                    2.2441  2.2453  2.2465  2.2476  2.2488  2.2500

     COMPUTE NM HYD       ID=1 HYD NO=101.1 AREA=0.001238 SQ MI
                          PER A=0 B=22.36 C=22.36 D=55.28
                          TP=0.1333 HR MASS RAINFALL=-1

          K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000
SHAPE CONSTANT, N =  7.106420
          UNIT PEAK =   2.7019    CFS   UNIT VOLUME =    .9949       B =
526.28      P60 = 1.9000
          AREA =      .000684 SQ MI    IA =    .10000 INCHES    INF =
.04000 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT =    .033330


          K =    .118483HR    TP =    .133300HR    K/TP RATIO =    .888844
SHAPE CONSTANT, N =  3.990548
          UNIT PEAK =   1.4725    CFS   UNIT VOLUME =    .9914       B =
354.54      P60 = 1.9000
          AREA =      .000554 SQ MI    IA =    .42500 INCHES    INF =
1.04000 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT =    .033330

     PRINT HYD            ID=1 CODE=1

                                          PARTIAL HYDROGRAPH   101.10


          RUNOFF VOLUME =     1.49233 INCHES     =        .0985 ACRE-FEET
          PEAK DISCHARGE RATE =       2.85 CFS  AT   1.500 HOURS   BASIN
AREA =    .0012 SQ. MI.


FINISH

     NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 08:19:24
```

```
START                    TIME=0.0
***** HYDROGRAPH FOR BUREAU OF INDIAN AFFAIRS - BASIN C
RAINFALL                 TYPE=1 RAIN QUARTER=0.0 IN
                         RAIN ONE=1.90 IN RAIN SIX=2.25 IN
                         RAIN DAY=2.60 IN DT=0.03333 HR
COMPUTE NM HYD           ID=1 HYD NO=101.1 AREA=0.000300 SQ MI
                         PER A=0 B=0 C=0 D=100
                         TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD                ID=1 CODE=1
FINISH
```

```
          AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January,
1994
                RUN DATE (MON/DAY/YR) = 03/26/2003
                START TIME (HR:MIN:SEC) = 16:39:20     USER NO.=
M_GOODWN.I01
                INPUT FILE = BIABC.DAT

     START                    TIME=0.0
     ***** HYDROGRAPH FOR BUREAU OF INDIAN AFFAIRS - BASIN C
     RAINFALL                 TYPE=1 RAIN QUARTER=0.0 IN
                              RAIN ONE=1.90 IN RAIN SIX=2.25 IN
                              RAIN DAY=2.60 IN DT=0.03333 HR

                    COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA
ATLAS 2 - PEAK AT 1.40 HR.
                    DT =     .033330 HOURS        END TIME =      5.999400
HOURS

   .0114    .0000    .0018    .0036    .0055    .0074    .0094
   .0269    .0134    .0155    .0177    .0199    .0222    .0245
   .0458    .0293    .0319    .0345    .0372    .0399    .0428
   .0703    .0489    .0521    .0554    .0589    .0625    .0663
   .1133    .0745    .0789    .0836    .0888    .0944    .1004
   .7788    .1421    .1865    .2502    .3372    .4515    .5973
  1.5414   1.0003   1.2059   1.2918   1.3643   1.4288   1.4874
  1.8344   1.5916   1.6384   1.6823   1.7237   1.7627   1.7995
  1.9958   1.8674   1.8987   1.9284   1.9566   1.9834   1.9898
  2.0306   2.0014   2.0068   2.0120   2.0169   2.0216   2.0262
  2.0579   2.0349   2.0390   2.0430   2.0469   2.0507   2.0543
  2.0806   2.0614   2.0648   2.0681   2.0713   2.0745   2.0776
  2.1003   2.0836   2.0865   2.0894   2.0922   2.0949   2.0976
  2.1177   2.1029   2.1055   2.1080   2.1105   2.1129   2.1153
  2.1335   2.1201   2.1224   2.1247   2.1269   2.1291   2.1313
  2.1478   2.1356   2.1377   2.1398   2.1418   2.1439   2.1459
  2.1611   2.1498   2.1517   2.1537   2.1555   2.1574   2.1593
  2.1735   2.1629   2.1647   2.1665   2.1683   2.1700   2.1718
  2.1850   2.1752   2.1769   2.1785   2.1802   2.1818   2.1834
  2.1959   2.1866   2.1882   2.1898   2.1914   2.1929   2.1944
  2.2063   2.1975   2.1990   2.2004   2.2019   2.2034   2.2048
           2.2077   2.2091   2.2105   2.2119   2.2133   2.2147
```

2.2161

2.2174 2.2188 2.2201 2.2215 2.2228 2.2241

2.2254

2.2267 2.2280 2.2293 2.2306 2.2318 2.2331

2.2343

2.2356 2.2368 2.2381 2.2393 2.2405 2.2417

2.2429

2.2441 2.2453 2.2465 2.2476 2.2488 2.2500

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.000300 SQ MI
PER A=0 B=0 C=0 D=100
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 1.1844 CFS UNIT VOLUME = .9897 B = 526.28 P60 = 1.9000
AREA = .000300 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 2.01459 INCHES = .0322 ACRE-FEET
PEAK DISCHARGE RATE = .86 CFS AT 1.500 HOURS BASIN AREA = .0003 SQ. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 16:39:20

```
START                    TIME=0.0
***** HYDROGRAPH FOR BUREAU OF INDIAN AFFAIRS - BASIN D
RAINFALL                 TYPE=1 RAIN QUARTER=0.0 IN
                         RAIN ONE=1.90 IN RAIN SIX=2.25 IN
                         RAIN DAY=2.60 IN DT=0.03333 HR
COMPUTE NM HYD           ID=1 HYD NO=101.1 AREA=0.000182 SQ MI
                         PER A=0 B=44.39 C=44.39 D=11.22
                         TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD                ID=1 CODE=1
FINISH
```

```
          AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January,
1994
                RUN DATE (MON/DAY/YR) = 04/01/2003
                START TIME (HR:MIN:SEC) = 16:22:27     USER NO.=
M_GOODWN.I01
                INPUT FILE = BIABD.DAT

     START                  TIME=0.0
     ***** HYDROGRAPH FOR BUREAU OF INDIAN AFFAIRS - BASIN D
     RAINFALL               TYPE=1 RAIN QUARTER=0.0 IN
                            RAIN ONE=1.90 IN RAIN SIX=2.25 IN
                            RAIN DAY=2.60 IN DT=0.03333 HR

                       COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA
ATLAS 2 - PEAK AT 1.40 HR.
                       DT =     .033330 HOURS        END TIME =      5.999400
HOURS
   .0000    .0018    .0036    .0055    .0074    .0094
   .0114
   .0134    .0155    .0177    .0199    .0222    .0245
   .0269
   .0293    .0319    .0345    .0372    .0399    .0428
   .0458
   .0489    .0521    .0554    .0589    .0625    .0663
   .0703
   .0745    .0789    .0836    .0888    .0944    .1004
   .1133
   .1421    .1865    .2502    .3372    .4515    .5973
   .7788
  1.0003   1.2059   1.2918   1.3643   1.4288   1.4874
  1.5414
  1.5916   1.6384   1.6823   1.7237   1.7627   1.7995
  1.8344
  1.8674   1.8987   1.9284   1.9566   1.9834   1.9898
  1.9958
  2.0014   2.0068   2.0120   2.0169   2.0216   2.0262
  2.0306
  2.0349   2.0390   2.0430   2.0469   2.0507   2.0543
  2.0579
  2.0614   2.0648   2.0681   2.0713   2.0745   2.0776
  2.0806
  2.0836   2.0865   2.0894   2.0922   2.0949   2.0976
  2.1003
  2.1029   2.1055   2.1080   2.1105   2.1129   2.1153
  2.1177
  2.1201   2.1224   2.1247   2.1269   2.1291   2.1313
  2.1335
  2.1356   2.1377   2.1398   2.1418   2.1439   2.1459
  2.1478
  2.1498   2.1517   2.1537   2.1555   2.1574   2.1593
  2.1611
  2.1629   2.1647   2.1665   2.1683   2.1700   2.1718
  2.1735
  2.1752   2.1769   2.1785   2.1802   2.1818   2.1834
  2.1850
  2.1866   2.1882   2.1898   2.1914   2.1929   2.1944
  2.1959
  2.1975   2.1990   2.2004   2.2019   2.2034   2.2048
  2.2063
  2.2077   2.2091   2.2105   2.2119   2.2133   2.2147
```

```
2.2161
                    2.2174  2.2188  2.2201  2.2215  2.2228  2.2241
2.2254
                    2.2267  2.2280  2.2293  2.2306  2.2318  2.2331
2.2343
                    2.2356  2.2368  2.2381  2.2393  2.2405  2.2417
2.2429
                    2.2441  2.2453  2.2465  2.2476  2.2488  2.2500

     COMPUTE NM HYD       ID=1 HYD NO=101.1 AREA=0.000182 SQ MI
                          PER A=0 B=44.39 C=44.39 D=11.22
                          TP=0.1333 HR MASS RAINFALL=-1

          K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000
SHAPE CONSTANT, N =  7.106420
          UNIT PEAK =    .80621E-01CFS   UNIT VOLUME =     .8874       B =
526.28       P60 = 1.9000
          AREA =       .000020 SQ MI    IA =     .10000 INCHES    INF =
.04000 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT =    .033330


          K =    .118483HR    TP =    .133300HR    K/TP RATIO =    .888844
SHAPE CONSTANT, N =  3.990548
          UNIT PEAK =    .42975    CFS   UNIT VOLUME =     .9700       B =
354.54       P60 = 1.9000
          AREA =       .000162 SQ MI    IA =     .42500 INCHES    INF =
1.04000 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT =    .033330

     PRINT HYD            ID=1 CODE=1

                                          PARTIAL HYDROGRAPH   101.10


          RUNOFF VOLUME =       .97778 INCHES     =         .0095 ACRE-FEET
          PEAK DISCHARGE RATE =         .33 CFS  AT    1.500 HOURS   BASIN
AREA =    .0002 SQ. MI.


     FINISH

          NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 16:22:27
```

```
START                   TIME=0.0
***** HYDROGRAPH FOR BUREAU OF INDIAN AFFAIRS - BASIN E
RAINFALL                TYPE=1 RAIN QUARTER=0.0 IN
                        RAIN ONE=1.90 IN RAIN SIX=2.25 IN
                        RAIN DAY=2.60 IN DT=0.03333 HR
COMPUTE NM HYD          ID=1 HYD NO=101.1 AREA=0.008118 SQ MI
                        PER A=0 B=15.70 C=1.00 D=83.30
                        TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD               ID=1 CODE=1
FINISH
```

```
          AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January,
1994
               RUN DATE (MON/DAY/YR) = 04/01/2003
               START TIME (HR:MIN:SEC) = 16:23:53     USER NO.=
M_GOODWN.I01
               INPUT FILE = BIABE.DAT

     START                  TIME=0.0
     ***** HYDROGRAPH FOR BUREAU OF INDIAN AFFAIRS - BASIN E
     RAINFALL               TYPE=1 RAIN QUARTER=0.0 IN
                            RAIN ONE=1.90 IN RAIN SIX=2.25 IN
                            RAIN DAY=2.60 IN DT=0.03333 HR

                    COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA
ATLAS 2 - PEAK AT 1.40 HR.
                    DT =     .033330 HOURS       END TIME =     5.999400
HOURS

   .0114
   .0269
   .0458
   .0703
   .1133
   .7788
  1.5414
  1.8344
  1.9958
  2.0306
  2.0579
  2.0806
  2.1003
  2.1177
  2.1335
  2.1478
  2.1611
  2.1735
  2.1850
  2.1959
  2.2063

   .0000   .0018   .0036   .0055   .0074   .0094
   .0134   .0155   .0177   .0199   .0222   .0245
   .0293   .0319   .0345   .0372   .0399   .0428
   .0489   .0521   .0554   .0589   .0625   .0663
   .0745   .0789   .0836   .0888   .0944   .1004
   .1421   .1865   .2502   .3372   .4515   .5973
  1.0003  1.2059  1.2918  1.3643  1.4288  1.4874
  1.5916  1.6384  1.6823  1.7237  1.7627  1.7995
  1.8674  1.8987  1.9284  1.9566  1.9834  1.9898
  2.0014  2.0068  2.0120  2.0169  2.0216  2.0262
  2.0349  2.0390  2.0430  2.0469  2.0507  2.0543
  2.0614  2.0648  2.0681  2.0713  2.0745  2.0776
  2.0836  2.0865  2.0894  2.0922  2.0949  2.0976
  2.1029  2.1055  2.1080  2.1105  2.1129  2.1153
  2.1201  2.1224  2.1247  2.1269  2.1291  2.1313
  2.1356  2.1377  2.1398  2.1418  2.1439  2.1459
  2.1498  2.1517  2.1537  2.1555  2.1574  2.1593
  2.1629  2.1647  2.1665  2.1683  2.1700  2.1718
  2.1752  2.1769  2.1785  2.1802  2.1818  2.1834
  2.1866  2.1882  2.1898  2.1914  2.1929  2.1944
  2.1975  2.1990  2.2004  2.2019  2.2034  2.2048
  2.2077  2.2091  2.2105  2.2119  2.2133  2.2147
```

```
2.2161
                    2.2174  2.2188  2.2201  2.2215  2.2228  2.2241
2.2254
                    2.2267  2.2280  2.2293  2.2306  2.2318  2.2331
2.2343
                    2.2356  2.2368  2.2381  2.2393  2.2405  2.2417
2.2429
                    2.2441  2.2453  2.2465  2.2476  2.2488  2.2500

     COMPUTE NM HYD       ID=1 HYD NO=101.1 AREA=0.008118 SQ MI
                          PER A=0 B=15.70 C=1.00 D=83.30
                          TP=0.1333 HR MASS RAINFALL=-1

          K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000
SHAPE CONSTANT, N =  7.106420
          UNIT PEAK =   26.698    CFS   UNIT VOLUME =    .9989       B =
526.28      P60 = 1.9000
          AREA =      .006762 SQ MI    IA =    .10000 INCHES    INF =
.04000 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT =    .033330


          K =    .129290HR    TP =    .133300HR    K/TP RATIO =    .969919
SHAPE CONSTANT, N =  3.641827
          UNIT PEAK =   3.3617    CFS   UNIT VOLUME =    .9962       B =
330.54      P60 = 1.9000
          AREA =      .001356 SQ MI    IA =    .49102 INCHES    INF =
1.22485 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT =    .033330

     PRINT HYD            ID=1 CODE=1

                                        PARTIAL HYDROGRAPH   101.10


          RUNOFF VOLUME =     1.79723 INCHES     =         .7781 ACRE-FEET
          PEAK DISCHARGE RATE =      21.11 CFS  AT   1.500 HOURS   BASIN
AREA =    .0081 SQ. MI.


     FINISH

          NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 16:23:53
```

```
START                   TIME=0.0
***** HYDROGRAPH FOR BUREAU OF INDIAN AFFAIRS POND - LIFT STATION
RAINFALL                TYPE=1 RAIN QUARTER=0.0 IN
                        RAIN ONE=1.90 IN RAIN SIX=2.25 IN
                        RAIN DAY=2.60 IN DT=0.03333 HR
COMPUTE NM HYD          ID=1 HYD NO=101.1 AREA=0.008418 SQ MI
                        PER A=0 B=15.14 C=0.96 D=83.90
                        TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD               ID=1 CODE=1
*LIFT STATION - 2 PUMPS PUMPING AT 1.00 CFS EACH WITH LAG
ROUTE RESERVOIR         ID=2  HYD NO=101.2  INFLOW ID=1  CODE=24
                        OUTFLOW (CFS)    STORAGE (AC-FT)  ELEVATION
                           0.00              0.00           4947.23
                           0.01              0.000721       4948.23
                           0.02              0.001442       4949.23
                           0.03              0.002163       4950.23
                           0.04              0.002884       4951.23
                           0.991             0.003605       4952.23
                           0.992             0.004326       4953.23
                           0.993             0.005047       4954.23
                           0.994             0.005768       4955.23
                           1.990             0.007155       4956.23
                           1.991             0.009207       4957.23
                           1.992             0.011259       4958.23
                           1.993             0.013311       4959.23
                           1.994             0.102468       4959.50
                           1.995             2.029764       4960.50
PRINT HYD               ID=2 CODE=1
FINISH
```

```
          AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January,
1994
               RUN DATE (MON/DAY/YR) = 04/02/2003
               START TIME (HR:MIN:SEC) = 08:05:53     USER NO.=
M_GOODWN.I01
               INPUT FILE = BIAPOND.DAT

     START                  TIME=0.0
     ***** HYDROGRAPH FOR BUREAU OF INDIAN AFFAIRS POND - LIFT STATION
     RAINFALL               TYPE=1 RAIN QUARTER=0.0 IN
                            RAIN ONE=1.90 IN RAIN SIX=2.25 IN
                            RAIN DAY=2.60 IN DT=0.03333 HR

                       COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA
ATLAS 2 - PEAK AT 1.40 HR.
                       DT =     .033330 HOURS       END TIME =     5.999400
HOURS

   .0000   .0018   .0036   .0055   .0074   .0094
   .0114   .0134   .0155   .0177   .0199   .0222   .0245
   .0269   .0293   .0319   .0345   .0372   .0399   .0428
   .0458   .0489   .0521   .0554   .0589   .0625   .0663
   .0703   .0745   .0789   .0836   .0888   .0944   .1004
   .1133   .1421   .1865   .2502   .3372   .4515   .5973
   .7788  1.0003  1.2059  1.2918  1.3643  1.4288  1.4874
  1.5414  1.5916  1.6384  1.6823  1.7237  1.7627  1.7995
  1.8344  1.8674  1.8987  1.9284  1.9566  1.9834  1.9898
  1.9958  2.0014  2.0068  2.0120  2.0169  2.0216  2.0262
  2.0306  2.0349  2.0390  2.0430  2.0469  2.0507  2.0543
  2.0579  2.0614  2.0648  2.0681  2.0713  2.0745  2.0776
  2.0806  2.0836  2.0865  2.0894  2.0922  2.0949  2.0976
  2.1003  2.1029  2.1055  2.1080  2.1105  2.1129  2.1153
  2.1177  2.1201  2.1224  2.1247  2.1269  2.1291  2.1313
  2.1335  2.1356  2.1377  2.1398  2.1418  2.1439  2.1459
  2.1478  2.1498  2.1517  2.1537  2.1555  2.1574  2.1593
  2.1611  2.1629  2.1647  2.1665  2.1683  2.1700  2.1718
  2.1735  2.1752  2.1769  2.1785  2.1802  2.1818  2.1834
  2.1850  2.1866  2.1882  2.1898  2.1914  2.1929  2.1944
  2.1959  2.1975  2.1990  2.2004  2.2019  2.2034  2.2048
  2.2063  2.2077  2.2091  2.2105  2.2119  2.2133  2.2147
```

2.2161

2.2174 2.2188 2.2201 2.2215 2.2228 2.2241

2.2254

2.2267 2.2280 2.2293 2.2306 2.2318 2.2331

2.2343

2.2356 2.2368 2.2381 2.2393 2.2405 2.2417

2.2429

2.2441 2.2453 2.2465 2.2476 2.2488 2.2500

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.008418 SQ MI
PER A=0 B=15.14 C=0.96 D=83.90
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7..106420
UNIT PEAK = 27.884 CFS UNIT VOLUME = .9990 B =
526.28 P60 = 1.9000
AREA = .007063 SQ MI IA = .10000 INCHES INF =
.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

K = .129296HR TP = .133300HR K/TP RATIO = .969966
SHAPE CONSTANT, N = 3.641644
UNIT PEAK = 3.3605 CFS UNIT VOLUME = .9962 B =
330.52 P60 = 1.9000
AREA = .001355 SQ MI IA = .49106 INCHES INF =
1.22496 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.80503 INCHES = .8104 ACRE-FEET
PEAK DISCHARGE RATE = 21.96 CFS AT 1.500 HOURS BASIN
AREA = .0084 SQ. MI.

*LIFT STATION - 2 PUMPS PUMPING AT 1.00 CFS EACH WITH LAG
ROUTE RESERVOIR ID=2 HYD NO=101.2 INFLOW ID=1 CODE=24

OUTFLOW (CFS)	STORAGE (AC-FT)	ELEVATION
0.00	0.00	4947.23
0.01	0.000721	4948.23
0.02	0.001442	4949.23
0.03	0.002163	4950.23
0.04	0.002884	4951.23
0.991	0.003605	4952.23
0.992	0.004326	4953.23
0.993	0.005047	4954.23
0.994	0.005768	4955.23
1.990	0.007155	4956.23
1.991	0.009207	4957.23
1.992	0.011259	4958.23
1.993	0.013311	4959.23
1.994	0.102468	4959.50
1.995	2.029764	4960.50

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

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	4947.23	.000	.00
.80	.00	4947.23	.000	.00
1.60	15.23	4959.62	.333	1.99
2.40	.93	4959.74	.559	1.99
3.20	.20	4959.68	.456	1.99
4.00	.13	4959.62	.334	1.99
4.80	.13	4959.56	.210	1.99
5.60	.14	4959.45	.087	1.99
6.40	.01	4950.38	.002	.03
7.20	.00	4948.63	.001	.01
8.00	.00	4947.79	.000	.01
8.80	.00	4947.45	.000	.00

PEAK DISCHARGE = 1.994 CFS - PEAK OCCURS AT HOUR 2.20
MAXIMUM WATER SURFACE ELEVATION = 4959.743
MAXIMUM STORAGE = .5706 AC-FT INCREMENTAL TIME= .033330HRS

PRINT HYD ID=2 CODE=1

PARTIAL HYDROGRAPH 101.20

RUNOFF VOLUME = 1.80499 INCHES = .8104 ACRE-FEET
PEAK DISCHARGE RATE = 1.99 CFS AT 2.200 HOURS BASIN AREA = .0084 SQ. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 08:05:53